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The Global Innovation Index 2012

Stronger Innovation Linkages for Global Growth

Soumitra Dutta, INSEAD
Editor

Alcatel·Lucent

booz&co.

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The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth is the result of a collaboration between INSEAD and the World Intellectual Property Organization (WIPO) as co-publishers, and their Knowledge Partners.

The terms 'country', 'economy', and 'nation' as used in this report do not in all cases refer to a territorial entity that is a state as understood by international law and practice. The terms cover well-defined, geographically self-contained economic areas that may not be states but for which statistical data are maintained on a separate and independent basis.

Disclaimer: The index's methodology and the rankings do not necessarily present the views of WIPO or its Member States. The same applies to the substantive chapters in this report, which are the responsibility of the authors and not WIPO.

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Stronger Innovation Linkages for Global Growth

In recent months, policy discussions about how to reignite confidence in the world economy have questioned the focus on austerity measures. The economic policy debate is placing renewed emphasis on achieving an appropriate policy mix that fosters growth and employment while promoting sustainable public finances.

Policies to promote innovation should feature prominently in these discussions—even if innovation cannot cure the most immediate financial difficulties, it is a crucial element of sustainable growth. Future generations will ask whether the stimulus programmes of 2009 and any upcoming initiatives successfully married short-term demand stimulus with longer-lasting growth objectives. They will also ask whether policy makers seized the opportunity presented by the current crisis to put forward-looking measures in place to lay the foundations for future prosperity. Finally, they will judge whether firms and other innovation actors invested appropriately in the future, and attempt to determine why some emerged from the crisis more strongly than others.

To support this debate, metrics are required to assess innovation and related policy performance. In this light, we are pleased to present the 2012 edition of the Global Innovation Index (GII). The GII helps to create an environment in which innovation factors are under continual evaluation, and it provides a key tool for refining innovation policies.

The importance of linkages and the right infrastructure for innovation

Collaboration, the flow of ideas between different innovation actors, and access to knowledge are all increasingly important ingredients of innovation. So-called *innovation ecosystems* have become more complex and are now built on more internationalized, collaborative, and open innovation models and knowledge markets.

This year's GII report underlines the importance of linkages and of supporting the optimal infrastructure for these innovation ecosystems.

This is an important field of innovation policy, and one that garners increasing attention. The World Intellectual Property Organization (WIPO), for example, contributes to fostering the innovation infrastructure by focusing on knowledge diffusion. Among its other recent initiatives, WIPO's Access to Research for Development and Innovation programme increases the availability of scientific and technical publications in developing countries. Its Technology and Innovation Support Centers are designed to provide local innovators with access to high-quality technology information, including patent documents.

Challenges to promoting linkages

While there is broad agreement that linkages among innovation actors are key, we face two interrelated challenges:

First, experiences and lessons in designing effective policies that foster innovation linkages are still scarce. Modern innovation policies aim to support science-industry collaboration, the formation of innovation clusters, and knowledge diffusion, for example. Yet creating innovation linkages is perhaps the most complex innovation policy area, and there are no easy recipes for achieving tangible outcomes and benefits. For years, many economies have sought to foster collaboration between universities and firms, or to create successful technology clusters—often to no avail.

Second, measuring the existence and impact of innovation linkages remains dauntingly difficult. This is why the GII puts particular emphasis on measuring not only innovation inputs and outputs, but innovation linkages as well. For instance, it includes measures of the number of joint ventures, or patents filed jointly by a domestic and foreign inventor. However, most of the existing

variables capture innovation linkages only imperfectly, and improved metrics are sorely needed. The theme of this year's GII puts a spotlight on this important future measurement agenda.

Continuing the journey for better innovation metrics and policies

INSEAD began its journey to find better ways to measure innovation in 2007, increasingly helped by its Knowledge Partners. WIPO joined INSEAD as one of the Knowledge Partners in 2011 and is now co-publisher of the GII. Over the years, the GII model has evolved in response to our growing understanding of innovation parameters. We take pride in continually adapting the model to better reflect the modern dynamics of innovation and the better availability of data. The 2012 edition, for instance, places greater emphasis on measuring economies' ecological sustainability and online creativity.

We thank the GII's Knowledge Partners—Alcatel-Lucent, Booz & Company, and the Confederation of Indian Industry—for bringing true enterprise perspectives to our debates.

Last but not least, we welcome two new members to our eminent Advisory Board who have greatly strengthened its ranks: Sibusiso Sibisi, President and Chief Executive Officer of the Council for Scientific and Industrial Research in South Africa; and Rob Steele, Secretary-General of the International Organization for Standardization.

From the outset, we said that measuring innovation, identifying its main drivers, and fostering adequate policies would be a multi-year journey. INSEAD and WIPO, along with our partners, look forward to continuing this journey.

Soumitra Dutta
Roland Berger Professor of Business and Technology and Academic Director of eLab, INSEAD

Francis Gurry
Director General, World Intellectual Property Organization (WIPO)

Embracing New Types of Partnerships to Drive Open Innovation

We talk a great deal about innovation in the information and communication technologies (ICT) industry, where I have spent most of my career. When we speak about innovation we are generally talking about breakthroughs, new technologies, and the companies that bring them to market.

Breakthroughs are of course an important aspect of innovation. Breakthroughs can reduce energy consumption, create new markets, introduce different ways of doing things, generate new revenue, help people connect better, and help us solve problems in areas as diverse as healthcare, agriculture, education, and transportation. But innovation is about much more than just technological breakthroughs. Increasingly it is about breakthroughs in collaboration—forming linkages among different types of companies, industries, and public institutions to address challenges and opportunities that reach far beyond the scope or capability of any individual organization.

This notion of linkages and the collaborative models needed to address our biggest challenges is the central theme of the 2012 edition of the *Global Innovation Index* (GII), which we are proud to support once again as a Knowledge Partner. The 2012 GII explores the conditions in which innovation flourishes and documents which countries are most successful in fostering those conditions. The GII also looks at some of the ways old models of innovation are evolving, how new models are emerging, why they matter, and the impacts they can have.

Chapter 2 of this report, contributed by colleagues at Alcatel-Lucent, explores how an ancient model of collaboration—the public-private partnership—is being applied in novel ways to address some of the large-scale challenges faced today. The reality is that no organization—no government, company, research institution, or nongovernmental organization (NGO)—by itself can solve our biggest problems, such as the economic crisis facing Europe or the massive emerging ecological threats. They must partner. They must collaborate. In many cases, this means working very differently than they ever have before. It means forging much closer ties between previously distinct sectors than ever before. It means sharing resources and responsibilities, depending on others to do their part in the collaborative action, and embracing these interdependencies. Alcatel-Lucent, with many others, does this in the GreenTouch consortium, which is working to help reduce the energy consumption of telecommunications networks 1,000-fold by 2015.

Partnering in this way is difficult. Many countries have sought to bring their educational, business, and NGO sectors together to address specific challenges. Some have been successful, but just as often they have not: the often divergent motivations of these different organizations can lead to a mismatch of objectives, expectations, and approaches.

But innovation is a crucial element of competitiveness. For organizations, companies, and countries to remain competitive and to grow, they must innovate, and one of the ways they can accomplish this is through broad collaboration. Given the challenges we face as a global community, we must find ways to partner more effectively.

The GII offers an opportunity to think through this challenge. By shining a light on successful models of collaboration and innovation, and by documenting what has worked (or not) and where, the GII is contributing to an absolutely critical conversation.

Ben Verwaayen
Chief Executive Officer
Alcatel-Lucent

The Coherence Premium in Innovation

Booz & Company is honoured to contribute to *The Global Innovation Index 2012* for a second consecutive year. This is a critical element in our continuing effort to support businesses and governments in their development of innovation-led economies. For almost a decade, Booz & Company's annual Global Innovation 1000 study has ranked the top 1,000 public companies by their research and development (R&D) spending and has analysed how that spending influences their overall financial performance. Through this work, we continue to gain significant insight into the nature of innovation. It is clear that success in innovation is not just a blend of quantitative elements such as the number of researchers, the amount that they receive in funding, and the number of patents they file. Rather, the companies and countries that have succeeded in establishing strong innovation cultures have also embraced qualitative success factors—they have developed coherent linkages between their strategies and capabilities, and they nurture an environment that supports innovation.

Our 2011 study *The Global Innovation 1000: Why Culture Is Key* shows that spending more on R&D is not enough to create robust and sustainable innovative enterprises. Instead, numerous elements comprise a truly innovative company: a focused innovation strategy, a winning overall business vision, profound customer insight, great talent, and the right set of capabilities—the combination of processes, tools, knowledge, skills, and organization—are needed to succeed. Importantly, corporate culture ties all those elements together, making the 'secret sauce' that makes innovative companies different from their peers. The right culture of innovation guarantees a high degree of coherence between strategies and capabilities or between a company's aspirations and its implementation.

A coherent capabilities-driven strategy is the key to unlocking value creation on a reliable and sustained basis. Three interlocking elements comprise this strategy: pursuing a clear strategic direction, building a system of differentiating capabilities consistent with that direction, and selling products or services that thrive within that system. When these three elements are aligned, a company can be described as coherent and can move past the competition consistently and with ease.

We recognize that coherence is as relevant and critical for countries as it is for companies. Coherence between innovation strategies and capabilities at the national level requires the stakeholders to be closely linked in an effective ecosystem. Developed economies must continue to strengthen and develop such linkages to stay ahead in strategic sectors. At the same time, developing economies must institute a national model that establishes coherent linkages in their innovation systems. This involves forging strong ties among all stakeholders in the innovation ecosystem, encompassing policies, stakeholders, and operations. Key to this effort is establishing an innovation-promotion entity that will create and develop the necessary linkages, coordinate policy, convene stakeholders, and drive the national agenda.

At Booz & Company, we believe that coherence around key capabilities drives essential advantage. Coherent companies and, indeed, countries, wield a clear set of capabilities aligned with their strategy throughout their portfolio. Furthermore, both public and private sectors have an important role to play in increasing global welfare by developing coherent strategies and linkages for innovation at both the firm and country-wide levels.

Cesare R. Mainardi
Chief Executive Officer
Booz & Company

Why Innovation Linkages? Perspectives from an Emerging Economy

Too often these days, any discussion on innovation and its linkages to growth and development is reduced to the difficulties faced by economies in certain parts of the world over the last few years and the implications for the global economy. There is an urgent need to broaden this discussion and to explore how innovation can be not only fostered and harnessed for growth but also how it can solve everyday problems, reduce poverty, and help us attain a faster-sustainable-inclusive-growth-driven future.

There is also a need to widen the perspective on the actors that are crucial in promoting innovation. Today's innovation environment is broad and involves bilateral and multilateral collaborations in scientific and technological research and development (R&D), cultural exchanges, sharing of best practices, open innovation challenges, and other forms of linkages.

Such linkages must, however, energize and be energized by the innovative and creative spirits inherent in every society and culture. In this context, India stands as an example. With a large population and limited resources, Indians must innovate to thrive, and this is expressed in every strand of society: by those on the street; by grassroots innovators; by entrepreneurs; and by small, medium, and large companies.

A specific instance is found in one of India's biggest recent success stories: the mobile and ICT revolution. This revolution has enabled innovation in other spheres by connecting people throughout the country, providing the means for optimization of ideas and their realization. The government, for example, is connecting Indian *panchayats* (village administrations) through fibre optic cables with the goal of transforming service delivery in areas such as health, education, agriculture. This has truly provided an important means by which this Indian innovative spirit can be harnessed.

The government is keen to provide an enabling policy and institutional framework to promote innovation. The President of India has declared 2010–2020 the 'Decade of Innovation' to focus attention on this critical area and on inclusive growth. At the same time, the government has prioritized a doubling of investment in R&D over the next five years. The Indian National Innovation Council (NIC) was established by the government in 2010 to discuss, analyse, and help implement strategies for inclusive innovation in India and prepare a Roadmap for Innovation 2010–2020. Recently, for example, the NIC has taken up the challenge of forging global collaborations through its Global Innovation Roundtable Conference.

The government's partnership with stakeholders provides the key to the success of its initiatives. The Confederation of Indian Industry (CII) has been working with the industry, institutions, government and global organizations to strengthen innovation ecosystem in India. Many innovative initiatives based on public-private-partnership (PPP) mode have been launched to implement and support innovations on the ground. One key initiative is formation of a not-for-profit PPP company named Global Innovation & Technology Alliance to support industrial R&D that converts global high cost/high quality innovative technologies into cost effective products those are affordable by and accessible to people.

The theme of this year's Global Innovation Index, which emphasizes innovation linkages in high- and lower-income countries alike, is well suited for addressing the contemporary challenges of innovation. I take this opportunity to thank INSEAD and the World Intellectual Property Organization for bringing out this excellent work and to express my pleasure at CII's participation over the last four years as a Knowledge Partner in this important initiative. I also congratulate the other Knowledge Partners for their continued support and contribution to the report.

Chandrajit Banerjee
Director General
Confederation of Indian Industry

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Advisory Board to the Global Innovation Index

In 2011, an Advisory Board was set up to provide advice on the research underlying the Global Innovation Index (GII), generate synergies at its stages of development, and assist with the dissemination of its messages and results. The Advisory Board is a select group of leading international practitioners and experts with unique knowledge and skills in the realm of innovation. Its members, while coming from diverse geographical and institutional backgrounds (international organizations, the public sector, non-governmental organizations, business, and academia), participate in their personal capacity. We are grateful for the time and support provided by the Advisory Board members.

In 2012, we welcomed two new members to the Advisory Board: Sibusiso Sibisi and Rob Steele.

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Rankings

Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Switzerland	68.2	**1**	HI	**1**	EUR	**1**
Sweden	64.8	2	HI	2	EUR	2
Singapore	63.5	3	HI	3	SEAO	**1**
Finland	61.8	4	HI	4	EUR	3
United Kingdom	61.2	5	HI	5	EUR	4
Netherlands	60.5	6	HI	6	EUR	5
Denmark	59.9	7	HI	7	EUR	6
Hong Kong (China)	58.7	8	HI	8	SEAO	2
Ireland	58.7	9	HI	9	EUR	7
United States of America	57.7	10	HI	10	NAC	**1**
Luxembourg	57.7	11	HI	11	EUR	8
Canada	56.9	12	HI	12	NAC	2
New Zealand	56.6	13	HI	13	SEAO	3
Norway	56.4	14	HI	14	EUR	9
Germany	56.2	15	HI	15	EUR	10
Malta	56.1	16	HI	16	EUR	11
Israel	56.0	17	HI	17	NAWA	**1**
Iceland	55.7	18	HI	18	EUR	12
Estonia	55.3	19	HI	19	EUR	13
Belgium	54.3	20	HI	20	EUR	14
Korea, Rep.	53.9	21	HI	21	SEAO	4
Austria	53.1	22	HI	22	EUR	15
Australia	51.9	23	HI	23	SEAO	5
France	51.8	24	HI	24	EUR	16
Japan	51.7	25	HI	25	SEAO	6
Slovenia	49.9	26	HI	26	EUR	17
Czech Republic	49.7	27	HI	27	EUR	18
Cyprus	47.9	28	HI	28	NAWA	2
Spain	47.2	29	HI	29	EUR	19
Latvia	47.0	30	UM	**1**	EUR	20
Hungary	46.5	31	HI	30	EUR	21
Malaysia	45.9	32	UM	2	SEAO	7
Qatar	45.5	33	HI	31	NAWA	3
China	45.4	34	UM	3	SEAO	8
Portugal	45.3	35	HI	32	EUR	22
Italy	44.5	36	HI	33	EUR	23
United Arab Emirates	44.4	37	HI	34	NAWA	4
Lithuania	44.0	38	UM	4	EUR	24
Chile	42.7	39	UM	5	LCN	**1**
Slovakia	41.4	40	HI	35	EUR	25
Bahrain	41.1	41	HI	36	NAWA	5
Croatia	40.7	42	HI	37	EUR	26
Bulgaria	40.7	43	UM	6	EUR	27
Poland	40.4	44	HI	38	EUR	28
Montenegro	40.1	45	UM	7	EUR	29
Serbia	40.0	46	UM	8	EUR	30
Oman	39.5	47	HI	39	NAWA	6
Saudi Arabia	39.3	48	HI	40	NAWA	7
Mauritius	39.2	49	UM	9	SSF	**1**
Moldova, Rep.	39.2	50	LM	**1**	EUR	31
Russian Federation	37.9	51	UM	10	EUR	32
Romania	37.8	52	UM	11	EUR	33
Brunei Darussalam	37.7	53	HI	41	SEAO	9
South Africa	37.4	54	UM	12	SSF	2
Kuwait	37.2	55	HI	42	NAWA	8
Jordan	37.1	56	UM	13	NAWA	9
Thailand	36.9	57	UM	14	SEAO	10
Brazil	36.6	58	UM	15	LCN	2
Tunisia	36.5	59	UM	16	NAWA	10
Costa Rica	36.3	60	UM	17	LCN	3
Lebanon	36.2	61	UM	18	NAWA	11
Macedonia, FYR	36.2	62	UM	19	EUR	34
Ukraine	36.1	63	LM	2	EUR	35
India	35.7	64	LM	3	CSA	**1**
Colombia	35.5	65	UM	20	LCN	4
Greece	35.3	66	HI	43	EUR	36
Uruguay	35.1	67	UM	21	LCN	5
Mongolia	35.0	68	LM	4	SEAO	11
Armenia	34.5	69	LM	5	NAWA	12
Argentina	34.4	70	UM	22	LCN	6
Georgia	34.3	71	LM	6	NAWA	13

Global Innovation Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Bosnia and Herzegovina	34.2	72	UM	23	EUR	37
Namibia	34.1	73	UM	24	SSF	3
Turkey	34.1	74	UM	25	NAWA	14
Peru	34.1	75	UM	26	LCN	7
Viet Nam	33.9	76	LM	7	SEAO	12
Guyana	33.7	77	LM	8	LCN	8
Belarus	32.9	78	UM	27	EUR	38
Mexico	32.9	79	UM	28	LCN	9
Belize	32.5	80	LM	9	LCN	10
Trinidad and Tobago	32.5	81	HI	44	LCN	11
Swaziland	32.0	82	LM	10	SSF	4
Kazakhstan	31.9	83	UM	29	CSA	2
Paraguay	31.6	84	LM	11	LCN	12
Botswana	31.4	85	UM	30	SSF	5
Dominican Republic	30.9	86	UM	31	LCN	13
Panama	30.9	87	UM	32	LCN	14
Morocco	30.7	88	LM	12	NAWA	15
Azerbaijan	30.4	89	UM	33	NAWA	16
Albania	30.4	90	UM	34	EUR	39
Jamaica	30.2	91	UM	35	LCN	15
Ghana	29.6	92	LM	13	SSF	6
El Salvador	29.5	93	LM	14	LCN	16
Sri Lanka	29.1	94	LM	15	CSA	3
Philippines	29.0	95	LM	16	SEAO	13
Kenya	28.9	96	LI	1	SSF	7
Senegal	28.8	97	LM	17	SSF	8
Ecuador	28.5	98	UM	36	LCN	17
Guatemala	28.4	99	LM	18	LCN	18
Indonesia	28.1	100	LM	19	SEAO	14
Fiji	27.9	101	LM	20	SEAO	15
Rwanda	27.9	102	LI	2	SSF	9
Egypt	27.9	103	LM	21	NAWA	17
Iran, Islamic Rep.	27.3	104	UM	37	CSA	4
Nicaragua	26.7	105	LM	22	LCN	19
Gabon	26.5	106	UM	38	SSF	10
Zambia	26.4	107	LM	23	SSF	11
Tajikistan	26.4	108	LI	3	CSA	5
Kyrgyzstan	26.4	109	LI	4	CSA	6
Mozambique	26.3	110	LI	5	SSF	12
Honduras	26.3	111	LM	24	LCN	20
Bangladesh	26.1	112	LI	6	CSA	7
Nepal	26.0	113	LI	7	CSA	8
Bolivia, Plurinational St.	25.8	114	LM	25	LCN	21
Zimbabwe	25.7	115	LI	8	SSF	13
Lesotho	25.7	116	LM	26	SSF	14
Uganda	25.6	117	LI	9	SSF	15
Venezuela, Bolivarian Rep.	25.4	118	UM	39	LCN	22
Mali	25.4	119	LI	10	SSF	16
Malawi	25.4	120	LI	11	SSF	17
Cameroon	25.0	121	LM	27	SSF	18
Burkina Faso	24.6	122	LI	12	SSF	19
Nigeria	24.6	123	LM	28	SSF	20
Algeria	24.4	124	UM	40	NAWA	18
Benin	24.4	125	LI	13	SSF	21
Madagascar	24.2	126	LI	14	SSF	22
Uzbekistan	23.9	127	LM	29	CSA	9
Tanzania, United Rep.	23.9	128	LI	15	SSF	23
Cambodia	23.4	129	LI	16	SEAO	16
Gambia	23.3	130	LI	17	SSF	24
Ethiopia	23.3	131	LI	18	SSF	25
Syrian Arab Rep.	23.1	132	LM	30	NAWA	19
Pakistan	23.1	133	LM	31	CSA	10
Côte d'Ivoire	22.6	134	LM	32	SSF	26
Angola	22.2	135	LM	33	SSF	27
Togo	20.5	136	LI	19	SSF	28
Burundi	20.5	137	LI	20	SSF	29
Lao PDR	20.2	138	LM	34	SEAO	17
Yemen	19.2	139	LM	35	NAWA	20
Niger	18.6	140	LI	21	SSF	30
Sudan	16.8	141	LM	36	SSF	31

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Chapters

The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth

Daniela Benavente and **Soumitra Dutta**, INSEAD eLab

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The global economic recovery is fragile and uneven across different regions.

Most current economic forecasts by leading international economic institutions predict a slowdown of gross domestic product (GDP) growth throughout 2012 and an uncertain recovery in 2013.[1] Despite some setbacks, growth remains relatively strong in most emerging-market economies. The situation in high-income economies, however, is more precarious. Unemployment is high and growing in many of these countries. Full crisis recovery will take its time, and there are risks of a renewed degradation of the economic climate resulting in a prolonged state of uncertainty.

In this context, the economic policy debate is placing renewed emphasis on achieving an appropriate policy framework that fosters growth and employment while promoting sustainable public finances. As outlined in the Preface to this report, policies that promote innovation and structural policies fostering long-term output growth should feature prominently in these discussions. Although innovation cannot cure the most immediate financial difficulties, it is a crucial element of sustainable growth. Forward-looking measures are needed to lay the foundations for future prosperity.

The economic crisis is affecting not only investments but also the climate for innovation.[2] The effect of this downturn on innovation is complex and ambiguous, with large variations across firms, sectors, countries, and regions. On the one hand, crisis might stimulate new entrepreneurial ventures and growth areas. Past crises in the 1990s are said to have generated new strings of innovative companies and may have put entire nations—such as Finland and the Republic of Korea—on a new growth path.[3] Countries that continue to invest in innovation despite economically worsening conditions are reaping the benefits of their efforts at some point.

On the other hand, true risks exist in terms of a negative effect on innovation expenditures and outputs. Total and/or business R&D investments have declined as of 2008 or 2009 in a significant number of countries for which data are available (for example, in Canada, Israel, Lithuania, Netherlands, Spain, Sweden, and the United Kingdom, or UK).[4] Moreover, the world's top R&D investors decreased their R&D spending by 1.9% in 2009.[5] The crisis is expected to have slowed the introduction of new products or processes, primarily because of decreased demand and increased business uncertainty, including uncertainty about the size of the future market. Large multinational firms responsible for a large share of business R&D have recently accumulated large cash stocks that are not being reinvested.

Unmistakably, reductions or a streamlining of R&D expenditures in times of crisis does not have to affect research output or innovations if efficiency is improved and less promising projects are discontinued. Still, firms—in particular small and medium-sized enterprises (SMEs)—face greater difficulties in tapping external sources of funding to support their innovation investments and to finance new business ventures. The access to venture capital is still severely depressed. The number of firm creations is down in countries for which data are available.

Importantly, research and development (R&D) and innovation expenditures cannot often be stopped and subsequently picked up again simply when the economy recovers. Initial investments are sunk. Researchers deskill and PhD students without funding go into other fields. Innovation that is postponed now will also not take place later; there are hysteresis effects in innovation.

Knowing the exact effects of the economic crisis on business innovation will take time. The questions involved are too complex to be reduced to a blanket assessment of the effect of the economic slowdown on the level and geography of innovation. Moreover, such an assessment is premature and data to fully assess the impacts are only emerging.

Also, as part of their stimulus packages, in 2009 and onwards most

governments have pledged to avoid cutbacks in science and R&D or even increase spending.[6] Ideally, spending measures decided by governments need to marry short-term demand stimulus with longer-lasting growth objectives. Most governments have also identified financial or structural policies to foster new employment and growth in areas such as research, the health sector, transport, and the environment. There is now a need to monitor and assess how and whether these stimulus measures have been implemented and to determine the impacts on short-term demand and longer-term economic foundations and the society more broadly. This applies to programmes decided in 2009 and to those that are in the offing.

To support these debates, to guide polices, and to highlight good practices, metrics are required to assess innovation and related policy performance. For this purpose the GII is timely and relevant.

Stronger innovation linkages for global growth

The theme of this year's GII report, 'Stronger innovation linkages for global growth', underlines the importance of productive interactions among innovation actors—firms, the public sector, academia, and society—in modern innovation ecosystems (see also Chapter 4 of this report).

More and more attention is focused on the interplay of institutions and the interactive processes in the creation, application, and diffusion of knowledge, human capital, and technology. In particular, the transfer of scientific results and inventions and their application to societal challenges in high- and lower-income countries alike is garnering attention.

In the policy debate and the literature, emphasis is put on the increasingly collaborative nature of innovative processes. Such collaboration has been facilitated as innovation processes have become more fragmented and 'open'.[7] As studied in several chapters of this publication, the role of the Internet more generally has been crucial in introducing changes to the innovation process and to related outputs.[8] Markets for technologies that allow for knowledge diffusion have added a further boost to collaboration.[9]

Accordingly, in the last decades in high- and middle-income countries alike, various national strategies have aimed to improve the linkages between the various innovation actors, most notably the science system and higher education, the government, the private sector, and increasingly also the not-for-profit sector such as philanthropies and nongovernmental organizations.

The measurement agenda has evolved to address the *systemic dimension of innovation*[10]—that is, the activities of multiple innovation actors and linkages among them.[11] The challenge is to detect and quantify the dynamic and often informal nature of linkages and their efficacy.

This policy and measurement ambition is far from being important only to advanced economies. It is also critical in most low- and middle-income country contexts, where innovation linkages are, on average, weaker than in high-income countries. Furthermore, low- and middle-income countries have been the source of incremental innovation.[12] One challenge is to appropriately quantify the extent of this type of innovation and the required linkages.

Yet again, the GII intends to contribute to the policy and measurement debate on linkages. It does so by introducing and discussing relevant metrics that are complemented by substantive chapters that analyse this theme in the context of particular country settings (Chapter 3 on Saudi Arabia, Chapter 5 on the Golf Cooperation Council, Chapter 6 on the Russian Federation, and Chapter 7 on India) and with a focus on science-industry linkages (Chapters 4 and 8), public-private partnerships (Chapter 2), and the role of information and communication technologies and the Internet (Chapters 8, 9, and 10).

The rationale for the Global Innovation Index

The GII project was launched by INSEAD in 2007 with the simple goal of determining how to find metrics and approaches to better capture the richness of innovation in society and go beyond such traditional measures of innovation as the number of research articles and the level of R&D expenditures.[13]

There were several motivations for setting this goal. First, innovation is important for driving economic progress and competitiveness—both for developed and developing economies. Many governments are putting innovation at the centre of their growth strategies. Second, there is awareness that the definition of innovation has broadened—it is no longer restricted to R&D laboratories and to published scientific papers. Innovation could be and is more general and horizontal in nature, and includes social innovations and business model innovations as well. Last but not least, recognizing and celebrating innovation in emerging markets is seen as critical for inspiring people—especially the next generation of entrepreneurs and innovators.

The GII helps to create an environment in which innovation factors are under continual evaluation, and it provides a key tool and a rich database of detailed metrics for refining innovation policies.

The GII is not meant to be the ultimate and definitive ranking of nations with respect to innovation. Measuring innovation outputs and impacts remains difficult; hence great emphasis is placed on measuring the climate and infrastructure for innovation and on assessing related outcomes.

Although the end results take the form of several rankings, the GII is more concerned with improving the 'journey' to better measuring and understanding innovation, and with identifying targeted policies, good practices, and other levers to foster innovation. The rich metrics can be used by individual countries—either at the level of the index and sub-indices or at the level of individual variables, such as 'the number of patent applications by resident'—to monitor performance over time and to benchmark developments against other countries in the same region or of the same income group.

As a result, and drawing on the expertise of the GII's Knowledge Partners and the prominent Advisory Board, the GII model is continually updated to reflect the improved availability of statistics and our understanding of the meaning and implications of innovation. This year particular emphasis is placed on avoiding flawed year-on-year comparisons by estimating the impact in the rankings of changes in performance on particular indicators, adjustments to the GII framework, and/or the inclusion of additional economies in the rankings.

An inclusive perspective on innovation

The GII adopts a broad notion of innovation, originally presented in the *Oslo Manual* developed by the European Communities and the OECD:[14]

> An innovation is the implementation of a new or significantly improved product (good or service), a new process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations.

This definition reflects the evolving nature of the way innovation is perceived and understood over the last two decades.[15]

Previously, economists and policy makers focused on R&D-based technological product innovation, largely produced in-house and mostly in manufacturing industries. This type of innovation is performed by a highly educated labour force in R&D-intensive companies. The process leading to such innovation was conceptualized as closed, internal, and localized. Technological breakthroughs were necessarily 'radical' and took place at the 'global knowledge frontier'. This characterization also implied the existence of leading and lagging countries with low- or middle-income economies only catching up.

Today, innovation capability is seen more as the ability to exploit new technological combinations and embraces the notion of incremental innovation and 'innovation without research'. Non-R&D-innovative expenditure is an important component of reaping the rewards of technological innovation.

There is also an increasing interest in understanding how innovation takes place in low- and middle-income countries and an awareness that incremental forms of innovation can impact development.

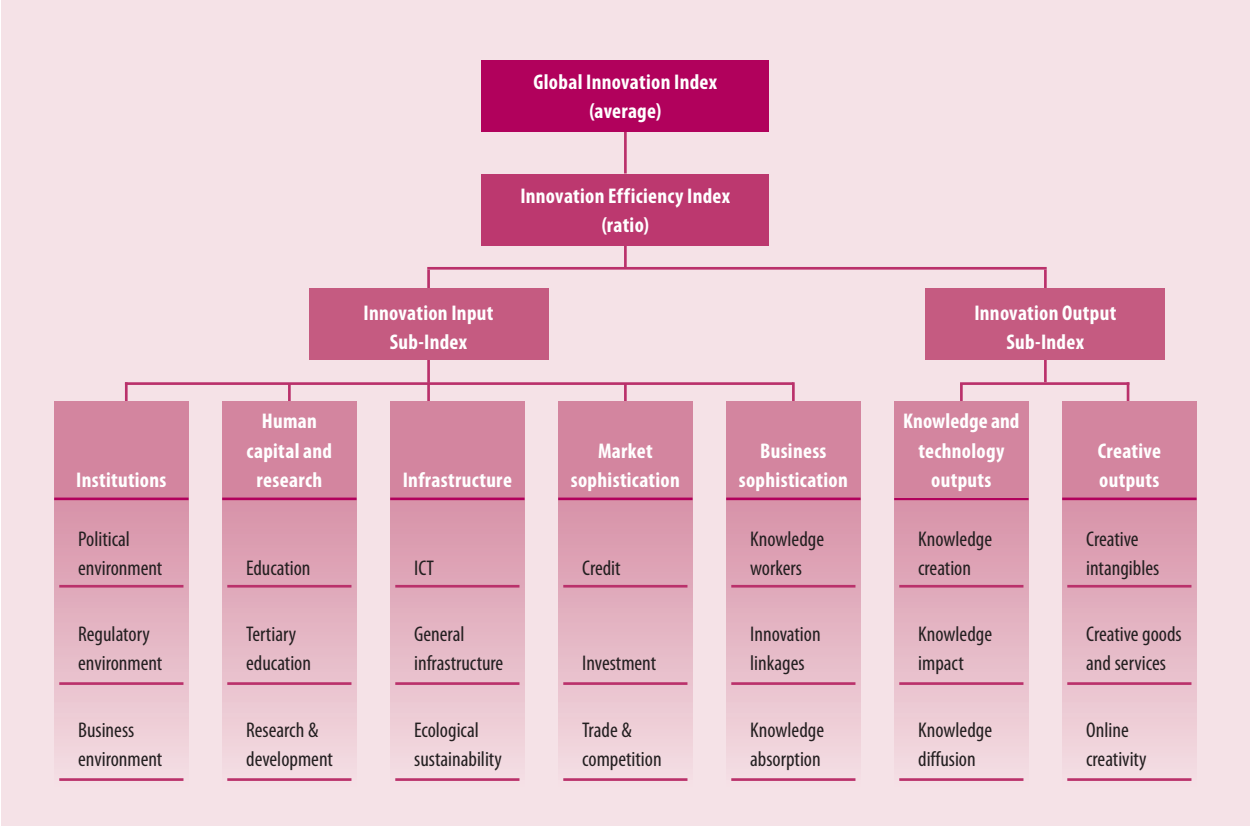
Furthermore, the process of innovation has undergone significant change. Investment in innovation-related activity has consistently intensified at the firm, country, and global levels, adding new innovation actors from outside high-income economies and also nonprofit actors. The structure of knowledge production activity is more complex and geographically dispersed than ever.

A key challenge is to find metrics that capture innovation as it happens in the world today.[16] Direct official measures that quantify innovation outputs remain extremely scarce.[17] For example, there are no official statistics on the amount of innovative activity—defined as the number of new products, processes, or other innovations—for any given innovation actor, let alone for any given country. Most measures also struggle to appropriately capture the innovation outputs of a wider spectrum of innovation actors, such as the services sector, public entities, and so on.

The GII aims to move beyond the mere measurement of such simple innovation metrics. This requires the integration of new variables, with a trade-off between the quality of the variable on the one hand and achieving good country coverage on the other hand.

The timeliest indicators are used for the GII. About 35% of data obtained is from 2011, 35% from 2010, 21% from 2009, and the small remainder—for certain particular variables or low-income countries—from earlier years.[18] This gives the GII good coverage of the years where the economic crisis attained its initial peak, when innovation expenditures were most severely affected, and when stimulus programmes were decided and meant to be put into action.

Figure 1: Framework of the Global Innovation Index 2012



That said, the time coverage does not allow us to capture more medium-term effects of the crisis or the stimulus programmes on innovation, some impacts of which might be very long-term (e.g., expenditures on education and public R&D). Moreover, the renewed setback of the global economy in the second half of 2011 and the current set-backs to the world economy, as well as possible new spending measures are not accounted for. These effects will naturally be at the heart of future GIIs.

The GII conceptual framework

The GII is an evolving project that builds upon previous editions of the index while incorporating newly available data and that is inspired by the latest research on the measurement of innovation. This year the GII model includes 141 economies, which represent 94.9% of the world's population and 99.4% of the world's GDP (in current US dollars).

The GII relies on two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, each built around pillars. Four measures are calculated (Figure 1):

1. **Innovation Input Sub-Index:** Five input pillars capture elements of the national economy that enable innovative activities: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication. The Innovation Input Sub-Index is the simple average of the first five pillar scores.
2. **Innovation Output Sub-Index:** Innovation outputs are the results of innovative activities within the economy. There are two output pillars: (6) Knowledge and technology outputs[19] and (7) Creative outputs. The Innovation Output Sub-Index is the simple average of the last two pillar scores. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index.
3. **The overall GII score** is the simple average of the Input and Output Sub-Indices.

4. **The Innovation Efficiency Index** is the ratio of the Output Sub-Index over the Input Sub-Index. It shows how much innovation output a given country is getting for its inputs, and is a sense of efficiency of sorts.

Each pillar is divided into three sub-pillars and each sub-pillar is composed of individual indicators, for a total of 84 indicators. The GII pays special attention to providing data sources and definitions (Appendix III), technical notes (Appendix IV), and improving and making accessible metrics (Appendix II Data Tables).[20]

The GII model is revised every year in a transparent exercise to improve the way innovation is measured. This year, for example, the Infrastructure pillar was reorganized to single out ecological sustainability in a new sub-pillar. In addition, a sub-pillar on online creativity was added to the Creative outputs pillar. Adjustments to the framework made this year at the indicator level are detailed in Annex 1.

In addition, this year the GII innovates in two additional and important ways:

First, for the first time, the GII includes a detailed analysis of the underlying factors influencing year-on-year changes. An approximate assessment of changes in rankings due to performance and adjustments to the GII framework is presented in detail in Annex 2. As outlined before, this helps avoid making erroneous conclusions on the basis of simple year-on-year rankings.

Second, this year for the first time, the strengths/weaknesses of each economy were identified on the basis of the percentage of countries with scores that fall below the particular country score (please refer to the country/economy profiles in Appendix I). This relative ranking is critically helpful for policy makers and experts to understand existing successes and areas of improvement.

Discussion of results: The world's top innovators

The following analysis describes and analyses the salient features of the GII results. It does so for the global leaders in each index and the best performers within each income category (high-, upper-middle, lower-middle, and low-income groups).[21] A short discussion of the rankings at the regional level follows.[22] The detailed information can be found in the country profiles (Appendix I).

Tables 1 through 3 report on the overall GII and the Input and Output Sub-Indices, with regional and income group rankings. The rankings per pillar, with details on sub-pillar scores are provided in Annex 1.[23]

The top 10 in the Global Innovation Index

The top 10 countries in the GII 2012 edition are Switzerland, Singapore, Sweden, Finland, the UK, the Netherlands, Denmark, Hong Kong (China), Ireland, and the United States of America (USA). In contrast to current worries in the policy debate, which focuses largely on the crisis of the euro, Europe stands out with 7 out of 10 countries. While nine out the top 10 countries were already in this top league in 2011, Ireland joins the top group for the first time. Canada is the only country leaving the top 10.

Switzerland maintains its 2011 position as number 1. It makes it to the top 10 on all four indices and on all pillars except Institutions (13th), where it shows relative weaknesses in its business environment, as captured by its relatively poor showing in the ease of starting a business and of resolving insolvency. A knowledge-based economy of 7.8 million people with one of the highest GDP per capita, its high degree of innovation efficiency (5th) allows Switzerland to translate its robust innovation capabilities into innovation outputs. Switzerland ranks 1st on the Output Sub-Index and its two pillars, Knowledge and technology outputs and Creative outputs. The quality of its scientific and research institutions, coupled with numerous scientific and technical publications, good linkages between academia and firms, and a skilled labour force stand out. Switzerland also ranks 1st in national patent applications by residents and through the Patent Cooperation Treaty (PCT).

The runner-up, **Sweden,** retains its 2011 position and comes in 1st among Nordic and European Union (EU) countries in the GII and its two sub-indices. It ranks 3rd on inputs and 2nd on outputs, with strengths on all seven pillars. The country ranks 1st in Infrastructure, demonstrating a vigorous use of information and communication technologies (ICT) and coming in at 2nd place in ecological sustainability, with the highest score on ISO 14001 environmental certificates issued in 2011. It also ranks 7th in R&D and 2nd in Knowledge and technology outputs—1st among EU countries—with scientific research institutions of quality, a high level of gross expenditure on R&D (3.6% of GDP), and a high rate of patenting and scientific publications.

Singapore comes in 3rd on the GII this year, maintaining its 2011 position and leading the rankings among Asian economies. Its innovation capabilities rank 1st in the world, with a well-trained student body, a robust research community, a skilled labour force, sophisticated financial and commercial markets, and a business community

Table 1: Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Switzerland	68.2	**1**	HI	**1**	EUR	**1**
Sweden	64.8	2	HI	2	EUR	2
Singapore	63.5	3	HI	3	SEAO	**1**
Finland	61.8	4	HI	4	EUR	3
United Kingdom	61.2	5	HI	5	EUR	4
Netherlands	60.5	6	HI	6	EUR	5
Denmark	59.9	7	HI	7	EUR	6
Hong Kong (China)	58.7	8	HI	8	SEAO	2
Ireland	58.7	9	HI	9	EUR	7
United States of America	57.7	10	HI	10	NAC	**1**
Luxembourg	57.7	11	HI	11	EUR	8
Canada	56.9	12	HI	12	NAC	2
New Zealand	56.6	13	HI	13	SEAO	3
Norway	56.4	14	HI	14	EUR	9
Germany	56.2	15	HI	15	EUR	10
Malta	56.1	16	HI	16	EUR	11
Israel	56.0	17	HI	17	NAWA	**1**
Iceland	55.7	18	HI	18	EUR	12
Estonia	55.3	19	HI	19	EUR	13
Belgium	54.3	20	HI	20	EUR	14
Korea, Rep.	53.9	21	HI	21	SEAO	4
Austria	53.1	22	HI	22	EUR	15
Australia	51.9	23	HI	23	SEAO	5
France	51.8	24	HI	24	EUR	16
Japan	51.7	25	HI	25	SEAO	6
Slovenia	49.9	26	HI	26	EUR	17
Czech Republic	49.7	27	HI	27	EUR	18
Cyprus	47.9	28	HI	28	NAWA	2
Spain	47.2	29	HI	29	EUR	19
Latvia	47.0	30	UM	**1**	EUR	20
Hungary	46.5	31	HI	30	EUR	21
Malaysia	45.9	32	UM	2	SEAO	7
Qatar	45.5	33	HI	31	NAWA	3
China	45.4	34	UM	3	SEAO	8
Portugal	45.3	35	HI	32	EUR	22
Italy	44.5	36	HI	33	EUR	23
United Arab Emirates	44.4	37	HI	34	NAWA	4
Lithuania	44.0	38	UM	4	EUR	24
Chile	42.7	39	UM	5	LCN	**1**
Slovakia	41.4	40	HI	35	EUR	25
Bahrain	41.1	41	HI	36	NAWA	5
Croatia	40.7	42	HI	37	EUR	26
Bulgaria	40.7	43	UM	6	EUR	27
Poland	40.4	44	HI	38	EUR	28
Montenegro	40.1	45	UM	7	EUR	29
Serbia	40.0	46	UM	8	EUR	30
Oman	39.5	47	HI	39	NAWA	6
Saudi Arabia	39.3	48	HI	40	NAWA	7
Mauritius	39.2	49	UM	9	SSF	**1**
Moldova, Rep.	39.2	50	LM	**1**	EUR	31
Russian Federation	37.9	51	UM	10	EUR	32
Romania	37.8	52	UM	11	EUR	33
Brunei Darussalam	37.7	53	HI	41	SEAO	9
South Africa	37.4	54	UM	12	SSF	2
Kuwait	37.2	55	HI	42	NAWA	8
Jordan	37.1	56	UM	13	NAWA	9
Thailand	36.9	57	UM	14	SEAO	10
Brazil	36.6	58	UM	15	LCN	2
Tunisia	36.5	59	UM	16	NAWA	10
Costa Rica	36.3	60	UM	17	LCN	3
Lebanon	36.2	61	UM	18	NAWA	11
Macedonia, FYR	36.2	62	UM	19	EUR	34
Ukraine	36.1	63	LM	2	EUR	35
India	35.7	64	LM	3	CSA	**1**
Colombia	35.5	65	UM	20	LCN	4
Greece	35.3	66	HI	43	EUR	36
Uruguay	35.1	67	UM	21	LCN	5
Mongolia	35.0	68	LM	4	SEAO	11
Armenia	34.5	69	LM	5	NAWA	12
Argentina	34.4	70	UM	22	LCN	6
Georgia	34.3	71	LM	6	NAWA	13

Table 1: Global Innovation Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Bosnia and Herzegovina	34.2	72	UM	23	EUR	37
Namibia	34.1	73	UM	24	SSF	3
Turkey	34.1	74	UM	25	NAWA	14
Peru	34.1	75	UM	26	LCN	7
Viet Nam	33.9	76	LM	7	SEAO	12
Guyana	33.7	77	LM	8	LCN	8
Belarus	32.9	78	UM	27	EUR	38
Mexico	32.9	79	UM	28	LCN	9
Belize	32.5	80	LM	9	LCN	10
Trinidad and Tobago	32.5	81	HI	44	LCN	11
Swaziland	32.0	82	LM	10	SSF	4
Kazakhstan	31.9	83	UM	29	CSA	2
Paraguay	31.6	84	LM	11	LCN	12
Botswana	31.4	85	UM	30	SSF	5
Dominican Republic	30.9	86	UM	31	LCN	13
Panama	30.9	87	UM	32	LCN	14
Morocco	30.7	88	LM	12	NAWA	15
Azerbaijan	30.4	89	UM	33	NAWA	16
Albania	30.4	90	UM	34	EUR	39
Jamaica	30.2	91	UM	35	LCN	15
Ghana	29.6	92	LM	13	SSF	6
El Salvador	29.5	93	LM	14	LCN	16
Sri Lanka	29.1	94	LM	15	CSA	3
Philippines	29.0	95	LM	16	SEAO	13
Kenya	28.9	96	LI	1	SSF	7
Senegal	28.8	97	LM	17	SSF	8
Ecuador	28.5	98	UM	36	LCN	17
Guatemala	28.4	99	LM	18	LCN	18
Indonesia	28.1	100	LM	19	SEAO	14
Fiji	27.9	101	LM	20	SEAO	15
Rwanda	27.9	102	LI	2	SSF	9
Egypt	27.9	103	LM	21	NAWA	17
Iran, Islamic Rep.	27.3	104	UM	37	CSA	4
Nicaragua	26.7	105	LM	22	LCN	19
Gabon	26.5	106	UM	38	SSF	10
Zambia	26.4	107	LM	23	SSF	11
Tajikistan	26.4	108	LI	3	CSA	5
Kyrgyzstan	26.4	109	LI	4	CSA	6
Mozambique	26.3	110	LI	5	SSF	12
Honduras	26.3	111	LM	24	LCN	20
Bangladesh	26.1	112	LI	6	CSA	7
Nepal	26.0	113	LI	7	CSA	8
Bolivia, Plurinational St.	25.8	114	LM	25	LCN	21
Zimbabwe	25.7	115	LI	8	SSF	13
Lesotho	25.7	116	LM	26	SSF	14
Uganda	25.6	117	LI	9	SSF	15
Venezuela, Bolivarian Rep.	25.4	118	UM	39	LCN	22
Mali	25.4	119	LI	10	SSF	16
Malawi	25.4	120	LI	11	SSF	17
Cameroon	25.0	121	LM	27	SSF	18
Burkina Faso	24.6	122	LI	12	SSF	19
Nigeria	24.6	123	LM	28	SSF	20
Algeria	24.4	124	UM	40	NAWA	18
Benin	24.4	125	LI	13	SSF	21
Madagascar	24.2	126	LI	14	SSF	22
Uzbekistan	23.9	127	LM	29	CSA	9
Tanzania, United Rep.	23.9	128	LI	15	SSF	23
Cambodia	23.4	129	LI	16	SEAO	16
Gambia	23.3	130	LI	17	SSF	24
Ethiopia	23.3	131	LI	18	SSF	25
Syrian Arab Rep.	23.1	132	LM	30	NAWA	19
Pakistan	23.1	133	LM	31	CSA	10
Côte d'Ivoire	22.6	134	LM	32	SSF	26
Angola	22.2	135	LM	33	SSF	27
Togo	20.5	136	LI	19	SSF	28
Burundi	20.5	137	LI	20	SSF	29
Lao PDR	20.2	138	LM	34	SEAO	17
Yemen	19.2	139	LM	35	NAWA	20
Niger	18.6	140	LI	21	SSF	30
Sudan	16.8	141	LM	36	SSF	31

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Table 2: Innovation Input Sub-Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Singapore	74.9	**1**	HI	**1**	SEAO	**1**
Hong Kong (China)	72.0	2	HI	2	SEAO	2
Sweden	68.8	3	HI	3	EUR	**1**
Switzerland	68.0	4	HI	4	EUR	2
United Kingdom	68.0	5	HI	5	EUR	3
Finland	67.5	6	HI	6	EUR	4
Ireland	67.4	7	HI	7	EUR	5
Denmark	67.4	8	HI	8	EUR	6
United States of America	66.3	9	HI	9	NAC	**1**
Canada	65.8	10	HI	10	NAC	2
Norway	64.0	11	HI	11	EUR	7
New Zealand	63.4	12	HI	12	SEAO	3
Australia	63.4	13	HI	13	SEAO	4
Luxembourg	63.0	14	HI	14	EUR	8
Netherlands	62.9	15	HI	15	EUR	9
Korea, Rep.	61.8	16	HI	16	SEAO	5
Israel	61.5	17	HI	17	NAWA	**1**
Japan	61.3	18	HI	18	SEAO	6
Iceland	60.8	19	HI	19	EUR	10
Belgium	60.3	20	HI	20	EUR	11
Austria	59.5	21	HI	21	EUR	12
France	59.1	22	HI	22	EUR	13
Germany	58.8	23	HI	23	EUR	14
Estonia	57.4	24	HI	24	EUR	15
Cyprus	56.4	25	HI	25	NAWA	2
Spain	56.0	26	HI	26	EUR	16
Malta	55.3	27	HI	27	EUR	17
United Arab Emirates	55.2	28	HI	28	NAWA	3
Malaysia	54.2	29	UM	**1**	SEAO	7
Qatar	54.1	30	HI	29	NAWA	4
Czech Republic	53.3	31	HI	30	EUR	18
Slovenia	53.2	32	HI	31	EUR	19
Portugal	51.9	33	HI	32	EUR	20
Italy	51.5	34	HI	33	EUR	21
Bahrain	51.4	35	HI	34	NAWA	5
Latvia	51.4	36	UM	2	EUR	22
Hungary	51.2	37	HI	35	EUR	23
Lithuania	50.2	38	UM	3	EUR	24
Saudi Arabia	49.2	39	HI	36	NAWA	6
Slovakia	47.3	40	HI	37	EUR	25
Poland	47.1	41	HI	38	EUR	26
Oman	46.9	42	HI	39	NAWA	7
Chile	46.8	43	UM	4	LCN	**1**
Croatia	46.4	44	HI	40	EUR	27
South Africa	46.4	45	UM	5	SSF	**1**
Brunei Darussalam	45.8	46	HI	41	SEAO	8
Bulgaria	45.5	47	UM	6	EUR	28
Montenegro	45.0	48	UM	7	EUR	29
Mauritius	44.7	49	UM	8	SSF	2
Greece	44.0	50	HI	42	EUR	30
Romania	43.9	51	UM	9	EUR	31
Macedonia, FYR	43.2	52	UM	10	EUR	32
Mongolia	42.8	53	LM	**1**	SEAO	9
Botswana	42.8	54	UM	11	SSF	3
China	42.7	55	UM	12	SEAO	10
Namibia	42.4	56	UM	13	SSF	4
Peru	42.3	57	UM	14	LCN	2
Colombia	42.3	58	UM	15	LCN	3
Thailand	42.1	59	UM	16	SEAO	11
Russian Federation	42.0	60	UM	17	EUR	33
Kuwait	42.0	61	HI	43	NAWA	8
Lebanon	41.8	62	UM	18	NAWA	9
Georgia	41.7	63	LM	2	NAWA	10
Tunisia	41.5	64	UM	19	NAWA	11
Serbia	41.5	65	UM	20	EUR	34
Bosnia and Herzegovina	41.4	66	UM	21	EUR	35
Kazakhstan	41.4	67	UM	22	CSA	**1**
Uruguay	40.3	68	UM	23	LCN	4
Brazil	40.2	69	UM	24	LCN	5
Mexico	39.8	70	UM	25	LCN	6
Costa Rica	39.8	71	UM	26	LCN	7

Table 2: Innovation Input Sub-Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Jordan	39.7	72	UM	27	NAWA	12
Armenia	39.1	73	LM	3	NAWA	13
Trinidad and Tobago	39.0	74	HI	44	LCN	8
Panama	38.7	75	UM	28	LCN	9
Argentina	38.7	76	UM	29	LCN	10
Jamaica	38.2	77	UM	30	LCN	11
Ukraine	38.0	78	LM	4	EUR	36
Moldova, Rep.	37.8	79	LM	5	EUR	37
Belarus	37.7	80	UM	31	EUR	38
Turkey	37.5	81	UM	32	NAWA	14
Albania	37.4	82	UM	33	EUR	39
Viet Nam	37.0	83	LM	6	SEAO	12
Fiji	37.0	84	LM	7	SEAO	13
Azerbaijan	36.8	85	UM	34	NAWA	15
Guyana	36.7	86	LM	8	LCN	12
Belize	36.6	87	LM	9	LCN	13
Morocco	36.6	88	LM	10	NAWA	16
Kenya	36.6	89	LI	**1**	SSF	5
Kyrgyzstan	35.5	90	LI	2	CSA	2
Ghana	35.1	91	LM	11	SSF	6
Lesotho	34.8	92	LM	12	SSF	7
Dominican Republic	34.6	93	UM	35	LCN	14
El Salvador	34.6	94	LM	13	LCN	15
Rwanda	34.3	95	LI	3	SSF	8
India	34.0	96	LM	14	CSA	3
Iran, Islamic Rep.	33.9	97	UM	36	CSA	4
Guatemala	33.7	98	LM	15	LCN	16
Swaziland	33.7	99	LM	16	SSF	9
Uzbekistan	33.2	100	LM	17	CSA	5
Algeria	33.0	101	UM	37	NAWA	17
Nicaragua	32.9	102	LM	18	LCN	17
Paraguay	32.6	103	LM	19	LCN	18
Egypt	32.5	104	LM	20	NAWA	18
Honduras	31.8	105	LM	21	LCN	19
Philippines	31.7	106	LM	22	SEAO	14
Mozambique	31.7	107	LI	4	SSF	10
Bolivia, Plurinational St.	31.3	108	LM	23	LCN	20
Ecuador	31.2	109	UM	38	LCN	21
Malawi	30.8	110	LI	5	SSF	11
Tajikistan	30.8	111	LI	6	CSA	6
Gabon	30.7	112	UM	39	SSF	12
Indonesia	30.6	113	LM	24	SEAO	15
Senegal	30.4	114	LM	25	SSF	13
Sri Lanka	30.3	115	LM	26	CSA	7
Madagascar	30.2	116	LI	7	SSF	14
Tanzania, United Rep.	29.7	117	LI	8	SSF	15
Bangladesh	29.5	118	LI	9	CSA	8
Cambodia	29.5	119	LI	10	SEAO	16
Burkina Faso	29.5	120	LI	11	SSF	16
Uganda	29.4	121	LI	12	SSF	17
Zambia	28.9	122	LM	27	SSF	18
Syrian Arab Rep.	28.6	123	LM	28	NAWA	19
Ethiopia	28.4	124	LI	13	SSF	19
Cameroon	28.3	125	LM	29	SSF	20
Venezuela, Bolivarian Rep.	28.1	126	UM	40	LCN	22
Nepal	28.0	127	LI	14	CSA	9
Gambia	27.8	128	LI	15	SSF	21
Lao PDR	27.3	129	LM	30	SEAO	17
Zimbabwe	27.0	130	LI	16	SSF	22
Mali	27.0	131	LI	17	SSF	23
Benin	26.7	132	LI	18	SSF	24
Angola	26.3	133	LM	31	SSF	25
Nigeria	26.1	134	LM	32	SSF	26
Togo	25.4	135	LI	19	SSF	27
Niger	25.4	136	LI	20	SSF	28
Burundi	25.3	137	LI	21	SSF	29
Yemen	25.2	138	LM	33	NAWA	20
Côte d'Ivoire	24.5	139	LM	34	SSF	30
Pakistan	24.3	140	LM	35	CSA	10
Sudan	23.3	141	LM	36	SSF	31

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

Table 3: Innovation Output Sub-Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Switzerland	68.5	**1**	HI	**1**	EUR	**1**
Sweden	60.7	2	HI	2	EUR	2
Netherlands	58.2	3	HI	3	EUR	3
Malta	57.0	4	HI	4	EUR	4
Finland	56.1	5	HI	5	EUR	5
United Kingdom	54.5	6	HI	6	EUR	6
Germany	53.7	7	HI	7	EUR	7
Estonia	53.3	8	HI	8	EUR	8
Denmark	52.5	9	HI	9	EUR	9
Luxembourg	52.4	10	HI	10	EUR	10
Singapore	52.0	11	HI	11	SEAO	**1**
Iceland	50.6	12	HI	12	EUR	11
Israel	50.5	13	HI	13	NAWA	**1**
Ireland	49.9	14	HI	14	EUR	12
New Zealand	49.9	15	HI	15	SEAO	2
United States of America	49.1	16	HI	16	NAC	**1**
Norway	48.8	17	HI	17	EUR	13
Belgium	48.3	18	HI	18	EUR	14
China	48.1	19	UM	**1**	SEAO	3
Canada	48.0	20	HI	19	NAC	2
Austria	46.7	21	HI	20	EUR	15
Slovenia	46.6	22	HI	21	EUR	16
Czech Republic	46.1	23	HI	22	EUR	17
Korea, Rep.	45.9	24	HI	23	SEAO	4
Hong Kong (China)	45.5	25	HI	24	SEAO	5
France	44.4	26	HI	25	EUR	18
Latvia	42.6	27	UM	2	EUR	19
Japan	42.0	28	HI	26	SEAO	6
Hungary	41.9	29	HI	27	EUR	20
Moldova, Rep.	40.7	30	LM	**1**	EUR	21
Australia	40.4	31	HI	28	SEAO	7
Cyprus	39.3	32	HI	29	NAWA	2
Portugal	38.7	33	HI	30	EUR	22
Chile	38.5	34	UM	3	LCN	**1**
Spain	38.5	35	HI	31	EUR	23
Serbia	38.5	36	UM	4	EUR	24
Lithuania	37.8	37	UM	5	EUR	25
Malaysia	37.6	38	UM	6	SEAO	8
Italy	37.5	39	HI	32	EUR	26
India	37.3	40	LM	2	CSA	**1**
Qatar	36.9	41	HI	33	NAWA	3
Bulgaria	35.8	42	UM	7	EUR	27
Slovakia	35.4	43	HI	34	EUR	28
Montenegro	35.3	44	UM	8	EUR	29
Croatia	34.9	45	HI	35	EUR	30
Jordan	34.6	46	UM	9	NAWA	4
Ukraine	34.2	47	LM	3	EUR	31
Mauritius	33.8	48	UM	10	SSF	**1**
Russian Federation	33.8	49	UM	11	EUR	32
Poland	33.6	50	HI	36	EUR	33
United Arab Emirates	33.6	51	HI	37	NAWA	5
Brazil	33.0	52	UM	12	LCN	2
Costa Rica	32.8	53	UM	13	LCN	3
Kuwait	32.4	54	HI	38	NAWA	6
Oman	32.1	55	HI	39	NAWA	7
Thailand	31.8	56	UM	14	SEAO	9
Romania	31.7	57	UM	15	EUR	34
Tunisia	31.6	58	UM	16	NAWA	8
Viet Nam	30.8	59	LM	4	SEAO	10
Bahrain	30.8	60	HI	40	NAWA	9
Turkey	30.7	61	UM	17	NAWA	10
Paraguay	30.6	62	LM	5	LCN	4
Lebanon	30.6	63	UM	18	NAWA	11
Guyana	30.6	64	LM	6	LCN	5
Swaziland	30.4	65	LM	7	SSF	2
Argentina	30.2	66	UM	19	LCN	6
Uruguay	30.0	67	UM	20	LCN	7
Armenia	29.8	68	LM	8	NAWA	12
Brunei Darussalam	29.7	69	HI	41	SEAO	11
Saudi Arabia	29.4	70	HI	42	NAWA	13
Macedonia, FYR	29.2	71	UM	21	EUR	35

Table 3: Innovation Output Sub-Index rankings *(continued)*

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Colombia	28.7	72	UM	22	LCN	8
South Africa	28.5	73	UM	23	SSF	3
Belize	28.4	74	LM	9	LCN	9
Belarus	28.1	75	UM	24	EUR	36
Sri Lanka	28.0	76	LM	10	CSA	2
Dominican Republic	27.3	77	UM	25	LCN	10
Senegal	27.2	78	LM	11	SSF	4
Mongolia	27.1	79	LM	12	SEAO	12
Bosnia and Herzegovina	26.9	80	UM	26	EUR	37
Georgia	26.8	81	LM	13	NAWA	14
Greece	26.5	82	HI	43	EUR	38
Philippines	26.3	83	LM	14	SEAO	13
Trinidad and Tobago	26.0	84	HI	44	LCN	11
Ecuador	25.9	85	UM	27	LCN	12
Mexico	25.9	86	UM	28	LCN	13
Namibia	25.9	87	UM	29	SSF	5
Peru	25.8	88	UM	30	LCN	14
Indonesia	25.5	89	LM	15	SEAO	14
Morocco	24.7	90	LM	16	NAWA	15
El Salvador	24.5	91	LM	17	LCN	15
Zimbabwe	24.4	92	LI	**1**	SSF	6
Ghana	24.1	93	LM	18	SSF	7
Azerbaijan	24.0	94	UM	31	NAWA	16
Nepal	24.0	95	LI	2	CSA	3
Zambia	24.0	96	LM	19	SSF	8
Mali	23.8	97	LI	3	SSF	9
Albania	23.3	98	UM	32	EUR	39
Egypt	23.3	99	LM	20	NAWA	17
Panama	23.1	100	UM	33	LCN	16
Guatemala	23.1	101	LM	21	LCN	17
Nigeria	23.1	102	LM	22	SSF	10
Venezuela, Bolivarian Rep.	22.8	103	UM	34	LCN	18
Bangladesh	22.6	104	LI	4	CSA	4
Kazakhstan	22.4	105	UM	35	CSA	5
Gabon	22.2	106	UM	36	SSF	11
Jamaica	22.1	107	UM	37	LCN	19
Benin	22.0	108	LI	5	SSF	12
Tajikistan	22.0	109	LI	6	CSA	6
Pakistan	21.8	110	LM	23	CSA	7
Cameroon	21.7	111	LM	24	SSF	13
Uganda	21.7	112	LI	7	SSF	14
Rwanda	21.5	113	LI	8	SSF	15
Kenya	21.3	114	LI	9	SSF	16
Mozambique	21.0	115	LI	10	SSF	17
Honduras	20.9	116	LM	25	LCN	20
Iran, Islamic Rep.	20.8	117	UM	38	CSA	8
Côte d'Ivoire	20.7	118	LM	26	SSF	18
Nicaragua	20.4	119	LM	27	LCN	21
Bolivia, Plurinational St.	20.3	120	LM	28	LCN	22
Botswana	19.9	121	UM	39	SSF	19
Malawi	19.9	122	LI	11	SSF	20
Burkina Faso	19.8	123	LI	12	SSF	21
Fiji	18.9	124	LM	29	SEAO	15
Gambia	18.7	125	LI	13	SSF	22
Madagascar	18.2	126	LI	14	SSF	23
Angola	18.1	127	LM	30	SSF	24
Ethiopia	18.1	128	LI	15	SSF	25
Tanzania, United Rep.	18.0	129	LI	16	SSF	26
Syrian Arab Rep.	17.6	130	LM	31	NAWA	18
Kyrgyzstan	17.3	131	LI	17	CSA	9
Cambodia	17.3	132	LI	18	SEAO	16
Lesotho	16.5	133	LM	32	SSF	27
Algeria	15.8	134	UM	40	NAWA	19
Burundi	15.8	135	LI	19	SSF	28
Togo	15.6	136	LI	20	SSF	29
Uzbekistan	14.7	137	LM	33	CSA	10
Yemen	13.1	138	LM	34	NAWA	20
Lao PDR	13.1	139	LM	35	SEAO	17
Niger	11.9	140	LI	21	SSF	30
Sudan	10.3	141	LM	36	SSF	31

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

proactive at adopting the latest technologies (1st on knowledge absorption). This year, in addition, Singapore reaches 3rd place on the Knowledge and technological outputs pillar, up from position 15 in 2011, with clear improvements on two main indicators: growth rate of labour productivity (2nd) and FDI net outflows (4th). It also tops the rankings at position 1 in 10 indicators: government effectiveness, cost of redundancy dismissal, government's online service, applied tariff rate, imports and exports of goods and services, employment in knowledge-intensive services, royalty and license fees payments, high-tech exports, and ICT and organizational models creation.

Finland reaches 4th position this year, up one position from 5th in 2011. Finland has strengths across the board, with a particularly strong institutional framework (6th) and a skilled labour force (1st in the EU, 3rd globally) engaged in research and patenting. Finland tops the rankings in political environment and five indicators, notably the state of cluster development, royalty and license fees receipts, and computer and communications service exports. Finland's relative weakness is in Market sophistication, where it ranks 26th.

The United Kingdom (UK) occupies the 5th rank in 2012. Although its performance has improved since last year, when it ranked 10th, the UK benefitted to a large extent from adjustments made to the GII framework (refer to Annex 2). It gained 11 positions in Infrastructure because of its excellent 10th position in ecological sustainability (a pillar introduced this year) and it tops the rankings in three indicators that are also new this year: cost of redundancy dismissal, ease of getting credit, and generic top-level domains (TLDs). It also has strong institutions and sophisticated financial markets (ranking 1st on credit and 3rd on investment). Its excellent 8th position in Knowledge and technology outputs is the result of a good balance between the creation of knowledge through patenting and scientific and technical research (13th), the economic impact of these activities in the domestic economy (11th, although labour productivity has still not fully recovered from the crisis), and diffusion abroad of the latest technologies (16th). While it ranks 3rd in Market sophistication, its 57th rank in trade and competition is of concern.

The Netherlands ranks 6th, up from 9th in 2011, and with a clear relative advantage in outputs, where it is ranked 3rd. The country does less well in inputs, however, achieving a 15th position resulting in a 9th place in innovation efficiency. The Netherlands has made particularly strong use of ICT, with top 10 rankings in press freedom, ICT access, government's online service, online e-participation, computer software spending, and all four indicators included in online creativity, a sub-pillar introduced this year to Creative outputs: generic top-level domains (gTLDs), country-code top-level domains (ccTLDs), edits on Wikipedia, and video uploads on YouTube. One area where there is room for improvement is Human capital and research (34th), and more specifically a 66th rank in tertiary education. In spite of a relatively good level of enrolment (ranked 24th, at 62.7%), its scores in the remaining indicators are rather low: 14.0% of graduates in science and engineering (83rd), 3.8% of inbound mobility (37th), and a 1.1% of gross tertiary outbound enrolment (69th).

Denmark ranks 7th, down from 6th in 2011. Its institutions are assessed as the most transparent and business friendly in the world (1st). A prepared and well-funded research community (the country ranks 5th on R&D) leads to high degrees of patenting via the PCT and of publishing in scientific and technical journals. An area that deserves attention is its 38th position in tertiary education, a poor result pointing up several areas of concern: with only 19.6% of tertiary graduates in science and engineering and a gross tertiary outbound enrolment of 1.6%, Denmark ranks 57th and 55th globally. With a high level of ICT use (6th), it is one of the leading economies in terms of registrations of Internet TLDs (6th for generic and 3rd for country-code TLDs). One alarming sign, however, is that Denmark is one of the 15 economies in the sample with scores going down on all four indices.

Hong Kong (China) is ranked 8th, a drop of four places from its 4th position in 2011. Its main strength is still on the input side (2nd). Its rank in innovation outputs (25th) is lower than it was in 2011 because of a relatively low ranking in Knowledge and technology outputs (34th), which echoes a relatively low ranking in Human capital and research (26th). In all remaining Input pillars, Hong Kong (China) is ranked among the top 10, with a record of 14 indicators in the very top positions in a range of domains, but notably in a series of indicators showing an extremely dynamic economy: ICT access, efficiency in energy use, market capitalization, value of stocks traded, imports and exports of goods and services, high-tech imports, FDI net inflows and outflows, and new businesses creation.

Ireland is ranked 9th, up four positions from 13th place in 2011. Ireland has been particularly good at prioritizing those areas that convert

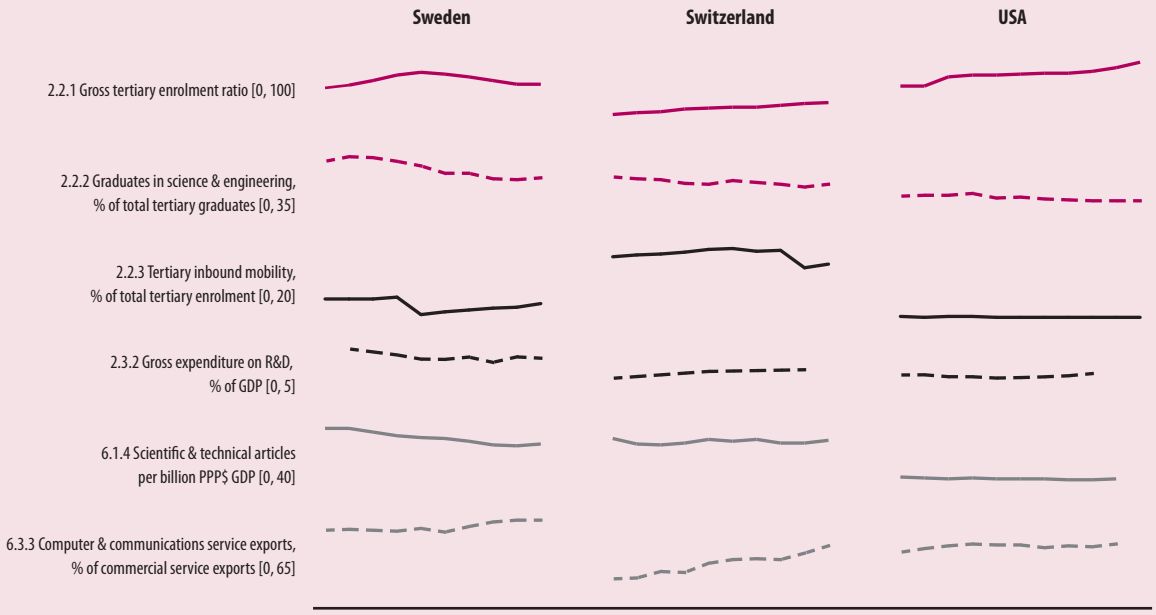
Box 1: A spotlight on the United States of America's innovation ranking

The central role of the USA for global innovation hardly needs underlining: its universities, its research institutions, its innovation clusters, and its firms are world class and continue to be a magnet and a model for other countries.

Yet when time series are considered for indicators included in the GII, the relative performance of the USA—compared, for instance, with those of Switzerland and Sweden—offers a contrast from the accepted view (Figure 1.1):

1. Over the 2000–11 period, the USA presents a relative advantage in school life expectancy and tertiary enrolment, together with a greater capacity to recover from cyclical declines in labour productivity.
2. In other areas, the performance of the USA is closer to that of Switzerland and Sweden. For example, the percentage of R&D financed by the business sector has been steady at close to 70% in the USA and Switzerland, with a slight but steady decline in Sweden. For venture capital deals and strategic alliance deals the three countries also show comparable performances.
3. Yet, in some cases, although the USA has seen its figures improve in absolute terms, the rate of improvement is lower than that of these two innovation leaders, explaining the country's relative slippage in the GII rankings. This is the situation for royalty and license fees receipts as a percentage of GDP (with respect to Sweden only, data are not available for Switzerland) and for computer and communication service exports as a percentage of total commercial service exports.
4. Finally, in a series of indicators, the USA has been facing a weaker performance. This is particularly evident in specific areas, mostly those linked to education and the tapping of global talent, and to research, patenting, and scientific publications.

Figure 1.1: Sparklines for selected indicators, 2000–10



Note: Refer to Appendix III, Sources and Definitions, for details regarding each indicator.

it into an attractive destination for investments. With good scores in Institutions (4th), Human capital and research (7th), access to credit (4th) and investor's protection (5th), it ranks 4th in venture capital deals, and 1st in exports of goods and services.[24] Ireland is also particularly good at both assimilating and disseminating knowledge through top 10 positions in all eight indicators included in sub-pillars knowledge absorption and knowledge creation (ranking 2nd in both sub-pillars), and is the only country in that situation: royalty and license fees payments/receipts, high tech imports/exports, communication and computer services exports/imports, and FDI net inflows/outflows. On a less positive note, Ireland is in dire need of investments in infrastructure (35th), particularly in ICT (43rd) and general infrastructure (49th), less so in ecological sustainability (22nd). Its ranking in Creative outputs is also relatively low (38th).

The United States of America (USA) ranks 10th, down from 7th place in 2011 (Box 1). Its drop in the rankings is the result of a relatively poorer performance on the output side, where it comes in at 16th in 2012, down from 5th in 2011. Its bright areas are in Market (2nd) and Business sophistication (9th). In Knowledge and technology outputs, the USA has improved its ranking only in FDI net outflows (from position 27 to 22, with an increase from 1.90% to 2.41% of GDP), maintaining its positions in PCT applications (14th), computer software spending (7th), and royalty & license fees receipts (9th), with deteriorating positions in the remaining five indicators. The USA position fell to 84th in creative intangibles (trademark registrations, ICT in organizational models) and to 27th in creative goods and services. Yet its 33rd ranking in Creative outputs (down from 24th in 2011) is sustained by its 20th position in online creativity, a sub-pillar introduced this year to the GII framework. The major area of concern for the USA, however, is a relatively lower ranking in Human capital and research (22nd, down from 13th in 2011). Gross tertiary enrolment increased from 82.9 to 94.8% (ranked 2nd), but the USA is ranked 74th in graduates in science and engineering, 42nd in tertiary inbound mobility, and 119th in gross tertiary outbound enrolment—a weakness revealed only this year (last year the data were not available). This result is very topical in the light of current discussions on the dropping openness of the USA to outside students and workforce talent.

The top 10 in the Innovation Input Sub-Index

The top 10 economies on the Innovation Input Sub-Index are Singapore, Hong Kong (China), Sweden, Switzerland, the UK, Finland, Ireland, Denmark, the USA, and Canada. Nine of these countries were in the top 10 in 2011. The USA entered the list this year, while Luxembourg moved from 9th position in 2011 to 14th position this year. All except Canada are in the GII top 10 (discussed above).

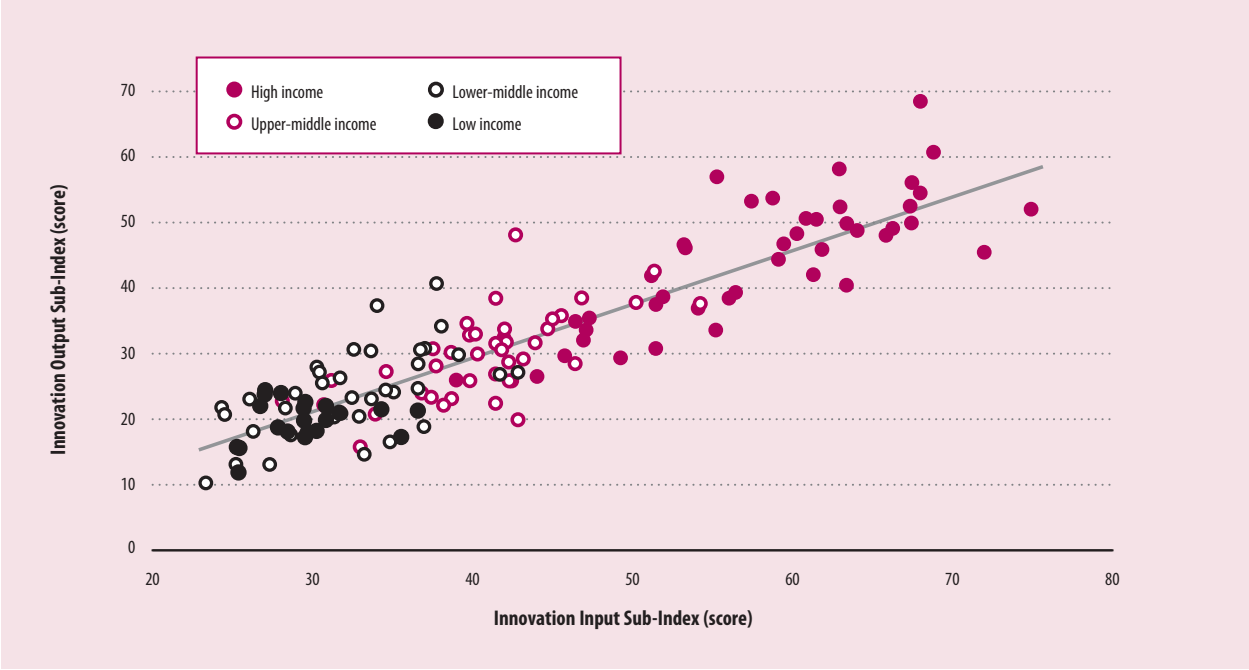
Canada, in Northern America, ranks 12th in the GII but 10th in the Input Sub-Index. Down from 8th position in the GII, it is the only economy that dropped out of the top 10 this year, with its rankings falling on all four indices (Input drops from 8th to 10th, Output from 10th to 20th, Efficiency from 54th to 74th). Canada has many strengths but it does not translate its excellent ranks in institutions (2nd) and Market sophistication (7th) into innovation outputs. The priorities at the education and research level (25th) do not seem to go in the direction of fomenting innovation and exchanges, as shown by a percentage of graduates in science and engineering of only 21.1% (ranked 47th) and a gross tertiary outbound enrolment of 2.0% (47th), leading to a rank of merely 22nd in Knowledge and technology outputs. In general infrastructure Canada does very well (4th), but it has been slow at assimilating ICTs (16th), and an 87th position in efficiency in energy use as well as a slow incorporation of ISO 14001 environmental standards lead to a position of 77th in ecological sustainability. In that sense, the figures mirror accurately the current debate—which deplores the low levels of support for R&D in many parts of the Canadian private sector, faltering skills, and a weakening position on innovation.

The top 10 in the Innovation Output Sub-Index

The Innovation Output Sub-Index variables provide information on elements that are the result of innovation within an economy. Although scores on the Input and Output Sub-Indices might differ substantially, leading to important shifts in rankings from one Sub-Index to the other for particular countries, the data confirm that efforts made on enabling environments are rewarded with increased innovation outputs (Figure 2).

The top 10 countries in the Innovation Output Sub-Index are Switzerland, Sweden, the Netherlands, Malta, Finland, the UK, Germany, Estonia, Denmark, and Luxembourg. Seven of these countries had reached the top 10 in 2011; Malta, Estonia, and Luxembourg join the group this year, while the USA, Israel, and Canada drop to 16th, 13th, and 20th

Figure 2: Innovation Output Sub-Index vs. Innovation Input Sub-Index



Note: Countries/economies are classified according to the World Bank Income Group Classification (April 2012).

positions, respectively. Six of the top 10 Output countries are in the GII top 10 (discussed above).

Luxembourg is ranked 11th in the GII, up six positions from 17th place in 2011, with the highest jump in the EU from an improved performance (Annex 2). It ranks 14th in the Input Sub-Index and 10th in the Output Sub-Index (up from 25th in 2011), and 29th in Efficiency. Luxembourg's profile is that of a sophisticated service economy, with strengths across the board. It is particularly open to exchanges with the rest of the world at all levels: it tops the rankings at 1st place in imports and exports of goods and services, FDI net inflows and outflows, and tertiary inbound and outbound mobility. While the country's credit (112th) and investment (100th) regimes are found wanting, this has not stopped the flow of credit and investments: Luxembourg ranks 10th in domestic credit to private sector (at 185.4% of GDP) and 4th in market capitalization (at 183.5 % of GDP). Another strength comes from the assimilation of ICTs by businesses and society. Elementary education requires attention, however: while ranking 90th and 63rd in current expenditure on education and in public expenditure per pupil alone might not be of great concern, considering the high GDP per capita of Luxembourg by which the data are scaled, the 60th spot in school life expectancy (13.5 years) and the results of the PISA exam (ranked 33rd) are more worrisome.

Germany ranks 15th, down from 12th in 2011. The country's loss of three positions is entirely due to adjustments made to the model (as opposed to a deteriorating performance, Annex 2). With a population of 81.4 million (the most populous country in the EU), its strengths are in the Output Sub-Index again this year (7th). Ranking 23rd in the Input Sub-Index, it places 11th in Efficiency. Its rank of 16th in Human capital and research is only partially reliable (the only pillar affected by such a problem) because Germany has missing data in four key indicators. This does not affect the sub-pillar on R&D, in which it ranks 11th globally and which translates into a 12th position in Knowledge and technology outputs with ranks within the top 20 on all but one of the indicators included in knowledge creation and knowledge diffusion. It also places in the top 10 in registration of top-level domains. Its major weaknesses are in innovation linkages (where it ranks 55th globally; see, however, the discussion in Chapter 4 on the weak nature of these indicators) and in three domains that are deeply cyclical and therefore affected by the global economic crisis: gross capital formation (ranked 116th at 17.3% of GDP), imports of goods & services (69th at 41.4% of GDP), FDI net inflows (96th at 1.4% of GDP), and creation of new businesses (57th).

Box 2: Stability at the top

One salient feature of this year's Global Innovation Index (GII) is the stability we can perceive at the top of the rankings. The top 3 are the same as they were in 2011: Switzerland, Sweden, and Singapore. Nine of the top 10 are repeated, with Ireland replacing Canada, which dropped from position 8 to 12. Seventeen of last year's top 20 economies are included in that select list this year: Malta, Estonia, and Belgium joined in, while the Republic of Korea, Austria, and Japan left the top 20 to drop to positions 21, 22, and 25, respectively.[1]

Unsurprisingly, the GII top 20 are all high-income economies. In this income group, only five economies (of a total of 44) exhibit relatively weak performances on the GII: Saudi Arabia (48th), Brunei Darussalam (53rdt), Kuwait (55th), Greece (66th), and Trinidad and Tobago (81st).

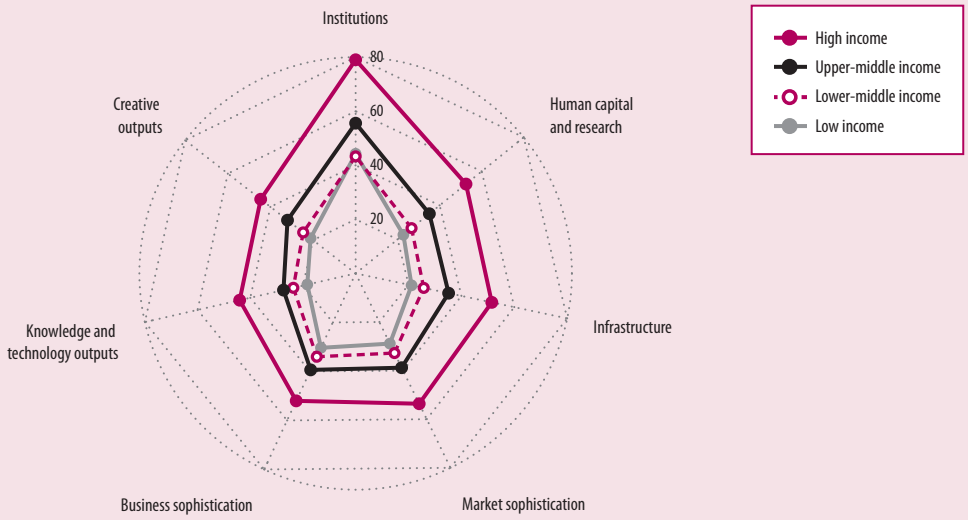
Altogether, this year's GII confirms that rankings are strongly correlated with income levels. Most importantly, on average, high-income countries outpace developing countries by a wide margin across the board in terms of scores (Figure 2.1). This margin itself explains a large part of the stability at the top of the rankings.

Yet this phenomenon can be seen in a positive and encouraging light: scores at lower levels of income are more 'concentrated', so to speak, implying that marginal improvements in one or two domains or strengths revealed by data recently made available or by adjustments to the GII framework can have a significant impact on rankings (details in Annex 2). The major jumps in the rankings this year over 2011 are in Brunei Darussalam (by 24 positions); Swaziland (by 23); Tajikistan (by 15); Zambia (by 14); Rwanda and Zimbabwe (both by 13); Oman (by 12); Serbia, Morocco, Nicaragua, and Algeria (all by 11); and Peru (by 10).

Note

1. More analysis is needed to determine the change of rankings for Japan and the Republic of Korea, because model changes have impacted these economies particularly strongly.

Figure 2.1: Average scores by income group and by pillar (0–100)



Note: Countries/economies are classified according to the World Bank Income Group Classification (April 2012).

Malta is ranked 16th in the GII 2012 and is 1st among the 16 countries added to the GII this year. Malta achieves 4th position in the Output Sub-Index. Its 1st rank in creative goods and services, with good scores across all indicators, is in large measure the reflection of its appeal as a tourist destination, which has a direct impact on the production and consumption of recreation and culture. Although labour productivity is still low at 0.5% (ranked 99th), Malta achieves 5th and 6th positions in new businesses and the adoption of certificates of conformance with the ISO 9001 quality standard, leading to 10th position in knowledge impact. The country's two major strengths, however, are its 3rd and 6th positions in knowledge absorption and diffusion. The major areas of concern are its low rankings in Human capital and research and in investment.

Estonia ranks 19th (18th among GII 2011 countries), up from 23rd in 2011 and 8th in the Output Sub-Index. After averaging an 8.3% growth in GDP in 2000–07, Estonia experienced two years of recession, with a drop in GDP of 14.3% in 2009 but an estimated 7.6% growth in 2011.[25] In its GII results, the country shows real strength on the outputs side and is firmly placed at the frontier of innovation learners and leaders, outperforming all countries with similar income levels in per capita PPP$: it ranks 8th on the efficiency ratio, 13th on Knowledge and technology outputs, and 9th on Creative outputs. The leverage there comes from two sub-pillars: first, Estonia places 18th in knowledge creation. Second, the country places 2nd in knowledge impact, reflecting the dynamism of its economy with a growth rate of labour productivity of 8.6% (ranked 4th), and taking 7th place in the establishment of new businesses and the 12th position in the adoption of the ISO 9001 quality standard. Another area of relative strength is its high level of adoption of the latest technologies and online creativity, with a 1st position in Wikipedia and 12th on YouTube video uploads. A deeper financial market and improved innovation linkages will be needed for Estonia to benefit fully from its strong output positions.

Top performers by income group

Identifying the underlying conditions of a country and comparing performances among its peers is vital to a good understanding of the implications of a country's ranking in the GII. This report attempts to abide by this underlying principle by assessing results on the basis of the development stages of countries (captured by the World Bank income classifications). High-income top performers are discussed in detail in the previous section (Box 2).

Upper-middle-income countries (40 economies)

Among upper-middle-income countries, the best performers in the GII 2012 are Latvia (30th), Malaysia (32nd), China (34th), Lithuania (38th), Chile (39th), Bulgaria (43rd), Montenegro (45th), Serbia (46th), Mauritius (49th), and the Russian Federation (51st).

In the Input Sub-Index, the best performers are Malaysia (29th), Latvia (36th), Lithuania (38th), Chile (43rd), South Africa (45th), Bulgaria (47th), Montenegro (48th), Mauritius (49th), Romania (51st), and the former Yugoslav Republic of Macedonia (52nd).

In the Output Sub-Index, the best performers are China (19th), Latvia (27th), Chile (34th), Serbia (36th), Lithuania (37th), Malaysia (38th), Bulgaria (42nd), Montenegro (44th), Jordan (46th), and Mauritius (48th).

Latvia is ranked 30th (29th among GII 2011 economies), up from 36th place in 2011 and topping the rankings among upper-middle-income countries. As for Estonia, this is commendable because Latvia was one of the countries hardest hit by the economic crisis, subject to three recession years in 2008–10 and the biggest drop in GDP in the world in 2009 (–17.7%), but it has been steadily recovering since. Latvia places in the top 30 positions in the Output Sub-Index (27th), Institutions (30th), Market sophistication (22nd), and Creative outputs (21st). It displays relative weaknesses in the Input Sub-Index (where it places 36th), Human capital and research (50th), Infrastructure (38th), Business sophistication (53th), and Knowledge and technology outputs (37th). It is the only upper-middle-income country in the top 30 this year, also a result of the fact that it recently dropped in classification from high income to upper-middle income in the 2011 World Bank classification.

Malaysia comes first among upper-middle-income economies in Asia, ranking 32nd (31st among GII 2011 countries, the same rank as in 2011). Its major strengths are in Market and Business sophistication (where it ranks 14th and 11th, respectively), while it needs to make improvements in its institutional framework (55th) and in Human capital and research (42nd) to move up in the rankings. Regarding the latter, deficiencies are found at the primary and secondary levels mainly (74th), in contrast to a highly competent tertiary education system (10th globally, 3rd in Asia) that has attracted foreign students (with a tertiary inbound mobility of 5.8%,

Malaysia ranks 27th globally). In R&D, Malaysia does less well (48th), although the involvement of the private sector in financing and performing R&D is noteworthy (at levels above 84%, it ranks 1st globally on both). Malaysia is also good at adopting the latest technologies, as demonstrated by its 6th rank in Knowledge absorption, driven by its 1st position in high-tech imports.

For second year in a row, **China** shows several strengths (Box 3). China ranks 34th (33rd among GII 2011 countries), down from 29th in 2011. It reached 1st place in the Efficiency Index, 55th in the Input Sub-Index, and 19th in the Output Sub-Index. With a population of 1.3 billion and a GDP per capita of PPP$ 8,394.1, its performance is remarkable. China was particularly affected by the adjustments made to the GII framework. Had the 2011 model been kept intact, China would have improved its ranking (Annex 2). China's rankings improved on two pillars: Business sophistication (from 29th to 28th/27th position among GII 2011 economies) and Knowledge and technology outputs (from 9th to 5th position). On the latter—which includes knowledge creation (patents, utility models, scientific publications), knowledge impact (growth in labour productivity, new businesses, and so on), and knowledge diffusion (royalty receipts, high-tech exports, computer and communication services exports, FDI outflows)—China is outpaced only by Switzerland, Sweden, Singapore, and Finland. China dropped six places in the rankings on infrastructure (to 39th position); the addition of a new sub-pillar on ecological sustainability, however, is not to blame (there China ranks 37th); the culprit is rather a fall on the ICT sub-pillar, from 59th to 73rd/70th among 2011 economies. This weakness is echoed by a low score on the new sub-pillar 7.3, online creativity, where China ranks 120th.

Lower-middle-income countries (36 economies)

Among lower-middle-income countries, the best performers in the GII are the Republic of Moldova (50th), Ukraine (63rd), India (64th), Mongolia (68th), Armenia (69th), Georgia (71st), Viet Nam (76th), Guyana (77th), Belize (80th), and Swaziland (82nd).

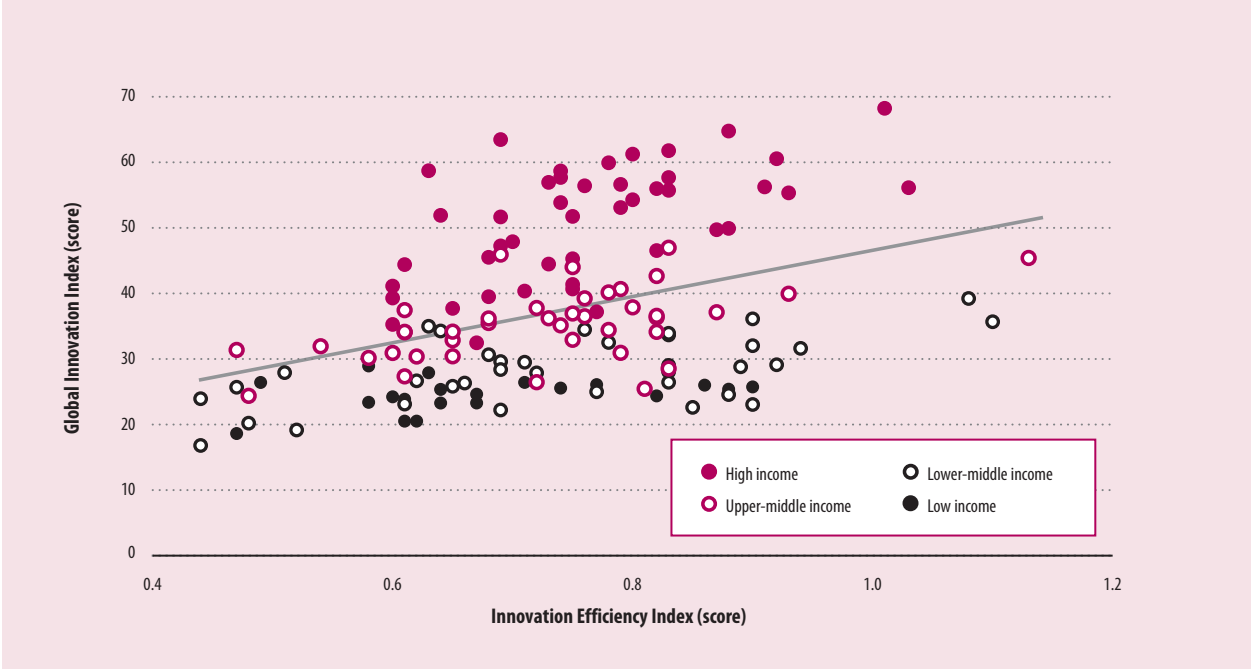
In the Input Sub-Index, the best performers are Mongolia (53rd), Georgia (63rd), Armenia (73rd), Ukraine (78th), the Republic of Moldova (79th), Viet Nam (83rd), Fiji (84th), Guyana (86th), Belize (87th), and Morocco (88th).

In the Output Sub-Index, the best performers are the Republic of Moldova (30th), India (40th), Ukraine (47th), Viet Nam (59th), Paraguay (62nd), Guyana (64th), Swaziland (65th), Armenia (68th), and Belize (74th).

The Republic of Moldova is ranked 50th (48th among GII 2011 countries), down from 39th in 2011. It replaced China as 1st among lower-middle-income economies in the GII this year because China is now classified as upper-middle-income, but it had already been 2nd in 2011. Moldova has been somewhat affected by the adjustments made to the GII model, but the country also shows signs of a worsening performance (Annex 2), probably linked to a recession in 2009 (with a 6% drop in GDP). With the lowest GDP per capita in Europe, this landlocked transition economy comes before Ukraine (63rd), the only other lower-middle-income country in Europe. Moldova has a relative advantage in innovation outputs (30th, 1st among lower-middle-income economies), ranking 3rd in efficiency, with relative strengths on four intellectual property (IP) indicators: patent and utility model applications at the domestic level (15th and 1st), and trademark registrations, both at the domestic level and at the Madrid system (4th in both). However, it ranks 73rd in patenting at the PCT. Its worst showings are in Business sophistication (104th) and Market sophistication (96th, the last in Europe), with relative weaknesses in the quality of scientific research institutions and trade and transport infrastructure, venture capital deals, and on areas related to innovation linkages: R&D financed by business, university/industry research collaboration, development of clusters, and joint-venture/strategic alliance deals.

Mongolia is ranked 68th (66th among GII 2011 countries), up from 68th position in 2011 and 1st among lower-middle-income economies in the Input Sub-Index. This landlocked Asian country of 2.8 million people achieves prominence in the Input Sub-Index (53), coming in at only 79th place in the Output Sub-Index. Mongolia's GDP has been growing at an impressive pace: after an average GDP growth of 8.2% in 2002–08, it was mildly hit by the global crisis with a recession year in 2009 (a 1.27% decline in GDP) recovering in 2010. It now has very promising growth prospects of a mind-blowing 14.6% on average in the period 2011–14.[26] Although the GII country profile is just a snapshot at a given point in time, it includes several metrics that reflect this success story: Mongolia ranks 1st in microfinance gross loans (at 14.8% GDP), 11th in firms offering formal training (61.2%), and 3rd in FDI net inflows (at 23.5% of GDP). In a series of count variables scaled by GDP in PPP$ to account for different stages in development and

Figure 3: Global Innovation Index vs. Innovation Efficiency Index



Note: Countries/economies are classified according to the World Bank Income Group Classification (April 2012).

to avoid improperly biasing results to the detriment of countries with large young or ageing populations, Mongolia does remarkably well. For example, it takes 1st place in utility model applications by residents (127 in 2010) and in trademark registrations at the national office (3,510 in 2010). Mongolia's main deficits are in ecological sustainability, R&D, cluster development, knowledge diffusion, and creative goods and services.

Low-income countries (21 economies)

Among low-income economies, the top 5 are Kenya (96th), Rwanda (102nd), Tajikistan (108th), Kyrgyzstan (109th), and Mozambique (110th) in the GII; Kenya (89th), Kyrgyzstan (90th), Rwanda (95th), Mozambique (107th), and Malawi (110th) in the Input Sub-Index; and Zimbabwe (92nd), Nepal (95th), Mali (97th), Bangladesh (104th), and Benin (108th) in the Output Sub-Index.

Kenya is ranked 96th (91st among GII 2011 countries), down from 89th in 2011. Kenya came in 3rd among low-income economies in 2011, after Ghana and Kyrgyzstan; since Ghana this year joined the upper-middle-income group, Kenya tops the GII and the Input rankings among low-income economies. It benefits from an average annual growth of GDP (US$) of 4.8% for the period 2004–11, with a forecasted growth of 6.1% for 2012–17.[27] For the second year in a row, this low-income country of 40.9 million people shows noteworthy relative strengths in Human capital and research (72nd), Market sophistication (41st), and Business sophistication (66th). Kenya's institutional framework (103rd) is particularly worrisome, however, especially in areas crucial to the investments required for growth and innovation: political stability, rule of law, ease of starting a business, and the tax burden (including tax rates and formalities). Its ranking in Infrastructure (120th) is also weak, including a 104th position in the adoption of ICTs (its best showing at the sub-pillar level).

Zimbabwe is ranked 115th (106th among GII 2011 countries), up from 119th in 2011, and it leads the Output Sub-Index among lower-middle-income economies. With the second-lowest GDP per capita of the 141 economies, after Burundi, the positions in the Output Sub-Index (92nd) and the Efficiency ratio (13th) of this landlocked economy are indeed promising. These results are driven by relatively good records on the areas traditionally linked to innovation, namely Human capital and research (71st), Business sophistication (50th), and Knowledge and technology outputs (70th), showing that Zimbabwe is prioritizing those areas that will give it a better edge

Table 4: Innovation Efficiency Index rankings: Top 10

Rank	Country/Economy	Efficiency Score	Input Rank	Output Rank	Income Group	Rank	Region Group	Rank	Population (US$ millions)	GDP per capita (current PPP$)
1	China	1.13	55	19	UM	**1**	SEAO	**1**	1,348.1	8,394.1
2	India	1.10	96	40	LM	**1**	CSA	**1**	1,206.9	3,703.5
3	Moldova, Rep.	1.08	79	30	LM	2	EUR	**1**	3.6	3,383.0
4	Malta	1.03	27	4	HI	**1**	EUR	2	0.4	25,782.7
5	Switzerland	1.01	4	**1**	HI	2	EUR	3	7.8	43,508.6
6	Paraguay	0.94	103	62	LM	3	LCN	**1**	6.5	5,548.9
7	Serbia	0.93	65	36	UM	2	EUR	4	7.4	10,661.3
8	Estonia	0.93	24	8	HI	3	EUR	5	1.3	20,182.1
9	Netherlands	0.92	15	3	HI	4	EUR	6	16.7	42,330.7
10	Sri Lanka	0.92	115	76	LM	4	CSA	2	20.5	5,609.4

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

in the innovation race. Deficiencies in all other areas are, however, just as noteworthy: Input Sub-Index (130th), Institutions (141th, the lowest globally), Infrastructure (139th), Market sophistication (118th), and Creative outputs (112th).

The Innovation Efficiency Index

While the GII is calculated as the average of the Input and Output Sub-Indices, the Innovation Efficiency Index is calculated as the ratio of the Output over the Input Sub-Index. The relationship between the GII and the efficiency ratio is positive, as expected, implying that more efficient countries achieve, on average, better GII scores (Figure 3).

The top 10 countries in the Innovation Efficiency Index are countries particularly good at surmounting relative weaknesses on their Input Sub-Indices, with robust output results: China, India, the Republic of Moldova, Malta, Switzerland, Paraguay, Serbia, Estonia, Netherlands, and Sri Lanka. The first three were already in the top 10 in efficiency in 2011; Côte d'Ivoire, Nigeria, Pakistan, Sweden, Brazil, Argentina, and Bangladesh moved out. This year not a single low-income economy is included (Table 4).

The Innovation Efficiency Index is designed to be neutral to the countries' stages of development, and the data indeed reflect this. That said, the analysis by income group for efficiency ratios is particularly crucial, because economies might reach a relatively high efficiency ratio **because of particularly low Input scores.** The over-representation of the efficiency ratio in the media in 2011 out of the proper context—namely GII scores—was unfortunate, with analysts jumping to the conclusion that countries with high efficiency ratios were to be commended when in effect these high ratios often reflected blatant deficiencies in the input side and a performance in the GII well below that of countries with similar GDP per capita. Efficiency ratios must be analysed jointly with GII, Input, and Output scores, and with development stages of countries/economies in mind. Efficiency ratios are reported by income group for that reason (Tables 5a through 5d).

Among high-income economies (Table 5a), European countries take up the first 20 positions, with the exception of Israel (12th), New Zealand (16th), and Kuwait (19th). South East Asia and Oceania present mixed results. The USA and Canada are ranked 26th and 28th. With the exception of Kuwait, GCC countries place at the bottom of the rankings in efficiency. The lesson is that making available large sums of money for innovation inputs does not guarantee a high level of outputs. Only 39% of high-income economies have better rankings on outputs than on inputs.

Among upper-middle-income countries (Table 5b), some show a capacity to achieve more innovation outputs from less favourable conditions: China, Latvia, Chile, Serbia, and Lithuania make it to the top 40 globally on outputs, surmounting lower positions on capabilities. Of these, Chile and Lithuania have actually reversed the situation they had in 2011. In this income group, 55% of countries have better rankings in the Output Sub-Index than in the Input Sub-Index.

The same analysis among lower-middle-income countries (Table 5c) leads to encouraging results. Four of the top 10 countries in the Efficiency Index come from this income group. In fact, India and the Republic of Moldova are in the top 40 in the Output Sub-Index. Within this income group, 64% of countries have better rankings in outputs than in inputs.

Among low-income countries (Table 5d), 43% have better showings in output than in inputs, and none is in the top 10 on efficiency. While middle-income countries show, in average, better rankings in

Table 5a: Innovation Efficiency Index rankings (high-income countries/economies)

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Region Group	Rank	Population (US$ millions)	GDP per capita (current PPP$)
1	Malta	1.03	4	27	4	23	EUR	2	0.4	25,782.7
2	Switzerland	1.01	5	4	**1**	3	EUR	3	7.8	43,508.6
3	Estonia	0.93	8	24	8	16	EUR	5	1.3	20,182.1
4	Netherlands	0.92	9	15	3	12	EUR	6	16.7	42,330.7
5	Germany	0.91	11	23	7	16	EUR	7	81.4	37,935.5
6	Sweden	0.88	18	3	2	1	EUR	9	9.4	40,613.8
7	Slovenia	0.88	20	32	22	10	EUR	10	2.0	29,179.1
8	Czech Republic	0.87	22	31	23	8	EUR	11	10.5	25,933.8
9	Iceland	0.83	28	19	12	7	EUR	12	0.3	38,079.6
10	Luxembourg	0.83	29	14	10	4	EUR	13	0.5	84,829.3
11	Finland	0.83	30	6	5	1	EUR	14	5.4	36,723.3
12	Israel	0.82	38	17	13	4	NAWA	2	7.6	31,004.6
13	Hungary	0.82	41	37	29	8	EUR	16	10.0	19,647.1
14	United Kingdom	0.80	44	5	6	–1	EUR	18	62.6	35,974.4
15	Belgium	0.80	45	20	18	2	EUR	19	11.0	37,677.4
16	New Zealand	0.79	47	12	15	–3	SEAO	5	4.4	27,966.8
17	Austria	0.79	48	21	21	0	EUR	20	8.4	41,805.1
18	Denmark	0.78	52	8	9	–1	EUR	23	5.5	37,741.9
19	Kuwait	0.77	54	61	54	7	NAWA	4	3.7	40,740.2
20	Norway	0.76	58	11	17	–6	EUR	24	5.0	53,376.2
21	Croatia	0.75	63	44	45	–1	EUR	26	4.4	18,338.5
22	France	0.75	64	22	26	–4	EUR	27	63.2	35,048.8
23	Slovakia	0.75	65	40	43	–3	EUR	28	5.4	23,384.1
24	Portugal	0.75	67	33	33	0	EUR	30	10.7	23,204.5
25	Korea, Rep.	0.74	69	16	24	–8	SEAO	7	49.0	31,753.5
26	United States of America	0.74	70	9	16	–7	NAC	**1**	312.9	48,147.2
27	Ireland	0.74	71	7	14	–7	EUR	31	4.6	39,507.9
28	Canada	0.73	74	10	20	–10	NAC	2	34.4	40,457.6
29	Italy	0.73	75	34	39	–5	EUR	32	60.6	30,165.5
30	Poland	0.71	80	41	50	–9	EUR	34	38.1	20,136.9
31	Cyprus	0.70	82	25	32	–7	NAWA	9	0.8	29,100.3
32	Singapore	0.69	83	**1**	11	–10	SEAO	8	5.3	59,937.0
33	Spain	0.69	87	26	35	–9	EUR	35	46.1	30,622.2
34	Japan	0.69	88	18	28	–10	SEAO	10	127.9	34,362.1
35	Oman	0.68	90	42	55	–13	NAWA	10	3.1	26,272.4
36	Qatar	0.68	91	30	41	–11	NAWA	11	1.8	102,891.2
37	Trinidad and Tobago	0.67	97	74	84	–10	LCN	15	1.3	20,301.4
38	Brunei Darussalam	0.65	104	46	69	–23	SEAO	11	0.4	49,517.8
39	Australia	0.64	107	13	31	–18	SEAO	12	22.5	40,836.4
40	Hong Kong (China)	0.63	110	2	25	–23	SEAO	14	7.2	49,342.0
41	United Arab Emirates	0.61	121	28	51	–23	NAWA	16	5.4	48,597.7
42	Greece	0.60	124	50	82	–32	EUR	39	11.2	27,624.3
43	Bahrain	0.60	125	35	60	–25	NAWA	17	1.1	27,368.4
44	Saudi Arabia	0.60	127	39	70	–31	NAWA	18	28.2	24,056.7

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

outputs, this is not the case for high- and low-income economies.

Learning to innovate: The GII scores in light of income levels

Figure 4, new this year, illustrates most of the findings and points made in the discussion and presents the GII scores in a completely new light, plotted against GDP per capita in PPP$ (in natural logs). When stages in development of countries are considered, overachievers and underperformers are revealed.

The economies that appear close to the trend line show the performance results expected from their level of development. A majority of economies are in this category, including the USA, Japan, the Russian Federation, Brazil, Indonesia, Nigeria, and Bangladesh. The farther up and above the trend line a country is, the better its innovation performance compared with that of its peers with the same GDP per capita in PPP$. Bubbles outlined in black correspond to the efficient innovators (the majority are situated above the trend line), while the bubbles outlined in red are those countries in the lower half of the Innovation Efficiency Index.

Figure 4: GII scores v. GDP per capita in PPP$ (bubbles sized by population)

Note: 'Efficient innovators' are countries/economies with Innovation Efficiency ratios ≥ 0.74; 'Inefficient innovators' have ratios < 0.74; the trend line is a polynomial of degree four.

Figure 4: GII scores v. GDP per capita in PPP$ (bubbles sized by population): ISO-2 Country Codes

Code	Country
AE	United Arab Emirates
AL	Albania
AM	Armenia
AO	Angola
AR	Argentina
AT	Austria
AU	Australia
AZ	Azerbaijan
BA	Bosnia and Herzegovina
BD	Bangladesh
BE	Belgium
BF	Burkina Faso
BG	Bulgaria
BH	Bahrain
BI	Burundi
BJ	Benin
BN	Brunei Darussalam
BO	Bolivia, Plurinational St.
BR	Brazil
BW	Botswana
BY	Belarus
BZ	Belize
CA	Canada
CH	Switzerland
CI	Côte d'Ivoire
CL	Chile
CM	Cameroon
CN	China
CO	Colombia
CR	Costa Rica
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
DO	Dominican Republic
DZ	Algeria
EC	Ecuador
EE	Estonia
EG	Egypt
ES	Spain
ET	Ethiopia
FI	Finland
FJ	Fiji
FR	France
GA	Gabon
GB	United Kingdom
GE	Georgia
GH	Ghana
GM	Gambia
GR	Greece
GT	Guatemala
GY	Guyana
HK	Hong Kong (China)
HN	Honduras
HR	Croatia
HU	Hungary
ID	Indonesia
IE	Ireland
IL	Israel
IN	India
IR	Iran, Islamic Rep.
IS	Iceland
IT	Italy
JM	Jamaica
JO	Jordan
JP	Japan
KE	Kenya
KG	Kyrgyzstan
KH	Cambodia
KR	Korea, Rep.
KW	Kuwait
KZ	Kazakhstan
LA	Lao PDR
LB	Lebanon
LK	Sri Lanka
LS	Lesotho
LT	Lithuania
LU	Luxembourg
LV	Latvia
MA	Morocco
MD	Moldova, Rep.
ME	Montenegro
MG	Madagascar
MK	Macedonia, FYR
ML	Mali
MN	Mongolia
MT	Malta
MU	Mauritius
MW	Malawi
MX	Mexico
MY	Malaysia
MZ	Mozambique
NA	Namibia
NE	Niger
NG	Nigeria
NI	Nicaragua
NL	Netherlands
NO	Norway
NP	Nepal
NZ	New Zealand
OM	Oman
PA	Panama
PE	Peru
PH	Philippines
PK	Pakistan
PL	Poland
PT	Portugal
PY	Paraguay
QA	Qatar
RO	Romania
RS	Serbia
RU	Russian Federation
RW	Rwanda
SA	Saudi Arabia
SD	Sudan
SE	Sweden
SG	Singapore
SI	Slovenia
SK	Slovakia
SN	Senegal
SV	El Salvador
SY	Syrian Arab Rep.
SZ	Swaziland
TG	Togo
TH	Thailand
TJ	Tajikistan
TN	Tunisia
TR	Turkey
TT	Trinidad and Tobago
TZ	Tanzania, United Rep.
UA	Ukraine
UG	Uganda
US	United States of America
UY	Uruguay
UZ	Uzbekistan
VE	Venezuela, Bolivarian Rep.
VN	Viet Nam
YE	Yemen
ZA	South Africa
ZM	Zambia
ZW	Zimbabwe

Table 5b: Innovation Efficiency Index rankings (upper-middle-income countries/economies)

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Region Group	Rank	Population (US$ millions)	GDP per capita (current PPP$)
1	China	1.13	**1**	55	19	36	SEAO	**1**	1,348.1	8,394.1
2	Serbia	0.93	7	65	36	29	EUR	4	7.4	10,661.3
3	Jordan	0.87	21	72	46	26	NAWA	**1**	6.3	5,900.3
4	Ecuador	0.83	31	109	85	24	LCN	3	15.0	8,335.1
5	Latvia	0.83	33	36	27	9	EUR	15	2.2	15,448.1
6	Costa Rica	0.82	35	71	53	18	LCN	4	4.7	11,562.2
7	Chile	0.82	37	43	34	9	LCN	5	17.4	16,171.9
8	Brazil	0.82	39	69	52	17	LCN	6	194.9	11,845.8
9	Turkey	0.82	40	81	61	20	NAWA	3	72.2	14,615.5
10	Venezuela, Bolivarian Rep.	0.81	42	126	103	23	LCN	7	29.8	12,407.2
11	Russian Federation	0.80	43	60	49	11	EUR	17	142.4	16,687.4
12	Dominican Republic	0.79	46	93	77	16	LCN	8	10.1	9,289.2
13	Bulgaria	0.79	49	47	42	5	EUR	21	7.5	13,562.9
14	Montenegro	0.78	50	48	44	4	EUR	22	0.6	11,228.2
15	Argentina	0.78	51	76	66	10	LCN	9	40.9	17,376.1
16	Tunisia	0.76	59	64	58	6	NAWA	6	10.7	9,557.5
17	Mauritius	0.76	60	49	48	1	SSF	10	1.3	15,015.7
18	Thailand	0.75	61	59	56	3	SEAO	6	64.3	9,693.4
19	Lithuania	0.75	62	38	37	1	EUR	25	3.3	18,769.5
20	Belarus	0.75	66	80	75	5	EUR	29	9.4	14,948.0
21	Uruguay	0.74	68	68	67	1	LCN	11	3.4	15,469.7
22	Lebanon	0.73	73	62	63	–1	NAWA	7	4.0	15,597.0
23	Gabon	0.72	76	112	106	6	SSF	12	1.5	16,021.5
24	Romania	0.72	77	51	57	–6	EUR	33	21.4	12,357.9
25	Malaysia	0.69	84	29	38	–9	SEAO	9	28.7	15,579.0
26	Colombia	0.68	92	58	72	–14	LCN	14	46.1	10,155.3
27	Macedonia, FYR	0.68	93	52	71	–19	EUR	36	2.1	10,369.5
28	Azerbaijan	0.65	100	85	94	–9	NAWA	13	9.1	10,216.7
29	Mexico	0.65	101	70	86	–16	LCN	17	109.7	15,121.4
30	Bosnia and Herzegovina	0.65	102	66	80	–14	EUR	37	3.9	8,174.1
31	Albania	0.62	112	82	98	–16	EUR	38	3.2	7,780.2
32	South Africa	0.61	116	45	73	–28	SSF	22	50.6	10,977.1
33	Iran, Islamic Rep.	0.61	118	97	117	–20	CSA	7	75.9	12,258.2
34	Peru	0.61	119	57	88	–31	LCN	20	30.0	10,000.7
35	Namibia	0.61	120	56	87	–31	SSF	24	2.1	7,276.4
36	Panama	0.60	126	75	100	–25	LCN	21	3.6	13,595.2
37	Jamaica	0.58	130	77	107	–30	LCN	22	2.7	9,003.8
38	Kazakhstan	0.54	131	67	105	–38	CSA	8	16.5	13,060.0
39	Algeria	0.48	136	101	134	–33	NAWA	20	36.7	7,210.3
40	Botswana	0.47	139	54	121	–67	SSF	30	1.9	16,279.5

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

- Among the innovation leaders we find high-income countries such as Switzerland, the Nordic countries, Singapore, the UK, the Netherlands, New Zealand, Malta, Israel, and Estonia. These economies have succeeded in creating well-linked innovation ecosystems where investments in human capital thrive in fertile and stable innovation infrastructures to create impressive levels of innovation outputs.
- The group of innovation learners, grouped to the left, includes Latvia, Malaysia, China, Republic of Moldova, Jordan, Ukraine, India, Mongolia, Armenia, Georgia, Viet Nam, Swaziland, and Ghana. These middle-income economies demonstrate rising levels of innovation results because of improvements in institutional frameworks, a skilled labour force with an expansion of tertiary education, better innovation infrastructures, a deeper integration with global credit investment, and trade markets and a relatively sophisticated business community compared with other middle-income economies—even if progress on these dimensions is not uniform across all segments of the country.
- Innovation underperformers, grouped below the trend line, include a mix of economies in different stages of development. Most resource-rich economies

Table 5c: Innovation Efficiency Index rankings (lower-middle-income countries/economies)

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Region Group	Rank	Population (US$ millions)	GDP per capita (current PPP$)
1	India	1.10	2	96	40	56	CSA	**1**	1,206.9	3,703.5
2	Moldova, Rep.	1.08	3	79	30	49	EUR	**1**	3.6	3,383.0
3	Paraguay	0.94	6	103	62	41	LCN	**1**	6.5	5,548.9
4	Sri Lanka	0.92	10	115	76	39	CSA	2	20.5	5,609.4
5	Swaziland	0.90	12	99	65	34	SSF	**1**	1.2	5,179.1
6	Ukraine	0.90	14	78	47	31	EUR	8	45.6	7,198.9
7	Pakistan	0.90	15	140	110	30	CSA	3	175.3	2,791.8
8	Senegal	0.89	16	114	78	36	SSF	3	13.4	1,893.4
9	Nigeria	0.88	17	134	102	32	SSF	4	160.3	2,589.0
10	Côte d'Ivoire	0.85	24	139	118	21	SSF	6	22.7	1,571.8
11	Indonesia	0.83	25	113	89	24	SEAO	2	240.5	4,668.1
12	Guyana	0.83	26	86	64	22	LCN	2	0.8	7,541.4
13	Viet Nam	0.83	27	83	59	24	SEAO	3	89.3	3,354.8
14	Philippines	0.83	32	106	83	23	SEAO	4	95.8	4,111.1
15	Zambia	0.83	34	122	96	26	SSF	7	13.6	1,612.9
16	Belize	0.78	53	87	74	13	LCN	10	0.3	8,275.2
17	Cameroon	0.77	55	125	111	14	SSF	9	20.9	2,256.3
18	Armenia	0.76	57	73	68	5	NAWA	5	3.3	5,395.3
19	Egypt	0.72	78	104	99	5	NAWA	8	79.4	6,504.6
20	El Salvador	0.71	81	94	91	3	LCN	12	5.9	7,595.3
21	Angola	0.69	85	133	127	6	SSF	13	19.6	5,911.0
22	Ghana	0.69	86	91	93	–2	SSF	14	24.3	3,081.6
23	Guatemala	0.69	89	98	101	–3	LCN	13	14.7	5,033.2
24	Morocco	0.68	94	88	90	–2	NAWA	12	32.2	5,069.8
25	Honduras	0.66	99	105	116	–11	LCN	16	8.2	4,350.1
26	Bolivia, Plurinational St.	0.65	103	108	120	–12	LCN	18	10.6	4,843.2
27	Georgia	0.64	106	63	81	–18	NAWA	14	4.5	5,430.3
28	Mongolia	0.63	109	53	79	–26	SEAO	13	2.8	4,509.7
29	Nicaragua	0.62	114	102	119	–17	LCN	19	5.9	3,185.4
30	Syrian Arab Rep.	0.61	115	123	130	–7	NAWA	15	21.2	5,078.8
31	Yemen	0.52	132	138	138	0	NAWA	19	25.1	2,520.7
32	Fiji	0.51	133	84	124	–40	SEAO	16	0.9	4,624.5
33	Lao PDR	0.48	135	129	139	–10	SEAO	17	6.6	2,659.2
34	Lesotho	0.47	137	92	133	–41	SSF	28	2.6	1,425.1
35	Uzbekistan	0.44	140	100	137	–37	CSA	10	28.6	3,293.7
36	Sudan	0.44	141	141	141	0	SSF	31	32.7	2,981.1

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

are in this category, including, in the Middle East, Qatar, the United Arab Emirates (UAE), and Kuwait (Bahrain, Oman, and Saudi Arabia to a much lesser extent) as well as Brunei Darussalam, the Bolivarian Republic of Venezuela, and Algeria. Also in this category we find Greece, which is undergoing a debt and economic crisis. By decreasing level of income per capita, Trinidad and Tobago, Botswana, Gabon, the Islamic Republic of Iran, Angola, Syria, Sudan, and Yemen are also in this category; the lower-middle-income economies typically lack adequate innovation infrastructures, while some upper-middle-income countries fall in this category because of poor linkages across the elements of the innovation ecosystems.

Figure 4 also seems to indicate that countries might develop their innovation capabilities and results in stages. It may be necessary to reach some critical level regarding institutions, skills of the labour force, infrastructure, and market and business sophistication for innovation activities to get underway, with a multiplier effect in terms of innovation outputs (stage 1).

In stage 2, innovation results increase because of sound institutions, increased R&D, the development of clusters, supply chains in interaction with global markets, and entrepreneurship. Often these developments do not reach the entire territory or population, implying that input scores are still relatively low at the national scale. Innovation linkages are crucial at that level: firms, governments, and academic sectors need to collaborate to develop pockets of wealth, clusters, and niche

Table 5d: Innovation Efficiency Index rankings (low-income countries/economies)

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Region Group	Rank	Population (US$ millions)	GDP per capita (current PPP$)
1	Zimbabwe	0.90	13	130	92	38	SSF	2	12.6	471.7
2	Mali	0.88	19	131	97	34	SSF	5	13.8	1,328.1
3	Nepal	0.86	23	127	95	32	CSA	4	28.5	1,328.1
4	Benin	0.82	36	132	108	24	SSF	8	9.9	1,491.5
5	Bangladesh	0.77	56	118	104	14	CSA	5	166.7	1,697.3
6	Uganda	0.74	72	121	112	9	SSF	11	35.2	1,305.4
7	Tajikistan	0.71	79	111	109	2	CSA	6	7.8	2,039.9
8	Gambia	0.67	95	128	125	3	SSF	15	1.8	2,116.6
9	Burkina Faso	0.67	96	120	123	–3	SSF	16	15.0	1,456.7
10	Mozambique	0.66	98	107	115	–8	SSF	17	22.0	1,085.9
11	Malawi	0.64	105	110	122	–12	SSF	18	16.2	852.7
12	Ethiopia	0.64	108	124	128	–4	SSF	19	86.8	1,092.7
13	Rwanda	0.63	111	95	113	–18	SSF	20	10.2	1,318.5
14	Burundi	0.62	113	137	135	2	SSF	21	8.4	430.0
15	Togo	0.61	117	135	136	–1	SSF	23	7.1	892.8
16	Tanzania, United Rep.	0.61	122	117	129	–12	SSF	25	42.2	1,505.7
17	Madagascar	0.60	123	116	126	–10	SSF	26	21.9	943.2
18	Cambodia	0.58	128	119	132	–13	SEAO	15	14.4	2,286.1
19	Kenya	0.58	129	89	114	–25	SSF	27	40.9	1,750.8
20	Kyrgyzstan	0.49	134	90	131	–41	CSA	9	5.5	2,380.8
21	Niger	0.47	138	136	140	–4	SSF	29	15.1	795.3

Note: World Bank Income Group Classification (April 2012): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income. Regions are based on the United Nations Classification (20 September 2011): EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

products and services that will allow the rest of society to progress.

In stage 3, input rankings start improving because of a better integration of segments of society that were previously kept at the margins of development: wages increase, cities and villages become more populated at the expense of rural subsistence communities, education becomes affordable for greater segments of society, women enter the labour force, and so on. The same phenomena that lead to the demographic transition apply, with the added spin that markets start playing an even greater role in parallel to societal progress, with a multiplier effect. Innovation learners are found in stages 2 and 3; in addition, hysteresis effects in innovation might explain the steepness of the curve.

In stage 4, where we find the innovation leaders, both innovation capabilities and results stabilize at a high level in an equilibrium that is more the result of demographics, market size, and comparative advantages (services, trade, and so on) than of failed policies or planned strategies. The challenge is to avoid complacency and the risk of an ever-shrinking scientific and creative community that could imperil future growth.

Regional rankings

Leaders in their respective regions in the GII are the same as in 2011: Switzerland in Europe (1st), Singapore in South East Asia and Oceania (3rd), the USA in Northern America (10th), Israel in Northern Africa and Western Asia (17th), Chile in Latin America and the Caribbean (39th), Mauritius in Sub-Saharan Africa (49th), and India in Central and Southern Asia (64th).

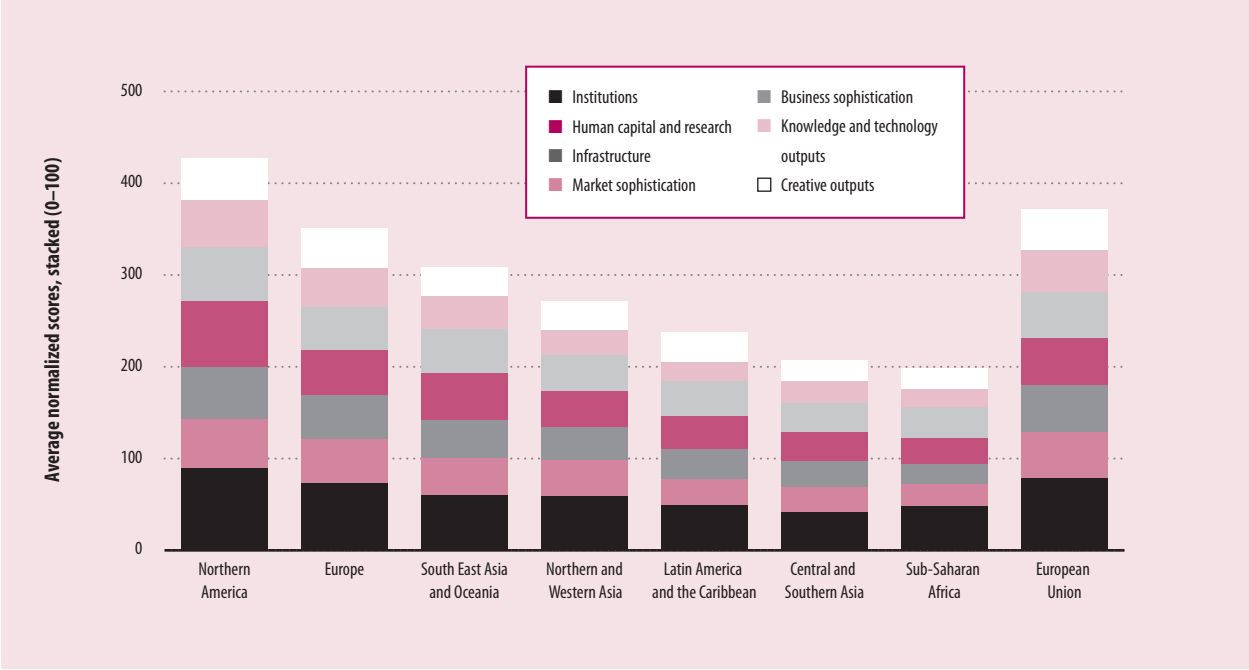
This section discusses regional and sub-regional trends, with snapshots for some countries leading in the rankings.

Following the insights illustrated by Figure 4, this year the regional rankings are discussed on the basis of that figure, in increasing order of average GDP per capita, to clearly showcase those economies that are outperforming their peers in the innovation race (except for the USA and Canada in Northern America, discussed above and in Box 1). To further put the discussion of rankings in perspective, Figure 5 presents in a bar graph the average pillar scores by region and Table 6 presents a heatmap with the scores for the top 10 and average scores by income and regional groups.

Sub-Saharan Africa (31 economies)

The first four countries in the region have seen clear improvements in their rankings. Despite these encouraging developments, only two countries—Mauritius and South Africa—remain in the upper half of the rankings, and 23 are placed at the bottom (rankings of 100 or plus). Mauritius, South Africa, Namibia, Swaziland, Ghana, Kenya, Senegal, Rwanda, and Zimbabwe have relatively good performances, while Botswana, Gabon, Angola, and Sudan are underperforming.

Figure 5: Average scores for selected country groups



Note: Countries/economies are classified according to the United Nations Classification (20 September 2011). European Union overlaps (it includes 26 European countries, and Cyprus in Western Asia).

In **Eastern and Northern Africa,** the rankings are led by Mauritius (49th), followed by Kenya (96th), Rwanda (102nd), Zambia (107th), Mozambique (110th), Zimbabwe (115th), Uganda (117th), Malawi (120th), Madagascar (126th), the United Republic of Tanzania (128th), Ethiopia (131st), Burundi (137th), and Sudan (141st).

Mauritius is ranked 49th (47th among GII 2011 countries), up from 53rd in 2011. With a net jump of six positions compared with 2011, Mauritius was affected in the rankings by the adjustments made to the GII model (Annex 2). This archipelago of 1.3 million inhabitants, with the 3rd highest GDP per capita in the region after Botswana and Gabon, gets its strengths from the Output Sub-Index (48th), Institutions (24th), and Creative outputs (31st), where it ranks 1st in the region. It has relative deficiencies in Human capital and research (70th), Infrastructure (112th), and Knowledge and technology outputs (78th). Particularly worrisome is its 101st position in elementary education; if Mauritius does not prioritize investing in education (it ranks 101st with a current expenditure on education of only 3.1% of GNI), the improvements made in tertiary education and other areas such as linkages might be short-lived.

In **Middle and Western Africa,** Ghana leads at the 92nd position, followed by Senegal (97th), Gabon (106th), Mali (119th), Cameroon (121st), Burkina Faso (122nd), Nigeria (123rd), Benin (125th), Gambia (130th), Côte d'Ivoire (134th), Angola (135th), Togo (136th), and Niger (140th). With the 2nd GDP per capita in the region (at PPP$ 16,021), the ranking of Gabon is disappointing.

Ghana epitomises the impact on a ranking of adjustments to the general framework, breaks in series, and availability of data previously missing (Annex 2). This year, Ghana is ranked 92nd (87th among GII 2011 countries), down from 70th place in 2011. This country of 24.3 million people shows a balanced profile, with rankings ranging from 73rd on Market sophistication to 107th on Infrastructure. This year a new indicator on the cost of redundancy dismissal was introduced in which it ranks 134th, implying 69 positions lost in the regulatory environment sub-pillar (54 positions lost among GII 2011 economies). Changes in sub-pillar 1.3, business environment, also affected Ghana—the country dropped 17 positions in the rankings on this sub-pillar (15 if only 2011 economies are considered). In addition, the availability of new data related to expenditure on R&D revealed some weaknesses and strengths previously not assessed for lack of data: low levels of researchers and GERD led to a 97th place in the

Table 6: Heatmap for GII top 10 economies and regional and income group averages (0–100)

Country/Economy	GII	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Input	Knowledge and technology outputs	Creative outputs	Output	Efficiency
Switzerland	68.24	87.99	57.87	60.83	69.76	63.51	67.99	71.96	65.03	68.49	1.01
Sweden	64.77	88.65	62.75	69.79	64.25	58.62	68.81	67.89	53.57	60.73	0.88
Singapore	63.47	92.51	68.25	60.60	76.30	76.88	74.91	64.91	39.17	52.04	0.69
Finland	61.78	92.83	68.20	61.96	53.56	60.74	67.46	62.87	49.34	56.10	0.83
United Kingdom	61.25	90.42	53.78	61.82	76.62	57.28	67.98	57.62	51.41	54.51	0.80
Netherlands	60.55	88.74	48.40	58.73	60.76	57.96	62.92	59.38	56.97	58.18	0.92
Denmark	59.93	95.28	62.85	56.78	66.60	55.24	67.35	51.53	53.48	52.50	0.78
Hong Kong (China)	58.72	92.60	51.54	63.38	85.52	66.87	71.98	38.36	52.57	45.47	0.63
Ireland	58.68	93.05	59.91	45.01	69.42	69.75	67.43	60.89	38.97	49.93	0.74
United States of America	57.69	85.11	53.41	56.11	76.83	59.85	66.26	56.05	42.17	49.11	0.74
Average	**36.81**	**58.07**	**36.52**	**35.76**	**40.41**	**40.60**	**42.27**	**30.28**	**32.42**	**31.35**	**0.73**
Regions											
Northern America	57.32	90.05	53.28	55.64	72.63	58.65	66.05	51.22	45.94	48.58	0.74
Europe	47.93	72.69	48.89	47.38	48.73	47.07	52.95	43.03	42.78	42.91	0.81
South East Asia and Oceania	41.16	60.33	39.46	41.93	51.30	47.45	48.09	35.96	32.51	34.23	0.71
Northern Africa and Western Asia	35.96	58.56	40.18	35.55	39.40	39.01	42.54	26.97	31.80	29.39	0.69
Latin America and the Caribbean	31.84	48.96	29.16	32.51	34.96	38.52	36.82	21.44	32.29	26.87	0.73
Central and Southern Asia	27.60	41.85	27.13	27.36	32.05	32.19	32.12	23.52	22.65	23.09	0.73
Sub-Saharan Africa	26.16	47.77	24.17	21.65	29.12	32.76	31.09	20.36	22.11	21.23	0.69
Income levels											
High income	51.02	79.03	52.53	51.49	53.63	52.01	57.74	44.02	44.57	44.30	0.76
Upper-middle income	35.24	55.57	35.09	35.16	38.80	39.37	40.80	27.39	31.98	29.68	0.73
Lower-middle income	28.31	43.29	26.61	25.75	32.77	34.00	32.49	23.65	24.63	24.14	0.74
Low income	24.61	44.25	22.72	21.15	28.88	30.36	29.47	18.35	21.16	19.76	0.67

Worst — Average — Best

Note: Darker shadings indicate better performances. Countries/economies are classified according to the World Bank Income Group and the United Nations Regional Classifications (April 2012 and 20 September 2011, respectively).

R&D sub-pillar. However, healthy levels of R&D financed by business (ranked 19th) and by abroad (ranked 27th) implied better showings on business sophistication. Ghana ranks 38th on high-tech imports (previously the data were not available). On pillar 6, Knowledge and technology outputs, Ghana lost 15 positions (7 among GII 2011 economies) on patent applications at the PCT (there was a break in the series, Annex 1, Box 1) and 27 (22) on scientific publications. Its performance on knowledge impact has been weak, with a low growth in labour productivity (ranked 63rd, down from 23rd last year), a 74th position in new business density, and a low rank on ISO 9001 quality certificates where it comes in at 137th place (this is a new indictor this year). Overall, however, Ghana still clearly outperforms its regional peers.

Nigeria is ranked 123rd (113th among GII 2011 countries), down from 96th in 2011. The loss of 17 positions compared with 2011 was the result both of worsening

performances on key indicators and of the effect of adjustments to the GII framework (Annex 2). This populous lower-middle income country (the most populated in the region) continues to show a relative strength on the side of the innovation results, ranked 102nd on the Output Sub-Index and 17th on the efficiency ratio (after being in the top 10 in 2011). Its main strengths are in Market sophistication (91) and Creative outputs (76).

In **Southern Africa,** South Africa is ranked 54th, followed by Namibia (73rd), Swaziland (82nd), Botswana (85th), and Lesotho (116th).

South Africa is ranked 54th (52nd among GII 2011 countries), up from 59th in 2011, in great measure because of the adjustments made to the GII model (Annex 2). It tops the regional rankings in the Input Sub-Index (45th), Infrastructure (79th), and Market sophistication (13th). It also benefits from sound Institutions (39th). Its low rankings in Human capital and research (103rd) and Business sophistication (55th) lead to relatively poor showings in Knowledge and technology outputs (61st), Creative outputs (86th), and the Output Sub-Index (73rd).

Swaziland is ranked 82nd (78th among GII 2011 countries), up from 101st in 2011, jumping 23 positions despite being slightly affected by the adjustments made to the GII framework (Annex 2). The best assets of this landlocked lower-middle-income country (the least populous in the region) are its Business sophistication (46th) and Knowledge and technology outputs (40th), which compensate for a feeble Infrastructure (136th) and deficient market conditions for credit, investment, trade and competition (123rd). Swaziland is firmly positioned among innovation learners and ranks 12th in innovation efficiency, a position sustained by a 48th position in patenting at the PCT and an 8th rank in computer and communication services exports (at 64.2% of commercial service exports). Unfortunately, lack of statistics does not allow a more complete analysis.

Botswana is ranked 85th (81st among GII 2011 countries), down from 79th in 2011. This landlocked country has the highest per capita income in the region (at PPP$ 16,279), and yet its ranking is below par. Its Input Sub-Index ranking is relatively high (54th), but does not compensate for a particularly poor ranking in Outputs (121st), leading to the lowest efficiency ratio in the region after Sudan. This is particularly puzzling as Botswana's main strengths are in its Institutions (31st), Human capital and research (62nd), and Business sophistication (67th), all areas in which relative strengths usually have a multiplier effect on the side of innovation results. Some important data points are missing, however, that would allow a more completely accurate assessment of where Botswana stands in innovation results (Annex 3).

Central and Southern Asia (8 economies)

In **Southern Asia,** India comes first (64th), followed by Sri Lanka (94th), the Islamic Republic of Iran (104th), Bangladesh (112th), Nepal (113th), and Pakistan (133rd).

India comes in 1st position in the region, ranked 64th (62nd among 2011 economies, maintaining its 2011 ranking of 62nd). With more than 1.2 billion inhabitants and a GDP per capita of PPP$ 3,703.5 (it is a lower-middle-income country), these rankings place India among the innovation learners. India has relative strength on the Output Sub-Index (ranked 40th, first in the region) over the Input Sub-Index (ranked 96th), therefore achieving a high efficiency ratio, coming 2nd after China in 2012. Its major weaknesses are its Institutions (125th), and Human capital and research (131st), while its best scores are in Market sophistication (46th), Knowledge and technology outputs (47th), and Creative outputs (34th) (see Box 3 for details of BRIC country strengths and weaknesses). With one of the most business-friendly communities being that of the ICT sector—India ranks 4th in computer and communication services exports, at 70.5% of commercial services exports—its 108th and 117th positions in ICT access and use, respectively, reflect the existence of pockets of wealth developing around niche markets and clusters (the software industry in this case), with little trickle down to the rest of society. The inverted progression in the ranking in Human capital and research, with a ranking of 113th in elementary education, 135th in tertiary education, and 55th in R&D is symptomatic of the same phenomenon.

The Islamic Republic of Iran, which comes 2nd in terms of per capita income in the region (PPP$ 12,258.2, an upper-middle-income country) has a rather poor showing at 104th position (98th among GII 2011 countries, down from 95th in 2011), reaching 97th place on the Input Sub-Index and 117th on the Output Sub-Index. Interestingly, it shows good scores on the three pillars traditionally linked to innovation: Human capital and research (ranked 54th), Business sophistication (49th), and Knowledge and technology outputs (73rd). In the latter two areas, its showing in tertiary education (24th), R&D (52nd), patent filings at the national office (23rd), and scientific and technical publications (45th) are noteworthy. Its lower scores in the remaining four

Box 3: BRIC countries show important strengths and several persistent weaknesses

China—ranked 34th in the Global Innovation Index (GII) this year—continues to display strong performance in Knowledge and technology outputs (for which its score is above the average score of the GII top 10), and in Infrastructure and Market and Business sophistication. Areas where improvements would be conducive to higher aggregate GII rankings include Institutions, Human capital and research, and Creative outputs.

The Russian Federation—51st overall this year—comes first among the BRIC countries (Brazil, Russian Federation, India, and China) in Human capital and research by a wide margin. In addition, the country displays good scores in Institutions, Infrastructure, Business sophistication, and Knowledge and technology outputs. Rankings are less satisfying for Market sophistication and Creative outputs.

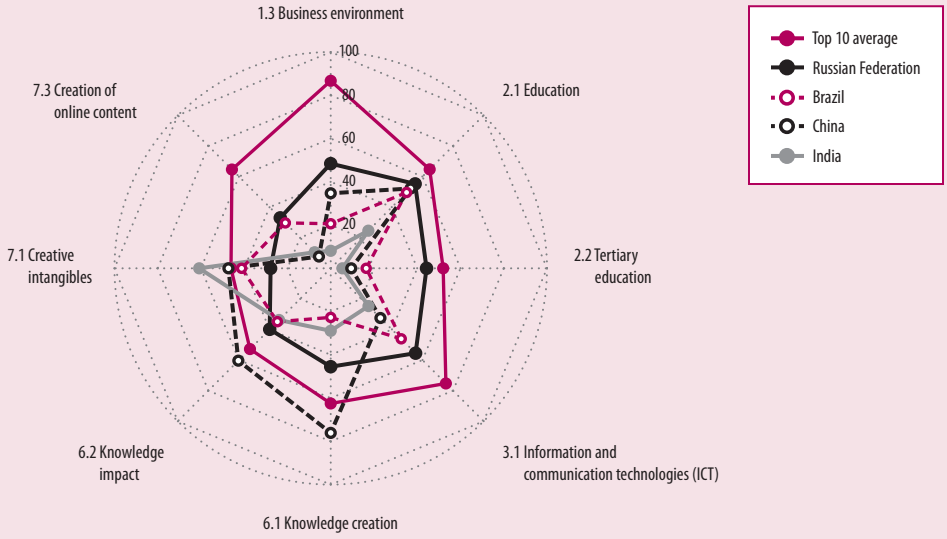
Brazil, at 58th place, offers a distribution of strengths and weaknesses similar to that of the Russian Federation in Institutions, Infrastructure, and both Market and Business sophistication. It comes far behind in Human capital and research (at a level similar to that of China), and last among BRICs in Knowledge and technology outputs. It achieves second place among BRIC countries, after India, on Creative outputs.

India ranks 64th, below Brazil, but with the best score among BRICs in Creative outputs, and it comes second among BRICs in Market sophistication, closely behind China. The innovation front in India continues to be penalized by deficits in Human capital and research, Infrastructure, and Business sophistication, where it comes last among BRICs, and in Knowledge and technology outputs, where it comes in ahead of Brazil only.

Fine-tuning this analysis, there are seven areas in which the four BRIC countries achieve very similar performances: creative goods and services, research and development (R&D), trade and competition, innovation linkages, knowledge absorption, and, to a minor extent, regulatory environment and knowledge diffusion.

There are eight domains, however, in which scores differ substantially: knowledge creation; tertiary education, business environment, elementary education, information and communication technologies (ICT), creative intangibles, and knowledge impact. Figure 3.1 illustrates the relative competitive advantages of each BRIC country in the innovation race and compares this with the average scores for the GII top 10 countries/economies.

Figure 3.1: The sub-pillars of major divergence in scores among BRIC countries



Note: Numbers refer to sub-pillars. Please refer to Appendix III, Sources and Definitions for details.

pillars, however, place it among the countries with a low performance in the region.

Bangladesh, the poorest country in the region, with a per capita income of PPP$ 1,697.3 (a low-income country), is ranked 112th (104th among GII 2011 countries), down from 97th in 2011. Ranked in the top 10 on efficiency in 2011, Bangladesh comes at 56th position in 2012. Its major strength lies in Knowledge and technology outputs, and yet it ranks 74th (69th among GII 2011 countries, losing 25 positions compared with 2011), with deteriorating positions in a majority of indicators. In Creative outputs it ranks 121st, with a particularly poor showing in online creativity (a sub-pillar added this year).

Lower-middle-income **Pakistan** is ranked 133rd (121st among GII 2011 countries), down from 105th position in 2011. With an Output Sub-Index ranking of 110 and an Input Sub-Index of 140, this country is ranked 15th on efficiency (4th in 2011). Its major drop in rankings is in the two output pillars: Knowledge and technology outputs (117th; 107th among 2011 economies, down from 98th in 2011), and Creative outputs (99th; 94th among 2011 economies, 53rd in 2011), the latter in part because of a significant impact from the addition of sub-pillar 7.3 on online creativity, in which Pakistan is ranked 105th.

In **Central Asia,** transition economies Kazakhstan (83rd), Tajikistan (108th), Kyrgyzstan (109th), and Uzbekistan (127th) are all in the bottom half of the rankings.

Kazakhstan is ranked 83rd (79th among GII 2011 countries), up from 84th in 2011. This upper-middle-income transition economy is the wealthiest in the region (PPP$ 13,060.0), yet its performance is somewhat below par. It has a relative advantage on the Input Sub-Index, where it ranks 67th (1st in the region), compared to 105th on the Output Sub-Index, showing one of the lowest efficiency ratios (ranked 131st). The world's largest landlocked economy (9th in the world by territorial area), this country shows relative strengths in Institutions (52nd), Infrastructure (58th), and Business sophistication (62nd), while it could improve its rankings on Human capital and research (85th), Market sophistication (92nd), Knowledge and technology outputs (85th), and Creative outputs (119th).

Latin America and the Caribbean (22 economies)

Latin America and the Caribbean includes only upper- and middle-income economies, except for high-income Trinidad and Tobago. The first seven countries in the regional rankings are upper-middle-income countries.

South American countries show great disparities in rankings. Chile tops the rankings at 39th place, followed by Brazil (58th), Colombia (65th), Uruguay (67th), Argentina (70th), Peru (75th), Guyana (77th), Paraguay (84th), Ecuador (98th), the Plurinational State of Bolivia (114th), and the Bolivarian Republic of Venezuela (118th).

Chile is ranked 39th (38th among GII 2011 countries), keeping its position from 2011, and the only country in the region in the top 40. Among the upper-middle-income economies, it comes in at 5th place in the GII, 4th in Inputs, and 3rd in the Output Sub-Index, after China and Latvia. Chile shows strengths across the board, with the notable exception of Human capital and research (75th), where it comes only in 6th position out of 22 in the region, a result in line with the crisis of tertiary education in the country that was highlighted in 2011. Deficiencies are particularly evident in primary and secondary education, where it ranks 78th in public expenditure per pupil over GDP per capita and 103rd in the pupil-teacher ratio. In the region, it tops the Input Sub-Index (43rd), the Output Sub-Index (34th), Institutions (29th), and Creative outputs (18th).

Brazil follows 19 positions further down the rankings, 2nd among South American countries, at position 58th (56th among GII 2011 countries), down from 47th in 2011 (Box 3). Although Brazil benefitted from the adjustments made to the GII model, it still lost a net of 9 positions compared with 2011 (Annex 2), yet it is at the level expected from its GDP per capita in PPP$. This BRIC country has its relative strength in the Output Sub-Index (52nd), although it lost 18 positions (among GII 2011 countries). With an Input Sub-Index rank of 69, it ranks only 39th on efficiency (down from a top 10 position in 2011). Particularly worrisome are its rankings in business environment (127th) tertiary education (115th), credit conditions, and trade (108th in both).

The Bolivarian Republic of Venezuela is ranked 118th (108th among GII 2011 countries), down from 102 in 2011. This resource-rich economy shows relatively good rankings in Human capital and research (69th), Infrastructure (86th), Business sophistication (48th), and Creative outputs (87th) that, however, do not compensate for big deficiencies in the remaining three pillars: Institutions (140th); and Market sophistication (139th), where it ranks last in the region; and Knowledge and technology outputs (121st). With the lowest ranking in the region in the GII and in the Input Sub-Index (126th), Venezuela's performance deserves improvements.

In **Central America,** Costa Rica comes first in 60th position, followed by Mexico (79th), Belize (80th), Panama (87th), El Salvador (93rd), Guatemala (99th), Nicaragua (105th), and Honduras (111th).

Costa Rica is ranked 60th (58th among GII 2011 countries), down from 45th in 2011 (to some extent to the result of adjustments made to the GII framework, see Annex 2), and 1st in Central America. With a population of 4.7 million, it has lost its positions on all indices: Input Sub-Index (71st/69th among 2011 economies, down from 53rd), Output Sub-Index (53rd/51st down from 37th), efficiency ratio (35th/33rd, down from 29th in 2011), and yet it retains its place among innovation learners. Costa Rica presents two major impediments to the development of its full innovation potential: the conditions for credit and investment are assessed very low (ranked 88th and 131st, respectively), and indeed, the levels of domestic credit to private sector and microfinance (45.9% and 0.2% of GDP, respectively) are relatively low, as well as the level of market capitalization and of stocks traded (ranked 101st and 96th at 4.2% and 0.1% of GDP, respectively).

In the **Caribbean,** Trinidad and Tobago comes first but at the disappointing position of 81st place, which places it among countries performing least well, in addition to the fact that it is a high-income country—the only one in the region—with a relatively high per capita income. It is followed by the Dominican Republic (86th), and Jamaica (91st).

Northern Africa and Western Asia (20 economies)

Israel is ranked 17th (16th among GII 2011 countries), down from 14th in 2011. This high-income country has strong positions across the board, and ranks 17th on the Input Sub-Index, 13th on the Output Sub-Index (38th on efficiency), and 1st in the region in Human capital and research (4th), Market sophistication (9th), and Knowledge and technology outputs (10th). Although it maintained its 1st place in scientific publications and improved its ranking in computer spending, Israel has deteriorating relative positions in all the remaining indicators in Knowledge and technology outputs (ranking 6th in knowledge creation, 2nd in 2011; and 12th in knowledge diffusion, 8th in 2011). Israel is still, however, firmly positioned among the global innovation leaders.

Cyprus (EU12) is ranked 28th (27th among GII 2011 countries), up from 28th in 2011. This island of merely 0.8 million people that is now part of the European Union ranks 1st in the region in Institutions (at 15th, its best score), with additional strengths in Market sophistication (20th) and Knowledge and technology outputs (25th), the latter corresponding to a ranking of 30th (5th in the region) in Human capital and research.

The six countries of the **Gulf Cooperation Council (GCC)**—Qatar, the UAE, Bahrain, Oman, Saudi Arabia, and Kuwait—come next in the regional rankings (in that order). With populations ranging from 1.1 million (Bahrain) to 28.2 million (Saudi Arabia) and per capita incomes ranging from PPP$ 24,056.7 (Saudi Arabia) to PPP$ 102,891.2 (Qatar), these economies present distinct profiles, with, however, one common feature: particularly low rankings in Knowledge and technology outputs and efficiency (above 90th on the latter, with the exception of Kuwait, which is ranked 54th). In addition, they attain rankings that are well below those of their peers in GDP per capita. All place among the countries performing less well—especially Qatar, the UAE, and Kuwait. Chapter 5 studies recent efforts in the GCC to change the situation, which is shared with other resource-rich economies in the world, while Chapter 3 analyses in further detail the situation in Saudi Arabia.

Qatar is ranked 33rd (32nd among GII 2011 countries), down from 26th in 2011. Qatar was particularly affected by the adjustments made to the GII framework (Annex 2). This resource-rich country of 1.8 million with the highest GDP per capita in the sample (PPP$ 102,891.2) has a relative advantage in the Input Sub-Index (30th) over the Output Sub-Index (41st), with the 1st regional ranks in Business sophistication (8th) and Creative outputs (19th). Its ranking of 14th in Human capital and research is sustained by a good score in R&D that is not entirely conclusive, because it is based on a single indicator (a survey question on the quality of research institutions). Within the same pillar, low levels of expenditure in education, a low score at the PISA examination, and a tertiary enrolment ratio of merely 10% (ranked 117th) are definitely of concern. Also worrisome are an 84th position in Market sophistication, and a 77th position in Knowledge and technology outputs. With one of the lowest indicator-coverages this year (at 72%), a proper assessment of Qatar is particularly difficult (Annex 3).[28] This is also an appeal to Qatar to improve the data situation.

Northern Africa and Western Asia underwent a wave of upheavals known as the Arab Spring starting in late December 2010; for some of these countries, the upheaval is continuing. Some data points included in the GII are anterior to that period, and therefore do not accurately

reflect the situation of the countries concerned—they are, at most, indications of the situation prevailing at the moment the events erupted. It will be interesting to study the effect of these revolutions on innovation and related policies next year.

Tunisia, for example, is ranked 1st in **Northern Africa,** at position 59th (57th among GII 2011 countries), up from 66th position in 2011. Although it does better than Morocco (88th), Egypt (103rd), and Algeria (124th), it cannot be ruled out that its ranking will vary considerably in future editions of the GII.

Algeria is ranked 124th (114th among GII 2011 countries), up 11 positions from 125th in 2011, one of the best performances in the region. Its relative strength is in the Input Sub-Index (101st), which, for a country at its income level, places it among the countries with a low performance. With increased data coverage, some real strengths in areas previously reported as not available were revealed this year—notably in computer and communications service imports (ranked 3rd), computer and communications service exports (21st), foreign direct investment net outflows (75th), recreation and culture consumption (86th), and creative services exports (22nd). Algeria comes in at 134th in the Output Sub-Index, however, reaching one of the lowest efficiency ratios (ranked 136th, last in the region).

In **Western Asia,** the rankings are led by Jordan (56th), followed by Lebanon (61st), Armenia (69th), Georgia (71st), Turkey (74th), and Azerbaijan (89th) in the second half of the global rankings, with the Syrian Arab Republic (132nd) and Yemen (139th) lagging behind.

Jordan is ranked 56th (54th among GII 2011 countries), down from 41st in 2011. Its loss of 13 positions does not affect its impressive showing in the rankings as a clear innovation learner. Although its economy has been decelerating over the past two years, Jordan exhibited spectacular growth averaging 7.6% of GDP in the period 2004–09. Its fall in the rankings this year is primarily due to deteriorating positions in Market and Business sophistication as well as Knowledge and technology outputs. Jordan's 81st position in the new sub-pillar on online creativity implied a drop from 10th to 24th in Creative outputs. On a positive note, Jordan continues to improve its standing in Institutions, Human capital and research, and Infrastructure.

The Syrian Arab Republic is ranked 132nd (120th among GII 2011 countries), down from 115th in 2011. The country has experienced political and other instability since 2011. Because it is one of the countries with the lowest indicator coverage (76.2%), a complete analysis is difficult. It is, however, noteworthy that all its pillar and index rankings are in the red, its best position being 105th in Human capital and research.

South East Asia and Oceania (17 economies)

The region includes 17 economies that are very dissimilar in terms of their level of development. In particular, a few countries were particularly strongly affected by the adjustments made to the GII model: Viet Nam lost 23 positions for that reason alone; Mongolia, China, the Republic of Korea, Japan, and Indonesia were also affected (Annex 2).

Of the seven **high-income economies,** Singapore (3rd), Hong Kong (China) (8th), New Zealand (13th), the Republic of Korea (21st), Australia (23rd), and Japan (25th) cover the first six positions in the region. Singapore in addition tops the regional rankings in the Input and Output Sub-Indices, Human capital and research, Business sophistication (1st globally) and Knowledge and technology outputs, while Hong Kong (China) comes in at 1st position in the region in Market sophistication (1st globally) and Creative outputs.

The Republic of Korea is ranked at 21st (20th among GII 2011 countries), down from 16th position in 2011. It is one of the countries most affected by the new modelling choices (Annex 2), but nonetheless it continues to be firmly placed among the innovation leaders. Its scores improved in three pillars: Infrastructure (3rd, the best ranking in the region), Business sophistication (25th), and Knowledge and technology outputs (9th), with a jump of 35 positions on knowledge impact (driven essentially by a healthy growth in labour productivity and by ISO 9001 quality certificates, a new indicator). The Republic of Korea ranks 1st on the ICT sub-pillar and on six indicators including tertiary enrolment, stock market dynamism, and patent applications at the national office. In knowledge creation (patents, utility models, scientific publications), the Republic of Korea lost its 1st position in the GII 2011 to Switzerland and Sweden, to reach the 3rd position. The main negative impact on its ranking is triggered by the inclusion of the sub-pillar on online creativity, on which it ranks 48th. Coupled with a deteriorating position in trademark registrations and the assessment of the business community of its use of ICT in business and organizational models (78th in creative intangibles), this led to a ranking of 59th in creative outputs (down from 27th in 2011). Given the average reliability of these data for this Asian economy, the case of the

Box 4: A multi-speed Europe

The GII 2012 rankings confirm that European countries continue to progress at different speeds and on different levels.

Northern Europe and Switzerland continue to be strong. This group includes not only Switzerland (ranked 1st in the GII) and three Nordic countries—Sweden (3rd), Finland (4th), and Denmark (7th)—but also the United Kingdom (UK, at 5th), the Netherlands (6th), and Ireland (9th). These countries have common strengths in robust institutions and cohesive societies; well-developed infrastructures; skilled labour forces; a high level of assimilation of information and communication technologies (ICTs) and of adoption of new technologies; well-developed medium- and high-tech sectors; open economies with dynamic financial markets; and sophisticated business and academic communities involved in research, patenting, and creativity.

Other economies in Western Europe have strengths across the board. This is the case of Luxembourg (11th), Germany (15th), Belgium (20th), Austria (22nd), and France (24th), which remain in the top 30.

Southern Europe has no representative in the top 10. Malta (16th) is one of the few making it to the top 30, along with Spain and Slovenia. Southern Europe offers generally a more worrisome situation, with lower rankings by Portugal (35th), Italy (36th), Croatia (42nd), Montenegro (45th), Serbia (46th), Macedonia, FYR (62nd), Greece (66th), Bosnia and Herzegovina (72nd), and Albania (90th). Portugal, however, is one of the few countries in the South to have strongly increased business and total R&D expenditures consistently throughout the crisis, a reflection of a previously agreed strong innovation policy.[1] For some countries, notably Greece, those relatively low rankings in the GII are coupled with major problems at the macroeconomic level.

The Baltic countries were very severely hit by the crisis in 2008–09 with severe drops in their GDPs of 18% in Latvia, 15% in Lithuania, and 14% in Estonia in 2009.[2] Nonetheless, they have all increased their rankings on all four indices (GII, Input, Output, and Efficiency), sometimes also because innovation expenditures (the nominator in many variables) fell less rapidly than the plunging GDP (the denominator)—leading to an overall positive but sometimes misleading effect in the rankings. Lithuania and Latvia, for instance, have actually seen their R&D expenditures fall in absolute terms during the crisis and have not recovered to 2007 levels to this day. [3] The situation in Estonia is different, as, on average, it has seen its business and total R&D expenditures levels increase significantly between 2007 and 2010.[4]

In Eastern Europe there are some bright developments in terms of GII rankings, such as the relatively good performance of the Republic of Moldova. The Czech Republic, Hungary, and Ukraine also do relatively well. Looking again at the level of absolute business and total R&D expenditures, some countries in the East are the bright spot of Europe. Countries such as Bulgaria, Hungary, and Slovenia have seen their business and total R&D expenditures increase consistently and strongly.

Notes

1. Calculations based on Eurostat, Business enterprise R&D expenditure (BERD) by economic activity (NACE Rev. 2) and Total intramural R&D expenditure (GERD) by sectors of performance.
2. IMF, 2012.
3. Calculations based on Eurostat, Business enterprise R&D expenditure (BERD) by economic activity (NACE Rev. 2) and Total intramural R&D expenditure (GERD) by sectors of performance.
4. Calculations based on Eurostat, Business enterprise R&D expenditure (BERD) by economic activity (NACE Rev. 2) and Total intramural R&D expenditure (GERD) by sectors of performance. See also OECD, 2012, forthcoming.

Republic of Korea and its innovation performance deserve separate analysis.

With the second-highest GDP per capita in the region after Singapore, **Brunei Darussalam** is ranked 8th regionally and 53rd globally (51st among GII 2011 countries), up from 75th in 2011. Brunei Darussalam gains 24 positions for the largest jump in the rankings, mostly the result of improvements across the board, although it also benefitted from the adjustments made to the GII framework (Annex 2). Moreover, it is one of only two countries (jointly with Latvia) to have improved its ranking on all seven pillars since 2011.[29] In spite of all these encouraging results, Brunei Darussalam continues to be placed among the underperformers, following other resource-rich countries in that same situation in the Middle East and Latin America.

Among **upper-middle-income countries**, Malaysia (32nd) and China (34th) do very well (descriptions above show them to be among the best performers by income group), while Thailand ranks 57th (55th among GII 2011 countries), down from 48th position in 2011. At the bottom of the rankings we find lower-middle and low-income countries: Mongolia (68th, discussed above), Viet Nam (76th), the Philippines (95th), Indonesia (100th), Fiji (101st), Cambodia (129th), and Lao People's Democratic Republic (138th).

Viet Nam is ranked 76th (74th among GII 2011 countries), down from 51th position in 2011. Viet Nam is the second-most-affected country by adjustments made to the GII framework in 2012, to which its drop of 23 positions in the rankings is fully attributed (had the GII 2011 not been modified, Viet Nam would have kept its place in the rankings). With a per capita income of only

PPP$ 3,354.8 Viet Nam has a very good showing, however, among the innovation learners, particularly in the Output Sub-Index (59th) compared to the Input Sub-Index (83rd), and ranking 27th on efficiency. In addition, the availability of data this year for the first time on tertiary inbound and outbound mobility revealed a weakness in the tertiary sector. The main drop occurs in pillar 7 Creative outputs (from 31st to 70th (66th among 2011 economies), essentially because of a fall in trademark registrations and a relatively weak performance on the new pillar 7.3, where its best showing is on country-code top-level domains (ranked 49th).

Europe (41 countries)

Switzerland (1st) and the five **Nordic countries** Sweden (2nd), Finland (4th), Denmark (7th), Norway (14th), and Iceland (18th) have very strong performances globally as well as regionally, where they are within the top 20 globally on the GII and its two sub-indices.

Within the European Union (EU), among the 15 original EU countries **(EU15)**,[30] six are in the top 10 (Sweden, Finland, the UK, the Netherlands, Denmark, and Ireland), followed by Luxembourg and Germany. The rest of the EU15 countries—Belgium, Austria, France, and the four Mediterranean countries Spain, Portugal, Italy, and Greece—have lost key positions to some of the 12 countries that recently acceded to the EU (the EU12 group).[31]

The **EU12 group** is led by high-income countries Malta (16th), followed by Estonia in the top 20, Slovenia, the Czech Republic, and Latvia in the top 30, and Hungary, Lithuania, Slovakia, Bulgaria, Poland, and Romania.

Among **non-EU transition economies** in Europe, Croatia leads the rankings in 42nd position globally (26th in Europe), followed by Montenegro, Serbia, the Republic of Moldova, the Russian Federation, the former Yugoslav Republic of Macedonia, Ukraine, Bosnia and Herzegovina, Belarus, and Albania. See Box 4 for a review of the different paces demonstrated by Western European countries.

Ranked 51st (49th among GII 2011 countries), up seven positions from 56 in 2011, the **Russian Federation** benefitted strongly from the adjustments to the GII model (Annex 2). With a population of 142.4 million (the most populous on the continent) and a GDP per capita of PPP$ 16,687.4, this upper-middle-income country comes second among BRIC countries (Box 3), showing a relative strength in the three pillars traditionally linked to innovation activities: Human capital and research (43rd), Business sophistication (43rd), and Knowledge and technology outputs (32nd), a feature that had already appeared in 2011 (when it ranked 38th, 37th, and 34th on those three pillars).

Key messages and conclusions

1. **A new dynamic of innovation is emerging around the world regardless of the deep and persistent innovation divides between countries and regions.** In 2012, the dynamics of innovation continue to be affected by the emergence of new successful innovators. In all areas of innovation—new products, processes, business models, and policies—different parts of the world have come up with their own particular 'innovation models', including at the more localized level in developing countries. This is exemplified by the range of countries from different continents ranking in the top 20 of the Global Innovation Index (GII); it is also evident in the impressive performances of emerging economies such as China, the Republic of Moldova, Jordan, India, Mongolia, and Viet Nam, (in order of performance). Despite these positive trends, large divides persist in innovation performances across the world. The GII confirms the intuitive expectation that average rankings increase with income levels. Large innovation divides also exist across geographic regions, especially when comparing average performances across high-income countries with those of other regions, such as Africa and large parts of Asia and Latin America. Among Sub-Sahara African countries, a few—such as Mauritius and South Africa—perform well. However, many other countries—such as Botswana, Gabon, Angola, and Sudan—are lagging behind economies from other regions that have similar GDP per capita levels. The GII results, however, also confirm that small improvements in one or two dimensions can have a positive impact on innovation and related rankings for low-ranked economies.
2. **Three groups of countries can be identified by their innovation performance in relation to their income levels.** Among the **innovation leaders** we find high-income countries such as Switzerland, Singapore, the Nordic countries, New Zealand, Malta, Israel, and Estonia. These economies have succeeded in creating innovation ecosystems where investments

in human capital thrive in fertile and stable innovation infrastructures to create impressive levels of innovation outputs. The group of **innovation learners** includes Latvia, Malaysia, China, Montenegro, Serbia, the Republic of Moldova, Jordan, Ukraine, India, Mongolia, Armenia, Georgia, Viet Nam, Swaziland, Ghana, and Kenya. These middle-income economies demonstrate rising levels of innovation achievement as a result of improvements in institutional frameworks, a skilled labour force with an expanded tertiary education, better innovation infrastructures, a deeper integration with global credit investment and trade markets, and a sophisticated business community—even if progress in these dimensions is not uniform across all segments of the country. **Countries with weaknesses in their innovation system** include a mix of high-income economies such as Qatar, the United Arab Emirates (UAE), Brunei Darussalam, Kuwait, and Greece as well as middle-income countries including Botswana, the Islamic Republic of Iran, Gabon, Venezuela, Algeria, the Syrian Arab Republic, Angola, and Sudan.

3. **Pay attention to *hysteresis* effects in innovation — investing in innovation in times of crisis is essential.** The crisis has slowed the introduction of new products or processes as a consequence of increased business uncertainty. Expenditures on total R&D in OECD countries shrunk by 1.6% in real terms in 2009 and for the first time since 1993. The decrease is mainly driven by a sharp reduction of expenditure in business (–4.5%). Large multinational firms have recently accumulated large cash stocks that are not reinvested. In other sectors, particularly higher education, R&D spending kept growing by almost 5%, also supported by government pledges to support R&D in their stimulus plans.[32] There is a risk, however, that as of 2011 R&D-related government stimuli will cease to exist. Importantly, R&D and innovation cannot be stopped and then simply picked up again when the economy recovers, and hysteresis effects in innovation lead to innovation being less dynamic even when the economy has recovered. On a positive note, in the following countries business R&D spending has increased throughout the crisis: Turkey, Slovakia, the Republic of Korea, Poland, Ireland, Hungary, and Portugal.[33] In other countries—such as the USA, Germany, France, and the Russian Federation—firms held their R&D investments steady.

4. **A focus on the systemic dimension of innovation and building strong linkages across the innovation ecosystem is crucial.** More attention needs to be put on the interplay of institutions and the interactive processes in the creation, application, and diffusion of knowledge, human capital, and technology. Policy makers should pay attention to the transfer of scientific results and inventions and their application to societal challenges in high- and lower-income countries alike. Innovation leaders (such as the Scandinavian countries) have improved their linkages across the various innovation actors, most notably with universities, public research, the government, the private sector, and increasingly also the not-for-profit sector such as philanthropies. The importance of addressing the systemic nature of innovation is evident in the case of the group of resource-rich economies (as in the Gulf Cooperation Council, or GCC), which—despite having made significant investments in human capital over the last several years—have yet to reap the innovation benefits from their actions. The GII also highlights the fact that other resource-rich countries have not started to reinvest into sound innovation infrastructure and human capital at par with their level of GDP.

5. **Policy discussions in Europe have to include a focus on innovation, not just austerity, to bridge gaps in a two-speed continent.** A two-speed Europe is emerging, with innovation leaders in northern Europe (Sweden, Finland, the United Kingdom, the Netherlands, Denmark) and countries that perform less well in innovation in southern Europe. European policy discussions need to place renewed emphasis on achieving an appropriate policy mix that fosters growth and employment while promoting sustainable public finances. Even if innovation cannot cure the most immediate financial difficulties, it is a crucial element of sustainable growth. Looking at the level of absolute business and total R&D expenditures, some countries in the East are the bright spot of Europe. Countries such as Bulgaria, Hungary, and Slovenia have seen their business and total R&D expenditures increase consistently and strongly throughout the crisis.

6. **Northern America continues to be an innovation leader but needs to address what could become chronic weaknesses.** The central role of the USA for global innovation hardly needs underlining: its universities, its research institutions, its innovation clusters, and its firms are world class and continue to be a magnet and a model for other countries. Still, the innovation rankings of the USA and also Canada point to the potential development of weaknesses. A thorough analysis of USA performance on a series of 23 key indicators, when compared with the performance of the two top leaders in the overall GII rankings (Switzerland and Sweden), shows that the USA is, in the majority of cases, either performing less well or seeing its competitive advantage decrease in the following areas: current expenditure on education as a percentage of gross national income, percentage of graduates in science and engineering, researchers headcount per million people, gross expenditure on R&D as a percentage of GDP, percentage of R&D performed by business, resident patent application at the national office (over GDP in PPP$), and scientific and technical publications (over GDP in PPP$). Although the USA continues to demonstrate great strengths in many innovation outputs, and although the country is still the leader of innovation in many respects—in particular, in creating world-class technology start-ups and hosting innovative multinationals with excellent linkages to the research system—policy leaders would be well advised to pay special heed to pressure points relating to human resources and openness to global talent. Canada—having seen its rank on all indices of the GII fall—is the only country this year to leave the top 10 in the GII. Canada's GII country profile mirrors the current debate in that country, where observers deplore the low levels of support for R&D in many areas of the Canadian private sector, the faltering scientific skills of the labour force, and a generally weakening position on innovation as demonstrated by its 22nd rank on the Knowledge and technology outputs pillar.

7. **BRICs need to renew their innovation drivers to live up to their expected potential.** The BRIC countries (Brazil, the Russian Federation, India, and China) have been seen as drivers of the global economic engine since 2008 and the slowdown in high-income economies. But these countries too are slowing down, and despite their unrealized potential, they need to continue to invest in building their innovation infrastructures. China and India come in at 1st and 2nd place, respectively, in the Innovation Efficiency Index rankings, demonstrating a great ability to translate pockets of excellence in their innovation infrastructures into valuable innovation outputs. China's performance on the key Knowledge and technology outputs pillar is impressive—the country is outpaced only by Switzerland, Sweden, Singapore, and Finland. However, both of these countries have weaknesses in their innovation infrastructures—for example, ICT is poor in China and Human capital and research needs improvement in India—that must be addressed if these countries wish to resume higher levels of growth and innovation. Brazil has suffered the largest drop among the BRICs. This drop demonstrates the importance of addressing structural weaknesses in innovation ecosystems in the face of a global slowdown in growth. The country profiles reveal important differences across the four BRIC countries, but they all have in common governance and institutional challenges that need to be addressed if they wish to live up to their expected innovation potentials.

8. **Measuring innovation is a moving target.** Based on discussions with innovation experts and inputs from the Advisory Board and Knowledge Partners, the GII model is revised every year in a transparent exercise to improve the way innovation is measured. This year, for example, the Infrastructure pillar was reorganized to single out ecological sustainability in a new sub-pillar. In addition, a new sub-pillar on online creativity was added to the Creative outputs pillar. Such evolution will continue over the years as new metrics that provide better and more accurate measures of innovation, capabilities, and impact become available. The GII is not meant to be the definitive ranking of economies with respect to innovation. The GII is more concerned with improving the 'journey' to better measuring and understanding innovation; and with identifying targeted policies, good practices, and other levers to foster innovation.

The GII model does not capture all dimensions of innovation across continents. In GII 2011, we stated:

More formal analysis, beyond the scope of this Report, is required to explore in depth the linkages and dynamics between development stages and innovation phenomena in depth. . . . Innovation is a multi-stakeholder effort, with many different roles for the different actors. Governments have a role in setting the right environment and policies. Firms have to improve their innovation readiness and innovation results—they must protect and leverage their intellectual property, increase their investment in R&D, and make better use—through international trade, linkages, and the adoption of ICT—of innovations developed elsewhere. Societies and individual citizens also have to look at different aspects that help them create a broader capacity for innovation. All of these stakeholders must collaborate in order to foster and sustain innovation.

The following analytical chapters included in this year's report illustrate the richness of innovation, which is difficult to define, much less to encapsulate in a particular metric.

Notes

1 IMF, 2012; OECD, 2012.

2 See on this topic and first assessment about the effect of the crisis: OECD, 2009, 2010; WIPO, 2010, 2011a; Archibugi and Filippetti, 2011; and Filippetti and Archibugi, 2011. See also the upcoming OECD *Science, Technology and Industry Outlook 2012* (OECD, 2012 forthcoming).

3 OECD, 2012 forthcoming.

4 OECD Main Science and Technology Indicators.

5 EC, 2011.

6 OECD, 2009.

7 WIPO, 2011b.

8 See Chapter 9, contributed by ITU and INSEAD; Chapter 10, contributed by ISOC; and Chapter 11, contributed by Google.

9 Athreye and Yang, 2011; WIPO, 2011b.

10 Freeman and Soete, 2007.

11 See Chapter 4 of the GII 2012.

12 Ray and Ray, 2010; WIPO, 2011b.

13 For a fuller introduction to the Global Innovation Index, see INSEAD, 2011. Examples of other composite innovation indices were reviewed in the GII 2011. More recently, the Global Innovation Policy Index of the Information Technology and Innovation Foundation (2012), which is quite complementary to the GII, has been formulated.

14 Eurostat and OECD, 2005.

15 OECD, 2010; INSEAD, 2011; WIPO, 2011b.

16 GII 2011; OECD Scoreboard, 2011; WIPO, 2011b.

17 INSEAD 2011; OECD Scoreboard, 2011; WIPO, 2011b.

18 This was 4.1% from 2008. Only 5.23% of data points date from earlier years in the period 2001–07. In addition, the GII is calculated on the basis of 10,274 data points (compared with 11,844 in case of complete series), implying that 13.3% of data points are missing. Data Tables (Appendix II) include the reference year for each data point; in addition, missing data are marked as not available (n/a). Appendix II provides tables for each of the 84 indicators that make up the Global Innovation Index 2012. The Data Tables are included in the digital copy only and are available online at http://globalinnovationindex.org.

19 This pillar was entitled 'Scientific outputs' in the 2011 GII.

20 Beyond the use of WIPO data, we collaborate both with public international bodies (such as the International Labour Organization, the OECD, UNESCO, and the World Bank) and private organizations (such as the ISO, the Graduate Management Admission Council, Thomson Reuters, ZookNIC, and Google) to obtain the best data on innovation measurement globally.

21 Countries are classified according to the World Bank classification. Economies are divided according to 2010 gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low-income, US$1,005 or less; lower-middle-income, US$1,006 to US$3,975; upper-middle-income, US$3,976 to US$12,275; and high-income, US$12,276 or more.

22 This year the regional groups are based on the United Nations Classification: EUR = Europe; NAC = Northern America; LCN = Latin America and the Caribbean; CSA = Central and Southern Asia; SEAO = South East Asia and Oceania; NAWA = Northern Africa and Western Asia; and SSF = Sub-Saharan Africa.

23 Caution should be exercised in directly comparing ranks across years with previous editions of the GII report because the model has evolved, as have the variables that are included and particular countries covered (Annex 2).

24 The series was winsorized because of economies with high values distorting the distribution, explaining the tie in ranking with Hong Kong (China), Singapore, and Luxembourg, which achieve higher percentages of exports of goods of services over GDP than Ireland.

25 IMF, 2012.

26 IMF, 2012.

27 IMF, 2012.

28 In fact, the JRC Audit, which assesses the reliability of rankings, by, among others, imputing missing data, revealed that there is not much room for complacency with Qatar's ranking, as it is in the upper range of the 90% confidence interval [32, 42] because of missing data.

29 As it should be, 2012 rankings were recalculated among the 125 countries included in GII 2011 only. In that case, the rankings in the seven pillars of Brunei Darussalam are, respectively, 26 and 48 (pillar 1), 60 and 77 (pillar 2), 50 and 115 (pillar 3), 46 and 46 (pillar 4), 79 and 96 (pillar 5), 77 and 88 (pillar 6), and 49 and 87 (pillar 7).

30 The EU15 group includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. The EU15 includes three Nordic countries: Denmark, Finland, and Sweden.

31 The EU12 group includes Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia.

32 OECD Main Science and Technology Indicators database, February 2012.

33 OECD Main Science and Technology Indicators database, February 2012.

References

Archibugi, D., and A. Filippetti. 2011. 'Is the Economic Crisis Impairing Convergence in Innovation Performance across Europe?' *Journal of Common Market Studies* 49 (6): 1153–82.

Athreye S., and Y. Yang. 2011. 'Disembodied Knowledge Flows in the World Economy'. *WIPO Economics Research Working Papers* No. 4. Geneva: World Intellectual Property Organization.

EC (European Commission). 2011. *The 2011 EU Industrial R&D Scoreboard.* Brussels: European Commission.

Eurostat and OECD. 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data.* 3rd edition. Paris: OECD.

Filippetti, A., and D. Archibugi. 2011. 'Innovation in Times of Crisis: National Systems of Innovation, Structure, and Demand'. *Research Policy* 40 (2): 179–92.

Freeman, C., and L. Soete. 2007. 'Science, Technology and Innovation Indicators: The Twenty-First Century Challenges'. In *Science, Technology and Innovation Indicators in a Changing World: Responding to Policy Needs,* Chapter 15. Paris: OECD.

IMF (International Monetary Fund). 2012. *World Economic Outlook (WEO): Growth Resuming, Dangers Remain.* April 2012. Washington, DC: IMF.

INSEAD. 2011. *The Global Innovation Index 2011: Accelerating Growth and Development.* Fountainebleau: INSEAD.

OECD (Organisation for Economic Co-operation and Development). 2009. *Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth.* Paris: OECD. Available at http://www.oecd.org/dataoecd/59/45/42983414.pdf.

———. 2010. *The OECD Innovation Strategy: Getting a Head Start on Tomorrow.* Paris: OECD.

———. 2011. *OECD Science, Technology and Industry Scoreboard 2011.* Paris: OECD.

———. 2012. *OECD Economic Outlook,* No. 91, May 2012. Paris: OECD.

———. 2012, forthcoming. *Science, Technology and Industry Outlook.* Paris: OECD.

Ray, P. K., and S. Ray. 2010. 'Resource Constrained Innovation for Emerging Economies: The Case of the Indian Telecommunications Industry'. *IEEE Transactions on Engineering Management* 57 (1): 144–56.

WIPO (World Intellectual Property Organization). 2010. *World Intellectual Property Indicators 2011.* Economics and Statistics Division, December 2011. Geneva: WIPO.

———. 2011a. Survey on Patenting Strategies in 2009 and 2010 to Better Understand How Users of the PCT System Responded to the Economic Crisis. Economics and Statistics Division, January 2011, Geneva: WIPO.

———. 2011b. 'The Changing Nature of Innovation and Intellectual Property'. In *World Intellectual Property Report 2011: The Changing Face of Innovation,* Chapter 1. Geneva: WIPO. Available at http://www.wio.int/econ_stat/en/economics/publications.html.

The Global Innovation Index Conceptual Framework

The Global Innovation Index (GII) relies on two sub-indices, the Innovation Input Sub-Index and the Innovation Output Sub-Index, each built around pillars.

Each pillar is divided into three sub-pillars and each sub-pillar is composed of individual indicators, for a total of 84 indicators (Figure 1; refer to Appendices III Sources and Definitions and IV Technical Notes for details on sources and computation of scores, respectively).

A table is included for each pillar that provides a list of its indicators; their type (composite indicators are identified with an asterisk '*', survey questions with a dagger 'ŧ', and the remaining indicators are hard data); their weight (indicators with half weight are identified with the letter 'a'); and the direction of their effect (indicators for which higher values imply worse outcomes are identified with the letter 'b'). The table then provides for each indicator the average values (in their respective units) per income group (World Bank classification) and for the whole sample of 141 economies retained in the final computation (Tables 1a through 1g).

The Innovation Input Sub-Index

The GII has five enabler pillars: Institutions, Human capital and research, Infrastructure, Market sophistication, and Business sophistication. Enabler pillars define aspects of the environment conducive to innovation within an economy.

Institutions

Nurturing an institutional framework that attracts business and fosters growth by providing good governance and the correct levels of protection and incentives is essential to innovation. The Institutions pillar captures the institutional framework of a country (Table 1a).

The political environment sub-pillar includes three indices that reflect perceptions of the likelihood that a government might be destabilized; the quality of public and civil services, policy formulation, and implementation; and perceptions on violations to press freedom.

The regulatory environment sub-pillar draws on two indices aimed at capturing perceptions on the ability of the government to formulate and implement cohesive policies that promote the development of the private sector and at evaluating the extent to which the rule of law prevails (in aspects such as contract enforcement, property rights, the police, and the courts). The third indicator evaluates the cost of redundancy dismissal as the sum, in salary weeks, of the cost of advance notice requirements added to severance payments due when terminating a redundant worker.[1]

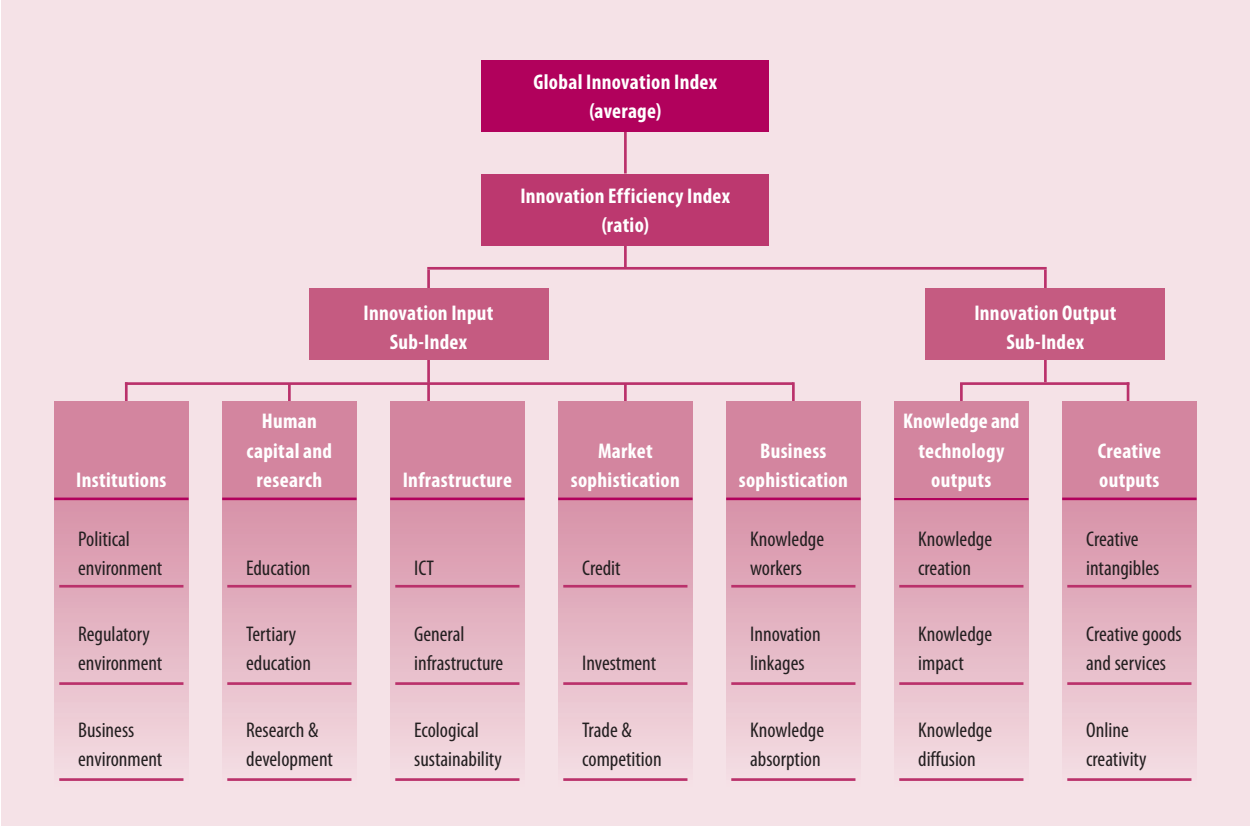
The business environment sub-pillar expands on three aspects that directly affect private entrepreneurial endeavours by using three World Bank indices on the ease of starting a business;[2] the ease of resolving insolvency (based on the recovery rate recorded as the cents on the dollar recouped by creditors through reorganization, liquidation or debt enforcement/foreclosure proceedings);[3] and the ease of paying taxes.[4] Changes to the business environment sub-pillar were driven by the need to acknowledge expert opinion; capture better multi-dimensional phenomena; and incorporate a series of methodological changes adopted by the World Bank. The World Bank's changes included the establishment of a threshold (32.5% this year) in the inclusion of the total tax rate, with the intention "to mitigate the effect of very low tax rates on the ranking on the ease of paying taxes".[5]

Human capital and research

The level and standard of education and research activity in a country are the prime determinants of the innovation capacity of a nation. This pillar tries to gauge the human capital of countries (Table 1b).

The first sub-pillar includes a mix of indicators aimed at capturing achievements at the elementary and secondary education levels. Education expenditure and school life expectancy are good proxies for coverage. Public expenditure per pupil gives a sense of the level of priority given to

Figure 1: Framework of the Global Innovation Index 2012



education by the state. The quality of education is measured through the results to the Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA), which examines 15-year-old students' performances in reading, mathematics, and science, as well as the pupil-teacher ratio.

The OECD PISA assessment is made every three years. The 2009 data used in the GII 2011 were, however, complemented this year with the addition of scores for eight countries that underwent the PISA assessment in 2010: Costa Rica, Georgia, India (Himachal Pradesh and Tamil Nadu), Malaysia, Malta, Mauritius, the Republic of Moldova, and the Bolivarian Republic of Venezuela (Miranda).

Higher education is crucial for economies to move up the value chain beyond simple production processes and products. The sub-pillar on tertiary education aims at capturing coverage (tertiary enrolment); the priority given to the sectors traditionally associated with innovation (with a series on the percentage of tertiary graduates in science and engineering, manufacturing, and construction);[6] and the inbound and gross outbound mobility of tertiary students,[7] which play a crucial role in the exchange of ideas and skills necessary to innovation.

The last sub-pillar, on R&D, measures the level and quality of R&D activities, with indicators on researchers (headcounts), expenditure, and perceptions of the quality of scientific and research institutions (a survey question).

Infrastructure

In the 2011 GII, the Infrastructure pillar included three sub-pillars: Information and communication technologies (ICT), energy supply, and infrastructure. In 2012, the last two sub-pillars were reshuffled to render most explicit the importance, on one hand, of a good general infrastructure (new sub-pillar 7.2) and on the other hand of ecological sustainability (new sub-pillar 3.3, enriched with two indicators) (Table 1c).

A good and ecologically friendly communication, transport, and energy infrastructure facilitates the production and exchange of ideas, services, and goods and feeds into the innovation system through increased productivity and efficiency, lower

transaction costs, better access to markets, and sustainable growth.

The ICT sub-pillar includes four indices developed by international organizations on ICT access, ICT use, online service by governments, and online participation of citizens.

The sub-pillar on general infrastructure includes two indicators related to electricity supply (the average of electricity output and consumption in kWh per capita); a composite indicator on the quality of trade- and transport-related infrastructure (e.g., ports, railroads, roads, and information technology); and gross capital formation, which consists of outlays on additions to the fixed assets and net inventories of the economy, including land improvements (fences, ditches, drains); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

The sub-pillar on ecological sustainability includes three indicators: GDP per unit of energy use (a measure of efficiency in the use of energy), the Environmental Performance Index of Yale and Columbia University, and the number of certificates of conformity with standard ISO 14001 on environmental management systems issued. Reflecting the increased importance of green growth and innovation, the last two variables were included in this edition of the GII for the first time.[8] In future editions, the theme of green growth and innovation will receive more and more attention. In the course of the next year adequate metrics for this objective will be assessed with the relevant experts.

Market sophistication

The ongoing global financial crisis has underscored how crucial the availability of credit, investment funds, and access to international markets are for businesses to prosper. The Market sophistication pillar has three sub-pillars structured around market conditions and the total level of transactions (Table 1d).

The credit sub-pillar includes a measure on the ease of getting credit,[9] aimed at measuring the degree to which collateral and bankruptcy laws facilitate lending by protecting the rights of borrowers and lenders, as well as the rules and practices affecting the coverage, scope, and accessibility of credit information. Transactions are given by the total value of domestic credit and, in an attempt to make the model more applicable to emerging markets, the gross loan portfolio of microfinance institutions.

The investment sub-pillar includes a percent rank index on

Table 1a: Institutions pillar

		Average value by income group (0–100)				
	Indicator	High income	Upper-middle income	Lower-middle income	Low income	Mean
1	**Institutions**					
1.1	*Political environment*					
1.1.1	Political stability*	0.7	-0.2	-0.7	-0.7	-0.1
1.1.2	Government effectiveness*	1.3	0.0	-0.6	-0.7	0.1
1.1.3	Press freedom*	14.1	43.1	56.3	41.3	37.0
1.2	*Regulatory environment*					
1.2.1	Regulatory quality*	1.2	0.0	-0.5	-0.6	0.2
1.2.2	Rule of law*	1.2	-0.2	-0.7	-0.8	0.0
1.2.3	Cost of redundancy dismissal, salary weeks	13.8	17.8	23.4	20.5	18.4
1.3	*Business environment*					
1.3.1	Ease of starting a business*	0.7	0.5	0.4	0.4	0.5
1.3.2	Ease of resolving insolvency*	0.8	0.6	0.4	0.3	0.6
1.3.3	Ease of paying taxes*	0.7	0.5	0.3	0.4	0.5

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1b: Human capital & research pillar

		Average value by income group (0–100)				
	Indicator	High income	Upper-middle income	Lower-middle income	Low income	Mean
2	**Human capital & research**					
2.1	*Education*					
2.1.1	Current expenditure on education, % GNI	4.6	4.2	4.0	3.9	4.2
2.1.2	Public expenditure/pupil, % GDP/cap	22.6	17.9	20.3	18.7	20.2
2.1.3	School life expectancy, years	15.7	13.6	11.3	9.6	13.1
2.1.4	PISA scales in reading, maths, & science	495.7	423.9	374.0	324.9	458.6
2.1.5	Pupil-teacher ratio, secondary	11.1	15.1	20.1	27.4	16.9
2.2	*Tertiary education*					
2.2.1	Tertiary enrolment, % gross	58.0	43.5	21.2	7.5	36.9
2.2.2	Graduates in science & engineering, %	22.8	19.9	17.1	17.2	20.0
2.2.3	Tertiary inbound mobility, %	10.0	2.6	2.5	2.2	5.3
2.2.4	Gross tertiary outbound enrolment, %	4.3	2.0	1.0	0.5	2.2
2.3	*Research & development (R&D)*					
2.3.1	Researchers, headcounts/mn pop	4,621.2	1,171.2	447.5	102.8	1,963.3
2.3.2	Gross expenditure on R&D, % GDP	1.8	0.5	0.3	0.2	0.9
2.3.3	Quality of scientific research institutions†	4.8	3.6	3.0	3.2	3.8

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1c: Infrastructure pillar

	Indicator	Average value by income group (0–100) High income	Upper-middle income	Lower-middle income	Low income	Mean
3	**Infrastructure**					
3.1	*Information & communication technologies (ICT)*					
3.1.1	ICT access*	7.3	4.5	3.0	1.9	4.6
3.1.2	ICT use*	5.2	1.9	0.8	0.3	2.5
3.1.3	Government's online service*	0.7	0.5	0.4	0.3	0.5
3.1.4	E-participation*	0.5	0.3	0.2	0.1	0.3
3.2	*General infrastructure*					
3.2.1	Electricity output, kWh/cap	10,019.7	2,805.3	1,190.2	535.2	4,754.8
3.2.2	Electricity consumption, kWh/cap	9,931.7	2,534.1	802.7	476.7	4,541.1
3.2.3	Quality of trade & transport infrastructure*	3.6	2.6	2.3	2.1	2.7
3.2.4	Gross capital formation, % GDP	20.4	24.9	24.0	22.7	23.0
3.3	*Ecological sustainability*					
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.1	6.5	5.3	4.2	5.9
3.3.2	Environmental performance*	60.3	52.3	48.2	49.7	53.8
3.3.3	ISO 14001 certificates/bn PPP$ GDP	4.5	2.8	0.4	0.3	2.5

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1d: Market sophistication pillar

	Indicator	Average value by income group (0–100) High income	Upper-middle income	Lower-middle income	Low income	Mean
4	**Market sophistication**					
4.1	*Credit*					
4.1.1	Ease of getting credit*	0.7	0.7	0.5	0.4	0.6
4.1.2	Domestic credit to private sector, % GDP	121.4	54.8	33.7	24.1	65.9
4.1.3	Microfinance gross loans, % GDP	0.0	1.0	2.1	2.2	1.6
4.2	*Investment*					
4.2.1	Ease of protecting investors*	0.7	0.6	0.4	0.5	0.6
4.2.2	Market capitalization, % GDP	96.0	54.7	29.1	39.1	64.6
4.2.3	Total value of stocks traded, % GDP	61.3	18.2	7.2	4.4	31.9
4.2.4	Venture capital deals/tr PPP$ GDP	69.7	9.5	7.7	18.3	29.1
4.3	*Trade & competition*					
4.3.1	Applied tariff rate, weighted mean, %	2.2	5.4	6.8	9.4	5.3
4.3.2	Non-agricultural mkt access weighted tariff, %	1.6	1.0	1.3	2.2	1.4
4.3.3	Imports of goods & services, % GDP	54.8	41.2	48.7	43.1	47.6
4.3.4	Exports of goods & services, % GDP	62.1	38.7	39.2	24.7	44.0
4.3.5	Intensity of local competition†	5.4	4.6	4.5	4.3	4.8

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

the ease of protecting investors.[10] Three indicators on level of transactions are used. To show whether market size is matched by market dynamism, stock market capitalization is complemented by the total value of shares traded. These indicators are complemented by hard data on venture capital deals, taking into account a total of 6,306 deals in 71 countries in 2011.[11]

The last sub-pillar tackles trade and competition. The market conditions for trade are given by two indicators: the average tariff rate weighted by import shares, and a measure capturing market access conditions to foreign markets (five major export markets weighted actual applied tariffs for non-agricultural exports).[12] The sub-pillar then includes the total value of exports and imports as a percentage of GDP. The last indicator is a survey question that reflects on the intensity of competition in local markets. Efforts made at finding hard data on competition proved unsuccessful.

Business sophistication

The last enabler pillar tries to capture the level of business sophistication to assess how conducive firms are to innovation activity (Table 1e). The Human capital and research pillar (pillar 2) made the case that the accumulation of human capital through education, and particularly higher education and the prioritization of R&D activities, is an indispensable condition for innovation to take place. That logic is taken one step further here with the assertion that businesses foster their productivity, competitiveness, and innovation potential with the employment of highly qualified professionals and technicians.

The first sub-pillar includes four quantitative indicators on knowledge workers already included in the GII 2011: employment in knowledge-intensive services; the availability of formal training at the level of the firm; and the percentage of total gross expenditure of R&D that is either financed or performed by business enterprise. In addition, this year two indicators related to the Graduate Management Admission Test (GMAT) were added.[13] The GMAT mean scores and total number of test takers (scaled by population aged 20 to 34 years old) were taken as proxies for the entrepreneurship mindset of young graduates and for their overall level of aptitude to succeed in global innovation markets (where skills in English and mathematics are crucial).

Innovation linkages and public/private/academic partnerships are essential to innovation (see Chapter

4 of this report). In emerging markets, pockets of wealth have developed around industrial or technological clusters and networks in sharp contrast to the poverty that may prevail in the rest of the territory. The sub-pillar draws on both qualitative and quantitative data regarding business/university collaboration on R&D, the prevalence of well-developed and deep clusters, collaboration in inventive activities, the level of gross R&D expenditure financed by abroad and the number of deals on joint ventures and strategic alliances. The latter covers a total of 2,892 deals announced in 2011, with firms headquartered in 113 participating economies.[14] In addition, the share of published patent applications filed by residents through the Patent Cooperation Treaty (PCT) with at least one foreign inventor is included to proxy for international linkages.

In broad terms, pillar 4 on market sophistication makes the case that well-functioning markets contribute to the innovation environment through competitive pressure, efficiency gains, and economies of transaction and by allowing supply to meet demand. Open markets to foreign trade and investment have the additional effect of exposing domestic firms to best practices around the globe, which is critical to innovation through knowledge absorption and diffusion. The rationale behind sub-pillars 5.3 on knowledge absorption (an enabler) and 6.3 on knowledge diffusion (a result)—two sub-pillars designed to be mirror images of each other—is precisely that together they will reveal how good countries are at absorbing and diffusing knowledge.

Sub-pillar 5.3 includes four statistics all linked to sectors with high-tech content or that are key to innovation: royalty and license fees payments as a percentage of GDP; high-tech imports (net of re-imports) as a percentage of total imports; imports of computer, communications, and other services as a percentage of commercial service imports; and net inflows of foreign direct investment (FDI) as a percentage of GDP.

Table 1e: Business sophistication pillar

		Average value by income group (0–100)				
	Indicator	High income	Upper-middle income	Lower-middle income	Low income	Mean
5	**Business sophistication**					
5.1	*Knowledge workers*					
5.1.1	Knowledge-intensive employment, %	36.6	23.1	17.7	6.8	26.2
5.1.2	Firms offering formal training, % firms	42.6	43.4	32.7	30.9	37.5
5.1.3	R&D performed by business, %	54.9	31.9	20.4	11.7	38.5
5.1.4	R&D financed by business, %	49.6	29.3	17.5	14.1	34.5
5.1.5	GMAT mean score	535.0	516.2	474.9	429.9	498.6
5.1.6	GMAT test takers/mn pop. 20–34	356.0	117.2	52.7	18.5	160.9
5.2	*Innovation linkages*					
5.2.1	University/industry research collaboration†	4.6	3.6	3.1	3.2	3.7
5.2.2	State of cluster development†	4.2	3.4	3.2	3.0	3.6
5.2.3	R&D financed by abroad, %	8.3	7.0	13.3	29.1	11.4
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	62.5	16.0	29.8	22.8	35.1
5.2.5	PCT patent filings with foreign inventor, %	46.3	55.7	73.5	87.5	56.6
5.3	*Knowledge absorption*					
5.3.1	Royalty & license fees payments/th GDP	11.5	1.9	1.6	0.4	4.5
5.3.2	High-tech imports less re-imports, %	13.5	10.7	7.4	6.8	10.4
5.3.3	Computer & comm. service imports, %	40.5	32.7	23.9	21.8	31.3
5.3.4	FDI net inflows, % GDP	10.0	3.8	3.9	3.6	5.7

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

The Innovation Output Sub-Index

Innovation outputs are the results of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index. There are two output pillars: Knowledge and technology outputs (this pillar was labeled 'Scientific outputs' in the 2011 GII and Creative outputs).

Knowledge and technology outputs

This pillar covers all those variables that are traditionally thought to be the fruits of inventions and/or innovations (Table 1f). The first sub-pillar refers to the creation of knowledge. It includes four indicators that are the result of inventive and innovation activities: patent applications filed by residents both at the national patent office and at the international level through the PCT; utility model applications filed by residents at the national office; and scientific and technical published articles in peer-reviewed journals (Box 1).

The second sub-pillar, on knowledge impact, includes statistics representing the impact of innovation activities at the micro and macroeconomic level or related proxies: increases in labour productivity, the entry density of new firms, and spending on software. This year for the first time, an indicator on the number of certificates of conformity with standard ISO 9001 on quality management systems issued was added.

The third sub-pillar, on knowledge diffusion, is the mirror image of the knowledge absorption sub-pillar

Box 1: Patent and trademark statistics now based on 'equivalent counts'

As of this year, patent applications and trademark applications/registrations are based on 'equivalent counts' as opposed to simple counts. In addition, trademark applications/registrations are based on 'equivalent class counts', to take into account multi-class systems. These new measures consider the multiplying effect of filings made at regional offices, and are therefore more comparable across countries.

These new definitions are not limited to resident data, but they apply to resident and filing-abroad data alike. One immediate effect of this new measurement system is the higher volume of application/grant/registration figures for patents and trademarks (Figure 1.1). Statistics at the Patent Cooperation Treaty (PCT) system or the Madrid system, however, were not affected.

Equivalent counts for patents concern the Eurasian Patent Organization (EAPO) and the African Intellectual Property Organization (OAPI). In contrast, for the European Patent Office (EPO) and the African Regional Intellectual Property Organization (ARIPO), each application/grant/registration is counted as one application abroad if the applicant does not reside in a member state, or as one resident and one application abroad if the applicant resides in a member state.

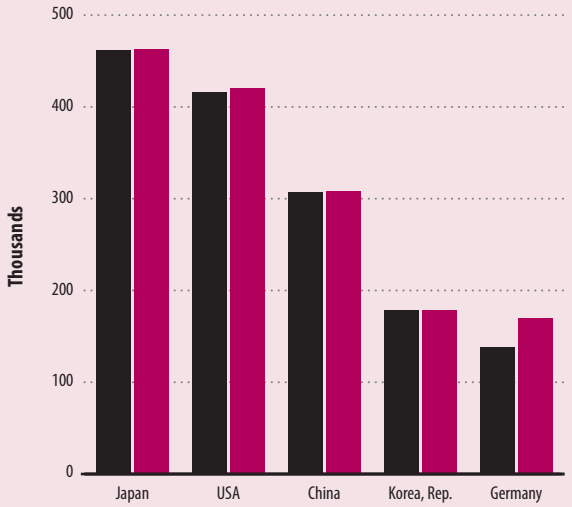
Equivalent counts for trademarks apply to offices such as the Office of Harmonization for the Internal Market (OHIM, which covers the 27 countries of the European Union), or the Benelux Office of Intellectual Property (BOIP).

Trademark applications/registrations are based on equivalent class counts. For each trademark application, one or more classes may be specified, depending on whether the national office has a single- or multi-class filing system. For example, the offices of Japan, the Republic of Korea and the United States of America, as well as many European offices, have multi-class filing systems. The offices of Brazil, China, and Mexico follow a single-class filing system, requiring a separate application for each class in which applicants seek trademark protection. Such a single-class system can result in much higher numbers of applications/registrations. To improve international comparability between offices, the World Intellectual Property Organization (WIPO) has analysed the number of classes specified in trademark applications and registrations with time series going back to 2004, while taking into account whether an office has a single- or multi-class fling system. Statistics concerning class refer to the 45 classes of the International Classification of Goods and Services for the Purposes of the Registration of Marks under the Nice Agreement (www.wipo.int/classifications/en/). The first 34 of the 45 classes represent goods, and the remaining 11 refer to services.

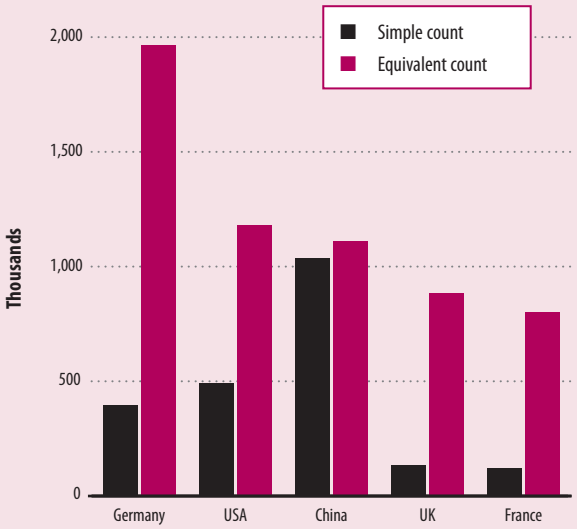
SOURCE: WIPO.

Figure 1.1: Equivalent and simple counts: Patent and trademark data, top five countries of origin

1.1a: Patent applications, 2010 (thousands)



1.1b: Trademark applications, 2010 (thousands)



under pillar 5. It includes four statistics all linked to sectors with high-tech content or that are key to innovation: royalty and license fees receipts as a percentage of GDP; high-tech exports (net of re-exports) as a percentage of total exports (net of re-exports); exports of computer, communications, and other services as a percentage of commercial service exports; and net outflows of FDI as a percentage of GDP.

Creative outputs

The role of creativity for innovation is still largely underappreciated in innovation measurement and policy debates. Since its inception, the GII has always put an emphasis on measuring creativity as part of its Innovation Outputs pillars.

The last pillar, on creative outputs, has now three sub-pillars (Table 1g): it has been strengthened by the addition of a third sub-pillar on online creativity.

The first sub-pillar on creative intangibles includes statistics on trademark registrations by residents at the national office and under the Madrid System, as well as two survey questions regarding the use of ICT in business and organizational models, new areas that are increasingly linked to process innovations in the literature. The second sub-pillar includes proxies to get at creativity and creative outputs in an economy. As discussed in a GII chapter of last year, indicators in this area are largely biased towards data on consumption, trade, and sometimes the production of entertainment and cultural products.[15]

Even with this focus, it is not easy to obtain data on cultural outputs in a given country and on a sectoral level.

Data with large country coverage are available from private sources on the revenue generated by various entertainment industry sectors—for example, the metrics in PricewaterhouseCoopers' annual *Global Entertainment and Media Outlook* and those published by the International Federation of the Phonographic Industry (IFPI) such as the *Recording Industry in Numbers*. However, these data relate more to the market size of a given country (in US dollars) and hence consumption. They do not attempt to measure the level of creative outputs in a given country.

Statistics also increasingly exist to measure the contribution of copyrighted industries to the economy and to employment.[16] The WIPO

Table 1f: Knowledge and technology outputs pillar

		Average value by income group (0–100)				
	Indicator	High income	Upper-middle income	Lower-middle income	Low income	Mean
6	**Knowledge & technology outputs**					
6.1	*Knowledge creation*					
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.6	3.2	2.6	1.4	5.7
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.1	0.3	0.2	0.1	1.2
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.2	2.9	6.8	1.9	3.2
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.8	4.3	2.3	2.7	6.8
6.2	*Knowledge impact*					
6.2.1	Growth rate of PPP$ GDP/worker, %	2.7	3.2	3.0	1.7	2.8
6.2.2	New businesses/th pop. 15–64	5.6	2.3	0.8	0.4	3.0
6.2.3	Computer software spending, % GDP	0.6	0.2	0.1	0.1	0.4
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	20.0	12.7	2.8	1.5	10.8
6.3	*Knowledge diffusion*					
6.3.1	Royalty & license fees receipts/th GDP	3.7	0.4	1.6	0.2	1.7
6.3.2	High-tech exports less re-exports, %	11.4	5.7	1.4	0.5	6.0
6.3.3	Computer & comm. service exports, %	39.8	27.3	27.3	25.6	31.0
6.3.4	FDI net outflows, % GDP	9.7	1.0	0.3	0.2	3.8

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Table 1g: Creative outputs pillar

		Average value by income group (0–100)				
	Indicator	High income	Upper-middle income	Lower-middle income	Low income	Mean
7	**Creative outputs**					
7.1	*Creative intangibles*					
7.1.1	Domestic res trademark reg/bn PPP$ GDP	43.9	62.0	70.7	23.5	50.8
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.5	1.0	0.6	0.2	1.1
7.1.3	ICT & business model creation†	4.8	4.1	3.7	3.6	4.1
7.1.4	ICT & organizational model creation†	4.4	3.8	3.4	3.8	3.9
7.2	*Creative goods & services*					
7.2.1	Recreation & culture consumption, %	8.6	4.5	2.1	2.3	5.5
7.2.2	National feature films/mn pop. 15–69	6.2	2.3	2.6	1.0	3.7
7.2.3	Paid-for dailies, circulation/th pop. 15–69	245.0	85.5	40.6	8.1	114.5
7.2.4	Creative goods exports, %	2.1	3.9	1.5	1.5	2.4
7.2.5	Creative services exports, %	8.4	5.4	2.3	2.6	5.2
7.3	*Creation of online content*					
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	42.3	8.8	4.1	0.3	16.8
7.3.2	Country-code TLDs/th pop. 15–69	52.2	28.3	13.7	4.5	28.7
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,947.8	1,737.6	502.4	41.7	3,091.6
7.3.4	Video uploads on YouTube/pop. 15–69	70.5	54.7	37.4	18.7	49.8

Note (*) index, (†) survey question, (a) half weight, (b) higher values indicate worse outcomes.

Box 2: Online creativity in the Global Innovation Index 2012

The participative Internet is increasingly an important platform for creativity and innovation (see the contributions from Google (Chapter 11), The Internet Society (ISOC, Chapter 10), and the International Telecommunications (ITU, Chapter 9) in this report). Web users are now often contributors to developing, rating, collaborating, and distributing Internet content. New web tools have emerged around digital content- and data-rich web services.

As a result, studies supported by ISOC and the United Nations Educational, Scientific and Cultural Organization (UNESCO)—which are part of the GII Advisory Board—and the OECD show that digital content is growing very quickly in volume, often at high rates.[1] Low- and middle income countries are becoming important sources of content.

Online creativity is now established as an important new facet of innovation, but traditional innovation metrics do not capture this phenomenon. New approaches are needed. These could be facilitated by the fact that the emerging Internet is also a source of potentially real-time, complete, and detailed data about Internet user behaviours and content creations. As opposed to the offline world, where data collection is tedious and is based on samples and surveys, on the Internet one can potentially measure each and every online transaction.

That said, reliable metrics in this field are only nascent or difficult to access. Although this area of data is slowly moving into household surveys of national statistical offices, official data on the topic are still lacking.[2] Metrics collected on the behaviours of Internet users are mostly owned by private firms. Access to the full data is often restricted for reasons of confidentiality.

Despite all the focus on how the Internet is stimulating creativity, it is also still difficult to properly account for content creation. Internet measurement firms now enable us to get detailed data on the amount of time users spent online and what type of Internet sites they view. However, properly accounting for creative outputs on the Internet is largely impossible on the basis of these data.

To be sure, new metrics have emerged on the number of users of social networks and online encyclopaedias, the number of blogs and tweets, the number of online photos and online songs and others.[3] Yet these often provide only a partial picture, because they are provided by private sources or are focused on specific Internet properties only (such as Facebook, Wikipedia, Technorati for blogs, and so on). These also might not be equally representative for all countries because of language and other biases. Taking this into account, the GII 2012 measures the creation of online content by including a new sub-pillar (7.3) comprising four metrics, two focused on the creation of Internet sites and two on online participation in the creation of content, all scaled by population aged 15–69 years old. These are:

7.3 Online creativity

7.3.1 Generic top-level domains (TLDs)

7.3.2 Country-code TLDs

7.3.3 Wikipedia monthly edits

7.3.4 Video uploads on YouTube

Earlier papers have discussed the pros and cons of these data in great detail.[4]

- The combination of domain name information provides a relatively good approximation for local content creation, although websites in themselves can be seen only as potential platforms for creative outputs. Also some country-specific biases exist that need to be factored in.[5]
- The edits provided to Wikipedia encyclopaedia sites are a relatively trustworthy indication of user activity on this global online encyclopaedia.
- Identifying data on online content creation is more difficult. In collaboration with Google, the GII is using video upload on YouTube, the online video sharing service, as a content creation proxy. It is the first time these data are published in this way, after transforming them into an index to avoid revealing the confidential underlying data. Three caveats apply. First, video uploaded to YouTube may also be distributed through other traditional channels (e.g., a television broadcast that the station also uploads to their own YouTube channel). We do not attempt to disentangle the 'online-only' content in this dataset. Second, this video service does not operate in all countries and is blocked in some, which could bias the figures in these countries downward. Finally, since the data cover only YouTube, it is merely a proxy and misses content creation that is occurring on other video platforms.

With these caveats in mind, the creation of this new online creativity pillar does justice to better accounting for online creativity and furthering the development of right metrics in the field.

Notes

1. ISOC, OECD, and UNESCO, 2011.
2. OECD, 2008.
3. OECD, 2006, 2007.
4. OECD, 2006, 2007; Bruegge, 2011.
5. OECD, 2006, 2007; Bruegge, 2011.

References

Bruegge, C. 2011. 'Measuring Digital Local Content'. *OECD Digital Economy Papers* No. 188. Paris: OECD.

ISOC (Internet Society), OECD (Organisation for Economic Co-operation and Development), and the UNESCO (United Nations Educational, Scientific and Cultural Organization). 2011. *The Relationship Between Local Content, Internet Development and Access Prices.* Paris: OECD. Available at http://www.oecd.org/dataoecd/9/8/50305352.pdf.

OECD (Organisation for Economic Co-operation and Development). 2006. 'Emerging Technology Applications: The Participative Web.' OECD Information Technology Outlook, Chapter 7, Paris: OECD.

———. 2007. *Participative Web and User-Created Content: Web 2.0, Wikis and Social Networking.* Paris: OECD. Available at http://browse.oecdbookshop.org/oecd/pdfs/free/9307031e.pdf.

———. 2008. 'Measuring User-Created Content: Implications for the ICT Access and Use by Households and Individuals Surveys'. Working Party on Indicators for the Information Society. Paris: OECD.

project on surveying the economic contribution of the copyright-based industries has produced data for 30 economies. This is still too small a sample for the GII, but it represents good progress from a few years ago, when these metrics existed only for the USA.[17]

International data on creative outputs are readily available for only two sectors: the national feature films produced in a given country and the daily newspapers in circulation.

In addition to data on these two sectors, this pillar includes the share of household expenditure in recreation and culture as a proxy for creative activities and consumption in a given country. Since statistics on creative industries are scarce, the pillar also relies on data on creative goods and services exports.

In future editions of the GII, attempts will be made to include a broader coverage of the production of cultural products, rather than emphasizing their consumption or trade. In terms of creative outputs, it will be key to attempt to extend the sectoral coverage to other creative industries—in particular, to book publishing, music, and computer games. It will help that the UNESCO Institute for Statistics (UIS) recently launched a new, pilot data collection programme, so that in a few years it will be able to supply a large range of media indicators across countries.[18] In general, the creation of content online (e.g. online newspapers, online videos, and other formats) will however have to be increasingly accounted for to arrive at a sensible estimate at creative outputs.

For the above reason, a new and third sub-pillar on online creativity has been added to the GII 2012. This sub-pillar includes four Internet indicators, all scaled by population aged 15 to 69 years old (Box 2).

Tables 2a through 2g (on pages 52 through 65) provide the rankings per pillar, with details on sub-pillar scores.

Table 2a: Institutions pillar

	Institutions		Political environment		Regulatory environment		Business environment	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Denmark	95.3	**1**	94.9	2	99.4	**1**	91.6	5
Canada	95.0	2	91.7	9	95.5	11	97.8	2
New Zealand	93.9	3	93.4	8	98.6	2	89.7	7
Ireland	93.0	4	86.9	15	97.0	8	95.2	4
Norway	93.0	5	94.8	3	96.4	10	87.7	9
Finland	92.8	6	99.5	**1**	97.5	6	81.5	14
Hong Kong (China)	92.6	7	85.2	17	97.2	7	95.4	3
Singapore	92.5	8	81.5	24	97.5	5	98.5	**1**
United Kingdom	90.4	9	83.0	21	97.7	3	90.6	6
Australia	90.0	10	88.1	12	93.5	14	88.4	8
Netherlands	88.7	11	91.2	10	97.6	4	77.4	20
Sweden	88.6	12	94.1	6	92.3	16	79.6	16
Switzerland	88.0	13	94.4	5	95.0	12	74.6	24
Iceland	87.9	14	90.1	11	89.8	19	83.9	10
Cyprus	86.3	15	83.6	20	91.5	17	83.9	11
Belgium	86.2	16	87.3	14	92.4	15	78.8	18
United States of America	85.1	17	78.5	29	94.4	13	82.5	13
Malta	84.4	18	81.4	25	87.4	21	n/a	n/a
Luxembourg	83.8	19	94.6	4	84.1	26	72.6	26
France	82.7	20	82.6	22	89.7	20	76.0	22
Austria	82.3	21	93.6	7	96.4	9	56.8	56
Estonia	79.9	22	84.3	18	86.8	23	68.5	32
Japan	79.0	23	86.0	16	89.8	18	61.1	40
Mauritius	78.8	24	73.6	38	83.2	28	79.6	17
Slovenia	78.0	25	80.1	27	83.0	29	70.9	29
Germany	76.7	26	87.3	13	82.2	33	60.4	42
Korea, Rep.	73.8	27	74.9	36	68.0	66	78.6	19
Brunei Darussalam	73.5	28	71.6	41	87.2	22	61.6	39
Chile	73.1	29	75.2	34	84.4	25	59.7	44
Latvia	72.8	30	73.1	39	84.8	24	60.6	41
Botswana	72.3	31	75.6	33	68.7	64	72.6	26
Hungary	72.3	32	76.1	32	81.4	34	59.4	46
Oman	71.9	33	64.8	50	82.5	32	68.3	33
Portugal	70.6	34	79.9	28	61.4	84	70.7	30
Qatar	70.2	35	72.9	40	69.0	63	68.8	31
Italy	70.2	36	70.4	44	82.8	30	57.5	55
Lithuania	70.0	37	77.3	31	69.7	58	63.0	38
Slovakia	69.8	38	82.2	23	70.5	53	56.8	57
South Africa	69.7	39	66.6	46	76.7	41	65.9	34
United Arab Emirates	69.6	40	69.8	45	79.9	36	59.2	47
Croatia	69.2	41	71.5	42	72.6	44	63.5	35
Macedonia, FYR	68.8	42	54.0	77	69.8	57	82.7	12
Spain	68.5	43	71.5	43	81.1	35	53.0	62
Czech Republic	68.2	44	84.3	19	75.5	43	44.8	82
Poland	68.1	45	80.9	26	83.5	27	40.0	95
Bulgaria	67.2	46	63.1	56	78.2	38	60.4	43
Israel	67.2	47	58.4	64	69.1	62	74.1	25
Bahrain	66.7	48	40.8	115	82.7	31	76.4	21
Tunisia	66.3	49	55.4	72	71.5	47	72.1	28
Namibia	65.6	50	73.9	37	75.6	42	47.2	74
Georgia	65.2	51	55.0	74	77.1	40	63.5	37
Kazakhstan	64.5	52	50.3	83	68.0	65	75.0	23
Saudi Arabia	63.8	53	45.2	103	65.5	74	80.8	15
Jamaica	63.8	54	65.5	47	67.5	68	58.4	53
Malaysia	63.5	55	64.7	52	66.2	70	59.7	44
Romania	62.1	56	64.2	55	79.1	37	43.1	87
Jordan	61.7	57	52.3	81	77.9	39	55.1	60
Armenia	61.5	58	59.3	63	70.5	52	54.6	61
Greece	60.7	59	64.7	51	71.7	46	45.8	79
Kuwait	60.2	60	64.5	53	59.7	93	56.3	58
Uruguay	60.1	61	78.4	30	69.5	60	32.4	103
Montenegro	58.5	62	62.5	57	54.4	104	58.7	52
Mongolia	58.2	63	57.2	67	69.6	59	47.9	71
Rwanda	57.6	64	46.9	90	66.8	69	59.2	47
Lesotho	57.0	65	62.4	58	62.0	82	46.7	77
Trinidad and Tobago	56.8	66	65.1	48	64.1	79	41.2	93
Costa Rica	56.6	67	75.0	35	70.8	49	23.9	122
Panama	56.5	68	57.6	65	65.7	73	46.2	78
Belize	56.3	69	47.2	88	69.1	61	52.5	63
Peru	56.2	70	46.2	98	70.3	55	52.0	65
Serbia	56.0	71	55.7	71	72.2	45	40.2	94

Table 2a: Institutions pillar *(continued)*

	Institutions		Political environment		Regulatory environment		Business environment	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Mexico	55.9	72	45.2	102	59.1	96	63.5	35
Colombia	55.3	73	40.8	116	66.0	71	59.2	49
Albania	55.0	74	54.9	75	60.7	89	49.3	68
Lebanon	53.9	75	44.1	106	70.1	56	47.4	73
Uganda	52.8	76	38.2	122	70.7	50	49.6	67
Tanzania, United Rep.	52.7	77	60.7	60	67.5	67	29.9	109
Moldova, Rep.	52.6	78	54.0	76	57.0	99	46.7	76
Bosnia and Herzegovina	51.4	79	50.3	84	70.6	51	33.3	101
Burkina Faso	51.2	80	55.3	73	70.3	54	28.0	114
Swaziland	51.0	81	46.4	95	61.0	87	45.5	80
Malawi	50.8	82	48.4	86	61.8	83	42.4	90
El Salvador	50.6	83	65.0	49	56.7	100	30.2	107
Brazil	50.4	84	59.6	62	71.0	48	20.6	127
Morocco	50.4	85	46.6	92	60.4	90	44.1	83
Turkey	50.0	86	45.8	100	56.4	101	47.7	72
Fiji	49.8	87	46.5	93	62.9	81	40.0	95
Guyana	49.7	88	56.8	68	59.7	94	32.6	102
Madagascar	49.5	89	43.5	108	61.3	85	43.6	85
Ghana	49.5	90	64.3	54	33.6	133	50.6	66
Azerbaijan	49.5	91	37.0	124	52.7	110	58.7	51
Senegal	49.3	92	53.0	79	64.8	75	30.2	107
Russian Federation	49.1	93	41.1	114	57.9	97	48.4	70
Ethiopia	48.8	94	37.0	125	51.8	114	57.5	54
Thailand	48.6	95	43.6	107	47.1	120	55.1	59
Mali	48.0	96	56.8	69	63.2	80	24.1	121
Zambia	47.2	97	56.6	70	26.3	135	58.7	50
Mozambique	46.4	98	60.2	61	36.4	132	42.6	89
Nicaragua	46.3	99	47.7	87	60.2	91	30.9	105
Kyrgyzstan	46.2	100	44.3	105	55.5	103	38.8	97
Argentina	44.9	101	61.4	59	44.6	125	28.8	111
Benin	44.7	102	57.3	66	64.4	77	12.4	136
Kenya	43.7	103	45.5	101	59.7	92	25.8	118
Dominican Republic	43.6	104	53.7	78	50.2	117	26.8	115
Niger	43.3	105	50.6	82	65.8	72	13.4	134
Gabon	43.0	106	52.6	80	60.8	88	15.5	130
Paraguay	41.7	107	44.8	104	48.6	118	31.6	104
Togo	41.7	108	46.5	94	59.5	95	19.1	129
Belarus	41.5	109	33.4	131	47.0	121	44.1	84
Nepal	41.3	110	37.5	123	44.4	127	41.9	91
Syrian Arab Rep.	41.0	111	24.1	136	64.7	76	34.3	100
Viet Nam	40.9	112	39.2	117	53.0	108	30.4	106
Cambodia	40.7	113	41.9	112	53.4	106	26.8	116
Algeria	40.6	114	38.9	118	53.3	107	29.4	110
Bangladesh	40.5	115	34.8	127	41.5	130	45.0	81
Egypt	40.4	116	33.5	130	44.5	126	43.3	86
Ukraine	40.0	117	46.7	91	61.1	86	12.2	137
Guatemala	39.9	118	46.0	99	48.1	119	25.6	119
Tajikistan	39.9	119	38.6	120	52.8	109	28.2	113
Nigeria	39.3	120	26.9	135	53.8	105	37.3	98
China	39.1	121	30.8	133	51.9	112	34.7	99
Pakistan	39.0	122	21.1	138	46.9	122	49.1	69
Gambia	38.9	123	46.3	96	51.2	115	19.4	128
Cameroon	38.8	124	46.2	97	57.3	98	12.9	135
India	38.4	125	42.8	109	64.3	78	8.1	139
Sri Lanka	38.0	126	38.7	119	23.0	138	52.2	64
Honduras	36.4	127	42.6	110	45.7	123	20.8	126
Iran, Islamic Rep.	36.4	128	18.6	139	43.7	128	46.7	75
Burundi	35.0	129	31.5	132	51.8	113	21.6	124
Yemen	34.9	130	16.8	140	44.9	124	42.9	88
Angola	34.7	131	41.8	113	52.2	111	10.0	138
Philippines	34.6	132	38.5	121	50.4	116	14.8	133
Uzbekistan	34.4	133	34.6	128	42.2	129	26.6	117
Ecuador	34.4	134	47.0	89	32.0	134	24.2	120
Côte d'Ivoire	33.7	135	23.6	137	56.0	102	21.6	124
Bolivia, Plurinational St.	32.5	136	50.3	85	25.2	136	22.0	123
Sudan	30.4	137	10.1	141	39.7	131	41.4	92
Lao PDR	29.6	138	36.4	126	23.6	137	28.7	112
Indonesia	25.4	139	42.4	111	19.0	139	14.8	132
Venezuela, Bolivarian Rep.	16.2	140	34.2	129	7.9	140	6.7	140
Zimbabwe	15.4	141	30.7	134	0.0	141	15.5	131

Table 2b: Human capital and research pillar

	Human capital and research		Education		Tertiary education		Research and development (R&D)	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Iceland	68.3	**1**	73.3	6	54.8	13	76.7	4
Singapore	68.3	2	58.2	44	83.3	**1**	63.3	9
Finland	68.2	3	69.8	10	55.5	12	79.3	3
Israel	66.5	4	61.8	29	43.2	43	94.3	**1**
Denmark	62.9	5	75.0	4	43.9	38	69.7	5
Sweden	62.8	6	69.2	11	50.2	18	68.9	7
Ireland	59.9	7	75.7	**1**	54.5	14	49.6	23
Korea, Rep.	59.0	8	58.2	45	55.9	11	63.0	10
Austria	58.9	9	64.5	18	57.3	7	54.9	14
Switzerland	57.9	10	58.1	47	47.9	27	67.7	8
New Zealand	57.6	11	73.7	5	49.1	20	50.1	22
Luxembourg	56.5	12	53.5	62	70.6	3	45.3	28
Norway	56.1	13	63.8	21	47.0	28	57.6	13
Qatar	55.7	14	40.6	105	45.9	32	80.5	2
Portugal	55.6	15	66.6	12	48.0	26	52.2	19
Germany	55.4	16	63.6	23	41.8	45	60.7	11
France	55.1	17	63.0	26	49.2	19	53.0	18
Bahrain	54.7	18	54.6	57	74.1	2	35.4	34
Japan	54.6	19	56.6	52	37.6	56	69.6	6
Belgium	54.5	20	71.7	7	41.2	48	50.7	21
United Kingdom	53.8	21	62.8	27	45.3	33	53.2	17
United States of America	53.4	22	61.3	31	38.8	54	60.1	12
United Arab Emirates	53.3	23	49.3	77	56.9	8	53.8	15
Australia	53.3	24	59.4	39	46.8	29	53.6	16
Canada	53.2	25	64.7	17	43.4	40	51.4	20
Hong Kong (China)	51.5	26	53.5	63	66.9	4	34.3	36
Slovenia	51.5	27	66.4	14	41.2	47	46.9	25
Estonia	50.0	28	63.7	22	40.8	49	45.6	27
Montenegro	49.3	29	56.0	53	63.2	5	28.8	45
Cyprus	49.3	30	64.5	19	59.0	6	24.3	61
Czech Republic	49.1	31	57.8	49	46.3	30	43.3	29
Fiji	48.9	32	53.8	61	44.0	37	n/a	n/a
Spain	48.7	33	60.7	34	44.6	35	40.7	30
Netherlands	48.4	34	63.6	24	33.7	66	48.0	24
Uzbekistan	48.4	35	75.4	2	21.4	99	n/a	n/a
Oman	48.1	36	49.3	75	49.0	21	45.9	26
Lithuania	46.3	37	60.3	37	43.3	42	35.3	35
Hungary	46.0	38	63.5	25	34.1	62	40.4	31
Greece	45.6	39	58.5	41	56.6	9	21.7	71
Saudi Arabia	44.8	40	65.5	15	49.0	22	19.8	77
Italy	44.7	41	61.9	28	40.2	52	32.0	40
Malaysia	44.5	42	49.6	74	56.0	10	28.0	48
Russian Federation	43.8	43	55.2	55	44.3	36	31.8	41
Serbia	43.1	44	60.7	35	43.4	41	25.4	56
Belarus	42.7	45	60.5	36	52.2	16	15.2	104
Slovakia	42.6	46	52.8	66	49.0	23	26.0	53
Malta	42.3	47	66.6	13	35.3	58	25.1	58
Ukraine	42.2	48	56.6	51	44.8	34	25.1	57
Jordan	42.0	49	60.9	32	45.9	31	19.3	83
Latvia	42.0	50	65.3	16	32.7	70	27.9	49
Croatia	41.9	51	57.8	48	37.7	55	30.0	42
Bosnia and Herzegovina	41.6	52	70.3	9	40.3	51	14.3	108
Poland	40.5	53	61.4	30	31.5	73	28.7	46
Iran, Islamic Rep.	40.3	54	45.5	90	48.8	24	26.6	52
Moldova, Rep.	39.9	55	71.7	8	32.4	71	15.7	100
Bulgaria	39.9	56	54.3	58	43.6	39	21.8	70
Lebanon	39.4	57	40.8	104	53.9	15	23.6	62
Argentina	39.1	58	59.7	38	31.9	72	25.8	54
Namibia	38.1	59	52.8	65	22.1	96	39.3	32
Tunisia	38.0	60	59.0	40	21.8	97	33.3	38
Kuwait	37.6	61	55.4	54	42.5	44	15.0	105
Botswana	37.5	62	64.2	20	28.8	79	19.4	82
Trinidad and Tobago	37.1	63	48.3	81	48.5	25	14.6	107
Morocco	36.7	64	48.7	78	41.8	46	19.5	79
Macedonia, FYR	36.6	65	53.1	64	39.7	53	17.0	92
Brunei Darussalam	36.2	66	43.5	98	50.2	17	14.9	106
Romania	36.1	67	51.6	70	37.0	57	19.6	78
Jamaica	34.5	68	54.7	56	25.6	88	23.2	64
Venezuela, Bolivarian Rep.	34.4	69	60.7	33	26.5	86	16.0	99
Mauritius	34.1	70	42.6	101	35.2	60	24.7	60
Zimbabwe	33.5	71	38.2	112	28.7	80	33.6	37

Table 2b: Human capital and research pillar *(continued)*

	Human capital and research		Education		Tertiary education		Research and development (R&D)	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Kenya	33.0	72	44.2	96	34.7	61	20.0	75
Burundi	32.9	73	58.5	42	17.9	111	22.4	68
Uruguay	32.9	74	44.9	92	31.0	74	22.7	66
Chile	32.8	75	47.6	83	29.6	77	21.3	72
Armenia	32.5	76	46.9	85	33.3	67	17.4	89
Algeria	32.5	77	54.0	60	33.8	63	9.6	126
Costa Rica	32.2	78	52.1	68	19.4	104	25.0	59
Belize	32.2	79	57.1	50	16.3	116	23.0	65
Mongolia	31.8	80	48.6	79	33.2	68	13.7	112
Mexico	31.8	81	47.8	82	27.6	83	20.0	76
Turkey	31.8	82	41.2	103	30.8	75	23.3	63
Brazil	31.5	83	49.6	73	16.4	115	28.4	47
China	31.4	84	52.2	67	9.5	125	32.4	39
Kazakhstan	31.2	85	51.6	69	29.5	78	12.5	118
Kyrgyzstan	30.5	86	50.1	72	33.8	65	7.6	131
Colombia	30.4	87	39.3	110	35.3	59	16.6	95
Panama	30.4	88	42.0	102	32.7	69	16.4	98
Swaziland	30.3	89	58.5	43	12.8	119	19.5	81
Lesotho	30.2	90	75.1	3	7.9	129	7.6	132
Azerbaijan	30.0	91	45.5	89	26.9	84	17.7	87
Indonesia	29.9	92	48.6	80	23.9	91	17.2	90
Gabon	29.8	93	40.4	106	40.6	50	8.6	130
Guyana	29.8	94	35.3	117	18.2	110	35.8	33
Georgia	29.6	95	45.9	87	27.7	82	15.3	103
Tajikistan	29.1	96	40.3	107	33.8	64	13.3	115
Bolivia, Plurinational St.	28.7	97	49.3	76	23.6	93	13.2	116
Yemen	28.3	98	58.2	46	15.5	117	11.3	123
Burkina Faso	28.2	99	39.8	109	28.1	81	16.6	96
Cameroon	27.8	100	38.8	111	25.1	89	19.5	80
Thailand	27.6	101	43.8	97	20.0	103	18.8	84
Ghana	27.2	102	44.8	93	20.2	102	16.5	97
South Africa	27.2	103	51.4	71	0.7	141	29.5	43
Honduras	27.1	104	54.2	59	16.5	114	10.6	125
Syrian Arab Rep.	27.0	105	47.4	84	6.6	132	27.0	51
Albania	26.2	106	44.7	94	25.1	90	8.9	129
Viet Nam	26.1	107	42.9	100	18.8	108	16.7	94
Egypt	25.9	108	46.2	86	17.4	113	14.0	110
Ecuador	25.1	109	39.9	108	23.6	92	11.8	122
Malawi	24.2	110	44.3	95	5.8	133	22.4	67
Paraguay	23.9	111	45.9	88	19.4	105	6.5	135
Sri Lanka	23.8	112	45.1	91	8.2	128	18.1	86
El Salvador	23.8	113	33.7	121	30.3	76	7.4	134
Dominican Republic	23.7	114	25.8	130	17.6	112	27.5	50
Guatemala	23.4	115	36.4	115	21.6	98	12.2	119
Senegal	22.5	116	37.0	113	8.7	127	21.8	69
Peru	21.9	117	34.7	120	19.3	106	11.9	121
Côte d'Ivoire	21.2	118	42.9	99	5.4	136	15.4	102
Madagascar	21.0	119	31.0	123	21.3	100	10.8	124
Rwanda	20.9	120	35.8	116	6.9	131	20.1	74
Philippines	20.7	121	23.6	135	26.4	87	12.2	120
Tanzania, United Rep.	20.7	122	23.1	136	20.8	101	18.2	85
Benin	20.5	123	36.7	114	4.6	137	20.1	73
Nepal	20.4	124	24.6	132	26.9	85	9.6	127
Uganda	20.1	125	35.3	118	9.5	126	15.6	101
Gambia	19.9	126	26.8	129	18.9	107	14.0	111
Bangladesh	19.2	127	20.8	138	7.5	130	29.1	44
Ethiopia	19.0	128	20.3	139	23.1	94	13.7	113
Mozambique	19.0	129	31.7	122	12.0	120	13.4	114
Mali	18.5	130	35.2	119	3.4	139	16.9	93
India	18.5	131	24.6	133	5.4	135	25.6	55
Angola	18.0	132	21.5	137	23.0	95	9.4	128
Zambia	17.0	133	29.9	124	3.9	138	17.1	91
Cambodia	16.6	134	24.9	131	11.8	121	13.2	117
Niger	16.0	135	29.4	126	18.6	109	0.0	139
Nicaragua	14.9	136	26.9	128	10.3	124	7.5	133
Sudan	14.5	137	28.6	127	10.8	123	4.2	136
Togo	13.9	138	29.7	125	10.9	122	1.0	137
Nigeria	12.7	139	18.3	140	5.5	134	14.3	109
Lao PDR	12.6	140	24.2	134	13.5	118	0.3	138
Pakistan	10.0	141	10.0	141	2.2	140	17.6	88

Table 2c: Infrastructure pillar

	Infrastructure		Information and communication technologies (ICT)		General infrastructure		Ecological sustainability	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Sweden	69.8	**1**	78.5	6	63.6	6	67.3	2
Norway	64.3	2	74.7	12	74.8	**1**	43.5	31
Korea, Rep.	64.2	3	90.2	**1**	57.6	13	44.7	27
Hong Kong (China)	63.4	4	77.6	7	50.6	25	61.9	7
Finland	62.0	5	77.3	8	64.1	5	44.5	28
United Kingdom	61.8	6	84.4	3	44.3	37	56.8	10
Japan	61.6	7	75.5	10	53.8	17	55.4	12
Switzerland	60.8	8	63.1	21	53.2	18	66.2	3
Singapore	60.6	9	84.1	4	56.3	14	41.4	38
Spain	59.7	10	62.3	23	47.4	28	69.5	**1**
Netherlands	58.7	11	85.7	2	51.0	23	39.5	43
Denmark	56.8	12	73.2	13	46.8	32	50.4	18
Australia	56.3	13	75.1	11	60.2	9	33.6	59
United States of America	56.1	14	80.9	5	58.5	12	29.0	73
Canada	55.2	15	70.1	16	67.0	4	28.5	77
Germany	55.1	16	73.1	14	51.5	22	40.8	39
United Arab Emirates	55.0	17	69.7	17	69.3	2	25.9	92
Luxembourg	55.0	18	67.5	19	58.8	11	38.7	48
Estonia	54.9	19	67.2	20	40.4	47	57.2	9
France	54.5	20	70.1	15	51.8	21	41.6	36
Israel	54.2	21	76.1	9	43.7	38	42.6	35
Italy	53.5	22	50.8	41	44.9	36	64.9	4
Austria	53.4	23	62.0	24	50.5	26	47.8	20
Czech Republic	52.0	24	46.4	46	45.7	33	63.8	5
New Zealand	51.9	25	68.8	18	50.8	24	36.2	56
Lithuania	50.5	26	56.8	28	31.9	93	62.8	6
Qatar	49.0	27	61.4	25	67.4	3	18.2	117
Hungary	48.5	28	54.8	32	36.1	69	54.6	13
Slovenia	47.8	29	51.9	37	40.5	46	50.9	17
Iceland	47.6	30	56.2	30	61.4	8	25.1	93
Belgium	47.0	31	51.2	40	52.9	19	36.7	52
Portugal	46.5	32	56.4	29	39.0	56	44.0	30
Slovakia	46.3	33	42.4	53	41.0	45	55.6	11
Colombia	46.3	34	53.6	34	31.5	94	54.0	15
Ireland	45.0	35	48.2	43	40.1	49	46.7	22
Croatia	44.9	36	51.7	39	32.9	89	50.0	19
Bahrain	44.7	37	62.9	22	63.5	7	7.8	126
Latvia	44.7	38	45.7	48	34.2	83	54.3	14
China	44.3	39	32.5	73	58.8	10	41.6	37
Romania	44.3	40	36.6	61	36.1	70	60.1	8
Malaysia	44.1	41	51.9	38	41.6	40	38.9	46
Cyprus	43.3	42	43.3	51	39.1	55	47.4	21
Greece	43.2	43	50.2	42	36.3	68	43.1	33
Chile	42.7	44	53.9	33	35.8	74	38.4	49
Saudi Arabia	42.6	45	60.6	26	47.0	31	20.2	113
Malta	42.3	46	52.7	36	34.9	80	39.3	44
Bulgaria	41.2	47	35.3	66	35.9	72	52.5	16
Poland	39.7	48	43.8	50	37.2	63	38.2	50
Brazil	39.1	49	46.1	47	34.4	81	36.6	54
Mexico	38.4	50	47.3	44	37.1	64	30.9	66
Oman	38.3	51	46.7	45	47.0	30	21.2	108
Brunei Darussalam	38.3	52	53.0	35	34.9	79	26.9	89
Peru	38.0	53	35.7	65	32.5	90	45.6	24
Russian Federation	37.8	54	55.5	31	37.7	61	20.4	111
Uruguay	37.8	55	38.4	59	29.7	105	45.5	25
Costa Rica	37.5	56	36.2	64	29.8	103	46.6	23
Argentina	37.3	57	39.0	58	34.3	82	38.7	47
Kazakhstan	37.3	58	58.4	27	38.7	58	14.9	123
Panama	37.0	59	36.3	62	35.0	78	39.6	42
Thailand	36.9	60	32.3	75	39.4	51	39.0	45
Dominican Republic	35.6	61	37.0	60	24.7	125	45.1	26
Macedonia, FYR	35.1	62	36.3	63	36.0	71	33.2	60
Serbia	35.1	63	42.3	54	33.9	85	29.0	72
Tunisia	34.9	64	33.9	67	33.4	88	37.4	51
Kuwait	34.8	65	33.6	70	55.0	15	15.9	120
Belarus	34.5	66	32.5	74	47.1	29	24.0	96
Turkey	34.0	67	31.5	76	35.3	77	35.3	58
Montenegro	34.0	68	43.2	52	41.7	39	17.0	118
Philippines	33.8	69	29.2	80	28.2	112	44.1	29
Egypt	33.6	70	45.3	49	25.7	122	29.9	70
Albania	33.6	71	27.3	85	30.2	100	43.3	32

Table 2c: Infrastructure pillar *(continued)*

	Infrastructure		Information and communication technologies (ICT)		General infrastructure		Ecological sustainability	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Lebanon	33.5	72	32.8	72	45.1	34	22.6	100
Morocco	32.6	73	21.5	100	36.6	66	39.8	41
Mongolia	32.6	74	41.0	57	38.6	59	18.2	116
Viet Nam	32.5	75	28.2	83	41.5	41	27.8	83
El Salvador	31.6	76	41.5	55	22.4	131	30.9	68
Ecuador	31.3	77	29.8	78	31.4	95	32.8	61
India	31.0	78	24.7	94	41.1	44	27.3	87
South Africa	30.8	79	25.9	90	45.1	35	21.4	105
Indonesia	30.5	80	27.2	86	36.4	67	28.0	81
Sri Lanka	30.4	81	21.3	101	27.2	117	42.7	34
Botswana	30.2	82	18.6	107	35.9	73	36.3	55
Belize	30.1	83	29.1	82	52.8	20	8.5	125
Lesotho	29.8	84	12.0	131	47.7	27	n/a	n/a
Moldova, Rep.	29.8	85	41.3	56	26.7	118	21.4	106
Venezuela, Bolivarian Rep.	29.7	86	33.7	69	32.2	91	23.1	99
Georgia	29.4	87	33.7	68	26.0	120	28.4	78
Iran, Islamic Rep.	29.3	88	29.5	79	38.3	60	20.2	114
Armenia	29.0	89	22.2	99	36.8	65	28.1	80
Bosnia and Herzegovina	28.9	90	26.9	89	28.9	108	30.8	69
Paraguay	28.8	91	25.3	93	32.1	92	28.9	74
Senegal	28.7	92	21.3	102	34.0	84	30.9	67
Bangladesh	28.2	93	18.2	108	29.6	107	36.7	53
Gambia	28.1	94	14.7	121	41.5	42	n/a	n/a
Algeria	28.0	95	17.4	112	39.2	54	27.4	86
Honduras	27.6	96	22.8	97	27.9	114	32.0	64
Jordan	27.5	97	27.0	87	28.1	113	27.4	85
Ukraine	27.1	98	29.9	77	30.8	98	20.4	110
Nicaragua	27.0	99	18.7	106	30.1	102	32.3	63
Namibia	27.0	100	16.1	117	24.2	127	40.6	40
Guatemala	26.5	101	27.6	84	22.3	132	29.6	71
Kyrgyzstan	26.3	102	25.9	91	31.4	96	21.7	103
Azerbaijan	26.2	103	27.0	88	24.9	124	26.8	90
Trinidad and Tobago	24.8	104	32.9	71	25.4	123	16.2	119
Bolivia, Plurinational St.	24.8	105	24.6	95	22.8	129	27.1	88
Benin	24.8	106	12.7	129	30.2	99	31.5	65
Ghana	24.6	107	16.5	115	28.6	110	28.9	75
Gabon	24.3	108	16.2	116	28.6	109	28.2	79
Jamaica	23.9	109	20.6	103	26.2	119	24.9	94
Nepal	23.8	110	12.8	128	30.9	97	27.8	84
Uzbekistan	23.7	111	25.6	92	33.8	87	11.8	124
Mauritius	23.5	112	29.2	81	39.3	52	2.0	130
Cambodia	23.0	113	11.8	132	21.3	134	36.0	57
Ethiopia	22.9	114	24.2	96	21.2	135	23.2	98
Madagascar	22.9	115	13.6	125	54.7	16	0.3	137
Tajikistan	22.5	116	11.6	133	27.3	116	28.7	76
Syrian Arab Rep.	22.3	117	18.2	109	27.7	115	20.9	109
Rwanda	22.0	118	13.9	124	30.1	101	n/a	n/a
Tanzania, United Rep.	21.7	119	16.0	118	29.6	106	19.5	115
Kenya	21.6	120	20.1	104	24.3	126	20.2	112
Mozambique	21.5	121	17.1	113	25.9	121	21.3	107
Fiji	21.4	122	22.8	98	37.5	62	3.8	128
Pakistan	20.9	123	19.9	105	20.2	137	22.6	101
Sudan	20.9	124	14.0	123	22.8	130	25.9	91
Togo	20.7	125	10.2	136	19.4	138	32.3	62
Côte d'Ivoire	20.4	126	17.8	110	21.1	136	22.3	102
Cameroon	19.6	127	12.7	130	21.7	133	24.5	95
Guyana	19.4	128	16.9	114	40.1	48	1.3	133
Zambia	19.3	129	12.9	127	23.4	128	21.6	104
Uganda	18.9	130	14.4	122	41.4	43	1.0	135
Angola	18.2	131	14.9	120	16.0	140	23.8	97
Yemen	18.1	132	10.2	137	28.4	111	15.7	121
Lao PDR	17.4	133	11.6	134	38.9	57	1.8	131
Nigeria	16.8	134	17.5	111	18.1	139	15.0	122
Mali	16.6	135	12.9	126	35.6	75	1.3	132
Swaziland	16.6	136	10.9	135	33.9	86	5.0	127
Niger	16.5	137	8.9	140	39.3	53	1.3	134
Malawi	16.4	138	9.2	139	39.5	50	0.6	136
Zimbabwe	15.4	139	9.5	138	8.6	141	27.9	82
Burkina Faso	15.3	140	15.8	119	29.7	104	0.3	138
Burundi	15.1	141	7.5	141	35.5	76	2.4	129

Table 2d: Market sophistication pillar

	Market sophistication		Credit		Investment		Trade and competition	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Hong Kong (China)	85.5	**1**	81.4	3	91.0	**1**	84.2	2
United States of America	76.8	2	83.8	2	83.0	2	63.7	69
United Kingdom	76.6	3	85.6	**1**	78.2	3	66.1	57
Singapore	76.3	4	61.0	15	76.9	4	91.1	**1**
Switzerland	69.8	5	69.0	8	67.8	8	72.5	17
Ireland	69.4	6	80.5	4	50.8	18	76.9	9
Canada	68.4	7	60.6	17	72.9	6	71.8	20
Denmark	66.6	8	78.1	5	54.6	15	67.1	46
Israel	64.9	9	59.8	18	66.7	9	68.1	40
Sweden	64.3	10	52.8	23	70.4	7	69.5	30
Australia	63.2	11	65.6	12	57.4	11	66.7	51
New Zealand	62.6	12	74.2	6	46.7	21	67.0	48
South Africa	62.5	13	51.8	25	75.1	5	60.7	83
Malaysia	60.8	14	46.8	31	54.7	14	81.0	4
Netherlands	60.8	15	63.6	13	42.1	28	76.6	10
Korea, Rep.	60.5	16	60.7	16	63.0	10	57.9	95
Spain	58.3	17	65.8	11	45.7	22	63.4	71
Japan	57.7	18	68.0	9	49.2	19	55.9	110
Norway	57.5	19	43.3	38	56.9	12	72.3	18
Cyprus	56.2	20	69.3	7	32.4	49	66.8	50
Belgium	56.0	21	44.7	35	45.4	24	77.9	8
Latvia	55.1	22	66.0	10	32.7	48	66.5	55
Luxembourg	55.0	23	39.9	44	41.8	29	83.4	3
Germany	54.9	24	56.9	21	39.1	32	68.9	34
Peru	54.8	25	61.2	14	37.1	37	66.1	58
Finland	53.6	26	51.6	26	45.5	23	63.6	70
Estonia	52.8	27	52.0	24	31.7	51	74.7	16
Mongolia	52.6	28	50.1	27	39.8	31	68.0	41
France	52.0	29	48.2	29	43.6	27	64.1	66
Austria	51.8	30	59.5	19	25.2	69	70.7	25
Georgia	50.3	31	44.7	34	37.5	36	68.8	35
Albania	49.7	32	41.9	41	45.0	25	62.4	75
Thailand	48.9	33	30.0	71	47.4	20	69.3	31
Kyrgyzstan	47.8	34	48.5	28	22.8	75	72.2	19
China	47.8	35	32.6	62	52.8	16	58.0	94
Saudi Arabia	47.5	36	36.1	50	36.3	40	70.2	29
Portugal	47.4	37	43.8	37	35.3	43	63.3	73
Lithuania	46.8	38	39.5	45	29.6	55	71.3	22
Mauritius	46.1	39	33.9	56	29.2	56	75.1	15
Bahrain	45.8	40	23.6	87	34.9	45	78.9	5
Kenya	45.6	41	47.7	30	32.1	50	56.9	105
Iceland	45.3	42	53.9	22	13.3	106	68.7	37
Azerbaijan	44.9	43	29.9	72	41.0	30	63.8	68
Poland	44.8	44	35.0	52	33.0	47	66.5	54
Montenegro	44.8	45	40.1	43	27.2	63	67.1	47
India	44.6	46	30.2	70	51.8	17	51.7	118
Brunei Darussalam	44.5	47	17.3	101	44.8	26	71.3	21
Czech Republic	44.2	48	37.7	49	18.8	87	76.2	12
Viet Nam	44.1	49	58.1	20	16.9	95	57.3	103
Chile	44.0	50	25.6	85	38.3	34	68.1	39
Kuwait	43.2	51	27.1	80	36.9	38	65.5	62
Macedonia, FYR	43.1	52	34.3	55	24.4	72	70.7	26
Namibia	42.8	53	30.4	68	30.7	53	67.3	44
Bulgaria	42.6	54	43.0	39	18.1	91	66.6	52
United Arab Emirates	42.5	55	31.1	65	25.2	68	71.2	23
Hungary	42.2	56	31.7	64	18.5	90	76.5	11
Malta	42.1	57	44.9	32	3.0	135	78.5	6
Bosnia and Herzegovina	41.2	58	37.8	48	18.0	92	67.7	43
Italy	41.1	59	34.3	54	27.3	62	61.6	77
Slovenia	40.9	60	29.3	76	22.3	76	71.1	24
Rwanda	40.4	61	25.7	84	38.1	35	57.6	99
Colombia	40.3	62	27.3	79	38.5	33	55.0	113
Romania	39.7	63	34.7	53	25.5	67	58.8	93
Turkey	39.4	64	17.3	100	36.5	39	64.5	64
Tajikistan	39.4	65	33.1	58	29.1	57	56.0	109
Nicaragua	39.3	66	30.8	66	18.0	92	69.1	33
Trinidad and Tobago	39.0	67	27.8	77	25.9	66	63.3	72
Ukraine	38.7	68	33.1	59	18.6	88	64.2	65
Paraguay	38.4	69	32.8	61	14.6	100	67.9	42
Fiji	38.1	70	33.3	57	20.9	81	60.2	88
Slovakia	38.1	71	30.3	69	7.8	118	76.1	13

Table 2d: Market sophistication pillar *(continued)*

	Market sophistication		Credit		Investment		Trade and competition	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Armenia	37.8	72	42.9	40	9.0	115	61.6	79
Ghana	37.1	73	40.8	42	17.8	94	52.7	116
Bolivia, Plurinational St.	37.0	74	44.4	36	5.5	124	61.3	81
Belarus	36.9	75	20.3	90	14.7	98	75.7	14
Mexico	36.8	76	21.9	89	26.7	65	61.8	76
Croatia	36.8	77	24.4	86	19.1	86	67.0	49
Serbia	36.7	78	38.3	47	14.0	104	57.8	97
Dominican Republic	36.6	79	19.3	92	29.1	57	61.3	80
Guatemala	36.5	80	32.9	60	7.9	116	68.8	36
Zambia	36.2	81	29.8	73	13.3	105	65.6	60
Brazil	35.6	82	15.3	108	35.4	42	56.1	108
Cambodia	35.5	83	44.8	33	23.4	73	38.4	137
Qatar	35.3	84	15.6	107	21.0	80	69.2	32
Jordan	35.3	85	15.2	109	35.4	41	55.2	112
Botswana	35.1	86	31.7	63	19.3	85	54.2	114
Russian Federation	35.0	87	13.6	112	31.0	52	60.3	85
Greece	34.8	88	39.0	46	6.1	123	59.4	91
Honduras	34.1	89	35.6	51	1.8	137	64.9	63
Lebanon	34.0	90	22.3	88	12.6	108	67.2	45
Nigeria	34.0	91	15.7	106	28.5	61	57.8	96
Kazakhstan	34.0	92	17.2	102	20.8	82	63.9	67
Morocco	33.8	93	18.9	95	21.6	79	60.9	82
Uruguay	33.7	94	18.6	98	24.9	70	57.5	100
Mozambique	33.3	95	9.0	122	33.5	46	57.3	102
Moldova, Rep.	33.1	96	18.9	96	9.8	113	70.5	27
El Salvador	33.1	97	30.7	67	2.2	136	66.3	56
Indonesia	33.0	98	11.9	115	29.8	54	57.4	101
Guyana	32.7	99	6.9	128	13.0	107	78.2	7
Oman	32.6	100	15.1	110	14.2	102	68.6	38
Togo	31.9	101	17.1	103	56.4	13	22.2	141
Angola	31.8	102	6.7	129	29.1	57	59.6	90
Ecuador	31.6	103	29.6	75	4.8	125	60.4	84
Argentina	31.3	104	17.7	99	19.3	84	57.0	104
Tunisia	30.9	105	17.0	104	19.5	83	56.4	107
Philippines	30.7	106	11.0	120	18.6	89	62.5	74
Madagascar	30.6	107	3.0	136	29.1	57	59.8	89
Egypt	30.5	108	16.3	105	24.6	71	50.6	121
Lao PDR	30.2	109	3.8	133	35.3	44	51.4	119
Bangladesh	30.0	110	27.7	78	27.0	64	35.2	138
Nepal	29.9	111	26.5	82	14.5	101	48.6	126
Jamaica	29.8	112	11.7	116	16.1	97	61.6	78
Belize	29.8	113	19.1	94	11.2	109	59.2	92
Algeria	29.3	114	7.0	127	23.4	73	57.7	98
Panama	29.1	115	29.7	74	11.1	112	46.5	128
Malawi	29.1	116	12.9	114	14.1	103	60.2	87
Costa Rica	28.6	117	14.4	111	1.2	139	70.2	28
Zimbabwe	27.9	118	11.5	117	21.7	78	50.4	123
Uganda	27.8	119	26.3	83	4.0	128	53.0	115
Syrian Arab Rep.	27.6	120	2.5	139	14.7	98	65.5	61
Lesotho	27.1	121	8.8	123	6.5	119	65.9	59
Sri Lanka	27.0	122	19.5	91	16.3	96	45.2	131
Swaziland	26.4	123	27.0	81	6.2	122	46.1	130
Yemen	26.1	124	3.8	134	7.9	116	66.6	53
Uzbekistan	24.1	125	7.7	126	4.3	127	60.3	86
Pakistan	23.4	126	19.2	93	22.1	77	28.8	139
Cameroon	23.1	127	8.3	125	11.2	109	50.0	125
Ethiopia	22.3	128	11.5	118	11.2	109	44.3	134
Burkina Faso	22.0	129	8.4	124	6.5	119	51.2	120
Tanzania, United Rep.	21.7	130	11.2	119	9.5	114	44.3	132
Côte d'Ivoire	21.4	131	3.0	137	4.6	126	56.5	106
Burundi	21.1	132	4.1	132	3.6	129	55.6	111
Iran, Islamic Rep.	20.3	133	18.8	97	3.4	134	38.8	136
Senegal	19.6	134	13.4	113	1.8	137	43.8	135
Gambia	19.6	135	6.2	130	0.7	140	51.9	117
Mali	19.5	136	5.8	131	6.5	119	46.2	129
Gabon	19.2	137	3.8	135	3.6	129	50.2	124
Niger	19.0	138	2.8	138	3.6	129	50.5	122
Venezuela, Bolivarian Rep.	16.9	139	1.9	140	0.2	141	48.6	127
Sudan	16.4	140	1.5	141	3.6	129	44.3	133
Benin	12.1	141	10.5	121	3.6	129	22.4	140

Table 2e: Business sophistication pillar

	Business sophistication		Knowledge workers		Innovation linkages		Knowledge absorption	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Singapore	76.9	**1**	91.8	**1**	54.4	13	84.5	**1**
Ireland	69.8	2	77.0	13	49.4	25	82.8	2
Hong Kong (China)	66.9	3	71.4	21	54.2	14	75.0	4
Malta	65.2	4	69.6	26	44.3	39	81.5	3
Luxembourg	64.6	5	83.8	3	53.3	16	56.8	9
Switzerland	63.5	6	85.8	2	54.5	12	50.3	17
Finland	60.7	7	78.3	9	51.0	22	52.9	14
Qatar	60.3	8	48.6	61	67.8	3	64.6	5
United States of America	59.9	9	79.3	6	58.5	8	41.7	46
Sweden	58.6	10	77.6	12	50.0	23	48.2	21
Malaysia	58.2	11	68.4	28	42.4	45	63.7	6
Netherlands	58.0	12	75.2	16	48.6	27	50.1	18
Belgium	57.7	13	80.0	5	46.4	30	46.6	24
Canada	57.4	14	76.6	14	51.4	20	44.3	34
United Kingdom	57.3	15	75.0	17	51.4	21	45.5	29
United Arab Emirates	55.6	16	63.1	35	68.7	2	34.8	71
Denmark	55.2	17	78.0	10	45.5	35	42.2	41
Iceland	55.1	18	77.6	11	47.4	28	40.2	53
Israel	54.8	19	83.2	4	35.8	66	45.4	30
Australia	54.0	20	79.0	7	45.3	36	37.8	61
Japan	53.6	21	78.6	8	36.9	62	45.5	28
Czech Republic	53.0	22	73.4	18	33.6	78	52.0	15
Guyana	52.1	23	50.8	54	48.8	26	56.6	10
Germany	51.7	24	69.8	25	39.2	55	46.1	26
Korea, Rep.	51.7	25	64.9	31	32.2	88	57.9	7
France	51.3	26	75.5	15	36.7	63	41.6	47
New Zealand	50.9	27	72.3	19	38.1	56	42.2	42
China	50.9	28	69.1	27	34.4	73	49.1	20
Austria	50.9	29	72.1	20	43.7	42	36.7	62
Estonia	49.5	30	70.0	23	33.1	84	45.3	31
Norway	49.3	31	70.8	22	40.6	53	36.4	63
Thailand	48.6	32	55.8	41	32.3	87	57.9	8
Lebanon	48.3	33	64.8	33	41.9	47	38.2	59
Slovenia	47.9	34	67.4	29	28.8	104	47.4	22
Italy	47.8	35	69.9	24	32.1	90	41.4	48
Saudi Arabia	47.5	36	40.1	89	61.4	6	41.0	50
Cyprus	47.2	37	52.5	49	53.5	15	35.6	66
Hungary	46.9	38	54.7	45	31.1	95	54.7	12
Lao PDR	46.8	39	23.1	129	76.7	**1**	40.4	52
Bahrain	45.3	40	41.8	79	65.9	5	28.1	103
Spain	45.0	41	63.4	34	31.6	91	39.9	54
Brazil	44.4	42	52.6	48	38.0	57	42.6	38
Russian Federation	44.3	43	64.8	32	25.8	118	42.3	40
Costa Rica	44.2	44	49.2	56	41.3	50	42.1	43
Bosnia and Herzegovina	44.2	45	65.0	30	43.1	43	24.4	127
Swaziland	44.0	46	46.1	66	34.8	71	51.1	16
Oman	43.8	47	29.3	116	66.0	4	36.2	64
Venezuela, Bolivarian Rep.	43.4	48	55.7	42	40.0	54	34.4	73
Iran, Islamic Rep.	43.3	49	35.3	103	41.5	49	53.0	13
Zimbabwe	43.0	50	52.8	47	46.0	33	30.3	92
Ukraine	42.3	51	49.2	55	33.1	85	44.7	33
Poland	42.3	52	57.3	39	23.6	126	45.9	27
Latvia	42.2	53	62.1	36	33.3	83	31.3	91
Guatemala	42.1	54	45.7	68	54.6	11	25.9	121
South Africa	41.9	55	48.7	60	35.7	67	41.2	49
Viet Nam	41.5	56	34.6	106	43.8	41	46.2	25
Chile	41.5	57	61.4	37	31.1	96	32.0	88
Mauritius	40.9	58	43.7	71	46.1	31	33.1	78
Peru	40.6	59	53.7	46	35.9	65	32.2	84
Argentina	40.6	60	52.5	50	25.6	122	43.6	36
Panama	40.5	61	23.4	127	60.0	7	38.2	60
Kazakhstan	40.2	62	45.0	69	33.4	82	42.3	39
Slovakia	39.7	63	54.8	44	29.7	101	34.7	72
Croatia	39.4	64	48.0	63	28.2	107	41.9	44
Portugal	39.3	65	52.5	51	30.0	100	35.5	67
Kenya	39.1	66	38.3	95	47.1	29	32.0	87
Botswana	39.1	67	41.1	83	44.1	40	32.1	85
Colombia	39.0	68	49.0	59	28.4	106	39.5	55
Mongolia	38.9	69	42.8	76	41.7	48	32.3	83
Jamaica	38.9	70	40.9	86	42.9	44	32.8	80
Namibia	38.8	71	38.3	94	45.6	34	32.4	82

Table 2e: Business sophistication pillar *(continued)*

	Business sophistication		Knowledge workers		Innovation linkages		Knowledge absorption	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Philippines	38.8	72	48.3	62	34.9	70	33.1	79
Montenegro	38.4	73	39.0	91	31.2	94	45.0	32
Mozambique	38.2	74	16.1	141	58.1	9	40.5	51
India	37.6	75	42.9	74	37.4	59	32.5	81
Lithuania	37.5	76	57.3	38	31.4	92	23.7	130
Romania	37.4	77	46.0	67	23.5	127	42.7	37
Gabon	37.2	78	34.0	109	28.1	109	49.5	19
Trinidad and Tobago	37.1	79	43.9	70	34.2	74	33.2	76
Nicaragua	37.1	80	41.8	81	37.9	58	31.7	90
Uruguay	37.1	81	49.1	57	33.6	76	28.4	100
Tunisia	37.0	82	41.8	80	42.0	46	27.3	109
Ghana	36.9	83	37.8	97	29.0	102	44.0	35
Bulgaria	36.8	84	51.8	52	23.7	125	35.0	70
Brunei Darussalam	36.4	85	38.7	92	40.6	52	30.0	96
Serbia	36.3	86	42.4	77	27.1	114	39.4	56
Mexico	36.1	87	51.1	53	28.0	110	29.4	98
Greece	35.8	88	49.1	58	28.1	108	30.1	94
Uzbekistan	35.5	89	28.8	118	22.7	131	54.9	11
Armenia	34.8	90	46.2	65	30.1	98	28.1	104
Belize	34.6	91	43.5	72	33.4	81	26.8	113
Algeria	34.5	92	30.7	112	31.0	97	41.9	45
Sudan	34.4	93	28.4	119	54.9	10	19.9	140
Indonesia	34.2	94	17.8	139	46.0	32	38.8	57
Kuwait	34.0	95	34.4	107	34.5	72	33.1	77
Georgia	34.0	96	40.6	87	37.3	60	24.0	128
Honduras	33.8	97	36.9	99	32.3	86	32.1	86
El Salvador	33.7	98	41.6	82	33.5	80	26.1	120
Malawi	33.7	99	40.9	85	35.4	68	24.8	126
Bolivia, Plurinational St.	33.7	100	40.3	88	32.2	89	28.6	99
Dominican Republic	33.6	101	43.4	73	33.8	75	23.6	131
Azerbaijan	33.5	102	34.3	108	27.4	112	38.7	58
Ecuador	33.4	103	42.3	78	31.4	93	26.6	116
Moldova, Rep.	33.4	104	41.1	84	28.9	103	30.2	93
Belarus	33.1	105	54.9	43	16.3	136	28.1	105
Gambia	32.7	106	29.2	117	33.6	77	35.3	69
Turkey	32.5	107	47.0	64	22.9	130	27.5	108
Mali	32.4	108	22.1	131	51.5	18	23.5	132
Cameroon	32.2	109	35.3	104	26.9	115	34.3	74
Macedonia, FYR	32.2	110	34.9	105	25.8	119	35.8	65
Sri Lanka	32.1	111	36.3	102	33.5	79	26.7	114
Niger	32.1	112	19.9	136	50.0	24	26.5	118
Senegal	32.0	113	20.4	134	51.8	17	23.7	129
Egypt	31.9	114	42.8	75	26.8	116	26.2	119
Cambodia	31.8	115	24.5	126	44.3	38	26.5	117
Jordan	31.7	116	37.9	96	30.0	99	27.3	111
Tanzania, United Rep.	31.7	117	20.8	133	51.4	19	22.9	135
Benin	31.5	118	38.5	93	26.2	117	29.8	97
Burkina Faso	30.7	119	26.2	124	45.2	37	20.8	139
Rwanda	30.4	120	27.3	122	36.4	64	27.6	107
Lesotho	30.1	121	36.3	101	25.7	120	28.2	101
Paraguay	30.1	122	37.0	98	25.0	124	28.2	102
Bangladesh	30.0	123	27.8	120	41.2	51	20.9	138
Morocco	29.5	124	29.6	115	27.2	113	31.8	89
Ethiopia	29.2	125	30.1	113	35.2	69	22.4	137
Angola	28.8	126	22.3	130	17.0	134	47.2	23
Pakistan	28.3	127	30.0	114	27.7	111	27.3	110
Uganda	27.5	128	18.9	137	37.0	61	26.7	115
Nigeria	27.5	129	27.2	123	25.3	123	30.1	95
Madagascar	27.2	130	23.2	128	23.1	128	35.4	68
Kyrgyzstan	26.9	131	40.1	90	15.0	138	25.6	124
Fiji	26.6	132	57.1	40	0.0	140	22.6	136
Côte d'Ivoire	25.8	133	30.8	111	19.9	132	26.8	112
Syrian Arab Rep.	25.4	134	36.7	100	23.0	129	16.6	141
Zambia	24.8	135	20.3	135	28.7	105	25.5	125
Nepal	24.8	136	20.9	132	25.7	121	27.8	106
Tajikistan	23.3	137	17.3	140	18.7	133	33.8	75
Albania	22.6	138	27.7	121	17.0	135	23.0	134
Burundi	22.3	139	25.5	125	15.4	137	25.8	122
Togo	19.0	140	33.6	110	0.0	140	23.5	133
Yemen	18.7	141	17.8	138	12.5	139	25.7	123

Table 2f: Knowledge and technology outputs pillar

	Knowledge and technology outputs		Knowledge creation		Knowledge impact		Knowledge diffusion	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Switzerland	72.0	**1**	99.7	**1**	57.2	7	59.0	11
Sweden	67.9	2	84.6	2	49.1	21	70.0	5
Singapore	64.9	3	49.3	25	67.9	3	77.5	**1**
Finland	62.9	4	71.1	8	46.5	27	71.0	4
China	61.8	5	76.1	4	60.4	6	48.9	23
Ireland	60.9	6	54.2	20	51.9	16	76.6	2
Netherlands	59.4	7	66.2	10	50.2	19	61.7	7
United Kingdom	57.6	8	63.2	13	55.3	11	54.3	16
Korea, Rep.	57.5	9	81.5	3	40.0	43	50.9	20
Israel	57.2	10	72.9	6	40.8	41	57.8	12
United States of America	56.1	11	66.8	9	45.0	31	56.3	13
Germany	54.9	12	71.1	7	42.0	40	51.5	18
Estonia	53.8	13	55.3	18	70.4	2	35.6	39
Malta	53.1	14	35.8	37	55.4	10	67.9	6
Japan	51.7	15	62.5	14	36.4	57	56.3	14
Denmark	51.5	16	64.4	11	48.7	22	41.5	30
Belgium	50.6	17	57.7	15	43.0	37	51.2	19
Luxembourg	49.8	18	50.3	23	40.0	44	59.2	10
New Zealand	49.2	19	75.7	5	47.6	23	24.3	77
Czech Republic	48.4	20	46.2	27	61.8	4	37.3	35
Hungary	46.8	21	34.9	40	55.1	12	50.5	22
Canada	46.4	22	56.5	16	42.8	38	39.9	32
France	45.5	23	45.5	30	40.4	42	50.7	21
Iceland	45.5	24	64.4	12	55.0	13	17.0	114
Cyprus	44.7	25	36.4	36	60.9	5	36.7	36
Norway	42.1	26	55.7	17	37.1	53	33.4	46
Slovenia	41.7	27	49.0	26	47.4	24	28.7	58
Austria	41.4	28	50.8	22	38.9	48	34.4	42
Serbia	40.0	29	33.9	42	51.8	17	34.5	41
Ukraine	39.2	30	53.8	21	33.9	66	29.9	55
Moldova, Rep.	38.9	31	54.7	19	34.9	62	27.0	67
Russian Federation	38.4	32	45.5	29	39.9	45	29.9	56
Spain	38.4	33	39.4	32	46.5	26	29.3	57
Hong Kong (China)	38.4	34	5.7	119	55.9	8	53.5	17
Italy	38.2	35	36.9	35	43.9	34	33.9	45
Malaysia	38.0	36	22.8	65	42.5	39	48.7	24
Latvia	37.8	37	35.8	38	53.1	15	24.5	75
Paraguay	36.5	38	1.5	138	47.2	25	60.8	8
Slovakia	36.5	39	31.1	50	50.9	18	27.5	64
Swaziland	35.9	40	32.8	45	30.1	80	44.9	27
Bulgaria	35.7	41	27.3	59	55.5	9	24.2	79
Lithuania	35.3	42	31.6	46	53.6	14	20.9	103
Australia	34.9	43	43.7	31	37.8	50	23.3	83
Belarus	34.5	44	45.5	28	36.6	56	21.3	98
Croatia	34.0	45	35.1	39	44.9	33	22.1	91
Romania	34.0	46	21.4	71	36.7	55	43.9	28
India	34.0	47	28.9	54	33.8	67	39.2	33
Lebanon	33.9	48	15.2	95	45.5	29	40.9	31
Portugal	33.8	49	33.0	44	45.2	30	23.2	85
Thailand	33.5	50	22.0	68	43.2	36	35.5	40
Poland	32.9	51	31.1	49	36.0	59	31.7	48
Gabon	32.3	52	18.0	87	23.2	107	55.6	15
Kuwait	32.0	53	5.1	122	18.4	125	72.5	3
Armenia	31.7	54	37.1	34	31.8	75	26.1	69
Brazil	30.5	55	22.7	67	34.9	63	34.1	44
Costa Rica	30.5	56	12.2	106	37.2	52	42.1	29
Georgia	29.5	57	33.3	43	38.7	49	16.5	118
Viet Nam	29.4	58	14.2	101	39.7	46	34.3	43
Philippines	28.9	59	14.0	102	26.7	94	46.1	26
Macedonia, FYR	28.8	60	21.4	70	34.7	64	30.2	53
South Africa	28.2	61	30.6	51	35.2	61	18.9	106
Chile	27.9	62	23.9	63	37.6	51	22.2	90
Turkey	27.8	63	31.6	47	30.1	81	21.8	92
Belize	27.5	64	27.9	57	22.2	111	32.5	47
Bahrain	27.4	65	19.3	79	39.7	47	23.3	84
Sri Lanka	27.1	66	20.4	75	30.0	82	30.7	52
Oman	26.8	67	22.8	66	32.0	74	25.8	70
Tajikistan	26.7	68	30.5	52	21.2	114	28.3	61
Tunisia	26.7	69	27.8	58	28.5	89	23.8	82
Zimbabwe	26.2	70	34.1	41	43.7	35	0.8	137
Montenegro	26.0	71	26.1	60	46.4	28	5.5	134

Table 2f: Knowledge and technology outputs pillar *(continued)*

	Knowledge and technology outputs		Knowledge creation		Knowledge impact		Knowledge diffusion	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Bosnia and Herzegovina	25.9	72	18.0	86	34.1	65	25.7	72
Iran, Islamic Rep.	25.9	73	28.9	55	22.8	108	n/a	n/a
Bangladesh	25.6	74	2.1	135	26.7	95	48.1	25
Greece	25.6	75	29.9	53	27.1	92	19.7	105
Guyana	25.5	76	1.6	137	14.8	129	60.2	9
Qatar	25.2	77	1.5	139	74.2	**1**	0.0	139
Mauritius	24.9	78	2.1	134	49.5	20	23.0	87
Namibia	24.8	79	39.1	33	21.6	113	13.8	124
Morocco	24.5	80	20.4	76	25.5	100	27.6	63
Argentina	24.3	81	9.7	111	32.1	73	31.1	51
Uruguay	24.2	82	9.2	114	44.9	32	18.7	108
Jordan	24.1	83	20.8	73	28.7	88	22.9	88
Brunei Darussalam	23.9	84	1.6	136	31.5	76	38.6	34
Kazakhstan	23.8	85	13.1	103	37.1	54	21.3	97
Mozambique	23.3	86	3.0	130	35.5	60	31.5	49
Colombia	23.1	87	14.8	97	32.9	70	21.5	95
Fiji	22.9	88	25.7	61	28.3	90	14.7	123
Uzbekistan	22.7	89	12.1	107	33.4	69	n/a	n/a
Mongolia	22.7	90	49.4	24	2.8	140	15.8	119
Ghana	22.6	91	18.3	83	20.9	116	28.5	60
Egypt	22.6	92	21.0	72	26.1	97	20.6	104
Mali	22.6	93	17.7	88	26.2	96	23.8	81
Mexico	22.3	94	16.4	91	26.1	98	24.3	76
Zambia	22.1	95	16.0	92	29.3	86	21.2	100
Côte d'Ivoire	21.9	96	15.7	93	24.8	105	25.2	73
Senegal	21.7	97	18.3	84	20.2	119	26.8	68
Trinidad and Tobago	21.5	98	10.7	109	32.4	71	21.5	96
Malawi	21.5	99	14.3	100	22.5	109	27.7	62
Cameroon	21.5	100	18.7	80	17.1	126	28.6	59
Benin	21.2	101	19.7	77	16.8	127	27.2	65
Kenya	20.8	102	18.1	85	20.1	120	24.0	80
Azerbaijan	20.5	103	11.2	108	25.3	103	25.1	74
Indonesia	20.4	104	4.4	123	29.9	83	27.0	66
Peru	20.3	105	7.7	117	36.4	58	16.7	117
Botswana	20.1	106	20.5	74	8.5	135	31.3	50
Lao PDR	19.9	107	31.3	48	9.5	133	18.8	107
Algeria	19.9	108	10.0	110	19.5	123	30.1	54
El Salvador	19.5	109	14.3	99	21.1	115	23.1	86
United Arab Emirates	18.7	110	28.2	56	27.7	91	0.3	138
Nicaragua	18.6	111	21.4	69	24.9	104	9.5	128
Togo	18.6	112	23.8	64	7.7	136	24.2	78
Albania	18.5	113	12.8	104	25.7	99	17.1	113
Niger	18.5	114	18.6	81	15.7	128	21.1	101
Ecuador	18.4	115	14.9	96	29.1	87	11.0	127
Sudan	18.2	116	9.7	112	29.4	85	15.4	121
Pakistan	18.1	117	4.0	124	24.4	106	25.7	71
Tanzania, United Rep.	18.0	118	17.6	89	29.5	84	6.8	131
Kyrgyzstan	17.6	119	25.6	62	4.9	139	22.3	89
Burkina Faso	17.4	120	12.7	105	18.6	124	20.9	102
Venezuela, Bolivarian Rep.	17.4	121	3.1	128	12.6	131	36.5	37
Burundi	17.4	122	2.4	133	32.1	72	17.5	112
Angola	17.2	123	0.0	141	30.2	79	21.5	94
Honduras	17.2	124	9.0	115	20.9	117	21.7	93
Dominican Republic	17.2	125	14.8	98	31.1	77	5.7	133
Guatemala	16.5	126	8.5	116	19.7	122	21.2	99
Nigeria	16.4	127	9.4	113	22.1	112	17.8	111
Uganda	16.2	128	16.8	90	25.4	101	6.4	132
Syrian Arab Rep.	16.1	129	15.6	94	30.5	78	2.3	136
Saudi Arabia	15.3	130	2.7	132	25.4	102	17.9	110
Yemen	14.7	131	1.2	140	33.7	68	9.4	129
Lesotho	14.7	132	3.3	126	4.9	138	36.0	38
Bolivia, Plurinational St.	14.6	133	3.1	129	22.3	110	18.5	109
Gambia	14.0	134	19.4	78	9.5	134	13.0	126
Nepal	13.8	135	5.3	120	20.5	118	15.7	120
Ethiopia	13.6	136	5.8	118	26.8	93	8.1	130
Cambodia	13.2	137	2.9	131	19.9	121	16.8	116
Madagascar	12.5	138	18.4	82	5.3	137	13.7	125
Jamaica	11.7	139	5.1	121	13.3	130	16.8	115
Rwanda	6.9	140	3.2	127	2.4	141	15.2	122
Panama	6.4	141	3.5	125	10.7	132	4.9	135

Table 2g: Creative outputs pillar

	Creative outputs		Creative intangibles		Creative goods and services		Online creativity	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Switzerland	65.0	**1**	67.9	7	51.6	7	72.8	8
Malta	60.9	2	57.3	14	86.3	**1**	42.8	33
Netherlands	57.0	3	44.7	50	57.8	3	80.7	2
Iceland	55.8	4	55.5	15	30.9	40	81.3	**1**
Norway	55.5	5	45.4	47	53.2	6	78.0	3
Luxembourg	55.0	6	55.3	16	34.1	36	75.0	5
Sweden	53.6	7	47.9	35	45.1	13	73.3	7
Denmark	53.5	8	46.7	39	46.4	10	74.1	6
Estonia	52.8	9	51.6	22	42.2	16	65.7	11
Germany	52.6	10	46.2	40	45.8	11	72.2	9
Hong Kong (China)	52.6	11	50.3	27	55.0	4	54.7	22
Austria	52.1	12	46.1	42	54.6	5	61.7	15
Slovenia	51.5	13	58.9	13	39.2	21	49.2	25
United Kingdom	51.4	14	41.5	65	47.0	8	75.6	4
New Zealand	50.5	15	52.0	21	36.6	28	61.5	16
Canada	49.7	16	46.1	41	45.6	12	61.0	17
Finland	49.3	17	46.0	43	42.5	14	62.9	13
Chile	49.1	18	73.2	2	14.9	84	35.0	40
Qatar	48.6	19	76.2	**1**	22.9	64	19.2	78
United Arab Emirates	48.5	20	70.8	4	23.0	63	29.2	51
Latvia	47.4	21	51.5	23	38.3	24	48.1	27
Belgium	46.0	22	40.3	70	40.6	18	62.8	14
Australia	45.9	23	43.4	59	33.7	37	63.4	12
Jordan	45.1	24	68.8	5	24.6	59	18.1	81
Montenegro	44.6	25	44.9	49	17.3	79	71.3	10
Czech Republic	43.9	26	38.4	81	46.8	9	52.0	24
Israel	43.8	27	43.7	57	28.4	52	59.4	19
Portugal	43.6	28	48.1	34	34.3	35	43.7	32
Saudi Arabia	43.4	29	72.4	3	8.4	110	20.3	74
France	43.3	30	42.1	62	36.2	30	52.7	23
Mauritius	42.7	31	53.0	19	42.5	15	22.3	67
Moldova, Rep.	42.5	32	61.9	9	22.9	66	23.5	60
United States of America	42.2	33	37.0	84	37.2	27	57.6	20
India	40.7	34	60.8	10	30.7	42	10.5	109
Lithuania	40.3	35	39.5	73	37.9	25	44.3	30
Panama	39.9	36	49.9	29	36.5	29	23.4	61
Singapore	39.2	37	44.4	53	29.6	49	38.3	38
Ireland	39.0	38	34.4	97	30.5	43	56.6	21
Spain	38.5	39	33.7	99	38.7	22	48.0	28
Dominican Republic	37.3	40	52.2	20	25.5	57	19.5	76
Oman	37.3	41	64.4	8	7.4	115	12.9	102
Malaysia	37.3	42	50.5	26	23.8	62	24.3	56
Hungary	37.0	43	29.8	111	39.7	20	48.5	26
Serbia	36.9	44	38.9	76	40.2	19	29.3	50
Italy	36.8	45	29.1	115	40.9	17	47.9	29
Tunisia	36.4	46	60.0	11	12.6	91	13.1	101
Rwanda	36.1	47	68.1	6	1.9	131	6.1	122
Argentina	36.0	48	40.0	71	22.9	65	41.3	34
Bulgaria	35.9	49	43.9	55	24.6	60	31.2	45
Croatia	35.8	50	34.9	93	34.8	34	38.7	37
Guyana	35.7	51	47.8	37	24.8	58	22.2	68
Uruguay	35.7	52	45.6	45	19.5	76	32.0	44
Brunei Darussalam	35.5	53	54.3	17	9.1	104	24.1	57
Brazil	35.4	54	41.2	67	29.7	47	29.7	49
Costa Rica	35.2	55	50.0	28	17.9	77	22.9	64
China	34.4	56	47.3	38	35.3	33	7.7	120
Slovakia	34.4	57	34.0	98	29.7	48	40.0	35
Colombia	34.4	58	42.5	60	22.0	67	30.7	46
Korea, Rep.	34.3	59	38.8	78	29.8	46	29.8	48
Poland	34.3	60	28.6	117	36.0	31	44.0	31
Nepal	34.2	61	29.0	116	68.8	2	9.9	110
Bahrain	34.2	62	44.5	51	28.0	54	19.6	75
Cyprus	34.0	63	36.5	87	26.0	56	37.1	39
Turkey	33.7	64	40.4	69	30.8	41	23.1	63
Ecuador	33.5	65	45.2	48	24.1	61	19.4	77
Kuwait	32.8	66	39.5	72	28.6	51	23.7	59
Senegal	32.6	67	59.1	12	2.6	128	9.8	111
Jamaica	32.5	68	49.1	31	10.9	94	21.1	72
Japan	32.3	69	29.8	112	37.6	26	32.2	43
Viet Nam	32.2	70	34.8	95	36.0	32	23.2	62
Mongolia	31.6	71	48.5	33	10.6	98	19.0	79

Table 2g: Creative outputs pillar *(continued)*

	Creative outputs		Creative intangibles		Creative goods and services		Online creativity	
Country/Economy	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Peru	31.4	72	49.1	30	5.8	119	21.7	69
Indonesia	30.6	73	54.2	18	5.0	122	9.2	113
Trinidad and Tobago	30.4	74	45.5	46	9.4	103	21.3	71
Thailand	30.0	75	35.9	89	30.0	45	18.3	80
Nigeria	29.7	76	50.9	24	16.1	82	1.0	140
Guatemala	29.7	77	45.9	44	12.4	93	14.8	94
Macedonia, FYR	29.6	78	34.8	96	21.1	69	27.7	52
Mexico	29.5	79	38.8	77	16.3	81	24.1	58
El Salvador	29.4	80	43.5	58	14.6	85	16.1	91
Belize	29.3	81	28.1	119	0.5	140	60.7	18
Romania	29.3	82	26.9	123	29.0	50	34.4	41
Ukraine	29.2	83	33.5	100	19.7	75	30.0	47
Russian Federation	29.1	84	27.8	121	27.9	55	33.0	42
Sri Lanka	28.9	85	41.7	64	20.7	71	11.3	106
South Africa	28.8	86	42.3	61	9.5	101	21.0	73
Venezuela, Bolivarian Rep.	28.2	87	36.3	88	17.6	78	22.4	65
Albania	28.1	88	35.0	91	20.1	73	22.4	66
Armenia	28.0	89	37.1	83	12.4	92	25.5	55
Bosnia and Herzegovina	27.9	90	33.0	103	19.9	74	25.6	54
Azerbaijan	27.5	91	41.0	68	10.8	95	17.0	87
Greece	27.5	92	19.3	131	32.0	39	39.3	36
Lebanon	27.3	93	27.0	122	38.4	23	17.1	86
Uganda	27.1	94	50.5	25	2.8	126	4.8	131
Namibia	26.9	95	43.8	56	7.7	113	12.2	103
Bolivia, Plurinational St.	26.0	96	38.4	79	12.7	90	14.6	96
Zambia	25.8	97	48.7	32	0.9	137	4.9	130
Ghana	25.7	98	44.4	54	9.5	102	4.6	132
Pakistan	25.6	99	31.3	107	28.3	53	11.4	105
Mali	25.0	100	47.9	36	1.6	135	2.6	138
Swaziland	24.9	101	25.8	125	30.0	44	18.1	82
Morocco	24.9	102	38.4	80	7.2	116	15.7	93
Paraguay	24.8	103	36.7	85	7.7	114	18.1	83
Honduras	24.6	104	37.9	82	9.1	105	13.3	100
Georgia	24.2	105	26.9	124	17.1	80	25.9	53
Egypt	24.0	106	31.3	106	21.2	68	12.2	104
Madagascar	24.0	107	29.4	113	32.2	38	5.0	128
Philippines	23.7	108	34.9	94	7.1	117	17.8	84
Gambia	23.5	109	39.4	74	0.6	139	14.7	95
Benin	22.8	110	41.7	63	1.1	136	6.6	121
Ethiopia	22.7	111	44.4	52	1.9	133	0.1	141
Zimbabwe	22.7	112	36.6	86	9.0	106	8.6	116
Nicaragua	22.3	113	33.3	101	8.2	112	14.4	97
Burkina Faso	22.1	114	41.4	66	2.3	129	3.6	135
Cameroon	21.9	115	39.3	75	5.6	120	3.6	134
Kenya	21.9	116	33.2	102	12.9	87	8.2	119
Belarus	21.8	117	24.7	126	21.0	70	16.7	88
Cambodia	21.3	118	35.0	92	6.9	118	8.2	117
Kazakhstan	21.0	119	29.2	114	8.4	109	17.3	85
Botswana	19.7	120	31.2	109	2.7	127	13.8	98
Bangladesh	19.6	121	31.5	105	10.1	100	5.3	123
Côte d'Ivoire	19.6	122	35.5	90	2.0	130	5.2	125
Syrian Arab Rep.	19.1	123	23.8	129	12.8	88	16.0	92
Angola	19.1	124	30.3	110	10.7	96	4.9	129
Mozambique	18.7	125	27.8	120	15.8	83	3.3	136
Lesotho	18.4	126	31.2	108	0.1	141	10.9	108
Malawi	18.3	127	32.5	104	4.1	124	4.1	133
Tanzania, United Rep.	18.0	128	28.3	118	12.8	89	2.8	137
Tajikistan	17.4	129	24.2	127	4.4	123	16.5	89
Kyrgyzstan	17.0	130	19.0	132	20.6	72	9.4	112
Iran, Islamic Rep.	15.7	131	22.6	130	8.5	108	9.1	115
Fiji	14.9	132	n/a	n/a	8.2	111	21.6	70
Burundi	14.2	133	24.2	128	3.0	125	5.3	124
Togo	12.6	134	n/a	n/a	8.9	107	16.4	90
Gabon	12.1	135	n/a	n/a	10.7	97	13.6	99
Algeria	11.7	136	12.0	134	13.6	86	9.2	114
Yemen	11.5	137	18.5	133	0.8	138	8.2	118
Uzbekistan	6.6	138	5.3	135	10.6	99	5.2	126
Lao PDR	6.3	139	n/a	n/a	1.7	134	10.9	107
Niger	5.3	140	n/a	n/a	5.5	121	5.1	127
Sudan	2.4	141	2.7	136	1.9	132	2.2	139

Notes

1 This indicator replaces the rigidity of employment index used in the GII 2011, which has been temporarily discontinued following consultations between the World Bank and the International Labour Organization.

2 This indicator replaces two of its components included in the GII 2011, time and cost to start a business.

3 The World Bank Doing Business indicator, formerly known as 'Ease of closing a business', is reintroduced this year in the GII.

4 The ease of paying taxes index replaces the indicator total tax rate as a percentage of profits included in GII 2011 (the latter being one component of the former).

5 Following consultations within the International Tax Dialogue (ITD), a series of modifications to the computation of the ease of paying taxes index was adopted. Among others, a minimum threshold was applied to the total tax rate as a percentage of profits. The ITD is a collaborative project of the European Commission, the Inter-American Development Bank, the International Monetary Fund, the Organisation for Economic Co-operation and Development (OECD), and the World Bank. Refer to *Ease of Doing Business Data Notes,* page 52, and to the *Annex 13: Update on Paying Taxes* consultation process with the ITD, pages 51 to 56 of *Doing Business Employing Workers Indicator Consultative Group, Annexes,* April 27, 2011, both available at http://www.doingbusiness.org.

6 The percentage of tertiary students in science on one hand, and in engineering, manufacturing, and construction, on the other, which were included separately in the GII 2011 (2.2.2 and 2.2.3), were combined this year into a single indicator, 2.2.2.

7 The indicator tertiary outbound mobility included in the GII 2011 was deemed redundant and dropped from the model this year.

8 The share of renewables in energy use, included in the GII 2011, was eliminated because a similar metric—renewable electricity—is one component of the Environmental Performance Index. The ecological footprint and biocapacity indicator was eliminated because the series has not been updated since 2007.

9 The percent rank index is constructed on the basis of two indices that were included separately in the GII 2011. This change was made to incorporate the asymmetric weighting in the ease of getting credit rank of its components, by which weights of 62.5% and 37.5% are assigned to the strength of legal rights index and to the depth of credit information index (GII 2011 indicators 4.1.1 and 4.1.2), respectively.

10 This World Bank Ease of Doing Business indicator includes four components, one of which was included in the GII 2011, the strength of investor protection index, which it now replaces as indicator 4.2.1.

11 The global economic crisis has had its toll. In the GII 2011, this indicator was constructed on the basis 7,937 deals in 81 countries in 2010.

12 The latter, a World Trade Organization series, replaces the Market Access Trade Restrictiveness Index of the International Monetary Fund and the World Bank (included in the GII 2011), which has not been updated.

13 The GMAT is a standardized test aimed at measuring aptitude to succeed academically in graduate business studies. It is an important part of the admissions process for nearly 5,300 graduate management programmes in approximately 2,000 business schools worldwide.

14 This was determined from a query on joint ventures / strategic alliances deals announced in 2011 from Thomson Reuters SDC Platinum database. A count variable was created: each participating nation of each company in a deal (*n* countries per deal) gets, per deal, a score equivalent to 1/*n*. All country scores add up to 3,007 (1,247 in 2010, in 94 participating economies), the total number of deals.

15 Wunsch-Vincent, 2011.

16 See the GII 2011, Chapter 6.

17 This information is based on the WIPO website, http://www.wipo.int/export/sites/www/ip-development/en/creative_industry/pdf/table_results_of_studies.pdf.

18 Thanks go to Lydia Deloumeaux from UIS for providing this information.

References

World Bank. 2012. Ease of Doing Business Data Notes. *Doing Business 2011*, p. 52, Available at http://www.doingbusiness.org.

World Bank. 2011. *Doing Business: Employing Workers Indicator Consultative Group,* Annexes, April 27, 2011, Annex 13: Update on Paying Taxes consultation process with the ITD, pp. 51–56. Available at http://www.doingbusiness.org.

Wunsch-Vincent, S. 2011. 'Accounting for Creativity in Innovation: Measuring Ambitions and Related Challenges'. *The Global innovation Index 2011,* Chapter 6. Fontainebleau: INSEAD.

Adjustments to the Global Innovation Index Framework and Year-on-Year Comparability of Results

Although the Global Innovation Index (GII) is a year-on-year performance assessment, it also seeks to update/improve the way innovation is measured. The report pays special attention to making accessible the statistics used, providing data sources and definitions, and detailing the computation methodology (Appendices II, III, and IV, respectively). This annex is aimed at summarizing the changes made and providing an assessment of the impact of these changes in the comparability of rankings.

Adjustments to the Global Innovation Index framework

The GII model is revised every year in a transparent exercise. This year, the Infrastructure pillar was reorganized to single out ecological sustainability in a new sub-pillar. The title of the sixth pillar was changed to Knowledge and technology outputs to better reflect its component indicators. A new sub-pillar on online digital creativity was also added to the rankings.

In addition, beyond the use of WIPO data, we collaborate with both public international bodies (such as the International Labour Organization, UNESCO, and the World Bank) and private organizations (such as the International Organization for Standardization (ISO), the Graduate Management Admission Council, Thomson Reuters, ZookNIC, and Google) to obtain the best data on innovation measurement globally.

While the reasons/rationale for the adjustments made to the GII framework are explained in detail in Annex 1, Table 1 provides a summary of changes made at the pillar, sub-pillar, and indicator level for quick referencing.

Some scaling factors were also adjusted this year and a couple of indicators had methodological breaks in their series. For instance, the Press Freedom Index can now take negative values, when in the

Table 1: Changes to the Global Innovation Index framework

	GII 2011		GII 2012
1.2.3	Rigidity of employment	1.2.3	Cost of redundancy dismissal
1.3.1	Time to start a business	1.3.1	Ease of starting a business
1.3.2	Cost to start a business		
		1.3.2	Ease of resolving insolvency
1.3.3	Total tax rate	1.3.3	Ease of paying taxes
2.2.2	Graduates in science	2.2.2	Graduates in science & engineering
2.2.3	Graduates in engineering		
2.2.5	Tertiary outbound mobility ratio	2.2.4	Gross tertiary outbound enrolment ratio
2.2.6	Gross tertiary outbound enrolment ratio		
3.2	Energy	3.2.	General infrastructure
3.3	General infrastructure	3.3.	Ecological sustainability
3.3.1	Quality of trade and transport-related infrastructure	3.2.3	Quality of trade and transport-related infrastructure
3.3.2	Gross capital formation	3.2.4	Gross capital formation
3.2.3	GDP per unit of energy use	3.3.1	GDP per unit of energy use
3.2.4	Share of renewables in energy use	3.3.2	Environmental performance index
3.3.3	Ecological footprint and biocapacity	3.3.3	ISO 14001 environmental certificates
4.1.1	Strength of legal rights to get credit	4.1.1	Ease of getting credit
4.1.2	Depth of credit information		
4.2.1	Strength of investor protection index	4.2.1	Ease of protecting investors
4.3.2	Market access trade restrictiveness	4.3.2	Market access for non-agricultural exports
		5.1.5	GMAT mean score
		5.1.6	GMAT test takers
6.	Scientific outputs	6.	Knowledge and technology outputs
		6.2.4	ISO 9001 quality certificates
		7.3.	Online creativity
		7.3.1	Generic top-level domains (gTLDs)
		7.3.2	Country-code top-level domains (ccTLDs)
		7.3.3	Wikipedia monthly edits
		7.3.4	Video uploads on YouTube

Note: Dark shades indicate changes at the pillar and sub-pillar level, light shades indicate changes in the positioning only of the indicator.

Table 2: Source of changes in the rankings: 2012 compared with 2011

Country/Economy	GII 2012 rank (A)	GII 2012 rank among 2011 economies (B)	GII 2011 rank (C)	Change in ranking between GII 2011 and 2012 (D)	Change due to improved or worsening performance on the basis of the 2011 framework (E)	Change due to adjustments to the GII framework (F)	Change due to the inclusion of additional countries/ economies (G)
Switzerland	1	1	1	0	0	0	0
Sweden	2	2	2	0	0	0	0
Singapore	3	3	3	0	0	0	0
Finland	4	4	5	1	1	0	0
United Kingdom	5	5	10	5	1	4	0
Netherlands	6	6	9	3	3	0	0
Denmark	7	7	6	–1	–1	0	0
Hong Kong (China)	8	8	4	–4	–1	–3	0
Ireland	9	9	13	4	3	1	0
United States of America	10	10	7	–3	–4	1	0
Luxembourg	11	11	17	6	9	–3	0
Canada	12	12	8	–4	–5	1	0
New Zealand	13	13	15	2	1	1	0
Norway	14	14	18	4	0	4	0
Germany	15	15	12	–3	0	–3	0
Malta	16	n/a	n/a	n/a	n/a	n/a	n/a
Israel	17	16	14	–3	–2	0	–1
Iceland	18	17	11	–7	–6	0	–1
Estonia	19	18	23	4	4	1	–1
Belgium	20	19	24	4	2	3	–1
Korea, Rep.	21	20	16	–5	1	–5	–1
Austria	22	21	19	–3	–2	0	–1
Australia	23	22	21	–2	–2	1	–1
France	24	23	22	–2	–2	1	–1
Japan	25	24	20	–5	0	–4	–1
Slovenia	26	25	30	4	2	3	–1
Czech Republic	27	26	27	0	1	0	–1
Cyprus	28	27	28	0	–1	2	–1
Spain	29	28	32	3	–1	5	–1
Latvia	30	29	36	6	2	5	–1
Hungary	31	30	25	–6	–5	0	–1
Malaysia	32	31	31	–1	0	0	–1
Qatar	33	32	26	–7	1	–7	–1
China	34	33	29	–5	2	–6	–1
Portugal	35	34	33	–2	1	–2	–1
Italy	36	35	35	–1	–3	3	–1
United Arab Emirates	37	36	34	–3	–2	0	–1
Lithuania	38	37	40	2	1	2	–1
Chile	39	38	38	–1	–2	2	–1
Slovakia	40	39	37	–3	–6	4	–1
Bahrain	41	40	46	5	9	–3	–1
Croatia	42	41	44	2	–2	5	–1
Bulgaria	43	42	42	–1	–6	6	–1
Poland	44	43	43	–1	–1	1	–1
Montenegro	45	n/a	n/a	n/a	n/a	n/a	n/a
Serbia	46	44	55	9	8	3	–2
Oman	47	45	57	10	7	5	–2
Saudi Arabia	48	46	54	6	12	–4	–2
Mauritius	49	47	53	4	18	–12	–2
Moldova, Rep.	50	48	39	–11	–6	–3	–2
Russian Federation	51	49	56	5	–2	9	–2
Romania	52	50	50	–2	–10	10	–2
Brunei Darussalam	53	51	75	22	18	6	–2
South Africa	54	52	59	5	–6	13	–2
Kuwait	55	53	52	–3	11	–12	–2
Jordan	56	54	41	–15	–11	–2	–2
Thailand	57	55	48	–9	–5	–2	–2
Brazil	58	56	47	–11	–14	5	–2
Tunisia	59	57	66	7	2	7	–2
Costa Rica	60	58	45	–15	–9	–4	–2
Lebanon	61	59	49	–12	–7	–3	–2
Macedonia, FYR	62	60	67	5	5	2	–2
Ukraine	63	61	60	–3	–6	5	–2
India	64	62	62	–2	3	–3	–2
Colombia	65	63	71	6	–4	12	–2
Greece	66	64	63	–3	–6	5	–2
Uruguay	67	65	64	–3	1	–2	–2
Mongolia	68	66	68	0	13	–11	–2
Armenia	69	67	69	0	1	1	–2
Argentina	70	68	58	–12	–12	2	–2
Georgia	71	69	73	2	2	2	–2

Table 2: Source of changes in the rankings: 2012 compared with 2011 *(continued)*

Country/Economy	GII 2012 rank (A)	GII 2012 rank among 2011 economies (B)	GII 2011 rank (C)	Change in ranking between GII 2011 and 2012 (D)	Change due to improved or worsening performance on the basis of the 2011 framework (E)	Change due to adjustments to the GII framework (F)	Change due to the inclusion of additional countries/ economies (G)
Bosnia and Herzegovina	72	70	76	4	2	4	–2
Namibia	73	71	78	5	–2	9	–2
Turkey	74	72	65	–9	–2	–5	–2
Peru	75	73	83	8	7	3	–2
Viet Nam	76	74	51	–25	0	–23	–2
Guyana	77	75	61	–16	12	–26	–2
Belarus	78	n/a	n/a	n/a	n/a	n/a	n/a
Mexico	79	76	81	2	–3	8	–3
Belize	80	n/a	n/a	n/a	n/a	n/a	n/a
Trinidad and Tobago	81	77	72	–9	–6	1	–4
Swaziland	82	78	101	19	28	–5	–4
Kazakhstan	83	79	84	1	2	3	–4
Paraguay	84	80	74	–10	–3	–3	–4
Botswana	85	81	79	–6	0	–2	–4
Dominican Republic	86	n/a	n/a	n/a	n/a	n/a	n/a
Panama	87	82	77	–10	5	–10	–5
Morocco	88	83	94	6	6	5	–5
Azerbaijan	89	84	88	–1	5	–1	–5
Albania	90	85	80	–10	–7	2	–5
Jamaica	91	86	92	1	6	0	–5
Ghana	92	87	70	–22	–11	–6	–5
El Salvador	93	88	90	–3	–2	4	–5
Sri Lanka	94	89	82	–12	–3	–4	–5
Philippines	95	90	91	–4	1	0	–5
Kenya	96	91	89	–7	0	–2	–5
Senegal	97	92	100	3	5	3	–5
Ecuador	98	93	93	–5	–3	3	–5
Guatemala	99	94	86	–13	–13	5	–5
Indonesia	100	95	99	–1	8	–4	–5
Fiji	101	n/a	n/a	n/a	n/a	n/a	n/a
Rwanda	102	96	109	7	15	–2	–6
Egypt	103	97	87	–16	–6	–4	–6
Iran, Islamic Rep.	104	98	95	–9	–2	–1	–6
Nicaragua	105	99	110	5	–11	22	–6
Gabon	106	n/a	n/a	n/a	n/a	n/a	n/a
Zambia	107	100	114	7	13	1	–7
Tajikistan	108	101	116	8	5	10	–7
Kyrgyzstan	109	102	85	–24	–17	0	–7
Mozambique	110	n/a	n/a	n/a	n/a	n/a	n/a
Honduras	111	103	98	–13	–8	3	–8
Bangladesh	112	104	97	–15	–1	–6	–8
Nepal	113	n/a	n/a	n/a	n/a	n/a	n/a
Bolivia, Plurinational St.	114	105	112	–2	8	–1	–9
Zimbabwe	115	106	119	4	3	10	–9
Lesotho	116	n/a	n/a	n/a	n/a	n/a	n/a
Uganda	117	107	106	–11	–8	7	–10
Venezuela, Bolivarian Rep.	118	108	102	–16	–3	–3	–10
Mali	119	109	107	–12	7	–9	–10
Malawi	120	110	108	–12	5	–7	–10
Cameroon	121	111	103	–18	–5	–3	–10
Burkina Faso	122	112	120	–2	5	3	–10
Nigeria	123	113	96	–27	–11	–6	–10
Algeria	124	114	125	1	12	–1	–10
Benin	125	115	118	–7	–1	4	–10
Madagascar	126	116	113	–13	3	–6	–10
Uzbekistan	127	n/a	n/a	n/a	n/a	n/a	n/a
Tanzania, United Rep.	128	117	104	–24	–5	–8	–11
Cambodia	129	118	111	–18	–6	–1	–11
Gambia	130	n/a	n/a	n/a	n/a	n/a	n/a
Ethiopia	131	119	121	–10	3	–1	–12
Syrian Arab Rep.	132	120	115	–17	–5	0	–12
Pakistan	133	121	105	–28	–7	–9	–12
Côte d'Ivoire	134	122	117	–17	–5	0	–12
Angola	135	n/a	n/a	n/a	n/a	n/a	n/a
Togo	136	n/a	n/a	n/a	n/a	n/a	n/a
Burundi	137	n/a	n/a	n/a	n/a	n/a	n/a
Lao PDR	138	n/a	n/a	n/a	n/a	n/a	n/a
Yemen	139	123	123	–16	0	0	–16
Niger	140	124	122	–18	–3	1	–16
Sudan	141	125	124	–17	0	–1	–16

past it was bounded from below by zero; there was a break in series for WIPO indicators (refer to Box 1 in Annex 1), among others. For details please refer to Appendices III and IV.

Sources of changes in the rankings

Scores and rankings from one year to the other are therefore not entirely comparable. An effort was made, however, this year for the first time, at being transparent regarding the sources of changes in rankings.

Table 2 details the source of the changes in rankings, and includes six columns:

1. The GII 2012 ranking out of 141 economies (A).
2. The GII 2012 ranking among the economies included in the GII 2011 ranking (B).
3. The GII 2011 ranking (out of 125 economies (C)).
4. For the 125 economies included in the 2011 ranking, we provide the difference between the GII 2011 and the GII 2012 ranking (D = A – C). There are three sources of changes in rankings:
   a. The changes in rankings due to improved or worsening performance on the basis of the 2011 model. These are calculated by comparing the GII 2011 ranking with the rankings obtained with the 2011 framework and updated data—that is, the data available in 2012 (E).
   b. The changes in rankings due to adjustments made to the GII framework in 2012 compared with 2011. These correspond to the comparison of rankings with the GII 2011 and GII 2012 frameworks with updated data only (G = B – F); they can also be calculated as a residual (F = D – G – E).
   c. The changes in rankings due to the inclusion of 16 additional countries/economies. These are calculated by comparing the GII 2012 ranking with the same ranking among the 125 economies included in GII 2011. This source is independent of the GII ranking, only the sample of countries matters (G = B – A).

How to interpret this chart

Estonia gained four positions this year, rising from rank 23 in the GII 2011 to 19 in the GII 2012. Estonia lost one position because of the inclusion of additional economies in the GII 2012. If only those economies included in the GII 2011 are considered, it gained five positions; four positions were gained because of its improved performance on the basis of the 2011 model, and one position was gained because of adjustments made to the GII framework in 2012.

Yet these sources of changes in rankings are only an approximation at best; for some countries, some weaknesses or strengths were also revealed through better data coverage. A different approach could have been adopted, such as evaluating performance by recalculating last year's rankings with this year's framework. Moreover, the statistical treatment of indicators—a modelling choice that has no relation to the conceptual framework—also has an impact on scores and rankings. The expansion of the sample of countries (16 countries added this year) has a direct impact on the rankings as well (E above), but also an indirect impact through, among others, the min-max normalization.

Although this exercise adds some layers of complexity to the interpretation of results, it allows analysts to refine their assessment of the changes in rankings. To that end, they are also encouraged to look carefully at the underlying components of the rankings and at the country profiles.

The primary message of this annex is that making inferences about performance on the basis of year-on-year differences in rankings alone can be misleading. For example, note that while Viet Nam fell 25 positions in the rankings, this is not at all an indicator of relatively improving or worsening performance: two positions were lost because of the addition of economies, and 23 were lost because of adjustments to the GII framework in 2012. In other words, Viet Nam would have kept its ranking among the 125 economies of 2011 had we maintained the GII 2011 framework unchanged.

Statistical Tests on the Global Innovation Index

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The assessment of conceptual and statistical coherence of the Global Innovation Index (GII) and the estimation of the impact of modelling assumptions on a country's performance are necessary steps to ensure the transparency and reliability of the GII and enable policy makers to derive more accurate and meaningful conclusions and potentially guide choices on priority setting and policy formulation. Modelling the versatile concepts underlying innovation at national scale around the globe, as attempted in the GII, raises practical challenges related to the quality of data and the combination of these into a single number.

The Econometrics and Applied Statistics Unit at the European Commission Joint Research Centre (JRC) in Ispra (Italy) was invited for a second consecutive year by INSEAD and the World Intellectual Property Organization (WIPO) to audit the GII along two main issues: the conceptual and statistical coherence of the structure, and the impact of key modelling assumptions on the GII 2012 scores and ranks.[1]

Conceptual and statistical coherence in the GII framework

An earlier version of the GII model was assessed by the JRC in March 2012. Fine-tuning suggestions were made and taken into account in the final version of the GII model. In this way, the development of the 2012 GII moved from a one-way design process to an iterative process with the JRC with a view to set the foundation for a balanced index. This section will consider these refinements and provide an additional assessment of the conceptual/statistical coherence in the final GII model. The entire process followed four steps (see Figure 1):

Step 1: Conceptual consistency

Candidate indicators were selected for their relevance to a specific innovation pillar (based on literature review and expert opinion) and timeliness. To represent a fair picture of country differences, indicators were scaled (by GDP, population, total goods, or others), as appropriate and where needed, either at the source or by the GII team.

Step 2: Data checks

The most recently released data were used for each country with a cut-off at year 2001. Countries were included if data availability was at least 63% (i.e., 54 out of 84 variables) and at least two of the three sub-pillars in each pillar could be computed. These two criteria were jointly decided by the JRC and the GII team as suitable for the dataset already at hand from the GII 2011. Data values outside the 2.0 interquartile range[2] were checked for reporting errors. Potentially problematic indicators that could bias the overall results were identified as those having skewness (absolute) > 2 and kurtosis > 3.5[3] and were treated either by winsorisation (country values distorting the indicator distribution were assigned the next highest value, up to the level where skewness and kurtosis entered within the specified ranges) or by taking the natural logarithm (in case of more than five outliers).

Step 3: Statistical coherence

Only two cases of strong collinearity (i.e., Pearson correlation coefficients greater than ~ 0.92) were spotted within the same sub-pillar: these involved variables 1.2.1 with 1.2.2, Regulatory quality and Rule of Law; and finally 3.2.1 with 3.2.2 Electricity output and consumption.[4] This issue was dealt with by treating them as a single indicator (by assigning half weight to each normalized score). Besides these four variables, 17 more variables in the GII 2012 framework of 84 variables were assigned half weight in order to arrive at sub-pillar scores that were balanced in the underlying variables. For the same reason, two sub-pillars—7.2 and 7.3, Creative goods and services and Online creativity—were assigned half weight, while all other sub-pillars were assigned a weight of 1.0. These 0.5 or 1.0 weights were jointly decided between the JRC and the GII team, as scaling coefficients and not as importance coefficients. The aim was to attain a balance between

Figure 1: Conceptual and statistical coherence in the GII 2012 framework

Source: Saisana and Philippas, European Commission Joint Research Centre, 2012.

the contribution of variables to their respective sub-pillars and also a balance of the sub-pillars to their respective pillars. Paruolo et al. (2012) show that nominal weights in weighted arithmetic averages are not a measure of variable importance, although weights are assigned so as to reflect some stated target importance and they are communicated as such. In weighted averages, the ratio of two nominal weights gives the rate of substitutability between the two individual variables, and hence can be used to reveal the target relative importance of individual indicators. This target importance can then be compared with ex-post measures of variables' importance, such as the Karl Pearson's 'correlation ratio'.

Principal component analysis confirms the presence of a single latent dimension in the first six pillars (one component with an eigenvalue greater than 1.0) that captures between 57% (business sophistication) and 80% (institutions) of the total variance in the three underlying sub-pillars. For the seventh pillar (creative outputs), two principal components have eigenvalues greater than 1.0; nevertheless, the first component captures 56% of the variance of the three underlying sub-pillars. Further, results confirm the expectation that the sub-pillars are more correlated to their own pillar than to any other.

The five pillars in the Innovation Input Sub-index also share a single latent dimension that captures 80% of the total variance. The five loadings are very similar to each other, which suggests that building the Input Sub-index as a simple average (equal weights) of the five pillars is statistically supported by the data. This analysis could not be carried out on the Innovation Output Sub-index given that it is made of only two pillars[5]—Knowledge and technology outputs and Creative outputs, which are both correlated strongly with the Output Sub-index (Pearson correlation coefficients 0.92 and 0.90, respectively). This latter implies that also the Output Sub-index is well balanced in its two pillars.

Finally, building the GII as the simple average of the Input and Output Sub-index is also statistically justifiable because the Pearson correlation coefficient of either sub-index with the overall GII is roughly 0.90. So far, results show that the conceptual grouping of sub-pillars into pillars, sub-indices, and in an overall GII is statistically coherent, has a balanced structure (i.e., not dominated by any pillar or sub-pillar), and

Table 1: Uncertainty parameters: missing values, aggregation and weights

		Reference	Alternative
I. Uncertainty in the treatment of missing values		no estimation of missing data	Expectation Maximization (EM)
II. Uncertainty in the aggregation formula at the pillar level		arithmetic average	geometric average
III. Uncertainty intervals for the GII weights			
GII Sub-Index	Pillar	Reference value for the weight	Distribution assigned for robustness analysis
Innovation Input	Institutions	0.2	U[0.1,0.3]
	Human capital and research	0.2	U[0.1,0.3]
	Infrastructure	0.2	U[0.1,0.3]
	Market sophistication	0.2	U[0.1,0.3]
	Business sophistication	0.2	U[0.1,0.3]
Innovation Output	Knowledge and technology outputs	0.5	U[0.4,0.6]
	Creative outputs	0.5	U[0.4,0.6]

Source: Saisana and Philippas, European Commission Joint Research Centre, 2012.

gives further justification for the use of simple averages at the various levels of aggregation.

Step 4: Qualitative review

Finally, the GII results, including overall country classification and relative performance in terms of Innovation Input or Output, were evaluated by the GII team and the JRC to verify that the overall results are, to a great extent, consistent with current evidence, existing research or prevailing theory.

Notwithstanding these statistical tests and the positive outcomes on the statistical coherence of the GII structure, it is important to mention that the GII model is and has to be open for future improvements as better data, more comprehensive surveys and assessments, and new relevant research studies become available.

Impact of modelling assumptions on the GII results

Every country score on the overall GII and its two Innovation Sub-Indices depends on choices: the seven-pillar structure, the selected variables, the estimation or not of missing data, the normalization of the variables, the weights assigned to them, and the aggregation method, among other elements. Some of these choices are based on the opinion of experts in the field (e.g., the selection of variables and equal weights within pillars) or common practice (e.g., min-max method to normalize the variables in 0 to 100 scale), driven by statistical analysis (e.g., treating outliers) or simplicity (e.g., no estimation of missing data). The aim of the robustness analysis is to assess to what extent these choices might impact the GII results. We have dealt with these uncertainties in order to check their simultaneous and joint influence with a view to fully acknowledging their implications. In the present analysis, the data are assumed to be error-free since INSEAD already undertook a double-check control of potential outliers and eventual errors and typos were corrected during this phase (see Step 2 in Figure 1).

The robustness assessment of the GII was based on the combination of a Monte Carlo experiment and a multi-modelling approach. This type of assessment aims to respond to eventual criticism that the country scores associated with aggregate measures are generally not calculated under conditions of certainty, even if they are frequently presented as such.[6] The Monte Carlo simulation related to the issue of weighting and comprised 1,000 runs, each corresponding to a different set of weights of the seven pillars randomly sampled from uniform continuous distributions centred in the reference values. The choice of the range for the weights' variation has been driven by two opposite needs: on the one hand, to ensure a wide enough interval to have meaningful robustness checks; on the other hand, to respect the rationale of the GII that the Input Sub-Index (five pillars) and the Output Sub-Index (two pillars) are placed on equal footing when building the overall GII. Given these considerations, limit values of uncertainty intervals have been defined as shown in Table 1. The multi-modelling approach involved combinations of the remaining two key assumptions on the 'no imputation' of missing data and the aggregation formula at the pillar level. The GII developing team, for transparency and replicability, opted not to estimate missing

Figure 2a: Robustness analysis (GII rank vs. median rank, 90% confidence intervals)

Source: Saisana and Philippas, European Commission Joint Research Centre, 2012.

Note: The Spearman rank correlation between the median rank and the GII 2012 rank is 0.996. Median ranks and intervals are calculated over 4,000 simulated scenarios combining different sets of weights, imputed versus non imputed (missing) values and geometric versus arithmetic average at the pillar level.

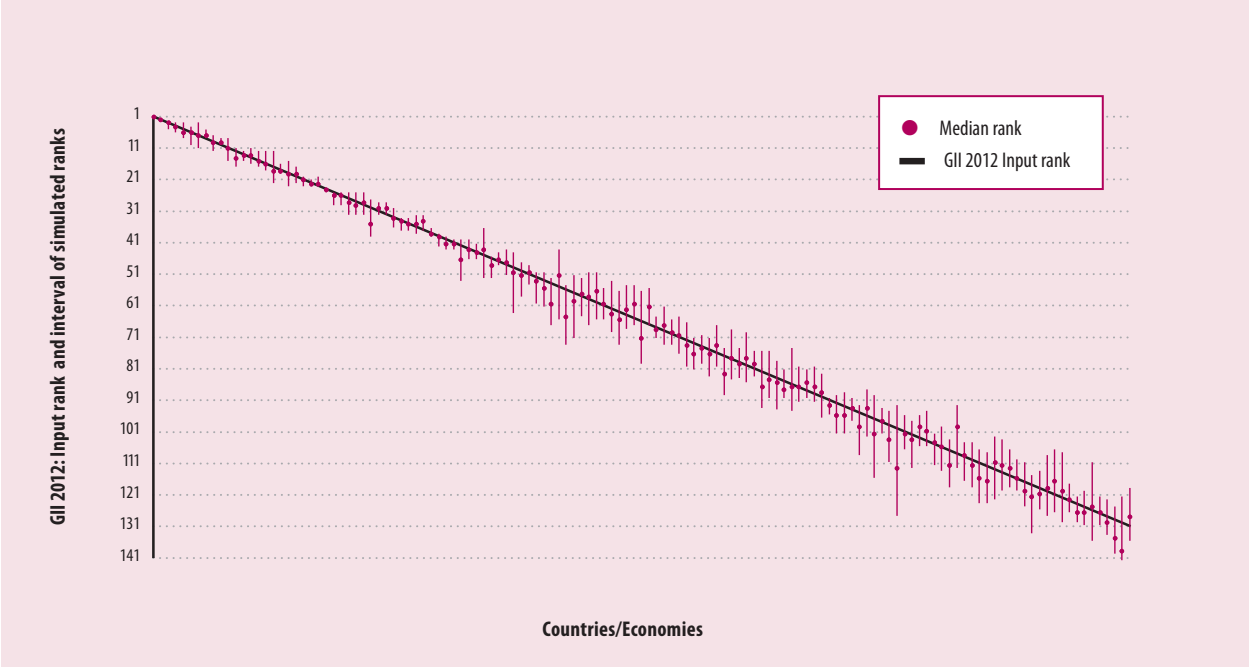
data and instead calculated sub-pillar and pillar scores using only available information per country. The "no imputation" choice, which is common in relevant contexts, might discourage countries from reporting low data values.[7] To overcome this limitation, we opted to use the Expectation Maximization (EM) algorithm.[8] Regarding the GII assumption on the aggregation function (arithmetic average), and despite that it received statistical support in the previous section, decision-theory practitioners have challenged this type of aggregation because of inherent theoretical inconsistencies and because of the fully compensatory nature, in which a comparative high advantage on few variables can compensate a comparative disadvantage on many variables.[9] Hence, we considered the geometric average instead,[10] which is a partially compensatory approach and further 'motivates' countries to improve in the dimensions of innovation where they perform poorly, as opposed to in any dimension (which is instead done under the arithmetic average).

Consequently, we tested four models based on the combination of 'no imputation' versus EM, or arithmetic versus geometric average. Combined with the 1,000 simulations per model to account for the uncertainty in the weights at the pillar level, we carried out altogether 4,000 simulations for the GII, and an equal number of simulations for either the Innovation Input or the Innovation Output Sub-index (see Table 1 for a summary of the uncertainties considered in the GII 2012).

Uncertainty analysis results

The main results of the robustness analysis are shown in Figure 2 with median ranks and intervals computed across the 4,000 Monte Carlo simulations for the overall GII, and the two Innovation Sub-Indices. Countries are ordered from best to worst according to their reference rank (black line), the dot being the median rank. Error bars represent, for each country, the 90% interval across all simulations. GII ranks are rather robust: the median rank is close to the reference rank (less than four positions for 75% of the countries). Results for the Input Sub-Index are more robust (75% of the countries shift less than 3 positions), while the Output Sub-Index is more sensitive to the methodological choices (75% of the countries shift less than 6 positions).The fact that the Output Sub-Index is more sensitive to methodological changes is twofold: there are only two pillars and they are only moderately associated to each other (Pearson correlation coefficient: 0.65). However, it cannot be ruled out altogether that the correlation

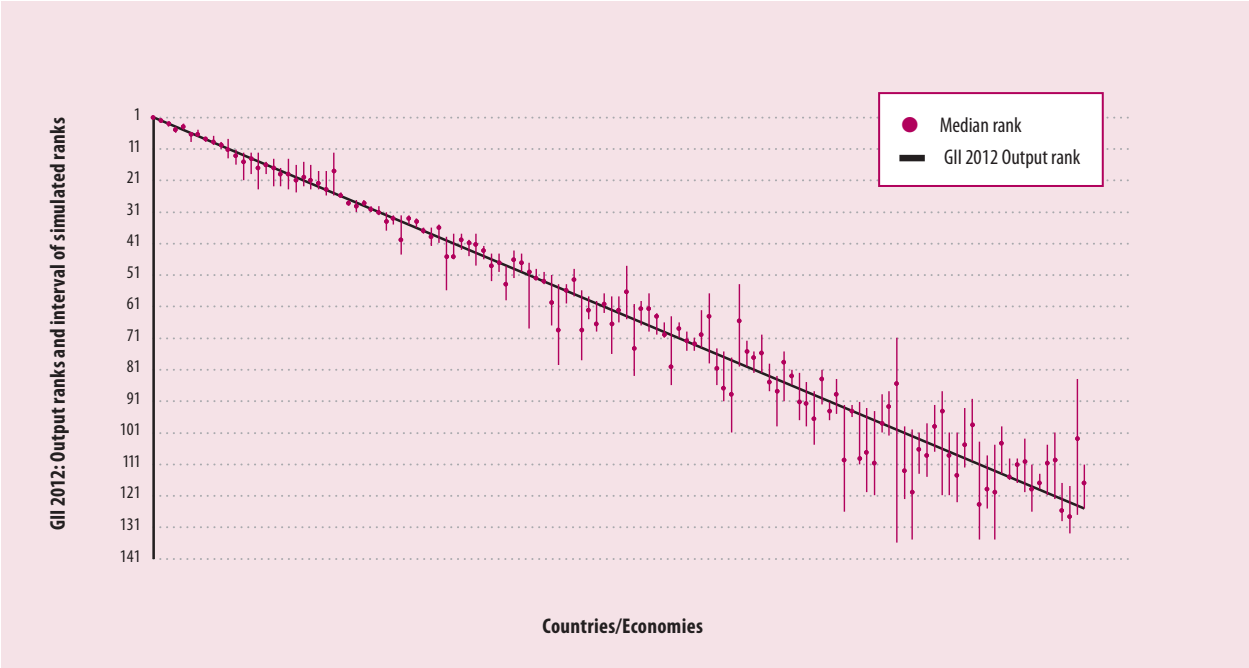
Figure 2b: Robustness analysis (Input rank vs. median rank, 90% confidence intervals)



Source: Saisana and Philippas, European Commission Joint Research Centre, 2012.

Note: The Spearman rank correlation between the median rank and the Input rank is 0.998. Median ranks and intervals are calculated over 4,000 simulated scenarios combining different sets of weights, imputed versus non imputed (missing) values and geometric versus arithmetic average at the pillar level.

Figure 2c: Robustness analysis (Output rank vs. median rank, 90% confidence intervals)



Source: Saisana and Philippas, European Commission Joint Research Centre, 2012.

Note: The Spearman rank correlation between the median rank and the Output rank is 0.988. Median ranks and intervals are calculated over 4,000 simulated scenarios combining different sets of weights, imputed versus non imputed (missing) values and geometric versus arithmetic average at the pillar level.

Table 2: GII 2012 and Input and Output Sub-Indices: Ranks and 90% confidence intervals

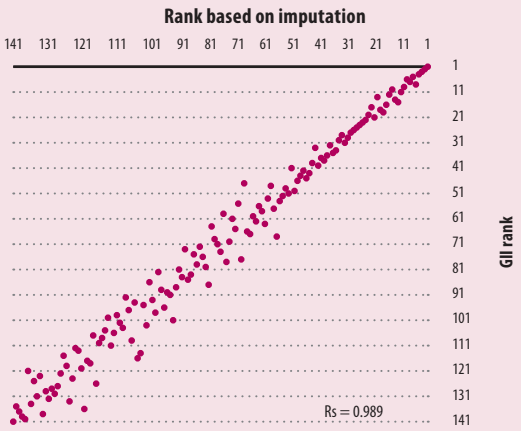
Country/Economy	GII 2012		Input Sub-Index		Output Sub-Index	
	Rank	Interval	Rank	Interval	Rank	Interval
Switzerland	1	[1, 1]	4	[3, 6]	1	[1, 1]
Sweden	2	[2, 2]	3	[3, 5]	2	[2, 2]
Singapore	3	[3, 5]	1	[1, 1]	11	[8, 14]
Finland	4	[3, 5]	6	[4, 10]	5	[3, 5]
United Kingdom	5	[4, 6]	5	[3, 8]	6	[6, 9]
Netherlands	6	[5, 8]	15	[12, 17]	3	[3, 4]
Denmark	7	[5, 8]	8	[5, 8]	9	[7, 10]
Hong Kong SAR, China	8	[5, 14]	2	[2, 2]	25	[12, 26]
Ireland	9	[8, 13]	7	[3, 11]	14	[12, 19]
United States	10	[9, 16]	9	[7, 12]	16	[15, 19]
Luxembourg	11	[8, 12]	14	[11, 16]	10	[9, 11]
Canada	12	[12, 17]	10	[8, 10]	20	[16, 25]
New Zealand	13	[12, 19]	12	[11, 17]	15	[12, 24]
Norway	14	[10, 18]	11	[8, 15]	17	[14, 23]
Germany	15	[9, 16]	23	[20, 23]	7	[5, 7]
Malta	16	[11, 19]	27	[25, 32]	4	[4, 6]
Israel	17	[12, 22]	17	[12, 22]	13	[12, 21]
Iceland	18	[13, 20]	19	[15, 23]	12	[11, 16]
Estonia	19	[12, 19]	24	[24, 25]	8	[8, 9]
Belgium	20	[19, 22]	20	[17, 22]	18	[17, 23]
Korea, Rep.	21	[17, 22]	16	[12, 18]	24	[18, 26]
Austria	22	[20, 22]	21	[20, 23]	21	[15, 23]
Australia	23	[23, 26]	13	[12, 15]	31	[29, 32]
France	24	[23, 25]	22	[21, 23]	26	[25, 26]
Japan	25	[23, 27]	18	[16, 19]	28	[27, 31]
Slovenia	26	[25, 27]	32	[28, 32]	22	[16, 24]
Czech Republic	27	[24, 27]	31	[28, 32]	23	[18, 24]
Cyprus	28	[28, 32]	25	[25, 29]	32	[31, 37]
Spain	29	[28, 31]	26	[25, 29]	35	[32, 35]
Latvia	30	[28, 32]	36	[32, 38]	27	[27, 29]
Hungary	31	[28, 32]	37	[32, 37]	29	[27, 29]
Malaysia	32	[31, 35]	29	[25, 32]	38	[36, 42]
Qatar	33	[32, 42]	30	[27, 39]	41	[38, 46]
China	34	[28, 37]	55	[43, 65]	19	[14, 24]
Portugal	35	[32, 35]	33	[30, 36]	33	[32, 35]
Italy	36	[34, 37]	34	[33, 37]	39	[35, 41]
United Arab Emirates	37	[35, 43]	28	[25, 32]	51	[47, 68]
Lithuania	38	[35, 38]	38	[36, 39]	37	[36, 38]
Chile	39	[38, 45]	43	[40, 46]	34	[32, 45]
Slovakia	40	[37, 41]	40	[39, 43]	43	[40, 45]
Bahrain	41	[40, 50]	35	[33, 37]	60	[59, 69]
Croatia	42	[41, 45]	44	[41, 46]	45	[42, 46]
Bulgaria	43	[39, 44]	47	[44, 48]	42	[38, 43]
Poland	44	[42, 46]	41	[40, 43]	50	[44, 50]
Montenegro	45	[39, 47]	48	[43, 51]	44	[38, 48]
Serbia	46	[41, 48]	65	[54, 67]	36	[33, 36]
Oman	47	[46, 71]	42	[40, 53]	55	[54, 80]
Saudi Arabia	48	[47, 67]	39	[38, 42]	70	[64, 86]
Mauritius	49	[46, 54]	49	[44, 63]	48	[48, 59]
Moldova	50	[43, 50]	79	[74, 84]	30	[29, 31]
Russian Federation	51	[47, 54]	60	[50, 65]	49	[43, 52]
Romania	52	[48, 54]	51	[48, 54]	57	[49, 58]
Brunei Darussalam	53	[51, 63]	46	[45, 52]	69	[66, 71]
South Africa	54	[49, 64]	45	[36, 52]	73	[71, 75]
Kuwait	55	[51, 68]	61	[55, 65]	54	[51, 67]
Jordan	56	[52, 63]	72	[66, 80]	46	[44, 53]
Thailand	57	[51, 61]	59	[50, 67]	56	[54, 60]
Brazil	58	[51, 61]	69	[61, 73]	52	[49, 52]
Tunisia	59	[57, 74]	64	[54, 68]	58	[56, 78]
Costa Rica	60	[54, 63]	71	[64, 76]	53	[50, 54]
Lebanon	61	[56, 68]	62	[53, 69]	63	[58, 66]
Macedonia, FYR	62	[56, 65]	52	[50, 60]	71	[66, 71]
Ukraine	63	[50, 65]	78	[68, 84]	47	[44, 50]
India	64	[57, 77]	96	[87, 102]	40	[39, 56]
Colombia	65	[62, 70]	58	[52, 64]	72	[69, 75]
Greece	66	[58, 71]	50	[47, 58]	82	[70, 82]
Uruguay	67	[56, 69]	68	[64, 71]	67	[57, 69]
Mongolia	68	[50, 73]	53	[50, 61]	79	[54, 80]
Armenia	69	[67, 74]	73	[71, 81]	68	[63, 70]
Argentina	70	[60, 74]	76	[67, 80]	66	[59, 67]
Georgia	71	[67, 77]	63	[56, 73]	81	[75, 82]

Table 2: GII 2012 and Input and Output Sub-Indices: Ranks and 90% confidence intervals *(cont'd.)*

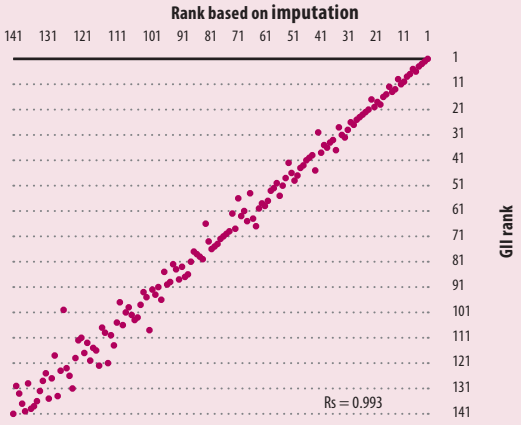
Country/Economy	GII 2012		Input Sub-Index		Output Sub-Index	
	Rank	Interval	Rank	Interval	Rank	Interval
Bosnia and Herzegovina	72	[70, 79]	66	[56, 79]	80	[72, 80]
Namibia	73	[71, 86]	56	[54, 73]	87	[82, 97]
Turkey	74	[64, 75]	81	[75, 83]	61	[57, 63]
Peru	75	[70, 83]	57	[51, 71]	88	[85, 99]
Vietnam	76	[67, 81]	83	[75, 90]	59	[58, 65]
Guyana	77	[58, 79]	86	[74, 94]	64	[48, 65]
Belarus	78	[60, 81]	80	[69, 85]	75	[57, 79]
Mexico	79	[77, 81]	70	[65, 73]	86	[81, 86]
Belize	80	[74, 81]	87	[80, 91]	74	[62, 74]
Trinidad and Tobago	81	[79, 87]	74	[70, 79]	84	[83, 99]
Swaziland	82	[79, 96]	99	[94, 110]	65	[60, 83]
Kazakhstan	83	[78, 86]	67	[55, 67]	105	[92, 107]
Paraguay	84	[79, 87]	103	[95, 105]	62	[58, 76]
Botswana	85	[79, 94]	54	[52, 67]	121	[101, 122]
Dominican Republic	86	[84, 97]	93	[88, 101]	77	[75, 91]
Panama	87	[74, 119]	75	[71, 83]	100	[71, 136]
Morocco	88	[81, 89]	88	[81, 90]	90	[81, 92]
Azerbaijan	89	[86, 92]	85	[81, 90]	94	[92, 96]
Albania	90	[86, 95]	82	[75, 93]	98	[89, 101]
Jamaica	91	[87, 101]	77	[74, 89]	107	[101, 121]
Ghana	92	[89, 109]	91	[90, 95]	93	[92, 126]
El Salvador	93	[91, 96]	94	[90, 97]	91	[91, 97]
Sri Lanka	94	[87, 102]	115	[106, 118]	76	[74, 86]
Philippines	95	[88, 100]	106	[99, 113]	83	[79, 88]
Kenya	96	[88, 99]	89	[80, 91]	114	[99, 114]
Senegal	97	[93, 106]	114	[103, 119]	78	[77, 101]
Ecuador	98	[88, 100]	109	[104, 116]	85	[75, 91]
Guatemala	99	[97, 109]	98	[93, 101]	101	[99, 122]
Indonesia	100	[93, 112]	113	[102, 122]	89	[88, 105]
Fiji	101	[85, 109]	84	[78, 94]	124	[84, 127]
Rwanda	102	[98, 131]	95	[92, 108]	113	[105, 135]
Egypt	103	[91, 103]	104	[94, 105]	99	[88, 102]
Iran	104	[99, 111]	97	[89, 115]	117	[103, 120]
Nicaragua	105	[103, 114]	102	[97, 112]	119	[114, 119]
Gabon	106	[102, 119]	112	[107, 123]	106	[88, 121]
Zambia	107	[102, 120]	122	[107, 129]	96	[93, 120]
Tajikistan	108	[102, 114]	111	[106, 123]	109	[93, 112]
Kyrgyzstan	109	[99, 118]	90	[82, 96]	131	[127, 132]
Mozambique	110	[105, 115]	107	[103, 118]	115	[109, 116]
Honduras	111	[102, 112]	105	[101, 111]	116	[109, 117]
Bangladesh	112	[102, 125]	118	[114, 133]	104	[98, 115]
Nepal	113	[108, 122]	127	[121, 130]	95	[91, 111]
Bolivia	114	[97, 118]	108	[92, 112]	120	[105, 121]
Zimbabwe	115	[104, 131]	130	[121, 141]	92	[84, 95]
Lesotho	116	[97, 122]	92	[89, 101]	133	[107, 133]
Uganda	117	[112, 122]	121	[106, 126]	112	[108, 125]
Venezuela	118	[106, 125]	126	[110, 135]	103	[101, 114]
Mali	119	[110, 127]	131	[118, 135]	97	[94, 121]
Malawi	120	[114, 125]	110	[104, 118]	122	[117, 129]
Cameroon	121	[111, 136]	125	[119, 130]	111	[104, 135]
Burkina Faso	122	[119, 130]	120	[108, 127]	123	[118, 133]
Nigeria	123	[119, 135]	134	[120, 138]	102	[100, 135]
Algeria	124	[117, 131]	101	[95, 106]	134	[133, 137]
Benin	125	[118, 136]	132	[128, 140]	108	[101, 123]
Madagascar	126	[112, 128]	116	[109, 119]	126	[116, 129]
Uzbekistan	127	[118, 136]	100	[92, 127]	137	[119, 138]
Tanzania	128	[124, 133]	117	[110, 124]	129	[124, 137]
Cambodia	129	[126, 133]	119	[113, 125]	132	[130, 132]
Gambia, The	130	[121, 132]	128	[122, 133]	125	[111, 125]
Ethiopia	131	[129, 136]	124	[121, 129]	128	[126, 135]
Syria	132	[124, 133]	123	[117, 126]	130	[126, 130]
Pakistan	133	[115, 134]	140	[134, 141]	110	[90, 110]
Côte d'Ivoire	134	[124, 136]	139	[131, 139]	118	[111, 126]
Angola	135	[132, 141]	133	[128, 139]	127	[123, 141]
Togo	136	[112, 138]	v135	[128, 139]	136	[99, 136]
Burundi	137	[135, 139]	137	[131, 140]	135	[132, 139]
Lao PDR	138	[125, 139]	129	[124, 139]	139	[113, 139]
Yemen	139	[137, 140]	138	[129, 139]	138	[137, 139]
Niger	140	[137, 140]	136	[132, 139]	140	[131, 140]
Sudan	141	[140, 141]	141	[139, 141]	141	[140, 141]

Figure 3a: Sensitivity analysis: Impact of modelling choices
(Imputation)

Global Innovation Index 2012



Innovation Input Sub-Index 2012



Innovation Output Sub-Index 2012

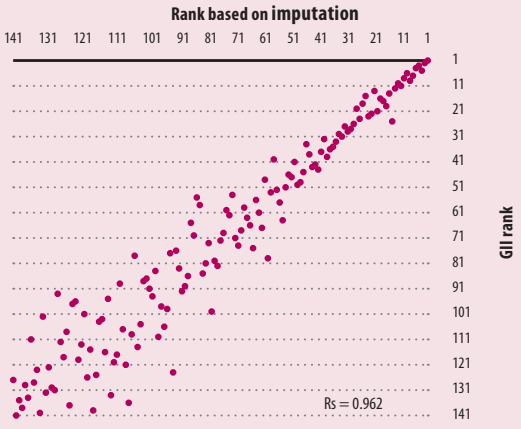
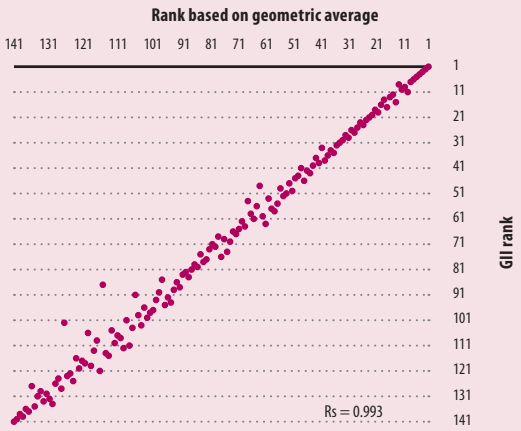
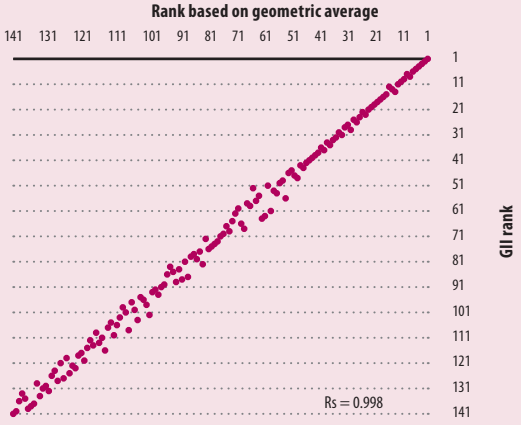


Figure 3b: Sensitivity analysis: Impact of modelling choices
(Geometric average)

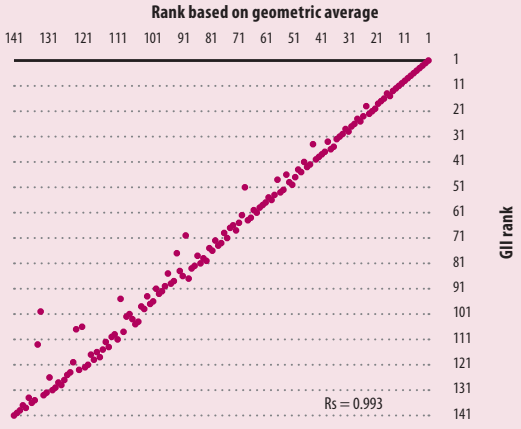
Global Innovation Index 2012



Innovation Input Sub-Index 2012



Innovation Output Sub-Index 2012



Source: Saisana and Philippas, European Commission Joint Research Centre, 2012.
Note: Rs = Spearman rank correlation; imputation based on expectation-maximization algorithm.

could improve as data become available, as suggested by theory. In fact, between 2011 and 2012 the association between these two output pillars increased from 0.51 to 0.65.The currently observed moderate correlation might be caused by (1) the fact that missing values are particularly distorting; (2) the use of count and not value variables; (3) the use of proxies due to the lack of statistics, particularly on 7.2 (expenditure on recreation and culture, exports of creative goods and services as proxies for creative outputs). For an in depth discussion of these results, the reader is referred to Saisana and Philippas, 2012.

For transparency, Table 2 reports the original country ranks and the 90% interval for the simulated rank for the GII, the Input Sub-Index, and the Output Sub-Index. Our intention is to be explicit about on which countries the simulated interval either does not include the reference rank or is too wide to allow for a reasonable inference. Overall, all country ranks in the GII or any of the Innovation Sub-Indices lay within the simulated intervals. Simulated intervals are narrow enough for most countries (less than 10 positions) to allow for meaningful inferences to be drawn.

Sensitivity analysis results

Complementary to the uncertainty analysis, sensitivity analysis has been used to identify which of the modelling assumptions have the highest impact on certain country ranks. Detailed results are available in the main JRC assessment report, but the main conclusion is that the impact of the imputation alone is noteworthy for some countries, although it may be moderated when considering a geometric aggregation and a variation in the weights for the pillars. Figure 3 plots the reference GII ranks (and the two sub-indices) versus one-at-a-time changes of either the imputation method or the aggregation formula.

These plots show that the most influential assumption is the choice of no imputation versus EM imputation in particular for the Output Sub-Index, then for the GII and least for the Input Sub-index. For example, in one case a country does not shift position if a geometric aggregation is applied, although it is found to lose 24 positions in the Output ranking if EM imputation is applied. If both assumptions are changed (and weights remain at the reference values), the impact of the imputation would be moderated. This sensitivity is the result of data availability. Although all countries have data coverage above 70% in the Input variables, 21 countries have data coverage below 65% in the Output variables, which explains the impact of imputation on these countries ranks. Sensitivity analysis, by assessing the impact of the modelling choices, has given more transparency in the entire process and can help to appreciate the GII results with respect to the assumptions made during the development phase. Sensitive ranks usually concern countries with poor data coverage on the Innovation Output Sub-Index, and to a more limited extent on the Innovation Input Sub-Index—an impact that propagates to the estimation of the overall GII. For an in depth discussion of these results, the reader is referred to Saisana and Philippas, 2012.

The recommendation for the future would be to apply the 63% criterion for data availability within each of the two sub-indices so as to avoid drawing a better picture for countries with poor data quality on one of the two sub-indices, in particular on the Innovation Output Sub-Index. For this year, drawing upon the analysis made by the JRC, the recommendation is to consider country ranks in the GII 2012 and in the Input and Output Sub-Indices not only at face value but also within the ranges simulated by uncertainty analysis in order to better appreciate to what degree a country rank depends on the methodological choices made during the development of the GII 2012.

Conclusion

The JRC analysis suggests that the conceptualized multi-level structure of the GII 2012 is statistically coherent and balanced (i.e., not dominated by any pillar or sub-pillar). Furthermore, the analysis has offered statistical justification for the weights and the use of arithmetic averaging at the various levels of aggregation. Together with other fine-tuning suggestions made in the sections above, a key recommendation for future years is to apply the data coverage criterion for countries' inclusion not at the overall GII level, as is currently done, but within each of the two Innovation Sub-Indices. Furthermore, the 'no imputation' choice for not treating missing values, common in relevant contexts and justified on grounds of transparency and replicability, can at times have an undesirable impact on aggregate scores, with the additional negative side-effect that it may discourage countries from reporting low data values. Finally, the GII team's choice this year to use weights as scaling coefficients during the development of the index constitutes a significant departure from the traditional vision of weights as a reflection of indicators' importance in a weighted average. Such a consideration will hopefully be made also by other developers of composite indicators.

Overall, GII country ranks are in most cases fairly robust (less than three positions shift for 94 out of 141 countries) to methodological assumptions related to the estimation of missing data, weighting and aggregation formula. Consequently, inferences can be drawn for most countries in the GII, although some caution may be needed for a few countries. Note that perfect robustness would have been undesirable because this would have implied that the GII components are perfectly correlated and hence redundant. The JRC analysis suggests that the GII 2012 and its Innovation Input and Output Sub-Indices are fairly robust to the methodological choices without being redundant.

Notes

1 The JRC analysis was based on the recommendations of the OECD/EC JRC *Handbook on Constructing Composite Indicators* (2008) and on more recent research from the JRC. The JRC auditing studies of composite indicators are available at http://composite-indicators.jrc.ec.europa.eu/ (all audits were carried upon request of the Index developers).

2 The 'interquartile range' is the difference between the upper (75% of values) and the lower (25% of values) quartiles.

3 Groeneveld and Meeden (1984) set the criteria for absolute skewness above 1 and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample (130 countries).

4 High collinearity can be problematic when analysing the statistical coherence of a framework and may result in aggregate scores that are dominated by the highly collinear indicators.

5 Principal Components Analysis requires at three least pillars (variables in general).

6 Saisana et al., 2005; Saisana et al., 2011.

7 Note that here 'no imputation' is equivalent to replacing missing values with the average of the available data within each sub-pillar.

8 The Expectation-Maximization (EM) algorithm is an iterative procedure that finds the maximum-likelihood estimates of the parameter vector by repeating two steps: (1) The expectation E-step: Given a set of parameter estimates, such as a mean vector and covariance matrix for a multivariate normal distribution, the E-step calculates the conditional expectation of the complete-data log likelihood given the observed data and the parameter estimates. (2) The maximization M-step: Given a complete-data log likelihood, the M-step finds the parameter estimates to maximize the complete-data log likelihood from the E-step. The two steps are iterated until the iterations converge. See Little and Rubin, 2002.

9 Munda, 2008.

10 In the geometric average, pillars are multiplied as opposed to summed in the arithmetic average. Pillar weights appear as exponents in the multiplication. All pillar scores were greater than 1.0, hence there was no reason to rescale them to avoid zero values that would have led to zero geometric averages.

References

Groeneveld, R. A., and G. Meeden. 1984. 'Measuring Skewness and Kurtosis'. *The Statistician* 33: 391–99.

Little, R. J .A., and D. B. Rubin. 2002. *Statistical Analysis with Missing Data* 2nd edition. Hobboken, NJ: John Wiley & Sons.

Munda, G. 2008. *Social Multi-Criteria Evaluation for a Sustainable Economy.* Berlin Heidelberg: Springer-Verlag.

OECD/EC JRC. 2008. *Handbook on Constructing Composite Indicators: Methodology and User Guide.* Paris: OECD.

Paruolo, P., M. Saisana, and A. Saltelli. 2012. 'Ratings and Rankings: Voodoo or Science?' *Journal of the Royal Statistical Society – A* (in print). A draft version is available at http://arxiv.org/abs/1104.3009.

Saisana, M., B. D'Hombres, and A. Saltelli. 2011. 'Rickety Numbers: Volatility of University Rankings and Policy Implications.' *Research Policy* 40: 165–77.

Saisana, M., A. Saltelli, and S. Tarantola. 2005. 'Uncertainty and Sensitivity Analysis Techniques as Tools for the Analysis and Validation of Composite Indicators'. *Journal of the Royal Statistical Society A* 168 (2): 307–23.

Saltelli, A., M. Ratto, T. Andres, F. Campolongo, J. Cariboni, D. Gatelli, M. Saisana, and S. Tarantola. 2008. *Global Sensitivity Analysis: The Primer.* Chichester, England: John Wiley & Sons.

The Role of Public-Private Partnerships in Driving Innovation

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The term 'public-private partnership' (PPP) describes a relationship in which public and private resources are blended to achieve a goal or set of goals judged to be mutually beneficial both to the private entity and to the public. The term has gained prominence as its importance has become more significant over time.

The role of public-private partnerships in national economies

The use by governments or public authorities of private contributions for public benefit is nearly as old as recorded history.[1] For example, in the city-state of Athens in the 4th century BC, prominent citizens made major contributions in order to stage public festivals and religious events and to build public buildings and monuments. Some centuries later, when the Roman army conquered large parts of Europe and the Mediterranean region, civilians worked hand-in-hand with the army to exploit the new territories and build needed infrastructure. PPPs have a long history in the United States of America (USA) as well: the principle that government and political leaders should use and support private businesses—in order to develop scientific advancement and innovations for the benefit of the society—was well established at the time the country's constitution was written. One of the first instances of a PPP in the New World occurred in 1742 when Benjamin Franklin established the American Philosophical Society of Philadelphia, which—together with the Pennsylvania House of Representatives—sponsored the founding of the University of Pennsylvania, the first medical school in the British colonies. The purpose of this collaboration was to make advancements in agriculture, science, and medicine available to all citizens. Another, more recent, renowned project that brought the business world and government together in the public interest was the building of the Paris metro: the tunnels were constructed by the city, while the tracks, energy, signalling, and rolling stock were provided by the operator, a Belgian entrepreneur.

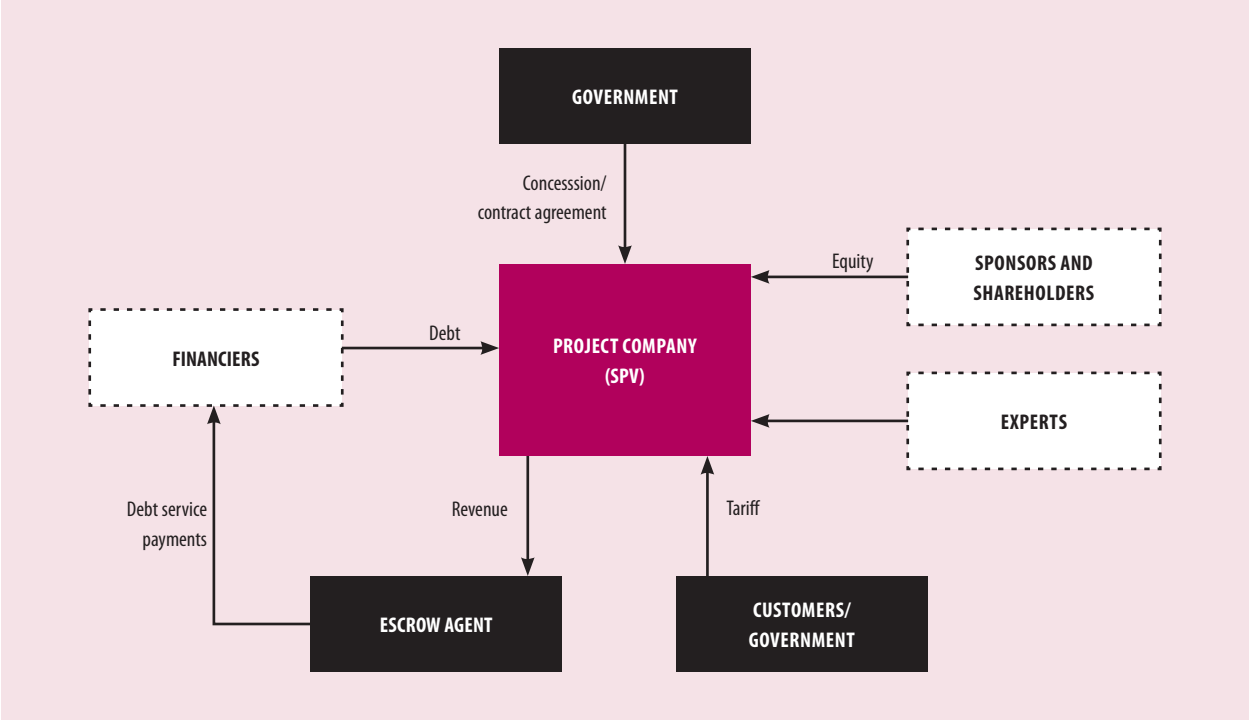
In today's economic environment, PPPs are defined as contractual agreements between a public agency or public-sector authority and a private-sector entity that allow for greater private participation in the delivery of public services, or in developing an environment that improves the quality of life for the general public (Figure 1). Under such a legal construction, the partners share risk, reward, and responsibility for a shared investment.[2] These partnerships are not simply tools for funding projects, but they require full commitment from all partners for the entire undertaking.

The PPP legal construction can cover three types of arrangements. First, it can be used to introduce private-sector ownership into state-owned businesses through a public listing or the introduction of an equity partner. Second, it can become a private finance initiative, where the government takes advantage of private-sector management skills by awarding long-term franchises to a private-sector partner, which assumes the responsibility for constructing and maintaining the infrastructure and for providing the public service. Third, it can cover the selling of government services to private-sector partners, which can better exploit the commercial potential of public assets. In these three arrangements, the private-sector consortium typically forms a special company—called a 'special purpose vehicle' (SPV)—to develop, build, maintain, and operate the assets for the contracted period. In cases where the government has invested in the project, it is usually—but not always—allotted an equity share in the SPV. Within the PPP, it is the SPV that signs the contract with the government and with subcontractors to build the facility and then maintain it.

Achieving urban sustainability through public-private partnerships

History has frequently shown that PPPs can improve urban living through collaborations that combine innovative efforts from the private sector, forward-thinking policies

Figure 1: Typical structure of a PPP project



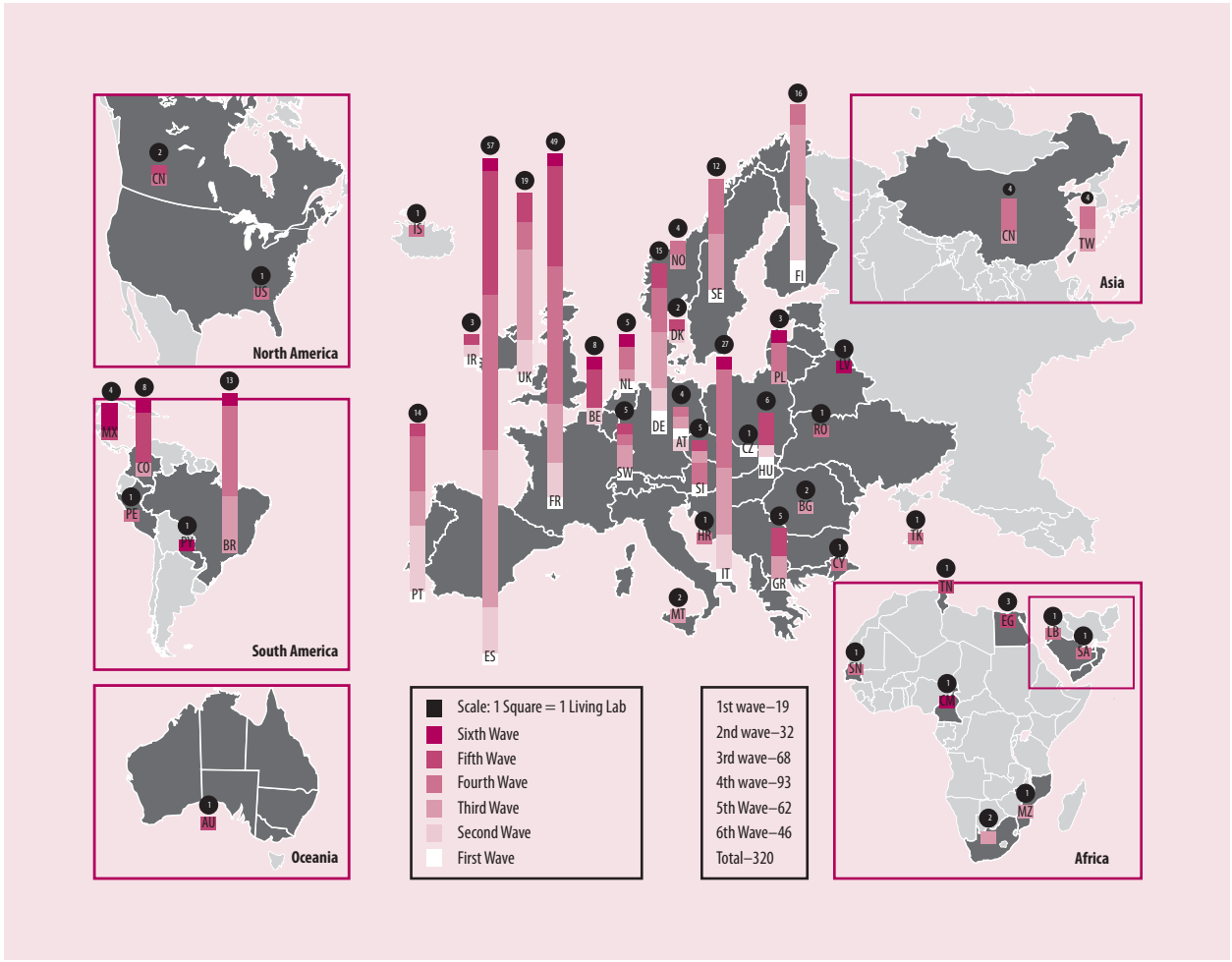
Source: UN ESCAP, 2011.

from governments, and support from nonprofit organizations.[3] This is still true: today's cities too can be transformed by forging PPPs that encourage new ways of doing things. What makes the current situation different from that of the past is that information and communication technologies (ICT) are reinforcing and expanding these PPPs beyond all previous limitations and boundaries. PPPs that incorporate—in innovative and creative ways—the deployment and use of ICT have the power to improve the services that matter most to city residents: education, transportation, economic development, public safety, healthcare, and social services. Rather than simply cut back on these services in the face of budget deficits, governments can work with private corporations to transform the way such services are delivered by using ICT through initiatives such as e-government, remote healthcare, and intelligent transport.

A good example is Living Cities,[4] a USA-based innovative philanthropic collaborative of 22 foundations and financial institutions that takes a comprehensive approach to improving the lives of low-income people and revitalizing the urban areas in which they live. Living Cities works to connect city governments and private partners to ensure that key urban issues—such as green jobs, housing, education, and neighbourhood stabilization—are addressed in innovative ways. In another example, in Europe the Living Labs PPP of city governments and private companies aims to create a user-driven open innovation eco-system where users live, work, study, play and entertain (Figure 2).[5] In this real living environment, the participants—in cooperation with government institutions and private companies—co-create, experiment, and test new ideas, new products, and new services. Ultimately this approach is expected to lead to user-centric solutions and social innovation processes. Crucial drivers of the Living Labs are ICT and the Internet, which are at the heart of the open co-creation; the platforms and open connectivity, which are key facilitators; and open innovation, which is the soul of competitiveness and new services.

What is more, individual cities (e.g., Oulu in Finland, Dubuque in the USA, and Beijing in China) are pursuing their own models for using PPPs for urban development. The Oulu city project is using the living lab approach to win inward investment for the city; this successful undertaking has encouraged some companies to locate research and development resources in the city. The city of Dubuque (Iowa,

Figure 2: European network of Living Labs



Source: www.openlivinglabs.eu.

USA) is leveraging a PPP to amplify the potential benefits of the Energy Efficiency and Conservation Block Grant funding programme from the federal government. The PPP aims at making the city 'smart' by reducing energy consumption and greenhouse gas emissions, and by building up the community's technical capacity to conduct energy-efficient retrofits of existing infrastructure, ultimately helping to foster local job creation. The city of Beijing used the PPP model in the building and operation of the city's fourth subway line (28 kilometres long, with 24 stations), with companies from both inside and outside of China participating.

Although these efforts do help to highlight the effectiveness of the PPP model, they are hardly the rule. The overwhelming majority of PPPs are still issue-specific, focusing on a particular area of civic engagement such as education, healthcare, the environment, or the arts. Few such initiatives are elevated to the level of an entire city, where all of the issues noted above and many more intersect. However, as cities struggle to overcome economic stress and accommodate rapid population growth, they must pursue an interconnected model of problem solving. Innovation from the private sector can be extremely beneficial in this process by leveraging the capabilities of ICT to make all the systems used to supply the city with services smarter, more efficient, and more effective. Similarly, the public sector can explore models that have proven to be successful in corporations and other enterprises. The first step in such an innovative transformation is the creation of a city-wide strategy that allows leaders to view their cities as an interdependent system of systems, and to assess ways in which ICT can be used to improve them all.

Box 1: Public-private partnerships in the ICT sector

e-Mitra (India): This project was undertaken by the government of the Indian state of Rajasthan and local service providers to deliver e-government services (e.g., forms, birth certificates, information) to Indian citizens via dedicated centres and kiosks.

Eastern African Submarine Cable System (EASSy): This is a multi-country, multi-partner consortium set up to connect 21 countries in East Africa with each other and with the rest of the world via undersea optical fibre cables.

Estonia Rural Connectivity: This project exhibits cooperation between the national authorities and the Estonian Telephone Company to expand access to broadband communications services in scarcely populated areas.

Egypt Smart Village: This is a technology park/PPP between Egypt's Ministry of Information and Communication Technology and a private consortium designed to remove obstacles for ICT firms investing in the country.

SOURCE: infoDev and ITU, available at www.ictregulationtoolkit.org/en/PracticeNote.aspx?id=3160 (accessed 19 April 2012).

Driving key social and economic sectors through public-private partnerships

PPPs have been heavily promoted in key sectors such as education and healthcare with the aim of improving efficiency and innovation in the generation and performance of public services. However, the infrastructure for improvement in these sectors comes from the ICT sector, where many PPPs have been established to respond in faster and more inventive ways to the ever-increasing demands of customers.[6] One example is the European Union (EU)'s Future Internet PPP,[7] which covers a research program co-funded by private enterprises and the European Commission's Information Society and Media Directorate General. This project addresses some of the key challenges described in its *Digital Agenda for Europe*[8]—in particular, Europe's competitiveness in future Internet technologies and systems and the need to make public-service infrastructures and business processes significantly smarter—more intelligent, more efficient, more sustainable—through tighter integration with Internet connectivity and computing capabilities.

PPPs in the ICT field are driven primarily by mobile applications and more affordable Internet access (see Box 1). The success of an ICT-centric PPP project depends largely on the establishment of economically viable business models and self-sustaining schemes for the delivery of e-services, because most private participants are interested in PPPs only if there is a possibility of a return on their investment (and the associated risk that is deemed worth taking). However, global initiatives—such as the Digital Opportunity Task Force, the Global Knowledge Partnership, and the World Summit on the Information Society[9]—have increased awareness of the vital role that PPPs play in providing access to ICT for all as an instrument for social, industrial, and economic innovation.

Schooling and education is, in general, largely provided and financed by governments,[10] but unmet demand for education coupled with shrinking government budgets requires that—in many parts of the world—public-sector organizations develop partnerships with the private sector if educational needs are to be met. The main rationale behind these PPPs is that private companies can stimulate equitable access to education and, ideally, can improve learning outcomes.[11] In low-income countries, excess demand for schooling results in private supply when the state cannot afford schooling for all. In high-income countries, demand for 'differentiated' education leads to a call for private schooling, as a sophisticated clientele demands different kinds of schools. Just as importantly, expectations of the integration of new devices to access the Web, along with the availability of new broadband networks and new social networking applications and the increasing availability of educational content for online learning, are becoming a crucial part of global education and learning services.

The transport sector has seen multiple PPP initiatives, which aim to upgrade transportation infrastructure with innovative ways of funding, technological development, and streamlined management.[12] The EU is enabling innovation by co-funding a €5 billion European Green Cars PPP initiative that would improve the sustainability of all European road transport and accelerate the move towards the electrification of road and urban transport.[13] Between 2005 and 2008, more PPPs for surface transportation facilities were established in the USA than during any comparable period in that country.[14] One example is the collaboration between the Carlyle Group and Doctor's Associates—called Project Service—which resulted in the formation of a 35-year PPP with the State of Connecticut to redevelop, operate, and maintain the 23 highway service areas across the state. Project Service will reduce the energy usage and emissions associated with trucks by implementing new environmental technologies.

Similar efforts are underway in the manufacturing sector. For instance, the EU is supporting a €1.2 billion Factories of the Future PPP initiative to promote the competitiveness and sustainability of the European manufacturing industry.[15] The initiative has embarked on its first 25 research projects, which focus on four main innovation areas: (1) smart factories, by using more streamlined ICT or the next generation of robotics, automation, planning, and simulation; (2) digital factories, which reduce the need for physical prototyping; (3) sustainability and exploiting new methods, or new green technologies and people-friendly strategies in factories; and (4) rethinking the use of materials or processing with new high-performing materials.

Other sectors that witness the PPP as a framework for action to direct basic research and basic services are the agriculture and healthcare sector (see Box 2).

Public-private partnerships: Inseparable parts of international and national innovation policies

PPPs in the field of technological innovation are essential for the competitiveness of regions and individual countries, and various regions are making moves to identify the best use of PPPs in this respect. The European Commission, for instance, is building up a specific legal framework to facilitate the creation of PPPs and ensure that risks and responsibilities are shared.[16] The intent is to guarantee access to finance through grants, public procurement, or investment. In the Middle East and North Africa, PPPs are also taking centre stage in terms of regulatory requirements.[17] The need for the rapid delivery of large-scale and complex projects conflicts with significant capital needs that should remain available for infrastructure, education, and healthcare. This puts heavy constraints on public budgets, but the availability of private capital is also constrained because investors are now more risk-aware than they were earlier, and are less willing to take risks in emerging markets. On the flip side, efficiency gains from private-sector involvement are believed to be considerable.

Countries are also defining legal frameworks and policies to make the usage of PPPs more transparent and better integrated in the national context. Studies by the Organisation for Economic Co-operation and Development (OECD) revealed that an important weakness in the Dutch national innovation system was the inadequate interaction between science/higher education and industry.[18] Different models of PPPs were already key components of the Dutch innovation policy toolkit, but the OECD recommended additional PPPs to improve the country's innovation and economic performance. In Austria, the OECD noted that the national government had taken a variety of policy initiatives to increase R&D intensity and the efficiency of the national innovation system.[19] Fostering linkages in the national innovation system had become the major policy focus and PPPs the major policy instrument. The Kplus programme of the Ministry of Transport, Innovation and Technology, and the Kind/Knet program of the Ministry of Economics and Labour were seen as emblematic examples of this reorientation of Austria's technology and innovation policy because they encourage and organize collaboration between enterprises and research institutions in pre-competitive research with a high potential for commercial application.

Box 2: Public-private partnerships in the agriculture and healthcare sectors

Biotech Brinjal: This PPP uses technology donated by private-sector developers to local researchers in India, Bangladesh, and the Philippines to improve eggplant productivity and yields.

Improvement of teff yields: This project was established to improve yields of the cereal grain teff, which is an important staple in Ethiopia. Private-sector researchers have teamed up with the University of Bern in this PPP.

ASAQ Winthrop: This is a PPP between the World Health Organization (WHO) and a private company to develop a new anti-malarial medicine and to address issues posed by its deployment in the field.

Chiranjeevi Yojana (meaning 'long life'): This is a PPP in Gujarat (India) between the government of Gujarat and private-sector gynaecologists to remove financial barriers so that poor women can access qualified healthcare facilities.

SOURCES: Bompart et al., 2011; Croplife International, 2009; MDG-5, 2010.

In Hong Kong (China), the idea of implementing PPPs was explored several years ago when the economy accumulated a budget deficit following the Asian financial crisis. The government had to explore ways to cut expenditures and still deliver much-needed infrastructure. Since that time, several projects have been put forward, sparking much debate about whether PPPs are the appropriate model for infrastructure delivery in Hong Kong (China).[20] PPPs were also not unknown in the Russian

Federation, but their number, size, technological scope, and geographical spread were very limited.[21] PPPs in the Russian Federation were too often seen as a mere financing instrument with which actors could attract additional funding without altering their research agenda. Government financing was welcomed by researchers in the private sector, because it was obtained without any change to planned development stages. According to the OECD, there is room in the Russian Federation both for improving existing PPP schemes and for new PPP initiatives that could increase the breadth, depth, and economic relevance of the national R&D portfolio.

PPPs are also pursued as innovation vehicles in the USA, where policy makers are creating a legal framework to better use the strength of PPPs for technological and social innovation in the telecommunications sector. North American political leaders are eagerly looking for close collaborations with telecommunications service providers to address critical societal issues, such as improving healthcare, distance learning, better education, and more open government. The current USA administration is also asking the telecommunications industry to help to bring the USA back up to speed with the rest of the world in embracing technology and innovation. Cox Communications and Comcast Cable have replied enthusiastically to the request and entered into a partnership with the Commonwealth of Virginia to provide general educational development classes on their on-demand platform, making those available to thousands of Virginians.

Public-private partnerships: Crucial in driving innovation

The examples cited here—whether at the level of a city or a specific sector—show clearly that PPPs are critical instruments for innovation. PPPs help governments become more inventive by creating a space outside the government structure that allows innovation to flourish. PPPs help to inject a broader set of skills and talents, as well as a more diligent and responsive work culture into the government machinery and to create a solid foundation for innovative thinking and creativity. PPPs also help private companies embrace innovation and bring together new financial resources and business capital to help open the door for the creation of new industry clusters, thus ultimately helping to facilitate innovation in increasingly competitive environments. Moreover, PPPs allow private companies to engage in large-scale projects that go far beyond their traditional capacities.

PPPs have gained particular relevance in the ICT sector. Much of the innovation taking place in various business sectors depends on ICT—or rather, ICT is necessary to facilitate the formation and operation of virtually every PPP. The relationship between PPPs and ICT can be described as symbiotic. PPPs create opportunities to reduce the risks associated with investing in new technologies, while they simultaneously drive the development of new services, applications, and solutions that do not yet exist. PPPs often deliver services and solutions more cost effectively than traditional approaches can manage. Moreover, close cooperation with the public sector defines clearer social and economic objectives, which can be reached in a more satisfying way.

On one hand, the PPP model can provide an ideal vehicle for funding ICT projects, helping enable the development of the needed infrastructure with some relative assurance of an appropriate return on investment. On the other hand, ICT services can more easily be put within the financial reach of millions of consumers in rural and urban areas because service delivery objectives of the public sector can be easily aligned with the business objectives of ICT service providers.

Just as importantly, as the delivery of social services becomes increasingly dependent on communications networks, it is natural and appropriate that government and private-sector organizations collaborate to ensure that needed ICT infrastructures are in place and available to businesses and individual citizens alike.

Notes

1 For more examples of the role of PPPs in history, see Bertig et al., 2001; for the role of PPPs in the history of the USA, see Cellucci, ed., 2010.

2 Akkawi, 2010.

3 Crozier, 2010.

4 For details, see www.livingcities.org; http://thecityfix.com/blog/living-cities-collaboration-is-key/.

5 de Oliveira, 2011. For more information on Living Labs, please contact info@ENoLL.org.

6 For more details on these projects, see infoDev. n.d.; Jazynka, 2007; Marcelle and Hinz, 2011.

7 ENVIROFI Consortium, 2011.

8 European Commission, *Digital Agenda for Europe*. Available at http://ec.europa.eu/information_society/digital-agenda/index_en.htm.

9 Pillay and Hearn, 2009.

10 World Bank, n.d.

11 For more information on the role private companies can play in education-centric PPPs, see Aggarwal and Ladda, 2010; for examples in the Indian education system, see Bhattacharya and Rahman, 2010.

12 Details of PPPs in the transport sector can be found in IFC, 2011; Mak and Mo, 2005.

13 European Commission, 2011.

14 US DOT, 2008.

15 EFFRA, 2010.

16 Europa, 2010.

17 Akkawi, 2010.

18 OECD, 2004a; Koppenjan, 2012.

19 OECD, 2004b; Oder, 2008.

20 Kwan, 2005; Mak and Mo, 2005.

21 OECD, 2005.

References

Aggarwal, M., and B. Ladda. 2010. 'PPP in Education: Workshop on PPP in Urban and Social Sectors'. CRISIL Risk and Infrastructure Solutions Limited, 21 May. CRISIL Infrastructure Advisory. Available at http://www.crisil.com/pdf/infra-advisory/6-ppps-in-education.pdf.

Akkawi, A. 2010. 'INSEAD—PPPs as Policy Instruments'. 29 November. Ernst & Young. Available at http://campuses.insead.edu/abu_dhabi/events/PPPPresentation29.11.10.pdf.

Bertig, E., J. O'Connor, P. Stambor, L. Steers, and I. Wall. 2001. 'Public-Private Partnerships in Seattle: A Supplement to the Seattle *Voter*'. May. Available at http://www.seattlelwv.org/sites/default/files/public_private_partnerships.pdf.

Bhattacharya, D., and M. Rahman. 2010. 'Delivering Social Infrastructure Through PPP: The Role of Non-Profit Organisation'. Presentation of the Centre for Policy Dialogue at the OECD Global Forum on Development, Paris,. 10–12 October.

Bompart, F., J.-R. Kiechel, R. Sebbag, and B. Pecoul. 2011. 'Innovative Public-Private Partnerships to Maximize the Delivery of Anti-Malarial Medicines: Lessons Learned from the ASAQ Winthrop Experience'. *Malaria Journal* 10: 143.

Cellucci, T. A., ed. 2010. *Innovative Public Private Partnerships: A Pathway to Effectively Solving Problems,* July. U.S. Department of Homeland Security. Available at http://www.dhs.gov/xlibrary/assets/st_innovative_public_private_partnerships_0710_version_2.pdf.

Croplife International. 2009. 'Advancing Agricultural Innovation through Public-Private Partnerships'. Belgium: CropLife International. Available at www.croplife.org/view_document.aspx?docId=2244.

Crozier, J. 2010. 'Smarter Urbanization Requires Innovative Public-Private Partnerships'. 15 November. Available at www.huffingtonpost.com.

de Oliveira, A. 2011. 'European Perspective on User-Driven Innovation (Living Labs)'. Presentation, Living Labs Seminar, 9 February, Helsinki.

EFFRA (European Factories of the Future Research Association). 2010. Overview of FP7-Funded Projects under the First Call: Developing Technologies for "Factories of the Future"'. EFFRA Brochure. Brussels: EFFRA.

ENVIROFI Consortium. 2011. 'The Environmental Observation Web and Its Service Applications within the Future Internet'. Future Internet PPP, Seventh Framework Programme, European Commission., 29 July. Available at http://www.envirofi.eu/Portals/89/Docs/Project/FAQ/ENVIROFI%20Frequently%20Asked%20Questions.pdf.

Europa. 2010. 'Developing Public Private Partnerships'. Summaries of EU Legislation, 15 April. Available at http://europa.eu/legislation_summaries/employment_and_social_policy/eu2020/em0026_en.htm.

European Commission. 2011. 'New Public-Private Partnerships for Research in the Manufacturing, Construction and Automotive Sectors: European PPP Research Supports Economic Recovery Progress Report: July 2011'. EUR 24823. Luxembourg: Publications Office of the European Union.

European Commission. n.d. *Digital Agenda for Europe.* Available at http://ec.europa.eu/information_society/digital-agenda/index_en.htm.

IFC (International Finance Corporation). 2011. 'PPP in Transport Sector'. Slide presentation, January. IFC, World Bank Group. Available at http://www.ppiaf.org/sites/ppiaf.org/files/documents/6-Transport-Privatisation-PPP-Pawan-Maini.pdf.

infoDev and ITU. n.d. 'Public-Private Partnerships in the Telecommunications and ICT Sector'. *ICT Regulation Toolkit: Practice Note.* Available at http://www.ictregulationtoolkit.org/en/PracticeNote.aspx?id=3160 (accessed 19 April 2012).

Jazynka, S. 2007. 'PPP ICT Case Studies'. Presentation given 26 February, Amman, Jordan, at the Institute for Public-Private Partnerships.

Koppenjan, J. 2012. 'Public-Private Partnerships and LCCR-Investments'. Slide presentation, 6 February. Paris: OECD.

Kwan, J. 2005. 'Public Private Partnerships; Public Private Dialogue'. Speech given at the University of Hong Kong, 1 March. Available at http://www.civil.hku.hk/cicid/3_events/32/papers/1.pdf.

Mak, C. K., and S. Mo. 2005. 'Some Aspects of the PPP Approach to Transport Infrastructure Development in Hong Kong'. March. Hong Kong (China): Highways Department, Government of the Hong Kong Special Administrative Region.

Marcelle, G., and S. Hinz, co-chairs. 2011. 'How to Support Efficient and Innovative ICT Public-Private Partnerships (PPP)?' Panel at the 4th Euro-Africa Cooperation Forum on ICT Research, Cape Town, South Africa, 14–15 November.

MDG-5: Improve Maternal Health, June 23, 2010. Available at http://mdgpolicynet.undg.org/ext/MDG-Good-Practices/mdg5/MDG5A_India_Innovative_Model_of_Public_Private_Partnership_for_Reduction_of_Maternal_Mortality.pdf.

Oder, M. 2008. 'OECD/SIGMA, Concessions and Public Private Partnerships'. Presentation 10-11 March, Ankara. Available at www.oecd.org/dataoecd/36/31/40450632.ppt.

OECD (Organisation for Economic Co-operation and Development). 2004a. 'Public-Private Partnerships for Research and Innovation: An Evaluation of the Dutch Experience'. OECD. Available at http://www.oecd.org/dataoecd/49/18/25717044.pdf.

———. 2004b. Public-Private Partnerships for Research and Innovation: An Evaluation of the Austrian Experience'. OECD. Available at http://www.oecd.org/dataoecd/49/17/25717078.pdf

———. 2005. *Fostering Public-Private Partnership for Innovation in Russia.* Paris: OECD.

Pillay, H. and G. Hearn. 2009. 'Public-Private Partnerships in ICT for Education'. *Digital Review of Asia Pacific 2009–2010.* Montreal and Ottowa: Orbicom and the International Research Centre. 77–87.

US DOT (United States Department of Transportation). 2008. 'Innovation Wave: An Update on the Burgeoning Private Sector Role in U.S. Highway and Transit Infrastructure'. U.S. Department of Transportation: Federal Highway Administration. Available at http://www.fhwa.dot.gov/reports/pppwave/ppp_innovation_wave.pdf.

UN ESCAP (United Nations Economic and Social Commission for Asia and the Pacific). 2011. *A Guidebook on Public-Private Partnership in Infrastructure, Economic and Social Commission for Asia and the Pacific.* Bankok: UN.

The World Bank. n.d. Public-Private Partnerships in Education: Overview. Available at http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,contentMDK:20756247~menuPK:2448342~pagePK:210058~piPK:210062~theSitePK:282386,00.html.

Academia-Industry Innovation Linkages in the Case of Saudi Arabia: Developing a University-Industry Triple-Helix Framework to Promote Research and Development Collaboration

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Future innovation platforms in Saudi Arabia cannot be isolated from the changes that are now reshaping the Saudi economy, which has long been known for its chronic heavy dependence on the country's natural resources. This is especially apparent when we consider the proportion of export revenues that is attributable to the oil sector (see Figure 1).

Saudi Arabia in the global research and development scene: Context and economic rationale

Saudi Arabia is not the only nation with natural-resource wealth that affects its economy in many ways, including its research and development (R&D) levels. The continued deep reliance on natural resources for the past several decades has taken its toll on today's Saudi industry. Large corporations dominate the industry landscape; these include Saudi Aramco, which has a monopoly on upstream oil development, and Saudi Basic Industries (SABIC), which is currently the world's seventh-largest petrochemical producer and the largest non-oil company in the Middle East. The Kingdom's development remains largely in the investment stage, although there are potential pockets of innovation.

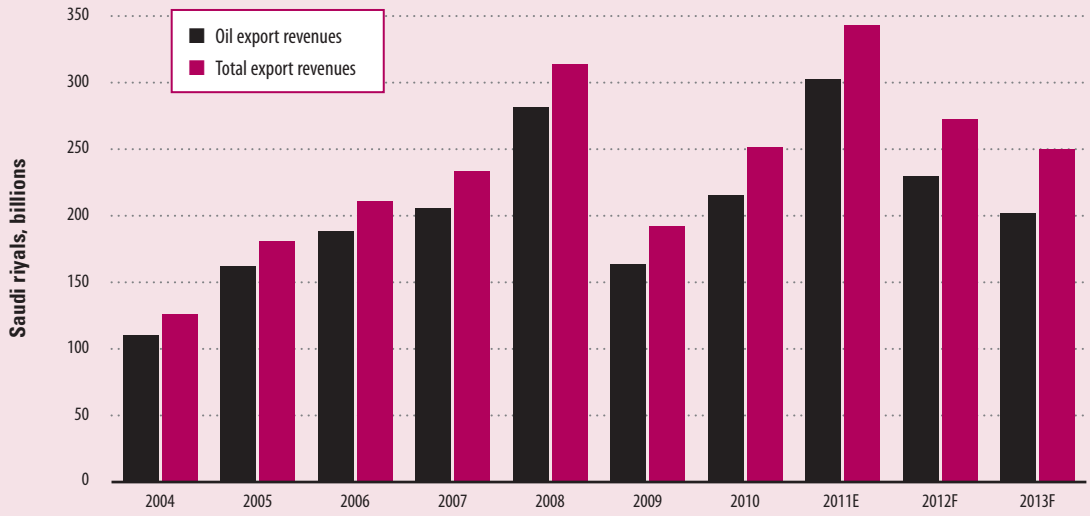
The National Plan for Science, Technology and Innovation (NPSTI 2010–2025) highlighted the major challenges facing the advancement of Saudi Arabia towards industrialization and the diversification of its economy. The Saudi form of Dutch Disease made the manufacturing sector less competitive than it could otherwise have been, and although figures on R&D expenditures by private firms are not being collected, they are assumed to be very low by international standards. R&D programmes remain limited largely to the large industrial companies. Saudi investments have always tended to be risk averse and less favourable towards extending funds to new technology-driven companies that have a high-risk profile.

Moreover, efforts to stimulate innovation and enhance competitiveness at the national level have confronted serious human resources challenges. Although the number of engineers and scientists in Saudi Arabia has increased in the last few years, it remains low when compared with those of other industrialized countries. According to research from the International Development Research Centre,[1] Saudi Arabia has the lowest total early-stage entrepreneurial activity rate of all the factor-driven economies in its study. Only 4.7% of the adult population are actively involved in the start-up of a new business or own a young business that has existed for less than three and half years.

It seems the wealth of resources that was once argued to have been an obstacle to Saudi Arabia diversifying its economy in innovative ways will become a benefit. Saudi Arabia is gradually taking part in the globalization of R&D. The country's growing resource incomes are increasingly driving the transformation of the economy towards a knowledge-based system. In 2012 Saudi Arabia was one of three new emerging economies to appear on the world R&D map for first time (Malaysia and Indonesia are the other two) according to Battelle's *2012 Global R&D Funding Forecast*.[2] Although Saudi Arabia is not now one of the global science and technology (S&T) supply countries where multinational enterprises (MNEs) choose to locate their offshore R&D centres, and is not now a natural target for R&D-related foreign direct investment (FDI), a multitude of multibillion-dollar developmental projects—mainly in the petroleum upstream/downstream processing and the construction and engineering fields—have brought multinational R&D centres of international industrial corporations (see Box 1).

International research collaboration is now acknowledged to be an important transmission mechanism through which technology can be diffused between firms and across regions and countries. FDI plays a major role in the process of globalizing R&D, and MNEs are the main actors. MNEs are seen as the primary driver of global R&D, and the world's biggest multinationals are increasingly happy to locate their

Figure 1: Annual export revenues of Saudi Arabia



Source: Compiled by the authors from data presented in Jadwa Investment, 2012.

Box 1: R&D centres of international industrial corporations in Saudi Arabia

Dhahran Techno-Valley (DTV) is a prominent Saudi example of locations where MNEs opted to locate offshore R&D centres. DTV is a specialized technology cluster focused on petroleum processes that was launched at the King Fahd University of Petroleum and Minerals (KFUPM) in 2006 (in close proximity to Saudi Armco's headquarters). It currently hosts R&D centres for key multinationals and other large local industries. Dow Chemical Company recently announced its intention of entering into a strategic relationship with the King Abdullah University of Science and Technology (KAUST) to establish a multi-year, multi-million dollar joint research framework initially aimed at using catalysis to develop new routes for producing chemical derivatives. In addition, Dow announced its intention of exploring developmental efforts at the KAUST Research Park and Innovation Cluster.

In another example, along with Sumitomo, Saudi Aramco has set up PetroRabigh—a joint venture plastics development park—at King Abdullah Economic City mainly in order to develop types of chemical cracker and their derivatives. These development parks are possible because large industrial organizations worldwide continue to decentralize their R&D facilities and build new ones in offshore locations. Growing evidence shows that, within a few years, the research parks of the major Saudi universities will bring together academic research organizations, national industries, and multinational R&D centres in an emerging Saudi triple helix arrangement, where each of these three elements combines with the others to offer a dynamic and robust framework. The Saudi triple helix arrangement includes the Saudi Universities, the Saudi mega industries, and the MNEs.

R&D facilities in emerging markets. More than 95% of the 700 firms with the largest R&D expenditure worldwide are MNEs; they account for close to half of the world's total R&D expenditure and more than two-thirds of the world's business R&D. The top R&D-performing MNEs often spend more on R&D than many nation states do, and their presence is felt not only through activities in their home countries but also increasingly abroad. Companies on the Fortune 500 list have 98 R&D facilities in China and 63 in India. Multinationals expect about 70% of the world's growth over the next few years to come from emerging markets. This estimated growth is associated with the strategies of those industrial organizations that build global marketing and sales support presence at their technology market locations (among many other reasons). The offshoring of R&D in developing countries has involved internationally known MNEs such as Ericsson, GE, IBM,

Intel, Microsoft, Motorola, Nokia, Oracle, Texas Instruments, and SAP. These emerging international R&D trends have started to manifest themselves in national innovation systems, which are becoming more integrated in global innovation networks and more dependent on foreign sources of knowledge.

All of these observations are not separate from the changes that the global R&D typology has seen during the last decade. Among the changes observed in the *UNESCO Science Report 2010* is an increase in the number of researchers in developed countries:[3] in 2002, developed countries had 29.7% of the world's researchers; this increased to 37% in 2007. Many indicators show a levelling of the R&D global playing field. Most of the growth in global R&D funding is being driven by Asian economies, which is expected to increase by nearly 9% in 2012, while European R&D will grow by about 3.5% and North American R&D by 2.8%. A country-by-country technical strength analysis perceived China as having the world's greatest technical strength in 2015, while the United States of America was perceived to retain the same position in 2010.[4]

Saudi Arabia seems to be dynamically responding to the global transformation of the R&D environment, and its spending on R&D has witnessed substantial growth. From 0.25% of GDP in 2000, the Saudi appropriation for R&D and innovation will increase to 1% between 2010 and 2015 with the aim of reaching 2% between 2017 and 2015. The Saudi economy is part of the world's changing portrayal of R&D, and is considered to be one of the emerging economies that are slowly (and steadily) increasing their annual investment in R&D infrastructure, education, and intellectual properties.

Box 2: Development Plans for Saudi Arabia

The 8th Development Plan (2005–09) focused on fundamental developments that laid the basis for heading towards a knowledge-based economy. These included starting to implement the first five-year plan of the Science and Technology National Policy; adopting the National ICT Plan, the National Industrial Strategy, and the Strategy and Plan for Giftedness, Creativity and Innovation. The 9th Development Plan adopted the drive towards a knowledge-based economy by focusing on education, which disseminates knowledge, thus paving the way for knowledge transfer and accumulation and thereafter knowledge generation, as well as the utilization of knowledge in various economic and social sectors, particularly production and service activities. Through these endeavours, the 9th Plan sought to enhance the comparative advantages of the economy and add new ones, diversify it, and increase its productivity and competitiveness as well as create appropriate employment opportunities for citizens.

The 9th Plan (2010–14) recognized higher education as one of the most important stages of the build-up towards a knowledge-based economy. Saudi higher education institutions now receive the lion's share of the country's appropriation for R&D. The National Science and Technology Plan (NSTP) implemented programmes and projects worth SR7.9 billion in 2008, which constituted a significant development in financing knowledge-production activities. Moreover, in 2006–07, the number of research centres at Saudi universities increased, with the establishment of seven research centres of excellence for environmental studies, medical genome sciences, oil refining and petrochemicals, renewable energy, materials engineering, biotechnology, and research on dates and palm trees. In addition, 32 training programmes were implemented within the framework of a project for innovation and excellence. Furthermore, several private-sector companies have realized the importance of R&D centres or units and started to establish such centres, which are expected to lead to increasing the knowledge content of their products and services.

The Saudi push for a diversified economy: Key roles for higher education institutions and major industries

Under the country's 8th Development Plan, several major public and private projects in various regions of the Kingdom have been implemented. These include investment projects aimed at diversifying the economic base and achieving balanced development among the country's sectors, such as mining, ICT and petrochemical projects. During the last decade, the picture has gradually changed. The 8th and 9th Development Plans included clear directions for the transfer and indigenization of knowledge and thereafter its generation—either internally through several channels or by including partnerships with leading foreign companies (see Box 2). However, with all these advancements, it should be noted the picture is still not totally rosy. For example, the low number of Master and PhD students was recognized in the Development Plans. These were small numbers by international standards, a failing that reflects negatively on R&D.

The major roles open to Saudi industry in building the future knowledge-based economy were highlighted by the 9th Development Plan. Saudi Aramco and SABIC

and the companies of the Offset Program, particularly in the field of electronics, are now carrying out important technology-transfer and indigenization activities. Saudi Aramco has worked on transfer and indigenization of technology in the oil industry, establishing two R&D centres for that purpose. SABIC also made similar efforts in the petrochemical technology transfer, expanding its Industrial Complex for R&D in Riyadh and locating two upstream R&D centres at the science parks of two major Saudi universities. The company is building a plastics application development centre at the Riyadh Techno Valley research complex inside the King Saud University (KSU) campus. Saudi International Petrochemical Company (Sipchem), which was established in 1999, is building now a corporate Product & Application Development Centre (PADC) at DTV of KFUPM, which will be operational in mid 2012. The Saudi Arabian Amiantit Company, which was established in 1968 and developed into a major diversified industrial group with operations spanning the globe, is now establishing a research centre at DTV.

The Saudi national ecosystem and academia-industry links

While implementing the 8th Plan focused on the knowledge production and dissemination challenges, the 9th Plan recognized different difficulties with regard to indigenization of knowledge and transforming knowledge into products in Saudi Arabia. These included two intertwined dimensions: (1) directing the country's investment in R&D and innovation towards areas important to the national economy and (2) the needs for developing effective academia-enterprise innovation linkages.

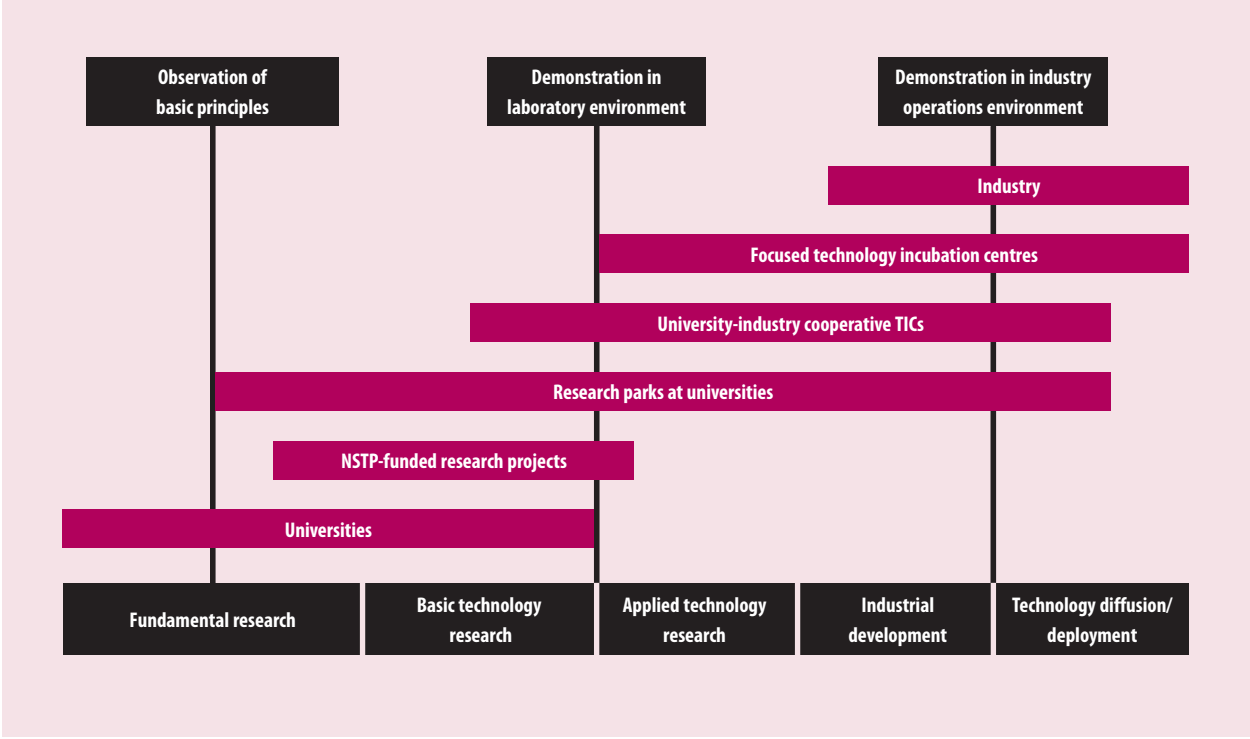
To address the relative imbalance among basic and applied research, development, and innovation, NSTP funding for research in universities came under contract with the production and service sectors, thus avoiding being geared merely towards academic publication and career promotion. The academia-enterprise innovation linkages dimension encompasses several important enablers, including intermediary institutions that interface education and R&D with production and services sectors. These intermediary institutions also play an important role in transferring R&D results to production lines and services and transforming knowledge into wealth. In addition to research parks at the campuses of major Saudi universities, both quantitative and qualitative expansion of intermediary institutions has occurred in the last few years. An NSTP programme was launched in 2009 with the aim of creating a chain of cooperative technology innovation centres (TICs) between universities and the private industrial sector (both local and global) at leading universities in the Kingdom.

With a similar approach, the World Bank's *Innovation Policy Guide for Developing Countries* emphasizes the development of an innovation scheme to provide public-private partnerships and industry-university collaboration by focusing on funding the seed stage of potential niche research projects as a possible innovation path for Saudi Arabia.[5] In 2011, TICs were established at three major Saudi universities: KFUPM, KSU, and King Abdulaziz University (KAU). The centres are geared towards developing advanced technologies that secure demanded advanced products and give new resources to generate wealth and work opportunities for citizens. They are also driven by industrially relevant problems. Types of university-industry cooperation include joint funding, sharing of resources, and in-kind support. The activities of these centres involve education and training programmes including, but not limited to, a PhD programme that complements the research programmes and builds engagement, innovation, and R&D capacity with industrial members. These centres are also strongly encouraged to extend their activities in order to involve undergraduates in their research. This is part of the efforts for developing Saudi human resources training programmes attuned to modern knowledge and technology.

Further important dimensions of the NSTP are motivating Saudi research universities and enterprise sectors to expand partnerships in increasing knowledge production nationally and to provide more incentives for joint ventures and R&D-related FDI investment in knowledge transfer and indigenization.

Encouraging the commercialization of research and promoting technology transfer from universities and research institutes are two of the main objectives of the National Policy for Technology Business Incubation (NPTBI). The King Abdulaziz City for Science and Technology created the BADIR programme to advance that policy to meet some of the NSTP objectives. The BADIR—which means 'initiate'—programme is mandated to support a network of five national technology-focused incubators that assist emerging-technology companies with specialist accommodations. BADIR incubators will focus mainly on the priority

Figure 2: Intermediary university-industry programmes/institutions: Positions in Saudi Arabia's technology development



technologies of ICT, biotechnology, advanced materials, manufacturing, and energy technologies and work closely with affiliate incubators in national universities. The work is near completion and is expected to be implemented under the auspices of the NSTP.

Enhancing academia-industry innovation links in Saudi Arabia

The industrially oriented NSTP-funded R&D projects, the research parks at major universities, the cooperative TICs, and the focused technology incubation centres constitute jointly a large-scale national effort for aligning universities' research with the future strategic needs of the Kingdom and transitioning public R&D results to production and service sectors. These programmes and intermediary organizations have been positioned in the technology development structure according to their levels of technology readiness (Figure 2). The university-industry innovation linking system was designed to operate mission-driven environments—the elements of the system will receive ongoing support from the government and leverage significant funds from industry (both national and multinational). It is assumed they will have transformative effects on the industrial base of Saudi Arabia during coming decades.

Consolidating these initiatives requires a special type of engagement—known as 'triple-helix engagement'—that fosters dynamic exchanges among Saudi universities, national funding (and policy-making) organizations, and local/global firms. Coordinating among the intermediary organizations and numerous Saudi national knowledge-based economy initiatives and knowledge nodes requires effective and well-designed regulatory regimes and policies. Special arrangements are needed to coordinate activities of the university-industry cooperative TICs and the R&D centres of the MNEs at the research parks at universities. Also, there are no clear links between the developmental initiatives that take place at the newly established economic cities and the research clusters that have started to emerge at the campuses of the Saudi universities.

Regulatory regimes and policies needed for Saudi Arabia to enhance current academia-industry linkages

The R&D centre environments of the large industries—represented by both national and multinational enterprises—require advanced engineering and manufacturing support services. Petroleum R&D processes are typically known for their

heavy demands for high-precision mechanic work, which Saudi Arabia currently lacks. The deficit in engineering design skills and the inability of the labour force to execute small devices or provide specialized shops that can build systems and components to specifications as required by the scope of research projects are among the most challenging difficulties facing the advanced research centres in the Kingdom. Encouraging small- and medium-sized enterprises in Saudi Arabia to invest in these types of engineering design and manufacturing services will require a specially designed favourable investment environment and new types of investment policies. In the same way, encouraging industrial ventures in building innovative prototypes that could become successful in international markets was among the possible innovation paths recommended for Saudi Arabia by the World Bank's innovation policy guide.[6] Saudi institutions of higher education need also to be encouraged to align their curricula with these developmental demands and to develop special training programmes to bridge the skills gap in these particular sectors.

In regard to the protection of intellectual property (IP) rights—a protection that is important for attracting the R&D activities of foreign companies—Saudi Arabia has achieved significant progress, which was a requirement of membership in the World Trade Organization. However, further work is needed in this area to develop more transparent and enforceable regimes for IP rights. From an MNE headquarters perspective, among the main drawbacks of R&D offshoring is the potential loss of control over the results. In order to stimulate the patenting activity of firms, an instrument used by several countries is offering fiscal incentives to cover patenting costs. This support may be of interest to foreign investors in R&D. Ensuring the presence of adequate skills in IP is necessary as well; this can be done, for example, by sponsoring IP education and identifying specialized law firms and consultants that can be contacted by potential foreign investors.

An abundance of natural resources has been always one of the most important determinants of FDI in Saudi Arabia, but indications of a gradual shift—from resource-seeking to other types of FDI—are growing. This diversification of the type of FDI should be encouraged. Increasing the attractiveness of Saudi Arabia as a location for offshored R&D centres and R&D-related FDI requires policy makers to foster scientific excellence through the creation of both scientific and technological networks of public and private research not only within boundaries of the country but also with distant partners. In the end, Saudi Arabia is a developed country entering the era of globalized innovation; this reality needs to be reflected in its national policy for science and technology. For this reason, Saudi national policies for science and technology should be related to the integration and concentration of resources to reach an internationally competitive critical mass. The small number of graduate students remains an impediment for knowledge generation in the Kingdom. To ameliorate this situation, policies are needed that stimulate Saudi institutions of higher education to continue engaging with enterprises and to adopt a method of systematic and formal consultation with industry in the development of structured Master and PhD programmes that address industry's requirements.

Creating more favourable conditions for bringing a larger portion of the world's R&D-related FDI is also needed. The World Bank's Doing Business 2012 data for Saudi Arabia indicates that the country occupies an advanced position (12 out of 183) in terms of the ease of doing business. However, this environment remains mainly limited to investments in economic development projects. There are special needs for handling important issues hindering technology development by international companies and the R&D offshore centres of MNEs in Saudi Arabia. New legislation is essential to facilitate the importation of special materials or ordering equipment. Plans for attracting FDI should also include differentiated packages for R&D-related FDIs.

To obtain greater gains from foreign technology transfer to local Saudi firms and industries, several conditions must be met through indigenous R&D. Foreign technology can generate technological change and upgrading for local firms only insofar as sufficient indigenous R&D activities and human capital are present. The level of local absorptive capacity is a crucial determinant and depends on the human capital and the country's appropriation for R&D. Experiences from emerging economies suggest that maximizing the benefits of innovation and accelerating catch up requires parallel encouragement for indigenous innovation and the acquisition of foreign knowledge. China's model—and also the Indian and Brazilian models—of 'walking on two legs' reflects prudent strategy for maximizing benefits of developing countries. It is true that the offshored R&D centres in Saudi Arabia are, so far, mainly for Western-headquartered corporations, but selecting and shaping

the best combinations of foreign technology transfer to Saudi Arabia is a strategic challenge. There are numerous and multi-tier choices of technology engagement rather than the simple bi-dimensional North-South divide. The Saudi emerging economy is of the resource-rich type and technologies developed in Saudi Arabia could be more appropriate for other resource-abundant countries.

The efforts undertaken by Saudi Arabia during last decade to diversify its economy and enhance its knowledge/technology content are a step in the right direction for preparing for a post-oil era. The approach of the rich-resource country of using the resource itself as an anchor for attracting the R&D centres of major industrial international corporations may provide useful observations and lessons learned for other resource-abundant countries. Directing a major portion of its resource-dependent financial revenues towards spending on R&D is another important investment that has been made by the Saudi government. The Saudi university-industry innovation linkages, which includes several intermediary organizations/programs, is still at an early stage of implementation and must be closely watched to properly determine its lessons for success and failure.

Notes

1 IRDC, 2010.

2 Batelle, 2011.

3 UNESCO, 2010.

4 Batelle, 2010.

5 World Bank, 2010.

6 World Bank, 2010.

References

Battelle. 2010. *2011 Global R&D Funding Forecast.* Battelle and *R&D Magazine,* December. Available at http://www.battelle.org/aboutus/rd/2011.pdf.

———. 2011. *2012 Global R&D Funding Forecast.* Battelle and *R&D Magazine,* December. Available at http://www.battelle.org/aboutus/rd/2012.pdf.

The Economist. 2010. 'The World Turned Upside Down'. *The Economist. Special Report: Innovation in Emerging Markets.* 15 April, from the print edition. Available at http://www.economist.com/node/15879369/print.

European Commission. 2008. *Internationalisation of R&D: Facing the Challenge of Globalization: Approaches to a Proactive International Policy in S&T.* Brussels: European Communities.

Fu, X., C. Pietrobelli, and L. Soete. 2010. 'The Role of Foreign Technology and Indigenous Innovation in Emerging Economies: Technological Change and Catching Up'. *Technical Notes* No. IDB-TN-166. Washington, DC: Inter-American Development Bank, Institutional Capacity and Finance Sector.

Guimón, J. 2008. 'Government Strategies to Attract R&D-Intensive FDI'. Paper submitted to the OECD Global Forum VII on International Investment, Session 2: International Investment and Innovation, 27–28 March.

Hauser, H. 2010. *The Current and Future Role of Technology and Innovation Centres in the UK: A Report by Dr. Hermann Hauser.* UK Department for Business Innovation & Skills. Available at http://www.bis.gov.uk/assets/biscore/innovation/docs/10-843-role-of-technology-innovation-centres-hauser-review.

Havro, G., and J. Santiso. 2008. 'Lessons from Chile and Norway: To Benefit from Plenty'. OECD Development Centre. *Policy Brief* No. 37. Paris: OECD.

IDRC (International Development Research Centre). 2010. *Global Entrepreneurship Monitor: GEM-MENA Regional Report 2009 (Middle East and North Africa).* International Development Research Centre with contributions from the Palestine Economic Policy Research Institute (MAS), December. Cairo: IDRC.

Jadwa Investment. 2012. *Saudi Chartbook.* February. Available at http://www.susris.com/documents/2012/120131-jadwa-chartbook.pdf.

Narula, R. and J. Guimón. 2009. 'The Contribution of Multinational Enterprises to the Upgrading of National Innovation Systems in the EU New Member States: Policy Implications'. Paper submitted to the OECD Global Forum on International Investment, Investment Division, Global Forum VIII on International Investment, Session 2.4.: Measuring the Quality of Investment Policy Frameworks: Useful Guides for Policy Reform or a Beauty Contest?' 7–8 December.

OECD (Organisation for Economic Co-operation and Development). 2008. 'Research and Development: Going Global'. *Policy Brief,* July. Paris: OECD.

Pillay, P. 2011. *Higher Education and Economic Development: Literature Review.* Wynberg: Centre for Higher Education Transformation (CHET).

Poelhekke, S., and F. van der Ploeg. 2010. 'Do Natural Resources Attract FDI? Evidence from Non-Stationary Sector Level Data'. *De Nederlandsche Bank NV Working Paper* No. 266/2010, November.

Saudi e-Government National Portal. n.d. National Plans and Initiatives: Ninth Development Plan. Chapter-5: Knowledge Based Economy. Available at http://www.mep.gov.sa/themes/GoldenCarpet/index.jsp;jsessionid=024E62861EE532B3E9E68DE84221403F.alfa.

Technopolis Group. 2008. *Drivers of International Collaboration in Research: Background Report 4.* 1 December. Conference Report Brussels 13–14 October 2008. Amsterdam: Technopolis Group, Manchester Institute of Innovation Research, Wise Guys Ltd. Available at http://ec.europa.eu/research/iscp/pdf/drivers_sti_annex_4.pdf.

UNCTAD (United Nations Conference on Trade and Development). 2005. *Globalization of R&D and Developing Countries: Proceedings of the Expert Meeting.* Geneva: UNCTAD.

UNESCO. 2010. *UNESCO Science Report 2010: The Current Status of Science Around the World.* Paris: UNESCO Publishing.

World Bank. 2010. *Innovation Policy: A Guide for Developing Countries.* Washington, DC: The International Bank for Reconstruction and Development / The World Bank.

World Bank and International Finance Corporation. 2012. *Doing Business 2012: Doing Business in a More Transparent World.* Washington, DC: The International Bank for Reconstruction and Development / The World Bank.

Accounting for Science-Industry Collaboration in Innovation: Existing Metrics and Related Challenges

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The theme of this year's Global Innovation Index (GII) report underlines the importance of linkages among innovation actors in modern innovation ecosystems.

Innovation is increasingly understood as an interactive learning process that embraces the integration of knowledge from external sources. Innovation processes have become more fragmented and 'open'.[1] Markets for technologies allow for the exchange of technologies more and more frequently.

In this arrangement, universities and public research organizations (PROs) are a fundamental pillar of the innovation ecosystem. On the one hand, they provide human capital and training. On the other hand, they advance knowledge through public science and diffuse that knowledge through tacit or tangible technology transfer activities. Accordingly, in high- and middle-income countries alike, strategies have aimed to improve linkages among public research and firms.

Although there is now consensus that these linkages among innovation actors are crucial, measuring their existence and impact remains daunting. As outlined in the Preface to this report, this difficulty has an effect on our ability to judge existing policies. This is unfortunate because the creation of linkages is likely one of the most complex innovation policy areas, with no easy recipes and few countries or regions with notable successes.

With a view to improving the availability of the indicators that could be useful in the GII, this chapter discusses the metrics that are currently available to measure public-sector research and science-industry collaboration.

Putting a figure on public-sector research

Although our main interest here is related to metrics for science-industry linkages, often data on the size of public-sector research are used to assess its role in the broader innovation ecosystem. A number of first-class variables with wide country coverage for recent years exist today to assess the size of public-sector research (see Table 1).

These metrics show that universities and PROs account for a substantial share of both total research and development (R&D) and the number of researchers in a given country. For instance, in high-income economies, the public sector is responsible for anywhere between 20 and 45% of annual total R&D expenditure. PROs—rather than universities or firms—are often the main R&D actors in low- and middle-income economies.

On the one hand, these data are part and parcel of a complete analysis of innovation potential. They help to identify where limited public research—and hence a lack of knowledge creation—is holding back a country's innovation ecosystem. Public research itself does not guarantee a proficient business R&D and innovation. Yet public research efforts trigger firms to perform more R&D themselves as these efforts raise the returns on firms' innovation expenditure. Indeed, almost no country has—in absolute terms—large private R&D expenditures but meaningless public R&D.

On the other hand, these metrics alone do not contribute to assessing the linkages between the public and the private sector or any resulting impacts. Worse, in many non-OECD countries the problem is in fact that the majority of R&D projects and researchers are concentrated in universities or PROs, often without diffusion to the private sector. In middle- and low-income countries, firms often contribute little to scientific research. Absent its own R&D capacity, the private sector cannot 'absorb' what is done in public research. Public actors are also unable to identify the correct research priorities and methods. Researchers have little incentive to transfer their technologies.

Another interesting set of variables used to assess the contribution of the public sector is the level and share of basic R&D conducted in universities and PROs. Basic R&D in the public sector is recognized as a necessary driver for radical innovations. On their own, businesses

Table 1: Selected measures of the size of public research

Metric	Availability of data and country coverage
Public-sector R&D expenditures (including as a share of total R&D)	Available for a wide range of countries, based on the Science and Technology Statistics of the UNESCO Institute for Statistics (UIS) and the Science, Technology and R&D Statistics of the Organisation for Economic Co-Operation and Development (OECD)
Basic research performed in the public sector as a percent of national basic research	Available only for a limited number of countries, based on OECD Research and Development Statistics and national sources
Number of researchers or R&D personnel in the public sector	Available for a wide range of countries, based on the UIS and OECD statistics mentioned above

do not conduct blue-skies research with no expectation of some financial returns. Given the increasingly science-based nature of technological advances, publicly financed science is said to be increasingly crucial to innovation.[2]

Accordingly, governments usually provide the majority of the funding for basic research—more than three-quarters of all basic research in high-income economies. In low- and middle-income countries for which data are available, public research is also responsible for the majority of basic research—close to 100% in China, close to 90% in Mexico, about 80% in Chile and the Russian Federation, and about 75% in South Africa.

Again, the metrics currently available for measuring the level and share of public-sector basic R&D are only a useful starting point.

First, basic research conducted in the public sector will have an economically 'useful' role to play only if it is eventually transformed into innovations by innovation actors. Other innovation actors will require a large internal absorptive capacity to make use of public investments in the field. In the United States of America (USA), businesses devoted US$16.5 billion to basic research in 2009. This is small compared with the country's total R&D spending (US$247.4 billion in 2009), but it still accounted for about 22% of the overall funding for basic research in the USA.[3]

Second, the correct level of basic research investment versus more applied R&D in the public sector or the economy as a whole is subject to a passionate discussion.

On one side, it is argued that basic research is a central driver of scientific breakthroughs and follow-on radical innovation.[4] In this view, it is critically important that the 'blue sky nature' of basic research is untainted by short-term and/or commercial interests. In the case of advanced countries, the worry is that both public institutions and firms will do less and less basic research, which will have an impact on the potential of future innovation. Public research institutions are also subject to budget cuts that constrain their ability to fund expensive research infrastructures. In the case of firms in high-income countries, the focus on shorter product cycles and the pressures of financial markets are said to have reduced basic R&D.

On the other side, there are worries that public research is too focused on research without any tangible economic or social repercussions. Policies to stimulate technology transfer are out to maximize the return on investment in public R&D. Universities and PROs ought to undertake more development to produce useful inventions that can be readily transferred to firms.

The following questions will occupy innovation economists and policy makers for some time to come: What is the optimal level of basic research versus more applied R&D, both in the public and the private sector? How does it vary between different technical fields and for different levels of national development? What are the implications for funding agencies?

Third, and for reasons outlined earlier, lower-middle- or low-income countries in particular would be ill-advised to concentrate all their efforts on basic research rather than more development-oriented, more 'practical' research activities. As outlined before, in developing countries the problem is often an excessive focus on basic research without diffusion to innovation actors in the private sector.

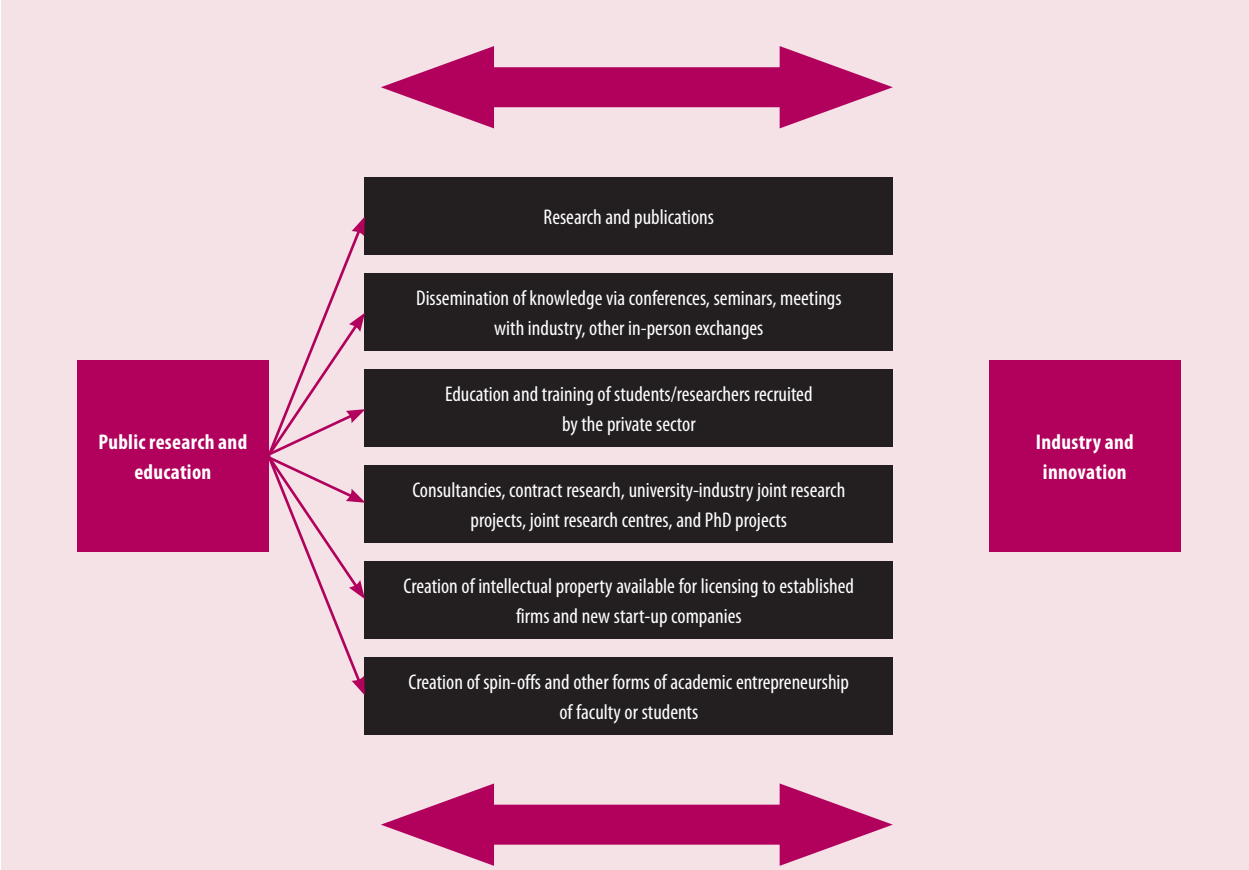
In sum, the use of data to measure public R&D (basic or more applied) or the number of researchers is but a useful starting point for assessing the potential of industry-science linkages.

Measuring public-private linkages

The measurement agenda has increasingly evolved to address the *systemic dimension* of innovation—that is, the activities of multiple innovation actors and linkages among them.[5]

This ambition for measurement is also important to poorer economies because innovation linkages

Figure 1: The multiple vectors of knowledge transfer from universities and PROs to industry



Source: WIPO, 2011b.

within them are, on average, weak. Innovation indicators for less-developed economies ought to assess the extent to which connections and linkages are present in the field of innovation, define the nature of these links—including determining whether they are national or international—identify involved or excluded agents, and ascertain the efficiency of existing information channels.[6]

Channels of science-industry linkages

In a first step, it is important to showcase the different public-private linkages. This demonstration of science-industry channels also reveals the complexity of measurement and the danger of focusing excessively on single measures.

Public-private knowledge transfers occur through a large number of formal and informal and two-way channels. Figure 1 illustrates the following informal and formal channels of exchange:

- *Informal channels* include transferring knowledge through publications, conferences, and informal exchanges among scientists.
- *Formal channels* include hiring students and researchers from universities and PROs, sharing equipment and instrumentation, contracting technology services, encouraging research collaboration, creating university spin-offs or joint firms, and generating newer intellectual property (IP)-related transmission channels such as licensing inventions from universities.

A key measurement problem is that a significant share of collaborative activity remains unmeasured. Firm surveys and detailed studies, however, show that informal—and often unmeasured—contacts are most prevalent. Conventional university outputs such as numbers of graduates and publications, among

Table 2: Advanced science and technology metrics available to assess public-private collaboration

Metrics to assess linkages	Availability
Industry funding of public R&D and government-financed business R&D	Data are largely available for many high- and middle-income countries via statistics collected by the OECD and UNESCO (see Table 1). Very limited country coverage for data on cross-funding of basic R&D.
Co-publishing activities	No official data exist. Limited estimates can be produced by using private publication databases and identifying publications where co-authors are affiliated with firms and others are affiliated with public research institutions.
Researcher mobility between industry and science	No known large-scale data source is available to assess moves of researchers between industry and science at the national or international level. Some available information is based on inventor surveys or the study of academic patenting (see the section on 'inventor and innovation surveys'). For PhD holders, information is available for some mainly developed countries; see www.oecd.org/sti/cdh.
Joint research agreements or research centres	Almost no official data exist, but some information is available from company reports, annual reports of public research institutions, press announcements, and the like.
IP-BASED VARIABLES	
University and PRO patents	Estimates available for selected countries for patents filed under the Patent Cooperation Treaty (PCT), based on either the method developed at the Catholic University of Leuven (Belgium) or the method developed at WIPO.*
	Only incomplete data are available with respect to national patent filings in selected countries. In some countries, surveys are conducted by technology transfer associations, such as the US Association of University Technology Managers in the USA and ProTon Europe, the European Knowledge Transfer Association.
Co-patenting activities	WIPO estimates are available for joint filings under WIPO's PCT for selected countries.
Patent-to-patent and patent-to-non-patent citations	No across-the-board data on public-private citations are available for a large set of countries. The data that do exist are available only in selected studies based on bibliometric techniques applied to databases of the USA and European patent office, Google Patents, or commercial providers such as the 'Web of Science'. Studies are subject to potential biases, most notably those relating to problems with the identification of the applicant's affiliation.
Number of licenses and options; licensing income	Limited data are available through technology transfer offices, associations, or surveys in Europe and in North America. Very little information is available for non-OECD economies.
	No across-the-board country-level data are available. Very limited data—obtained from university technology transfer offices or associations, selected case studies, or journal articles—exist.

* Du Plessis et al., 2010; WIPO, 2011b.

others, are the most frequently cited activities contributing to innovation.

Moreover, it is important to realize that these exchanges do not take place in one direction only, from universities and PROs to firms. Rather industrial research complements and also guides more basic research. Such an exchange is also a means of equipping university scientists with new and powerful instruments. Existing metrics often underappreciate this two-way street of knowledge exchange.

The data available for assessing the frequency and type of collaboration are limited, especially in terms of public, official sources with the wide institutional and country coverage needed for the GII. Often these data points are available only for some high-income economies. Furthermore, existing data say little about the dimensions of quality and impact of cooperation, and thus the question of to what extent the collaboration may have been a key driver for different types of innovation is left unaddressed.

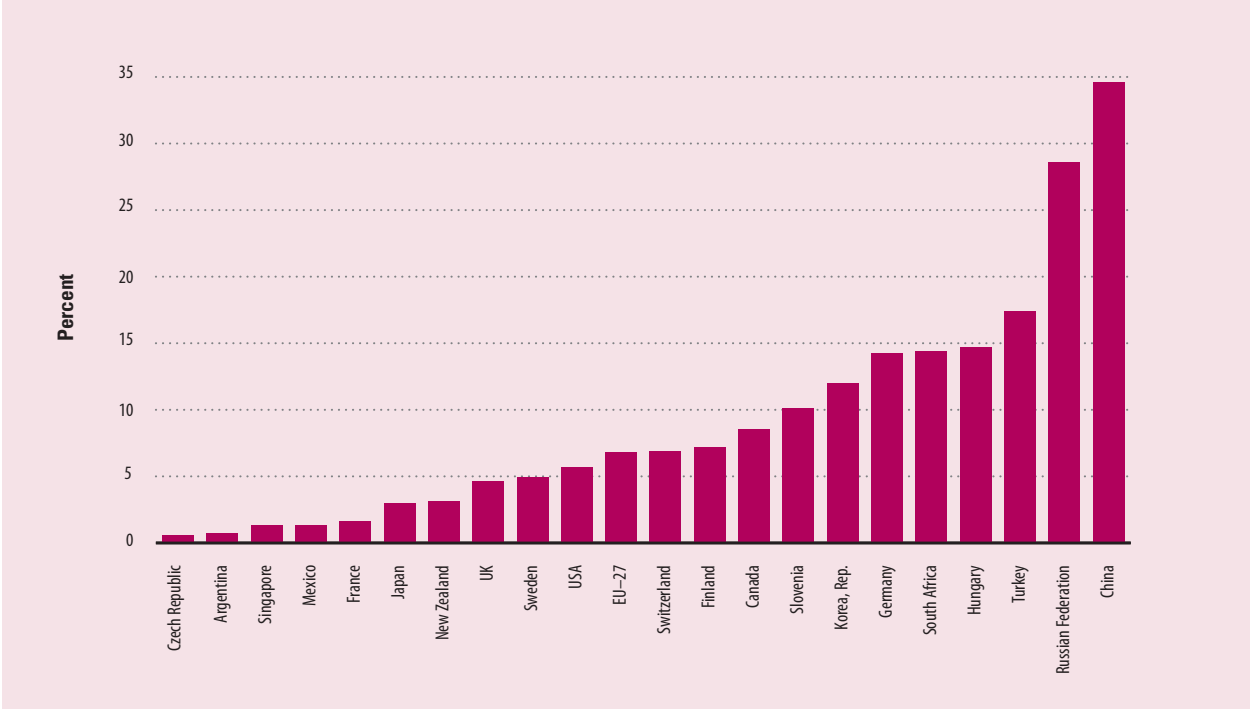
Two main categories of metrics to elaborate on these linkages can be distinguished:

1. *Advanced science and technology metrics*
2. *Inventor and innovation surveys*

Metrics of assessment: Advanced science and technology metrics

A first set of indicators focuses on the existence of networks of researchers/inventors (Table 2) and the extent to which the industrial base makes use of the results of scientific work for innovation.[7]

Figure 2: Higher education research expenditure financed by industry, selected countries (2008 or latest available year)



Souce: OECD, Science, Technology and R&D Statistics database.

The data presented in Table 2 mostly relate to R&D cross-funding and linkages, as demonstrated in data related to R&D funding, R&D cooperation, researcher mobility, publication activities, patenting and licensing, and business ventures emanating from universities and PROs, such as university spin-offs. Except for the data on cross-funding of R&D, usually these metrics are available only for a select number of high-income countries. Some metrics are not easily available at all. For instance, official statistics on joint research agreements and on cooperation between firms and the public sector, the exchange of know-how, the mobility of researchers, and even co-publication data are hardly available at all, much less for a wide range of economies.

The limited available statistics on the number of academic spin-offs are often used to evaluate technology transfer. These are mostly only available for the USA and Canada; these are based on the reporting of the technology transfer association,[8] and in a few select high-income countries.[9] Also the focus on the number of start-ups directly related to university IP can be misleading.[10]

In the following section, we focus on R&D cross-funding and IP-based variables and spin-offs.

Public-private cross-funding of R&D

Data on industry funding of R&D in higher education (primarily in universities, colleges, and laboratories affiliated with these institutions of higher education) is increasingly available for a large set of OECD and a few non-OECD economies (see Figure 2).[11]

When using these data on industry funding in any innovation ranking, it must be kept in mind that for most economies the share of higher education R&D expenditure financed by industry is relatively small. In the USA, for example—a country with arguably good science-industry links—firms finance about 6% of academic R&D. In Germany or Hungary this figure is closer to 15%, and in Turkey, the Russian Federation, and China businesses finance an even higher share of public R&D. It is, however, difficult to tell the extent and quality of linkages from these percentages alone. It must also be kept in mind that these data do not include the share of government PRO R&D expenditures financed by industry.

Metrics on the public funding of business R&D measure grants, loans, and government procurement efforts, but they exclude R&D tax credits. In the OECD region, the government funds nearly 7% of total business expenditure on R&D, down from nearly 9% in 1999.[12] More than 15% of business R&D is funded directly by government in the Russian Federation,

Table 3: Top 10 PCT applicants in 2011: Public research organizations

Rank	Applicant	Country of origin	Number of applications
1	Commissariat a L'Energie Atomique et aux Energies Alternatives	France	371
2	Fraunhofer-Gesellschaft Zur Forderung der Angewandten Forschung E.V.	Germany	294
3	Centre National de la Recherche Scientifique (CNRS)	France	196
4	Agency of Science, Technology and Research	Singapore	180
5	Consejo Superior de Investigaciones Cientificas (CSIC)	Spain	120
6	China Academy of Telecommunications Technology	China	119
7	Mimos Berhad	Malaysia	108
8	Electronics & Telecommunications Research Institute of Korea	Rep. of Korea	104
9	National Institute of Advanced Industrial Science and Technology	Japan	100
10	United States of America, Represented by the Secretary, Department of Health and Human Services	USA	98

Source: WIPO Statistics Database; WIPO, 2012.
Note: Government and research institutions include private nonprofit organizations and hospitals.

South Africa, Spain, Hungary, and Turkey. Although these metrics are an important tool for understanding the support of the public sector given to private-sector research and the ensuing potential linkages, the public funding of business R&D might, however, not systematically trigger true science-industry collaboration.

Intellectual property: Technology transfer channel

In the absence of comprehensive data on science-industry relationships, data on patents and licenses are used to gain insight into the technology transfer performance of universities and PROs.

While the use of such IP data has been influential in the policy debate, certain caveats are related to these metrics—most notably that a large share of inventions originating from public research is not patented under the institution's name, and hence is invisible as university output.[13] There is consensus in the literature and in policy circles that additional indicators need to be developed to achieve adequate monitoring that will allow a more accurate assessment.[14]

- *University and PRO patents:* Extracting the information from the patent databases requires additional manipulation and the use of search algorithms because patent documents do not easily reveal the institution of the patent applicant.

Based on available estimates, since 1979, the number of international patent applications filed under WIPO's Patent Cooperation Treaty (PCT) system by universities and PROs has been steadily increasing, except for a drop in 2009 linked to broader economic conditions.[15] The share of universities' and PROs' patents out of total patents under the PCT has been increasing since 1983, reaching 6% for universities and 3% for PROs in 2010. Most of the growth in applications is driven by high-income economies.

Among middle-income countries, China leads in terms of university applications with 2,348 PCT filings, followed by Brazil, India, and South Africa. PROs from China and India alone represent 78% of total patents by PROs originating from middle-income countries. They are followed by Malaysia, South Africa, and Brazil. The highest rates of university PCT applications as a share of total patents are reported for Singapore, Malaysia and Spain. The countries with the highest participation of PROs out of total PCT filings are Malaysia, Singapore, and India. Table 3 shows the top 10 PCT applicants among public research organizations in 2011.

Aside from a few high-income countries, statistics on national patent applications from universities and PROs are largely unavailable. The countries with the largest share of university applications are China (13.4%), Spain (13.2%), Mexico (12.6%), and Morocco (11.2%). The countries with the largest share of PRO resident applications are India (21%, based on estimates and not official data), Mexico (close to 10%), China (7%) and France (close to 4%).

In this context, co-patenting—when firms and universities / PROs decide to apply for patents jointly— is also an important indicator. After the year 2000, joint filings between firms and universities have been on the rise. In 2010, they made up about 18% of all PCT applications involving universities from high-income countries, up from almost none in 1980. On average, university-company co-ownership of PCT patents is more prevalent in middle-income than in high-income countries, even though the levels of filings are substantially lower in the former country group. Japan has the highest share of university-company partnerships at 42% of all university applications, followed by the Russian Federation (30%), China (29%), and Brazil (24%).

- *University IP licensing and commercialization:* Close to no indicators exist for assessing the scale of university commercialization and related downstream impacts. The most widely used indicators for measuring university technology transfer are the number of licenses issued and the income associated with these licenses. These data are available for only a few countries, are often based on nongovernmental surveys using varying methodologies and schedules, and are largely confined to universities without covering PROs.

Broadly speaking, the data tend to support the view that university and PRO licenses and related income are growing from low levels. Outside the USA, both are still relatively modest compared with the number of patents filed by public research institutions, or compared with income from their R&D contracts and consulting, or their R&D expenditure. Also, on average, university and PRO licensing income is still marginal compared with total university and PRO funding or research expenditure.

In middle- and low-income economies, data on technology transfer are even scarcer. Studies point to the nascent stage of IP and its commercialization, which is limited to a few patents and institutions. Other forms of IP, such as copyrighted works and know-how, are more commonly used to transfer knowledge to businesses.[16]

Metrics of assessment: Inventor and innovation surveys

In the last decade, large-scale inventor surveys and innovation surveys, which are both useful for assessing science-industry linkages, have flourished. The focus, size, and type of sampling involved in these two survey exercises are not comparable. Inventor surveys focus on specific inventors who have filed for a patent; innovation surveys address a representative sample of all firms in a given economy. Both types of surveys are the source of interesting academic follow-on papers focused on very particular researchers, institutions, or countries that provide a rich contextual background to studying science-industry collaboration.

Inventor surveys

Inventor surveys have been conducted primarily in Europe, Japan, and the USA; some of these surveys focus on large firms only. The so-called PatVal, a European-wide survey of inventors, is probably the most representative of all patent holders and covers all technical fields in six major European Union (EU) countries. The survey requests information about the sources of knowledge that were used in the research project and the assessment of the importance of the sources of knowledge leading to the patent.

PatVal's results show that coming up with technological breakthroughs worthy of a patent often involves collaboration among inventors.[17] About 20% of PatVal-EU patents are developed through collaborations among the employer organization and other partners, with variations across countries. Interestingly, 75% of these collaborations are formalized through specific contracts, and IP-based collaborations tend to be more formalized than non-IP based ones, as discussed later.

PatVal's results also show that a firm's customers are the most important source of innovation, followed by the knowledge supplied by the patent literature and the scientific literature.[18] Interaction with the firm's competitors, its participation in conferences / workshops, and its contacts with suppliers are ranked second as sources of innovation. Yet university and non-university research laboratories feature prominently for only a smaller share of firms. Specifically, 22% and 13% of the inventors in the PatVal survey rated the knowledge coming from universities and other public laboratories as important.

Although most discussions of the PatVal survey results dismiss the importance of university inputs on this basis, two arguments supporting the role of university inputs can be made. First, the aforementioned sources of innovation—such as scientific literature, conferences, and contact with suppliers—are often tightly linked to universities. Access to scientific literature and to conferences is often enabled by public researchers or the public research system. Studies that combine data on scientific co-authorship with data on patent co-invention at the level of individual researchers show that connectedness among scientists and inventors is extensive.[19] These studies also show that particular authors/inventors are fundamental to ensuring the intersection between the two worlds of science and technology.[20] Research shows that the mobility of researchers is crucial to transferring scientific knowledge with certain excludability from university to industry, and in fact, the more valuable the patent, the higher the probability of a move to a company.[21]

Second, as outlined earlier, it is not unnatural to assume that only a small share of inventors and firms actually work directly with public research institutions because only a small share of firms are involved in more radical innovations and scientific breakthroughs. In this light, the low absolute or relative numbers of

innovations that are brought to market through collaboration is neither surprising nor disappointing. These figures must be seen in terms of the structure of the particular industry, the sophistication of the innovation ecosystem, and types of innovations produced—that is, radical innovations or more incremental ones.

Business innovation surveys

A second set of survey indicators concern enterprise innovation surveys that assess innovation cooperation. These address the question of whether firms have cooperated with public research institutions during the innovation process.

In the absence of results from business innovation surveys with broad country coverage or better data on industry-science linkages with broad country coverage, the GII relies on the survey results of the World Economic Forum (WEF)'s Executive Opinion Survey.[22] One question in that survey asks respondents about the intensity with which businesses and universities collaborate on R&D.[23] One advantage is that the question potentially targets formal and informal collaboration alike. The data are, however, 'soft' data—they are very qualitative. They also relate to R&D rather than to innovation more broadly. Another statistic from the WEF survey in use in the GII assesses the state of cluster development.[24]

Currently, the most pertinent and complete innovation survey is the European Community Innovation Survey (CIS), which—until recently—was conducted primarily in European high-income economies.[25] Encouragingly, since 2005 the CIS places greater emphasis on the role of linkages with other firms and institutions in the innovation process.[26] Furthermore, UNESCO's Institute for Statistics (UIS) and the Red Iberoamericana de Indicadores de Ciencia y Tecnología (RICYT, or Network of Science and Technology Indicators-Ibero American and Inter-American) are both emphasizing innovation linkages when formulating guidelines on how to implement innovation surveys in developing countries.[27]

These business innovation surveys examine which of the following modes are used to conduct innovation and which are the sources of this knowledge transfer, including public research institutions:

- *Open information sources:* These comprise openly available information that does not require the purchase of technology or IP rights and does not require interaction with the source.
- *Acquisition of knowledge and technology:* This refers to purchases of external knowledge and/or knowledge and technology embodied in capital goods and services.
- *Innovation cooperation:* This refers to active cooperation with other enterprises or public research institutions for innovation activities (including the purchase of knowledge and technology).

One advantage of the business innovation surveys is that, in principle, they address all linkages, including informal ones. Moreover, they are not limited to technological breakthroughs and patents but instead embrace innovation (including process innovation) in general. A second advantage is that these surveys contain a large number of representative responses.

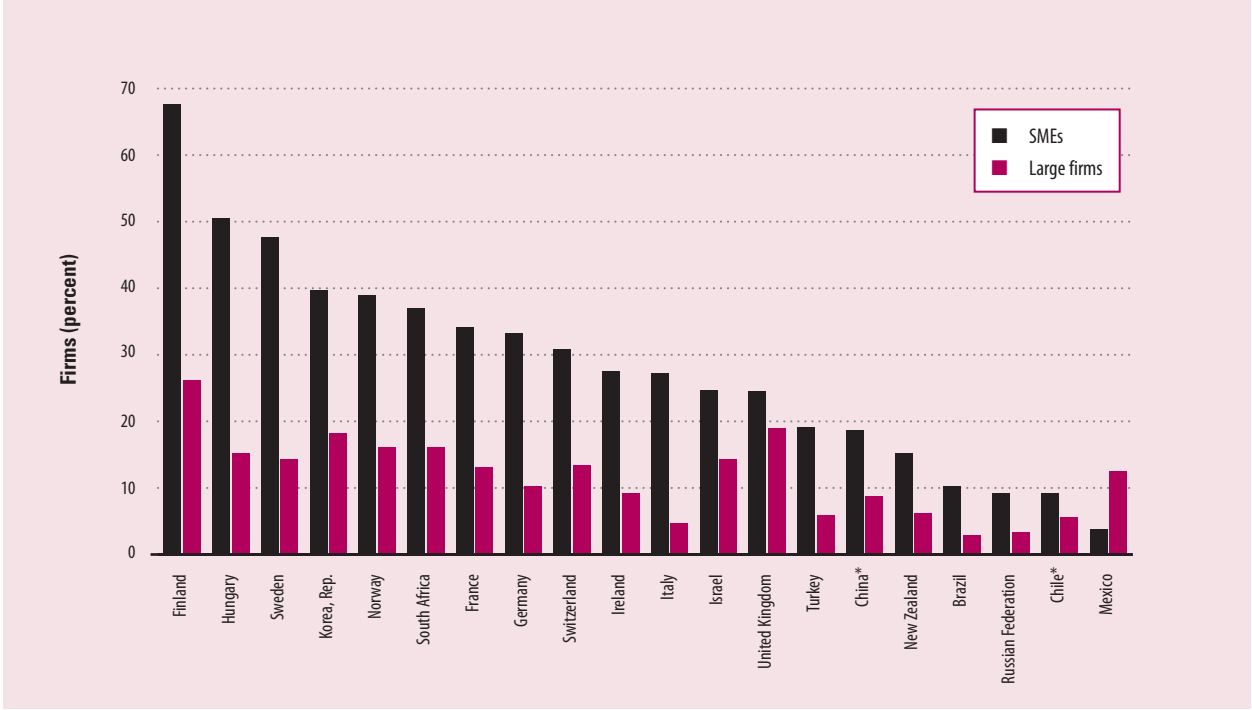
One reason for not using innovation survey data in the 2012 GII is the limited, although fast-growing, number of countries that carry them out these surveys. This will likely change because the goal of the UIS is to create an international database of innovation statistics for countries at all stages of development as of 2013.[28]

As was the case with inventor surveys, another challenge is the interpretation of related results. Firms are asked to evaluate which knowledge sources are 'highly important' to their innovation. The data produced show great variation by country, and comparability is not evident (Figure 3). A key problem with these business innovation surveys is still the cross-country comparability of results.

As expected, available data from existing innovation surveys—mostly for European, other advanced, and a few middle-income countries (e.g., China, the Russian Federation, and South Africa)—show that internal sources are often reported as the most important for innovation. Suppliers of equipment, materials, components, or software are the most likely external collaboration partner. The next likely collaborators are other enterprises within the enterprise group, often followed by customers and clients-competitors, and then, last—as seen in the inventor survey—universities and PROs. In most countries, large firms are usually two to three times more likely than small and medium-sized enterprises to engage in such collaboration.

Provisional results from the UIS show that in many surveyed countries a low percentage of firms cooperated with universities and other higher education institutions. Yet great differences across countries prevail.[29] In the Philippines, 47.1% of all innovation active manufacturing firms cooperate with universities or other higher education institutions; Malaysia shows similar levels of cooperation. This percentage

Figure 3: Firms collaborating on innovation with higher education or government research institutions by firm size, 2006–08



Source: OECD Science, Technology and R&D Statistics; OECD, 2011.
Note: See http://www.oecd-ilibrary.org/science-and-technology/data/oecd-science-technology-and-r-d-statistics_strd-data-en for detailed technical notes.
* China (2004-06); Chile (2007–08).

drops to 15–20% in Indonesia, South Africa, Colombia; it drops further, to 9% in the Russian Federation and 2% in Brazil. In some countries, other cooperation partners present even lower rates.

At face value, apart a few countries that seem to have the opposite experience, university interaction with industry appears to be a quantitatively small part of the overall pattern of knowledge flows for innovation.[30] This is not true in all countries, however. Innovating large firms in the Nordic countries, Hungary, and the Republic of Korea collaborate to a significant extent with public institutions, while few enjoy such collaboration in the Russian Federation, Chile, and Mexico. Moreover, innovation surveys cover product, process, marketing, and organizational innovation. It is not expected that connections to public research matter much to a majority of innovating firms, especially when they do not participate in research in the same way as universities.

The very sparse literature, based on innovation surveys, assessing linkages and their importance finds that incremental innovators benefit from intra-industry knowledge spillovers and close proximity to universities, but that radical innovators (those who come up with products new to the market) collaborate with universities, even with foreign universities. However, these studies also show that radical innovators source knowledge from universities but do not necessarily cooperate with them directly. In this latter case, they might not be counted in the above statistics as relying on public research institutions as external partners.[31]

Furthermore, the vehicle of technology transfer—that is, informal links, research agreements, patent licensing, and so on—between the innovating firm and the public sector is not explained. For the most part, this question is not posed. Only a few innovation surveys include such detailed information.

The relatively new US Business R&D and Innovation Survey breaks new ground in this respect.[32] It contains questions on agreements with public research institutions and other interactions with academia, such as the hiring of academic consultants for short-term projects in science and engineering, the visiting of corporate scientists at universities, and financial support to public research in order to support R&D.

In general, however, the qualitative dimension of collaboration (exactly how important such collaboration is, and via which levers it occurs) is often uncertain when looking at these survey results. An exception is seen when some more detailed industry studies have been carried out as a follow-up. More importantly, existing metrics and more detailed studies struggle to shed light on the ensuing downstream effect and impact of university and PRO outputs and the collaboration of industry with these institutions. Additional related impacts of cooperation may materialize over time, complicating the accurate measurement of impacts further.

Conclusions

This chapter shows that it is infeasible to reduce the complex web of science-industry relations and their indirect and direct effects on industrial innovation to a single-heading figure. Possible metrics are often not available for many countries, and those that are available are imperfect in their ability to encapsulate the complex set of overlapping interactions and knowledge flows. It is hoped that in the near future it will be possible to use a cluster of variables to measure the intensity and efficacy of science-industry collaboration. Certainly, an important objective of the GII exercise is to point to the current state of data in a given innovation policy field and to encourage the improvement of its metrics.

Notes

1 WIPO, 2011a.

2 NRC, 2003.

3 NSB, 2012.

4 NRC, 2003; WIPO, 2011b.

5 Freeman and Soete, 2007.

6 See Eurostat and OECD, 2005; RICYT, 2001.

7 Veugelers, 2007.

8 Statistics Access for Tech Transfer (STATT), AUTM, May 2011, available at http://www.autmsurvey.org/statt/index.cfm.

9 See WIPO 2011b for a summary of available data and a related discussion.

10 For a discussion of this point, see WIPO, 2011b.

11 Following the OECD *Frascati Manual on R&D Survey Standards,* the definition of higher education sector covers all universities, colleges of technology, and other institutions of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with higher education institutions.

12 OECD, 2011.

13 See Box 4.3 in WIPO, 2011b; see also Khan and Wunsch-Vincent, 2011.

14 EC, 2009.

15 WIPO, 2011b.

16 WIPO, 2011b; Zuñiga, 2011.

17 Guiri et al., 2007.

18 Guiri et al., 2007.

19 See the project 'Academic Patenting in Europe (APE-INV)', steered by Francesco Lissoni at http://www.esf-ape-inv.eu/index.php, for some work in the field.

20 Breschi and Catalini, 2010.

21 Crespi et al., 2006.

22 The Executive Opinion Survey is given annually to thousands of business executives to gather their insight into their business operating environment. For further information on this survey, see Brown and Geiger, 2011.

23 The survey question asks 'To what extent do business and universities collaborate on research and development (R&D) in your country?' Possible answers: 1 = do not collaborate at all; 7 = collaborate extensively. See https://wefsurvey.org.

24 See Chapter 1 of this report.

25 In the future, another potential source of information is the World Bank Enterprise Survey, which has a large country coverage. Its Innovation and Technology Module currently has only one linkage question, which is related to the share of firms using technology licensed from foreign companies.

26 Eurostat and OECD, 2005. Questions on sources of information and cooperation (the latter focused only on R&D activities) have been in the CIS questionnaire since its first round. In 2005, the whole issue of linkages was emphasized by the *Oslo Manual* (3rd edition). The document in which UIS and RICYT are also emphasizing linkages in developing countries is an annex to the 3rd edition of manual.

27 RICYT undertook the first effort to develop guidelines for innovation surveys outside of the OECD and the European Union. This resulted in the *Bogotá Manual,* which is used in most innovation surveys conducted in Latin American countries. See http://www.ricyt.org/.

28 The UIS has developed a pilot data collection that has been conducted in 2011. The pilot was focused on the gathering of national data from the most recent national innovation surveys in 19 pre-selected countries: Brazil, China, Colombia, Egypt, Ghana, Indonesia, Israel, Malaysia, the Philippines, the Russian Federation, South Africa, and Uruguay. Thanks go to Martin Schaaper and Luciana Marins from the UIS for providing this and related information.

29 Thanks go to Martin Schaaper and Luciana Marins from UIS for providing this and related information. The data will be published in the summer of 2012 under the title 'Results of the 2011 Pilot Innovation Data Collection', conducted by the UNESCO Institute for Statistics (UIS).

30 Cosh et al., 2006.

31 Mohnen and Hoareau, 2003; Mairesse and Mohnen, 2010.

32 See the US Business R&D and Innovation Survey, available at http://www.nsf.gov/statistics/srvyindustry/about/brdis/.

References

Breschi, S., and C. Catalini. 2010. 'Tracing the Links Between Science and Technology: An Exploratory Analysis of Scientists' and Inventors' Networks'. *Research Policy* 39 (1).

Browne, C., and T. Geiger. 2011. 'The Executive Opinion Survey: An Indispensable Tool in the Assessment of National Competitiveness'. *The Global Competitiveness Report 2011–2012,* pp. 75–83. Geneva: World Economic Forum.

Cosh, A., A. Hughes, and R. K. Lester. 2006. 'UK plc: Just How Innovative Are We? Findings from the Cambridge-MIT Institute Project on International Innovation Benchmarking'. *Massachusetts Institute of Technology Working Paper Series* MIT-IPD-06-009. Available at http://web.mit.edu/ipc/publications/pdf/06-009.pdf.

Crespi, G. A., A. Geuna, and L. J. J. Nesta. 2006. 'Labour Mobility of Academic Inventors: Career Decision and Knowledge Transfer'. *SPRU Electronic Working Paper Series* 139, University of Sussex, SPRU - Science and Technology Policy Research.

Du Plessis, M., B. Van Looy, X. Song, and T. Magerman. 2010. *Data Production Methods for Harmonized Patent Statistics: Patentee Sector Allocation 2009.* Brussels: Eurostat.

EC (European Commission). 2009. *Metrics for Knowledge Transfer from Public Research Organisations in Europe: Report from the European Commission's Group on Knowledge Transfer Metrics Expert Group Report.* Available at http://ec.europa.eu/invest-in-research/pdf/download_en/knowledge_transfer_web.pdf.

Eurostat and OECD (Organisation for Economic Co-operation and Development). 2005. *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data,* 3rd edition. Paris: OECD.

Freeman, C., and L. Soete. 2007. 'Science, Technology and Innovation Indicators: The Twenty-First Century Challenges'. In *OECD, Science, Technology and Innovation Indicators in a Changing World: Responding to Policy Needs,* pp. 271–84. Paris: OECD.

Giuri, P., M. Mariani, and other PatVal contributors. 2007. 'Inventors and Invention Processes in Europe: Results from the PatVal-EU Survey'. *Research Policy* 36 (8): 1107–27.

Khan, M., and S. Wunsch-Vincent. 2011. 'Capturing Innovation: The Patent System'. In *The Global Innovation Index Report 2011,* Chapter 1, Box 6. Fontainebleu: INSEAD.

Mairesse, J., and P. Mohnen. 2010. 'Using Innovations Surveys for Econometric Analysis'. *NBER Working Papers* 15857. Cambridge, MA: National Bureau of Economic Research.

Mohnen, P., and C. Hoareau. 2003. 'What Type of Enterprise Forges Close Links with Universities and Government Labs? Evidence from CIS 2'. *Managerial and Decision Economics* 24: 133–46.

NRC (National Research Council). 2003. *Innovation in Information Technology.* Washington, DC: The National Academies Press.

NSB (National Science Board). 2012. *Science and Engineering Indicators 2012.* Arlington, VA: National Science Foundation.

OECD (Organisation for Economic Co-operation and Development). 2009. *Policy Responses to the Economic Crisis: Investing in Innovation for Long-Term Growth.* Paris: OECD. Available at http://www.oecd.org/dataoecd/59/45/42983414.pdf.

——— . 2011. 'Connecting to Knowledge'. *OECD Science, Technology and Industry Scoreboard 2011.* Chapter 3. OECD: Paris.

OECD and UIS (Organisation for Economic Co-operation and Development and UNESCO's Institute for Statistics). 2012. 'Measuring R&D in Developing Countries'. Annex to the *Frascati Manual,* Working Party of National Experts on Science and Technology Indicators. Paris: OECD.

RICYT (Iberoamerican Network of Science and Technology Indicators). 2001. *Bogota Manual: Standardisation of Indicators of Technological Innovation in Latin American and Caribbean Countries.* Available at http://www.uis.unesco.org/Library/Documents/Bogota%20Manual_eng.pdf.

Veugelers, R. 2007. 'Developments in EU Statistics on Science, Technology and Innovation'. In *OECD, Science, Technology and Innovation Indicators in a Changing World: Responding to Policy Needs,* pp. 33-45. Paris: OECD.

WIPO (World Intellectual Property Organization). 2010. 'The Impact of the Economic Crisis and Recovery on Innovation'. Special theme in World IP Indicators 2010 Geneva: WIPO. Available at http://www.wipo.int/ipstats/en/.

———. 2011a. 'The Changing Nature of Innovation and Intellectual Property'.In *World Intellectual Property Report 2011,* Chapter 1. Geneva: WIPO. Available at http://www.wipo.int/econ_stat/en/economics/publications.html.

———. 2011b. 'Harnessing Public Research for Innovation: The Role of Intellectual Property'. In *World Intellectual Property Report 2011,* Chapter 4. Geneva: WIPO.

———. 2012. *PCT Yearly Review.* Geneva: WIPO.

Zuñiga, P. 2011. 'The State of Patenting at Research Institutions in Developing Countries: Policy Approaches and Practices'. *WIPO Economics Research Working Papers* No. 4. Geneva: WIPO.

The Role of Coherent Linkages in Fostering Innovation-Based Economies in the Gulf Cooperation Council Countries

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Developed countries around the world with strong innovation cultures have succeeded by linking people, capital, and research to introduce novelty and create economic value. These countries have an effective integrated network of stakeholders that foster an environment that can transform ideas into successful outcomes. The web of stakeholders acts as a vibrant innovation ecosystem. This system, rather than specific institutions focused on a single discipline, spurs widespread economic activity, drives efficiency and productivity, and increases overall standards of living. Countries with strong innovation capabilities have resilient economies that can withstand periodic economic shocks to individual sectors.

In recent years, the countries of the Gulf Cooperation Council (GCC)—Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE)—have embarked on a series of reforms and initiatives targeted at immediate challenges within their innovation systems. These challenges include need to cultivate human capital and to promote research and development (R&D). These countries are also developing traditional sectors (such as oil and gas, petrochemicals, basic industries, and water desalination) and nascent ones (including aerospace, healthcare, and renewable energy). The GCC has made significant progress in a relatively short time.

To ensure further progress in these efforts, the GCC countries must now institute a national model that establishes coherent linkages in their innovation systems. This involves forging strong ties among all stakeholders in the innovation ecosystem (which encompasses policies, operations, and all stakeholders). This is vital for the GCC states, which have rich natural resource endowments, large governments, and a need to diversify their economic base. Policymakers in the GCC are well aware that the resource endowment is finite. They know that they need to invest the current windfall wisely in developing knowledge-based economies.

The crucial mechanism required is an innovation-promotion entity. This body establishes and develops the necessary linkages, coordinates policy, convenes stakeholders, and drives the national agenda.

Key elements for promoting innovation

The GCC needs to foster innovation to diversify its economic base, reduce its dependence on hydrocarbons, and create opportunities for its large number of young citizens.

- The GCC has made marked strides in creating innovation-based economies. However, it still lags behind developed countries and has room to improve its global rankings by creating vibrant, entrepreneurship-friendly environments.
- Overall, the GCC needs to forge ties that bring together all the stakeholders in the innovation ecosystem—academics, regulators, multinational companies, and entrepreneurs among them—in a cohesive, targeted program aimed at fostering innovation.
- The creation of coherent links is vital to establishing an innovation economy. The process must involve an innovation-promotion entity that fuses policies, stakeholders, and operations into a focused effort.

Transitioning to an innovation economy

There are three reasons GCC countries must move towards innovation-based growth: economic diversification, demographics and the engagement of youth, and globalization.

Economic diversification

GCC countries realize that sustainable long-term economic development hinges on their ability to decrease reliance on hydrocarbon income and to widen their economic base. The GCC countries must become innovative. They have to respond promptly to current and expected demands for goods and services if they are to diversify their economies in a competitive manner.

Over the past decade, GCC countries have developed non-oil sectors. The UAE has lowered its dependence on hydrocarbon exports and, to a lesser extent, on hydrocarbon income. Kuwait's hydrocarbon export dependence has also dropped; Oman and Qatar too are less reliant on hydrocarbons for their official revenues. Nevertheless, oil and gas continue to dominate in the region. Over the period from 1990 to 1999, for example, with the exception of Bahrain, hydrocarbon revenue accounted for 80% of revenue and exports of goods and services in the GCC. In the following decade from 2000 to 2009, hydrocarbons accounted for close to 90% of revenue and 80% of exports, making the economies in the region more vulnerable to external shocks.[1]

There is ample room for growth and development of the private sector—the source of innovation in developed and emerging economies. In the past, private businesses faced challenges that did not position them to play this role. The government provided generous assistance—such as subsidized energy—to promote the private sector with an eye towards exports. An unintended consequence was that improvements in private-sector competitiveness and productivity stalled. Firms focused excessively on domestic demand. They faced limited domestic competition and no international competition. Recent changes are starting to address this legacy. In the meantime, however, the GCC continues to depend on imports for numerous economic activities. Among the sectors that rely on imported products are manufacturing, food, chemicals, and industrial solutions providers. Saudi Arabia, for example, is among the top 15 importers of pharmaceuticals worldwide. The UAE is in a similar position with transportation services.[2]

By taking the correct approach, the GCC economies can leverage their hydrocarbon endowment to invest in people and knowledge creation, and so secure a broader economic base. Such investments will enhance the competitiveness of non-oil sectors while reducing the need for imported expertise and materials.

Demographics and the engagement of youth

The population of the GCC in coming decades will continue to be predominantly young, in contrast to other high-income countries. By 2030, for example, 42 to 49% of Saudi Arabia's population will be under the age of 30, down from a remarkable 57% today. By contrast, 55 to 60% of Japanese will be 50 and older.[3]

There is a need to harness the energy and creativity of this youthful population and direct it towards entrepreneurship and innovation. Without such initiatives, the economy will continue to be highly dependent on imports. In addition, the GCC will have to rely on an increasing number of skilled expatriates.

Globalization

The integration of the global economy will largely benefit those countries with innovative individuals, systems, and cultures, and with favourable conditions for business operations. These are the countries that will attract foreign investors and corporations. They will gain from investment inflows and corporate exposure in terms of economic capabilities and competitiveness.

Foreign investment is particularly important. Multinational corporations' investments have been instrumental in transferring business and technology expertise. Much inbound investment in the GCC is destined for the oil and gas sector. However, some governments are providing incentives to attract funds into other sectors. Such measures include exemption from customs duties and flexibility in foreign ownership of local ventures and property. The result has been a steep rise in foreign direct investment into such countries as Saudi Arabia. That investment is increasingly entering less traditional sectors such as telecommunications and finance.

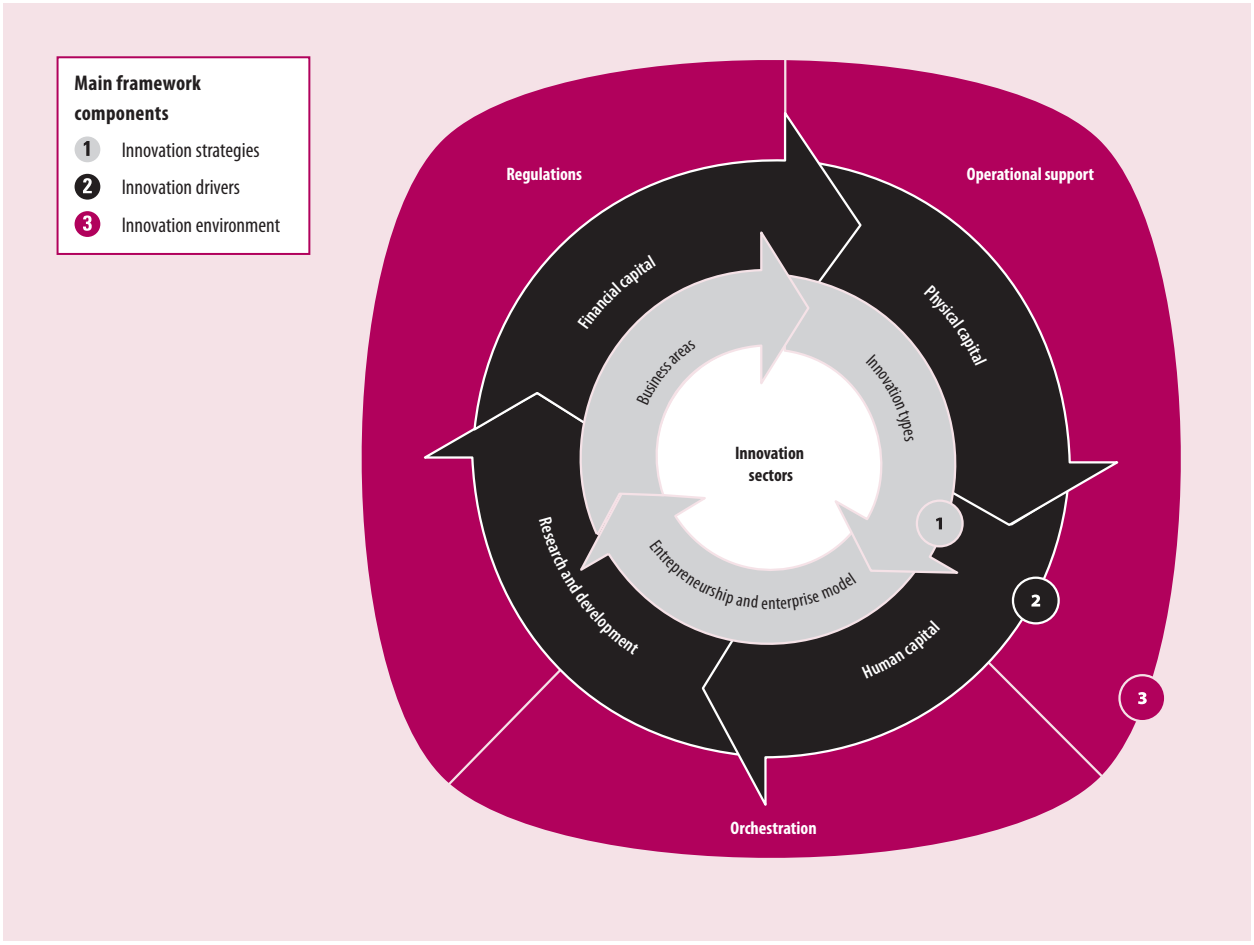
Strengthening innovation linkages in the Gulf Cooperation Council

GCC countries realize that creating innovation-led economies means proceeding in an established sequence. The steps below mainly describe the successful approaches of the Republic of Korea; Singapore; and Taiwan, Province of China. Following these examples, as well as those from other developed economies, GCC states will journey through the following three major stages:

1. Economic growth primarily driven by the relative abundance and comparative advantage of financial or human capital.
2. Accumulation of factors of production (financial and human capital) that provide higher value-added in existing products and services.
3. Additions to the value chain stemming from new technologies and ideas that lead to growth in the production of innovative products and services.

Some GCC countries already have begun this journey. They have opened technology and research clusters in recent years. These

Figure 1: Innovation policy framework



Source: Booz & Company analysis.

facilities aim to bring together various stakeholders and facilities such as universities, private-sector institutions, multinational corporations, and the public sector. Their goal is to foster collaboration on research and to leverage knowledge of the local market. Today several promising clusters have either been completed or are under construction in the GCC. These include the King Abdullah Bin Abdulaziz Science Park in Saudi Arabia, the Centre of Excellence for Applied Research and Training (CERT) in the UAE, the Knowledge Oasis Muscat in Oman, and the Qatar Science & Technology Park.

The next critical step is to assemble the different parts of the innovation landscape so that they cohere in a synergistic, holistic partnership. The overall policy agenda is an essential element, because it links policies to their respective components. Equally essential is the establishment of supporting institutional models to link stakeholders at the institutional and operational levels.

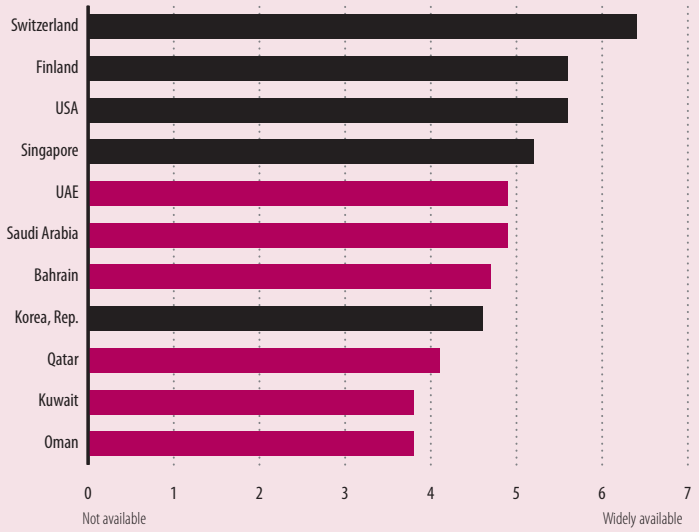
These linkages animate the ecosystem. They align cross-cutting policies and coordinate the efforts of all stakeholders, thereby driving the innovation process (see Figure 1).

The innovation policy framework has three main components. First and foremost are the innovation strategies that are set within economic sectors and that drive creativity in specific business areas (the inner circle in Figure 1). These strategies are set in motion by an enterprise model led by entrepreneurs, national entities, or a combination of the two. Each sector has different requirements for innovation and requires a different institutional setup. Some sectors are driven by entrepreneurship and start-ups. Other sectors require investments to be made by established large companies or national champions. The focus in the region has been on fostering entrepreneurship,

Figure 2: Innovation capabilities in GCC and selected developed countries

2a: Local availability of specialized research and training services

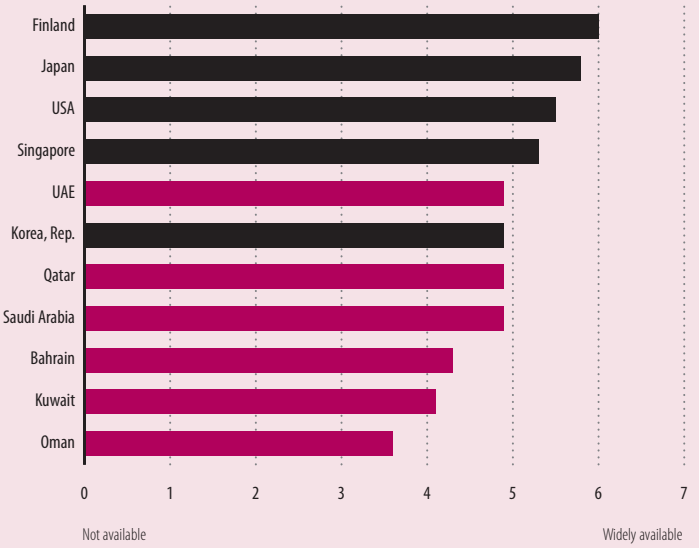
In your country, to what extent are high-quality, specialized training services available? [1 = not at all available; 7 = widely available]



	Rank (out of 142)	Score
Switzerland	1	6.4
Finland	10	5.6
USA	11	5.6
Singapore	19	5.2
UAE	28	4.9
Saudi Arabia	29	4.9
Bahrain	35	4.7
Korea, Rep.	39	4.6
Qatar	67	4.1
Kuwait	86	3.8
Oman	90	3.8

2b: Availability of scientists and engineers

To what extent are scientists and engineers available in your country? [1 = not at all available; 7 = widely available]



	Rank (out of 142)	Score
Finland	1	6.0
Japan	2	5.8
USA	4	5.5
Singapore	12	5.3
UAE	18	4.9
Korea, Rep.	23	4.9
Qatar	24	4.9
Saudi Arabia	26	4.9
Bahrain	55	4.3
Kuwait	65	4.1
Oman	99	3.6

Source: World Economic Forum, Executive Opinion Survey, 2010–2011.

which is good. However, the role of large firms seems to have been downplayed.

The next component of the policy framework is the innovation drivers—a set of policies that encompass all sectors and address financial capital, physical capital, human capital, and R&D (the middle circle in Figure 1). The last piece of the framework involves the innovation environment—the policies that aim to make the socioeconomic arena conducive to generating new ideas (the outer circle in Figure 1).

A clearly identified institution must have ownership of each of these three policy framework components and be accountable for implementation. The institutional model framework is the assembly of the stakeholders; their mandate is to cooperate to define and implement policies. The model links all of the stakeholders in the ecosystem (including academic and R&D centres, financial organizations, businesses, and government institutions) through dedicated agencies for promotion, funding, and orchestration.

The next challenge for the GCC is to ensure that the complex web of links among stakeholders is effective and spurs new ideas. These links can emerge within the framework that GCC states have created over the past decade. The GCC thus far has focused on framing the policy agenda and putting in place strategies and policies to develop the drivers and the environment.

Linking innovation policies

A crucial step in moving to an innovation-based economy is creating a balance of human, physical, and financial resources. Policies geared to the development of innovation drivers are necessary but not sufficient. Such policies also must align with laws and regulations that can provide the correct conditions for inventive ideas to flourish. This is an area of great opportunity for the GCC states. They can elevate their policy agenda framework, which will help such drivers as human capital and R&D reach levels comparable to those of advanced economies (see Figure 2). The GCC states can also link related policies more effectively to their respective components of strategy, drivers, and the environment.

The GCC has lagged behind innovation economies for the simple reason that many sectors in the region are at early stages of development. They either have not had the time to show results or do not yet have a comprehensive strategy.

The GCC states can do more in terms of R&D spending relative to GDP. The latest available figures show, for example, that Kuwait's R&D expenditure as a percentage of GDP was a mere 0.11% in 2009 (down from 0.21% in 1997) while that of Saudi Arabia was 0.08% in 2009 (up from 0.06% in 2003).[4] From a private-sector perspective, the lack of competition has removed a strong incentive to seek a business advantage through R&D. Equally important, many GCC companies are hesitant to invest in R&D because of their national regulatory and legal frameworks. The GCC countries have made significant efforts to improve this environment—for example, by enhancing intellectual property (IP) protection. A more comprehensive legislative approach would advance matters further (see Box 1).

An overall strategy must also identify the critical sectors that will drive inventiveness if it is to forge effective links among the different aspects of the policy agenda. Each of these sectors, in turn, must establish a strategy that cascades down to its various business areas, assesses and identifies the key typology within them, and determines the characteristics of the associated enterprise model. Clarity on these sector-specific plans will allow relevant government stakeholders to formulate policies relating to financial and human capital, and research in science and technology.

In Sweden, for example, the government sets the overall policy and allocates the necessary budget to support it. In turn, the local authorities and the county councils set policies for regional innovation and identify target sectors in accordance with overall national policies. Relevant ministries (including the Ministry of Education, the Ministry of Enterprise, the Ministry of Energy and Communication, and the Ministry of Defence) set their respective policies in research and education to facilitate the implementation of the national strategy. Research and innovation policy councils support these efforts by providing advice and guidance to the government and ministries. Several other entities, such as the Swedish Research Council and the Swedish Governmental Agency for Innovation Systems (known as VINNOVA) provide funds for basic and industry research. Other groups, such as Almi Företagspartner, finance, provide advice, arrange contacts, and assist in business development for small and medium-sized enterprises to stimulate the formation of new companies and innovative activities. Universities and public and private research institutions perform research by coordinating with private businesses. The latter then conducts in-house R&D to develop products and services.

A final consideration is that GCC policy agendas should focus their efforts on national strengths,

Box 1: Strengthening the innovation environment in the United Arab Emirates

The public sector and commercial entities in the United Arab Emirates (UAE) have initiated an innovation strategy and supporting efforts. There is broad recognition within the UAE that the success of its strategy will depend on its drivers and on a supportive environment. Such an environment involves creating regulatory incentives for stakeholders, ensuring that entities have the necessary support services such as networking and marketing, and orchestrating the innovation agenda to provide effective interaction among all stakeholders.

Regulatory environment

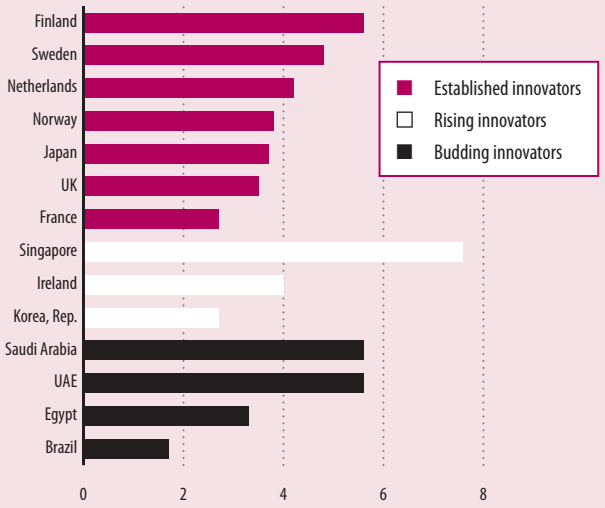
A comprehensive regulatory environment typically addresses several supporting aspects of innovation including intellectual property (IP) rights incentives specifically targeted at innovators and protective measures that improve investor confidence. In all three aspects, the UAE has made good progress, particularly on incentives regulation (see Figure 1.1).

- *Intellectual Property Rights*: The UAE is a member of the Paris Convention for the Protection of Industrial Property and has promulgated a patent law. IP legislation in the UAE can become even more comprehensive by covering a larger number of sectors.
- *Incentive Regulations*: The UAE compares favourably on implementing incentive regulations for firms in general, chiefly through the provision of tax exemptions, the absence of trade barriers, modern infrastructure, and freedom from foreign exchange controls. However, the UAE needs to enhance regulations that promote innovation.

Figure 1.1: Regulatory indicators for the United Arab Emirates and benchmark economies

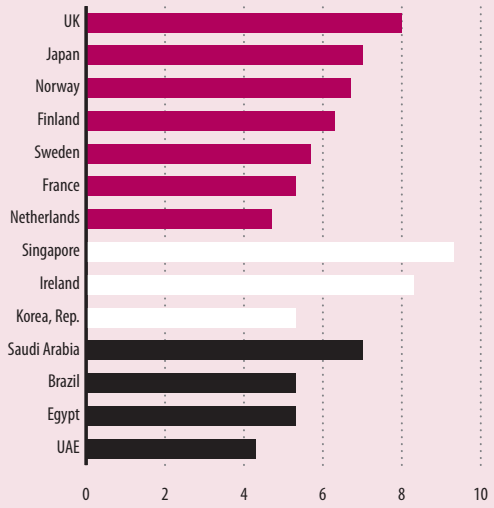
1.1a: Incentive regulations

How burdensome is it for businesses in your country to comply with governmental administrative requirements (e.g., permits, regulations, reporting)? [0 = extremely burdensome; 10 = not burdensome at all].



Burden of Government Regulation Indicator*

1.1b: Protective regulations



Strength of Investor Protection Index (1–10 scale)

Sources: 1.1a: World Economic Forum, Executive Opinion Survey 2010–2011. 1.1b: World Bank, Ease of Doing Business Index 2012, Doing Business 2012 (http://www.doingbusiness.org/)

Note: `Established Innovators' refers to countries that have long since put in place the structures needed to reach their innovation potential; `Rising Innovators' refers to countries that have established the structures needed to reach their innovation potential, and have risen rapidly to establish themselves as innovation leaders; `Budding Innovators' refers to countries beginning to explore plans to tap into their innovation potential and have started to put in place the structures needed to support their plans.

* The Burden of Government Regulation Indicator is rescaled from a scale of 1 to 7 to a scale of 0 to 10.

Box 1: Strengthening the innovation environment in the United Arab Emirates *(continued)*

The UAE can provide monetary incentives for undertaking research, hiring research personnel, and introducing environmentally friendly technologies—approaches taken in Singapore.

- *Protective Regulations*: Investor protection in the UAE must be enhanced if it is to become comparable to that of leading economies such as Singapore and Norway. The legal and regulatory systems in Singapore and Norway offer more protective measures. These include active bankruptcy laws, disclosure of information on transactions, and the liability of directors for damages caused. Shareholders can also launch lawsuits more easily.

Operations support

The UAE has operations support for innovation. The Technology Development Committee (TDC) plays a notable role in setting policy in Abu Dhabi. Similarly, the Khalifa Fund for Enterprise Development in Abu Dhabi provides funding for support systems—such as training and development—for entrepreneurs, and invests in specific projects. Overall, however, there is limited support for companies active in R&D and innovation. The UAE can expand assistance in three areas.

1. The UAE would benefit from a dedicated agency that provides support services specifically for innovators. Such services typically would include R&D funding, advisory support, matchmaking, and networking, as well as logistical support including marketing and promotion.
2. The UAE should increase the number of its incubators. The government can play a role in establishing and nurturing such incubators. In addition, entities such as CERT Technology Park in Abu Dhabi can provide mentoring and guidance to access the UAE market. They can help support innovative companies by transforming original ideas into economic value.
3. There should be a greater focus on innovation. A number of different entities, such as the Chamber of Commerce, offer support services such as matchmaking and networking for businesses. These efforts would be more powerful if they were coordinated with a specific focus on innovators.

Orchestration

In the UAE, orchestration can exist among most traditional and nascent sectors targeted for innovation. Having an entity charged with ensuring the orchestration of all these activities is critical for policies and initiatives to succeed. Orchestration involves coordinating the implementation of policies at the operational level, such as ensuring that funding is channelled to high-potential businesses and helping these businesses find investors and customers. Orchestration also means working with stakeholders in the landscape to identify and advocate new policies or policy revisions that will provide further support. The back-and-forth of orchestration provides continuous feedback that can improve policies.

The challenge in the UAE is that cross-stakeholder interaction is limited. It occurs typically through bilateral exchanges. Hence, the creation of an orchestration entity will produce engaged stakeholders connected precisely through the coherent linkages that result in a thriving ecosystem.

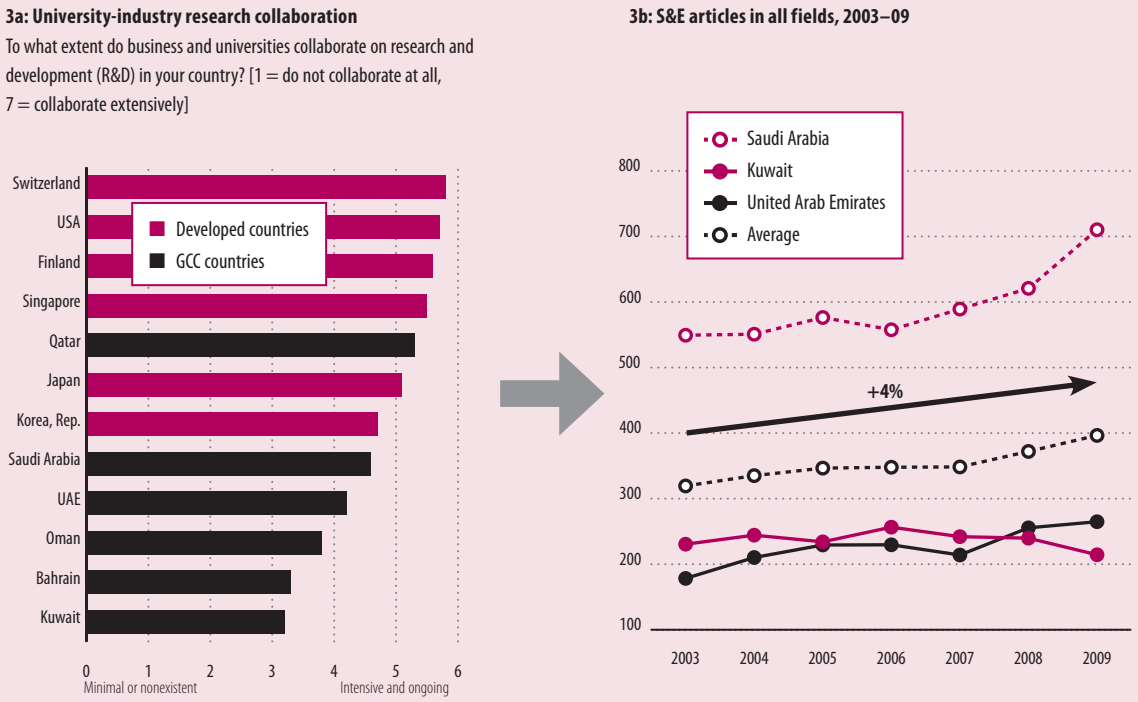
positioning their countries for competitive advantages as they develop their innovation strategies. For example, between 1978 and 1997, Singapore focused on the development of clusters in high value-added and mutually supporting industries such as electronics, petrochemicals, and engineering. The country thereby gained expertise and a competitive edge in electronics and high-tech products and services.

Linking innovation stakeholders

GCC countries have improved their stakeholder collaboration, according to the Executive Opinion Survey of the World Economic Forum in 2010-11 (see Figure 3). Saudi Arabia, for example, has risen from a ranking of 49 out of 130 countries in 2007 to 28 out of 142 in 2011 in terms of university-industry research collaboration. This is clear evidence of the strong initial impact of promotion entities such as the King Abdulaziz City for Science and Technology. These entities are strengthening and promoting effective links among stakeholders in the ecosystem. Such links may have resulted in positive outcomes, such as the increase in the number of research publications.

These impressive first steps should not lead to complacency. The main stakeholders in the innovation landscape in the GCC—such as government agencies, business, and academia—remain insufficiently connected. They have yet to coordinate in a fully effective and creative manner. Coordination among stakeholders often is limited to bilateral exchanges with little alignment among the innovation entities. For example, small, nascent enterprises remain isolated from the formal economy. In addition, many multinational corporations, such as those in the energy sector, are at

Figure 3: Research-industry collaboration: GCC and selected developed countries



Source: World Economic Forum, Executive Opinion Survey 2010–2011 (https://wefsurvey.org); National Science Foundation, National Center for Science and Engineering Statistics, and The Patent BoardTM, special tabulations (2011) from Thomson Reuters, SCI and SSCI; http://www.nsf.gov/statistics/seind12/append/c5/at05-27.xls; http://thomsonreuters.com/products_services/science/; http://data.worldbank.org/.

best weakly connected to national business organizations and academic institutions. In some GCC countries, such as Kuwait and Oman, collaboration between business enterprises and academia and research institutions at the national level has room for improvement.

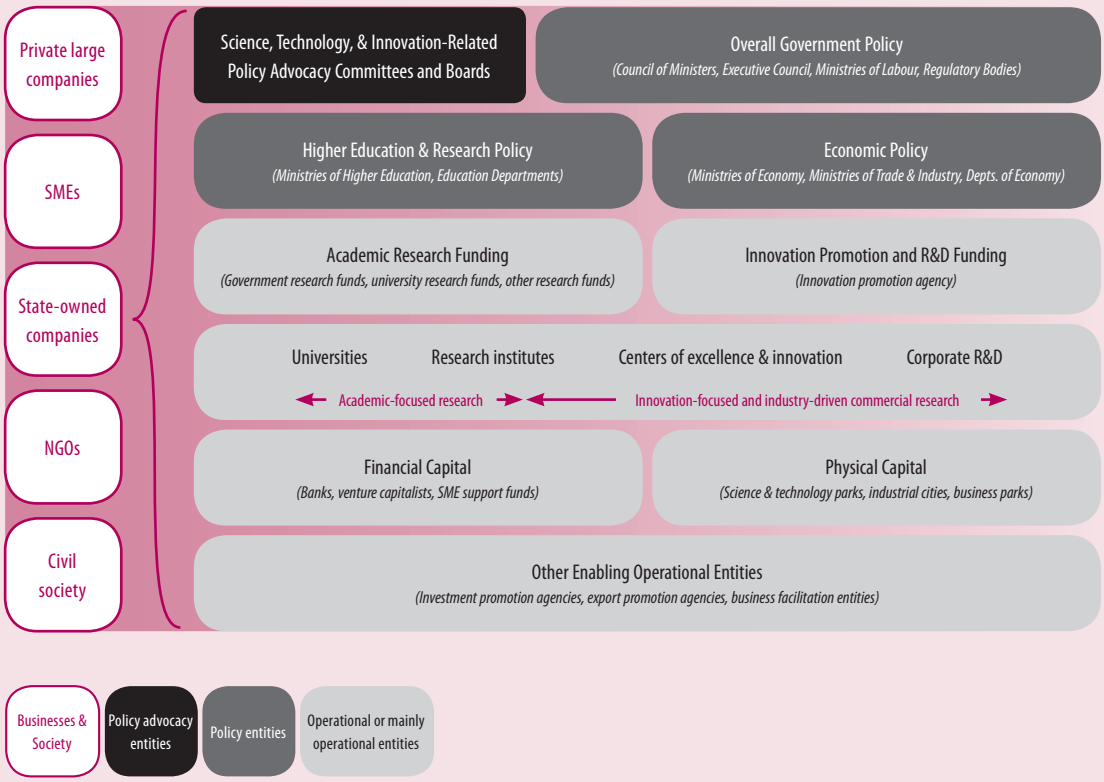
Coordination of activities among various stakeholders can improve significantly at the operational and institutional levels. Of particular importance are innovation promotion entities that coordinate the interactions between stakeholders and drive an overarching policy agenda. These entities would facilitate the creation and development of strong linkages throughout the ecosystem (see Figure 4).

The main role of the promotion entity is to identify policies that can improve the overall environment, promote those policies to their respective owner or stakeholders, and build networks among the most important leaders. In Norway, for example, Innovation Norway orchestrates all activities within the Norwegian national science, technology, and innovation model. Another example is that of Finland, where additional bodies have clearly defined roles. The Finnish Funding Agency for Technology and Innovation (known by its Finnish acronym Tekes) drives new ideas, while the Academy of Finland is responsible for managing most R&D activities.

Those creating the promotion entity should choose its leadership carefully. Animating the ecosystem is a complex, delicate task that requires continual adaptation. Policy makers and business leaders will need to monitor the leadership to ensure that it keeps pace with a rapidly changing environment, supports national initiatives, and effectively manages its organizations.[5]

The composition of the promotion entity's board is similarly important. A director of innovation should head the organization. That director should oversee a board comprised of representatives of stakeholders—especially the government, the private sector, and academia—to ensure

Figure 4: Conceptual framework for GCC innovation promotion entities



strong links between the promotion entities and operations.

GCC leaders across all societal and economic sectors should cooperate to ensure regional development of the main drivers of innovation. For example, the GCC has the potential to create an alliance among its economies that develops, attracts, and retains employees with the correct skill sets. Such an approach would also prevent the GCC states from crowding each other out at this critical early stage of developing their innovation ecosystem.

Finally, the most challenging aspect will be to convene the myriad stakeholders and leverage their abilities through synergy. Promotion entities will succeed when they have created a common set of values and norms and have forged a culture that nurtures innovation in the GCC. This is not a form of economic nationalism. On the contrary, by developing national talent, the GCC countries can act as a magnet to foreign firms seeking new innovation hubs. A recent Booz & Company study found, for example, that one of the top cultural attributes cited by successful innovative companies is an attitude that is welcoming to ideas from the outside.[6]

Linking innovation operations

The promotion entity plays a major role in orchestrating the model at the operational level. It ensures that businesses have the financial, physical, and human capital to succeed. This entails establishing dedicated specialized bodies to focus on specific businesses and industries, such as aerospace or nanotechnology. This means having a group with the broad mandate of ensuring that these sectors are coordinated both with each other and with the national policy.

For example, an orchestrated effort can help a country focus and maximize the effectiveness of the total investments made in R&D. Advanced countries—including Sweden, Finland, and Japan—have a dedicated entity that oversees funding of innovation-based research to ensure that companies are not

Box 2: Saudi Arabia: Linking innovation operations

Saudi Arabia is making progress in certain leading indicators of innovation, such as industry-academic collaboration and the number of patents and research publications it produces. Still, it faces several challenges, including the development of drivers of innovation such as human capital, as well as limited opportunities for entrepreneurs. These factors have taken a toll on entrepreneurial activities and diversification of the economy. For example, in 2009 new business ownership and nascent enterprise rates in Saudi Arabia were only 1.9% and 2.9%, respectively, compared with those in Lebanon (8.8% and 6.7%, respectively) and the UAE (7.4% and 6.5%).[1] At the same time, government revenues from oil accounted for about 85% of total revenues, and PhD graduates (aged 25 to 29) out of every 100,000 were only 40 in number compared with 509 and 743 in Germany and Sweden, respectively.[2]

Linking research to commercial activities

Established in 1977 as a national centre for science and technology, King Abdulaziz City for Science and Technology (KACST) now is the leading government agency in Saudi Arabia championing innovation efforts. KACST aims to support the development of Saudi businesses by funding research through its Saudi Arabian Business Innovation Research programme. The centre also has launched incubators through its BADIR program (*badir* is an Arabic word meaning 'initiate') and plans to have 80 incubators across the country by 2025.

BADIR promotes the expansion of technology incubators through its National Technology Incubation Policy. BADIR activities cover vital enablers such as incubation, financing, and commercialization. The creation of incubators will help bridge the gap that currently exists between R&D on the one hand and production and commercialization initiatives on the other (Table 2.1). There are some encouraging preliminary

Figure 2.1: Preliminary results of the BADIR programme

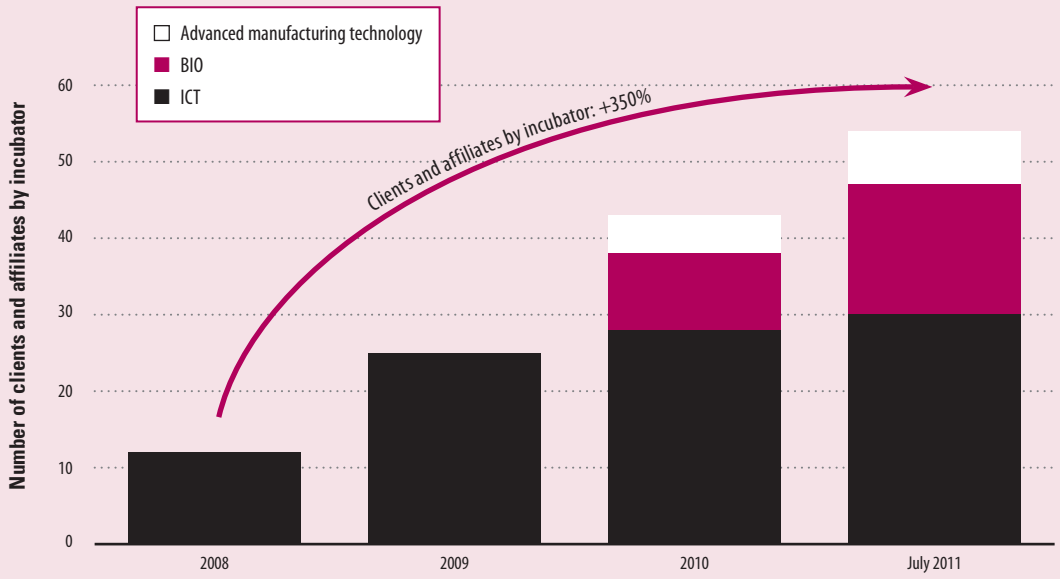


Table 2.1: BADIR incubator client status, 2011

	ICT	Advanced Manufacturing Technology	BIO	Total
Jobs created	182	9	50	241
Number of clients generating revenues	9	0	3	12
Number of clients generating profits	2	0	0	2

Source: BADIR monthly reports.

Box 2: Saudi Arabia: Linking innovation operations *(continued)*

signs. According to BADIR, the number of incubator clients increased by 350% between 2008 and 2011 (see Figure 2.1). Looking ahead to 2025, BADIR expects to generate 20,000 innovation-related jobs. Three recent BADIR success stories stand out:

- Ataalam provides a women's virtual learning environment through virtual classrooms and interactive whiteboards.
- S-me is a highly successful SMS-based social network for young Saudis, boasting some 600,000 members.
- ACE Biotech is a a medical manufacturer that aims to provide kits and reagents for polymerase chain reaction, DNA/RNA isolation, cloning, electrophoresis, and buffers.

Linking small enterprises to government operations

Within Saudi Arabia, start-up enterprises face several challenges, including their limited involvement with government operations. KACST has mechanisms to support incubated start-ups in partner search and networking activities, thereby providing additional assistance during the early stages of the start-up life cycle. KACST is also implementing processes that will select businesses to support government projects geared towards small enterprises. The centre will choose businesses based on their innovation potential.

Government digitization initiatives such as e-health, e-education, and e-government can further strengthen links between small enterprises and government operations, opening up commercial opportunities for innovative products and services. The government's investment of US$1.3 billion in Yesser (the e-government program) is an important step forward. Other approaches can include the government stimulating the supply of goods and services generated by small businesses. This can be done through direct ownership, public-private partnerships, or financial incentives. The government can stoke demand for these small businesses through awareness and education, demand creation, or financial incentives. KACST's national outreach strategy aims to enhance public understanding of the application of science and the benefits of technology to the daily needs of consumers. Moreover, the government can use its buying power to reduce the price of innovative products and services for both public and private sectors.

Linking innovation promotion entities to innovation operations

In a recent Booz & Company survey, 66% of Saudis who identified themselves as entrepreneurs said that it was difficult to start a new business. Among the major reasons cited were limited access to funding (including domestic credit and venture capital) and limited access to industry experts and resources.

KACST initiatives to boost entrepreneurship in Saudi Arabia include the development of government support policies for start-ups; the introduction of entrepreneurship funds to support relatively risky new ventures; and entrepreneurship culture promotion such as business plan competitions, conferences, and events.

To help bridge the research-commercialization gap, the government recently founded the Saudi Company for Technological Development and Investment (known as Taqnia, meaning 'technology'). Taqnia seeks to build companies that will enable the commercialization of research, thereby nurturing domestic R&D. Taqnia will also develop the industrial base by enhancing links among industries to ensure relevant research. Further, it will invest directly in foreign ventures to transfer technology to the local market through partnerships.

Notes

1. GEM, 2010.
2. Saudi Ministry of Higher education (http://www.mohe.gov.sa/ar/Ministry/Deputy-Ministry-for-Planning-and-Information-affairs/HESC/Ehsaat/Pages/default.aspx); The Conference Board of Canada, 2007 (http://www.conferenceboard.ca/hcp/details/education/phd-graduates.aspx); and Booz & Company analysis.

competing with similar academic efforts for resources. A promotion entity can ensure that only relevant projects will get the required R&D funding, and academic groups can ensure the financing of university research.

An example of a well-structured promotion entity in the GCC is the Technology Development Committee (TDC) in Abu Dhabi. Its members include government representatives from the departments of economic development, education, finance, local municipalities, and local executive councils. In addition, the TDC includes representatives from the technology sector as well as economic development funds, linking those groups together.

The TDC advocates and champions innovation-related policies at the government level. It works with industry stakeholders to understand their R&D priorities and advocates policies that support their adoption. The TDC can also coordinate with the science and technology committee (set up as advisor to the Abu Dhabi government on initiatives for promoting science and technology education programmes and innovation) to ensure alignment between R&D and academic research policies, and prevents conflicts between their respective priorities. Governments throughout the region are creating similar entities (see Box 2).

Operational entities should be autonomous and accountable for their spending to solidify the link between innovation promotion entities and innovation operations. Often the promotion entity has the resources to fund businesses and R&D projects. In addition, the entity might be able to expand linkages by funding marketing and

promotion, networking and matchmaking, and incubation services.

Conclusion

GCC countries recognize the need for innovation as the main catalyst for achieving sustainable economic growth through economic diversification. As they advance in this direction, they must carefully follow the steps of successful economies such as Taiwan, Province of China; the Republic of Korea; and Singapore. These economies have progressed in their efforts over the course of many decades. Although the GCC may require a similar time frame, it has two major advantages. First, it can use its substantial resource endowment to finance carefully selected initiatives. Second, it can learn from the experiences of innovation leaders and replicate some of the ways they have engaged stakeholders.

Governments have an important role to play as the conveners of stakeholders and coordinators of efforts across all socioeconomic sectors, public and private. The GCC countries need to develop strong links among their policies, stakeholders, and operations. To translate policy mandates to the innovation landscape, the GCC will need to ensure that their promotion entities follow detailed design activities that engage and link the stakeholders. These links are the sinews of inventiveness, ensuring that a healthy and lively innovation ecosystem emerges.

Notes

1 Beidas et al., 2011, p. 13.

2 Prasad, 2009.

3 UN, 2011.

4 UNESCO Institute for Statistics, UIS online database , available at http://stats.uis.unesco.org.

5 See Wilson, 2012.

6 Jaruzelski et al, 2011.

References

Beidas-Strom, S., T. Rasmussen, and D. O. Robinson. 2011. *Gulf Cooperation Council Countries (GCC): Enhancing Economic Outcomes in an Uncertain Global Economy.* Washington, DC: International Monetary Fund, Middle East and Central Asia Dept. Available at http://www.imf.org/external/pubs/cat/longres.aspx?sk=25251.

Barry Jaruzelski, B., J. Loehr, and R. Holman. 2011. 'The Global Innovation 1000: Why Culture Is Key'. *strategy+business,* Winter 2011

GEM (Global Entrepreneurial Monitor). 2010. *GEM-MENA Regional Report, 2009.* Cairo: IDRC (International Development Research Centre).

Prasad, A. 2009. 'Trade and the New Economic Geography of the Middle East'. *Economic Note* No. 4. Dubai International Financial Centre (DIFC) Economics Team. Dubai: DIFC. Available at http://www.difc.ae/sites/default/files/Economic20Note20420-20FINAL20April2021_0.pdf.

UN (United Nations), Department of Economic and Social Affairs, Population Division. 2011. *World Population Prospects: The 2010 Revision.* CD-ROM Edition.

Wilson, E. J. III. 2012. 'How to Make a Region Innovative'. *strategy+business,* 28 February (Spring 2012). Available at http://www.strategy-business.com/article/12103?gko=ee74a.

World Economic Forum. 2011. *The Global Competitiveness Report 2011–2012.* Geneva: World Economic Forum.

The Russian Federation: A New Innovation Policy for Sustainable Growth

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Over the last two decades, the Russian Federation has completed its transition to a market economy, and for a range of macroeconomic and social indicators it is now comparable to countries of the Organisation for Economic Co-operation and Development (OECD);[1] its integration into global chains of production and knowledge flows has become more established and has deepened along with the country's economic and social changes. However, the model of such integration proves to be highly unsustainable: the emphasis on exports of raw materials makes social welfare strongly dependent on external economic conjuncture instead of depending on, and establishing, internal sources of growth. The country's overall share of machinery and equipment accounts for just 13% of exports; the rest is represented mainly by raw materials.[2] Under these conditions, even the large financial reserves spent to compensate for the 2008–09 global crisis effects appear to be insufficient to revitalize the country's economic growth at pre-crisis rates.

Global technology trends also challenge further socioeconomic development if that development continues within the traditional carbon-hydrogen paradigm that is based predominantly on oil and gas extraction. Widely endorsed contre-carbon efforts have already resulted in convincing advances in alternative energy technologies backed by large-scale national public procurement programmes, direct and indirect incentives for energy-efficient producers and users, corporate initiatives for technological and organizational innovation, and international actions. Disruptive technologies in these and other areas may damage the positions of companies in established markets—including specific high-tech niches such as nuclear energy, aircraft, space, armaments, and so on—both globally and domestically.

Lower productivity and inefficient resource utilization have also been among the endogenous factors hampering the country's economic development. In certain sectors of the economy, technological gaps with leading industrial nations have accumulated during the last decades. Furthermore, the monopolistic structures of most local markets that serve to suppress incentives to increase competitiveness, the persistent barriers to entrepreneurship and innovation, the achieved quality of corporate governance, and inadequate protection of ownership rights all limit the potential of extensive sources for improving the Russian Federation's socioeconomic performance. The consequent deficit of trust results in lower incentives for encouraging a pragmatic coalition among business, state authorities, and society, and eventually decreases the effectiveness of public governance.

The above-mentioned challenges demonstrate an obvious need for a new model of innovation policy aimed at strengthening nation's positioning in the global economy and at knowledge flows that would allow the Russian Federation to benefit from the available high-quality human capital and scientific potential, while meeting tight constraints related to the demand for social stability and a GDP-per-capita ratio exceeding that of most rapidly developing economies.[3]

The Russian national innovation system: Trends and problems

Recent years have been notable for the substantial changes in innovation policy in the Russian Federation. Innovation has become a central part of the top-level policy agenda: coordination committees chaired by the President and Prime-Minister were established, key strategy documents were published, and a network of development institutions (the Technology Fund, the Russian Venture Company, the Development Bank, etc.) providing an 'innovation lift' was put in place. Earmarked programmes to promote university research and development (R&D) and the enforcement of innovative activities at state-owned companies were launched, and the scope of tax incentives for R&D and innovation was widened.

Figure 1: Innovation activity of industrial enterprises in the Russian Federation

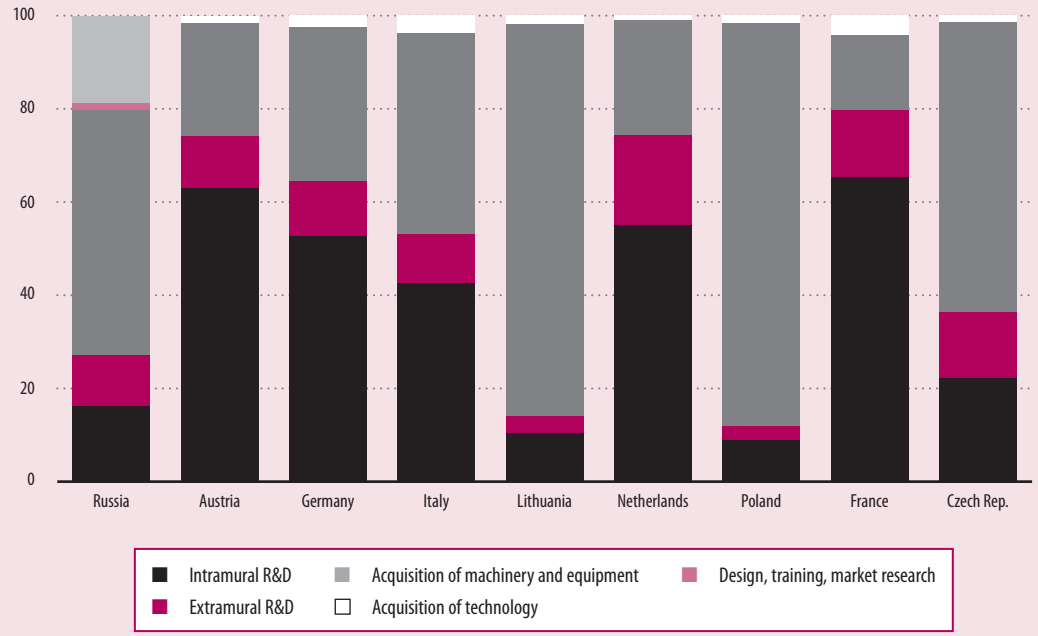
Source: HSE, 2011.

However, all these actions have not yet resulted in increasing the impact of innovation on economic growth and social welfare. At present, innovation activity in Russian industry is still marked by its limited scale and limited performance over a broad range of indicators (Figure 1).[4] The percentage of innovative enterprises here has not exceeded 10–11% since 2000. This is considerably less than that for both developed European countries and a number of developing economies. Innovation intensity related to total sales (1.9% in the Russian Federation, compared with 5.5% in Sweden and 4.6% in Germany) as well as the output of innovation investment (innovation products comprise roughly 5–6% of total sales for 1995–2009) is similarly low.

The poor aggregate performance of the national innovation system (NIS) is explained by a number of structural and institutional imbalances—the *innovation cleavages* that diminish synergetic effects and discourage innovation-based growth.

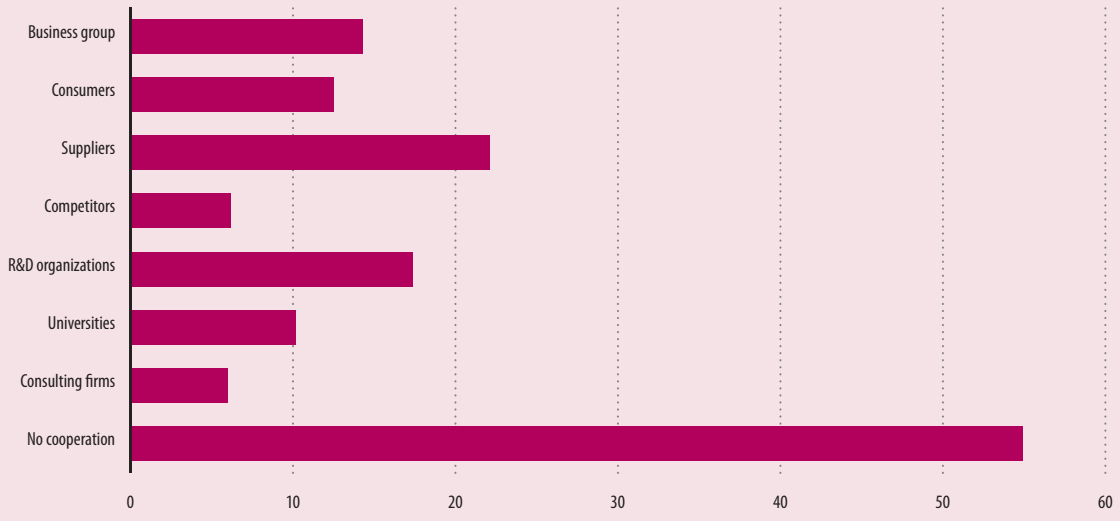
- *Science-industry split-offs.* Business exhibits little demand for innovation, which has not become a priority for domestic companies. International markets are targeted by only 2% of manufacturing enterprises. A typical business model focuses on local markets with lower competitive pressures, non-economic entry barriers, and subsequently limited incentives for longer-term investment in science and technology (S&T) and innovation. As a consequence, a usual innovation strategy of Russian companies is based on technology adoption via acquisition of machinery and equipment, while spending on R&D and technology lags behind that of the leading European Union (EU) economies (Figure 2). At the same time, R&D organizations tend to fail to provide technologies at the required level of readiness, novelty, and competitiveness. Against the background of rapidly growing public appropriations for R&D, these factors have led to a decline of business enterprise contribution to gross (domestic) expenditure on R&D (GERD) from 33% to 27% during 2000–10, versus the averages for the OECD area at 65% and for the EU-27 at 55%. The outcome has been underdeveloped linkages in the NIS (Figure 3) and, finally, a minimal proportion of new-to-market innovative products (0.8% of the total industry sales, compared with 3.3% in Germany and 6.3% in Finland) attributed to a follow-up model of technological development.

Figure 2: Expenditure on technological innovation in industry by innovative activity, %



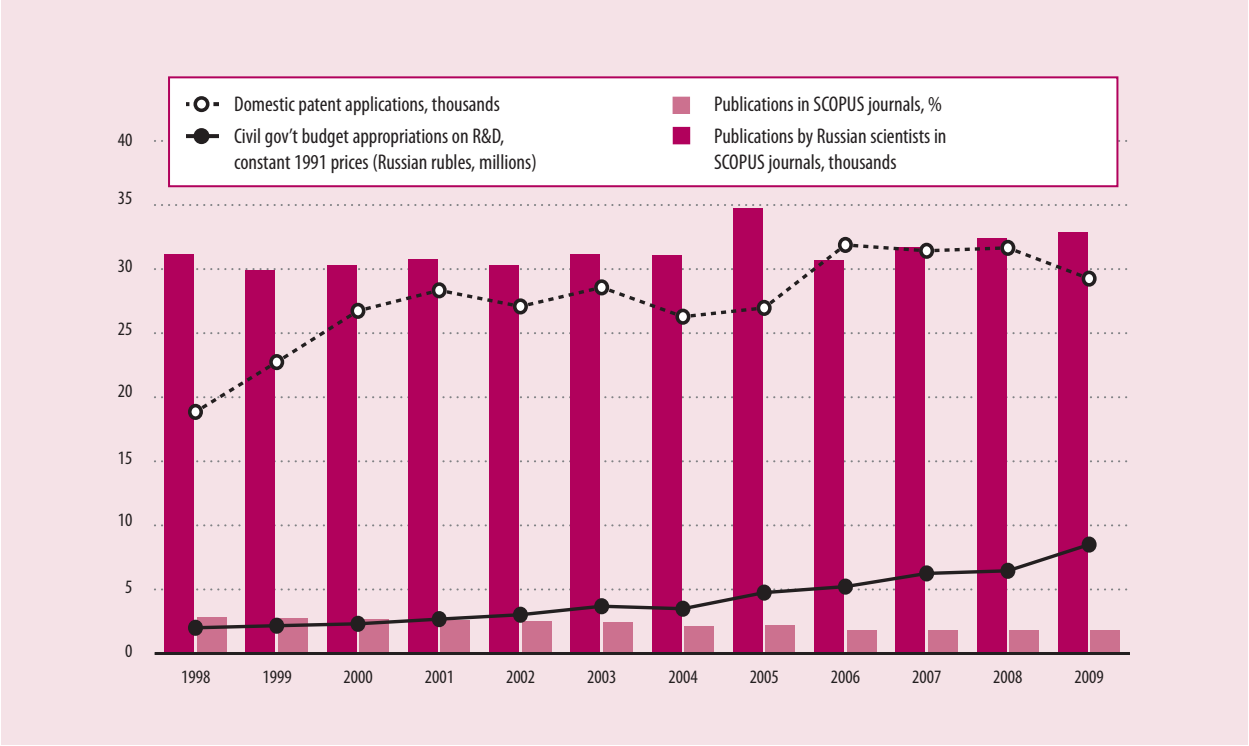
Sources: HSE, 2011; Eurostat, 2008.

Figure 3: Innovation cooperation in industry, % of innovative companies cooperating with particular types of establishments (2010)



Source: HSE, 2011.

Figure 4: Government expenditure on R&D and S&T output in the Russian Federation



Source: HSE, 2011.
Note: SCOPUS is the Elsevier SciVerse Scopus citation database.

- *Institutional model and the performance of the R&D sector.* The Russian R&D sector still retains the Soviet institutional model in terms of its organizational structure and state participation.[5] It is heavily biased towards research institutes and allied R&D-performing organizations legally independent of both universities and enterprises. These organizations concentrate over 80% of GERD; the remaining share is nearly equally divided between the two latter. Because of the deterioration of R&D activities at some public higher education establishments and the rapid growth of a respective private network during the last two decades, only 45% of universities are involved in R&D. The gap between science and education has been affecting the quality of teaching staff and educational programmes, and hampers the competitiveness of university graduates in the labour market.

Government funding of civil R&D has increased fourfold since 1998 (Figure 4) and amounted to US$14.9 billion (at purchasing power parity),[6] thus achieving the level of similar indicators for France, the Republic of Korea, and the United Kingdom (US$14–17 billion), and outpacing Italy and Canada (US$8–12 billion).[7] This intensive influx of funding has not been reflected in adequate performance trends, however, either in scientific articles or patents. Given the intensive efforts of other nations to improve their S&T and innovation capacities, the Russian Federation's ranking in related scores has declined (Table 1). Furthermore, the R&D sector in the country remains underfinanced, reaching only 54% of the 1990 GERD level, and its R&D-to-GDP ratio is 1.16% (2010). These tendencies result in a low competitive NIS experiencing difficulties in producing and exporting high-tech products to global markets.

- *Sectoral discrepancies.* Different sectors of the economy tend to differ significantly in all major S&T and innovation indicators. The percentage of innovative enterprises varies from 23 to 36%

in pharmaceuticals, computers, telecommunications equipment, and aerospace (which matches the EU industry average) to 2% in specific extracting industries. Service sectors also demonstrate lower levels of innovativeness than they do in the EU. Intersectoral and sometimes intra-sectoral differences in the novelty of technological bases, quality of the labour force, and efficiency of corporate governance lead to the fragmentation of Russian industry into technologically and economically incompatible segments.

- *Regional polarization*. The regional dimension represents one more vector of NIS fragmentation. Regions are characterized by diverse business climate conditions, competition regimes, and availability and accessibility of both innovation and non-innovation (standard) infrastructures (e.g., energy, transportation and logistics, healthcare, education, etc.). Particular combinations of such factors could result in a self-retaining deadlock hampering regional development and prosperity.

Our analyses suggest that this situation requires a shift towards a new regulatory model expressed by a comprehensive and well-balanced policy. Such a policy should have a long-term focus, and should identify and promote prospective priorities with particular attention to emerging post-industrial markets. It should not necessarily be linked to a traditional earlier-obtained understanding of economic growth.

Russian S&T and innovation policy: A new model

Learning from over 20 years of the post-Soviet evolution of the Russian S&T and innovation policy framework (see Box 1), several key principles for efficient regulation at a new stage of socioeconomic development can be derived:[8]

- Since the state remains the key actor of innovative development, prompt and consistent efforts should be made to increase the efficiency of allied policies on both demand and supply sides. One of the areas that must be addressed is the innovation-oriented public procurement system, possibly differentiated along the phases of the innovation cycle. To be successful, it is necessary to ensure the coordination of innovation strategies of state-owned companies, public R&D organizations, universities, and governmental agencies. Regular monitoring and evaluation of the initiatives launched is crucial to identify and disseminate successful practices.
- Indirect instruments (tax incentives, innovation-friendly customs and export regimes) should be carefully evaluated to determine their efficiency and actual administering practices. A revised taxation system is needed for start-up companies and transactions involving intellectual property rights (IPR) that takes innovation costs into account (e.g., costs of allied technology acquisitions, design, engineering, and training activities), exporters of innovative products and services, and so on.
- One of the most important functions of the state is the facilitation of networking and collaborative initiatives among NIS actors. An unfavourable business environment in a combination with high commercial risks of

Table 1: Competitive positions of Russian S&T

Basic Research	
Publications in Thompson Reuters Web of Science journals: ranking, 2010	**Citations, ranking, 2010**
Russian Federation: 16 (1995: 7)	Russian Federation: 27
China: 2 (1995: 14)	Brazil: 18
	India: 15
	China: 4

Applied Research	
Triadic patent families, 2009	**Export of technology, 2010 (billions)**
Russian Federation: 63 (1995: 63)	Russian Federation: US$0.6 (2010)
United States of America: 13,715 (1995: 12,361)	Hungary: US$2.7 (2009)
China: 667 (1995: 21)	Finland: US$9.1 (2009)
Israel: 339 (1995: 161)	United States of America: US$89.1 (2009)

Share of new-to-market innovative products in total sales, 2009 (%)	**Share in global high-tech exports, 2009 (%)**
Russian Federation: 0.4	Russian Federation: 0.20
Germany: 3.3	Hong Kong (China): 8.94
United Kingdom: 2.0	Singapore: 6.61
	Republic of Korea: 5.27

Sources: Gokhberg and Kuznetsova, 2011a, 2011b.

innovation can halt or postpone self-governed interactions. Under these conditions, specific public-private partnership regimes prove to be an efficient instrument for easing interaction barriers.

- To increase performance of the national R&D sector, reforming its institutional structure is essential. Identifying and promoting the centres of excellence and best-performing research groups in different fields of S&T and in various forms, and fostering of their communication and cooperation should become a principal focus of this policy domain.
- Proper sectoral specialization of the innovation policy seems to be crucial for the Russian industry, at least in the mid term. Limiting policy measures primarily to high-tech sectors, as it used to be, results in the excessive concentration on the technology aspects of innovation, restricting its scope and applications. Addressing mass-scale innovation processes across all sectors can ignite more significant effects for the economy and quality of life.
- Incorporating social interests and concerns into the innovation policy design process can significantly increase its impact. Leveraging the uneven access to innovation for different social groups and understanding the specific needs of those groups can produce extra drivers for both demand and supply of innovation. Ignoring such heterogeneity creates severe obstacles for the public perception of innovation and enablance of innovation-driven growth.

Recent official initiatives indicate a new step towards efficient and systemic policy making for S&T and innovation. Strategy-2020,[9] which intended to complete the transition to sustainable evolution of the Russian Federation's economy and society, contains a chapter entitled 'From Stimulating Innovation Towards Innovation-Based Growth'.[10] It presents scenarios and recommendations for systemic policy mix focusing on the following key areas:

- fostering mass innovation activities in all sectors of the economy rather than an excessive and myopic focus on high-tech;
- ensuring modernization and activation of innovation in the existing industry sectors and facilitating the growth of emerging technology-based markets;
- increasing the impact of innovation policy via particular efforts to stimulate resource efficiency; to promote networking and outsourcing services for innovative companies; and to decentralize decision-making in favour of regions, businesses, and development institutions;
- combining stimuli to both demand for innovation and quality of innovation supply; and
- facilitating social aspects of innovation (by developing human resources and promoting the creative class, by including vulnerable social groups, and improving the public perception of innovation).

The recommendations of Strategy-2020 have already been widely communicated and have contributed to the adjacent activities at different levels of the government. These recommendations are also strongly linked to the above-mentioned Strategy for Innovation Development. Importantly, the newly promoted mechanisms of S&T and innovation policies are considered within an integral framework of broader economic reforms aimed at improving the business climate, fighting corruption and removing administrative barriers, privatizing state-owned companies, stimulating investment and exports, and so on, thus distinguishing it from previous stages by a horizontal synchronization towards a whole-of-the-government policy.

One of the principal outcomes of such synergy is the broadly accepted importance of linkage-stimulating instruments. The next section provides an overview of some of the most recent initiatives in this regard.

Priority focus: Promoting linkages and managing interfaces

Networking within the NIS appears to be not only a factor of efficiency, but also the prerequisite for its proper functioning.[11] Encouraging dynamics of knowledge, ideas, technologies, and competences is a subject of appropriate state intervention and facilitation.[12] A particular set of the latest policy initiatives in the Russian Federation is targeted at covering persistent innovation cleavages discussed earlier by fostering collaboration between various NIS actors.

Integrating science and education

- A network of national research universities was established by nominating leading higher education establishments with a competitively granted status. The selection was held in two rounds (in 2009 and 2010) distinguishing 27 national research universities on the basis of the multi-criteria performance evaluation, including the quality of education they provide, the level of research they undertake, their available human capital, international acknowledgement, their

financial sustainability, and the validity of proposed development plans. The status of 'national research university' allows recognized universities to access additional public funding in order to support new academic programmes, international mobility, and research infrastructure. It has a limited span of 10 years and can be cancelled ahead depending on annual performance monitoring.

- Support provided to Science-Education Centres introduces another flexible option for promoting the integration of R&D and educational activities within universities and research institutes. The support envisages involvement of students into R&D activities, boosting internal and international academic mobility, and facilitating the diffusion of competences. Research groups consisting of senior scientists and junior scholars (postgraduate and graduate students) are encouraged to apply for earmarked grants that provide support for three years.
- Attracting the world's leading scientific competences to Russian universities is another direction of state intervention. A large-scale programme launched in 2009–10 provides 79 grants in the range of up to US$5 million each to integrate internationally acknowledged scientists into university research labs. These grants cover a wide spectrum of S&T areas such as astronomy and astrophysics, mathematics, physics, nuclear energy, chemistry, biology and biotechnology, information and communication technologies, space, energy efficiency, medicine, nanotechnology, Earth sciences, advanced materials, electronics, ecology,

Box 1: Periods of S&T and innovation policies in the Russian Federation: 1990–2012

Post-Soviet 'market romanticism' (early 1990s): Drastic changes in governance and economy resulted in a striking decrease of R&D funding; the disintegration of human resources; and the disturbance of established linkages and networks, production, and technology chains caused by dissipation of the centralized planning system and execution flaws. Hopes for efficient self-reorganization of S&T and innovation by market drivers were never realized. The first attempts to establish new mechanisms of R&D funding and governance (public science foundations, state research centres, etc.) were made.

Stagnation ('market formalism', mid 1990s): The key focus of government initiatives concerned principal economic reforms overshadowing S&T and innovation policy. Actual measures were fragmentary and targeted mainly at slowing down further NIS disorganization.

Recovery ('market pragmatism', end 1990 to early 2000s): First efforts to specify strategic policy objectives took place, accompanied by a gradual increase in budgetary R&D financing, experimentation with competition-based public funding, and further development of innovation infrastructure. The overall focus of actual S&T and innovation policy was narrowly targeted at short- and medium-term issues. Delayed-effect initiatives were limited. Debates on reforming the institutional structure of public R&D institutions and funding schemes continued without much progress, while innovation remained a marginal activity for enterprises that faced economic and ownership-protection challenges.

*Agenda for transition to the knowledge economy (2004–09):*The ideas of innovation development had been rooted deeply within the official policy discourse. Much effort was devoted to creating a structured policy framework and efficient regulation. National S&T foresight became a basis for the identification of priority S&T areas, and included a list of critical technologies. Major national development institutions for technology commercialisation and innovation were established—for example, the Russian Venture Company Vneshekonombank to support investment projects, and so on. This period also is associated with the launch of the Russian Nanotechnology Programme and the creation of Nanotech Corporation (RUSNANO) to foster development of nanotech goods and services and their market penetration.

Post-crisis 'innovation-based growth' (end-2000s to present): Responding to the effects of the world economic crisis and reacting to the limited performance of existing measures, the government has introduced a number of initiatives to increase the regulative potential of S&T and innovation policy framework. Specific actions started to improve efficiency of the R&D sector (national research centres, national research universities), strengthen university research and its cooperation with industry, intensify innovation activities of state-owned companies, provide indirect incentives to innovative enterprises, and revitalise innovation initiatives at the regional level. The Strategy for Innovation Development adopted by the government in December 2011 and the innovation policy chapter of a new Socio-Economic Strategy till 2020 (Strategy-2020) were designed for the forthcoming decade on a more systemic basis.

SOURCES: Gokhberg et al., 2009, 2012; Gokhberg and Kuznetsova, 2011b; OECD, 2011b.

psychology, cognitive sciences, economics, sociology, and so on. The main requirements that need to be met to obtain one of these grants are the presence of a research leader at the university for least four months a year, independent external evaluation, and publication of results in international, peer-reviewed journals.

Encouraging university-industry linkages

- The facilitation of university spin-offs by promoting innovation infrastructure (business incubators, techno parks, engineering centres, and the collective use of research equipment and S&T information) was initiated in 2010 via a competitive subsidies programme. Subsidies provide support to IPR protection, advanced training of personnel, and consultancy by Russian and foreign experts in the area of technology transfer and innovation management. Two contests allowed the selection of 78 universities for three-year-long projects.
- A co-funding scheme for research cooperation between industrial companies and universities began in 2010. The scheme is intended for technology projects resulting from university R&D. Companies should provide the same amount of financing as the government, and no less than 20% of the public subsidy must be spent on R&D, while the rest should be invested in tooling-up and implementation.

Fostering industry demand for R&D

- An agenda for altering the regimes of the innovation behaviour of major business actors in Russian industry is reflected in the 'innovation enforcement' initiative, implying obligations for the mandatory elaboration and execution of innovation-development strategies for 46 large state-owned companies (including, for example, Gazprom, Rosneft, Transneft, Rosatom, Federal Electricity Company, Aeroflot, and Russian Railways) since 2011. Coupled with annual evaluation, these strategies pursue a significant increase of R&D expenditure, the adoption of technologies meeting state-of-the-art efficiency and ecology standards, and an increase of labour productivity and exports. Particular attention is attributed to enhancing companies' cooperation with universities and R&D institutes, innovative small and medium enterprises, and development institutions. Companies are encouraged to facilitate spin-offs and corporate venture funds in collaboration with external investors. A twofold increase of the total R&D spending of the companies involved in 2010–13 is envisaged, and their funding of university R&D is expected to grow by 64%. Ten other large companies were encouraged to participate in the initiative in 2012.

Promoting S&T networking

Technology platforms—networks based on partnerships—launched in 2011 are targeted at fostering communication and pre-competitive collaboration among leading producers, suppliers, research organizations, universities, and engineering companies.[13] These platforms are organized as public-private partnerships. Currently, the list approved by the government includes 30 technology platforms selected out of over 200 initial proposals according to the criteria of legibility of collaboration objectives, market prospects, involvement of key players in S&T and business. Listed among the listed technology platforms are Medicine of the Future, Bioindustry, Supercomputer Technologies, Laser and Optical Technologies, National Software Platform, Aircraft, Space, National Information Satellite System, Radiation Technologies, Intellectual Energy System, Green Thermal Power Engineering, Renewable Energy, Distributed Energy Generation, Intellectual Railroads, New Polymer and Composite Materials and Technologies, Mineral Resources Extraction, Deep Processing of Hydrocarbons, Mechatronics and Embedded Systems, Exploration of the Ocean, and Technologies for Eco-Development.

Two types of technology platforms can be distinguished. The first is represented by those platforms notable for higher business concentration ratio and centred around large companies. Their primary focus is pre-competitive research to meet the demand for technological modernization. These activities are closely connected to companies' innovation strategies. The second type comprises other platforms marked by a lower involvement of large companies but an approach that unites research organizations, universities, and small and medium enterprises and that focuses on establishing and communicating a joint long-term vision of thematic priority areas. The role of the government in both these platform types lies in maintaining favourable conditions and removing administrative barriers.

Technology and commercialization interfaces

One of the most resounding projects is the presidential initiative that resulted in founding the Skolkovo Innovation Centre[14]—an

ex-territorial innovation centre with the objective of concentrating intellectual resources and business competences, and promoting Russian innovation activities internationally. It is based in a suburb near Moscow and includes a technology university (SkolTech) that is being developed in collaboration with the Massachusetts Institute of Technology (MIT). It also includes several thematic clusters (information technology, space, biomedical, energy efficiency, and nuclear) and a technopark. The participants of this agglomeration enjoy special taxation and customs regimes while benefiting from communications with investors and fellow innovators. Companies from all regions are encouraged to propose innovation projects, and the contest winners receive funding and allied services (project consultancy, IPR protection, and promotion of international visibility). There are 19 joint R&D centres established by Skolkovo in partnership with leading global companies (such as SAP, IBM, Intel, Microsoft, Siemens, Nokia, etc.). Other forms of alliances with transnational and domestic businesses include corporate venture funds, co-investment in start-ups, and co-financing of research and education infrastructure. The accumulated best practice experiences are supposed to be implemented in some other regions of the Russian Federation notable for high-class R&D and innovation capacities. Time will show whether this approach will be a success or failure.[15]

A regional innovation clusters initiative was announced in March 2012. This initiative implies the bringing of appropriate infrastructure towards specific locations with already-established innovative production or with promising technology chains. Clusters involving closely located and interlinked companies, R&D organizations, and universities will be supported from both federal and regional budgets on the basis of matching funds to resolve existing infrastructure bottlenecks. The clusters are expected to ensure positive externalities to the overall innovation system of the region, attracting employees to intellectually intensive jobs. At the same time, the cluster participants are encouraged to join related technology platforms in order to amplify the effects of within-cluster advancements and broaden their cooperation networks.

Altogether, the described innovation policy measures provide some specific evidence of the ongoing transformation of the NIS. In some cases, certain particular impact of particular incentives has been immediate and visible (such as, for example, absolute growth in university and business R&D, venture capital, and regional efforts), but it is too early to judge their major socioeconomic effects. The newly designed overall Strategy-2020 policy framework will be launched by the country's new government in the second half of 2012, and its outcomes will depend heavily on the coordinated and systemic actions of the government pursuing forward-looking objectives and meeting the needs and interests of businesses and civil society. The rule of law, a positive business climate and competition, incentives for foreign direct investment, policy transparency, and trust are among the key factors required for such goals to be achieved.

Notes

1 Åslund, 2007; OECD, 2011c.

2 Rosstat, 2011.

3 Gokhberg and Kuznetsova, 2011b.

4 See also Gokhberg and Kuznetsova, 2010.

5 Gokhberg et al., 2009.

6 A 'billion' is 1,000 million.

7 OECD, 2011a.

8 Gokhberg and Kuznetsova, 2011a, 2011b.

9 This document resulted from a dialogue among a wide group of leading experts, both domestic and international, with top-level government officials. See http://2020strategy.ru/g5.

10 Gokhberg and Kuznetsova, 2011b.

11 Powell and Grodal, 2005.

12 Hekkert et al., 2007.

13 Rudnik, 2011.

14 See http://www.sk.ru/en/.

15 For a discussion of design and implementation problems related to government policies for entrepreneurship and venture capital, see Lerner, 2009.

References

Åslund, A. 2007. *Russia's Capitalist Revolution: Why Market Reform Succeeded and Democracy Failed*. Washington, DC: Peter G. Peterson Institute for International Economics.

Eurostat. 2011. *Science, Technology and Innovation in Europe*. Luxembourg: Publications Office of the European Union.

Gokhberg, L., K. Fursov, and O. Karasev. 2012. 'Nanotechnology Development and Regulatory Framework: The Case of Russia'. *Technovation* 32 (3-4): 161–62.

Gokhberg, L., N. Gorodnikova, T. Kuznetsova, A. Sokolov, and S. Zaichenko. 2009. 'Prospective Agenda for S&T and Innovation Policies in Russia'. In *BRICS and Development Alternatives: Innovation Systems and Policies*, ed. J. Cassiolato and V. Vitorino. London: Anthem Press. 73–100.

Gokhberg, L., and T. Kuznetsova. 2010. 'Russian Federation'. In *UNESCO Science Report 2010: The current Status of Science Around the World*. Paris: UNESCO Publishing. 215–33.

———. 2011a. 'S&T and Innovation in Russia: Key Challenges of the Post-Crisis Period'. *Journal of East-West Business* 17 (2–3): 73–89.

———. 2011b. 'Strategy-2020: A New Outline for Russian Innovation Policy'. *Foresight-Russia* 5 (4): 8–30.

Hekkert, M. P., R. A. A. Suurs, S. O. Negro, S. Kuhlmann, and R. Smits. 2007. 'Functions of Innovation Systems: A New Approach for Analysing Technological Change'. *Technological Forecasting & Social Change* 74 (4): 413–32.

HSE (Higher School of Economics). 2011. *Science, Innovation and Information Society: Data Book*. Moscow: HSE.

Lerner, J. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed—and What to Do About It.* Princeton, NJ: Princeton University Press.

OECD. 2010. *The OECD Innovation Strategy: Getting a Head Start on Tomorrow.* Paris: OECD.

———. 2011a. *Main Science and Technology Indicators.* Vol.1. Paris: OECD.

———. 2011b. *OECD Reviews of Innovation Policy: Russian Federation 2011.* Paris: OECD.

———. 2011c. *OECD Economic Surveys: Russian Federation.* December 2011. Paris: OECD.

Powell, W., and S. Grodal. 2005. 'Networks of Innovators'. In *The Oxford Handbook of Innovation,* ed. J. Fagerberg, D. C. Mowery, and R. R. Nelson. Oxford and New York: Oxford University Press: 56–85.

Rosstat (Federal State Statistics Service). 2011. *Russia in Figures.* Moscow: Rosstat.

Rudnik, P. 2011. 'Technology Platforms in the Russian Innovation Policy Practice'. *Foresight-Russia* 5 (1): 16–25.

Smits, R., and S. Kuhlmann. 2004. 'The Rise of Systemic Instruments in Innovation Policy'. *International Journal of Foresight and Innovation Policy* 1 (1-2): 4–32.

Sokolov, A. 2006. 'Identification of National S&T Priority Areas with Respect to the Promotion of Innovation and Economic Growth: The Case of Russia'. In *Bulgarian Integration into Europe and NATO.* Amsterdam: IOS Press: 92–109.

Shaping the National Innovation System: The Indian Perspective

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Innovation in India is becoming a part of public discussions, business forums, and media announcements more often than it did in the past. However, the term 'innovation' carries multiple meanings, and is often used in the narrow context of short-term relevance. This usage is so frequent that even a temporary solution—which could be considered a 'work-around' or 'Jugaad', as it is known in India—carried out to overcome serious inadequacies of a system is praised as innovation (see Box 1).

What 'innovation' means in India

Thus the answer to any question about 'innovativeness' in India varies considerably, depending on the sector and the context under discussion. Many analysts, business planners, and researchers now recognize that macro indicators—such as national investment in research and development (R&D) (also known as gross expenditure in R&D, or GERD), R&D expenditure by industry as a percentage of sales turnover, the patents filed in a year, or number of research papers and number of PhDs in science and engineering, for example—are inadequate to capture the realities of innovation system in India. These indicators alone are not sufficient to provide policy makers with the necessary evidence to take concrete actions to stimulate and accelerate innovation in academia and the industry, agriculture, and services sectors.

Multiple elements need to be considered in totality in order to address the challenges of innovation. It will not suffice to address a few specific elements—such as tax incentives, additional funds for R&D, or excellence in education—regardless of how important they each are, in isolation. Recently attempts have been made to understand Indian innovation. One of the experts in this area, Arun Maira,[1] has aptly described the struggles that Indian policy makers and leaders in innovation have experienced over the last 10 years (see Box 2).

The Indian innovation system is extremely complex in terms of user segments and income disparities, and therefore markets are highly differentiated. At the same time, parts of some sectors need to cater to global demands. In order to focus our ideas on the complexities and their interconnected linkages, Table 1 provides a simplified diagram that attempts to capture most of the crucial elements of the Indian innovation system.

Although there have been a number of successes over the past two decades in some elements of Block 3 of the figure, and the successes have increased in the last decade, solutions that originated in India (the final outcomes shown in Block 4 of the figure) are very limited.

Policy (shown in Block 1 of Table 1) does not merely mean white papers or resolutions or even

Box 1: Jugaad: A nuanced term

There exists no colloquial word in Indian languages for 'Innovation'. Jugaad in India is pejorative, as is Gambiarra in Brazil and Zizhu Chuangxin in China. Yet emerging market problem-solving is becoming exemplary. India could give the world a new form of innovation, just as in 1966, India gave the world, Yoga, Sitar and Carnatic Music.

SOURCE: R. Gopalakrishnan, Director, Tata Sons, Sons, personal communication, 2 May 2012.

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Box 2: An innovator's struggle

Indian policy-makers and leaders in innovation have been experiencing an innovator's struggle in the past ten years. Since the innovator's idea is different from the prevalent dominant idea, it is dismissed, or not even noticed. A new paradigm of innovation has been growing in India: with a focus on simplicity and frugality in the process of innovation itself in contrast to the dominant paradigm wherein innovation is expensive and requires large resources of highly qualified personnel and finance and facilities. In the dominant paradigm, the principal, or even only measures of the innovation capacity of a system were the amounts spent on R&D, the numbers of scientists engaged, and the numbers of patents produced. Whereas in the new paradigm of innovation that has emerged in India, the measures of a system's innovation capability lie in the production of solutions (products and services) that are affordable and accessible to people with very low incomes. In this paradigm, innovations are outside the laboratory mostly. They are in institutional and organizational innovations that enable co-creation and co-operation to create reach, reduce costs, and deliver solutions that are useful to masses of people at the 'bottom of the pyramid'. This paradigm of innovation is being acknowledged now as a legitimate and useful innovation. Policy-makers charged with stimulating a system's innovation capacity, and evaluators of international innovation capabilities need to factor in insights from this emerging paradigm and replace conventional views.

SOURCE: Arun Maira, National Innovation Council, personal communication, 5 May 2012.

legislation, but should cover the whole chain of implementation to the last block in the figure. In many instances, the policy of government ministries promotes the development of new products and services by industry or government research labs, but, simultaneously, government purchasing policy in other ministries inhibits products from being developed through indigenous R&D. Similarly, many government bodies that approve test results or quality processes or certification are either ill equipped or mired in archaic procedures. In a number of instances, variations in standards from state to state affect certification. All these elements or drivers, shown in Block 1 of the figure, must be addressed.

The 4th driver shown in Block 1 is finance; finance is the first element in Block 2, facilitators, and appears there as government funding bodies. The only specific banks or venture capital funds shown in this block are the Small Industries Development Bank of India (SIDBI) and the National Bank of Agriculture and Rural Development (NABARD). This is because the policies and processes in place for financing innovation by banks and venture capital funds are highly skewed towards commercial and foreign consultant–backed ventures; this problem needs serious attention.

Similarly, the elements of Block 3 of the figure, which comprise the intermediate outcomes, show serious disconnects that prevent them from moving towards Block 4, the final outcomes. For example, most publications from even elite science and technology (S&T) institutions are not even vaguely oriented towards solutions. Even for those few that do attempt solutions, there is no follow up by the groups or institutions involved. Similarly, most patents are not commercially viable. Many of these patents result from the policies of funding S&T departments, national science academies, and the personal/promotion policies of research institutions that often work against those scientists/academics who work for marketable solutions, start-ups, prototypes, demo services (except when they are provided by big companies). They often flounder because of a lack of government or private-sector funding. The facilitation mechanisms shown in Block 2 of the figure are often too poorly funded or too small to cater to a large number of such intermediate outcomes, which in turn must evolve into the Block 4 outcomes shown in the figure.

It is beyond the scope of this chapter to deal with each of the elements depicted in Table 1 in detail. Hence the following section provides an overview of the actual Indian innovation scenario and illustrates a few select industrial sectors in which Indian innovation activity is relatively high. In the process we also point out areas of serious gaps. One of these is the gap in the innovative ability of micro, small, and medium enterprises (MSMEs), which is important in the medium- and long-term interest of the Indian economy and society because these enterprises provide employment for millions of Indians. The chapter provides a view of some of the thriving 'green gardens' of the Indian innovation system and also some of the 'dry desert' areas needing innovative attention.

In the following section, we take stock of some innovation-facilitating mechanisms and driving factors. These range from government finance systems, hand-holding systems that work with the innovators at every stage until they mature, and intellectual property rights (IPR)

Table 1: Idea-to-market curve

Drivers (Block1)	Facilitators (Block 2)	Intermediate Outcomes (Block 3)	Final Outcomes (Block 4)
1. Policy 2. Procedures for implementation 3. Knowledge inputs/access 4. Finance	**1. Government funding bodies** *Examples:* DST, DBT, TDB, TIFAC, NSTEDB, SIDBI, and NABARD. Ministries have some upgraded funds. **2. Technology R&D centres** *Examples*: Central government-funded national laboratories such as CSIR, ICAR, DAE, DRDO, ISRO, CPRI, CMTI, and so on. About 300 such centres exist in India. Industrial R&D centres including in-house R&D units, SIROs (NGO), foreign R&D units or centres, elite institutions, such as IITs, IISc, NITs, and central universities **3. Certification/standard approval and other formal accreditations** *Examples*: BIS, RDSO, food and drug controllers, national testing laboratories, IPO (for patent, design, and other IP components)	• Publications • Patents • New designs • Performance improvement in existing products/services • Start-ups • Skill upgrades • Joint R&D projects • Prototypes • Demonstration services • Technology-intensive products and services made in India	Production of solutions (products and services) that are affordable and accessible to: • People with very low incomes • People in the middle class • People in aspiring upward mobile classes Products and services distributed to global markets

Note: See Annex 1 at the end of this chapter for all acronyms.

facilitation to design-related support, to name a few. We also address macro indicators of innovation such as technology intensity in Indian manufactured exports, and compare these indicators in India with those of a few other countries.

Pockets of excellence

As can be guessed by any discerning observer of the Indian innovation system, although a number of pockets of excellence have emerged over the last several decades, there are few interconnections among them even at the policy level, let alone at other facilitating levels.

It will not be wise to leave these pockets of excellence to fend for themselves. As can be seen, in almost all areas of a desired national innovation system, India has had at least some level of experience for over a decade. Hence it will be possible to speed up the process of establishing a fully functioning system of innovation by connecting those pockets of excellence with each other and with other necessary components. The correct policies must be put in place, and the right implementation mechanisms must simultaneously be enforced. These elements need to be sustained for a long time for the laggards in the system to catch up speedily so that they are ready to innovate in products and services.

Sectoral green gardens

India has shown high growth and innovation capability in few sectors, called 'green gardens'. Two of India's fastest-growing sectors are described below.

Pharmaceutical

The Indian pharmaceutical industry plays an important role in promoting and sustaining low-cost, affordable, and innovative pharmaceutical product development in major markets.[2] Globally, India ranks third in terms of manufacturing pharmaceutical products by volume. The Indian pharmaceutical market is expected to reach more than US$ 55 billion by 2020 (Box 3).[3]

Automobiles

India has been the world's second-fastest-growing car market since 2010.[4] The Indian automotive industry has successfully introduced a range of new products in the domestic as well as the international market. The Indian auto component industry, which is dependent on the automotive industry, also has a distinct global competitive advantage in terms of cost and quality and has become the competitive supplier for the global market. It is one of the fastest-growing industries in India, with a compound annual growth rate of 23% during 2005 to 2010 and has reached US $19 billion in the year 2008–09 and is expected to grow to US$ 40 billion by 2016.[5]

Box 3: Paradigm shift in pharmaceuticals

The pharmaceutical industry has experienced a paradigm shift as a consequence of variable trends in globalization; the emergence of new markets; changing industry dynamics; and increasing regulatory, intellectual property (IP), and competitive pressures. India has become a preferred destination for R&D work because of the country's high-quality drug development, educated and skilled human resources, vertically integrated manufacturing capability, differentiated business models, and significant cost advantages.

Recently the industry has demonstrated good innovation skills in the fields of genetic research, biosimilars, vaccine development, contract research and manufacturing services, and new chemical entity development. Some instances are:

- *Innovation in biosimilars:* Biocon and Pfizer have entered into a strategic global agreement for commercialization of Biocon's biosimilar versions of Insulin and Insulin analog products: Recombinant Human Insulin, Glargine, Aspart and Lispro.[1]
- *Innovation in vaccines:* Indian biotech players are actively engaged in developing challenging vaccines. For example, India's first vaccine against H1N1 was developed by a major Ahmedabad-based pharmaceutical research company, Cadila Healthcare.[2] The Serum Institute of India has launched the indigenously developed intra-nasal H1N1 vaccine under the brand name Nasovac®.[3] Bharat Biotech has developed HNVAC, a novel vaccine that is the only developing world flu vaccine to be manufactured in a cell culture instead of eggs.[4]

Notes

1. See http://www.bloomberg.com/news/2010-10-18/biocon-sells-rights-to-insulin-to-pfizer-for-upfront-200-million-payment.html.
2. See http://www.zyduscadila.com/press/PressNote03-06-10.pdf.
3. See http://www.biospectrumasia.com/content/150710IND13091.asp.
4. See http://www.bharatbiotech.com/.

The automotive industry is also one of the largest R&D spenders within India's industrial establishment, second only to the pharmaceutical industry. R&D expenditures for domestic and multinational firms have increased considerably over the last decade. It is the domestic firms that have registered faster growth rates in absolute levels of R&D investments of Rs 2,400 crore (2010) than the multinational corporations, with Rs 210 crore for the same year.[6]

Some dry deserts

'Dry deserts' are those areas that are facing challenges in their attempts to incorporate innovation in their functioning.

Micro, small, and medium enterprises

MSMEs cover a vast segment of Indian economy with the employment of nearly 60 million Indians, distributed over 26 million enterprises. MSMEs generate a share of around 45% of the nation's manufacturing output and 40% of exports.[7]

Challenges in the input side, such as the high interest rates of 13–15% (much higher than rates for other Asian economies, which are 6–8%), rising raw materials costs, and labour costs coupled with tough competition—both in domestic and foreign markets—have added to the woes of the sector.

In terms of growth, the sector has taken a hit. As many as 91,400 micro and small units had shut down their operations as of March, 2011. The reasons cited for the closures were financial non-viability, slowing demand pull, obsolete technology, non-availability of raw material, infrastructural constraints, inadequate and delayed credit, and managerial deficiencies.[8]

The other big issue related to the sector is that about 98% of MSME units in India have very little interaction with big industries. The result is a gap in knowledge exchange between these two sectors. Almost 85–86% of MSMEs use traditional knowledge in their production units, and domestic R&D organizations have a meagre share (5–7% of the technical knowledge transactions are made with public R&D) in provisioning knowledge.[9]

The government is beginning to address the issue of the lack of financial resources for MSMEs, and it has recently authorized the Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) to open a dedicated exchange for small and medium enterprises. As a policy measure, the Indian Cabinet has also approved a public procurement policy for MSMEs. Recently the Ministry of MSME has proposed its plan to increase its innovation corpus from Rs 100 crore annually to Rs 2,500 crore.[10]

Technology intensity in manufactured exports

Among all merchandise exports of countries, manufacturing constitutes the lion's share. For India this is 61.5%, compared with 93% in China, for example. In spite of India's potential strengths in technology, and with the focus shifting to newer products and newer markets as encouraged by the government's Foreign Trade Policy (2009–14), currently the average technology value-added in manufactured products by Indian industry

is around 8%—very low, even compared with that of other emerging developing nations (In 2009, Brazil's value-added share was 14%, China's was 31%, Germany's was 18%, Mexico's was 21%, and that of the United States of America was 23%).[11]

The reason behind this trend is that India focuses more on assembling and sales than on design and development, making the process very 'shallow'. Some policy reforms that are possible solutions are listed at the end of this chapter. The slow pace of building up the value-added in India's manufacturing sector has been an area of concern for a long time, and now it has to grow really quickly in order to fulfil India's dream of becoming an innovation powerhouse.

Drivers: Facilitating mechanisms and implementation experiences

Drivers for innovation in India have traditionally been weak. Be it policy, funding, infrastructure—in all areas, India has been a laggard. Since economic liberalization in the early 1990s, the government has taken some measures to improve the situation.

The primary objectives of these measures are to attract more foreign direct investment, remove licensing monopoly control, encourage growth in imports and exports, revisit the policy framework, and encourage innovation capacity within industry and society.[12] However, government purchase policies and offset mechanisms to induce private- and public-sector industries to invest in R&D design are still not in place.

Government bodies

Since its independence, India has established institutional mechanisms to address its scientific and technological development. These mechanisms include R&D labs, such as the Council of Scientific and Industrial Research (CSIR); government departments, such as the Defence Research and Development Organization (DRDO), the Indian Space Research Organization (ISRO), the Department of Science and Technology (DST), the Department of Biotechnology (DBT), and the Department of Atomic Energy (DAE); and autonomous bodies, such as the National Institute of Design (NID). These institutions have been instrumental in providing a platform for innovation to flourish. Although the DRDO, the ISRO, and the DAE have been able to create state-of-the-art technologies and innovations, the DST and the DBT have been geared more towards the facilitation of innovation (see Box 4).

For example, the Biotechnology Industry Partnership Programme of the DBT is a new scheme for promoting innovation in industry.[13] It provides government support for 50% of the total cost of a project under this scheme, leaving the remaining 50% to the industry. Out of this 50% government support, 30–50% is given to industry as grant-in-aid and the remaining is given as a loan.[14] The beneficiaries of this program are the industries whose discoveries are linked to innovations in futuristic areas, transformational technologies, and product development of public goods.

Nongovernmental organization facilitators

Different nongovernmental organization (NGO) bodies contribute towards developing industrial capability for better growth. For example, CII Centers of Excellence (CoEs) work with MSMEs at the grassroots level. One of these, the Avantha Centre for Competitiveness, has secured more than 200 successful interventions in clusters, impacting more than 2,100 companies.[15] Other niche associations—such as the Indian Machine Tools Manufacturers Association (IMTMA), the Automotive Components Manufacturers (ACMA), and the Society of Indian Automobiles Manufacturers (SIAM)—work for the betterment of their respective sectors.

Funding

Various funding mechanisms for R&D and entrepreneurship are available both within and outside the government. Government R&D labs—such as the CSIR, the Central Manufacturing and Technology Institute (CMTI), the DRDO, and around 300 others—spend a great deal of money for in-house research through various schemes and fellowship programmes. Other government bodies, such as the DST and the DBT, fund research work through grants and subsidies.

Other than government, in the last decade many Indian and multinational enterprises have developed their R&D facilities in India where cutting-edge research is taking place. Along with Indian giants such as Tatas, Birlas Mahindras, and Godrejs, global multinational corporations such as Nokia, Xerox, Bosch, Philips, GE, and IBM have invested in India for their R&D programmes.

The Department of Scientific and Industrial Research (DSIR), under the Ministry of Science & Technology, recognizes non-commercial scientific and industrial research organizations (SIROs). Under this scheme, institutions or nongovernmental bodies such as NGOs, associations, and universities that undertake scientific and/or industrial research are granted recognition for their work. Each year DSIR compiles a list of SIROs in the country (575 in its 2008

Box 4: The Department of Science and Technology: A key facilitator of innovation

Launched in the 1970s, the Department of Science & Technology (DST) has since established policies and schemes for funding, managing, and monitoring innovative initiatives across the ecosystem covering individual innovators, entrepreneurs, small and medium enterprises, and institutions. In its proposal for the 12th five-year plan (2012–17), the DST has included a major focus on innovation and proposed doubling private-sector engagement in R&D by promoting a public-private partnership model. By its own estimation, the DST will support 3 million Indians directly through its programmes over the course of the next five years (2012–17). It has identified R&D investment as a priority and suggested increasing it as a percentage of GDP from its current levels of roughly 1% to roughly 1.5% of GDP by 2017, keeping in mind the global competitiveness in science, technology, and innovation. The DST works through different functional bodies that each have defined independent goals.[1]

For example, for the past 23 years the Technology Information, Forecasting and Assessment Council (TIFAC),[2] under the DST, has been trying to address issues of innovation and commercialization through its various programmes. Three such programmes are listed below:

- The Home Grown Technology Programme (HGT). This programme aims at encouraging SMEs to carry out significant innovations at the pilot production level, thereby covering some distance towards final marketing of a product. About 59 projects were undertaken under this scheme, and approximately 38% of them reached the commercialization stage. The loans were returned. Taxes from new businesses more than offset the initial government expenditure.
- The Technopreneur Promotion Programme (TePP) is a mechanism to encourage individual innovators to become technology-based entrepreneurs ('technopreneurs') by helping them network and forge links with other constituents of the innovation chain, thus supporting the commercialization of their developments.
- The Technology Refinement & Marketing Programme (TREMAP) is designed to support the country's innovation pool by pushing innovative technologies from the prototype stage towards a viable commercial product. In the short span of two years, TREMAP has transferred five innovations / technologies to the industry of commercial use.

Notes

1. DST, 2011.
2. Detail on TIFAC is contributed by Mukesh Mathur, Scientist D, TIFAC-DST, and Sajid Mubashir, Scientist F, TIFAC-DST, Government of India.

report). SIROs contribute significantly towards the funding of R&D.[16]

The National Skill Development Corporation (NSDC) and the Global Innovation and Technology Alliance (GITA) are some of the public-private partnership mechanisms that provide funding for initiatives in skill development and bilateral or multilateral joint R&D programmes, respectively. The government anticipates establishing more models of public-private partnerships to enhance the functioning of its programmes.

Intellectual property rights

While maintaining global standards and practices and ensuring a robust IPR system, the Indian legal and administration systems have been undergoing constant modifications.[17] Indian companies protect and maintain their IP assets in India and elsewhere to their competitive advantage. For example, United Phosphorous, a leading Indian company manufacturing agro-chemicals, successfully fought a trademark infringement case in the USA and a patent infringement case in Germany. Good IP management practices followed by Indian drug companies have enabled them to gain a strong position in the generic pharmaceutical market all over the world. The IP assets of these drug companies, along with the provision of foreign direct investment in the sector, have attracted many foreign companies to look for stakes in the Indian companies.

IPR awareness in India has remained generally low; however, the central government, through its various forums, is beginning to educate people on this topic. Industries, through their confederations, associations, and federations, have also been engaged in creating awareness about the issue for over a decade now. A recent example of strong legislative enforcement for patents that is taking shape in India is compulsory licensing—invoked for the first time in 2012—to facilitate the production of a particular drug (Nexavar, a drug used to treat kidney and liver cancers) and make it available to the Indian population at an affordable price.

Design

Design is extremely important for the future of India. It is integral to national competitiveness because it contributes significantly to India's

culture, environment, and economy.[18] The government has already announced a national design policy and is implementing it through the India Design Council. The policy's priorities are to deploy design to boost exports, strengthen design education, enhance the quality of life, and increase industry competitiveness as well as to create design centres to act as innovation hubs.

The Ministry of MSME has promulgated the design clinic scheme as a part of a national manufacturing competitiveness programme to assist MSMEs to become competitive by providing partial funding support, expert advice, and cost-effective solutions to real-time design problems, resulting in continuous improvement and value addition for existing products as well as new product development. India needs many more such interventions to upgrade its design skills.

Challenges and the way forward

India, because it is a pluralistic society and a democratic country, has an inherent inertia that resists accommodating change. The political environment is far from open and transparent, and the governance system is plagued with bureaucratic hurdles. Among many other obstacles hindering innovation and growth are the poor condition of the country's urban and rural infrastructure, its very low industry-academia linkage, its low GERD, and a non-innovative MSME sector.

Far-reaching policy reforms are needed to address all these issues. The list that follows provides some guidance to the types of policy reform that, if carried out successfully, could help ameliorate some of these pressing issues.

Policy initiative 1: Increase R&D spending

The government should formulate policy with the aim of increasing total GERD to 2% of India's GDP. Policy should also assist in implementing mechanisms to encourage industry to spend 50% of its total R&D, up from its current level of 20%.

India's national innovation infrastructure should be revisited, and reforms need to be incorporated to improve governance and make it more transparent (through the use of e-governance) and to upgrade infrastructure with projects to develop roads, energy distribution, water availability, for example.

Policy initiative 2: Global partnerships in innovation

Global innovation partnerships need to be strengthened. Policy can address this need by enhancing public-private partnership mechanisms such as GITA, and increased public funds should be earmarked for joint industrial R&D projects that include more countries and larger projects.

Policy initiative 3: Offset production

Policy may also be effective in extending the concept of offset production in India, not merely for defence purchases—where India's offset policy requires foreign suppliers to carry out some production in India or some R&D in collaboration with Indian firms—but also for other major sectors such as energy infrastructure, transport, and other broad sectors.[19] It is important, however, to avoid making these policies too rigid and unapproachable. Foreign investment, especially in MSMEs, that is undertaken to upgrade the capacity of the enterprise to take on such offset production responsibilities may also be counted as offset fulfilment. The aim of such foreign direct investment is to bring some focused, continual 'irrigation' of innovative capacity to a vast sector that was previously a dry desert in terms of innovation.

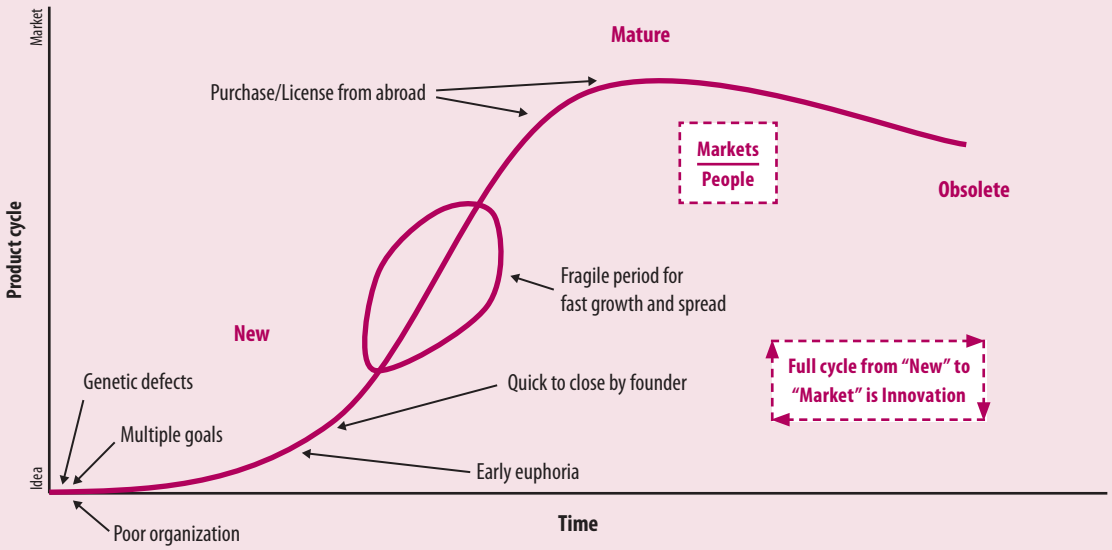
Policy initiative 4: Idea-to-market challenge

When considering the movement of ideas towards markets in India (see Figure 1), several problems at the idea stage itself become evident: the understanding of user needs and market needs, as well as the costs of bringing an idea to market, is generally poor. Other elements important to success, such as knowledge about competitors, are also lacking. In addition, most projects tend to be poorly organized, and multiple goals (often contradictory) are frequently assigned to a single project, leading to confusion. In spite of these hindrances, some innovative projects—especially those that begin in national labs or academic institutions—are launched with good results, leading to an early euphoria on the part of the innovator and other project stakeholders and sometimes media (if the innovation is large).

These euphoric early successes give way either to technology transfer or sell-offs, when the innovator sells off the enterprise/idea rather than making the effort to grow the venture. Even government funding schemes do not encourage further efforts to scale up initiatives that are successful in their early stages. For these projects, 'science' or R&D has been completed, and they are conveniently left to the mercy of users and industry. Venture capitalists who join the project at this stage often expect a quick return and tend to leave immediately thereafter, not remaining to support further R&D.

This period, in which everybody forgets the idea and the work and starts assuming that success has been achieved, is called the 'fragile

Figure 1: Idea-to-market curve



ellipse'.[20] The consequence is fewer idea-to-market innovations originating from India. Those who dare to enter markets with their innovative technology and desire to meet a user demand and make a successful business are usually forced to look abroad for licensing their technology, (although they may not be the best fit for India), in absence of a well-established Indian procurement system. These entrepreneurs will often be near the mature stage of the innovative solution and thus close to being obsolete in business, practically surviving at the top of curve, with only marginal shallow innovations in marketing and pricing.

To address these challenges the government needs to create a special fund to help Indian innovations, wherever they originate—in public or private sectors of industry, laboratories, or individuals—to advance beyond the fragile ellipse. Such a fund will require a special, flexible system of management. As a step in this direction, the government's National Innovation Council plans to establish the India Inclusive Innovation fund with US$1 billion.

Path forward

In spite of all the drawbacks, weaknesses, and challenges facing India's innovation system, India is presented with an opportunity to become a global innovation hub and eventually transform itself into an innovation-driven economy using its existing resources. To be successful in this endeavour, the country must make the right institutional, industrial, and policy reforms.

Notes

1 Arun Maira is a member of the Planning Commission of the Government of India, a member of the National Innovation Council, and a strong advocate for innovation in the Indian economy.

2 Details on pharmaceuticals were contributed by Dr. Goutam Muhuri, President, R&D – Dosage Forms, Jubilant Life Sciences.

3 See http://www.pharmaceutical-drug-manufacturers.com/pharmaceutical-industry/.

4 The Times of India, 2011.

5 IBEF, 2010.

6 See the Centre for Monitoring Indian Economy (CMIE), Prowess Dataset. One crore is 10 million.

7 Government of India, *MSME Annual Report 2011–12*, available at http://msme.gov.in/MSME-Annual-Report-2011-12-English.pdf.

8 Business Standard, 2011.

9 NISTADS, 2009 http://www.nistads.res.in

10 Bhatia, 2012.

11 Department of Commerce, 2011.

12 Ray and Saha, 2010.

13 See the Department of Biotechnology website at http://dbtindia.nic.in/uniquepage.asp?id_pk=680.

14 DBT, 2010.

15 CII & MSMEs an update; see http://www.ciicfc.org/abtus.html.

16 DSIR, 2008.

17 Details on the IPR system are contributed by R. Saha, Senior Advisor, Confederation of Indian Industry.

18 This perspective on design is contributed by Hrridaysh Deshpande, Director, DY Patil & Dilip Chhabria; see http://www.dypdc.com/directorspeaks.php?pageid=5.

19 'Offset' is a trade-off in a formal arrangement where a foreign supplier undertakes specified programs with a view to compensate or assist the buyer in its procurement expenditure and generate benefits for the economy of the buyer's country.

20 The author, Y. S. Rajan, got this description of the ellipse from Prof. S Chandrasekhar of IIM, Bangalore, based on his extensive research on innovation ecosystems in India. Rajan would like this phenomenon to be known as the 'Chandra-Ellipse of IIS fragility'.

References

Bhatia, N. 2010. 'Scaling New Heights'. *The Economic Times* 14 June 2012, p. 9.

Business Standard. 2011. *2011 Revisited: Big Problem for MSMEs.* New Delhi: Press Trust of India.

Department of Commerce. 2011. *Boosting India's Manufacturing Exports.* New Delhi: Ministry of Commerce, Government of India.

DBT (Department of Biotechnology, Ministry of Science & Technology). 2010. Biotechnology Industry Partnership Programme (BIPP): Complete Scheme Document Including Proposal Submission, Evaluation and Review Guidelines. Department of Biotechnology, Ministry of Science & Technology, Government of India.

DSIR (Department of Scientific & Industrial Research). 2008. *Directory of Recognised Scientific and Industrial Research Organisations.* New Delhi: Department of Scientific & Industrial Research, Ministry of Science & Technology.

DST (Department of Science and Technology). 2011. *Programmes and Proposals for the 12th Five Year Plan Period (2012–17).* New Delhi: Department of Science & Technology, Govt. of India.

Government of India. *MSME Annual Report 2011–12.* New Delhi: Government of India, Ministry of Micro, Small and Medium Enterprises. Available at http://msme.gov.in/MSME-Annual-Report-2011-12-English.pdf.

IBEF (India Brand Equity Foundation). 2010. 'Auto Components', April. Available at http://www.ibef.org/download/Auto_Components_060710.pdf.

NISTADS (National Institute of Science, Technology And Development Studies). (2009). *INDIA Science & Technology 2008.* New Delhi: National Institute of Science, Technology And Development Studies.

Ray, A. S., and S. Saha. 2010. 'Perspectives on Public Funded Research for Technological Development: Insight from India's Technology Trajectory'. In *Multi-Country Research Dialogue on Emerging Economies in the New World Order: Promises, Pitfalls and Priorities.* New Delhi: ICRIER.

The Times of India. 2011. "Indian Car Market Growth Second Fastest Globally'. *The Times of India,* 12 January. Available at http://articles.timesofindia.indiatimes.com/2011-01-12/india-business/28352452_1_global-auto-commercial-vehicles-indian-automobile-manufacturers.

Acronyms

ACMA	Automotive Components Manufacturers
APTDC	Andhra Pradesh Technology Development and Promotion Centre
BIS	Bureau of Indian Standards
CII COE'S	Confederation of Indian Industry, Centres of Excellence
CMTI	Central Manufacturing and Technology Institute
CPRI	Central Power Research Institute
CSIR	Council of Scientific and Industrial Research
DAE	Department of Atomic Energy
DBT	Department of Biotechnology
DIPP	Department of Industrial Policy and Promotion
DRDO	Defence Research and Development Organization
DSIR	Department of Scientific & Industrial Research
DST	Department of Science & Technology
GITA	Global Innovation and Technology Alliance
ICAR	Indian Council of Agricultural Research
IISC	Indian Institute of Science
IIT	Indian Institute of Technology
IMTMA	Indian Machine Tools Manufacturers Association
IPO	Indian Patent Office
IPR	Intellectual Property Rights
ISRO	Indian Space Research Organization
MSME	Micro Small and Medium Enterprises
NABARD	National Bank of Agriculture and Rural Development
NID	National Institute of Design
NISTADS	National Institute of Science, Technology And Development Studies
NIT	National Institute of Technology
NSDC	National Skill Development Corporation
NSTEDB	National Science & Technology Entrepreneurship Development Board
RDSO	Research Design and Standards Organization
SIDBI	Small Industries Development Bank of India
SIRO's	Scientific and Industrial Research Organization
TDB	Technology Development Board
TIFAC	Technology Information, Forecasting and Assessment Council
TNTDPC	Tamil Nadu Technology Development and Promotion Centre
TT Units	Technology Transfer Units

An Integrated Policy Approach in Science, Technology, and Innovation for Sustainable Development: A UNESCO Idea in Action

Irina Bokova, UNESCO

The first Director-General of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was the leading scientist Julian Huxley, who lobbied successfully to include the 'S' for scientific cooperation to the mandate of the Organization in 1945. Since then, science has taken a central place in UNESCO's work of building international scientific cooperation for lasting peace and sustainable development. Science holds answers to key questions we must address today—questions about sustainable and inclusive development and about the resilience of our societies. UNESCO's role is to support Member States in building the knowledge societies we need for the century ahead. This is especially important at a time of global change, as countries work to reach the internationally agreed Millennium Development Goals by 2015 and the international community debates the shape of a post-2015 global development agenda.

For UNESCO, science must lie at the heart of the new agenda for sustainable development. Science, technology, and innovation (STI) are especially important drivers. In 2011, UNESCO established a High Panel on Science and Technology for Development composed of eminent scholars, decision makers, and intellectuals from all regions of the world, with the aim of charting new ways to address common challenges facing humanity in the 21st century. The panel has led an in-depth reflection and proposes new strategies and initiatives on how the international community can cooperate more effectively and strengthen its efforts to use STI for sustainable development and a culture of peace.

There are signs that STI is increasingly recognized as fundamental to achieving sustainable development. A number of developed and developing countries have drawn on STI to improve production and productivity of agriculture and industries, to meet healthcare needs, and to overcome environmental challenges. However, many developing countries have not yet harnessed the power of STI as an engine of long-term development. Some developing countries have not yet established a national STI development plan, while others are working with plans that are out of date. This is true for a number of African countries that formulated science and technology policies in the 1970s and 1980s, when development imperatives and technological opportunities were very different than they are today.[1]

UNESCO is helping Member States to address these problems. Our action is guided by the goal of integration. We have developed an integrated approach that builds on four pillars in order to integrate STI into the broader framework of national development plans. The first pillar is to strengthen national capacities in STI policy formulation, evaluation, and implementation. The second pillar is to promote a culture of innovation by facilitating appropriate innovation ecosystems for firm-based high-technology innovation and grassroots innovation. Our goals in this pillar are primarily to develop appropriate technologies to meet the needs of the economically disadvantaged. Third, UNESCO promotes the enhancement of human and institutional capacities in science and engineering. The last pillar of this integrated approach is to improve STI system monitoring and foresight by developing multi-dimensional, comprehensive, and policy-relevant assessments.

Strengthening national STI systems and policies

Supporting science policy has always been a focus for UNESCO. Our goal in this area is to build national capacities for STI planning, evaluation, and reform to support an enabling environment for sustainable development.

To build knowledge societies, it is essential to integrate STI into national development policies and the economic reform agendas of countries. To this end, UNESCO supports its Member States in developing new approaches for the formulation of science policies by providing technical assistance in the reform

of STI systems and by assisting in the elaboration of STI strategies and action plans. The Organization also offers science policy training for STI stakeholders—many of these training programmes are especially designed for women and youth. UNESCO works as a standard-setter, assisting in the elaboration of guidelines for STI policy formulation, review, and reforms. Developed on the basis of international best practices, the guidelines address major socioeconomic development challenges.

To advance this goal, the Organization carries out science reviews and participates in country reviews. For instance, UNESCO undertook reviews in several African countries and provided support for the implementation of the African Consolidated Plan of Action through its flagship projects, including the African Virtual Campus. In Tanzania, for instance, UNESCO is heading a team of UN agencies and development partners in assisting the reform of the STI system. As a result, UNESCO has become an important reference point for the Ministry of S&T in Tanzania in the process of their reform. UNESCO has undertaken Virtual Campus projects in Cotonou (Benin) and Dakar (Senegal). The main purpose of the project is to contribute in building capacity of African States in science and technology by conducting e-learning in science training.

In April 2012 in Nairobi, UNESCO—in close collaboration with the African Development Bank (AfDB), the African Union (AU), the United Nations Economic Commission for Africa (UNECA), and the Association for the Development of Education in Africa (ADEA)—organized the First African Forum on STI for Youth Employment, Human Capital Development and Inclusive Growth. The forum was attended by over 30 African ministers of education and science who unanimously pledged to put STI policies, strategies, programmes, and plans into action in the next five years. The outcomes and recommendations of the forum, including the ministerial declaration, will contribute to forthcoming STI initiatives, including the African Development Bank's annual meetings in May 2012, the African Ministerial Council on Science and Technology (AMCOST) conference in May 2012, and the Science with Africa meeting in June 2012.

Effective STI must mobilize broad-based participation. Experience underlines the importance of increasing opportunities for citizen involvement in decision-making processes. This is important for inclusive and sustainable development. It is vital also to promote the right to be informed and the right to participate;[2] this is all the more important for the formulation and implementation of STI policy. To this end, UNESCO works to develop public awareness and expand citizen science through the popularization of science. One of our key activities here is to support Member States in the development of science centres, museums, and science and technology exhibitions. In 2011, for example, UNESCO organized two regional training workshops on science centre and science museum governance in Africa and the Asia Pacific region.

In addition, UNESCO facilitates research and scientific debate on the history of science, promotes the importance of science communication through science journalism, and supports international and regional networks for the popularization of science. To further these efforts, UNESCO declared 10 November to be World Science Day for Peace and Development and awards prizes in science to raise awareness and provide support to young researchers. The Organization also seeks to safeguard local and indigenous knowledge systems and promote their participation in socioeconomic and environmental development issues. Activities include, for instance, joint work with the ministries of education in Nicaragua and the Solomon Islands to promote vernacular language and indigenous knowledge in national education curricula.

We combine this work with a focus on science as a vehicle for international diplomacy. Sharing scientific knowledge can help create new solidarities and promote a culture of peace. This is a matter of necessity and not choice. Global challenges pay little heed to borders. Climate change, environmental degradation, infectious diseases, and the depletion of energy resources: tackling these challenges calls for international cooperation among national and international nongovernmental bodies and communities representing policy makers, scientists, and engineers.

UNESCO works to strengthen the interface between science and policy and to deepen exchanges in STI policy at the international level. This is the aim of the World Science Forum, which UNESCO organizes on a biennial basis in close cooperation with the Hungarian Academy of Sciences and the International Council for Science (ICSU). As an exercise in science diplomacy, this forum is the widest international platform for parliamentarians, scientists, policy makers, and members of civil societies to engage in a dialogue about science and its significance for improving the lives and livelihoods of the people. UNESCO leads also STI parliamentarian policy fora that are designed to assist parliamentary

institutions in developing countries to tackle issues related to STI. These fora have become important moments for generating knowledge on different modalities used by parliaments in countries across the world dealing with STI legislation and for sharing information and practices. UNESCO has also supported the creation of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), an interface between the scientific community and policy makers that aims to build capacity and strengthen the use of science in policy making on biodiversity and ecosystem services.

South-South cooperation is especially important to facilitate dialogue and cooperation between developing countries. In this spirit, in 2008 UNESCO supported the creation of an International Centre for South-South Cooperation for Science, Technology and Innovation (ISTIC) in Kuala Lumpur (Malaysia).

Promoting a culture of innovation

Innovation is essential today. It is a critical factor for enhancing economic growth and competitiveness. At the same time, innovation is crucial for social cohesion, equality, and poverty alleviation. UNESCO's vision builds on the definition of innovation proposed by the Organisation for Economic Co-operation and Development: 'Innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations'.[3] At the same time, UNESCO insists on the importance of grassroots innovation as an equally important source of solutions that meet the needs of developing countries. We act at three levels to build a culture of innovation.

First, we seek to facilitate the development of innovation systems. A key challenge in promoting technological innovation in developing countries is the lack of an appropriate innovation system to ease interaction among key actors. Such a system should foster investment in advanced technology and promote the development of affordable technology to meet the needs of the poor. It should also develop, attract, and retain potential up-and-coming talent for innovation.

Building an innovation system in developing countries is complex because it involves the formal sector—enterprises, universities, research institutes, the government, and the financial system—along with nongovernmental organizations and the informal sector, including grassroots inventors as well as local and indigenous knowledge. Bridging the formal and informal sector is especially difficult in circumstances of high social disparities. An effective innovation system should allow private companies to generate wealth and also improve the living conditions of the poor.

UNESCO places special emphasis on regional innovation ecosystems by supporting the development of science parks and technology business incubators. Science parks and technology business incubators are crucial elements for regional development. UNESCO has supported the development of science parks, for instance, at the University of Nairobi Science and Technology Park (Kenya), the Indonesian Science and Technology Park in Jakarta, the ICT Cluster in Mongolia, and the Nanotechnology Park in Sri Lanka.

Second, we promote firm-based innovation. To this end, in 1993 UNESCO launched the University-Industry Science Partnership Programme (UNISPAR). Its objective is to create synergy between research in universities and in the productive sector. Since 2002, the programme adopted a triple helix model of innovation, seeking to bring together the institutional spheres of academia, industry, and government. The programme has supported science parks and technology business incubators by providing technical assistance, organizing capacity-building activities, and developing pilot projects. It has also underpinned regional and international networks and supported the development of regional and international centres. The programme's ultimate goal is to develop national capacity in creating, nurturing, and managing knowledge-based small and medium enterprises.

All of these activities are conducted in close cooperation with governments, the Islamic Educational, Scientific and Cultural Organization (ISESCO), and international nongovernmental organizations—such as the World Technopolis Association (WTA), the International Association of Science Parks (IASP), and the International Network of the Small and Medium Enterprises (INSME), along with the private sector. Since 2002 more than 600 managers and future managers of science parks and technology business incubators have benefited from UNESCO's training workshops.

Our third angle is to promote grassroots innovation for sustainable development through a network of activists and organizations generating bottom-up solutions that respond to the needs of local communities.[4] Grassroots innovation carries immense potential for wealth creation. This requires incubation support for the benefits to

be disseminated to consumers far and wide. In this spirit, UNESCO is elaborating a strategy to promote grassroots innovation. This strategy will focus on empowering people to use science and technology to find affordable solutions that meet the needs of the disadvantaged. The strategy provides also for the popularization of science (science communication), 'technopreneurship' development, engineering, local and indigenous knowledge, and biodiversity conservation.

Building capacities in basic sciences and engineering

Science and engineering education is important for all countries to raise public literacy in science, engineering, and technology. This education is especially vital for developing countries so they can build a critical mass of scientists, researchers, and engineers that will allow them to participate fully in the global economy.

UNESCO has extensive experience in this area through the work of its International Basic Science Programme (IBSP) and the activities of its engineering programme. We work with national governments and partners in the United Nations system as well as intergovernmental and nongovernmental organizations to promote training and research and scientific networking, and to create and strengthen centres of excellence. Public-private partnerships can be essential ingredients for effective STI. To this end, UNESCO is elaborating several agreements with private companies—such as Intel and F.Hoffman-La Roche Ltd, among others—to jointly promote science, technology, engineering, and mathematics education.

Science education is essential. To attract and retain young people, we need leadership training and early career support mechanisms to be put in place at the university level. The challenge is to nurture and maintain a critical mass of highly qualified and innovative scientists and technologists and to provide them with the means to pursue their research objectives. Supporting science education is an essential component of UNESCO's action.

A special focus falls here on assisting girls and young women to pursue careers in science. These are the goals of our longstanding partnership with the L'Oreal Foundation and our annual L'Oreal-UNESCO Awards for Women in Science. It is vital to support young women scientists through such fellowships and also to increase the visibility of successful women scientists.

We work also to facilitate the integration of gender perspectives, vision, knowledge, and skills into the design, implementation, and evaluation of STI policy. Women must be change agents of STI and not merely beneficiaries. We must ensure gender-balanced representation in science policy dialogue platforms and international networks, and we must support women in the transmission, preservation, and elaboration of local and indigenous knowledge related to sustainable development, natural disaster preparedness and response, biodiversity conservation, and climate change. Within this framework, a variety of activities have been conducted that include empowering women as agents of change of STI—for instance, by supporting young women scientists and facilitating cooperation and exchange of scientific knowledge among women scientists. To further these ends, in close cooperation with ISTIC we recently organized an International Forum on Women in Science and Technology in Muslim Countries that was held in Kuala Lumpur.

The network of UNESCO university chairs is also specifically focused on women in S&T. Such chairs—through an integrated system of research, training, and information and documentation activities—serve as a means of facilitating collaboration on gender mainstreaming and good practices among high-level, internationally recognized researchers and teaching staff of university and other institutions in foreign countries. Networks have been established in several countries, including Argentina, Burkina Faso, Egypt, Ghana, Pakistan, Sudan, and Togo.

It is vital to bolster science and engineering education through capacity building and the development of new methodologies for teaching STI. Interdisciplinary approaches are required to support innovative research and its applications for sustainable development. These approaches must address the need to strengthen indigenous research systems and capacity; they must also involve the private sector, and especially industry, in promoting innovation and entrepreneurship among students and young professionals. South-South and North-South-South cooperation is another important lever here.

Improving STI monitoring and foresight systems

UNESCO also has extensive experience in supporting the dissemination of knowledge in STI policy information. This is essential for monitoring and also for sharing experience and practice.

From 1965 to 1994 a number of studies and documents (totalling 74 volumes) were published in UNESCO's well-known series entitled *Science Policy Studies and Documents*. After 2003, UNESCO

began to publish monographs on STI policy analysis. These must be seen in combination with the *UNESCO Science Report,* published every five years, which presents the state of affairs in STI worldwide. In addition, UNESCO has led the *Encyclopedia of Life Support Systems* (EOLSS), which is an Internet-based encyclopaedia for use by natural and social scientists, engineers, economists, educators, university students and professors, and conservationists as well as policy makers. UNESCO's publication *Engineering: Issues, Challenges and Opportunities for Development* is also important in presenting a global picture of engineering issues, applications and innovation, infrastructure, capacity building, and education. As the first international report on the status of engineering ever produced, it explores the realities of the shortages of engineers in developing countries. The report estimates that some 2.5 million new engineers and technicians will be needed in sub-Saharan Africa alone if the region is to achieve the Millennium Development Goals of improved access to clean water and sanitation.

To strengthen the dissemination of STI policy data and information, UNESCO has supported the establishment of the International Research and Training Centre for S&T Strategy in Beijing (China) as a category 2 centre under the auspices of UNESCO. The focus of the centre falls on conducting research, offering professional training, providing policy advice, facilitating technology transfers, and promoting international cooperation and exchanges in STI policy.

We must do more to measure the impact of STI on development to provide a solid basis for formulating sharper national STI strategies. The absence of relevant indicators is a major obstacle for the design and implementation of science and STI policies, especially in developing countries. To tackle this challenge, UNESCO has recently launched two initiatives: the Science, Technology and Innovation Global Assessment Programme (STIGAP) and the Global Observatory on Science, Technology and Innovation Policy Instruments (GOSPIN).

These initiatives are complementary. STIGAP is designed to strengthen conventional STI monitoring systems by adding a bottom-up approach to fill in the gaps in the global assessment of STI. STIGAP will broaden the scope of STI data collection to develop more relevant and country-specific data. This broader scope will enable countries to make more informed decisions on the development of STI. It will also facilitate a finer assessment of the development of STI at the international, regional, and national levels and expand STI monitoring by including countries with less-developed STI policies. GOSPIN is an STI policy cluster of databases. It is equipped with graphics and analytical tools to provide information about the structures of STI national systems and descriptions of national priorities and goals, legal frameworks, operational policy instruments, and international cooperation strategies. Together, STIGAP and GOSPIN provide an integrated perspective on data collection and analysis as well as on the methodology and kind of data that are collected. The overall aim is to better evaluate and analyse STI developments in order to recommend evidence-based STI policies. In 2012, STIGAP and GOSPIN were tested in Tanzania, and we are working to establish the necessary framework of a multilingual platform of GOSPIN in Africa.

Foresight is important to support government and industry with the information required for timely decisions and strategic planning. Foresight allows for more robust policies and greater precision in research choices. For these reasons, most developed countries are already using foresight to chart their national development. UNESCO is encouraging all Member States to develop foresight capacities as part of their STI monitoring and evaluation system.

Conclusion

STI can be a game changer for countries pursuing sustainable development over the long term. In a number of developing countries, STI already contributes significantly to economic growth and industrial dynamism. However, too many developing countries must still overcome steep obstacles before they are able to harness the benefits of STI. UNESCO's integrated approach provides a strong answer to this challenge.

Our approach seeks to improve national capacities in STI policy formulation, implementation, evaluation, and reform; it also seeks to establish an information support system for STI policy. To reach these objectives, UNESCO mobilizes broad-based participation in STI policy within governments and throughout civil society and the private sector, including marginalized groups. All women and men must have the tools and ability to participate in national STI.

We focus on the development of a culture of innovation—promoting firm-based innovation through science parks and technology business incubators and supporting grassroots innovation from local communities. Education is a core pillar of

our work—engaging young people at an early age, especially girls, and supporting their progress in pursuing careers in science and engineering. We back our work with by promoting evidence-based STI policy and we provide support to monitor progress in this area.

Promoting long-term sustainable development is not an easy task. With the absence of STI in the Millennium Development Goals, our work is more challenging. It is time to give STI a central place on the global development agenda. UNESCO's integrated policy approach on STI for sustainable development seeks to fill this gap.

Notes

1 Mugabe, 2006.

2 De Marchi et al. 2001.

3 OECD, 2005. p. 46.

4 Seyfang et al. 2010.

References

Bergman, N., N. Markusson, P. Connor, L. Middlemiss, and M. Ricci. 2010. 'Bottom-Up, Social Innovation for Addressing Climate Change'. Paper presented at the conference on *Energy Transitions in an Interdependent World: What and Where Are the Future Social Science Research Agendas?* Brighton, UK, 25–26 February 2010.

Calof, J., and J. Smith. 2010. 'Towards a Forward Looking Insightful Policy: Combining Competitive Intelligence and Foresight'. *myForesight* 1 (1): 18-21.

De Marchi B., S. Funtowicz, and Â. Guimarães Pereira. 2001. 'From the Right To Be Informed to the Right To Participate: Responding to the Evolution of the European Legislation with ICT'. *International Journal of Environment and Pollution* 15 (1): 01–21.

Etzkowitz, H. 2002. 'The Triple Helix of University-Industry-Government Implication for Policy and Evaluation'. Working Paper. Science Policy Institute, Stockholm.

Edquist, C. 2005. 'Systems of Innovation: Perspectives and Challenges'. In *The Oxford Handbook of Innovation,* 181–208. New York: Oxford University Press.

Hillig, J. 2006. 'Helping Hands, Guiding Principles: Science and Technology Policies'. In *Sixty Years of Science at UNESCO 1945–2005,* 434–51. Paris: UNESCO Publishing.

Lundvall, B.-Å., ed.1992. *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning.* London: Pinter.

Metcalfe, J. S. 2000. 'Science, Technology and Innovation Policy in Developing Economies'. Paper prepared for the workshop on Enterprise Competitiveness and Public Policies, Barbados, 22–25 November 1999, revised following that presentation. ESRC Centre for Research on Innovation and Competition University Manchester.

Metcalfe, S. and R. Ramlogan. 2008. 'Innovation Systems and the Competitive Process in Developing Economies'. *The Quarterly Review of Economics and Finance* 48: 433–46.

Mugabe, J. 2006. 'Regionalism and Science and Technology Development in Africa'. In, *Science and Technology Policy for Development, Dialogues at the Interface,* ed. L. Box and R. Engelhard, 37–54. London: Anthem Press.

Nelson, R. R., ed. 1993. *National Innovation Systems: A Comparative Study.* Oxford: Oxford University Press.

NEPAD (New Partnership for Africa's Development). 2005. *Africa's Science and Technology Plan of Action.* Available at http://www.nepadst.org/doclibrary/pdfs/doc27_082005.pdf.

OECD (Organisation for Economic Co-operation and Development) and Eurostat. 2005. *Oslo Manual: Guidelines for Collecting Innovation Data,* 3rd edition. Paris: OECD.

Seyfang, G., and A. Smith. 2006. 'Community Action: A Neglected Site of Innovation for Sustainable Development?' The Centre for Social and Economic Research on the Global Environment Working Paper, EDM.

———. 2007. 'Grassroots Innovations for Sustainable Development: Towards a New Research and Policy Agenda'. *Environmental Politics* 16 (4): 584–603.

Seyfang, G., A. Smith, and N. Longhurst. 2010. 'Grassroots Innovations for Sustainable Development: A New Research Agenda'. *Economic Sociology: European Electronic Newsletter* 12 (1): 67–71.

United Nations Economic and Social Council for Africa and African Union Commission, 2011. Promoting Science, Technology and Innovation for Development in Africa. Information Note: Meeting of the Committee of Experts of the 4th Joint Annual Meeting Addis Ababa, 24–27 March 2011.

Broadband, Inevitable Innovation, and Development

Robert Shaw, ITU

Bruno Lanvin, INSEAD eLab; Broadband Commission

It is an interesting phenomenon that many inventions have been made two or more times by different inventors, each working without knowlede of the other's research.

—Ogburn and Thomas, 1922.

Thus starts a delightful and fascinating 1922 paper entitled 'Are Inventions Inevitable? A Note on Social Evolution', authored by William F. Ogburn and Dorothy Thomas.[1] In the subsequent pages, the authors cite case after case of the world's most significant inventions that appear to have emerged independently and almost simultaneously, sometimes on completely different sides of the world. In the appendix, they offer a preliminary list of 148 such cases chosen from the fields of mathematics, astronomy, chemistry, physics, medicine, biology, psychology, and mechanics. And they assert that there are surely many more examples that could be found with additional research.

On the basis of this evidence, the authors ask the obvious question: 'What does this mean?' They seek to develop tentative answers to the question of whether inventions are inevitable. They begin with a simple rhetorical question: if certain inventors had died in infancy, would somebody else not have shortly invented the same thing and overall human progress continued? Their conclusion is, of course, 'Yes'. In other words, the numerous parallel occurrences of essentially the same invention suggest that it is not so much the genius of specific individuals that is important as the set of enabling knowledge and conditions at a period in time that enables an invention to emerge. To put it simply, nobody can invent the river steamboat without the prior invention of both boats and the steam engine. But once both exist, their combined emergence is not only likely, but also *simply inevitable*.

A more recent and powerful example can be cited for the invention of the worldwide web. Dave Raggett of the World Wide Consortium, in his description of the history of the invention of the Web by Sir Tim Berners-Lee, starts with the observation: 'The time was ripe for Tim's invention'.[2] He states:

> The fact that the Web was invented in the early 1990s was no coincidence. Developments in communications technology during that time meant that, sooner or later, something like the Web was bound to happen. For a start, hypertext was coming into vogue and being used on computers. Also, Internet users were gaining in the number of users on the system: there was an increasing audience for distributed information. Last, but not least, the new domain name system had made it much easier to address a machine on the Internet.

Indeed, with hindsight, most innovations can be qualified as inevitable. Rare is the disruptive breakthrough that comes out of nowhere—most are incremental changes built on the underpinnings of other knowledge, technologies, or platforms. What is important for most innovations to occur is a set of enabling conditions that triggers somebody with the right knowledge

and skills to recognize (even serendipitously) an incremental step that can be taken at that moment in time.

Along any evolutionary path, there are always set points where an underlying direction becomes clearer and trend signs get stronger. This chapter argues that we are entering an era of *inevitable innovation* enabled by information and communication technologies (ICTs). This will be the beneficial consequence of putting the knowledge, technologies, and platforms that ICTs bring into the reach of billions of new users, many of whom will come from developing countries. In turn, these users will produce many new innovations that will directly benefit and empower those in developing countries.

To make this point and identify ways in which countries at various levels of development can best benefit from ICT-based innovation, we shall successively consider the following four areas: (1) the changing ICT landscape and the contribution of ICTs to innovation, (2) the advent of broadband as a platform for inevitable innovation, (3) how to maximize the innovation benefits of ICTs, and (4) what steps should be taken to trigger inevitable innovation.

The changing ICT landscape

What is happening in the global ICT landscape? What are the key trends over time and across economies? To answer these questions, the International Telecommunication Union (ITU) gathers statistics as inputs into its *ICT Development Index* (IDI), a composite index combining 11 indicators into a single benchmark measure to monitor and compare developments in ICTs across countries. Elements of the IDI (ICT access and use) are used as inputs into the Global Innovation Index.

Data gathered for the IDI show that, over the past 10 years, we have witnessed an extraordinary transition. We have moved from a world where most people did not have access to even basic telecommunications to one with over 6 billion mobile subscriptions and an estimated 2.4 billion people using the Internet at the end of 2011.[3]

Figure 1 demonstrates that the most successful technology by a wide margin is mobile, with subscription numbers reaching 87% of the world's population at the end of 2011. The figure also shows that about 35% of the world population is using the Internet. This compares with penetration rates of 17% for mobile-broadband subscriptions, 16.6% for fixed-telephone lines, and 8.5% for wired-broadband subscriptions.

To fully appreciate the implications of these numbers and their predicted impact on innovation, it is helpful to drill down further into the nature and extent of Internet and mobile penetration around the globe.

The nature of the Internet as an enabling platform for innovation

Figure 2 shows that the Internet has seen its number of users more than double over the past five years to about 2.4 billion users worldwide at the end of 2011. Growth rates in developing countries are high, with absolute numbers driven by large countries such as Brazil, China, India, Nigeria, and the Russian Federation. In developed countries, around 74% of the population is online, but this figure drops to 26% in developing countries. Globally, at the end of 2011, roughly 35% of the world's population was online—up from 12% in 2003 and 6% in 2000.

Although the Internet entered the public domain only 20 years ago, the inhabitants of the developed world can take for granted the enormous benefits that it has brought. The Internet has been an extraordinary enabling platform that has facilitated numerous innovations, from e-banking to social media, online travel booking to e-government, free telephony to instant messaging—the changes it has brought to the way we work and play are immense. This has largely been possible because it is an open platform on top of which anyone can build a new service or application.

However, it is sobering to realize that 65% of the world's population (and 74% in developing countries) is not yet using the Internet. Clearly much work needs to be done to make the benefits of the Internet more broadly available on a global scale.

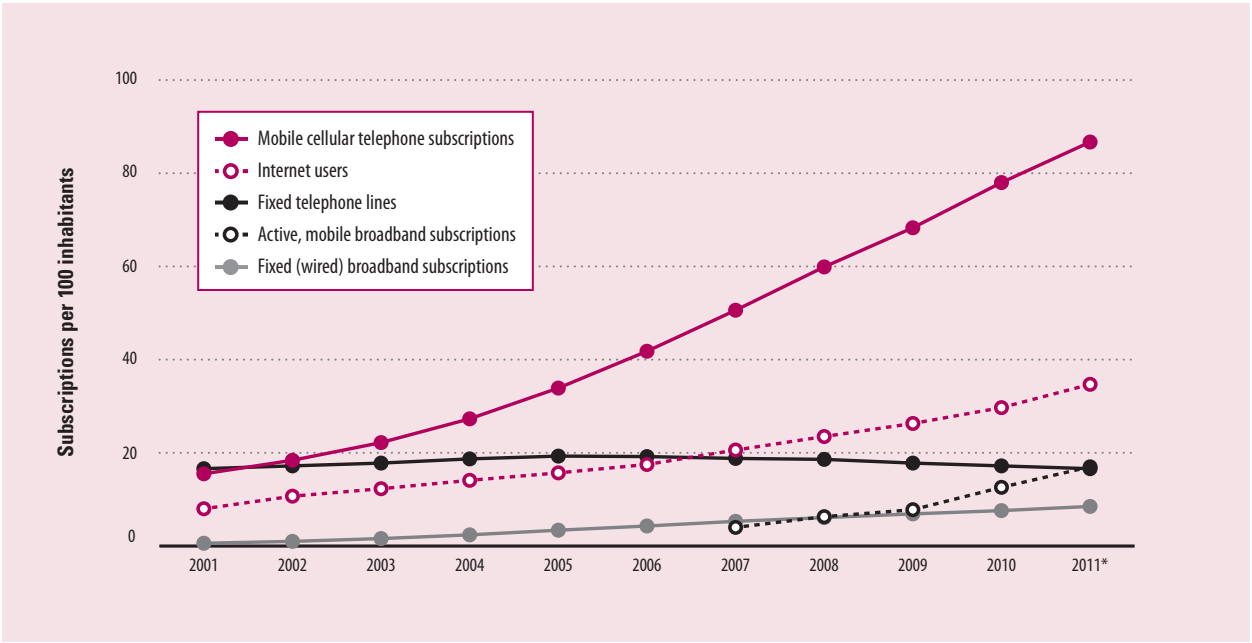
For the majority of the world population, the true ICT revolution has not been the Internet, but rather mobile telephony

Although ICTs have conquered the globe and brought basic communications within reach of almost everyone, the most prevalent technology, particularly in developing countries, is mobile. In many countries, mobile telephony growth has appeared to reach saturation levels, recording penetration rates of over 100%. In fact, more than 90 countries have a larger number of mobile subscriptions than their population. This 'mobile miracle' has occurred against the backdrop of the ongoing decline, which began in 2005, of fixed telephony lines—which now represents only a 16.6% penetration rate of the global population (see Figure 1).

The contribution of ICTs to innovation

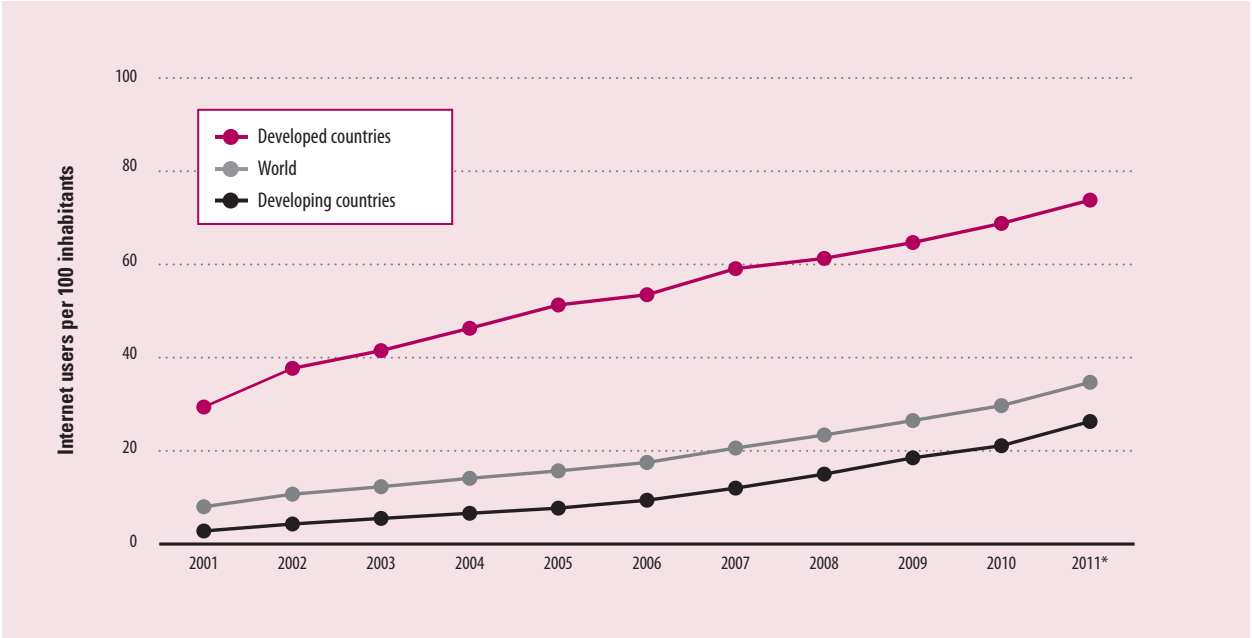
Generally, the contribution of the ICTs to innovation can be seen in at least three domains:

Figure 1: Global ICT developments, penetration (2000–11)



Source: ITU World Telecommunication / ICT Indicators database.
* Estimate.

Figure 2: Global Internet growth, penetration (2000–11)



Source: ITU World Telecommunication /ICT Indicators database.
Note: The developed/developing country classifications are base on the UN M.49 (the standard used by the United Nations for statistical purposes); see http://www.itu.int/ITU-D/ict/definitions/regions/index.html.
* Estimate.

Box 1: Simpa Networks

Simpa Networks is an innovative for-profit start-up that supplies pay-as-you-go solar energy systems in developing countries for households without access to the electricity grid. Consumers are able to purchase and install, at a minimal up-front cost, a solar energy system and pre-pay for electricity using a mobile text-based payment scheme.

Each payment contributes towards the total purchase price of the solar energy system. When full payment has been made, users receive a code that unlocks the device and delivers free electricity for the expected 10-year life of the product.

Simpa Networks provides a green energy solution that has cleverly adopted a mobile pre-paid business paradigm in an innovative way to deliver a solution for energy needs in rural areas. Although the company has developed its mobile payment engine, it is now in talks with a major mobile provider in India about directly using that provider's payment gateway.

SOURCE: simpanetworks.com.

- First, ICTs enable access to a global platform of knowledge (Wikipedia represents one well-known example of a knowledge source) that accelerates and enables further inventions and innovations. Knowledge about the best and brightest ideas can now quickly be made available to billions of people around the globe on a scale never before seen in human history. It is a new phenomenon of collective 'global knowledge bootstrapping'.
- Second, ICTs exponentially increase the ability of people to create, exchange, and debate ideas and knowledge—the mental building blocks of invention and innovation. Discussion and debate on new ideas and paradigms can spread around the globe in days—and be quickly adapted to local circumstances and needs. ICTs do this both by connecting people, whether individually or in groups or communities, and by facilitating the 'viral' spread of the best views and ideas.
- Third, business paradigms that have proven to be successful in making ICTs available for billions of users in developing countries, such as prepaid subscriptions, can serve as business paradigms for addressing other critical developmental needs (see Box 1).

Not surprisingly, as both the Internet and mobile telephony have become more widespread in developing countries, we have seen a wave of innovations emanating from and focused on the needs of the developing world.[4] Recognizing this, Brahima Sanou, the Director of ITU's Telecommunication Development Bureau, has identified innovation and its linkages to ICTs as one of his key focus areas. He foresees numerous opportunities for innovation in the developing world to empower individuals at a local level to fundamentally shape and improve their lives.

In fact, it is likely that history will demonstrate that the greatest contribution of ICTs to global development is that they provided an enabling platform that exponentially increased the ability of people to create and exchange ideas and knowledge.

Just as the wonders of the brain and human consciousness cannot be explained by studying neurons or how they are connected, the benefits of ICTs for socioeconomic development cannot be understood by simply adding up the numbers of newly connected people. In fact, the collective social and intellectual behaviour that arises out of interconnected networks of people can make these networks perform like rapidly evolving organisms. This phenomenon is only just beginning to be understood in a new and emerging scientific discipline called 'network science' that seeks to understand the principles and behaviours governing networked behaviour.

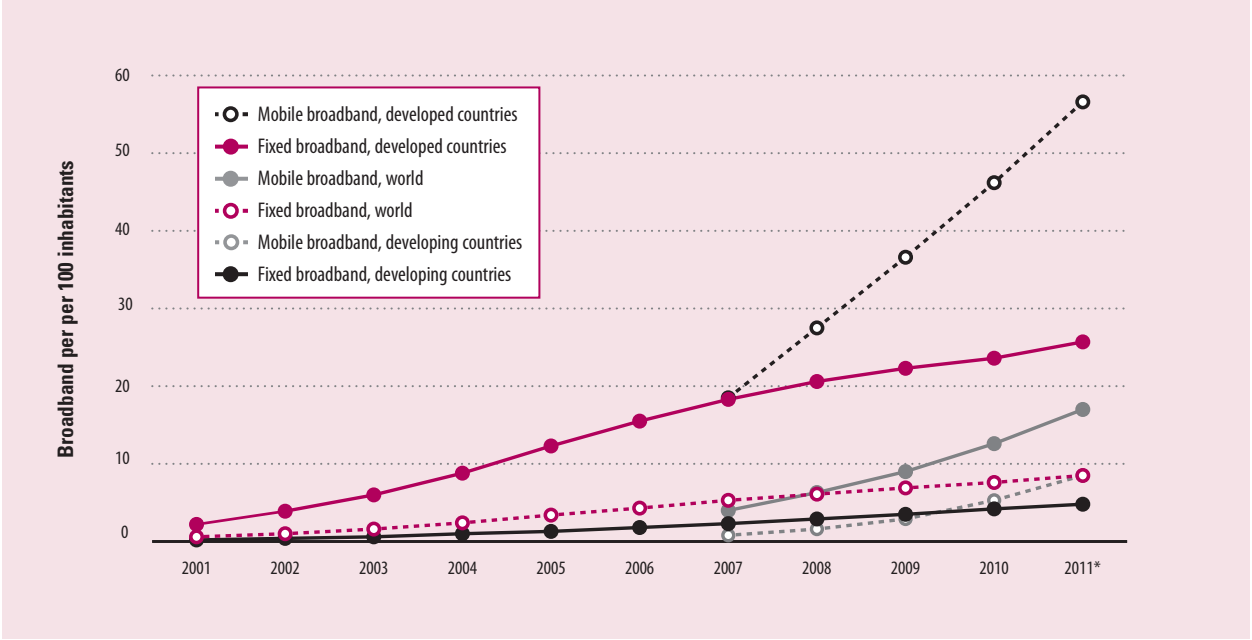
The advent of broadband: A platform for inevitable innovation

Government policy makers and investors are now directing considerable attention towards improving access to the Internet through broadband networks—whether these use wired or wireless connections. Although fixed broadband subscriptions have more than doubled in the past five years, Figure 3 shows that fixed broadband penetration in developed countries has risen to 26% at the end of 2011, but lags at less than 5% penetration in developing countries. Is there a solution on the horizon that could help? Mobile broadband seems to hold a large part of the answer.

Figure 3 shows the growth of mobile broadband over the last five years, which can only be characterized as a success story. Even having entered the ICT landscape so recently, globally mobile broadband has already surpassed twice the penetration of fixed broadband subscriptions. Remarkably, in just a few years, it has surpassed (at 17%) the global penetration of fixed telephone lines (at 16.6%), which was built up over more than 100 years.

The growth of mobile broadband comes at the same time that a number of studies demonstrate that mobile technologies, particularly

Figure 3: Global fixed and mobile broadband growth, 2000–11 (penetration)



Source: ITU World Telecommunication /ICT Indicators database.
Note: The developed/developing country classifications are base on the UN M.49 (the standard used by the United Nations for statistical purposes); see http://www.itu.int/ITU-D/ict/definitions/regions/index.html.
* Estimate.

in developing countries, can boost socio-economic development and, in particular, improve development outcomes in fields such as health, education, agriculture, employment, crisis prevention, and the environment.[5]

In other words, even with the relatively low-tech, low-bandwidth, and low-cost handsets widely used in developing countries, mobile technologies have acted as a platform for innovation. For example, Africa's rapid embracement of mobile—with more than 430 million subscriptions (36 times its number of fixed telephone lines)—has created an enabling platform that was sorely needed. With other infrastructure systems lacking, innovators have been quick to build out new services such as mobile banking, agricultural news sharing, and m-health applications. If this can occur with simple infrastructure and rudimentary access to the Internet, it is not too difficult to imagine what the impact of ubiquitous mobile broadband access to the Internet would be through the next generation of ever-more-affordable smartphones, phablets,[6] and tablets.

How to maximize the innovation benefits of ICTs

Because they cut across so many areas of social and economic policies, ICTs have been at the convergence of a complex array of commercial, political, and diplomatic strategies and actions. Maximizing the positive impact of ICTs for fostering innovation for development needs will therefore require deliberate and concerted efforts to ensure that all relevant players, private and public, are brought to the same table.

An example of recent efforts of that kind can be found in the area of broadband communications. To proactively address the 'broadband gap', ITU and UNESCO recently set up the *Broadband Commission for Digital Development* in response to UN Secretary-General Ban Ki-Moon's call to step up UN efforts to meet the Millennium Development Goals (MDGs).[7] The Commission was established in May 2010, five years after the World Summit on the Information Society (WSIS) and ten years after the launch of the MDGs. The Commission is attempting to boost the importance of broadband on the international policy agenda and believes that expanding broadband access in every country is key to accelerating progress towards the MDG targets of 2015. It is outlining practical ways in which countries—at all stages of development—can

Box 2: The targets of the Broadband Commission

In its report *Broadband for the Global Good*, issued in conjunction with the Broadband Leadership Summit in October 2011, the Broadband Commission issued a set of four targets that countries around the world should strive to meet in order to ensure that their populations fully participate in tomorrow's emerging knowledge societies:

1. **Making broadband policy universal:** By 2015, all countries should have a national broadband plan or strategy or include broadband in their Universal Access Service Definitions.
2. **Making broadband affordable:** By 2015, entry-level broadband services should be made affordable in developing countries through adequate regulation and market forces (for example, amounting to less than 5% of average monthly income).
3. **Connecting homes to broadband:** By 2015, 40% of households in developing countries should have Internet access.
4. **Bringing more people online:** By 2015, Internet user penetration should reach 60% worldwide, 50% in developing countries, and 15% in Least Developed Countries (LDCs).

SOURCE: Broadband Commission, 2011.

improve their broadband infrastructure in cooperation with the private sector.

It is clear that a broadband revolution will not arrive by itself. It must be accompanied by enlightened policies and concerted efforts to bridge the gap for the 74% of people in developing countries who have yet to use the Internet. The international targets proposed recently by the Broadband Commission in its *Broadband for the Global Good* report (Box 2) suggest practical reference points to make the broadband revolution truly global.[8]

What about the money?

Is there conclusive and quantitative proof that economic benefits will directly result from broadband rollout? This is a question that offers a number of challenges for researchers. First, the deployment of broadband has happened over a very short time scale. As a consequence, the time series data for broadband adoption are much shorter than for other technologies, such as voice communications. Second, only a few countries focused early on the potential economic impact of the Internet and broadband and began to collect statistics, so the data available for worldwide comparison are sparse. Third, since broadband is essentially an access technology for data communications, it has demonstrable economic effect only in combination with the broader adoption and use of ICTs and the subsequent implementation of organizational or process changes in enterprises or governments that follow. In sum, although a number of studies suggest broadband's positive correlation with economic growth, it is also difficult to unequivocally argue that broadband is not itself a side benefit of overall development.[9]

A more compelling case can be made that broadband is critical as an enabling platform for innovation and development. This is just beginning to be more widely understood in the context of supporting developmental needs and access to knowledge. For example, a 2010 Ministerial Report on the OECD Innovation Strategy observed:

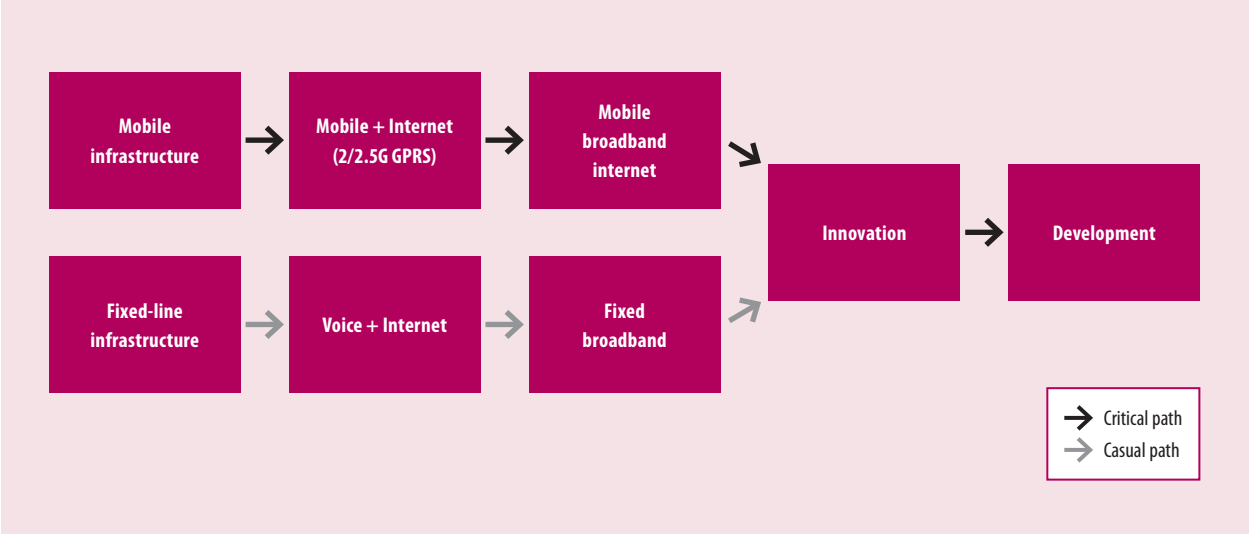
> Today, high-speed communication networks support innovation throughout the economy much as electricity and transport networks spurred innovation in the past. Governments should promote information and communication technologies (ICTs) as general-purpose platforms for innovation and knowledge sharing by upholding the open, free, decentralized and dynamic nature of the Internet.[10]

Some preliminary studies of the correlation of broadband with innovation are emerging, with case studies demonstrating how broadband has triggered entrepreneurial activities in developing countries and fulfilled developmental needs.[11] But the real innovation revolution is yet to come. This revolution will be based on mobile broadband, which holds the key to convergence between the two major communications revolutions whose genesis was in the early 1990s: the Internet and the mobile phone.

Triggering inevitable innovation: A basis for action

The beginning of this chapter considered how most innovations are incremental and built on foundations of other knowledge, technologies, or platforms. As noted, the numerous parallel occurrences of essentially the same invention suggests that what is really important is a set of enabling knowledge and conditions at a period in history that enables incremental innovations to emerge. Also discussed was how both the Internet and mobile phones have acted as enabling platforms for innovation and how mobile has impacted the developing world. It is therefore logical to reflect on how the convergence of Internet and mobile telephony technologies will occur in developing countries and what it may mean for innovation for development.

Figure 4: Evolution of ICT-innovation linkages in developing economies



Note: 'Mobile + Internet' refers to first-generation packet mobile data services with limited data rates; GPRS = general packet radio service.

As stated previously, along any evolutionary path, there are set points where an underlying direction becomes clearer and trend signs get stronger. One can clearly identify an emerging 'critical path' by which the ICT ➡ Innovation ➡ Development chain will be accelerated and trigger an era of *inevitable innovations* that will push forward the global development agenda (Figure 4). This is most likely to occur via mobile broadband, which can be logically anticipated from the enormous differences of penetration of mobile versus fixed telephony infrastructure in developing countries.

As an example, let us consider Africa at the end of 2011 to show why the future is mobile broadband. With a fixed line infrastructure of only 12 million lines and just 1 million broadband connections, future possibilities for fixed-line broadband growth are extremely limited. On the other hand, this can be contrasted with Africa's 433 million mobile subscriptions and 31 million mobile broadband subscriptions. Clearly the critical path for ICT growth in developing countries appears to be through mobile broadband.

If this scenario is correct, it is highly probable that many inevitable innovations that support the global development agenda will flourish along the critical path emerging from mobile broadband. Many of these innovations may initially appear to be 'low-tech' in nature, but will likely become more sophisticated as available bandwidth slowly grows. Whatever their degree of technological sophistication, such innovations are likely to surface first in developing countries where mobile devices will be the primary enabling platform and development needs are the most acute.

Skills, skills, and skills

A common tendency among policy makers and researchers is to attempt to guide outcomes and foresee solutions that describe entire ecosystems of platforms, services, and applications. But it would be wrong to try to 'over-engineer' the future of ICT-based or ICT-enabled innovations in emerging and developing economies. History has already demonstrated the remarkable creativity and surprising development-oriented innovations that have emerged once access to ICTs is made available. A more productive path would consist of (1) enabling innovative individuals to flourish, develop, and succeed locally; and (2) 'organize serendipity' by fostering multi-stakeholder and interdisciplinary approaches as often and in as many different areas as possible.

Clearly, pushing forward the broadband agenda is only one area in which a multi-stakeholder approach should be fostered. Enabling larger numbers of players to fully grasp the challenges and opportunities of emerging trends is paramount to maximizing global benefits from such trends. There are many new exciting areas that could be considered for such an approach in the

future, including cloud computing, open innovation, crowd-sourcing, and big data.

Enabling local knowledge and local brains to connect and mesh with the experience and talents of other countries, regions, traditions, and cultures will require steady efforts from the international community to encourage the development of innovation skill sets on a worldwide basis. ICTs can notably play a crucial role in allowing such skills to cross-fertilize, combine and re-combine, while enhancing their power to generate new innovations that will best address the local dimensions of development.

The relationship between ICTs and innovation and its foreseen positive impact on development suggests that policy debates about the importance of advancing the broadband agenda should shift from 'pipes and plumbing' to the critical importance of enabling an interconnected world of creativity, ideas, and knowledge that can trigger an age of inevitable innovations. Breaking with recent past and enabled by broadband access to ICTs and knowledge combined with local needs, many new innovations will emerge in developing countries. It is these bottom-up ideas that will bring exponential benefits and contribute more to the global development agenda than just about anything else we can do.

Notes

1 Ogburn and Thomas, 1922, p. 83.

2 Raggett et al., 1998.

3 ITU, 2011.

4 The ITU standards sector recently created a 'Focus Group on Innovation'. Part of the mandate of this group is to highlight cases of 'reverse innovation', a term introduced by Professors Vijay Govindarajan and Chris Trimble of Dartmouth College and GE's Jeffrey R. Immelt. Reverse innovation focuses on the needs and requirements for low-cost products and services in developing countries. In turn, these products and services may be made available in developed countries.

5 For an example of such a report, see UNDP, 2012.

6 'Phablet' is a term formed from the words 'phone + tablet' coined to describe handheld devices that are larger than a smartphone but smaller than a conventional tablet computer.

7 Information about the Broadband Commission is available at http://www.broadbandcommission.org.

8 Broadband Commission, 2011.

9 See Katz, 2012, for a more detailed discussion of the economic impact of broadband.

10 OECD, 2010, p. 2.

11 An interesting ITU study on the relationship of broadband to innovation was presented at the last ITU Global Symposium for Regulators and can be found at Best and Taylor, 2011.

References

Best, M. L., and M. Z. Taylor. 2011. 'Broadband Enabled Innovation'. Global Industry Leaders' Forum 2011 Discussion Paper. ITU. Available at http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR11/documents/GILF01-Broadband-E.pdf.

Broadband Commission. 2011. Broadband for the Global Good. Available at http://www.broadbandcommission.org/Documents/BD-BBLS-report-2012.pdf .

ITU (International Telecommunication Union). 2011. 'Key ICT Indicators for Developed and Developing Countries and the World (Totals and Penetration Rates)'. *ITU-D: ICT Data and Statistics: Key Global Telecom Indicators for the World Telecommunication Servic Sector,* updated 16 November 2011. International Telecommunication Union. Available at http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html.

Katz, R. 2012. *Impact of Broadband on the Economy: Research to Date and Policy Issues, April 2012. Broadband Series.* Geneva: ITU. Available at http://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports_Impact-of-Broadband-on-the-Economy.pdf.

OECD (Organisation for Economic Co-operation and Development). The OECD Innovation Strategy: Key Findings. Available at http://www.oecd.org/dataoecd/51/28/45326349.pdf.

Ogburn, W. and D. Thomas. 1922. 'Are Inventions Inevitable? A Note on Social Evolution'. *Political Science Quarterly* 37 (1): 83–98.

Raggett, D., J. Lam, I. Alexander, and M. Kmiec. Raggett on HTML 4. Edinburgh Gate, England: Addison Wesley Longman. Available at http://www.w3.org/People/Raggett/book4/ch02.html.

UNDP (United Nations Development Programme). 2012. *Mobile Technologies and Empowerment: Enhancing Human Development through Participation and Innovation.*. New York: UNDP.

The Internet: An Unprecedented and Unparalleled Platform for Innovation and Change

Lynn St. Amour, Internet Society

The Internet has evolved into a key enabler of today's economy and society. It has become integral to business, communication, education, and community building, as well as an essential tool in social life, empowering individuals and communities in ways previously unimagined. The Internet is bringing about unprecedented growth in global citizenry and an increasing diversity of stakeholders across an ever-broadening set of issues and causes. The Internet, directly and indirectly, is changing governance structures and bringing new levels of openness, accountability, and participation, effecting change around the globe. These changes are possible because the Internet encourages and facilitates the coming together of individuals, communities, entrepreneurs, activists, and many others in new and innovative ways.

In 2009, the Internet topped Knowledge@Wharton's list of the 'Top 30 Innovations of the Last 30 Years'. The panel of judges ranked the Internet number one, in part because it 'is an innovation that created an industry and subsequent new technologies, making it especially important.'[1] One of the judges noted not only the Internet's role as a facilitator of information sharing, but also—perhaps more importantly—its role as a catalyst of innovation: 'The Internet took away a major constraint to accessing knowledge and sharing knowledge. But a bigger innovation is one that spawns other innovations.'[2]

The Internet is perhaps the greatest enabler of innovation linkages among individuals, communities, businesses, the public sector, and the myriad of new structures—such as social and professional networks—that shape the way innovation occurs and is perpetuated around the globe today.

The genius of the Internet

The Internet's founding fathers were very deliberate in the networking model they devised. Developed primarily as a research and data-sharing tool, their genius was that they did not prescribe a technology or networking architecture. Rather they envisaged an open platform that would allow the sharing of information across networks, regardless of their particular architectures. The platform would be built around open standards and protocols developed in open fora. This vision of an Internet that would embrace existing and future networks was remarkable:

> The Internet as we now know it embodies a key underlying technical idea, namely that of open architecture networking. In this approach, the choice of any individual network technology was not dictated by a particular network architecture but rather could be selected freely by a provider and made to interwork with the other networks through a meta-level 'Internetworking Architecture'.[3]

When one considers more traditional networking approaches—such as the hierarchical or centralized telephone network and technology development processes that are built on retaining rights for commercial leverage—one realizes that the approach taken by the founders of the Internet was all the more revolutionary, even inspiring John Perry Barlow to issue his famous 'Declaration of the Independence of Cyberspace'.[4] This fundamentally different approach to networking has shaped the Internet's nature and helped motivate an unprecedented change in the way individuals and communities now view rules and rights as they pertain to networks and content, as Stephen Crocker noted in his *New York Times* op-ed 'How the Internet Got Its Rules':

> It probably helped that in those days we avoided patents and other restrictions; without any financial incentive to control the protocols, it was much easier to reach agreement. . . . This was the ultimate in openness in technical design and that culture of open processes was essential in enabling the Internet to grow and evolve as spectacularly as it has. . . . Put another way, we always tried to design each new protocol to be both useful in its own right and a building block available to others. We did not think of protocols as finished products, and we deliberately exposed the internal architecture to make it easy for others to gain a foothold. This was the antithesis of the attitude of the old telephone networks,

which actively discouraged any additions or uses they had not sanctioned.[5]

In his seminal 2009 speech 'Preserving a Free and Open Internet: A Platform for Innovation, Opportunity, and Prosperity' given at the Brookings Institution, Federal Communications Commission Chairman Julius Genachowski asked, rhetorically, why the Internet had been so successful in encouraging innovation and growth. The answer had a lot to do with those early pioneering days:

> A big part of the answer traces back to one key decision by the Internet's original architects: to make the Internet an open system. . . . Historian John Naughton describes the Internet as an attempt to answer the following question: How do you design a network that is 'future proof'—that can support the applications that today's inventors have not yet dreamed of? The solution was to devise a network of networks that would not be biased in favor of any particular application. The Internet's creators didn't want the network architecture—or any single entity—to pick winners and losers. Because it might pick the wrong ones.[6]

Catalysing business innovation and economic growth

The networking technology breakthrough that sparked the Internet phenomenon was to remove the physical barriers between networks and establish common protocols to share information across diverse local network computing environments. The Internet has also adapted and evolved, and has facilitated and embraced significant technological innovations:

> The Internet has changed much . . . since it came into existence. It was conceived in the era of time-sharing, but has survived into the era of personal computers, client-server and peer-to-peer computing, and the network computer. It was designed before LANs [local area networks] existed, but has accommodated that new network technology, as well as the more recent ATM [asynchronous transfer mode] and frame-switched services. It was envisioned as supporting a range of functions from file sharing and remote login to resource sharing and collaboration, and has spawned electronic mail and more recently the World Wide Web.[7]

To this list one might add other, more recent and important developments such as Creative Commons,[8] the Internet of Things,[9] and Cloud Computing.[10] Indeed, the mission of Creative Commons 'is nothing less than realizing the full potential of the Internet—universal access to research and education, full participation in culture—to drive a new era of development, growth, and productivity.'[11]

This networking breakthrough was not just about technology. The Internet also brought down barriers to doing business, to collaboration, and to innovation. By spurring creativity and competition, the Internet has had a profound impact on economies around the globe. In 2008, the Organisation for Economic Co-operation and Development noted how innovation linkages that are the result of the Internet have brought substantive growth and restructuring to industries of all sizes:

> The Internet and information and communications technologies (ICTs) are profoundly changing how research and creative activity are undertaken, for example by enabling distributed research, grid and cloud computing, simulation, or virtual worlds. They are also changing the organisation of science, research and innovation, by linking the creativity of individuals and allowing organisations to collaborate, pool distributed computing power and exploit new ways of disseminating information. This is fostering competition, stimulating the restructuring of industries and institutions, with potentially major impacts on innovation and growth. ICTs and the Internet account for a significant share of total research and development, patent applications, firm start-ups and venture capital. The global nature of the Internet is further spurring the pace and scope of research and innovation, and encouraging new kinds of entrepreneurial activity.[12]

Information and data are now more available to anyone with access to an online connection through new platforms such as the peer-reviewed Wikipedia; social or professional networks such as Facebook and Linked-in;[13] and innovative new mechanisms such as crowd-sourcing, where work usually undertaken by a specialist is instead undertaken by a group of individuals—a crowd. Such methodologies for information sharing would not be possible without the common platform that the Internet provides. Networked communities of interest have changed the nature of dialogue and research, making information available on an unprecedented scale so that any party can monitor it, access it, comment on it, and forward it on to others. The opportunities for 'permission-less innovation' have increased manyfold. [14]

Measuring the actual impact of the Internet on economic growth has always been challenging. But in 2011, the McKinsey Global Institute published 'The Great Transformer: The Impact of the Internet on Economic Growth and Prosperity', a report that researched the Internet and economic vitality:

> The Internet accounted for 21 percent of the GDP growth in mature economies over the past 5 years. In that time, we went from a few thousand students accessing Facebook to more than 800 million users around the world, including many leading firms, who

regularly update their pages and share content. While large enterprises and national economies have reaped major benefits from this technological revolution, individual consumers and small, upstart entrepreneurs have been some of the greatest beneficiaries from the Internet's empowering influence. If Internet were a sector, it would have a greater weight in GDP than agriculture or utilities.[15]

Importantly, the McKinsey report notes that future innovation and change brought about by the Internet will be significant—for everyone:

. . . we are still in the early stages of the transformations the Internet will unleash and the opportunities it will foster. Many more technological innovations and enabling capabilities . . . are likely to emerge, while the ability to connect many more people and things and engage them more deeply will continue to expand exponentially.[16]

Building communities and catalysing social innovation and change

Just as the Internet is facilitating linkages among businesses, entrepreneurs, and other entities integral to today's economies, it is also facilitating and encouraging linkages among a diversity of social entities, communities, academic organizations, and others, delivering unprecedented levels of social and activism-related collaboration and interaction around the globe. As the fathers of the Internet noted in their Internet history: 'The Internet is as much a collection of communities as a collection of technologies. . . . '[17]

The like-minded enthusiasts—academic, scientific, and engineering experts—who built and managed the Internet in its early days not only worked to develop technical standards and establish the basic functionality of the Internet, but they also helped shape the initial spirit of the Internet—one based on the principles of sharing resources, of open access, and of open standards. These tenets quickly evolved into a credo that embraced both simple, open structures reflecting principles of freedom of expression and information, and consultation processes with a broad community of stakeholders.

This openness encouraged ever-more diverse communities to use and build on the Internet as a platform for communication, creativity, and collaboration. The Internet user's horizon is almost limitless: a citizen with an Internet connection becomes a global citizen, instantly connected to individuals and communities and instantly aware of issues, happenings, and change at local, national, and international levels. Issues or interests that might once have been the purview of the few are now within the grasp of the many.

In 1992, when Vint Cerf and Bob Kahn announced the launch of the Internet Society, they remarked that 'a global renaissance of scientific and technical cooperation is at hand'. While that statement was true then, and remains true today, the announcement was incomplete. What was not said—what was perhaps unforeseen—was the degree to which the Internet would bring about unprecedented linkages and collaboration among individuals and communities across all sectors of society and the degree to which such collaborative efforts could and would address global challenges.

There are myriad examples of community-building and knowledge-sharing that address challenging issues around the globe. One such example, which brings together a diverse range of global stakeholders, is the Research4Life program, a public-private partnership of the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), the World Intellectual Property Organization (WIPO), Cornell and Yale Universities, the International Association of Scientific, Technical & Medical Publishers, and Microsoft. The partnership's innovative goal is to make available online scientific knowledge to those countries that typically would have very limited access to it:

The concept of Research4Life is simple: research in health, agriculture and the environment is better informed when it is based on the most recent, high quality and relevant scientific knowledge. Research4Life applies this, delivering knowledge to the world's poorest countries. Research4Life is empowering universities, colleges, research institutes and government ministries as well as non-governmental agencies and hospitals, with access to scientific knowledge that was never before imagined.[18]

The Internet is also being used to strengthen the well-being of existing communities in developing countries. The Millennium Villages project, for example, is enhancing the economic viability of communities in the developing world. Led by Jeffrey Sachs and the Earth Institute at Columbia University, the program is also designed to meet the UN's Millennium Development Goals (MDGs). Although technology and Internet access are but a part of the development equation, Sachs notes how they provide some of the key building blocks—innovation linkages—for meeting the MDGs and particularly how important they are to spurring innovative and sustainable multi-stakeholder approaches to development:

Information technologies such as mobile phones, Internet connections in schools and

community centres, and radio can enable training of health, education, agriculture and water personnel. They can allow better management of health delivery systems, and aid farmers by providing timely information on markets, prices and weather. ICT can be used to improve access to credit and remittances, as well as information on creating and managing businesses. Radio instruction and Internet access can further education, while better access to communications can empower and increase the impact of stakeholders' voices.[19]

These examples epitomize the innovation linkages that the Internet encourages and facilitates between diverse but similarly inspired organizations and communities. These linkages result in new ways of thinking and doing, effectively spurring innovation across all realms of economy and society.

Driving innovation and change in governance and political processes

As individuals and communities communicate, organize, and take action, governments and the governance models that have been taken for granted for so long are coming under pressure. The Internet, the global economy, real-time news, and an explosion in actors and stakeholders are among many factors challenging political processes as never before. The governance stage is now crowded with nations, stakeholders, communities and others clamouring for a role and for recognition. Innovative linkages among diverse but aligned stakeholders and communities are bringing change to existing governance and engagement models and forcing governments to adapt the way they interact with all players, from the local citizen to geopolitical partners on the world stage.

At a 2003 Aspen Institute Roundtable on how the Internet changes the powers of the nation-state and the conduct of international relations, it was noted that:

> The Internet has greatly lowered the costs of transmitting information, enabling people to bypass traditional intermediaries whose power revolved around the control of information: national governments, the diplomatic corps, transnational corporations, and news organizations, among others. As a result, nongovernmental organizations (NGOs), academic experts, diasporic ethnic communities, and individuals are using the Internet to create their own global platforms and political influence. As the velocity of information increases and the types of publicly available information diversify, the very architecture of international relations is changing dramatically.[20]

These issues are also reflected in the discussions being held at the international level on the future of Internet governance—in other words, how the Internet is managed and by whom. The Internet Governance Forum (IGF) is the forum in which a diversity of stakeholders—governments, businesses, civil society, the Internet community, and so on—come together to discuss issues of relevance to Internet policy and governance. This model is an innovation in international policy circles, and its informality helps to build linkages not just between diplomats and technologists, but among all stakeholders. The minimal structuring has encouraged interaction on 'neutral' ground—outside the parameters of typical intergovernmental structures:

> The Internet Governance Forum (IGF) serves to bring people together from various stakeholder groups as equals, in discussions on public policy issues relating to the Internet. While there is no negotiated outcome, the IGF informs and inspires those with policy-making power in both the public and private sectors. . . . The IGF is also a space that gives developing countries the same opportunity as wealthier nations to engage in the debate on Internet governance and to facilitate their participation in existing institutions and arrangements.[21]

The ways in which stakeholders engage with governments is also changing. Innovative and unprecedented alliances and partnerships built using the Internet will have an increasingly significant impact on how government undertakes its policy making. Recent legislative efforts to combat intellectual property theft (such as the illegal downloading of content and the production and selling of counterfeit goods) in the United States have been shelved because of the groundswell of opposition. The Stop Online Piracy Act (SOPA) and the PROTECT IP Act (PIPA) were two bills in the US Congress that were withdrawn because of the concerted efforts by a truly multi-stakeholder effort, ranging from entrepreneurs to law professors, and from think tanks and nonprofit organizations to businesses.[22] The proposals would have mandated domain name system blocking and filtering by Internet service providers to protect the interests of copyright holders. Although many agreed that combating illicit online activity was an important public policy objective, opposition focused on concerns that such bills would undermine the viability of the Internet as a platform for innovation by compromising its global architecture.[23] The scale of the protest surprised many, including the sponsors of the bills, which were already losing support on the Hill:

> On 18th January 2012, 30 million US citizens saw Mozilla's Firefox 'blackout' start-up page; 1.8 million visited its SOPA information page, and 360,000 people emailed congress about the issue. Other internet giants participating in the anti-SOPA campaign boast similarly impressive figures: 13 million people viewed

Google's anti-SOPA page, resulting in 7 million petition signatures; whilst Twitter saw 2.4 million SOPA-related tweets in 16 hours.[24]

Opposition to the legislation has demonstrated that ill-conceived policy making is likely to come under increasing pressure from concerned communities of interest, fuelled by the Internet, e-mail, and social media. The civil and corporate protest against SOPA and PIPA is but one example of the Internet producing or contributing to innovative change in the political landscape. Citizens can bring about substantive political change in a myriad of ways, largely enabled by the Internet: Votizen is an innovative platform designed to leverage social networks in political campaigning and elections;[25] Change.com is a platform that encourages users to start campaigns for social change;[26] and governments are increasingly implementing e-petitions—a medium for the citizen to promote an issue or cause for debate.[27]

Empowered and involved citizens and communities, collaborating and cooperating in many innovative ways around the globe—and using the Internet as their communication medium—are bringing about a pervasive and global awareness of social and political issues. In 2011 the world was witness to an unprecedented groundswell of civic involvement in the future of society. The Internet helped precipitate an increased freedom for millions and contributed to changing the political and social structures of nations in the Arab world. Mundane mobile phones linked to the Internet brought images of change to the world—those uploading the images and those viewing them may have been on different sides of the world but they were united in their concern and their resolve:

> Alongside traditional activism and action, the tools of the trade today are the internet (for information dissemination and news), social media (to connect and coordinate), mobile phones (to capture what happens) and digital, particularly satellite, television to report it.[28]

Conclusion and policy considerations

The genius of the Internet is that it is an open platform for boundary-less innovation, linking diverse and diffuse players in the quest for business success, community development, and social and political progress. It breaks down barriers, encouraging social and business entrepreneurs and businesses of all sizes, regardless of their location. These innovation linkages create unparalleled opportunity by facilitating and encouraging creativity and collaboration.

Just as importantly, the Internet also encourages and facilitates citizen activism by giving a voice to Internet users globally. The Internet's ubiquity enables partnerships and networks to address issues once thought to be out of reach or too difficult to tackle. Effectively, the linkages the Internet spurs are catalysing new and innovative ways of addressing what were once seemingly intractable challenges.

The Internet has brought about unprecedented innovation—in technology, economy, society, and governance. Yet, as the McKinsey report *The Great Transformer* suggests, the Internet has so much more to offer and more can be done to harness its benefits. To do so, that report suggests that policy makers should look to measures that foster competition, encourage innovation, develop human capital, and build infrastructure.[29]

But the Internet needs more than just good policy. The continued success of the Internet is dependent upon it remaining open, and on all of us nurturing it, building on it and participating in its development and management processes. Together, we can help shape the Internet's evolution and safeguard its invaluable role as a platform for innovation, economic and social development, allowing it to flourish for the benefit of all humankind.

Notes

1 Knowledge@Wharton, 2009.
2 Knowledge@Wharton, 2009.
3 Leiner et al., 2012.
4 Barlow, 1996.
5 Crocker, 2009.
6 Genachowski, 2009.
7 Leiner et al., 2012.
8 See http://creativecommons.org/about.
9 See http://en.wikipedia.org/wiki/Internet_of_Things.
10 See http://en.wikipedia.org/wiki/Cloud_computing.
11 Creative Commons vision statement, available at http://creativecommons.org/about.
12 OECD, 2008.
13 See http://en-gb.facebook.com/ and http://www.linkedin.com/static?key=what_is_linkedin.
14 Marsan, 2011.
15 Manyika and Roxburgh 2011.
16 Manyika and Roxburgh 2011.
17 Leiner et al., 2012.
18 Research4Life.
19 Sachs, 2011.
20 Bollier, 2003.
21 IGF, 2011.
22 See netCoalition.com.
23 See Google Take Action at https://www.google.com/landing/takeaction/sopa-pipa/.
24 Cooke, 2012.
25 See https://www.votizen.com/.
26 See http://www.change.org/.
27 See http://epetitions.direct.gov.uk/.
28 Williamson, n.d.
29 Manyika and Roxburgh, 2011.

References

Barlow, J. P. 1996. 'A Cyberspace Independence Declaration.' Memo, 9 February. Available at http://w2.eff.org/Censorship/Internet_censorship_bills/barlow_0296.declaration.

Bollier, D. 2003. *The Rise of Netpolitik: How the Internet Is Changing International Politics and Diplomacy.* A Report of the Eleventh Annual Aspen Institute Roundtable on Information Technology. Washington, DC: The Aspen Institute. Available at http://www.ucm.es/info/sdrelint/ficheros_materiales/materiales0415.pdf.

Cooke, C. 2012. 'The Anti-SOPA/PIPA Campaign and Social Media Strategy', Gorkana Group posting, 31 January. Available at http://www.gorkana.com/measurement-matters/measurement-matters/pr-planning/the-anti-sopapipa-campaign-and-social-media-strategy/#.T8O1MsVqc5s.

Creative Commons. n.d. Creative Commons: About. Available at http://creativecommons.org/about.

Crocker, D. 2009. 'How the Internet Got Its Rules'. *The New York Times,* Op-Ed, 6 April. Available http://www.nytimes.com/2009/04/07/opinion/07crocker.html

Genachowski, J. 2009. 'Preserving a Free and Open Internet: A Platform for Innovation, Opportunity, and Prosperity.' Prepared remarks of Chairman Julius Genachowski, Federal Communications Commission. The Brookings Institution, Washington, DC, 21 September. Available at http://www.brookings.edu/~/media/Files/events/2009/0921_broadband_communications/20090921_genachowski_prepared.pdf.

Google Take Action. 'More About SOPA and PIPA.' Available at https://www.google.com/landing/takeaction/sopa-pipa/.

IGF (Internet Governance Forum). 2011. 'What Is the Internet Governance Forum?' Nairobi, 27–30 September. Background Note Fact Sheet. Available at http://www.intgovforum.org/cms/aboutigf.

Knowledge@Wharton. 2009. 'Top 30 Innovations of the Last 30 Years.' Forbes.com. Available at http://www.forbes.com/2009/02/19/innovation-internet-health-entrepreneurs-technology_wharton.html.

Leiner, B. M., V. G. Cerf, D. D. Clark, R. E. Kahn, L. Kleinrock,D. C. Lynch, J. Postel, L. G. Roberts, and S. Wolff. 2012. 'Brief History of the Internet.' Internet Society: The Internet. Available at http://www.internetsociety.org/internet/internet-51/history-internet/brief-history-internet

Manyika, J. and C. Roxburgh. 2011. *The Great Transformer: The Impact of the Internet on Economic Growth and Prosperity.* McKinsey Global Institute. Available at http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/The_great_transformer.

Marsan, C. D. 2011. 'ISOC Panel Addresses Regulation, Innovation, and the Internet.' *IETF Journal* 7 (2): 8–9. Published by the Internet Society in cooperation with the Internet Engineering Task Force. Available at http://www.internetsociety.org/articles/isoc-panel-addresses-regulation-innovation-and-internet.

netCoalition.com. Stop SOPA/PIPA. Available at http://www.net-coalition.com/wp-content/uploads/2011/12/Opposition_Dec16.pdf.

OECD (Organisation for Economic Co-operation and Development). 2008. 'The Future of the Internet Economy'. OECD Policy Brief, June. Paris: OECD.

Pélissié du Rausas, M., J. Manyika, E. Hazan, J. Bughin, M. Chui, and R. Said. 2011. *Internet Matters: The Net's Sweeping Impact on Growth, Jobs, and Prosperity.* McKinsey Global Institute. Available at http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Internet_matters.

Research4Life. n.d. What Is Research4Life. Available at http://www.research4life.org/.

Sachs, J. D. 2011. 'The Millennium Villages and ICT for Development.' *ITU News* No. 8. Available at https://itunews.itu.int/En/1683-The-Millennium-Villages-and-ICT-for-Development.note.aspx.

Williamson, A. n.d. 'Social Media and the New Arab Spring.' Promoting Democracy, Strengthening Parliament. Hansard Society. Available at http://hansardsociety.org.uk/blogs/edemocracy/archive/2011/04/19/social-media-and-the-new-arab-spring.aspx.

We Are All Content Creators Now: Measuring Creativity and Innovation in the Digital Economy

Derek Slater and **Patricia Wruuck**, Google

In the wake of the recent financial crisis, economic recovery depends on contributions from everyone in society—everyone needs to be an innovator. The good news is that, increasingly, anyone can be an innovator—computers and the Internet are empowering more and more individuals and their communities, creating economic growth and jobs. If the Internet were a sector, it would be larger than agriculture and utilities in many economies today. From 2004 to 2009, the Internet contributed 15% to GDP growth in the United States of America (USA) and on average 21% in mature economies studied by McKinsey Global Institute.[1]

But innovation is not just about science and technology—it is about arts and culture as well. Technological development and the arts have always had a symbiotic relationship. For example, the videocassette recorder (VCR) led to new markets for movies and television, and computer animation was viewed as mainly a cute toy for artists until the animation film studio Pixar.

Understanding the Internet-driven arts and entertainment boom

Today, artists and entrepreneurs use the Internet to create fantastic new things. Just look at services such as iTunes and YouTube, which have launched careers and created entirely new markets that reach a huge audience. The Internet is democratizing innovation, empowering people to create, exchange, and implement new ideas, and to make those ideas available to people all around the world, with minimal barriers to entry.

As a result, more music, video, written works, and other content are published now than ever before.[2] And through a decade of economic and technological upheaval, the entertainment industry's global revenue grew 50% while consumer spending also increased.[3] The global music industry alone was valued at US$168 billion in 2010—up from US$132 billion just five years earlier[4] —and, according to data from PricewaterhouseCoopers and IDATE, the value of the global entertainment industry increased from US$449 billion in 1998 to US$745 billion in 2010.[5]

That increase is significant not only because of its size but also because of how it was measured. Some of the rise is the result of video-gaming. Traditionally, video-gaming would not have been considered to be part of the arts and entertainment sector, but definitions of 'art' are always evolving. Though this might have seemed bizarre only a short time ago, this year the Smithsonian American Art Museum in Washington, DC hosted an exhibit on 'the art of video games.'[6] Thus, as video gaming has evolved, so too have measures of the arts and entertainment.

Such measures need to evolve so that they can better account for the Internet's economic and social contributions to creativity. If we want to measure and harness the full potential of the Internet for innovation, we need to get 21st-century metrics for creativity right.

The Global Innovation Index (GII) has been a leader in this conversation. In its 2011 edition, the GII articulated the need to better measure creativity in the innovation process.[7] This year the GII goes further, including a number of new data points and establishing a separate sub-pillar to measure digital creativity. In doing so, it contributes to an active debate centring on how to best account for creativity in the digital age.

In this chapter, we ask—and attempt to answer—three questions:

- Why do the arts matter to the 21st-century economy, and how does the Internet empower artists?
- How can we better measure arts and entertainment in the digital economy?
- How can public policy harness the Internet to empower artists and fans?

We do not claim to have all the answers, nor do we claim to have quick fixes. Rather, we see this as a conversation that needs much more

thorough research and analysis, and we hope that, by posing these questions, we can contribute to that discussion.

We do, however, have one central thesis: it is critical to complement traditional measures with new ones that take into account the full range of creative activity that is taking place online. Robust data are the bedrock of public policy, and we cannot measure the information society by using industrial society metrics.

The economic contribution of arts in the digital economy

Beyond their social and cultural value, artists and the creative business ecosystem around them contribute to the economy in many ways, both direct and indirect. It is important to understand both types—and how the Internet has been a strong driver of growth across the board.

Attempts to estimate direct economic impact look mainly at the contribution of creative industries to GDP and employment. Depending on the sectoral definitions used to delineate 'creative industries',[8] their contribution to GDP tends to range between 2% and 6%.[9] To give but a few recent examples, creative and cultural industries accounted for a share of 2.6% in GDP for Germany (2008) and for 2.89% of gross value-added in the United Kingdom (2009).[10] Their contribution amounts to about 3% of GDP in the European Union[11]—a higher share than sectors such as food and beverages, textiles, chemicals, or rubber and plastics industries.[12] The creative and cultural industries are also a significant source of employment. Around 6.4 million people in Europe were employed in companies that belong to creative and cultural industries in 2009.[13] Moreover, the creative sector often provides high-quality jobs with a high level of fulfilment and personal life satisfaction.

Mapping creative services into national accounting and occupational statistics is not a straightforward exercise, however. Besides availability, reliability, and comparability of data,[14] organizational and operational peculiarities play a role. Many people work on creative projects on a full-time, part-time, or variable basis and/or are self-employed. These structures are challenging when dealing with national accounting and employment statistics.[15] With the Internet empowering anyone to create content at an unprecedented scale and scope, identifying ways to measure their contributions becomes all the more important.

Different definitions of creative industries coexist (Table 1; see UNCTAD/UNDP 2010 for an overview). Rather than coming up with yet another alternative definition, we focus on increasing our understanding of the *evolution* of creative industries today.

The Internet has been a strong driver of recent growth. Revenues of the recorded music industry are based on digital sales to a greater extent than the film, magazine, and newspaper industries combined.[16] Global digital music revenue grew by estimated 8% to reach US$5.2 billion in 2011, a faster rate than in 2010;[17] revenue from Web-to-television video content is estimated to grow from US$2 billion to over US$17 billion by 2014 for the USA alone;[18] and e-book sales have grown from 3% to 10% of the consumer book market and are forecasted to reach close to US$10 billion by 2016, up from US$3.2 billion globally in 2011.[19]

It is too often presumed that digital growth is a net negative, 'cannibalizing' markets and reducing content creators' profits. Clearly, some of the revenue growth represents substitution of sales that previously happened offline, and revenues do not equal profits. That said, sales revenues can decrease while both artists' profit and consumer surplus increase, given changes in technology. This possibility needs to be taken into account when measuring technology's impact.

Consider recorded music, for instance. Approximately half of the cost to the consumer of a typical compact disc (CD) traditionally went to production and distribution costs.[20] Today, thanks to online platforms, the cost of an album is less, but this reduction does not necessarily represent lost *profits* to the producer of the content in all cases. Instead, it may represent cost savings that are being captured by producers and/or consumers.

The rapid decline of costs to producers has another important consequence: individual artists have many more opportunities to find an audience and make money. To be sure, the importance of traditional intermediaries such as the record labels and movie studios has not been eliminated. But artists have more choices than ever before: the Internet has created many new ways for artists to produce, distribute, promote, and finance creativity. Consider the following examples:

- *Falling production and distribution costs:* Before the Internet, if you wanted to speak to a large audience, you needed to own a broadcast tower. Now, online services have reduced costs and barriers for everyone.
- *New funding models:* People have successfully used platforms such as crowd-funding websites to raise money. For instance,

Table 1: Models of creative industries: Classification systems

UK DCMS model	Symbolic texts model	Concentric circles model	WIPO copyright model
Advertising	**Core cultural industries**	**Core creative arts**	**Core copyright industries**
Architecture	Advertising	Literature	Advertising
Art and antiques market	Film	Music	Collecting societies
Crafts	Internet	Performing arts	Film and video
Design	Music	Visual arts	Music
Fashion	Publishing		Performing arts
Film and video	Television and radio	**Other core cultural industries**	Publishing
Music	Video and computer games	Film	Software
Performing arts		Museums and libraries	Television and radio
Publishing	**Peripheral cultural industries**		Visual and graphic arts
Software	Creative arts	**Wider cultural industries**	
Television and radio		Heritage services	**Interdependent copyright industries**
Video and computer games	**Borderline cultural industries**	Publishing	Blank recording material
	Consumer electronics	Sound recording	Consumer electronics
	Fashion	Television and radio	Musical instruments
	Software	Video and computer games	Paper
	Sport		Photocopiers, photographic equipment
		Related industries	
		Advertising	**Partial copyright industries**
		Architecture	Architecture
		Design	Clothing, footwear
		Fashion	Design
			Fashion
			Household goods
			Toys

Source: Based on UNCTAD/UNDP, 2010.

Kickstarter has been used for over 20,000 projects, the vast majority coming from content-creating categories: music, film and video, art, theatre, and writing and publishing. About 10% of the films presented at the Sundance Film Festival of independent films received funding this way; by March 2012, successfully funded projects have raised approximately US$175 million.[21]

- *New ways to market:* The arrival of the Internet has allowed innovative approaches to market content to consumers. For example, Topspin is a small tech company that offers artists tools and platforms for online marketing, and they have found that fans pay more and artists earn up to US$20 more revenue per transaction when artists use Topspin's platforms to gather data for better-informed decisions about where to invest for the biggest gain.
- *Social media as promotion:* It used to be that creators would need to invest a lot of money in marketing and promotion. Today, fans are increasingly becoming tastemakers via social media. Research by *GartnerG2* predicted that in 2010 at least 25% of sales would be attributable to features such as fan-to-fan recommendations.[22]

Even if the measurement of the arts and entertainment sector fully takes into account these changes to the choices now available to artists and those in the broader industry, these measures would be incomplete. Metrics that capture the direct output—the total production of art online, including sales revenues or profits—only partially explain why a thriving artistic culture matters to innovation.

Art can act as an *input* for future creativity as well. For example, some of Disney's best-known works (such as *Snow White* and *Pinocchio*) are based on earlier, well-known stories, long out of copyright, that have generated many derivative works. Today professionals and amateurs alike build on one another's work on a massive scale. A modern example is that of the JK Wedding Dance video,[23] which incorporated a popular song by artist Chris Brown, driving sales of the song as well as leading to a parody of the video itself on the television show *The Office*. Many artists choose to make their works available for others to build upon freely. Creative Commons (CC)—a 'nonprofit organization that enables the sharing and use of creativity and knowledge through

free legal tools'[24]—began providing licenses for the open sharing of content only a decade ago, and now more than 400 million CC-licensed works, ranging from music and photos to research findings and entire college courses, are available on the Internet.

Art can also produce positive externalities. For example, Pixar made a fortune from the film *Toy Story*—and they also inspired entire new generations of artists with their innovation. Pixar did not capture all the economic value of this inspiration. It owned the work *Toy Story*, but the company contributed to the pool of human creativity with an idea—the idea that computer graphics could push the boundaries of what movies can be.

Moreover, there is good evidence that both the location and magnitude of economic growth during the second half of the 20th century corresponded to a dramatic rise in what Richard Florida calls the 'creative class'—a category comprising not only scientists and engineers, but also artists.[25] The creative class did more than simply find ways to generate revenue; in an idea-driven economy, the presence of these creative minds in towns and cities helped shape a more innovative populace.

Measuring the arts in the 21st-century economy

Innovation is not a zero sum game—it grows the economic pie and gives more people a seat at the table. To measure that growth, it is important to update and adapt metrics to innovation. Make no mistake: existing measures of traditional creative industry players remain relevant because they continue to play a critical role in the ecosystem. But today artistic creation is far more decentralized, and that means new, complementary measures are needed.

First, creativity metrics must focus more on measuring whether there are sufficient infrastructure and incentives to generate and sustain creative activity. This type of holistic analysis can help advance our understanding of creativity as a process undertaken by individual creators, rather than using an approach that simply measures outputs. The infrastructure for creativity in the digital age can include, for example, the availability of tools that allow artists both to create artistic content and to have access to education about how to use those tools. Relevant incentives may be financial, but there are also non-economic reasons people create. Incentive structures can include legal instruments such as copyright protection as well as other ways of rewarding creativity.

This is a very challenging measurement problem, but there is some low-hanging fruit for researchers to start with. Today, online services provide the infrastructure for creativity, and there is growing evidence that complexity and uncertainty around service providers' responsibility for user-generated content can have a chilling effect on innovation and, thus, creativity.[26] Furthermore, just as it is important to measure how easy it is to start a new business, it is important to measure the transaction costs and time-to-launch for starting a new content service such as the digital music services iTunes or Spotify.[27]

Second, given that outputs will continue to remain relevant proxies, it is important to look beyond traditional GDP-based measures to assess the value generated by artists and creative workers. GDP is the sum of market-based costs, not a measure of welfare. It does not value creative work that occurs for free, and has difficulty in properly accounting for the true value to consumers of content creation financed through advertising, particularly online.[28] In addition, the creative economy generates value through spillovers to other industries, and these can be hard to account for with traditional approaches based on industry's GDP contribution. For example, firms may find it easier to attract skilled people to a place where the arts thrive and vibrant creative businesses can contribute to drive creativity and innovation across the economy.[29]

Furthermore, output metrics need to more rigorously account for the sheer quantity of art being produced. Today, 72 hours of video are uploaded to YouTube every minute,[30] 250 million photos are uploaded to Facebook every day,[31] and there are 440 blogs for every one autobiography available on Amazon.[32] Yet, if one is measuring only traditional, professional distribution channels, this creativity would not be part of the picture.

It is all too common for people to dismiss the abundance of artistic endeavours as merely 'amateur' content with no meaningful economic impact. That is a mistake, and it is worth debunking some common misperceptions.

- *The growth in available content is not limited to non-commercial content; instead, it includes a substantial portion of commercial activity.* There is more music *commercially* released today than ever before. For example, the online distribution service TuneCore—which helps independent artists distribute their works through iTunes, Amazon, and other outlets—releases more music in one day

than any single major recording label in a year.[33]

- *Even though much of this content is enjoyed by very few people, the aggregate impact is substantial.* For example, a given song sold on TuneCore may be purchased only a couple of times. But, aggregated over all the tracks distributed through that service, the songs that are sold add up to significant value.[34]
- *Much of this content may, on average, be of lower quality than content produced by traditional professionals, but today it is easier than ever to find art with qualities customized to one's own unique tastes.* Quality is hard to measure, but one attempt to do so in the context of music suggests that it is as high as ever.[35] Moreover, quality is in the eye of the beholder. You may never listen to the ukulele songs of Julia Nunes—or any ukulele songs for that matter—but the economy and society are clearly better off in a world where she can go online, find her fans, and launch a successful career. Ukulele fans cannot find music like Julia's at the average record store, but on YouTube some of her videos have received millions of viewings.

Last, but certainly not least, we need to take into account the benefit of art to fans. Art for art's sake is not a bad thing, but if we are trying to analyse economic value, we cannot simply look at how producers have fared in the digital age—particularly when the changing cost structure has meant resulted in a windfall of savings. Metrics based on consumer surplus—that is, the difference between willingness (and ability) to pay and the actual price of a good—allow for a better understanding of the value of cultural production to individual consumers and to society at large. Recent analysis shows that consumers particularly value new ways to consume media content. For example, recent research that looks at media consumption in Australia suggests that yearly consumer surplus for online content portals amounts to A$9.2 billion, or A$1,500 per connected household.[36] Obviously, the ability to choose and personalize generates value.

The role of public policy

This chapter has drawn attention to several points that warrant more research to better measure creativity itself and its relation to innovation in the digital age. The GII has made important progress in this direction this year by including measures such as the number of uploads to YouTube or Wikipedia edits.

What role can public policy play to both better measure creativity and determine whether current legal conditions are appropriate? Two possible indicators could be considered for the next GII:

- *Legal conditions and transaction costs to re-use content for inclusion in new art.* Because art is often an input into further creativity, it is important to understand the extent to which it is possible to build on existing material while respecting the rights of the artists of the original work. To do so, one could take a representative sample of works, attempt to license the works for re-use, and measure the transaction costs. It would also be important to take into account the size of the public domain and the availability of materials where transaction costs are near zero—such as works licensed under Creative Commons.
- *Legal conditions necessary and transaction costs to launch new content platforms.* As discussed above, one could measure the transaction costs and time-to-launch for starting a new content service like iTunes or Spotify.[37] Furthermore, it is worth considering evidence of how legal complexity and uncertainty impacts platforms for user-generated content.[38]

There is no one-size-fits-all solution to reach better measuring methods, and people are likely to disagree on the best approach. But everyone can agree that we need to measure the 21st-century creative economy by 21st-century metrics so that today's policies do not stand in the way of tomorrow's innovation and growth.

Notes

1 The sample of mature economies consists of Canada, France, Germany, Italy, Japan, the Republic of Korea, Sweden, the United Kingdom, and the USA. Pélissié du Rausas et al., 2011.

2 This seems obvious to anyone who spends time online, yet some remain skeptical, so we include a few points of validation here. Looking at video, on YouTube alone, more video is uploaded to YouTube in a month than all three major US networks broadcast in the last 60 years: see http://www.youtube.com/t/press_statistics. For music, the fragmented nature of the industry makes it difficult to do a census of music releases. Nevertheless, by nearly any metric, it is plain that there is more music being released than ever before. For example, consider that TuneCore—a service that helps independent artists make their works available through iTunes and other stores—issued 90,000 new releases in 2009. That is nearly as much music as that released by labels, as measured by Nielson. See http://blog.tunecore.com/2010/01/neilsen-says-tunecore-is-responsible-for-100-of-the-music-releases-in-2009-and-oh-yeah-we-are-a-majo.html. For written works, there are more books being published; see the Bowker Industry Report (2009) http://www.bowkerinfo.com/bowker/IndustryStats2010.pdf—and that is before we even start counting blogs and other forms of online writing. See also Masnick and Ho, 2012.

3 Masnick and Ho, 2012.

4 Masnick and Ho, 2012. Note, however, that the IFPI also made some adjustments to their methodology and categorization during the respective period. See Masnick and Ho, p. 25.

5 Masnick and Ho, 2012.

6 See http://americanart.si.edu/exhibitions/archive/2012/games/.

7 Wunsch-Vincent, 2011.

8 There are different approaches to define and hence measure the economic contribution for creative industries. For an introduction, see for example KEA European Affairs, 2006; UNCTAD/UNDP, 2008, 2010.

9 UNCTAD/UNDP, 2008, p. 29, displays estimates based on several studies that have analysed the contribution of the cultural and creative industries to GDP, gross value-added, and employment.

10 Soendermann, 2010 for Germany and dcms, 2011 for the United Kingdom.

11 For cultural industries including the audiovisual sector, see EC, 2011.

12 KEA European Affairs, 2006.

13 Estimate based on 30 European countries; see Power, 2011.

14 Png, 2010; Towse, 2010.

15 KEA European Affairs, 2006; Towse, 2010.

16 UNCTAD/UNDP, 2010.

17 IFPI, 2012.

18 In-Stat, 2010.

19 See Wauters, 2011; Juniper Research, 2011.

20 Fisher, 2004; OECD, 2005.

21 Locke, 2012.

22 McGuire and Slater, 2005.

23 See http://www.youtube.com/watch?v=4-94JhLEiN0.

24 See http://creativecommons.org/about.

25 Florida, 2002.

26 In a recent survey among angel investors in the USA, Le Merle et al. find that increasing liability for digital content providers would have a stronger negative impact on early stage investment than an economic recession; see Le Merle et al. 2011.

27 See Ghafele and Benjamin, 2011.

28 An analysis by McKinsey (2010) suggests that advertising revenues earned through web services underscore the value consumers derive from them.

29 For instance, Bakhshi et al. 2008 and Experian 2007 find evidence that firms with a higher share of inputs from creative industries indeed tend to do better on product innovation.

30 See http://www.onehourpersecond.com/.

31 See http://blog.facebook.com/blog.php?post=10150262684247131.

32 Estimated figures based on Blog Pulse data and Amazon.com. See also https://www.google.com/takeaction/you-are-the-web/.

33 TuneCore is a service that helps independent artists make their works available through iTunes and other stores. In 2009, according to an analysis by Nielsen, it issued 90,000 new releases. That is nearly as much music as that released by labels and does not even account for myriad musicians who are reaching the market directly through MySpace, YouTube, and many other platforms—see Price, 2010.

34 Anderson, 2006.

35 Waldfogel, 2011.

36 Belza et al., 2012. Figures refer to Australian dollars.

37 See Ghafele and Benjamin, 2011.

38 Le Merle et al. 2011.

References

Anderson, C. 2006. *The Long Tail: Why the Future of Business Is Selling Less of More.* New York: Hyperion.

Bakhshi, H., E. McVittie, and J. Simmie. 2008. *Creating Innovation: Do the Creative Industries Support Innovation in the Wider Economy?* NESTA research report. Available at http://www.nesta.org.uk/library/documents/Report%20-%20Creative%20Innovation%20v5.pdf

Belza, J., P. Forth, J. Purnell, and P. Zwillenberg. 2012. 2012. 'Culture Boom: How Digital Media Are Invigorating Australia'. Report. Boston: Boston Consulting Group.

DCSM (UK Department for Culture, Media and Sport). 2011. Creative Industries Economic Estimates: Full Statistical Release. Available at http://www.culture.gov.uk/images/research/Creative-Industries-Economic-Estimates-Report-2011-update.pdf

EC (European Commission). 2011. 'Commission Consults on How Best to Seize the Opportunities for TV and Film in the Online Age'. Press Release 13 July 2011. Available at http://europa.eu/rapid/pressReleasesAction.do?reference=IP/11/868&format=HTML&aged=0&language=EN&guiLanguage=en.

Experian. 2007. 'How Linked Are the UK's Creative Industries to the Wider Economy? An Input-Output Analysis'. Working Paper prepared for NESTA. Available at http://www.nesta.org.uk/library/documents/Creating_innovation_experian.pdf.

Fisher, W. 2004. *Promises to Keep: Technology, Law, and the Future of Entertainment.* Stanford, CA: Stanford University Press.

Florida, R. 2002. *The Rise of the Creative Class.* New York: Basic Books.

Ghafele, R., and G. Benjamin. 2011. 'Counting the Costs of Collective Rights Management of Music Copyright in Europe.' MPRA Paper 34646, University Library of Munich, Germany. Available at http://mpra.ub.uni-muenchen.de/34646/.

IFPI. 2012. *Digital Music Report 2012.* IFPI. Available at http://www.ifpi.org/content/library/DMR2012.pdf.

In-Stat. 2010. *Web to TV Gaining Momentum in the US.* Available at http://www.in-stat.com/catalog/mmcatalogue.asp?id=212#IN1004655CM.

Juniper Research. 2011. *Mobile Publishing: eBooks, eMagazines & eNewspapers for Smart Devices 2011-2016.* Available at http://www.juniperresearch.com/reports/Mobile_Publishing.

KEA European Affairs. 2006. *The Economy of Culture in Europe.* Study prepared for the European Commission (Directorate-General for Education and Culture).

Le Merle, M., R. Sarma, T. Ahmed, and C. Pencavel. 2011. *The Impact of U.S. Internet Copyright Regulation on Early-Stage Investment: A Quantitative Study.* Booz & Company. Available at http://www.booz.com/media/uploads/BoozCo-Impact-US-Internet-Copyright-Regulations-Early-Stage-Investment.pdf.

Lerner, J. 2011. 'The Impact of Copyright Policy Changes on Venture Capital Investment in Cloud Computing Companies'. Computers and Communication Industry Association (CCIA). Available at http://www.ccianet.org/CCIA/files/ccLibraryFilesFilename/000000000559/Cablevision%20white%20paper%20(11.01.11).pdf.

Locke, L. 2012. 'Kickstarter Crowdsourced Cash Empowers US innovators'. *BBC News Technology.* Available at http://www.bbc.com/news/technology-17531736.

Masnick, M. and M. Ho. 2012. 'The Sky Is Rising: A Detailed Look at the Entertainment Industry'. *techdirt: Floor64.* Available at http://www.techdirt.com/skyisrising/.

McGuire, M. and D. Slater. 2005. 'Consumer Taste Sharing Is Driving the Online Music Business and Democratizing Culture'. Gartner No. G00131260. The Berkman Center for Internet & Society at Harvard Law School. Available at http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/11-ConsumerTasteSharing.pdf.

McKinsey. 2010. 'Consumers Driving the Digital Uptake: The Economic Value of Online Advertising-Based Services for Consumers'. White paper. Available at http://www.iab.net/insights_research/industry_data_and_landscape/consumers_driving_digital_uptake.

OECD (Organisation for Economic Co-operation and Development). 2005. *Digital Music: Opportunities and Challenges.* Paris: OECD. Available at http://www.oecd.org/dataoecd/13/2/34995041.pdf.

Pélissié du Rausas, M., J. Manyika, E. Hazan, J. Bughin, M. Chui, and R. Said. 2011. *Internet Matters. The Net's Sweeping Impact on Growth, Jobs, and Prosperity.* McKinsey Global Institute. Available at http://www.mckinsey.com/Insights/MGI/Research/Technology_and_Innovation/Internet_matters.

Png, I. P. L. 2010. 'On the Reliability of Software Piracy Statistics'. *Electronic Commerce Research and Applications* 9 (5) (September-October 2010).

Power, D. 2011. The European Cluster Observatory. Priority Sector Report: Creative and Cultural Industries. Europe INNOVA papers, No. 16. Luxembourg: European Commission. Available at http://www.europe-innova.eu/c/document_library/get_file?folderId=18090&name=DLFE-12822.pdf.

Price, J. 2010. 'The State of the Music Industry & the Delegitimization of Artists. Part 1: Music Purchases and Net Revenue for Artists Are Up, Gross Revenue for Labels Is Down'. *Tunecore blog.* Available at http://blog.tunecore.com/2010/10/music-purchases-and-net-revenue-for-artists-are-up-gross-revenue-for-labels-is-down.html.

Soendermann, M. 2010. 'Culture and Creative Industries in Germany 2009: Monitoring of Selected Economic Key Data on Culture and Creative Industries'. Research Report No. 589, published by the German Federal Ministry of Economics and Technology (BMWi). Available at http://www.bmwi.de/Dateien/KuK/PDF/culture-and-creative-industries-in-germany-2009-monitoring,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf.

Towse, R. 2010. 'Creativity, Copyright and the Creative Industries Paradigm'. *Kyklos* 63(3): 461–78.

UNCTAD/UNDP (United Nations Conference on Trade and Development/United Nations Development Programme). 2008. *Creative Economy: Report 2008.* New York: UN. Available at http://www.unctad.org/en/docs/ditc20082cer_en.pdf.

———. 2010. *Creative Economy: Report 2010.* New York: UN. Available at http://www.unctad.org/en/docs/ditctab20103_en.pdf.

Waldfogel. J. 2011. 'Is the Sky Falling? The Quality of New Recorded Music Since Napster'. VoxEU, November 14. Available at http://www.voxeu.org/index. php?q=node/7274.

Wauters, R. 2011. 'Total Mobile eBook Sales Forecast to Reach $10B by 2016; Now Close To 1 Million Books In Kindle Store'. techcrunch.com. Available at http://techcrunch.com/2011/12/01/total-mobile-ebook-sales-forecast-to-reach-10b-by-2016-now-close-to-1-million-books-in-kindle-store/.

Wunsch-Vincent, S. 2011. 'Accounting for Creativity in Innovation: Measuring Ambitions and Related Challenges'. In *The Global Innovation Index 2011,* 107–13. Fountainebleau, France: INSEAD.

Wunsch-Vincent, S. and G. Vickery. 2007. *Participative Web: User-Created Content.* Paris: OECD, Working Party on the Information Economy. Available at http://www.oecd. org/dataoecd/57/14/38393115.pdf.

Appendices

Appendix I

Country/Economy Profiles

Country/Economy Profiles

The following tables provide detailed profiles for each of the 141 economies in the Global Innovation Index 2012. They are constructed around three sections.

1 Three key indicators at the beginning of each profile are intended to put the economy into context. They present the population in millions,[1] GDP per capita in PPP current international dollars,[2] and GDP in US$ billions.[3] While coming from different sources, the three series were extracted from the World Bank *World Development Indicators* database in April 2012.

2 The next section provides the economy's scores and rankings on the Global Innovation Index (GII), the Innovation Input Sub-Index, the Innovation Output Sub-Index, and the Innovation Efficiency Index.

The GII ranking for the 2011 edition comes next, followed by the economy's 2012 rank among the 125 economies included in the 2011 edition. Note that because of the inclusion of 16 additional economies in 2012 (from 125 to 141), and because of adjustments made to the GII framework in 2012, the GII 2011 and 2012 are not directly comparable. Please refer to Annex 2 of Chapter 1 for details.

Scores are normalized in the [0, 100] range except for the Efficiency Index, for which scores revolve around the number 1 (this index is calculated as the ratio between the Output and Input Sub-Indices).

The Innovation Input Sub-Index score is calculated as the simple average of the scores in the first five pillars, while the Innovation Output Sub-Index is calculated as the simple average of the last two pillars.


Albania

1

Key indicators

Population (millions) 3.2
GDP per capita, PPP$ 7,780.2
GDP (US$ billions) 13.3

2

Score (0 – 100) or value (hard data) | Rank

Global Innovation Index 2012 (out of 141) ..... 30.4 | 99
Innovation Output Sub-Index ..... 23.3 | 98
Innovation Input Sub-Index ..... 37.4 | 82
Innovation Efficiency Index ..... 0.6 | 112
Global Innovation Index 2011 (out of 125) ..... | 80
GII 2012 rank among GII 2011 economies (125) ..... | 81

3

1 Institutions ..... 55.0 | 74
1.1 Political environment ..... 54.9 | 79
1.1.1 Political stability* ..... 60.9 | 81
1.1.2 Government effectiveness* ..... 33.8 | 83
1.1.3 Press freedom* ..... 70.0 | 75
1.2 Regulatory environment ..... 60.7 | 89
1.2.1 Regulatory quality* ..... 57.5 | 65
1.2.2 Rule of law* ..... 36.1 | 84
1.2.3 Cost of redundancy dismissal, salary weeks ..... 20.8 | 93
1.3 Business environment ..... 49.3 | 68
1.3.1 Ease of starting a business* ..... 69.0 | 44
1.3.2 Ease of resolving insolvency* ..... 61.1 | 55
1.3.3 Ease of paying taxes* ..... 17.9 | 115

2 Human capital & research ..... 26.2 | 106
2.1 Education ..... 44.7 | 94
2.1.1 Current expenditure on education, % GNI ..... 2.8 | 112
2.1.2 Public expenditure/pupil, % GDP/cap. ..... n/a | n/a
2.1.3 School life expectancy, years ..... 11.4 | 99
2.1.4 PISA scales in reading, maths, & science ..... 384.3 | 64
2.1.5 Pupil-teacher ratio, secondary ..... 14.8 | 68
2.2 Tertiary education ..... 25.1 | 90
2.2.1 Tertiary enrollment, % gross ..... 18.4 | 90
2.2.2 Graduates in science & engineering, % ..... 6.1 | 101 ○
2.2.3 Tertiary inbound mobility, % ..... 0.9 | 74
2.2.4 Gross tertiary outbound enrollment, % ..... 6.6 | 9 ●
2.3 Research & development (R&D) ..... 8.9 | 129
2.3.1 Researchers, headcounts/mn pop. ..... 541.0 | 72
2.3.2 Gross expenditure on R&D, % GDP ..... 0.2 | 92
2.3.3 Quality of scientific research institutions† ..... 1.9 | 127 ○

3 Infrastructure ..... 33.6 | 71
3.1 Information & communication technologies (ICT) ..... 27.3 | 85
3.1.1 ICT access* ..... 39.3 | 77
3.1.2 ICT use* ..... 16.9 | 70
3.1.3 Government's online service* ..... 42.5 | 88
3.1.4 E-participation* ..... 10.5 | 93
3.2 General infrastructure ..... 30.2 | 100
3.2.1 Electricity output, kWh/cap. ..... 1,651.9 | 82
3.2.2 Electricity consumption, kWh/cap. ..... 1,768.0 | 73
3.2.3 Quality of trade & transport infrastructure* ..... 28.5 | 106
3.2.4 Gross capital formation, % GDP ..... 25.9 | 34 ●
3.3 Ecological sustainability ..... 43.3 | 32 ●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq. ..... 10.6 | 10 ●
3.3.2 Environmental performance* ..... 65.9 | 15 ●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP ..... 0.0 | 132 ○

4 Market sophistication ..... 49.7 | 32 ●
4.1 Credit ..... 41.9 | 41
4.1.1 Ease of getting credit* ..... 77.4 | 21 ●
4.1.2 Domestic credit to private sector, % GDP ..... 38.0 | 84
4.1.3 Microfinance gross loans, % GDP ..... 3.1 | 17 ●
4.2 Investment ..... 45.0 | 25 ●
4.2.1 Ease of protecting investors* ..... 89.9 | 15 ●
4.2.2 Market capitalization, % GDP ..... n/a | n/a
4.2.3 Total value of stocks traded, % GDP ..... n/a | n/a
4.2.4 Venture capital deals/tr PPP$ GDP ..... 0.0 | 65 ○
4.3 Trade & competition ..... 62.4 | 75
4.3.1 Applied tariff rate, weighted mean, % ..... 5.1 | 79
4.3.2 Non-agricultural mkt access weighted tariff, % ..... 0.2 | 20 ●
4.3.3 Imports of goods & services, % GDP ..... 51.8 | 47
4.3.4 Exports of goods & services, % GDP ..... 29.8 | 88
4.3.5 Intensity of local competition† ..... 50.5 | 118

5 Business sophistication ..... 22.6 | 138 ○
5.1 Knowledge workers ..... 27.7 | 121
5.1.1 Knowledge-intensive employment, % ..... n/a | n/a
5.1.2 Firms offering formal training, % firms ..... 19.9 | 91
5.1.3 R&D performed by business, % ..... 0.0 | 89 ○
5.1.4 R&D financed by business, % ..... 3.3 | 81
5.1.5 GMAT mean score ..... 492.6 | 79
5.1.6 GMAT test takers/mn pop. 20–34 ..... 156.6 | 38 ●
5.2 Innovation linkages ..... 17.0 | 135 ○
5.2.1 University/industry research collaboration† ..... 17.7 | 131 ○
5.2.2 State of cluster development† ..... 26.9 | 121
5.2.3 R&D financed by abroad, % ..... 7.4 | 44
5.2.4 JV–strategic alliance deals/tr PPP$ GDP ..... 0.0 | 114 ○
5.2.5 PCT patent filings with foreign inventor, % ..... n/a | n/a
5.3 Knowledge absorption ..... 23.0 | 134 ○
5.3.1 Royalty & license fees payments/th GDP ..... 1.0 | 72
5.3.2 High-tech imports less re-imports, % ..... 4.7 | 108
5.3.3 Computer & comm. service imports, % ..... 8.9 | 127 ○
5.3.4 FDI net inflows, % GDP ..... 9.4 | 15 ●

6 Knowledge & technology outputs ..... 18.5 | 113
6.1 Knowledge creation ..... 12.8 | 104
6.1.1 Domestic resident patent ap/bn PPP$ GDP ..... n/a | n/a
6.1.2 PCT resident patent ap/bn PPP$ GDP ..... 0.0 | 95
6.1.3 Domestic res utility model ap/bn PPP$ GDP ..... 0.0 | 62 ○
6.1.4 Scientific & technical articles/bn PPP$ GDP ..... 0.4 | 134 ○
6.2 Knowledge impact ..... 25.7 | 99
6.2.1 Growth rate of PPP$ GDP/worker, % ..... 1.6 | 81
6.2.2 New businesses/th pop. 15–64 ..... 0.8 | 67
6.2.3 Computer software spending, % GDP ..... n/a | n/a
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP ..... 2.2 | 92
6.3 Knowledge diffusion ..... 17.1 | 113
6.3.1 Royalty & license fees receipts/th GDP ..... 0.1 | 77
6.3.2 High-tech exports less re-exports, % ..... 0.9 | 74
6.3.3 Computer & comm. service exports, % ..... 12.6 | 112
6.3.4 FDI net outflows, % GDP ..... 0.0 | 100

7 Creative outputs ..... 28.1 | 88
7.1 Creative intangibles ..... 35.0 | 91
7.1.1 Domestic res trademark ap/bn PPP$ GDP ..... n/a | n/a
7.1.2 Madrid resident trademark reg/bn PPP$ GDP ..... 0.0 | 57
7.1.3 ICT & business model creation† ..... 53.0 | 62
7.1.4 ICT & organizational model creation† ..... 51.3 | 56
7.2 Creative goods & services ..... 20.1 | 73
7.2.1 Recreation & culture consumption, % ..... n/a | n/a
7.2.2 National feature films/mn pop. 15–69 ..... n/a | n/a
7.2.3 Paid-for dailies, circulation/th pop. 15–69 ..... 31.0 | 95
7.2.4 Creative goods exports, % ..... 2.0 | 46
7.2.5 Creative services exports, % ..... 5.9 | 33
7.3 Online creativity ..... 22.4 | 66
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69 ..... 2.1 | 83
7.3.2 Country-code TLDs/th pop. 15–69 ..... 19.5 | 75
7.3.3 Wikipedia monthly edits/mn pop. 15–69 ..... 878.2 | 67
7.3.4 Video uploads on YouTube/pop. 15–69 ..... 63.3 | 43

3 The value/normalized score and the rank for each pillar (identified by its single-digit number), sub-pillar (two-digit number), and indicator (three-digit number) are reported. For example, *indicator 1.3.1, Ease of starting a business,* appears under *sub-pillar 1.3, Business environment,* which in turn appears under *pillar 1, Institutions.*

When data are either not available or out of date (the cutoff year is 2001), 'n/a' is used.

The 2012 GII includes 84 indicators and three types of data. Composite indicators are identified with an asterisk (*), survey questions from the World Economic Forum's Executive Opinion Survey are identified with a dagger (†), and the remaining indicators are all hard data series.

For hard data, the original value is provided (except for indicators 7.3.1, 7.3.2, and 7.3.4, for which the raw data were provided under the condition that only the normalized scores be published). Normalized scores in the [0, 100] range are provided for everything else (index and survey data, sub-pillars, pillars, and indices).

For further details, see Appendix III, Sources and Definitions, and Appendix IV, Technical Notes.

4 To the far right of each column, a plain circle indicates that an indicator is one of the strengths of the country/economy in question, and a hollow circle indicates that it is a weakness.

All top ranks (of 1) are highlighted as strengths; for the remaining indicators, strengths and weaknesses of a particular economy are based on the percentage of economies with scores that fall below its score (i.e., percent ranks).

- ● Strengths are all scores with percent ranks greater than the 10th largest percent rank among the 84 indicators in a specific economy.
- ○ Weaknesses are all scores with percent ranks lower than the 10th smallest percent rank among the 84 indicators in a specific economy.

Percent ranks embed more information than ranks and allow for comparisons of ranks of series with missing data and ties in ranks. Examples from Poland illustrate this point:

1. Poland's best rank is its 8th position out of 140 in *4.1.1 Ease of getting credit*★. But because 13 economies are tied with Poland at rank 8, only 86% have lower scores than Poland (percent rank: 0.86).
2. Even if Poland's rank in *1.1.1 Political stability*★—where it ranks 15th out of 141— is lower than its rank of 8th in indicator 4.1.1, it is Poland's major strength because 90% of the economies in the sample have lower scores in this indicator than Poland does (its percent rank is 0.90, the highest among the 84 indicators).
3. Following that criteria, Poland's major weakness is *5.2.5 PCT patent filings with foreign inventor,* with a rank of 89 out of 102 but a percent rank of 0.13. However, here the fact that data are missing for 39 economies does not allow a straightforward reading of the rank (89).
4. In contrast, Poland's worst rank is 110th out of 133 in *7.1.4 ICT & organizational model creation*†, although only 17% of economies have lower scores than Poland (its percent rank is 0.17, lower than for indicator 5.2.5).

Percent ranks are not reported in the Country/Economy Profiles but are presented in the Data Tables (Appendix II), included in the digital copy only and available online at http://globalinnovationindex.org.

Notes

1 World Bank estimates based on various sources.

2 World Bank, International Comparison Program database.

3 World Bank national accounts data, and OECD National Accounts data files.

Index of Country/Economy Profiles

Albania

Key indicators

Population (millions)	3.2
GDP per capita, PPP$	7,780.2
GDP (US$ billions)	13.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**30.4**	**90**	
Innovation Output Sub-Index	23.3	98	
Innovation Input Sub-Index	37.4	82	
Innovation Efficiency Index	0.6	112	
Global Innovation Index 2011 (out of 125)		80	
GII 2012 rank among GII 2011 economies (125)		85	
1 Institutions	**55.0**	**74**	
1.1 Political environment	*54.9*	*75*	
1.1.1 Political stability*	60.9	81	
1.1.2 Government effectiveness*	33.8	83	
1.1.3 Press freedom*	70.0	75	
1.2 Regulatory environment	*60.7*	*89*	
1.2.1 Regulatory quality*	57.5	65	
1.2.2 Rule of law*	36.1	84	
1.2.3 Cost of redundancy dismissal, salary weeks	20.8	93	
1.3 Business environment	*49.3*	*68*	
1.3.1 Ease of starting a business*	69.0	44	
1.3.2 Ease of resolving insolvency*	61.1	55	
1.3.3 Ease of paying taxes*	17.9	115	
2 Human capital & research	**26.2**	**106**	
2.1 Education	*44.7*	*94*	
2.1.1 Current expenditure on education, % GNI	2.8	112	
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	11.4	99	
2.1.4 PISA scales in reading, maths, & science	384.3	64	
2.1.5 Pupil-teacher ratio, secondary	14.8	68	
2.2 Tertiary education	*25.1*	*90*	
2.2.1 Tertiary enrolment, % gross	18.4	90	
2.2.2 Graduates in science & engineering, %	6.1	101	○
2.2.3 Tertiary inbound mobility, %	0.9	74	
2.2.4 Gross tertiary outbound enrolment, %	6.6	9	●
2.3 Research & development (R&D)	*8.9*	*129*	
2.3.1 Researchers, headcounts/mn pop.	541.0	72	
2.3.2 Gross expenditure on R&D, % GDP	0.2	92	
2.3.3 Quality of scientific research institutions†	19.6	127	○
3 Infrastructure	**33.6**	**71**	
3.1 Information & communication technologies (ICT)	*27.3*	*85*	
3.1.1 ICT access*	39.3	77	
3.1.2 ICT use*	16.9	70	
3.1.3 Government's online service*	42.5	88	
3.1.4 E-participation*	10.5	93	
3.2 General infrastructure	*30.2*	*100*	
3.2.1 Electricity output, kWh/cap	1,651.9	82	
3.2.2 Electricity consumption, kWh/cap	1,768.0	73	
3.2.3 Quality of trade & transport infrastructure*	28.5	106	
3.2.4 Gross capital formation, % GDP	25.9	34	●
3.3 Ecological sustainability	*43.3*	*32*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	10.6	10	●
3.3.2 Environmental performance*	65.9	15	●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	132	○
4 Market sophistication	**49.7**	**32**	●
4.1 Credit	*41.9*	*41*	
4.1.1 Ease of getting credit*	77.4	21	●
4.1.2 Domestic credit to private sector, % GDP	38.0	84	
4.1.3 Microfinance gross loans, % GDP	3.1	17	●
4.2 Investment	*45.0*	*25*	●
4.2.1 Ease of protecting investors*	89.9	15	●
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*62.4*	*75*	
4.3.1 Applied tariff rate, weighted mean, %	5.1	79	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.2	30	●
4.3.3 Imports of goods & services, % GDP	51.8	47	
4.3.4 Exports of goods & services, % GDP	29.8	88	
4.3.5 Intensity of local competition†	50.5	118	
5 Business sophistication	**22.6**	**138**	○
5.1 Knowledge workers	*27.7*	*121*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	19.9	91	
5.1.3 R&D performed by business, %	0.0	89	○
5.1.4 R&D financed by business, %	3.3	81	
5.1.5 GMAT mean score	492.6	79	
5.1.6 GMAT test takers/mn pop. 20–34	156.6	38	●
5.2 Innovation linkages	*17.0*	*135*	○
5.2.1 University/industry research collaboration†	17.7	131	○
5.2.2 State of cluster development†	26.9	121	
5.2.3 R&D financed by abroad, %	7.4	44	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*23.0*	*134*	○
5.3.1 Royalty & license fees payments/th GDP	1.0	72	
5.3.2 High-tech imports less re-imports, %	4.7	108	
5.3.3 Computer & comm. service imports, %	8.9	127	○
5.3.4 FDI net inflows, % GDP	9.4	15	●
6 Knowledge & technology outputs	**18.5**	**113**	
6.1 Knowledge creation	*12.8*	*104*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	95	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.0	62	○
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.4	134	○
6.2 Knowledge impact	*25.7*	*99*	
6.2.1 Growth rate of PPP$ GDP/worker, %	1.6	81	
6.2.2 New businesses/th pop. 15–64	0.8	67	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.2	92	
6.3 Knowledge diffusion	*17.1*	*113*	
6.3.1 Royalty & license fees receipts/th GDP	0.1	77	
6.3.2 High-tech exports less re-exports, %	0.9	74	
6.3.3 Computer & comm. service exports, %	12.6	112	
6.3.4 FDI net outflows, % GDP	0.0	100	
7 Creative outputs	**28.1**	**88**	
7.1 Creative intangibles	*35.0*	*91*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.0	57	
7.1.3 ICT & business model creation†	53.0	62	
7.1.4 ICT & organizational model creation†	51.3	56	
7.2 Creative goods & services	*20.1*	*73*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	31.0	95	
7.2.4 Creative goods exports, %	2.0	46	
7.2.5 Creative services exports, %	5.9	33	
7.3 Online creativity	*22.4*	*66*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.1	83	
7.3.2 Country-code TLDs/th pop. 15–69	19.5	75	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	878.2	67	
7.3.4 Video uploads on YouTube/pop. 15–69	63.3	43	

Algeria

Key indicators

Population (millions)	36.7
GDP per capita, PPP$	7,210.3
GDP (US$ billions)	183.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**24.4**	**124**	
Innovation Output Sub-Index		15.8	134	○
Innovation Input Sub-Index		33.0	101	
Innovation Efficiency Index		0.5	136	○
Global Innovation Index 2011 (out of 125)			125	
GII 2012 rank among GII 2011 economies (125)			114	
1	**Institutions**	**40.6**	**114**	
1.1	*Political environment*	*38.9*	*118*	
1.1.1	Political stability*	35.1	125	
1.1.2	Government effectiveness*	26.2	103	
1.1.3	Press freedom*	55.4	97	
1.2	*Regulatory environment*	*53.3*	*107*	
1.2.1	Regulatory quality*	22.6	135	○
1.2.2	Rule of law*	27.6	107	
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	80	
1.3	*Business environment*	*29.4*	*110*	
1.3.1	Ease of starting a business*	10.7	124	
1.3.2	Ease of resolving insolvency*	67.6	46	●
1.3.3	Ease of paying taxes*	10.0	126	
2	**Human capital & research**	**32.5**	**77**	
2.1	*Education*	*54.0*	*60*	
2.1.1	Current expenditure on education, % GNI	4.5	54	●
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.6	54	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	20.8	96	
2.2	*Tertiary education*	*33.8*	*63*	
2.2.1	Tertiary enrolment, % gross	30.8	71	
2.2.2	Graduates in science & engineering, %	28.0	15	●
2.2.3	Tertiary inbound mobility, %	0.6	86	
2.2.4	Gross tertiary outbound enrolment, %	0.6	90	
2.3	*Research & development (R&D)*	*9.6*	*126*	
2.3.1	Researchers, headcounts/mn pop.	419.8	75	
2.3.2	Gross expenditure on R&D, % GDP	0.1	102	
2.3.3	Quality of scientific research institutions†	24.8	120	
3	**Infrastructure**	**28.0**	**95**	
3.1	*Information & communication technologies (ICT)*	*17.4*	*112*	
3.1.1	ICT access*	33.4	92	
3.1.2	ICT use*	5.6	105	
3.1.3	Government's online service*	25.5	123	
3.1.4	E-participation*	5.3	110	
3.2	*General infrastructure*	*39.2*	*54*	●
3.2.1	Electricity output, kWh/cap	1,201.4	88	
3.2.2	Electricity consumption, kWh/cap	972.5	93	
3.2.3	Quality of trade & transport infrastructure*	26.5	116	
3.2.4	Gross capital formation, % GDP	41.2	2	●
3.3	*Ecological sustainability*	*27.4*	*86*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.7	62	
3.3.2	Environmental performance*	48.6	83	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	89	
4	**Market sophistication**	**29.3**	**114**	
4.1	*Credit*	*7.0*	*127*	
4.1.1	Ease of getting credit*	10.9	120	
4.1.2	Domestic credit to private sector, % GDP	15.8	128	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*23.4*	*73*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*57.7*	*98*	
4.3.1	Applied tariff rate, weighted mean, %	8.6	114	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	17	●
4.3.3	Imports of goods & services, % GDP	36.1	84	
4.3.4	Exports of goods & services, % GDP	40.4	62	
4.3.5	Intensity of local competition†	48.0	126	
5	**Business sophistication**	**34.5**	**92**	
5.1	*Knowledge workers*	*30.7*	*112*	
5.1.1	Knowledge-intensive employment, %	19.1	73	
5.1.2	Firms offering formal training, % firms	17.3	94	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	514.4	63	
5.1.6	GMAT test takers/mn pop. 20–34	4.3	133	○
5.2	*Innovation linkages*	*31.0*	*97*	
5.2.1	University/industry research collaboration†	22.2	128	○
5.2.2	State of cluster development†	20.3	131	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	1.6	113	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*41.9*	*45*	●
5.3.1	Royalty & license fees payments/th GDP	0.1	109	
5.3.2	High-tech imports less re-imports, %	9.6	55	
5.3.3	Computer & comm. service imports, %	67.4	3	●
5.3.4	FDI net inflows, % GDP	1.4	94	
6	**Knowledge & technology outputs**	**19.9**	**108**	
6.1	*Knowledge creation*	*10.0*	*110*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	92	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	106	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.5	76	
6.2	*Knowledge impact*	*19.5*	*123*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	85	
6.2.2	New businesses/th pop. 15–64	0.4	85	
6.2.3	Computer software spending, % GDP	0.1	65	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.4	105	
6.3	*Knowledge diffusion*	*30.1*	*54*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	89	
6.3.2	High-tech exports less re-exports, %	0.0	119	○
6.3.3	Computer & comm. service exports, %	53.9	21	●
6.3.4	FDI net outflows, % GDP	0.2	75	
7	**Creative outputs**	**11.7**	**136**	○
7.1	*Creative intangibles*	*12.0*	*134*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	3.4	82	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.0	62	○
7.1.3	ICT & business model creation†	18.7	133	○
7.1.4	ICT & organizational model creation†	27.6	125	
7.2	*Creative goods & services*	*13.6*	*86*	
7.2.1	Recreation & culture consumption, %	1.7	86	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	106.9	53	●
7.2.4	Creative goods exports, %	0.0	131	○
7.2.5	Creative services exports, %	8.3	22	●
7.3	*Online creativity*	*9.2*	*114*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	129	
7.3.2	Country-code TLDs/th pop. 15–69	1.0	126	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	161.2	100	
7.3.4	Video uploads on YouTube/pop. 15–69	34.7	102	

Angola

Key indicators

Population (millions)	19.6
GDP per capita, PPP$	5,911.0
GDP (US$ billions)	99.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**22.2**	**135**	
Innovation Output Sub-Index	18.1	127	
Innovation Input Sub-Index	26.3	133	
Innovation Efficiency Index	0.7	85	
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**34.7**	**131**	
1.1 Political environment	*41.8*	*113*	
1.1.1 Political stability*	60.1	83	
1.1.2 Government effectiveness*	11.4	135	
1.1.3 Press freedom*	53.8	107	
1.2 Regulatory environment	*52.2*	*111*	
1.2.1 Regulatory quality*	25.2	131	
1.2.2 Rule of law*	14.8	136	
1.2.3 Cost of redundancy dismissal, salary weeks	15.8	73	●
1.3 Business environment	*10.0*	*138*	○
1.3.1 Ease of starting a business*	3.5	135	
1.3.2 Ease of resolving insolvency*	5.0	133	
1.3.3 Ease of paying taxes*	21.5	110	
2 Human capital & research	**18.0**	**132**	
2.1 Education	*21.5*	*137*	○
2.1.1 Current expenditure on education, % GNI	2.3	122	
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	10.2	117	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	38.7	130	○
2.2 Tertiary education	*23.0*	*95*	
2.2.1 Tertiary enrolment, % gross	3.7	126	
2.2.2 Graduates in science & engineering, %	11.9	93	
2.2.3 Tertiary inbound mobility, %	9.9	17	●
2.2.4 Gross tertiary outbound enrolment, %	0.4	106	
2.3 Research & development (R&D)	*9.4*	*128*	
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	9.4	133	○
3 Infrastructure	**18.2**	**131**	
3.1 Information & communication technologies (ICT)	*14.9*	*120*	
3.1.1 ICT access*	18.6	126	
3.1.2 ICT use*	5.3	106	
3.1.3 Government's online service*	33.3	107	
3.1.4 E-participation*	2.6	115	
3.2 General infrastructure	*16.0*	*140*	○
3.2.1 Electricity output, kWh/cap	225.5	114	
3.2.2 Electricity consumption, kWh/cap	202.8	113	
3.2.3 Quality of trade & transport infrastructure*	17.3	136	○
3.2.4 Gross capital formation, % GDP	14.6	132	
3.3 Ecological sustainability	*23.8*	*97*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	81	
3.3.2 Environmental performance*	47.6	87	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	131	○
4 Market sophistication	**31.8**	**102**	
4.1 Credit	*6.7*	*129*	
4.1.1 Ease of getting credit*	15.3	112	
4.1.2 Domestic credit to private sector, % GDP	20.3	118	
4.1.3 Microfinance gross loans, % GDP	0.0	81	
4.2 Investment	*29.1*	*57*	●
4.2.1 Ease of protecting investors*	58.2	48	●
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*59.6*	*90*	
4.3.1 Applied tariff rate, weighted mean, %	7.4	103	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.0	8	●
4.3.3 Imports of goods & services, % GDP	43.8	59	●
4.3.4 Exports of goods & services, % GDP	58.0	25	●
4.3.5 Intensity of local competition†	36.1	133	○
5 Business sophistication	**28.8**	**126**	
5.1 Knowledge workers	*22.3*	*130*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	23.5	84	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	403.9	129	
5.1.6 GMAT test takers/mn pop. 20–34	4.5	132	
5.2 Innovation linkages	*17.0*	*134*	
5.2.1 University/industry research collaboration†	17.8	130	○
5.2.2 State of cluster development†	23.3	127	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	4.7	104	
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*47.2*	*23*	●
5.3.1 Royalty & license fees payments/th GDP	0.1	111	
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	72.2	2	●
5.3.4 FDI net inflows, % GDP	-3.8	139	○
6 Knowledge & technology outputs	**17.2**	**123**	
6.1 Knowledge creation	*0.0*	*141*	○
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	110	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.1	140	○
6.2 Knowledge impact	*30.2*	*79*	
6.2.1 Growth rate of PPP$ GDP/worker, %	3.4	45	●
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.2	136	
6.3 Knowledge diffusion	*21.5*	*94*	
6.3.1 Royalty & license fees receipts/th GDP	0.1	66	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	9.2	119	
6.3.4 FDI net outflows, % GDP	1.6	30	●
7 Creative outputs	**19.1**	**124**	
7.1 Creative intangibles	*30.3*	*110*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	27.3	129	
7.1.4 ICT & organizational model creation†	33.3	115	
7.2 Creative goods & services	*10.7*	*96*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	4.4	124	
7.2.4 Creative goods exports, %	n/a	n/a	
7.2.5 Creative services exports, %	4.7	40	●
7.3 Online creativity	*4.9*	*129*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.1	131	
7.3.2 Country-code TLDs/th pop. 15–69	0.4	130	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	16.7	120	
7.3.4 Video uploads on YouTube/pop. 15–69	18.9	121	

Argentina

Key indicators

Population (millions)	40.9
GDP per capita, PPP$	17,376.1
GDP (US$ billions)	435.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**34.4**	**70**	
Innovation Output Sub-Index		30.2	66	
Innovation Input Sub-Index		38.7	76	
Innovation Efficiency Index		0.8	51	
Global Innovation Index 2011 (out of 125)			58	
GII 2012 rank among GII 2011 economies (125)			68	
1	**Institutions**	**44.9**	**101**	
1.1	*Political environment*	*61.4*	*59*	
1.1.1	Political stability*	65.1	69	
1.1.2	Government effectiveness*	35.4	82	
1.1.3	Press freedom*	83.8	41	
1.2	*Regulatory environment*	*44.6*	*125*	○
1.2.1	Regulatory quality*	34.2	120	○
1.2.2	Rule of law*	32.5	100	
1.2.3	Cost of redundancy dismissal, salary weeks	30.3	125	○
1.3	*Business environment*	*28.8*	*111*	
1.3.1	Ease of starting a business*	15.8	118	○
1.3.2	Ease of resolving insolvency*	48.2	73	
1.3.3	Ease of paying taxes*	22.3	108	
2	**Human capital & research**	**39.1**	**58**	
2.1	*Education*	*59.7*	*38*	
2.1.1	Current expenditure on education, % GNI	6.0	18	●
2.1.2	Public expenditure/pupil, % GDP/cap	19.8	60	
2.1.3	School life expectancy, years	16.1	18	●
2.1.4	PISA scales in reading, maths, & science	395.7	60	○
2.1.5	Pupil-teacher ratio, secondary	10.9	38	
2.2	*Tertiary education*	*31.9*	*72*	
2.2.1	Tertiary enrolment, % gross	71.2	17	●
2.2.2	Graduates in science & engineering, %	14.3	81	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	116	
2.3	*Research & development (R&D)*	*25.8*	*54*	
2.3.1	Researchers, headcounts/mn pop.	1,609.7	45	
2.3.2	Gross expenditure on R&D, % GDP	0.5	54	
2.3.3	Quality of scientific research institutions†	53.7	39	
3	**Infrastructure**	**37.3**	**57**	
3.1	*Information & communication technologies (ICT)*	*39.0*	*58*	
3.1.1	ICT access*	52.6	53	
3.1.2	ICT use*	21.6	60	
3.1.3	Government's online service*	52.9	59	
3.1.4	E-participation*	29.0	52	
3.2	*General infrastructure*	*34.3*	*82*	
3.2.1	Electricity output, kWh/cap	3,036.4	59	
3.2.2	Electricity consumption, kWh/cap	2,744.1	60	
3.2.3	Quality of trade & transport infrastructure*	43.8	50	
3.2.4	Gross capital formation, % GDP	22.0	75	
3.3	*Ecological sustainability*	*38.7*	*47*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.4	24	●
3.3.2	Environmental performance*	56.5	49	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	54	
4	**Market sophistication**	**31.3**	**104**	
4.1	*Credit*	*17.7*	*99*	
4.1.1	Ease of getting credit*	50.4	62	
4.1.2	Domestic credit to private sector, % GDP	14.6	131	○
4.1.3	Microfinance gross loans, % GDP	0.0	85	○
4.2	*Investment*	*19.3*	*84*	
4.2.1	Ease of protecting investors*	29.4	91	
4.2.2	Market capitalization, % GDP	17.3	83	
4.2.3	Total value of stocks traded, % GDP	0.7	78	
4.2.4	Venture capital deals/tr PPP$ GDP	9.8	48	
4.3	*Trade & competition*	*57.0*	*104*	
4.3.1	Applied tariff rate, weighted mean, %	6.2	94	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	37	
4.3.3	Imports of goods & services, % GDP	18.4	136	○
4.3.4	Exports of goods & services, % GDP	21.7	118	○
4.3.5	Intensity of local competition†	54.3	101	
5	**Business sophistication**	**40.6**	**60**	
5.1	*Knowledge workers*	*52.5*	*50*	
5.1.1	Knowledge-intensive employment, %	17.7	79	
5.1.2	Firms offering formal training, % firms	63.6	9	●
5.1.3	R&D performed by business, %	27.4	57	
5.1.4	R&D financed by business, %	26.5	56	
5.1.5	GMAT mean score	603.6	1	●
5.1.6	GMAT test takers/mn pop. 20–34	31.7	102	
5.2	*Innovation linkages*	*25.6*	*122*	○
5.2.1	University/industry research collaboration†	48.0	45	
5.2.2	State of cluster development†	38.3	81	
5.2.3	R&D financed by abroad, %	0.6	87	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	6.8	97	
5.2.5	PCT patent filings with foreign inventor, %	28.6	67	
5.3	*Knowledge absorption*	*43.6*	*36*	
5.3.1	Royalty & license fees payments/th GDP	4.2	21	●
5.3.2	High-tech imports less re-imports, %	15.0	20	●
5.3.3	Computer & comm. service imports, %	34.8	56	
5.3.4	FDI net inflows, % GDP	1.7	85	
6	**Knowledge & technology outputs**	**24.3**	**81**	
6.1	*Knowledge creation*	*9.7*	*111*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.7	58	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.3	44	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.3	48	
6.2	*Knowledge impact*	*32.1*	*73*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.4	26	
6.2.2	New businesses/th pop. 15–64	0.5	84	
6.2.3	Computer software spending, % GDP	0.1	59	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.7	51	
6.3	*Knowledge diffusion*	*31.1*	*51*	
6.3.1	Royalty & license fees receipts/th GDP	0.4	50	
6.3.2	High-tech exports less re-exports, %	2.5	55	
6.3.3	Computer & comm. service exports, %	49.2	26	
6.3.4	FDI net outflows, % GDP	0.3	67	
7	**Creative outputs**	**36.0**	**48**	
7.1	*Creative intangibles*	*40.0*	*71*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	53.4	61	
7.1.4	ICT & organizational model creation†	26.5	127	○
7.2	*Creative goods & services*	*22.9*	*65*	
7.2.1	Recreation & culture consumption, %	5.0	54	
7.2.2	National feature films/mn pop. 15–69	2.3	46	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	41.7	86	
7.2.4	Creative goods exports, %	0.4	93	
7.2.5	Creative services exports, %	12.3	12	●
7.3	*Online creativity*	*41.3*	*34*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	25.8	33	
7.3.2	Country-code TLDs/th pop. 15–69	63.1	17	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,296.9	47	
7.3.4	Video uploads on YouTube/pop. 15–69	64.6	40	

Armenia

Key indicators

Population (millions)	3.3
GDP per capita, PPP$	5,395.3
GDP (US$ billions)	10.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**34.5**	**69**	
Innovation Output Sub-Index		29.8	68	
Innovation Input Sub-Index		39.1	73	
Innovation Efficiency Index		0.8	57	
Global Innovation Index 2011 (out of 125)			69	
GII 2012 rank among GII 2011 economies (125)			67	
1	**Institutions**	**61.5**	**58**	
1.1	*Political environment*	*59.3*	*63*	
1.1.1	Political stability*	65.9	65	
1.1.2	Government effectiveness*	37.0	76	
1.1.3	Press freedom*	75.0	60	
1.2	*Regulatory environment*	*70.5*	*52*	
1.2.1	Regulatory quality*	58.8	63	
1.2.2	Rule of law*	35.3	86	
1.2.3	Cost of redundancy dismissal, salary weeks	11.0	44	
1.3	*Business environment*	*54.6*	*61*	
1.3.1	Ease of starting a business*	87.0	19	●
1.3.2	Ease of resolving insolvency*	65.4	49	
1.3.3	Ease of paying taxes*	11.5	124	
2	**Human capital & research**	**32.5**	**76**	
2.1	*Education*	*46.9*	*85*	
2.1.1	Current expenditure on education, % GNI	2.2	123	○
2.1.2	Public expenditure/pupil, % GDP/cap	16.3	84	
2.1.3	School life expectancy, years	12.2	85	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	6.7	2	●
2.2	*Tertiary education*	*33.3*	*67*	
2.2.1	Tertiary enrolment, % gross	51.5	44	
2.2.2	Graduates in science & engineering, %	15.9	72	
2.2.3	Tertiary inbound mobility, %	2.6	50	
2.2.4	Gross tertiary outbound enrolment, %	1.8	52	
2.3	*Research & development (R&D)*	*17.4*	*89*	
2.3.1	Researchers, headcounts/mn pop.	1,796.4	42	
2.3.2	Gross expenditure on R&D, % GDP	0.3	73	
2.3.3	Quality of scientific research institutions†	32.8	104	
3	**Infrastructure**	**29.0**	**89**	
3.1	*Information & communication technologies (ICT)*	*22.2*	*99*	
3.1.1	ICT access*	40.7	72	
3.1.2	ICT use*	15.5	74	
3.1.3	Government's online service*	32.7	109	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*36.8*	*65*	
3.2.1	Electricity output, kWh/cap	1,735.8	81	
3.2.2	Electricity consumption, kWh/cap	1,551.4	79	
3.2.3	Quality of trade & transport infrastructure*	33.0	92	
3.2.4	Gross capital formation, % GDP	33.4	12	●
3.3	*Ecological sustainability*	*28.1*	*80*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.0	53	
3.3.2	Environmental performance*	47.5	89	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	81	
4	**Market sophistication**	**37.8**	**72**	
4.1	*Credit*	*42.9*	*40*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	26.5	100	
4.1.3	Microfinance gross loans, % GDP	5.3	6	●
4.2	*Investment*	*9.0*	*115*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	0.3	106	○
4.2.3	Total value of stocks traded, % GDP	0.0	107	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*61.6*	*79*	
4.3.1	Applied tariff rate, weighted mean, %	2.3	44	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	20	●
4.3.3	Imports of goods & services, % GDP	44.8	56	
4.3.4	Exports of goods & services, % GDP	20.6	125	
4.3.5	Intensity of local competition†	39.3	131	○
5	**Business sophistication**	**34.8**	**90**	
5.1	*Knowledge workers*	*46.2*	*65*	
5.1.1	Knowledge-intensive employment, %	24.1	53	
5.1.2	Firms offering formal training, % firms	30.4	65	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	471.8	94	
5.1.6	GMAT test takers/mn pop. 20–34	265.8	23	●
5.2	*Innovation linkages*	*30.1*	*98*	
5.2.1	University/industry research collaboration†	28.1	119	○
5.2.2	State of cluster development†	33.9	102	
5.2.3	R&D financed by abroad, %	4.2	65	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*28.1*	*104*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	6.6	86	
5.3.3	Computer & comm. service imports, %	8.3	128	○
5.3.4	FDI net inflows, % GDP	6.1	32	●
6	**Knowledge & technology outputs**	**31.7**	**54**	
6.1	*Knowledge creation*	*37.1*	*34*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.4	24	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	47	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.4	16	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.1	36	
6.2	*Knowledge impact*	*31.8*	*75*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.9	54	
6.2.2	New businesses/th pop. 15–64	1.3	54	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.6	75	
6.3	*Knowledge diffusion*	*26.1*	*69*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.7	82	
6.3.3	Computer & comm. service exports, %	21.0	91	
6.3.4	FDI net outflows, % GDP	0.1	84	
7	**Creative outputs**	**28.0**	**89**	
7.1	*Creative intangibles*	*37.1*	*83*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	87.6	16	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.7	29	
7.1.3	ICT & business model creation†	44.6	92	
7.1.4	ICT & organizational model creation†	47.3	71	
7.2	*Creative goods & services*	*12.4*	*92*	
7.2.1	Recreation & culture consumption, %	0.4	99	○
7.2.2	National feature films/mn pop. 15–69	2.3	45	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	19.2	103	
7.2.4	Creative goods exports, %	1.6	53	
7.2.5	Creative services exports, %	5.3	38	
7.3	*Online creativity*	*25.5*	*55*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.5	68	
7.3.2	Country-code TLDs/th pop. 15–69	30.3	56	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,826.0	53	
7.3.4	Video uploads on YouTube/pop. 15–69	59.0	60	

Australia

Key indicators

Population (millions)	22.5
GDP per capita, PPP$	40,836.4
GDP (US$ billions)	1,507.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**51.9**	**23**	
Innovation Output Sub-Index		40.4	31	
Innovation Input Sub-Index		63.4	13	
Innovation Efficiency Index		0.6	107	○
Global Innovation Index 2011 (out of 125)			21	
GII 2012 rank among GII 2011 economies (125)			22	
1	**Institutions**	**90.0**	**10**	●
1.1	*Political environment*	*88.1*	*12*	
1.1.1	Political stability*	85.0	26	
1.1.2	Government effectiveness*	88.7	9	●
1.1.3	Press freedom*	90.5	27	
1.2	*Regulatory environment*	*93.5*	*14*	
1.2.1	Regulatory quality*	93.8	11	
1.2.2	Rule of law*	94.7	11	
1.2.3	Cost of redundancy dismissal, salary weeks	11.7	49	
1.3	*Business environment*	*88.4*	*8*	●
1.3.1	Ease of starting a business*	99.2	2	●
1.3.2	Ease of resolving insolvency*	92.8	11	
1.3.3	Ease of paying taxes*	73.3	38	
2	**Human capital & research**	**53.3**	**24**	
2.1	*Education*	*59.4*	*39*	
2.1.1	Current expenditure on education, % GNI	4.5	53	
2.1.2	Public expenditure/pupil, % GDP/cap	19.1	66	○
2.1.3	School life expectancy, years	19.2	2	●
2.1.4	PISA scales in reading, maths, & science	518.8	9	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*46.8*	*29*	
2.2.1	Tertiary enrolment, % gross	75.9	11	
2.2.2	Graduates in science & engineering, %	17.7	64	○
2.2.3	Tertiary inbound mobility, %	21.5	8	
2.2.4	Gross tertiary outbound enrolment, %	0.6	88	○
2.3	*Research & development (R&D)*	*53.6*	*16*	
2.3.1	Researchers, headcounts/mn pop.	4,224.3	22	
2.3.2	Gross expenditure on R&D, % GDP	2.3	13	
2.3.3	Quality of scientific research institutions†	74.7	13	
3	**Infrastructure**	**56.3**	**13**	
3.1	*Information & communication technologies (ICT)*	*75.1*	*11*	
3.1.1	ICT access*	72.2	23	
3.1.2	ICT use*	65.7	9	●
3.1.3	Government's online service*	86.3	9	
3.1.4	E-participation*	76.3	8	●
3.2	*General infrastructure*	*60.2*	*9*	●
3.2.1	Electricity output, kWh/cap	11,526.8	11	
3.2.2	Electricity consumption, kWh/cap	10,789.8	12	
3.2.3	Quality of trade & transport infrastructure*	69.5	18	
3.2.4	Gross capital formation, % GDP	27.5	25	
3.3	*Ecological sustainability*	*33.6*	*59*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.7	60	
3.3.2	Environmental performance*	56.6	47	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.7	49	
4	**Market sophistication**	**63.2**	**11**	
4.1	*Credit*	*65.6*	*12*	
4.1.1	Ease of getting credit*	87.6	8	
4.1.2	Domestic credit to private sector, % GDP	127.8	19	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*57.4*	*11*	
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	136.1	11	
4.2.3	Total value of stocks traded, % GDP	82.4	11	
4.2.4	Venture capital deals/tr PPP$ GDP	59.8	21	
4.3	*Trade & competition*	*66.7*	*51*	
4.3.1	Applied tariff rate, weighted mean, %	1.9	42	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.0	73	
4.3.3	Imports of goods & services, % GDP	21.6	131	○
4.3.4	Exports of goods & services, % GDP	19.8	126	○
4.3.5	Intensity of local competition†	81.2	6	●
5	**Business sophistication**	**54.0**	**20**	
5.1	*Knowledge workers*	*79.0*	*7*	●
5.1.1	Knowledge-intensive employment, %	42.9	11	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	60.8	22	
5.1.4	R&D financed by business, %	61.4	13	
5.1.5	GMAT mean score	590.5	6	●
5.1.6	GMAT test takers/mn pop. 20–34	171.8	33	
5.2	*Innovation linkages*	*45.3*	*36*	
5.2.1	University/industry research collaboration†	69.2	13	
5.2.2	State of cluster development†	49.4	36	
5.2.3	R&D financed by abroad, %	1.7	76	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	154.5	6	●
5.2.5	PCT patent filings with foreign inventor, %	29.0	66	○
5.3	*Knowledge absorption*	*37.8*	*61*	
5.3.1	Royalty & license fees payments/th GDP	2.9	34	
5.3.2	High-tech imports less re-imports, %	13.9	25	
5.3.3	Computer & comm. service imports, %	26.7	75	
5.3.4	FDI net inflows, % GDP	2.9	60	
6	**Knowledge & technology outputs**	**34.9**	**43**	
6.1	*Knowledge creation*	*43.7*	*31*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.7	46	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.9	23	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.3	26	
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.2	10	●
6.2	*Knowledge impact*	*37.8*	*50*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.0	93	○
6.2.2	New businesses/th pop. 15–64	6.4	14	
6.2.3	Computer software spending, % GDP	0.3	30	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.9	47	
6.3	*Knowledge diffusion*	*23.3*	*83*	○
6.3.1	Royalty & license fees receipts/th GDP	0.7	38	
6.3.2	High-tech exports less re-exports, %	2.2	59	
6.3.3	Computer & comm. service exports, %	22.5	84	○
6.3.4	FDI net outflows, % GDP	1.7	27	
7	**Creative outputs**	**45.9**	**23**	
7.1	*Creative intangibles*	*43.4*	*59*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	47.0	36	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.1	20	
7.1.3	ICT & business model creation†	65.4	23	
7.1.4	ICT & organizational model creation†	63.0	21	
7.2	*Creative goods & services*	*33.7*	*37*	
7.2.1	Recreation & culture consumption, %	11.3	6	●
7.2.2	National feature films/mn pop. 15–69	2.9	38	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	158.3	33	
7.2.4	Creative goods exports, %	0.5	89	○
7.2.5	Creative services exports, %	7.1	29	
7.3	*Online creativity*	*63.4*	*12*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	73.9	11	
7.3.2	Country-code TLDs/th pop. 15–69	69.7	15	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,958.9	24	
7.3.4	Video uploads on YouTube/pop. 15–69	74.5	15	

Austria

Key indicators

Population (millions)	8.4
GDP per capita, PPP$	41,805.1
GDP (US$ billions)	425.1

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**53.1**	**22**	
Innovation Output Sub-Index	46.7	21	
Innovation Input Sub-Index	59.5	21	
Innovation Efficiency Index	0.8	48	
Global Innovation Index 2011 (out of 125)		19	
GII 2012 rank among GII 2011 economies (125)		21	
1 Institutions	**82.3**	**21**	
1.1 Political environment	*93.6*	*7*	●
1.1.1 Political stability*	91.6	9	●
1.1.2 Government effectiveness*	90.5	6	●
1.1.3 Press freedom*	98.6	5	●
1.2 Regulatory environment	*96.4*	*9*	●
1.2.1 Regulatory quality*	90.4	15	
1.2.2 Rule of law*	95.4	8	●
1.2.3 Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3 Business environment	*56.8*	*56*	
1.3.1 Ease of starting a business*	26.6	103	○
1.3.2 Ease of resolving insolvency*	87.7	18	
1.3.3 Ease of paying taxes*	56.1	62	
2 Human capital & research	**58.9**	**9**	●
2.1 Education	*64.5*	*18*	
2.1.1 Current expenditure on education, % GNI	5.2	33	
2.1.2 Public expenditure/pupil, % GDP/cap	26.9	17	
2.1.3 School life expectancy, years	15.3	28	
2.1.4 PISA scales in reading, maths, & science	486.8	29	
2.1.5 Pupil-teacher ratio, secondary	10.3	31	
2.2 Tertiary education	*57.3*	*7*	●
2.2.1 Tertiary enrolment, % gross	60.2	32	
2.2.2 Graduates in science & engineering, %	28.7	12	
2.2.3 Tertiary inbound mobility, %	19.4	9	
2.2.4 Gross tertiary outbound enrolment, %	2.3	39	
2.3 Research & development (R&D)	*54.9*	*14*	
2.3.1 Researchers, headcounts/mn pop.	4,123.3	24	
2.3.2 Gross expenditure on R&D, % GDP	2.7	10	
2.3.3 Quality of scientific research institutions†	69.7	20	
3 Infrastructure	**53.4**	**23**	
3.1 Information & communication technologies (ICT)	*62.0*	*24*	
3.1.1 ICT access*	76.8	14	
3.1.2 ICT use*	59.9	16	
3.1.3 Government's online service*	74.5	26	
3.1.4 E-participation*	36.8	41	
3.2 General infrastructure	*50.5*	*26*	
3.2.1 Electricity output, kWh/cap	7,989.5	25	
3.2.2 Electricity consumption, kWh/cap	8,312.0	18	
3.2.3 Quality of trade & transport infrastructure*	67.0	21	
3.2.4 Gross capital formation, % GDP	21.6	76	
3.3 Ecological sustainability	*47.8*	*20*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	8.1	29	
3.3.2 Environmental performance*	68.9	7	●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	3.5	25	
4 Market sophistication	**51.8**	**30**	
4.1 Credit	*59.5*	*19*	
4.1.1 Ease of getting credit*	77.4	21	
4.1.2 Domestic credit to private sector, % GDP	122.4	22	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*25.2*	*69*	
4.2.1 Ease of protecting investors*	15.8	110	○
4.2.2 Market capitalization, % GDP	18.0	80	○
4.2.3 Total value of stocks traded, % GDP	12.8	46	
4.2.4 Venture capital deals/tr PPP$ GDP	56.8	24	
4.3 Trade & competition	*70.7*	*25*	
4.3.1 Applied tariff rate, weighted mean, %	1.6	11	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3 Imports of goods & services, % GDP	49.7	49	
4.3.4 Exports of goods & services, % GDP	54.0	36	
4.3.5 Intensity of local competition†	80.0	7	●
5 Business sophistication	**50.9**	**29**	
5.1 Knowledge workers	*72.1*	*20*	
5.1.1 Knowledge-intensive employment, %	36.7	26	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	70.6	11	
5.1.4 R&D financed by business, %	43.3	37	
5.1.5 GMAT mean score	573.0	20	
5.1.6 GMAT test takers/mn pop. 20–34	177.7	31	
5.2 Innovation linkages	*43.7*	*42*	
5.2.1 University/industry research collaboration†	66.6	18	
5.2.2 State of cluster development†	58.3	23	
5.2.3 R&D financed by abroad, %	15.0	19	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	14.0	78	
5.2.5 PCT patent filings with foreign inventor, %	32.9	63	○
5.3 Knowledge absorption	*36.7*	*62*	
5.3.1 Royalty & license fees payments/th GDP	3.7	27	
5.3.2 High-tech imports less re-imports, %	10.8	44	
5.3.3 Computer & comm. service imports, %	37.6	44	
5.3.4 FDI net inflows, % GDP	-7.0	140	○
6 Knowledge & technology outputs	**41.4**	**28**	
6.1 Knowledge creation	*50.8*	*22*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	12.5	13	
6.1.2 PCT resident patent ap/bn PPP$ GDP	3.8	11	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	2.0	18	
6.1.4 Scientific & technical articles/bn PPP$ GDP	15.0	26	
6.2 Knowledge impact	*38.9*	*48*	
6.2.1 Growth rate of PPP$ GDP/worker, %	1.3	90	○
6.2.2 New businesses/th pop. 15–64	0.6	79	○
6.2.3 Computer software spending, % GDP	0.8	11	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	15.5	35	
6.3 Knowledge diffusion	*34.4*	*42*	
6.3.1 Royalty & license fees receipts/th GDP	1.7	23	
6.3.2 High-tech exports less re-exports, %	10.9	25	
6.3.3 Computer & comm. service exports, %	38.0	45	
6.3.4 FDI net outflows, % GDP	-5.4	116	○
7 Creative outputs	**52.1**	**12**	
7.1 Creative intangibles	*46.1*	*42*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	24.5	57	○
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	2.7	6	
7.1.3 ICT & business model creation†	61.3	36	
7.1.4 ICT & organizational model creation†	54.1	45	
7.2 Creative goods & services	*54.6*	*5*	●
7.2.1 Recreation & culture consumption, %	11.4	4	●
7.2.2 National feature films/mn pop. 15–69	5.9	20	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	377.3	8	●
7.2.4 Creative goods exports, %	3.5	22	
7.2.5 Creative services exports, %	10.9	17	
7.3 Online creativity	*61.7*	*15*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	72.9	13	
7.3.2 Country-code TLDs/th pop. 15–69	72.8	10	●
7.3.3 Wikipedia monthly edits/mn pop. 15–69	6,526.8	27	
7.3.4 Video uploads on YouTube/pop. 15–69	68.1	31	

Azerbaijan

Key indicators

Population (millions)	9.1
GDP per capita, PPP$	10,216.7
GDP (US$ billions)	68.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**30.4**	**89**	
Innovation Output Sub-Index		24.0	94	
Innovation Input Sub-Index		36.8	85	
Innovation Efficiency Index		0.7	100	
Global Innovation Index 2011 (out of 125)			88	
GII 2012 rank among GII 2011 economies (125)			84	
1	**Institutions**	**49.5**	**91**	
1.1	*Political environment*	*37.0*	*124*	
1.1.1	Political stability*	57.9	88	
1.1.2	Government effectiveness*	18.9	123	
1.1.3	Press freedom*	34.3	129	○
1.2	*Regulatory environment*	*52.7*	*110*	
1.2.1	Regulatory quality*	40.5	103	
1.2.2	Rule of law*	24.3	117	
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	95	
1.3	*Business environment*	*58.7*	*51*	
1.3.1	Ease of starting a business*	89.9	15	●
1.3.2	Ease of resolving insolvency*	40.2	84	
1.3.3	Ease of paying taxes*	46.0	76	
2	**Human capital & research**	**30.0**	**91**	
2.1	*Education*	*45.5*	*89*	
2.1.1	Current expenditure on education, % GNI	3.4	93	
2.1.2	Public expenditure/pupil, % GDP/cap	15.1	89	
2.1.3	School life expectancy, years	11.7	95	
2.1.4	PISA scales in reading, maths, & science	388.6	62	
2.1.5	Pupil-teacher ratio, secondary	7.8	8	●
2.2	*Tertiary education*	*26.9*	*84*	
2.2.1	Tertiary enrolment, % gross	19.3	88	
2.2.2	Graduates in science & engineering, %	16.6	70	
2.2.3	Tertiary inbound mobility, %	3.2	44	
2.2.4	Gross tertiary outbound enrolment, %	1.1	70	
2.3	*Research & development (R&D)*	*17.7*	*87*	
2.3.1	Researchers, headcounts/mn pop.	1,217.8	51	
2.3.2	Gross expenditure on R&D, % GDP	0.3	75	
2.3.3	Quality of scientific research institutions†	38.6	84	
3	**Infrastructure**	**26.2**	**103**	
3.1	*Information & communication technologies (ICT)*	*27.0*	*88*	
3.1.1	ICT access*	42.8	70	
3.1.2	ICT use*	15.3	75	
3.1.3	Government's online service*	36.6	99	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*24.9*	*124*	
3.2.1	Electricity output, kWh/cap	2,101.9	72	
3.2.2	Electricity consumption, kWh/cap	1,651.2	75	
3.2.3	Quality of trade & transport infrastructure*	30.8	100	
3.2.4	Gross capital formation, % GDP	17.1	117	
3.3	*Ecological sustainability*	*26.8*	*90*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.4	48	
3.3.2	Environmental performance*	43.1	106	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	107	
4	**Market sophistication**	**44.9**	**43**	●
4.1	*Credit*	*29.9*	*72*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	18.3	121	
4.1.3	Microfinance gross loans, % GDP	2.3	21	●
4.2	*Investment*	*41.0*	*30*	●
4.2.1	Ease of protecting investors*	82.0	20	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*63.8*	*68*	
4.3.1	Applied tariff rate, weighted mean, %	3.9	67	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	10	●
4.3.3	Imports of goods & services, % GDP	20.4	133	○
4.3.4	Exports of goods & services, % GDP	55.1	32	●
4.3.5	Intensity of local competition†	46.5	128	○
5	**Business sophistication**	**33.5**	**102**	
5.1	*Knowledge workers*	*34.3*	*108*	
5.1.1	Knowledge-intensive employment, %	20.3	66	
5.1.2	Firms offering formal training, % firms	10.5	102	○
5.1.3	R&D performed by business, %	22.0	64	
5.1.4	R&D financed by business, %	24.8	58	
5.1.5	GMAT mean score	543.5	44	●
5.1.6	GMAT test takers/mn pop. 20–34	57.5	74	
5.2	*Innovation linkages*	*27.4*	*112*	
5.2.1	University/industry research collaboration†	35.9	103	
5.2.2	State of cluster development†	40.2	72	
5.2.3	R&D financed by abroad, %	0.1	92	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	31.1	48	
5.2.5	PCT patent filings with foreign inventor, %	50.0	48	
5.3	*Knowledge absorption*	*38.7*	*58*	
5.3.1	Royalty & license fees payments/th GDP	0.3	100	
5.3.2	High-tech imports less re-imports, %	8.1	70	
5.3.3	Computer & comm. service imports, %	61.1	8	●
5.3.4	FDI net inflows, % GDP	1.1	108	
6	**Knowledge & technology outputs**	**20.5**	**103**	
6.1	*Knowledge creation*	*11.2*	*108*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	97	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	94	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	57	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.8	88	
6.2	*Knowledge impact*	*25.3*	*103*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	62	
6.2.2	New businesses/th pop. 15–64	0.9	62	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.1	113	
6.3	*Knowledge diffusion*	*25.1*	*74*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	97	○
6.3.2	High-tech exports less re-exports, %	0.0	115	○
6.3.3	Computer & comm. service exports, %	38.4	43	●
6.3.4	FDI net outflows, % GDP	0.4	59	
7	**Creative outputs**	**27.5**	**91**	
7.1	*Creative intangibles*	*41.0*	*68*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.1	54	
7.1.3	ICT & business model creation†	54.6	57	
7.1.4	ICT & organizational model creation†	66.9	13	●
7.2	*Creative goods & services*	*10.8*	*95*	
7.2.1	Recreation & culture consumption, %	3.6	66	
7.2.2	National feature films/mn pop. 15–69	2.4	44	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	18.0	106	
7.2.4	Creative goods exports, %	0.0	128	○
7.2.5	Creative services exports, %	2.8	53	
7.3	*Online creativity*	*17.0*	*87*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.8	103	
7.3.2	Country-code TLDs/th pop. 15–69	15.0	82	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,615.2	54	
7.3.4	Video uploads on YouTube/pop. 15–69	44.1	90	

Bahrain

Key indicators

Population (millions)	1.1
GDP per capita, PPP$	27,368.4
GDP (US$ billions)	26.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**41.1**	**41**	
Innovation Output Sub-Index		30.8	60	
Innovation Input Sub-Index		51.4	35	
Innovation Efficiency Index		0.6	125	○
Global Innovation Index 2011 (out of 125)			46	
GII 2012 rank among GII 2011 economies (125)			40	
1	**Institutions**	**66.7**	**48**	
1.1	*Political environment*	*40.8*	*115*	○
1.1.1	Political stability*	57.1	89	
1.1.2	Government effectiveness*	56.6	44	
1.1.3	Press freedom*	8.8	137	○
1.2	*Regulatory environment*	*82.7*	*31*	
1.2.1	Regulatory quality*	71.3	39	
1.2.2	Rule of law*	59.7	47	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*76.4*	*21*	
1.3.1	Ease of starting a business*	55.3	62	
1.3.2	Ease of resolving insolvency*	83.4	24	
1.3.3	Ease of paying taxes*	90.6	14	
2	**Human capital & research**	**54.7**	**18**	
2.1	*Education*	*54.6*	*57*	
2.1.1	Current expenditure on education, % GNI	3.0	106	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	12.4	52	
2.2	*Tertiary education*	*74.1*	*2*	●
2.2.1	Tertiary enrolment, % gross	51.2	46	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	24.1	6	●
2.2.4	Gross tertiary outbound enrolment, %	8.0	5	●
2.3	*Research & development (R&D)*	*35.4*	*34*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	35.4	99	
3	**Infrastructure**	**44.7**	**37**	
3.1	*Information & communication technologies (ICT)*	*62.9*	*22*	
3.1.1	ICT access*	67.3	33	
3.1.2	ICT use*	32.2	44	
3.1.3	Government's online service*	86.3	9	●
3.1.4	E-participation*	65.8	19	
3.2	*General infrastructure*	*63.5*	*7*	●
3.2.1	Electricity output, kWh/cap	11,603.5	10	●
3.2.2	Electricity consumption, kWh/cap	13,624.5	10	●
3.2.3	Quality of trade & transport infrastructure*	59.0	29	
3.2.4	Gross capital formation, % GDP	33.2	13	
3.3	*Ecological sustainability*	*7.8*	*126*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.9	117	○
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	56	
4	**Market sophistication**	**45.8**	**40**	
4.1	*Credit*	*23.6*	*87*	
4.1.1	Ease of getting credit*	21.1	104	○
4.1.2	Domestic credit to private sector, % GDP	79.6	43	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*34.9*	*45*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	82.2	24	
4.2.3	Total value of stocks traded, % GDP	4.2	57	
4.2.4	Venture capital deals/tr PPP$ GDP	32.4	34	
4.3	*Trade & competition*	*78.9*	*5*	●
4.3.1	Applied tariff rate, weighted mean, %	3.6	60	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.0	74	
4.3.3	Imports of goods & services, % GDP	74.3	17	
4.3.4	Exports of goods & services, % GDP	96.8	6	●
4.3.5	Intensity of local competition†	74.2	23	
5	**Business sophistication**	**45.3**	**40**	
5.1	*Knowledge workers*	*41.8*	*79*	
5.1.1	Knowledge-intensive employment, %	20.7	64	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	415.8	122	○
5.1.6	GMAT test takers/mn pop. 20–34	122.7	44	
5.2	*Innovation linkages*	*65.9*	*5*	●
5.2.1	University/industry research collaboration†	38.9	84	
5.2.2	State of cluster development†	58.7	21	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	339.5	1	●
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*28.1*	*103*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	7.7	75	
5.3.3	Computer & comm. service imports, %	11.5	120	○
5.3.4	FDI net inflows, % GDP	1.2	105	
6	**Knowledge & technology outputs**	**27.4**	**65**	
6.1	*Knowledge creation*	*19.3*	*79*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	98	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.3	105	
6.2	*Knowledge impact*	*39.7*	*47*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	68	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.9	63	
6.3	*Knowledge diffusion*	*23.3*	*84*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.0	117	○
6.3.3	Computer & comm. service exports, %	25.4	73	
6.3.4	FDI net outflows, % GDP	-8.7	117	○
7	**Creative outputs**	**34.2**	**62**	
7.1	*Creative intangibles*	*44.5*	*51*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	2.0	83	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.6	40	
7.1.4	ICT & organizational model creation†	73.1	6	●
7.2	*Creative goods & services*	*28.0*	*54*	
7.2.1	Recreation & culture consumption, %	6.7	41	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	207.1	24	
7.2.4	Creative goods exports, %	0.3	94	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*19.6*	*75*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.0	73	
7.3.2	Country-code TLDs/th pop. 15–69	8.4	101	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,006.7	63	
7.3.4	Video uploads on YouTube/pop. 15–69	61.7	53	

Bangladesh

Key indicators

Population (millions)	166.7
GDP per capita, PPP$	1,697.3
GDP (US$ billions)	115.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.1**	**112**	
Innovation Output Sub-Index		22.6	104	
Innovation Input Sub-Index		29.5	118	
Innovation Efficiency Index		0.8	56	●
Global Innovation Index 2011 (out of 125)			97	
GII 2012 rank among GII 2011 economies (125)			104	
1	**Institutions**	**40.5**	**115**	
1.1	*Political environment*	*34.8*	*127*	
1.1.1	Political stability*	30.9	128	
1.1.2	Government effectiveness*	18.8	124	
1.1.3	Press freedom*	54.7	104	
1.2	*Regulatory environment*	*41.5*	*130*	
1.2.1	Regulatory quality*	29.9	125	
1.2.2	Rule of law*	27.4	108	
1.2.3	Cost of redundancy dismissal, salary weeks	31.0	127	
1.3	*Business environment*	*45.0*	*81*	
1.3.1	Ease of starting a business*	54.6	64	
1.3.2	Ease of resolving insolvency*	30.9	97	
1.3.3	Ease of paying taxes*	49.6	71	
2	**Human capital & research**	**19.2**	**127**	
2.1	*Education*	*20.8*	*138*	○
2.1.1	Current expenditure on education, % GNI	1.8	127	
2.1.2	Public expenditure/pupil, % GDP/cap	10.7	103	
2.1.3	School life expectancy, years	8.1	129	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	28.5	117	
2.2	*Tertiary education*	*7.5*	*130*	
2.2.1	Tertiary enrolment, % gross	10.6	102	
2.2.2	Graduates in science & engineering, %	8.1	99	○
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.1	135	○
2.3	*Research & development (R&D)*	*29.1*	*44*	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	29.1	112	
3	**Infrastructure**	**28.2**	**93**	
3.1	*Information & communication technologies (ICT)*	*18.2*	*108*	
3.1.1	ICT access*	19.1	120	
3.1.2	ICT use*	1.3	130	○
3.1.3	Government's online service*	44.4	85	
3.1.4	E-participation*	7.9	98	
3.2	*General infrastructure*	*29.6*	*107*	
3.2.1	Electricity output, kWh/cap	233.4	113	
3.2.2	Electricity consumption, kWh/cap	228.1	111	
3.2.3	Quality of trade & transport infrastructure*	37.3	73	
3.2.4	Gross capital formation, % GDP	24.4	48	●
3.3	*Ecological sustainability*	*36.7*	*53*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.2	7	●
3.3.2	Environmental performance*	42.6	110	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	135	○
4	**Market sophistication**	**30.0**	**110**	
4.1	*Credit*	*27.7*	*78*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	47.1	67	
4.1.3	Microfinance gross loans, % GDP	2.5	20	●
4.2	*Investment*	*27.0*	*64*	
4.2.1	Ease of protecting investors*	82.0	20	●
4.2.2	Market capitalization, % GDP	47.0	45	●
4.2.3	Total value of stocks traded, % GDP	14.7	42	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*35.2*	*138*	○
4.3.1	Applied tariff rate, weighted mean, %	13.0	131	
4.3.2	Non-agricultural mkt access weighted tariff, %	4.3	131	
4.3.3	Imports of goods & services, % GDP	25.0	125	
4.3.4	Exports of goods & services, % GDP	18.4	128	
4.3.5	Intensity of local competition†	59.0	88	
5	**Business sophistication**	**30.0**	**123**	
5.1	*Knowledge workers*	*27.8*	*120*	
5.1.1	Knowledge-intensive employment, %	7.3	99	○
5.1.2	Firms offering formal training, % firms	27.2	70	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	499.6	77	
5.1.6	GMAT test takers/mn pop. 20–34	10.2	124	
5.2	*Innovation linkages*	*41.2*	*51*	●
5.2.1	University/industry research collaboration†	27.2	121	
5.2.2	State of cluster development†	44.2	56	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	7.7	93	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*20.9*	*138*	○
5.3.1	Royalty & license fees payments/th GDP	0.2	105	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	7.4	129	○
5.3.4	FDI net inflows, % GDP	1.0	111	
6	**Knowledge & technology outputs**	**25.6**	**74**	
6.1	*Knowledge creation*	*2.1*	*135*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	94	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.1	110	
6.2	*Knowledge impact*	*26.7*	*95*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.4	44	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	69	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.9	116	
6.3	*Knowledge diffusion*	*48.1*	*25*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	95	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	72.1	2	●
6.3.4	FDI net outflows, % GDP	0.0	101	
7	**Creative outputs**	**19.6**	**121**	
7.1	*Creative intangibles*	*31.5*	*105*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	1.2	84	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	42.8	101	
7.1.4	ICT & organizational model creation†	51.2	59	
7.2	*Creative goods & services*	*10.1*	*100*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.7	73	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	15.6	108	
7.2.4	Creative goods exports, %	1.4	57	
7.2.5	Creative services exports, %	2.0	60	
7.3	*Online creativity*	*5.3*	*123*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	121	
7.3.2	Country-code TLDs/th pop. 15–69	0.7	129	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	40.8	109	
7.3.4	Video uploads on YouTube/pop. 15–69	20.1	119	

Belarus

Key indicators

Population (millions)	9.4
GDP per capita, PPP$	14,948.0
GDP (US$ billions)	57.7

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**32.9**	**78**	
Innovation Output Sub-Index	28.1	75	
Innovation Input Sub-Index	37.7	80	
Innovation Efficiency Index	0.7	66	
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**41.5**	**109**	
1.1 Political environment	*33.4*	*131*	○
1.1.1 Political stability*	62.6	76	
1.1.2 Government effectiveness*	11.3	136	○
1.1.3 Press freedom*	26.4	133	○
1.2 Regulatory environment	*47.0*	*121*	○
1.2.1 Regulatory quality*	22.2	136	○
1.2.2 Rule of law*	20.0	127	○
1.2.3 Cost of redundancy dismissal, salary weeks	21.7	95	
1.3 Business environment	*44.1*	*84*	
1.3.1 Ease of starting a business*	95.6	7	●
1.3.2 Ease of resolving insolvency*	36.6	89	
1.3.3 Ease of paying taxes*	0.0	140	○
2 Human capital & research	**42.7**	**45**	
2.1 Education	*60.5*	*36*	
2.1.1 Current expenditure on education, % GNI	4.4	60	
2.1.2 Public expenditure/pupil, % GDP/cap	23.6	37	
2.1.3 School life expectancy, years	14.7	41	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	8.1	11	●
2.2 Tertiary education	*52.2*	*16*	●
2.2.1 Tertiary enrolment, % gross	83.0	6	●
2.2.2 Graduates in science & engineering, %	26.6	17	●
2.2.3 Tertiary inbound mobility, %	1.4	66	
2.2.4 Gross tertiary outbound enrolment, %	3.9	19	●
2.3 Research & development (R&D)	*15.2*	*104*	
2.3.1 Researchers, headcounts/mn pop.	2,134.8	38	
2.3.2 Gross expenditure on R&D, % GDP	0.6	46	
2.3.3 Quality of scientific research institutions†	n/a	n/a	
3 Infrastructure	**34.5**	**66**	
3.1 Information & communication technologies (ICT)	*32.5*	*74*	
3.1.1 ICT access*	56.7	48	
3.1.2 ICT use*	24.1	54	
3.1.3 Government's online service*	41.2	92	
3.1.4 E-participation*	7.9	98	
3.2 General infrastructure	*47.1*	*29*	
3.2.1 Electricity output, kWh/cap	3,197.5	58	
3.2.2 Electricity consumption, kWh/cap	3,245.4	54	
3.2.3 Quality of trade & transport infrastructure*	40.8	59	
3.2.4 Gross capital formation, % GDP	40.6	4	●
3.3 Ecological sustainability	*24.0*	*96*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.5	95	
3.3.2 Environmental performance*	53.9	63	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.2	106	○
4 Market sophistication	**36.9**	**75**	
4.1 Credit	*20.3*	*90*	
4.1.1 Ease of getting credit*	27.0	88	
4.1.2 Domestic credit to private sector, % GDP	44.8	74	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*14.7*	*98*	
4.2.1 Ease of protecting investors*	29.4	91	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*75.7*	*14*	●
4.3.1 Applied tariff rate, weighted mean, %	2.1	43	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.7	64	
4.3.3 Imports of goods & services, % GDP	68.3	25	
4.3.4 Exports of goods & services, % GDP	54.6	34	
4.3.5 Intensity of local competition†	n/a	n/a	
5 Business sophistication	**33.1**	**105**	
5.1 Knowledge workers	*54.9*	*43*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	44.4	39	
5.1.3 R&D performed by business, %	52.0	31	
5.1.4 R&D financed by business, %	28.8	53	
5.1.5 GMAT mean score	558.8	32	
5.1.6 GMAT test takers/mn pop. 20–34	50.4	78	
5.2 Innovation linkages	*16.3*	*136*	○
5.2.1 University/industry research collaboration†	n/a	n/a	
5.2.2 State of cluster development†	n/a	n/a	
5.2.3 R&D financed by abroad, %	8.5	38	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	14.2	77	
5.2.5 PCT patent filings with foreign inventor, %	25.0	71	
5.3 Knowledge absorption	*28.1*	*105*	
5.3.1 Royalty & license fees payments/th GDP	1.8	51	
5.3.2 High-tech imports less re-imports, %	4.7	109	○
5.3.3 Computer & comm. service imports, %	26.9	74	
5.3.4 FDI net inflows, % GDP	2.6	66	
6 Knowledge & technology outputs	**34.5**	**44**	
6.1 Knowledge creation	*45.5*	*28*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	14.2	10	●
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	68	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	7.8	7	●
6.1.4 Scientific & technical articles/bn PPP$ GDP	3.1	70	
6.2 Knowledge impact	*36.6*	*56*	
6.2.1 Growth rate of PPP$ GDP/worker, %	7.0	7	●
6.2.2 New businesses/th pop. 15–64	0.8	68	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.1	111	○
6.3 Knowledge diffusion	*21.3*	*98*	
6.3.1 Royalty & license fees receipts/th GDP	0.2	65	
6.3.2 High-tech exports less re-exports, %	1.6	65	
6.3.3 Computer & comm. service exports, %	23.1	80	
6.3.4 FDI net outflows, % GDP	0.1	83	
7 Creative outputs	**21.8**	**117**	○
7.1 Creative intangibles	*24.7*	*126*	○
7.1.1 Domestic res trademark reg/bn PPP$ GDP	69.5	21	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.8	26	
7.1.3 ICT & business model creation†	n/a	n/a	
7.1.4 ICT & organizational model creation†	n/a	n/a	
7.2 Creative goods & services	*21.0*	*70*	
7.2.1 Recreation & culture consumption, %	3.6	64	
7.2.2 National feature films/mn pop. 15–69	1.1	65	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	249.4	17	●
7.2.4 Creative goods exports, %	1.5	55	
7.2.5 Creative services exports, %	4.1	44	
7.3 Online creativity	*16.7*	*88*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.8	89	
7.3.2 Country-code TLDs/th pop. 15–69	2.0	116	○
7.3.3 Wikipedia monthly edits/mn pop. 15–69	2,788.8	44	
7.3.4 Video uploads on YouTube/pop. 15–69	48.8	82	

Belgium

Key indicators

Population (millions)	11.0
GDP per capita, PPP$	37,677.4
GDP (US$ billions)	529.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**54.3**	**20**	
Innovation Output Sub-Index		48.3	18	
Innovation Input Sub-Index		60.3	20	
Innovation Efficiency Index		0.8	45	
Global Innovation Index 2011 (out of 125)			24	
GII 2012 rank among GII 2011 economies (125)			19	
1	**Institutions**	**86.2**	**16**	
1.1	*Political environment*	*87.3*	*14*	
1.1.1	Political stability*	84.6	28	
1.1.2	Government effectiveness*	82.8	14	
1.1.3	Press freedom*	94.6	19	
1.2	*Regulatory environment*	*92.4*	*15*	
1.2.1	Regulatory quality*	84.8	23	
1.2.2	Rule of law*	84.8	21	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*78.8*	*18*	
1.3.1	Ease of starting a business*	81.2	27	
1.3.2	Ease of resolving insolvency*	94.9	8	●
1.3.3	Ease of paying taxes*	60.4	56	
2	**Human capital & research**	**54.5**	**20**	
2.1	*Education*	*71.7*	*7*	●
2.1.1	Current expenditure on education, % GNI	5.8	23	
2.1.2	Public expenditure/pupil, % GDP/cap	28.8	12	
2.1.3	School life expectancy, years	16.4	13	
2.1.4	PISA scales in reading, maths, & science	509.3	14	
2.1.5	Pupil-teacher ratio, secondary	6.5	1	●
2.2	*Tertiary education*	*41.2*	*48*	
2.2.1	Tertiary enrolment, % gross	67.5	20	
2.2.2	Graduates in science & engineering, %	16.3	71	○
2.2.3	Tertiary inbound mobility, %	8.0	18	
2.2.4	Gross tertiary outbound enrolment, %	1.6	56	
2.3	*Research & development (R&D)*	*50.7*	*21*	
2.3.1	Researchers, headcounts/mn pop.	3,435.4	27	
2.3.2	Gross expenditure on R&D, % GDP	2.0	15	
2.3.3	Quality of scientific research institutions†	80.9	5	●
3	**Infrastructure**	**47.0**	**31**	
3.1	*Information & communication technologies (ICT)*	*51.2*	*40*	
3.1.1	ICT access*	75.4	17	
3.1.2	ICT use*	51.6	24	
3.1.3	Government's online service*	64.7	39	
3.1.4	E-participation*	13.2	83	○
3.2	*General infrastructure*	*52.9*	*19*	
3.2.1	Electricity output, kWh/cap	8,708.9	18	
3.2.2	Electricity consumption, kWh/cap	8,560.8	15	
3.2.3	Quality of trade & transport infrastructure*	75.3	12	
3.2.4	Gross capital formation, % GDP	20.2	89	○
3.3	*Ecological sustainability*	*36.7*	*52*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.7	61	○
3.3.2	Environmental performance*	63.0	24	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.1	43	
4	**Market sophistication**	**56.0**	**21**	
4.1	*Credit*	*44.7*	*35*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	94.9	35	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*45.4*	*24*	
4.2.1	Ease of protecting investors*	87.0	16	
4.2.2	Market capitalization, % GDP	57.6	39	
4.2.3	Total value of stocks traded, % GDP	23.8	36	
4.2.4	Venture capital deals/tr PPP$ GDP	29.0	36	
4.3	*Trade & competition*	*77.9*	*8*	●
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	77.3	14	
4.3.4	Exports of goods & services, % GDP	80.0	11	●
4.3.5	Intensity of local competition†	82.7	1	●
5	**Business sophistication**	**57.7**	**13**	
5.1	*Knowledge workers*	*80.0*	*5*	●
5.1.1	Knowledge-intensive employment, %	43.4	9	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	67.3	14	
5.1.4	R&D financed by business, %	61.4	14	
5.1.5	GMAT mean score	574.9	18	
5.1.6	GMAT test takers/mn pop. 20–34	202.0	28	
5.2	*Innovation linkages*	*46.4*	*30*	
5.2.1	University/industry research collaboration†	71.9	9	●
5.2.2	State of cluster development†	54.2	28	
5.2.3	R&D financed by abroad, %	13.0	24	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	22.8	61	
5.2.5	PCT patent filings with foreign inventor, %	53.9	47	○
5.3	*Knowledge absorption*	*46.6*	*24*	
5.3.1	Royalty & license fees payments/th GDP	4.1	23	
5.3.2	High-tech imports less re-imports, %	8.3	64	○
5.3.3	Computer & comm. service imports, %	46.9	21	
5.3.4	FDI net inflows, % GDP	13.4	9	●
6	**Knowledge & technology outputs**	**50.6**	**17**	
6.1	*Knowledge creation*	*57.7*	*15*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.7	28	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.9	15	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	18.8	14	
6.2	*Knowledge impact*	*43.0*	*37*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.6	82	○
6.2.2	New businesses/th pop. 15–64	4.3	23	
6.2.3	Computer software spending, % GDP	0.8	12	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.4	48	
6.3	*Knowledge diffusion*	*51.2*	*19*	
6.3.1	Royalty & license fees receipts/th GDP	4.6	13	
6.3.2	High-tech exports less re-exports, %	8.3	29	
6.3.3	Computer & comm. service exports, %	54.8	19	
6.3.4	FDI net outflows, % GDP	10.2	3	●
7	**Creative outputs**	**46.0**	**22**	
7.1	*Creative intangibles*	*40.3*	*70*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	12.8	73	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	65.0	26	
7.1.4	ICT & organizational model creation†	49.9	63	○
7.2	*Creative goods & services*	*40.6*	*18*	
7.2.1	Recreation & culture consumption, %	9.4	16	
7.2.2	National feature films/mn pop. 15–69	4.5	25	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	184.8	26	
7.2.4	Creative goods exports, %	1.8	47	
7.2.5	Creative services exports, %	11.6	15	
7.3	*Online creativity*	*62.8*	*14*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	58.2	17	
7.3.2	Country-code TLDs/th pop. 15–69	71.4	11	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	9,721.7	9	●
7.3.4	Video uploads on YouTube/pop. 15–69	72.1	20	

Belize

Key indicators

Population (millions)	0.3
GDP per capita, PPP$	8,275.2
GDP (US$ billions)	1.5

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**32.5**	**80**	
Innovation Output Sub-Index	28.4	74	
Innovation Input Sub-Index	36.6	87	
Innovation Efficiency Index	0.8	53	
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**56.3**	**69**	
1.1 Political environment	*47.2*	*88*	
1.1.1 Political stability*	65.1	70	
1.1.2 Government effectiveness*	29.4	92	
1.1.3 Press freedom*	n/a	n/a	
1.2 Regulatory environment	*69.1*	*61*	
1.2.1 Regulatory quality*	39.8	105	
1.2.2 Rule of law*	38.1	78	
1.2.3 Cost of redundancy dismissal, salary weeks	8.3	21	●
1.3 Business environment	*52.5*	*63*	
1.3.1 Ease of starting a business*	13.6	121	
1.3.2 Ease of resolving insolvency*	82.0	26	●
1.3.3 Ease of paying taxes*	61.8	54	
2 Human capital & research	**32.2**	**79**	
2.1 Education	*57.1*	*50*	
2.1.1 Current expenditure on education, % GNI	6.9	12	●
2.1.2 Public expenditure/pupil, % GDP/cap	20.3	57	
2.1.3 School life expectancy, years	12.9	74	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	16.8	79	
2.2 Tertiary education	*16.3*	*116*	
2.2.1 Tertiary enrolment, % gross	21.5	86	
2.2.2 Graduates in science & engineering, %	6.0	102	○
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	2.6	32	
2.3 Research & development (R&D)	*23.0*	*65*	
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	23.0	122	○
3 Infrastructure	**30.1**	**83**	
3.1 Information & communication technologies (ICT)	*29.1*	*82*	
3.1.1 ICT access*	n/a	n/a	
3.1.2 ICT use*	n/a	n/a	
3.1.3 Government's online service*	39.9	94	
3.1.4 E-participation*	18.4	71	
3.2 General infrastructure	*52.8*	*20*	●
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	n/a	n/a	
3.2.4 Gross capital formation, % GDP	25.5	38	
3.3 Ecological sustainability	*8.5*	*125*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.1	58	
4 Market sophistication	**29.8**	**113**	
4.1 Credit	*19.1*	*94*	
4.1.1 Ease of getting credit*	27.0	88	
4.1.2 Domestic credit to private sector, % GDP	62.2	53	
4.1.3 Microfinance gross loans, % GDP	0.9	40	
4.2 Investment	*11.2*	*109*	
4.2.1 Ease of protecting investors*	22.3	100	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*59.2*	*92*	
4.3.1 Applied tariff rate, weighted mean, %	6.4	95	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.6	123	○
4.3.3 Imports of goods & services, % GDP	70.0	20	●
4.3.4 Exports of goods & services, % GDP	62.1	23	●
4.3.5 Intensity of local competition†	53.7	103	
5 Business sophistication	**34.6**	**91**	
5.1 Knowledge workers	*43.5*	*72*	
5.1.1 Knowledge-intensive employment, %	20.4	65	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	420.3	118	
5.1.6 GMAT test takers/mn pop. 20–34	200.8	29	●
5.2 Innovation linkages	*33.4*	*81*	
5.2.1 University/industry research collaboration†	24.2	125	○
5.2.2 State of cluster development†	26.1	123	○
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*26.8*	*113*	
5.3.1 Royalty & license fees payments/th GDP	1.0	74	
5.3.2 High-tech imports less re-imports, %	5.7	93	
5.3.3 Computer & comm. service imports, %	20.7	99	
5.3.4 FDI net inflows, % GDP	6.9	28	●
6 Knowledge & technology outputs	**27.5**	**64**	
6.1 Knowledge creation	*27.9*	*57*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.4	83	
6.1.2 PCT resident patent ap/bn PPP$ GDP	1.8	24	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.8	121	
6.2 Knowledge impact	*22.2*	*111*	
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	3.0	33	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.6	101	
6.3 Knowledge diffusion	*32.5*	*47*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	12.3	113	
6.3.4 FDI net outflows, % GDP	0.1	87	
7 Creative outputs	**29.3**	**81**	
7.1 Creative intangibles	*28.1*	*119*	○
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	32.8	125	○
7.1.4 ICT & organizational model creation†	23.3	131	○
7.2 Creative goods & services	*0.5*	*140*	○
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	n/a	n/a	
7.2.4 Creative goods exports, %	0.0	122	○
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*60.7*	*18*	●
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2 Country-code TLDs/th pop. 15–69	77.1	6	●
7.3.3 Wikipedia monthly edits/mn pop. 15–69	428.1	80	
7.3.4 Video uploads on YouTube/pop. 15–69	63.6	42	

Benin

Key indicators

Population (millions)	9.9
GDP per capita, PPP$	1,491.5
GDP (US$ billions)	7.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**24.4**	**125**	
Innovation Output Sub-Index		22.0	108	
Innovation Input Sub-Index		26.7	132	
Innovation Efficiency Index		0.8	36	●
Global Innovation Index 2011 (out of 125)			118	
GII 2012 rank among GII 2011 economies (125)			115	
1	**Institutions**	**44.7**	**102**	
1.1	*Political environment*	*57.3*	*66*	●
1.1.1	Political stability*	72.7	53	●
1.1.2	Government effectiveness*	26.9	100	
1.1.3	Press freedom*	72.3	70	●
1.2	*Regulatory environment*	*64.4*	*77*	
1.2.1	Regulatory quality*	43.5	94	
1.2.2	Rule of law*	28.4	105	
1.2.3	Cost of redundancy dismissal, salary weeks	11.6	47	●
1.3	*Business environment*	*12.4*	*136*	○
1.3.1	Ease of starting a business*	7.1	130	
1.3.2	Ease of resolving insolvency*	22.3	109	
1.3.3	Ease of paying taxes*	7.9	129	
2	**Human capital & research**	**20.5**	**123**	
2.1	*Education*	*36.7*	*114*	
2.1.1	Current expenditure on education, % GNI	4.3	65	●
2.1.2	Public expenditure/pupil, % GDP/cap	17.0	79	
2.1.3	School life expectancy, years	9.4	120	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.9	108	
2.2	*Tertiary education*	*4.6*	*137*	○
2.2.1	Tertiary enrolment, % gross	6.0	116	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.4	103	
2.3	*Research & development (R&D)*	*20.1*	*73*	●
2.3.1	Researchers, headcounts/mn pop.	123.3	95	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	39.4	79	
3	**Infrastructure**	**24.8**	**106**	
3.1	*Information & communication technologies (ICT)*	*12.7*	*129*	
3.1.1	ICT access*	22.2	113	
3.1.2	ICT use*	1.2	132	○
3.1.3	Government's online service*	19.6	132	○
3.1.4	E-participation*	7.9	98	
3.2	*General infrastructure*	*30.2*	*99*	
3.2.1	Electricity output, kWh/cap	13.5	124	○
3.2.2	Electricity consumption, kWh/cap	87.9	122	○
3.2.3	Quality of trade & transport infrastructure*	37.0	74	●
3.2.4	Gross capital formation, % GDP	25.8	37	●
3.3	*Ecological sustainability*	*31.5*	*65*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.9	101	
3.3.2	Environmental performance*	50.4	77	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**12.1**	**141**	○
4.1	*Credit*	*10.5*	*121*	
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	23.1	109	
4.1.3	Microfinance gross loans, % GDP	1.9	22	●
4.2	*Investment*	*3.6*	*129*	○
4.2.1	Ease of protecting investors*	7.1	123	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*22.4*	*140*	○
4.3.1	Applied tariff rate, weighted mean, %	15.4	138	○
4.3.2	Non-agricultural mkt access weighted tariff, %	8.8	138	○
4.3.3	Imports of goods & services, % GDP	27.7	115	
4.3.4	Exports of goods & services, % GDP	14.1	133	○
4.3.5	Intensity of local competition†	59.0	89	
5	**Business sophistication**	**31.5**	**118**	
5.1	*Knowledge workers*	*38.5*	*93*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	32.4	57	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	464.0	102	
5.1.6	GMAT test takers/mn pop. 20–34	18.6	114	
5.2	*Innovation linkages*	*26.2*	*117*	
5.2.1	University/industry research collaboration†	38.5	86	
5.2.2	State of cluster development†	27.2	119	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*29.8*	*97*	
5.3.1	Royalty & license fees payments/th GDP	0.5	91	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	25.0	84	
5.3.4	FDI net inflows, % GDP	1.7	87	
6	**Knowledge & technology outputs**	**21.2**	**101**	
6.1	*Knowledge creation*	*19.7*	*77*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.7	73	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	78	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.5	66	●
6.2	*Knowledge impact*	*16.8*	*127*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.1	112	
6.3	*Knowledge diffusion*	*27.2*	*65*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	96	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	24.2	76	
6.3.4	FDI net outflows, % GDP	0.5	58	●
7	**Creative outputs**	**22.8**	**110**	
7.1	*Creative intangibles*	*41.7*	*63*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	40.7	113	
7.1.4	ICT & organizational model creation†	42.8	87	
7.2	*Creative goods & services*	*1.1*	*136*	○
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	10.7	114	
7.2.4	Creative goods exports, %	0.1	119	
7.2.5	Creative services exports, %	0.3	91	
7.3	*Online creativity*	*6.6*	*121*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	117	
7.3.2	Country-code TLDs/th pop. 15–69	1.0	125	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	18.6	123	

Bolivia (Plurinational State of)

Key indicators

Population (millions)	10.6
GDP per capita, PPP$	4,843.2
GDP (US$ billions)	23.9

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**25.8**	**114**	
Innovation Output Sub-Index	20.3	120	
Innovation Input Sub-Index	31.3	108	
Innovation Efficiency Index	0.6	103	
Global Innovation Index 2011 (out of 125)		112	
GII 2012 rank among GII 2011 economies (125)		105	
1 Institutions	**32.5**	**136**	○
1.1 Political environment	*50.3*	*85*	
1.1.1 Political stability*	55.7	91	
1.1.2 Government effectiveness*	29.1	93	
1.1.3 Press freedom*	66.2	85	
1.2 Regulatory environment	*25.2*	*136*	○
1.2.1 Regulatory quality*	31.0	124	○
1.2.2 Rule of law*	19.5	129	○
1.2.3 Cost of redundancy dismissal, salary weeks	n/a	n/a	
1.3 Business environment	*22.0*	*123*	
1.3.1 Ease of starting a business*	2.1	137	○
1.3.2 Ease of resolving insolvency*	61.8	54	●
1.3.3 Ease of paying taxes*	2.1	137	○
2 Human capital & research	**28.7**	**97**	
2.1 Education	*49.3*	*76*	
2.1.1 Current expenditure on education, % GNI	4.7	50	●
2.1.2 Public expenditure/pupil, % GDP/cap	17.9	75	
2.1.3 School life expectancy, years	13.5	61	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	18.2	88	
2.2 Tertiary education	*23.6*	*93*	
2.2.1 Tertiary enrolment, % gross	38.6	61	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	1.0	77	
2.3 Research & development (R&D)	*13.2*	*116*	
2.3.1 Researchers, headcounts/mn pop.	120.1	96	
2.3.2 Gross expenditure on R&D, % GDP	0.3	72	
2.3.3 Quality of scientific research institutions†	32.8	105	
3 Infrastructure	**24.8**	**105**	
3.1 Information & communication technologies (ICT)	*24.6*	*95*	
3.1.1 ICT access*	28.4	102	
3.1.2 ICT use*	7.7	97	
3.1.3 Government's online service*	41.2	92	
3.1.4 E-participation*	21.1	63	
3.2 General infrastructure	*22.8*	*129*	○
3.2.1 Electricity output, kWh/cap	598.3	105	
3.2.2 Electricity consumption, kWh/cap	553.3	103	
3.2.3 Quality of trade & transport infrastructure*	31.0	99	
3.2.4 Gross capital formation, % GDP	17.0	118	
3.3 Ecological sustainability	*27.1*	*88*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	84	
3.3.2 Environmental performance*	54.6	60	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.5	80	
4 Market sophistication	**37.0**	**74**	
4.1 Credit	*44.4*	*36*	●
4.1.1 Ease of getting credit*	21.1	104	
4.1.2 Domestic credit to private sector, % GDP	40.3	80	
4.1.3 Microfinance gross loans, % GDP	11.4	1	●
4.2 Investment	*5.5*	*124*	○
4.2.1 Ease of protecting investors*	15.8	110	
4.2.2 Market capitalization, % GDP	17.1	84	
4.2.3 Total value of stocks traded, % GDP	0.1	102	○
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*61.3*	*81*	
4.3.1 Applied tariff rate, weighted mean, %	5.4	83	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.0	11	●
4.3.3 Imports of goods & services, % GDP	34.3	92	
4.3.4 Exports of goods & services, % GDP	41.2	60	
4.3.5 Intensity of local competition†	46.0	129	○
5 Business sophistication	**33.7**	**100**	
5.1 Knowledge workers	*40.3*	*88*	
5.1.1 Knowledge-intensive employment, %	14.3	89	
5.1.2 Firms offering formal training, % firms	57.1	17	●
5.1.3 R&D performed by business, %	25.0	59	
5.1.4 R&D financed by business, %	16.0	68	
5.1.5 GMAT mean score	475.9	89	
5.1.6 GMAT test takers/mn pop. 20–34	25.2	108	
5.2 Innovation linkages	*32.2*	*89*	
5.2.1 University/industry research collaboration†	35.7	104	
5.2.2 State of cluster development†	36.7	88	
5.2.3 R&D financed by abroad, %	14.0	22	●
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	39.4	36	●
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*28.6*	*99*	
5.3.1 Royalty & license fees payments/th GDP	1.0	73	
5.3.2 High-tech imports less re-imports, %	10.2	50	●
5.3.3 Computer & comm. service imports, %	19.3	102	
5.3.4 FDI net inflows, % GDP	3.2	54	●
6 Knowledge & technology outputs	**14.6**	**133**	○
6.1 Knowledge creation	*3.1*	*129*	○
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.0	114	
6.2 Knowledge impact	*22.3*	*110*	
6.2.1 Growth rate of PPP$ GDP/worker, %	1.6	84	
6.2.2 New businesses/th pop. 15–64	0.4	86	
6.2.3 Computer software spending, % GDP	0.1	68	○
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	3.5	76	
6.3 Knowledge diffusion	*18.5*	*109*	
6.3.1 Royalty & license fees receipts/th GDP	0.1	67	
6.3.2 High-tech exports less re-exports, %	0.5	86	
6.3.3 Computer & comm. service exports, %	17.3	99	
6.3.4 FDI net outflows, % GDP	-0.1	107	○
7 Creative outputs	**26.0**	**96**	
7.1 Creative intangibles	*38.4*	*79*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	44.5	94	
7.1.4 ICT & organizational model creation†	32.4	117	○
7.2 Creative goods & services	*12.7*	*90*	
7.2.1 Recreation & culture consumption, %	2.5	75	
7.2.2 National feature films/mn pop. 15–69	4.2	29	●
7.2.3 Paid-for dailies, circulation/th pop. 15–69	26.1	100	
7.2.4 Creative goods exports, %	1.3	63	
7.2.5 Creative services exports, %	0.6	83	
7.3 Online creativity	*14.6*	*96*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.0	84	
7.3.2 Country-code TLDs/th pop. 15–69	11.4	95	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	329.9	88	
7.3.4 Video uploads on YouTube/pop. 15–69	43.2	93	

Bosnia and Herzegovina

Key indicators

Population (millions)	3.9
GDP per capita, PPP$	8,174.1
GDP (US$ billions)	18.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**34.2**	**72**	
Innovation Output Sub-Index		26.9	80	
Innovation Input Sub-Index		41.4	66	
Innovation Efficiency Index		0.6	102	
Global Innovation Index 2011 (out of 125)			76	
GII 2012 rank among GII 2011 economies (125)			70	
1	**Institutions**	**51.4**	**79**	
1.1	*Political environment*	*50.3*	*84*	
1.1.1	Political stability*	49.2	103	
1.1.2	Government effectiveness*	21.7	114	
1.1.3	Press freedom*	80.1	49	
1.2	*Regulatory environment*	*70.6*	*51*	
1.2.1	Regulatory quality*	49.2	76	
1.2.2	Rule of law*	38.1	77	
1.2.3	Cost of redundancy dismissal, salary weeks	9.2	30	●
1.3	*Business environment*	*33.3*	*101*	
1.3.1	Ease of starting a business*	5.0	133	○
1.3.2	Ease of resolving insolvency*	51.0	69	
1.3.3	Ease of paying taxes*	43.8	79	
2	**Human capital & research**	**41.6**	**52**	
2.1	*Education*	*70.3*	*9*	●
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.4	62	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	12.6	56	
2.2	*Tertiary education*	*40.3*	*51*	
2.2.1	Tertiary enrolment, % gross	35.9	66	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	4.2	16	●
2.3	*Research & development (R&D)*	*14.3*	*108*	
2.3.1	Researchers, headcounts/mn pop.	781.4	61	
2.3.2	Gross expenditure on R&D, % GDP	0.0	113	○
2.3.3	Quality of scientific research institutions†	37.0	95	
3	**Infrastructure**	**28.9**	**90**	
3.1	*Information & communication technologies (ICT)*	*26.9*	*89*	
3.1.1	ICT access*	43.5	68	
3.1.2	ICT use*	26.7	49	
3.1.3	Government's online service*	37.3	98	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*28.9*	*108*	
3.2.1	Electricity output, kWh/cap	4,013.1	51	
3.2.2	Electricity consumption, kWh/cap	2,867.5	59	
3.2.3	Quality of trade & transport infrastructure*	30.5	102	
3.2.4	Gross capital formation, % GDP	19.5	96	
3.3	*Ecological sustainability*	*30.8*	*69*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.6	63	
3.3.2	Environmental performance*	36.8	116	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.3	29	●
4	**Market sophistication**	**41.2**	**58**	
4.1	*Credit*	*37.8*	*48*	
4.1.1	Ease of getting credit*	50.4	62	
4.1.2	Domestic credit to private sector, % GDP	54.7	59	
4.1.3	Microfinance gross loans, % GDP	3.8	13	●
4.2	*Investment*	*18.0*	*92*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*67.7*	*43*	
4.3.1	Applied tariff rate, weighted mean, %	1.8	40	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	4	●
4.3.3	Imports of goods & services, % GDP	56.7	39	
4.3.4	Exports of goods & services, % GDP	35.9	75	
4.3.5	Intensity of local competition†	47.0	127	○
5	**Business sophistication**	**44.2**	**45**	
5.1	*Knowledge workers*	*65.0*	*30*	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	66.5	6	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	484.9	82	
5.1.6	GMAT test takers/mn pop. 20–34	48.1	81	
5.2	*Innovation linkages*	*43.1*	*43*	
5.2.1	University/industry research collaboration†	39.8	81	
5.2.2	State of cluster development†	39.6	75	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*24.4*	*127*	○
5.3.1	Royalty & license fees payments/th GDP	0.3	98	○
5.3.2	High-tech imports less re-imports, %	5.3	96	
5.3.3	Computer & comm. service imports, %	24.9	86	
5.3.4	FDI net inflows, % GDP	1.4	98	
6	**Knowledge & technology outputs**	**25.9**	**72**	
6.1	*Knowledge creation*	*18.0*	*86*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.8	56	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	59	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	41	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.1	81	
6.2	*Knowledge impact*	*34.1*	*65*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.2	105	○
6.2.2	New businesses/th pop. 15–64	0.6	80	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	31.0	13	●
6.3	*Knowledge diffusion*	*25.7*	*72*	
6.3.1	Royalty & license fees receipts/th GDP	0.9	34	
6.3.2	High-tech exports less re-exports, %	1.5	66	
6.3.3	Computer & comm. service exports, %	30.5	58	
6.3.4	FDI net outflows, % GDP	0.3	66	
7	**Creative outputs**	**27.9**	**90**	
7.1	*Creative intangibles*	*33.0*	*103*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	18.8	64	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	2.4	7	●
7.1.3	ICT & business model creation†	42.7	103	
7.1.4	ICT & organizational model creation†	30.5	120	○
7.2	*Creative goods & services*	*19.9*	*74*	
7.2.1	Recreation & culture consumption, %	4.7	57	
7.2.2	National feature films/mn pop. 15–69	2.1	49	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	67.5	71	
7.2.4	Creative goods exports, %	2.3	36	●
7.2.5	Creative services exports, %	0.4	88	
7.3	*Online creativity*	*25.6*	*54*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.9	66	
7.3.2	Country-code TLDs/th pop. 15–69	24.2	63	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,132.6	48	
7.3.4	Video uploads on YouTube/pop. 15–69	63.3	44	

Botswana

Key indicators

Population (millions)	1.9
GDP per capita, PPP$	16,279.5
GDP (US$ billions)	16.4

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**31.4**	**85**	
Innovation Output Sub-Index	19.9	121	
Innovation Input Sub-Index	42.8	54	
Innovation Efficiency Index	0.5	139	○
Global Innovation Index 2011 (out of 125)		79	
GII 2012 rank among GII 2011 economies (125)		81	
1 Institutions	**72.3**	**31**	●
1.1 Political environment	*75.6*	*33*	●
1.1.1 Political stability*	87.3	20	●
1.1.2 Government effectiveness*	54.3	48	
1.1.3 Press freedom*	85.1	38	
1.2 Regulatory environment	*68.7*	*64*	
1.2.1 Regulatory quality*	63.7	51	
1.2.2 Rule of law*	65.3	41	
1.2.3 Cost of redundancy dismissal, salary weeks	21.7	100	
1.3 Business environment	*72.6*	*26*	●
1.3.1 Ease of starting a business*	47.4	74	
1.3.2 Ease of resolving insolvency*	82.7	25	●
1.3.3 Ease of paying taxes*	87.7	18	●
2 Human capital & research	**37.5**	**62**	
2.1 Education	*64.2*	*20*	●
2.1.1 Current expenditure on education, % GNI	7.6	6	●
2.1.2 Public expenditure/pupil, % GDP/cap	27.9	14	●
2.1.3 School life expectancy, years	12.2	83	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	13.9	63	
2.2 Tertiary education	*28.8*	*79*	
2.2.1 Tertiary enrolment, % gross	7.4	113	
2.2.2 Graduates in science & engineering, %	13.0	86	
2.2.3 Tertiary inbound mobility, %	4.2	34	
2.2.4 Gross tertiary outbound enrolment, %	4.0	18	●
2.3 Research & development (R&D)	*19.4*	*82*	
2.3.1 Researchers, headcounts/mn pop.	923.4	59	
2.3.2 Gross expenditure on R&D, % GDP	0.5	55	
2.3.3 Quality of scientific research institutions†	39.7	78	
3 Infrastructure	**30.2**	**82**	
3.1 Information & communication technologies (ICT)	*18.6*	*107*	
3.1.1 ICT access*	31.2	98	
3.1.2 ICT use*	4.4	110	
3.1.3 Government's online service*	36.0	102	
3.1.4 E-participation*	2.6	115	○
3.2 General infrastructure	*35.9*	*73*	
3.2.1 Electricity output, kWh/cap	245.3	112	○
3.2.2 Electricity consumption, kWh/cap	1,527.7	80	
3.2.3 Quality of trade & transport infrastructure*	27.3	111	
3.2.4 Gross capital formation, % GDP	36.3	7	●
3.3 Ecological sustainability	*36.3*	*55*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	9.2	19	●
3.3.2 Environmental performance*	53.7	64	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.1	126	○
4 Market sophistication	**35.1**	**86**	
4.1 Credit	*31.7*	*63*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	23.4	108	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*19.3*	*85*	
4.2.1 Ease of protecting investors*	66.9	35	
4.2.2 Market capitalization, % GDP	27.4	64	
4.2.3 Total value of stocks traded, % GDP	0.9	71	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*54.2*	*114*	
4.3.1 Applied tariff rate, weighted mean, %	5.2	81	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.6	124	○
4.3.3 Imports of goods & services, % GDP	31.9	98	
4.3.4 Exports of goods & services, % GDP	28.6	96	
4.3.5 Intensity of local competition†	62.6	71	
5 Business sophistication	**39.1**	**67**	
5.1 Knowledge workers	*41.1*	*83*	
5.1.1 Knowledge-intensive employment, %	17.1	81	
5.1.2 Firms offering formal training, % firms	51.9	26	●
5.1.3 R&D performed by business, %	15.6	69	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	452.6	106	
5.1.6 GMAT test takers/mn pop. 20–34	40.7	93	
5.2 Innovation linkages	*44.1*	*40*	
5.2.1 University/industry research collaboration†	43.2	64	
5.2.2 State of cluster development†	37.2	85	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	6.6	98	
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*32.1*	*85*	
5.3.1 Royalty & license fees payments/th GDP	0.8	79	
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	26.0	81	
5.3.4 FDI net inflows, % GDP	3.6	48	
6 Knowledge & technology outputs	**20.1**	**106**	
6.1 Knowledge creation	*20.5*	*74*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	97	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.8	89	
6.2 Knowledge impact	*8.5*	*135*	○
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.5	126	○
6.3 Knowledge diffusion	*31.3*	*50*	
6.3.1 Royalty & license fees receipts/th GDP	0.0	92	○
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	34.0	54	
6.3.4 FDI net outflows, % GDP	0.0	99	
7 Creative outputs	**19.7**	**120**	
7.1 Creative intangibles	*31.2*	*109*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.0	59	○
7.1.3 ICT & business model creation†	40.1	115	○
7.1.4 ICT & organizational model creation†	53.0	51	
7.2 Creative goods & services	*2.7*	*127*	○
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	8.6	116	
7.2.4 Creative goods exports, %	0.1	113	
7.2.5 Creative services exports, %	1.2	67	
7.3 Online creativity	*13.8*	*98*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.3	118	
7.3.2 Country-code TLDs/th pop. 15–69	3.9	108	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	191.3	98	
7.3.4 Video uploads on YouTube/pop. 15–69	50.2	78	

Brazil

Key indicators

Population (millions)	194.9
GDP per capita, PPP$	11,845.8
GDP (US$ billions)	2,517.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**36.6**	**58**	
Innovation Output Sub-Index		33.0	52	
Innovation Input Sub-Index		40.2	69	
Innovation Efficiency Index		0.8	39	
Global Innovation Index 2011 (out of 125)			47	
GII 2012 rank among GII 2011 economies (125)			56	
1	**Institutions**	**50.4**	**84**	
1.1	*Political environment*	*59.6*	*62*	
1.1.1	Political stability*	66.5	63	
1.1.2	Government effectiveness*	42.8	65	
1.1.3	Press freedom*	69.4	78	
1.2	*Regulatory environment*	*71.0*	*48*	
1.2.1	Regulatory quality*	56.5	67	
1.2.2	Rule of law*	47.8	58	
1.2.3	Cost of redundancy dismissal, salary weeks	13.2	58	
1.3	*Business environment*	*20.6*	*127*	○
1.3.1	Ease of starting a business*	28.0	101	
1.3.2	Ease of resolving insolvency*	15.1	119	○
1.3.3	Ease of paying taxes*	18.7	113	○
2	**Human capital & research**	**31.5**	**83**	
2.1	*Education*	*49.6*	*73*	
2.1.1	Current expenditure on education, % GNI	4.8	43	
2.1.2	Public expenditure/pupil, % GDP/cap	19.1	67	
2.1.3	School life expectancy, years	14.0	49	
2.1.4	PISA scales in reading, maths, & science	401.0	56	○
2.1.5	Pupil-teacher ratio, secondary	17.1	83	
2.2	*Tertiary education*	*16.4*	*115*	○
2.2.1	Tertiary enrolment, % gross	36.1	65	
2.2.2	Graduates in science & engineering, %	12.2	91	○
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.2	129	○
2.3	*Research & development (R&D)*	*28.4*	*47*	
2.3.1	Researchers, headcounts/mn pop.	1,100.1	52	
2.3.2	Gross expenditure on R&D, % GDP	1.1	34	
2.3.3	Quality of scientific research institutions†	52.3	40	
3	**Infrastructure**	**39.1**	**49**	
3.1	*Information & communication technologies (ICT)*	*46.1*	*47*	
3.1.1	ICT access*	46.2	62	
3.1.2	ICT use*	21.1	61	
3.1.3	Government's online service*	67.3	32	
3.1.4	E-participation*	50.0	31	●
3.2	*General infrastructure*	*34.4*	*81*	
3.2.1	Electricity output, kWh/cap	2,436.1	68	
3.2.2	Electricity consumption, kWh/cap	2,200.6	66	
3.2.3	Quality of trade & transport infrastructure*	52.5	36	
3.2.4	Gross capital formation, % GDP	19.2	100	
3.3	*Ecological sustainability*	*36.6*	*54*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.9	39	
3.3.2	Environmental performance*	60.9	29	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.3	55	
4	**Market sophistication**	**35.6**	**82**	
4.1	*Credit*	*15.3*	*108*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	57.0	55	
4.1.3	Microfinance gross loans, % GDP	0.1	72	○
4.2	*Investment*	*35.4*	*42*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	74.0	32	
4.2.3	Total value of stocks traded, % GDP	43.2	24	●
4.2.4	Venture capital deals/tr PPP$ GDP	10.0	47	
4.3	*Trade & competition*	*56.1*	*108*	
4.3.1	Applied tariff rate, weighted mean, %	7.6	106	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.5	55	
4.3.3	Imports of goods & services, % GDP	12.1	141	○
4.3.4	Exports of goods & services, % GDP	11.2	139	○
4.3.5	Intensity of local competition†	69.3	46	
5	**Business sophistication**	**44.4**	**42**	
5.1	*Knowledge workers*	*52.6*	*48*	
5.1.1	Knowledge-intensive employment, %	19.3	72	
5.1.2	Firms offering formal training, % firms	52.9	22	●
5.1.3	R&D performed by business, %	40.2	44	
5.1.4	R&D financed by business, %	43.9	35	
5.1.5	GMAT mean score	563.8	24	●
5.1.6	GMAT test takers/mn pop. 20–34	33.5	98	
5.2	*Innovation linkages*	*38.0*	*57*	
5.2.1	University/industry research collaboration†	53.4	36	
5.2.2	State of cluster development†	52.1	30	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	16.7	70	
5.2.5	PCT patent filings with foreign inventor, %	10.1	93	○
5.3	*Knowledge absorption*	*42.6*	*38*	
5.3.1	Royalty & license fees payments/th GDP	1.4	60	
5.3.2	High-tech imports less re-imports, %	14.3	23	●
5.3.3	Computer & comm. service imports, %	49.4	17	●
5.3.4	FDI net inflows, % GDP	2.3	72	
6	**Knowledge & technology outputs**	**30.5**	**55**	
6.1	*Knowledge creation*	*22.7*	*67*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	64	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	55	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.9	35	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.1	50	
6.2	*Knowledge impact*	*34.9*	*63*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.1	31	
6.2.2	New businesses/th pop. 15–64	2.4	41	
6.2.3	Computer software spending, % GDP	0.1	53	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.0	50	
6.3	*Knowledge diffusion*	*34.1*	*44*	
6.3.1	Royalty & license fees receipts/th GDP	0.2	60	
6.3.2	High-tech exports less re-exports, %	3.6	49	
6.3.3	Computer & comm. service exports, %	57.0	16	●
6.3.4	FDI net outflows, % GDP	0.6	51	
7	**Creative outputs**	**35.4**	**54**	
7.1	*Creative intangibles*	*41.2*	*67*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	21.9	61	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	62.7	33	
7.1.4	ICT & organizational model creation†	50.4	62	
7.2	*Creative goods & services*	*29.7*	*47*	
7.2.1	Recreation & culture consumption, %	5.1	52	
7.2.2	National feature films/mn pop. 15–69	0.6	76	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	60.9	79	
7.2.4	Creative goods exports, %	0.5	88	
7.2.5	Creative services exports, %	20.5	4	●
7.3	*Online creativity*	*29.7*	*49*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.6	53	
7.3.2	Country-code TLDs/th pop. 15–69	42.7	43	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,048.8	60	
7.3.4	Video uploads on YouTube/pop. 15–69	64.3	41	

Brunei Darussalam

Key indicators

Population (millions)	0.4
GDP per capita, PPP$	49,517.8
GDP (US$ billions)	15.6

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**37.7**	**53**	
Innovation Output Sub-Index	29.7	69	
Innovation Input Sub-Index	45.8	46	
Innovation Efficiency Index	0.6	104	
Global Innovation Index 2011 (out of 125)		75	
GII 2012 rank among GII 2011 economies (125)		51	
1 Institutions	**73.5**	**28**	
1.1 Political environment	*71.6*	*41*	
1.1.1 Political stability*	95.3	4	●
1.1.2 Government effectiveness*	64.2	34	
1.1.3 Press freedom*	55.3	100	
1.2 Regulatory environment	*87.2*	*22*	●
1.2.1 Regulatory quality*	80.0	27	●
1.2.2 Rule of law*	68.9	35	
1.2.3 Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3 Business environment	*61.6*	*39*	
1.3.1 Ease of starting a business*	21.5	110	
1.3.2 Ease of resolving insolvency*	73.3	38	
1.3.3 Ease of paying taxes*	89.9	15	●
2 Human capital & research	**36.2**	**66**	
2.1 Education	*43.5*	*98*	
2.1.1 Current expenditure on education, % GNI	2.0	125	○
2.1.2 Public expenditure/pupil, % GDP/cap	7.2	114	○
2.1.3 School life expectancy, years	15.0	34	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	10.5	33	
2.2 Tertiary education	*50.2*	*17*	●
2.2.1 Tertiary enrolment, % gross	17.2	93	
2.2.2 Graduates in science & engineering, %	21.9	39	
2.2.3 Tertiary inbound mobility, %	4.0	35	
2.2.4 Gross tertiary outbound enrolment, %	9.0	1	●
2.3 Research & development (R&D)	*14.9*	*106*	
2.3.1 Researchers, headcounts/mn pop.	685.5	64	
2.3.2 Gross expenditure on R&D, % GDP	0.0	110	○
2.3.3 Quality of scientific research institutions†	39.1	82	
3 Infrastructure	**38.3**	**52**	
3.1 Information & communication technologies (ICT)	*53.0*	*35*	
3.1.1 ICT access*	65.1	34	
3.1.2 ICT use*	40.1	38	
3.1.3 Government's online service*	59.5	44	
3.1.4 E-participation*	47.4	34	
3.2 General infrastructure	*34.9*	*79*	
3.2.1 Electricity output, kWh/cap	8,896.6	16	●
3.2.2 Electricity consumption, kWh/cap	8,485.0	16	●
3.2.3 Quality of trade & transport infrastructure*	n/a	n/a	
3.2.4 Gross capital formation, % GDP	13.7	135	○
3.3 Ecological sustainability	*26.9*	*89*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.6	106	○
3.3.2 Environmental performance*	62.5	26	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.0	61	
4 Market sophistication	**44.5**	**47**	
4.1 Credit	*17.3*	*101*	
4.1.1 Ease of getting credit*	21.1	104	
4.1.2 Domestic credit to private sector, % GDP	44.5	75	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*44.8*	*26*	●
4.2.1 Ease of protecting investors*	22.3	100	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	47.3	27	●
4.3 Trade & competition	*71.3*	*21*	●
4.3.1 Applied tariff rate, weighted mean, %	4.1	70	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.3	43	
4.3.3 Imports of goods & services, % GDP	27.6	116	○
4.3.4 Exports of goods & services, % GDP	78.3	13	●
4.3.5 Intensity of local competition†	65.9	61	
5 Business sophistication	**36.4**	**85**	
5.1 Knowledge workers	*38.7*	*92*	
5.1.1 Knowledge-intensive employment, %	28.4	45	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	2.3	83	○
5.1.4 R&D financed by business, %	1.6	85	○
5.1.5 GMAT mean score	526.0	55	
5.1.6 GMAT test takers/mn pop. 20–34	44.8	84	
5.2 Innovation linkages	*40.6*	*52*	
5.2.1 University/industry research collaboration†	46.7	48	
5.2.2 State of cluster development†	45.6	52	
5.2.3 R&D financed by abroad, %	6.6	50	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	23.2	60	
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*30.0*	*96*	
5.3.1 Royalty & license fees payments/th GDP	0.7	80	
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	22.4	92	
5.3.4 FDI net inflows, % GDP	3.0	59	
6 Knowledge & technology outputs	**23.9**	**84**	
6.1 Knowledge creation	*1.6*	*136*	○
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.5	128	○
6.2 Knowledge impact	*31.5*	*76*	
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	3.0	81	
6.3 Knowledge diffusion	*38.6*	*34*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	21.4	88	
6.3.4 FDI net outflows, % GDP	0.2	76	
7 Creative outputs	**35.5**	**53**	
7.1 Creative intangibles	*54.3*	*17*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	51.8	67	
7.1.4 ICT & organizational model creation†	56.8	35	
7.2 Creative goods & services	*9.1*	*104*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	147.0	39	
7.2.4 Creative goods exports, %	0.1	114	○
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*24.1*	*57*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	4.2	63	
7.3.2 Country-code TLDs/th pop. 15–69	22.7	69	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	876.6	68	
7.3.4 Video uploads on YouTube/pop. 15–69	65.1	37	

Bulgaria

Key indicators

Population (millions)	7.5
GDP per capita, PPP$	13,562.9
GDP (US$ billions)	54.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**40.7**	**43**	
Innovation Output Sub-Index		35.8	42	
Innovation Input Sub-Index		45.5	47	
Innovation Efficiency Index		0.8	49	
Global Innovation Index 2011 (out of 125)			42	
GII 2012 rank among GII 2011 economies (125)			42	
1	**Institutions**	**67.2**	**46**	
1.1	*Political environment*	*63.1*	*56*	
1.1.1	Political stability*	74.4	50	
1.1.2	Government effectiveness*	41.2	66	
1.1.3	Press freedom*	73.6	63	
1.2	*Regulatory environment*	*78.2*	*38*	
1.2.1	Regulatory quality*	67.1	43	
1.2.2	Rule of law*	45.6	62	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*60.4*	*43*	
1.3.1	Ease of starting a business*	74.8	35	
1.3.2	Ease of resolving insolvency*	43.8	79	
1.3.3	Ease of paying taxes*	62.5	53	
2	**Human capital & research**	**39.9**	**56**	
2.1	*Education*	*54.3*	*58*	
2.1.1	Current expenditure on education, % GNI	3.8	83	
2.1.2	Public expenditure/pupil, % GDP/cap	25.4	23	
2.1.3	School life expectancy, years	13.8	53	
2.1.4	PISA scales in reading, maths, & science	432.2	44	
2.1.5	Pupil-teacher ratio, secondary	12.0	46	
2.2	*Tertiary education*	*43.6*	*39*	
2.2.1	Tertiary enrolment, % gross	53.0	42	
2.2.2	Graduates in science & engineering, %	18.8	61	
2.2.3	Tertiary inbound mobility, %	3.4	40	
2.2.4	Gross tertiary outbound enrolment, %	4.6	14	●
2.3	*Research & development (R&D)*	*21.8*	*70*	
2.3.1	Researchers, headcounts/mn pop.	1,767.3	43	
2.3.2	Gross expenditure on R&D, % GDP	0.5	52	
2.3.3	Quality of scientific research institutions†	40.2	75	
3	**Infrastructure**	**41.2**	**47**	
3.1	*Information & communication technologies (ICT)*	*35.3*	*66*	
3.1.1	ICT access*	57.7	46	
3.1.2	ICT use*	31.7	46	
3.1.3	Government's online service*	49.0	71	
3.1.4	E-participation*	2.6	115	○
3.2	*General infrastructure*	*35.9*	*72*	
3.2.1	Electricity output, kWh/cap	5,603.3	38	
3.2.2	Electricity consumption, kWh/cap	4,400.9	45	
3.2.3	Quality of trade & transport infrastructure*	32.5	94	○
3.2.4	Gross capital formation, % GDP	24.9	44	
3.3	*Ecological sustainability*	*52.5*	*16*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.3	86	○
3.3.2	Environmental performance*	56.3	51	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	10.3	7	●
4	**Market sophistication**	**42.6**	**54**	
4.1	*Credit*	*43.0*	*39*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	74.6	44	
4.1.3	Microfinance gross loans, % GDP	1.4	31	
4.2	*Investment*	*18.1*	*91*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	15.2	90	○
4.2.3	Total value of stocks traded, % GDP	0.4	84	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*66.6*	*52*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	59.7	36	
4.3.4	Exports of goods & services, % GDP	57.8	26	
4.3.5	Intensity of local competition†	57.3	95	○
5	**Business sophistication**	**36.8**	**84**	
5.1	*Knowledge workers*	*51.8*	*52*	
5.1.1	Knowledge-intensive employment, %	28.6	44	
5.1.2	Firms offering formal training, % firms	30.7	64	
5.1.3	R&D performed by business, %	30.0	53	
5.1.4	R&D financed by business, %	30.6	51	
5.1.5	GMAT mean score	585.5	8	●
5.1.6	GMAT test takers/mn pop. 20–34	334.1	14	●
5.2	*Innovation linkages*	*23.7*	*125*	○
5.2.1	University/industry research collaboration†	32.7	112	○
5.2.2	State of cluster development†	36.6	90	
5.2.3	R&D financed by abroad, %	6.8	47	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	9.8	88	
5.2.5	PCT patent filings with foreign inventor, %	20.0	77	○
5.3	*Knowledge absorption*	*35.0*	*70*	
5.3.1	Royalty & license fees payments/th GDP	2.4	38	
5.3.2	High-tech imports less re-imports, %	7.5	77	
5.3.3	Computer & comm. service imports, %	34.9	54	
5.3.4	FDI net inflows, % GDP	4.5	42	
6	**Knowledge & technology outputs**	**35.7**	**41**	
6.1	*Knowledge creation*	*27.3*	*59*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.6	47	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	54	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.7	21	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.7	44	
6.2	*Knowledge impact*	*55.5*	*9*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	5.4	16	●
6.2.2	New businesses/th pop. 15–64	7.2	13	●
6.2.3	Computer software spending, % GDP	0.2	34	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	64.4	2	●
6.3	*Knowledge diffusion*	*24.2*	*79*	
6.3.1	Royalty & license fees receipts/th GDP	0.7	37	
6.3.2	High-tech exports less re-exports, %	4.1	47	
6.3.3	Computer & comm. service exports, %	22.2	85	
6.3.4	FDI net outflows, % GDP	0.5	54	
7	**Creative outputs**	**35.9**	**49**	
7.1	*Creative intangibles*	*43.9*	*55*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	106.9	6	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.7	11	
7.1.3	ICT & business model creation†	48.5	78	
7.1.4	ICT & organizational model creation†	40.3	97	○
7.2	*Creative goods & services*	*24.6*	*60*	
7.2.1	Recreation & culture consumption, %	5.3	48	
7.2.2	National feature films/mn pop. 15–69	2.2	48	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	155.7	34	
7.2.4	Creative goods exports, %	1.4	59	
7.2.5	Creative services exports, %	6.5	32	
7.3	*Online creativity*	*31.2*	*45*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	12.5	43	
7.3.2	Country-code TLDs/th pop. 15–69	23.6	65	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	5,226.9	29	
7.3.4	Video uploads on YouTube/pop. 15–69	61.9	52	

Burkina Faso

Key indicators

Population (millions)	15.0
GDP per capita, PPP$	1,456.7
GDP (US$ billions)	10.1

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**24.6**	**122**	
Innovation Output Sub-Index	19.8	123	
Innovation Input Sub-Index	29.5	120	
Innovation Efficiency Index	0.7	96	
Global Innovation Index 2011 (out of 125)		120	
GII 2012 rank among GII 2011 economies (125)		112	
1 Institutions	**51.2**	**80**	
1.1 Political environment	*55.3*	*73*	
1.1.1 Political stability*	62.6	77	
1.1.2 Government effectiveness*	25.7	104	
1.1.3 Press freedom*	77.5	55	●
1.2 Regulatory environment	*70.3*	*54*	●
1.2.1 Regulatory quality*	49.1	77	
1.2.2 Rule of law*	42.1	70	
1.2.3 Cost of redundancy dismissal, salary weeks	10.5	42	●
1.3 Business environment	*28.0*	*114*	
1.3.1 Ease of starting a business*	31.6	95	
1.3.2 Ease of resolving insolvency*	31.6	96	
1.3.3 Ease of paying taxes*	20.8	111	
2 Human capital & research	**28.2**	**99**	
2.1 Education	*39.8*	*109*	
2.1.1 Current expenditure on education, % GNI	4.3	64	●
2.1.2 Public expenditure/pupil, % GDP/cap	34.5	5	●
2.1.3 School life expectancy, years	6.4	132	○
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	26.5	113	
2.2 Tertiary education	*28.1*	*81*	
2.2.1 Tertiary enrolment, % gross	3.3	129	
2.2.2 Graduates in science & engineering, %	23.3	35	●
2.2.3 Tertiary inbound mobility, %	3.1	45	●
2.2.4 Gross tertiary outbound enrolment, %	0.2	127	
2.3 Research & development (R&D)	*16.6*	*96*	
2.3.1 Researchers, headcounts/mn pop.	69.5	105	
2.3.2 Gross expenditure on R&D, % GDP	0.2	85	
2.3.3 Quality of scientific research institutions†	44.9	62	●
3 Infrastructure	**15.3**	**140**	○
3.1 Information & communication technologies (ICT)	*15.8*	*119*	
3.1.1 ICT access*	17.6	128	
3.1.2 ICT use*	0.5	137	○
3.1.3 Government's online service*	29.4	120	
3.1.4 E-participation*	15.8	78	
3.2 General infrastructure	*29.7*	*104*	
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	22.3	127	
3.2.4 Gross capital formation, % GDP	18.1	112	
3.3 Ecological sustainability	*0.3*	*138*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	130	
4 Market sophistication	**22.0**	**129**	
4.1 Credit	*8.4*	*124*	
4.1.1 Ease of getting credit*	2.8	126	○
4.1.2 Domestic credit to private sector, % GDP	17.6	124	
4.1.3 Microfinance gross loans, % GDP	1.6	27	●
4.2 Investment	*6.5*	*119*	
4.2.1 Ease of protecting investors*	12.9	119	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*51.2*	*120*	
4.3.1 Applied tariff rate, weighted mean, %	8.8	116	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.4	49	●
4.3.3 Imports of goods & services, % GDP	26.8	119	
4.3.4 Exports of goods & services, % GDP	11.5	137	○
4.3.5 Intensity of local competition†	48.1	125	
5 Business sophistication	**30.7**	**119**	
5.1 Knowledge workers	*26.2*	*124*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	24.8	80	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	11.9	71	
5.1.5 GMAT mean score	435.9	110	
5.1.6 GMAT test takers/mn pop. 20–34	10.8	123	
5.2 Innovation linkages	*45.2*	*37*	●
5.2.1 University/industry research collaboration†	36.9	93	
5.2.2 State of cluster development†	21.1	130	○
5.2.3 R&D financed by abroad, %	59.6	1	●
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*20.8*	*139*	○
5.3.1 Royalty & license fees payments/th GDP	0.1	112	
5.3.2 High-tech imports less re-imports, %	4.8	106	
5.3.3 Computer & comm. service imports, %	18.1	106	
5.3.4 FDI net inflows, % GDP	0.4	125	
6 Knowledge & technology outputs	**17.4**	**120**	
6.1 Knowledge creation	*12.7*	*105*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.1	107	○
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	86	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.1	53	
6.1.4 Scientific & technical articles/bn PPP$ GDP	2.7	75	
6.2 Knowledge impact	*18.6*	*124*	
6.2.1 Growth rate of PPP$ GDP/worker, %	0.9	94	
6.2.2 New businesses/th pop. 15–64	0.1	96	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.7	120	
6.3 Knowledge diffusion	*20.9*	*102*	
6.3.1 Royalty & license fees receipts/th GDP	0.0	102	
6.3.2 High-tech exports less re-exports, %	0.2	101	
6.3.3 Computer & comm. service exports, %	25.6	72	
6.3.4 FDI net outflows, % GDP	0.4	60	
7 Creative outputs	**22.1**	**114**	
7.1 Creative intangibles	*41.4*	*66*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	35.7	123	
7.1.4 ICT & organizational model creation†	47.0	73	
7.2 Creative goods & services	*2.3*	*129*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	0.5	85	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	4.2	126	
7.2.4 Creative goods exports, %	0.2	108	
7.2.5 Creative services exports, %	0.8	77	
7.3 Online creativity	*3.6*	*135*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.0	140	○
7.3.2 Country-code TLDs/th pop. 15–69	0.2	136	○
7.3.3 Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4 Video uploads on YouTube/pop. 15–69	10.5	133	

Burundi

Key indicators

Population (millions)	8.4
GDP per capita, PPP$	430.0
GDP (US$ billions)	1.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**20.5**	**137**	
Innovation Output Sub-Index		15.8	135	
Innovation Input Sub-Index		25.3	137	
Innovation Efficiency Index		0.6	113	
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**35.0**	**129**	
1.1	*Political environment*	*31.5*	*132*	
1.1.1	Political stability*	28.1	132	
1.1.2	Government effectiveness*	12.3	134	
1.1.3	Press freedom*	54.2	105	
1.2	*Regulatory environment*	*51.8*	*113*	
1.2.1	Regulatory quality*	22.9	133	
1.2.2	Rule of law*	15.6	134	
1.2.3	Cost of redundancy dismissal, salary weeks	15.9	74	●
1.3	*Business environment*	*21.6*	*124*	
1.3.1	Ease of starting a business*	41.0	83	●
1.3.2	Ease of resolving insolvency*	0.0	139	○
1.3.3	Ease of paying taxes*	23.7	107	
2	**Human capital & research**	**32.9**	**73**	●
2.1	*Education*	*58.5*	*42*	●
2.1.1	Current expenditure on education, % GNI	8.7	3	●
2.1.2	Public expenditure/pupil, % GDP/cap	34.1	6	●
2.1.3	School life expectancy, years	11.3	100	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.9	121	
2.2	*Tertiary education*	*17.9*	*111*	
2.2.1	Tertiary enrolment, % gross	3.2	130	
2.2.2	Graduates in science & engineering, %	9.6	97	
2.2.3	Tertiary inbound mobility, %	6.2	25	●
2.2.4	Gross tertiary outbound enrolment, %	0.1	132	
2.3	*Research & development (R&D)*	*22.4*	*68*	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	22.4	123	
3	**Infrastructure**	**15.1**	**141**	○
3.1	*Information & communication technologies (ICT)*	*7.5*	*141*	○
3.1.1	ICT access*	n/a	n/a	
3.1.2	ICT use*	n/a	n/a	
3.1.3	Government's online service*	15.0	137	○
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*35.5*	*76*	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	37.5	72	●
3.2.4	Gross capital formation, % GDP	16.4	124	
3.3	*Ecological sustainability*	*2.4*	*129*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	90	
4	**Market sophistication**	**21.1**	**132**	
4.1	*Credit*	*4.1*	*132*	
4.1.1	Ease of getting credit*	2.8	126	
4.1.2	Domestic credit to private sector, % GDP	25.5	103	
4.1.3	Microfinance gross loans, % GDP	0.2	57	
4.2	*Investment*	*3.6*	*129*	
4.2.1	Ease of protecting investors*	7.1	123	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*55.6*	*111*	
4.3.1	Applied tariff rate, weighted mean, %	5.5	85	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	78	●
4.3.3	Imports of goods & services, % GDP	47.0	52	●
4.3.4	Exports of goods & services, % GDP	10.7	140	○
4.3.5	Intensity of local competition†	52.6	109	
5	**Business sophistication**	**22.3**	**139**	○
5.1	*Knowledge workers*	*25.5*	*125*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	22.1	85	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	410.6	123	
5.1.6	GMAT test takers/mn pop. 20–34	12.1	122	
5.2	*Innovation linkages*	*15.4*	*137*	
5.2.1	University/industry research collaboration†	21.8	129	
5.2.2	State of cluster development†	16.8	133	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*25.8*	*122*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	8.5	63	●
5.3.3	Computer & comm. service imports, %	5.8	131	○
5.3.4	FDI net inflows, % GDP	0.0	129	
6	**Knowledge & technology outputs**	**17.4**	**122**	
6.1	*Knowledge creation*	*2.4*	*133*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.8	120	
6.2	*Knowledge impact*	*32.1*	*72*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.1	80	●
6.3	*Knowledge diffusion*	*17.5*	*112*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.5	89	
6.3.3	Computer & comm. service exports, %	2.0	133	○
6.3.4	FDI net outflows, % GDP	0.0	92	
7	**Creative outputs**	**14.2**	**133**	
7.1	*Creative intangibles*	*24.2*	*128*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	24.2	131	○
7.1.4	ICT & organizational model creation†	24.1	130	○
7.2	*Creative goods & services*	*3.0*	*125*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	4.1	127	
7.2.4	Creative goods exports, %	0.3	99	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*5.3*	*124*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	127	
7.3.2	Country-code TLDs/th pop. 15–69	2.7	110	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	13.0	130	

Cambodia

Key indicators

Population (millions)	14.4
GDP per capita, PPP$	2,286.1
GDP (US$ billions)	13.2

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**23.4**	**129**	
Innovation Output Sub-Index	17.3	132	
Innovation Input Sub-Index	29.5	119	
Innovation Efficiency Index	0.6	128	
Global Innovation Index 2011 (out of 125)		111	
GII 2012 rank among GII 2011 economies (125)		118	
1 Institutions	**40.7**	**113**	
1.1 Political environment	*41.9*	*112*	
1.1.1 Political stability*	50.4	101	
1.1.2 Government effectiveness*	19.3	122	
1.1.3 Press freedom*	56.1	92	
1.2 Regulatory environment	*53.4*	*106*	
1.2.1 Regulatory quality*	39.7	106	
1.2.2 Rule of law*	18.9	130	
1.2.3 Cost of redundancy dismissal, salary weeks	19.4	86	
1.3 Business environment	*26.8*	*116*	
1.3.1 Ease of starting a business*	0.7	139	○
1.3.2 Ease of resolving insolvency*	7.1	130	
1.3.3 Ease of paying taxes*	72.6	39	●
2 Human capital & research	**16.6**	**134**	
2.1 Education	*24.9*	*131*	
2.1.1 Current expenditure on education, % GNI	1.6	131	
2.1.2 Public expenditure/pupil, % GDP/cap	6.1	117	○
2.1.3 School life expectancy, years	10.5	112	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	23.9	107	
2.2 Tertiary education	*11.8*	*121*	
2.2.1 Tertiary enrolment, % gross	10.0	106	
2.2.2 Graduates in science & engineering, %	12.5	90	
2.2.3 Tertiary inbound mobility, %	0.0	90	○
2.2.4 Gross tertiary outbound enrolment, %	0.3	118	
2.3 Research & development (R&D)	*13.2*	*117*	
2.3.1 Researchers, headcounts/mn pop.	57.9	109	
2.3.2 Gross expenditure on R&D, % GDP	0.0	106	
2.3.3 Quality of scientific research institutions†	38.5	85	
3 Infrastructure	**23.0**	**113**	
3.1 Information & communication technologies (ICT)	*11.8*	*132*	
3.1.1 ICT access*	24.5	105	
3.1.2 ICT use*	3.5	116	
3.1.3 Government's online service*	19.0	134	○
3.1.4 E-participation*	0.0	127	○
3.2 General infrastructure	*21.3*	*134*	
3.2.1 Electricity output, kWh/cap	85.2	121	○
3.2.2 Electricity consumption, kWh/cap	123.5	117	
3.2.3 Quality of trade & transport infrastructure*	28.0	109	
3.2.4 Gross capital formation, % GDP	17.4	115	
3.3 Ecological sustainability	*36.0*	*57*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	8.8	21	●
3.3.2 Environmental performance*	55.3	57	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.1	120	
4 Market sophistication	**35.5**	**83**	
4.1 Credit	*44.8*	*33*	●
4.1.1 Ease of getting credit*	27.0	88	
4.1.2 Domestic credit to private sector, % GDP	27.6	98	
4.1.3 Microfinance gross loans, % GDP	12.4	1	●
4.2 Investment	*23.4*	*73*	
4.2.1 Ease of protecting investors*	46.7	60	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*38.4*	*137*	○
4.3.1 Applied tariff rate, weighted mean, %	9.9	122	
4.3.2 Non-agricultural mkt access weighted tariff, %	8.5	138	○
4.3.3 Imports of goods & services, % GDP	59.5	37	●
4.3.4 Exports of goods & services, % GDP	54.1	35	●
4.3.5 Intensity of local competition†	59.6	84	
5 Business sophistication	**31.8**	**115**	
5.1 Knowledge workers	*24.5*	*126*	
5.1.1 Knowledge-intensive employment, %	2.5	104	○
5.1.2 Firms offering formal training, % firms	48.4	34	●
5.1.3 R&D performed by business, %	12.1	72	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	404.1	127	
5.1.6 GMAT test takers/mn pop. 20–34	6.6	130	
5.2 Innovation linkages	*44.3*	*38*	●
5.2.1 University/industry research collaboration†	38.7	85	
5.2.2 State of cluster development†	48.9	37	●
5.2.3 R&D financed by abroad, %	28.4	9	●
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	32.5	46	●
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*26.5*	*117*	
5.3.1 Royalty & license fees payments/th GDP	0.5	88	
5.3.2 High-tech imports less re-imports, %	4.0	116	○
5.3.3 Computer & comm. service imports, %	26.6	76	
5.3.4 FDI net inflows, % GDP	7.0	27	●
6 Knowledge & technology outputs	**13.2**	**137**	○
6.1 Knowledge creation	*2.9*	*131*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.0	116	
6.2 Knowledge impact	*19.9*	*121*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.1	69	
6.2.2 New businesses/th pop. 15–64	0.2	90	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.2	132	
6.3 Knowledge diffusion	*16.8*	*116*	
6.3.1 Royalty & license fees receipts/th GDP	0.0	81	
6.3.2 High-tech exports less re-exports, %	0.1	107	
6.3.3 Computer & comm. service exports, %	13.2	110	
6.3.4 FDI net outflows, % GDP	0.2	71	
7 Creative outputs	**21.3**	**118**	
7.1 Creative intangibles	*35.0*	*92*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	16.7	67	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	45.4	89	
7.1.4 ICT & organizational model creation†	51.8	55	
7.2 Creative goods & services	*6.9*	*118*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	3.1	36	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	6.4	119	
7.2.4 Creative goods exports, %	0.8	82	
7.2.5 Creative services exports, %	0.1	105	
7.3 Online creativity	*8.2*	*117*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.3	123	
7.3.2 Country-code TLDs/th pop. 15–69	2.2	114	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	107.1	106	
7.3.4 Video uploads on YouTube/pop. 15–69	30.0	110	

Cameroon

Key indicators

Population (millions)	20.9
GDP per capita, PPP$	2,256.3
GDP (US$ billions)	25.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**25.0**	**121**	
Innovation Output Sub-Index		21.7	111	
Innovation Input Sub-Index		28.3	125	
Innovation Efficiency Index		0.8	55	●
Global Innovation Index 2011 (out of 125)			103	
GII 2012 rank among GII 2011 economies (125)			111	
1	**Institutions**	**38.8**	**124**	
1.1	*Political environment*	*46.2*	*97*	
1.1.1	Political stability*	51.4	99	
1.1.2	Government effectiveness*	17.7	127	
1.1.3	Press freedom*	69.6	76	
1.2	*Regulatory environment*	*57.3*	*98*	
1.2.1	Regulatory quality*	33.6	121	
1.2.2	Rule of law*	20.1	126	
1.2.3	Cost of redundancy dismissal, salary weeks	14.2	63	●
1.3	*Business environment*	*12.9*	*135*	○
1.3.1	Ease of starting a business*	23.7	107	
1.3.2	Ease of resolving insolvency*	8.6	128	
1.3.3	Ease of paying taxes*	6.4	131	○
2	**Human capital & research**	**27.8**	**100**	
2.1	*Education*	*38.8*	*111*	
2.1.1	Current expenditure on education, % GNI	3.1	99	
2.1.2	Public expenditure/pupil, % GDP/cap	12.8	96	
2.1.3	School life expectancy, years	10.9	105	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.2	76	
2.2	*Tertiary education*	*25.1*	*89*	
2.2.1	Tertiary enrolment, % gross	11.5	101	
2.2.2	Graduates in science & engineering, %	21.0	49	●
2.2.3	Tertiary inbound mobility, %	0.8	75	
2.2.4	Gross tertiary outbound enrolment, %	1.0	74	●
2.3	*Research & development (R&D)*	*19.5*	*80*	
2.3.1	Researchers, headcounts/mn pop.	243.2	82	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	37.3	92	
3	**Infrastructure**	**19.6**	**127**	
3.1	*Information & communication technologies (ICT)*	*12.7*	*130*	
3.1.1	ICT access*	16.4	132	○
3.1.2	ICT use*	1.6	129	○
3.1.3	Government's online service*	30.1	116	
3.1.4	E-participation*	2.6	115	
3.2	*General infrastructure*	*21.7*	*133*	○
3.2.1	Electricity output, kWh/cap	288.1	109	
3.2.2	Electricity consumption, kWh/cap	266.4	109	
3.2.3	Quality of trade & transport infrastructure*	27.5	110	
3.2.4	Gross capital formation, % GDP	17.7	114	
3.3	*Ecological sustainability*	*24.5*	*95*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.4	66	●
3.3.2	Environmental performance*	43.0	107	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	118	
4	**Market sophistication**	**23.1**	**127**	
4.1	*Credit*	*8.3*	*125*	
4.1.1	Ease of getting credit*	10.9	120	
4.1.2	Domestic credit to private sector, % GDP	11.5	136	○
4.1.3	Microfinance gross loans, % GDP	1.0	36	●
4.2	*Investment*	*11.2*	*109*	
4.2.1	Ease of protecting investors*	22.3	100	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*50.0*	*125*	
4.3.1	Applied tariff rate, weighted mean, %	15.0	137	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	22	●
4.3.3	Imports of goods & services, % GDP	32.5	96	
4.3.4	Exports of goods & services, % GDP	27.9	97	
4.3.5	Intensity of local competition†	59.4	86	
5	**Business sophistication**	**32.2**	**109**	
5.1	*Knowledge workers*	*35.3*	*104*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	25.5	77	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	445.1	108	
5.1.6	GMAT test takers/mn pop. 20–34	43.8	87	
5.2	*Innovation linkages*	*26.9*	*115*	
5.2.1	University/industry research collaboration†	39.1	83	
5.2.2	State of cluster development†	28.3	116	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*34.3*	*74*	●
5.3.1	Royalty & license fees payments/th GDP	0.5	90	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	36.5	47	●
5.3.4	FDI net inflows, % GDP	0.0	130	
6	**Knowledge & technology outputs**	**21.5**	**100**	
6.1	*Knowledge creation*	*18.7*	*80*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.6	77	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	83	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.4	69	●
6.2	*Knowledge impact*	*17.1*	*126*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.0	104	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	66	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.5	127	
6.3	*Knowledge diffusion*	*28.6*	*59*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	90	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	28.1	66	●
6.3.4	FDI net outflows, % GDP	-0.2	109	
7	**Creative outputs**	**21.9**	**115**	
7.1	*Creative intangibles*	*39.3*	*75*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	40.0	116	
7.1.4	ICT & organizational model creation†	38.7	101	
7.2	*Creative goods & services*	*5.6*	*120*	
7.2.1	Recreation & culture consumption, %	1.7	85	
7.2.2	National feature films/mn pop. 15–69	1.8	52	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	6.8	118	
7.2.4	Creative goods exports, %	0.0	126	○
7.2.5	Creative services exports, %	1.5	64	
7.3	*Online creativity*	*3.6*	*134*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	132	○
7.3.2	Country-code TLDs/th pop. 15–69	0.8	128	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	37.0	110	
7.3.4	Video uploads on YouTube/pop. 15–69	13.2	129	○

Canada

Key indicators

Population (millions)	34.4
GDP per capita, PPP$	40,457.6
GDP (US$ billions)	1,758.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**56.9**	**12**	
Innovation Output Sub-Index		48.0	20	
Innovation Input Sub-Index		65.8	10	
Innovation Efficiency Index		0.7	74	○
Global Innovation Index 2011 (out of 125)			8	
GII 2012 rank among GII 2011 economies (125)			12	
1	**Institutions**	**95.0**	**2**	●
1.1	*Political environment*	*91.7*	*9*	
1.1.1	Political stability*	88.1	18	
1.1.2	Government effectiveness*	90.0	8	
1.1.3	Press freedom*	97.1	9	
1.2	*Regulatory environment*	*95.5*	*11*	
1.2.1	Regulatory quality*	94.6	9	
1.2.2	Rule of law*	95.2	9	
1.2.3	Cost of redundancy dismissal, salary weeks	10.0	36	
1.3	*Business environment*	*97.8*	*2*	●
1.3.1	Ease of starting a business*	98.5	3	●
1.3.2	Ease of resolving insolvency*	98.5	3	●
1.3.3	Ease of paying taxes*	96.4	6	●
2	**Human capital & research**	**53.2**	**25**	
2.1	*Education*	*64.7*	*17*	
2.1.1	Current expenditure on education, % GNI	4.7	49	
2.1.2	Public expenditure/pupil, % GDP/cap	23.5	40	
2.1.3	School life expectancy, years	15.1	33	
2.1.4	PISA scales in reading, maths, & science	526.6	7	
2.1.5	Pupil-teacher ratio, secondary	7.1	4	●
2.2	*Tertiary education*	*43.4*	*40*	
2.2.1	Tertiary enrolment, % gross	62.3	27	
2.2.2	Graduates in science & engineering, %	21.1	46	
2.2.3	Tertiary inbound mobility, %	4.9	29	
2.2.4	Gross tertiary outbound enrolment, %	2.0	47	
2.3	*Research & development (R&D)*	*51.4*	*20*	
2.3.1	Researchers, headcounts/mn pop.	4,260.4	21	
2.3.2	Gross expenditure on R&D, % GDP	2.0	16	
2.3.3	Quality of scientific research institutions†	76.8	9	
3	**Infrastructure**	**55.2**	**15**	
3.1	*Information & communication technologies (ICT)*	*70.1*	*16*	
3.1.1	ICT access*	74.3	20	
3.1.2	ICT use*	48.7	27	
3.1.3	Government's online service*	88.9	6	●
3.1.4	E-participation*	68.4	15	
3.2	*General infrastructure*	*67.0*	*4*	●
3.2.1	Electricity output, kWh/cap	17,557.4	4	●
3.2.2	Electricity consumption, kWh/cap	15,449.3	9	
3.2.3	Quality of trade & transport infrastructure*	75.8	10	
3.2.4	Gross capital formation, % GDP	22.2	73	○
3.3	*Ecological sustainability*	*28.5*	*77*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.1	87	○
3.3.2	Environmental performance*	58.4	36	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.8	67	○
4	**Market sophistication**	**68.4**	**7**	
4.1	*Credit*	*60.6*	*17*	
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	128.2	18	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*72.9*	*6*	●
4.2.1	Ease of protecting investors*	94.2	5	
4.2.2	Market capitalization, % GDP	137.2	10	
4.2.3	Total value of stocks traded, % GDP	86.8	10	
4.2.4	Venture capital deals/tr PPP$ GDP	225.7	6	●
4.3	*Trade & competition*	*71.8*	*20*	
4.3.1	Applied tariff rate, weighted mean, %	1.0	6	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	29	
4.3.3	Imports of goods & services, % GDP	31.3	101	○
4.3.4	Exports of goods & services, % GDP	29.4	91	○
4.3.5	Intensity of local competition†	76.3	19	
5	**Business sophistication**	**57.4**	**14**	
5.1	*Knowledge workers*	*76.6*	*14*	
5.1.1	Knowledge-intensive employment, %	42.4	13	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	54.1	29	
5.1.4	R&D financed by business, %	47.5	26	
5.1.5	GMAT mean score	557.6	33	
5.1.6	GMAT test takers/mn pop. 20–34	1,053.2	6	●
5.2	*Innovation linkages*	*51.4*	*20*	
5.2.1	University/industry research collaboration†	70.0	11	
5.2.2	State of cluster development†	58.8	20	
5.2.3	R&D financed by abroad, %	9.3	34	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	125.9	9	
5.2.5	PCT patent filings with foreign inventor, %	43.2	55	○
5.3	*Knowledge absorption*	*44.3*	*34*	
5.3.1	Royalty & license fees payments/th GDP	5.5	12	
5.3.2	High-tech imports less re-imports, %	12.6	31	
5.3.3	Computer & comm. service imports, %	35.3	52	
5.3.4	FDI net inflows, % GDP	1.5	93	○
6	**Knowledge & technology outputs**	**46.4**	**22**	
6.1	*Knowledge creation*	*56.5*	*16*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.4	42	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.1	22	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.7	7	
6.2	*Knowledge impact*	*42.8*	*38*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.3	91	○
6.2.2	New businesses/th pop. 15–64	7.6	9	
6.2.3	Computer software spending, % GDP	0.6	17	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.7	65	○
6.3	*Knowledge diffusion*	*39.9*	*32*	
6.3.1	Royalty & license fees receipts/th GDP	2.4	20	
6.3.2	High-tech exports less re-exports, %	6.5	32	
6.3.3	Computer & comm. service exports, %	49.5	24	
6.3.4	FDI net outflows, % GDP	2.5	21	
7	**Creative outputs**	**49.7**	**16**	
7.1	*Creative intangibles*	*46.1*	*41*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	30.2	49	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	70.9	11	
7.1.4	ICT & organizational model creation†	53.3	50	
7.2	*Creative goods & services*	*45.6*	*12*	
7.2.1	Recreation & culture consumption, %	9.3	17	
7.2.2	National feature films/mn pop. 15–69	3.3	35	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	165.9	32	
7.2.4	Creative goods exports, %	1.8	49	
7.2.5	Creative services exports, %	19.4	6	
7.3	*Online creativity*	*61.0*	*17*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	66.6	14	
7.3.2	Country-code TLDs/th pop. 15–69	60.3	21	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,570.4	19	
7.3.4	Video uploads on YouTube/pop. 15–69	78.6	6	●

Key indicators

Population (millions)	17.4
GDP per capita, PPP$	16,171.9
GDP (US$ billions)	243.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**42.7**	**39**	
Innovation Output Sub-Index		38.5	34	
Innovation Input Sub-Index		46.8	43	
Innovation Efficiency Index		0.8	37	
Global Innovation Index 2011 (out of 125)			38	
GII 2012 rank among GII 2011 economies (125)			38	
1	**Institutions**	**73.1**	**29**	
1.1	*Political environment*	*75.2*	*34*	
1.1.1	Political stability*	80.0	37	
1.1.2	Government effectiveness*	72.0	26	●
1.1.3	Press freedom*	73.6	63	
1.2	*Regulatory environment*	*84.4*	*25*	●
1.2.1	Regulatory quality*	88.3	18	●
1.2.2	Rule of law*	81.9	23	●
1.2.3	Cost of redundancy dismissal, salary weeks	16.3	76	
1.3	*Business environment*	*59.7*	*44*	
1.3.1	Ease of starting a business*	65.4	49	
1.3.2	Ease of resolving insolvency*	38.1	87	
1.3.3	Ease of paying taxes*	75.5	34	
2	**Human capital & research**	**32.8**	**75**	
2.1	*Education*	*47.6*	*83*	
2.1.1	Current expenditure on education, % GNI	4.6	52	
2.1.2	Public expenditure/pupil, % GDP/cap	17.4	78	○
2.1.3	School life expectancy, years	14.7	39	
2.1.4	PISA scales in reading, maths, & science	439.3	43	
2.1.5	Pupil-teacher ratio, secondary	22.4	103	○
2.2	*Tertiary education*	*29.6*	*77*	
2.2.1	Tertiary enrolment, % gross	59.2	35	
2.2.2	Graduates in science & engineering, %	20.4	55	
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	92	
2.3	*Research & development (R&D)*	*21.3*	*72*	
2.3.1	Researchers, headcounts/mn pop.	630.0	69	
2.3.2	Gross expenditure on R&D, % GDP	0.4	66	
2.3.3	Quality of scientific research institutions†	50.5	48	
3	**Infrastructure**	**42.7**	**44**	
3.1	*Information & communication technologies (ICT)*	*53.9*	*33*	
3.1.1	ICT access*	51.7	54	
3.1.2	ICT use*	23.1	55	
3.1.3	Government's online service*	75.2	24	●
3.1.4	E-participation*	65.8	19	●
3.2	*General infrastructure*	*35.8*	*74*	
3.2.1	Electricity output, kWh/cap	3,633.1	55	
3.2.2	Electricity consumption, kWh/cap	3,288.2	53	
3.2.3	Quality of trade & transport infrastructure*	46.5	49	
3.2.4	Gross capital formation, % GDP	21.4	79	
3.3	*Ecological sustainability*	*38.4*	*49*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.8	40	
3.3.2	Environmental performance*	55.3	56	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	34	
4	**Market sophistication**	**44.0**	**50**	
4.1	*Credit*	*25.6*	*85*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	86.3	40	
4.1.3	Microfinance gross loans, % GDP	0.8	41	
4.2	*Investment*	*38.3*	*34*	
4.2.1	Ease of protecting investors*	76.2	27	
4.2.2	Market capitalization, % GDP	167.9	6	●
4.2.3	Total value of stocks traded, % GDP	26.7	33	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*68.1*	*39*	
4.3.1	Applied tariff rate, weighted mean, %	4.0	69	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	39	
4.3.3	Imports of goods & services, % GDP	31.8	99	○
4.3.4	Exports of goods & services, % GDP	38.7	68	
4.3.5	Intensity of local competition†	72.7	34	
5	**Business sophistication**	**41.5**	**57**	
5.1	*Knowledge workers*	*61.4*	*37*	
5.1.1	Knowledge-intensive employment, %	30.6	40	
5.1.2	Firms offering formal training, % firms	57.5	16	●
5.1.3	R&D performed by business, %	40.4	42	
5.1.4	R&D financed by business, %	43.7	36	
5.1.5	GMAT mean score	556.6	34	
5.1.6	GMAT test takers/mn pop. 20–34	105.8	50	
5.2	*Innovation linkages*	*31.1*	*96*	○
5.2.1	University/industry research collaboration†	51.5	41	
5.2.2	State of cluster development†	51.6	33	
5.2.3	R&D financed by abroad, %	3.3	68	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	40.5	33	
5.2.5	PCT patent filings with foreign inventor, %	8.0	97	○
5.3	*Knowledge absorption*	*32.0*	*88*	
5.3.1	Royalty & license fees payments/th GDP	2.4	37	
5.3.2	High-tech imports less re-imports, %	8.9	59	
5.3.3	Computer & comm. service imports, %	19.4	101	○
5.3.4	FDI net inflows, % GDP	7.1	24	●
6	**Knowledge & technology outputs**	**27.9**	**62**	
6.1	*Knowledge creation*	*23.9*	*63*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.3	63	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	42	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	48	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.7	43	
6.2	*Knowledge impact*	*37.6*	*51*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.0	33	
6.2.2	New businesses/th pop. 15–64	2.1	45	
6.2.3	Computer software spending, % GDP	0.1	47	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	18.1	27	
6.3	*Knowledge diffusion*	*22.2*	*90*	
6.3.1	Royalty & license fees receipts/th GDP	0.3	54	
6.3.2	High-tech exports less re-exports, %	0.7	80	
6.3.3	Computer & comm. service exports, %	22.0	87	
6.3.4	FDI net outflows, % GDP	4.1	14	●
7	**Creative outputs**	**49.1**	**18**	●
7.1	*Creative intangibles*	*73.2*	*2*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	207.2	3	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	62.6	34	
7.1.4	ICT & organizational model creation†	59.3	28	
7.2	*Creative goods & services*	*14.9*	*84*	
7.2.1	Recreation & culture consumption, %	6.0	45	
7.2.2	National feature films/mn pop. 15–69	1.2	64	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	47.9	83	
7.2.4	Creative goods exports, %	0.5	87	
7.2.5	Creative services exports, %	0.8	76	○
7.3	*Online creativity*	*35.0*	*40*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.3	48	
7.3.2	Country-code TLDs/th pop. 15–69	48.0	39	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,337.0	38	
7.3.4	Video uploads on YouTube/pop. 15–69	65.5	35	

China

Key indicators

Population (millions)	1,348.1
GDP per capita, PPP$	8,394.1
GDP (US$ billions)	6,988.5

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**45.4**	**34**	
Innovation Output Sub-Index	48.1	19	
Innovation Input Sub-Index	42.7	55	
Innovation Efficiency Index	1.1	1	●
Global Innovation Index 2011 (out of 125)		29	
GII 2012 rank among GII 2011 economies (125)		33	
1 Institutions	**39.1**	**121**	
1.1 Political environment	*30.8*	*133*	○
1.1.1 Political stability*	46.8	105	
1.1.2 Government effectiveness*	44.2	59	
1.1.3 Press freedom*	1.4	138	○
1.2 Regulatory environment	*51.9*	*112*	
1.2.1 Regulatory quality*	45.9	88	
1.2.2 Rule of law*	38.6	76	
1.2.3 Cost of redundancy dismissal, salary weeks	27.4	117	
1.3 Business environment	*34.7*	*99*	
1.3.1 Ease of starting a business*	10.7	124	○
1.3.2 Ease of resolving insolvency*	55.3	63	
1.3.3 Ease of paying taxes*	38.1	87	
2 Human capital & research	**31.4**	**84**	
2.1 Education	*52.2*	*67*	
2.1.1 Current expenditure on education, % GNI	1.8	128	○
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	11.7	93	
2.1.4 PISA scales in reading, maths, & science	576.8	1	●
2.1.5 Pupil-teacher ratio, secondary	15.5	72	
2.2 Tertiary education	*9.5*	*125*	○
2.2.1 Tertiary enrolment, % gross	25.9	78	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	0.0	90	○
2.2.4 Gross tertiary outbound enrolment, %	0.4	102	
2.3 Research & development (R&D)	*32.4*	*39*	
2.3.1 Researchers, headcounts/mn pop.	1,070.9	53	
2.3.2 Gross expenditure on R&D, % GDP	1.5	25	
2.3.3 Quality of scientific research institutions†	55.2	36	
3 Infrastructure	**44.3**	**39**	
3.1 Information & communication technologies (ICT)	*32.5*	*73*	
3.1.1 ICT access*	38.6	80	
3.1.2 ICT use*	17.3	68	
3.1.3 Government's online service*	52.9	59	
3.1.4 E-participation*	21.1	63	
3.2 General infrastructure	*58.8*	*10*	
3.2.1 Electricity output, kWh/cap	2,769.0	62	
3.2.2 Electricity consumption, kWh/cap	2,631.2	62	
3.2.3 Quality of trade & transport infrastructure*	63.5	25	
3.2.4 Gross capital formation, % GDP	47.8	1	●
3.3 Ecological sustainability	*41.6*	*37*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	5.4	67	
3.3.2 Environmental performance*	42.2	111	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	6.9	15	
4 Market sophistication	**47.8**	**35**	
4.1 Credit	*32.6*	*62*	
4.1.1 Ease of getting credit*	50.4	62	
4.1.2 Domestic credit to private sector, % GDP	130.0	17	
4.1.3 Microfinance gross loans, % GDP	0.2	58	
4.2 Investment	*52.8*	*16*	
4.2.1 Ease of protecting investors*	35.9	76	
4.2.2 Market capitalization, % GDP	81.0	26	
4.2.3 Total value of stocks traded, % GDP	136.6	5	●
4.2.4 Venture capital deals/tr PPP$ GDP	32.3	35	
4.3 Trade & competition	*58.0*	*94*	
4.3.1 Applied tariff rate, weighted mean, %	4.3	73	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.6	125	○
4.3.3 Imports of goods & services, % GDP	25.7	123	○
4.3.4 Exports of goods & services, % GDP	29.6	89	
4.3.5 Intensity of local competition†	75.8	20	
5 Business sophistication	**50.9**	**28**	
5.1 Knowledge workers	*69.1*	*27*	
5.1.1 Knowledge-intensive employment, %	7.4	98	○
5.1.2 Firms offering formal training, % firms	84.8	1	●
5.1.3 R&D performed by business, %	73.3	7	
5.1.4 R&D financed by business, %	71.7	6	
5.1.5 GMAT mean score	595.0	5	●
5.1.6 GMAT test takers/mn pop. 20–34	128.1	43	
5.2 Innovation linkages	*34.4*	*73*	
5.2.1 University/industry research collaboration†	58.8	28	
5.2.2 State of cluster development†	64.4	6	●
5.2.3 R&D financed by abroad, %	1.2	79	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	34.4	43	
5.2.5 PCT patent filings with foreign inventor, %	6.7	98	○
5.3 Knowledge absorption	*49.1*	*20*	
5.3.1 Royalty & license fees payments/th GDP	2.2	44	
5.3.2 High-tech imports less re-imports, %	25.6	4	●
5.3.3 Computer & comm. service imports, %	35.3	51	
5.3.4 FDI net inflows, % GDP	3.1	58	
6 Knowledge & technology outputs	**61.8**	**5**	●
6.1 Knowledge creation	*76.1*	*4*	●
6.1.1 Domestic resident patent ap/bn PPP$ GDP	29.0	1	●
6.1.2 PCT resident patent ap/bn PPP$ GDP	1.4	27	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	40.2	1	●
6.1.4 Scientific & technical articles/bn PPP$ GDP	8.2	40	
6.2 Knowledge impact	*60.4*	*6*	●
6.2.1 Growth rate of PPP$ GDP/worker, %	9.1	3	●
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	0.3	32	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	29.4	15	
6.3 Knowledge diffusion	*48.9*	*23*	
6.3.1 Royalty & license fees receipts/th GDP	0.1	68	
6.3.2 High-tech exports less re-exports, %	30.1	4	●
6.3.3 Computer & comm. service exports, %	49.2	25	
6.3.4 FDI net outflows, % GDP	1.0	40	
7 Creative outputs	**34.4**	**56**	
7.1 Creative intangibles	*47.3*	*38*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	119.7	5	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.2	48	
7.1.3 ICT & business model creation†	62.9	32	
7.1.4 ICT & organizational model creation†	66.2	15	
7.2 Creative goods & services	*35.3*	*33*	
7.2.1 Recreation & culture consumption, %	5.3	47	
7.2.2 National feature films/mn pop. 15–69	0.5	83	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	109.0	52	
7.2.4 Creative goods exports, %	6.2	8	
7.2.5 Creative services exports, %	1.8	62	
7.3 Online creativity	*7.7*	*120*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.9	87	
7.3.2 Country-code TLDs/th pop. 15–69	21.1	73	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	35.7	111	○
7.3.4 Video uploads on YouTube/pop. 15–69	n/a	n/a	

Colombia

Key indicators

Population (millions) 46.1
GDP per capita, PPP$ 10,155.3
GDP (US$ billions) 321.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**35.5**	**65**	
Innovation Output Sub-Index		28.7	72	
Innovation Input Sub-Index		42.3	58	
Innovation Efficiency Index		0.7	92	
Global Innovation Index 2011 (out of 125)			71	
GII 2012 rank among GII 2011 economies (125)			63	
1	**Institutions**	**55.3**	**73**	
1.1	*Political environment*	*40.8*	*116*	
1.1.1	Political stability*	29.2	130	○
1.1.2	Government effectiveness*	44.7	57	
1.1.3	Press freedom*	48.3	117	○
1.2	*Regulatory environment*	*66.0*	*71*	
1.2.1	Regulatory quality*	59.5	59	
1.2.2	Rule of law*	38.9	75	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	77	
1.3	*Business environment*	*59.2*	*49*	
1.3.1	Ease of starting a business*	59.7	57	
1.3.2	Ease of resolving insolvency*	81.2	27	
1.3.3	Ease of paying taxes*	36.6	88	
2	**Human capital & research**	**30.4**	**87**	
2.1	*Education*	*39.3*	*110*	
2.1.1	Current expenditure on education, % GNI	3.9	81	
2.1.2	Public expenditure/pupil, % GDP/cap	16.9	80	
2.1.3	School life expectancy, years	13.6	57	
2.1.4	PISA scales in reading, maths, & science	398.6	58	○
2.1.5	Pupil-teacher ratio, secondary	27.1	115	○
2.2	*Tertiary education*	*35.3*	*59*	
2.2.1	Tertiary enrolment, % gross	39.1	60	
2.2.2	Graduates in science & engineering, %	23.2	36	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.5	97	
2.3	*Research & development (R&D)*	*16.6*	*95*	
2.3.1	Researchers, headcounts/mn pop.	332.9	78	
2.3.2	Gross expenditure on R&D, % GDP	0.2	90	
2.3.3	Quality of scientific research institutions†	44.2	66	
3	**Infrastructure**	**46.3**	**34**	
3.1	*Information & communication technologies (ICT)*	*53.6*	*34*	
3.1.1	ICT access*	39.1	78	
3.1.2	ICT use*	17.1	69	
3.1.3	Government's online service*	84.3	16	●
3.1.4	E-participation*	73.7	11	●
3.2	*General infrastructure*	*31.5*	*94*	
3.2.1	Electricity output, kWh/cap	1,273.2	86	
3.2.2	Electricity consumption, kWh/cap	1,046.9	90	
3.2.3	Quality of trade & transport infrastructure*	39.8	62	
3.2.4	Gross capital formation, % GDP	23.8	51	
3.3	*Ecological sustainability*	*54.0*	*15*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	13.2	2	●
3.3.2	Environmental performance*	62.3	27	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.4	39	
4	**Market sophistication**	**40.3**	**62**	
4.1	*Credit*	*27.3*	*79*	
4.1.1	Ease of getting credit*	50.4	62	
4.1.2	Domestic credit to private sector, % GDP	43.5	78	
4.1.3	Microfinance gross loans, % GDP	1.5	28	
4.2	*Investment*	*38.5*	*33*	
4.2.1	Ease of protecting investors*	94.2	5	●
4.2.2	Market capitalization, % GDP	72.3	33	
4.2.3	Total value of stocks traded, % GDP	8.0	51	
4.2.4	Venture capital deals/tr PPP$ GDP	4.3	57	
4.3	*Trade & competition*	*55.0*	*113*	
4.3.1	Applied tariff rate, weighted mean, %	8.9	117	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	18	●
4.3.3	Imports of goods & services, % GDP	18.0	137	○
4.3.4	Exports of goods & services, % GDP	15.8	129	○
4.3.5	Intensity of local competition†	60.1	81	
5	**Business sophistication**	**39.0**	**68**	
5.1	*Knowledge workers*	*49.0*	*59*	
5.1.1	Knowledge-intensive employment, %	21.6	62	
5.1.2	Firms offering formal training, % firms	65.2	8	●
5.1.3	R&D performed by business, %	19.7	66	
5.1.4	R&D financed by business, %	16.1	67	
5.1.5	GMAT mean score	509.0	68	
5.1.6	GMAT test takers/mn pop. 20–34	69.3	64	
5.2	*Innovation linkages*	*28.4*	*106*	
5.2.1	University/industry research collaboration†	51.6	40	
5.2.2	State of cluster development†	48.7	38	
5.2.3	R&D financed by abroad, %	4.3	63	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	15.0	74	
5.2.5	PCT patent filings with foreign inventor, %	3.2	102	○
5.3	*Knowledge absorption*	*39.5*	*55*	
5.3.1	Royalty & license fees payments/th GDP	1.3	65	
5.3.2	High-tech imports less re-imports, %	17.5	13	●
5.3.3	Computer & comm. service imports, %	33.3	64	
5.3.4	FDI net inflows, % GDP	2.3	69	
6	**Knowledge & technology outputs**	**23.1**	**87**	
6.1	*Knowledge creation*	*14.8*	*97*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	91	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	64	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	39	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.5	98	
6.2	*Knowledge impact*	*32.9*	*70*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.8	55	
6.2.2	New businesses/th pop. 15–64	1.1	61	
6.2.3	Computer software spending, % GDP	0.1	63	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	18.9	26	●
6.3	*Knowledge diffusion*	*21.5*	*95*	
6.3.1	Royalty & license fees receipts/th GDP	0.2	59	
6.3.2	High-tech exports less re-exports, %	0.8	77	
6.3.3	Computer & comm. service exports, %	22.7	83	
6.3.4	FDI net outflows, % GDP	2.3	23	●
7	**Creative outputs**	**34.4**	**58**	
7.1	*Creative intangibles*	*42.5*	*60*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	28.7	52	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.9	38	
7.1.4	ICT & organizational model creation†	53.9	46	
7.2	*Creative goods & services*	*22.0*	*67*	
7.2.1	Recreation & culture consumption, %	4.9	56	
7.2.2	National feature films/mn pop. 15–69	0.6	79	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	39.0	90	
7.2.4	Creative goods exports, %	1.1	66	
7.2.5	Creative services exports, %	9.7	20	●
7.3	*Online creativity*	*30.7*	*46*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	12.1	44	
7.3.2	Country-code TLDs/th pop. 15–69	50.7	37	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	989.2	64	
7.3.4	Video uploads on YouTube/pop. 15–69	54.9	70	

Costa Rica

Key indicators

Population (millions)	4.7
GDP per capita, PPP$	11,562.2
GDP (US$ billions)	40.0

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**36.3**	**60**	
Innovation Output Sub-Index	32.8	53	
Innovation Input Sub-Index	39.8	71	
Innovation Efficiency Index	0.8	35	
Global Innovation Index 2011 (out of 125)		45	
GII 2012 rank among GII 2011 economies (125)		58	
1 Institutions	**56.6**	**67**	
1.1 Political environment	*75.0*	*35*	
1.1.1 Political stability*	80.9	35	
1.1.2 Government effectiveness*	49.4	51	
1.1.3 Press freedom*	94.8	18	●
1.2 Regulatory environment	*70.8*	*49*	
1.2.1 Regulatory quality*	64.6	48	
1.2.2 Rule of law*	61.1	46	
1.2.3 Cost of redundancy dismissal, salary weeks	18.7	84	
1.3 Business environment	*23.9*	*122*	
1.3.1 Ease of starting a business*	33.8	93	
1.3.2 Ease of resolving insolvency*	24.4	106	
1.3.3 Ease of paying taxes*	13.6	121	
2 Human capital & research	**32.2**	**78**	
2.1 Education	*52.1*	*68*	
2.1.1 Current expenditure on education, % GNI	6.2	14	●
2.1.2 Public expenditure/pupil, % GDP/cap	18.7	70	
2.1.3 School life expectancy, years	11.9	88	
2.1.4 PISA scales in reading, maths, & science	427.5	45	
2.1.5 Pupil-teacher ratio, secondary	15.5	73	
2.2 Tertiary education	*19.4*	*104*	
2.2.1 Tertiary enrolment, % gross	25.6	79	
2.2.2 Graduates in science & engineering, %	11.9	94	○
2.2.3 Tertiary inbound mobility, %	1.4	63	
2.2.4 Gross tertiary outbound enrolment, %	0.5	101	
2.3 Research & development (R&D)	*25.0*	*59*	
2.3.1 Researchers, headcounts/mn pop.	755.4	62	
2.3.2 Gross expenditure on R&D, % GDP	0.4	65	
2.3.3 Quality of scientific research institutions†	60.6	30	
3 Infrastructure	**37.5**	**56**	
3.1 Information & communication technologies (ICT)	*36.2*	*64*	
3.1.1 ICT access*	46.0	64	
3.1.2 ICT use*	17.4	67	
3.1.3 Government's online service*	49.7	67	
3.1.4 E-participation*	31.6	47	
3.2 General infrastructure	*29.8*	*103*	
3.2.1 Electricity output, kWh/cap	2,061.2	74	
3.2.2 Electricity consumption, kWh/cap	1,817.2	72	
3.2.3 Quality of trade & transport infrastructure*	39.0	65	
3.2.4 Gross capital formation, % GDP	20.0	91	
3.3 Ecological sustainability	*46.6*	*23*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	9.5	16	●
3.3.2 Environmental performance*	69.0	5	●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.9	46	
4 Market sophistication	**28.6**	**117**	
4.1 Credit	*14.4*	*111*	
4.1.1 Ease of getting credit*	27.0	88	
4.1.2 Domestic credit to private sector, % GDP	45.9	69	
4.1.3 Microfinance gross loans, % GDP	0.2	59	
4.2 Investment	*1.2*	*139*	○
4.2.1 Ease of protecting investors*	3.5	131	○
4.2.2 Market capitalization, % GDP	4.2	101	○
4.2.3 Total value of stocks traded, % GDP	0.1	96	○
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*70.2*	*28*	
4.3.1 Applied tariff rate, weighted mean, %	2.4	49	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.0	16	●
4.3.3 Imports of goods & services, % GDP	41.2	70	
4.3.4 Exports of goods & services, % GDP	38.1	70	
4.3.5 Intensity of local competition†	65.8	63	
5 Business sophistication	**44.2**	**44**	
5.1 Knowledge workers	*49.2*	*56*	
5.1.1 Knowledge-intensive employment, %	27.4	48	
5.1.2 Firms offering formal training, % firms	54.7	20	
5.1.3 R&D performed by business, %	30.2	52	
5.1.4 R&D financed by business, %	3.3	80	○
5.1.5 GMAT mean score	524.0	57	
5.1.6 GMAT test takers/mn pop. 20–34	72.1	62	
5.2 Innovation linkages	*41.3*	*50*	
5.2.1 University/industry research collaboration†	55.2	33	
5.2.2 State of cluster development†	46.4	47	
5.2.3 R&D financed by abroad, %	6.6	48	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*42.1*	*43*	
5.3.1 Royalty & license fees payments/th GDP	1.8	53	
5.3.2 High-tech imports less re-imports, %	20.4	7	●
5.3.3 Computer & comm. service imports, %	28.6	70	
5.3.4 FDI net inflows, % GDP	4.1	44	
6 Knowledge & technology outputs	**30.5**	**56**	
6.1 Knowledge creation	*12.2*	*106*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.2	102	○
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	87	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.1	55	○
6.1.4 Scientific & technical articles/bn PPP$ GDP	2.0	82	
6.2 Knowledge impact	*37.2*	*52*	
6.2.1 Growth rate of PPP$ GDP/worker, %	1.8	78	
6.2.2 New businesses/th pop. 15–64	8.8	6	●
6.2.3 Computer software spending, % GDP	0.1	57	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	4.3	72	
6.3 Knowledge diffusion	*42.1*	*29*	
6.3.1 Royalty & license fees receipts/th GDP	0.2	58	
6.3.2 High-tech exports less re-exports, %	24.4	5	●
6.3.3 Computer & comm. service exports, %	40.5	40	
6.3.4 FDI net outflows, % GDP	0.1	88	
7 Creative outputs	**35.2**	**55**	
7.1 Creative intangibles	*50.0*	*28*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	92.0	15	●
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	58.4	43	
7.1.4 ICT & organizational model creation†	48.1	67	
7.2 Creative goods & services	*17.9*	*77*	
7.2.1 Recreation & culture consumption, %	6.8	37	
7.2.2 National feature films/mn pop. 15–69	0.6	78	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	84.3	63	
7.2.4 Creative goods exports, %	0.9	75	
7.2.5 Creative services exports, %	0.2	98	○
7.3 Online creativity	*22.9*	*64*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	6.5	55	
7.3.2 Country-code TLDs/th pop. 15–69	23.1	67	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	1,213.3	57	
7.3.4 Video uploads on YouTube/pop. 15–69	55.9	65	

Côte d'Ivoire

Key indicators

Population (millions)	22.7
GDP per capita, PPP$	1,571.8
GDP (US$ billions)	23.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**22.6**	**134**	○
Innovation Output Sub-Index		20.7	118	
Innovation Input Sub-Index		24.5	139	○
Innovation Efficiency Index		0.8	24	●
Global Innovation Index 2011 (out of 125)			117	
GII 2012 rank among GII 2011 economies (125)			122	
1	**Institutions**	**33.7**	**135**	○
1.1	*Political environment*	*23.6*	*137*	○
1.1.1	Political stability*	27.8	133	○
1.1.2	Government effectiveness*	6.1	138	○
1.1.3	Press freedom*	36.8	128	
1.2	*Regulatory environment*	*56.0*	*102*	
1.2.1	Regulatory quality*	28.8	128	
1.2.2	Rule of law*	15.5	135	○
1.2.3	Cost of redundancy dismissal, salary weeks	13.1	57	●
1.3	*Business environment*	*21.6*	*124*	
1.3.1	Ease of starting a business*	0.0	140	○
1.3.2	Ease of resolving insolvency*	48.9	72	●
1.3.3	Ease of paying taxes*	15.8	118	
2	**Human capital & research**	**21.2**	**118**	
2.1	*Education*	*42.9*	*99*	
2.1.1	Current expenditure on education, % GNI	4.3	63	●
2.1.2	Public expenditure/pupil, % GDP/cap	26.3	19	●
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*5.4*	*136*	○
2.2.1	Tertiary enrolment, % gross	8.9	110	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	115	
2.3	*Research & development (R&D)*	*15.4*	*102*	
2.3.1	Researchers, headcounts/mn pop.	133.0	93	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	29.8	111	
3	**Infrastructure**	**20.4**	**126**	
3.1	*Information & communication technologies (ICT)*	*17.8*	*110*	
3.1.1	ICT access*	23.6	109	
3.1.2	ICT use*	0.9	134	○
3.1.3	Government's online service*	33.3	107	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*21.1*	*136*	○
3.2.1	Electricity output, kWh/cap	275.6	111	
3.2.2	Electricity consumption, kWh/cap	186.8	115	
3.2.3	Quality of trade & transport infrastructure*	34.3	84	
3.2.4	Gross capital formation, % GDP	13.9	134	○
3.3	*Ecological sustainability*	*22.3*	*102*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.8	103	
3.3.2	Environmental performance*	53.5	65	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	103	
4	**Market sophistication**	**21.4**	**131**	
4.1	*Credit*	*3.0*	*137*	○
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	18.1	122	
4.1.3	Microfinance gross loans, % GDP	0.2	62	
4.2	*Investment*	*4.6*	*126*	
4.2.1	Ease of protecting investors*	7.1	123	
4.2.2	Market capitalization, % GDP	31.2	60	●
4.2.3	Total value of stocks traded, % GDP	0.6	82	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*56.5*	*106*	
4.3.1	Applied tariff rate, weighted mean, %	7.3	102	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.7	89	
4.3.3	Imports of goods & services, % GDP	36.3	83	
4.3.4	Exports of goods & services, % GDP	40.9	61	●
4.3.5	Intensity of local competition†	60.5	79	
5	**Business sophistication**	**25.8**	**133**	○
5.1	*Knowledge workers*	*30.8*	*111*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	19.1	92	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	457.2	104	
5.1.6	GMAT test takers/mn pop. 20–34	27.1	105	
5.2	*Innovation linkages*	*19.9*	*132*	
5.2.1	University/industry research collaboration†	22.8	127	○
5.2.2	State of cluster development†	20.2	132	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	22.4	62	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*26.8*	*112*	
5.3.1	Royalty & license fees payments/th GDP	0.9	78	
5.3.2	High-tech imports less re-imports, %	5.7	94	
5.3.3	Computer & comm. service imports, %	27.2	72	●
5.3.4	FDI net inflows, % GDP	1.8	81	
6	**Knowledge & technology outputs**	**21.9**	**96**	
6.1	*Knowledge creation*	*15.7*	*93*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	96	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	85	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	96	
6.2	*Knowledge impact*	*24.8*	*105*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	102	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.2	110	
6.3	*Knowledge diffusion*	*25.2*	*73*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	91	
6.3.2	High-tech exports less re-exports, %	0.7	81	
6.3.3	Computer & comm. service exports, %	57.4	14	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**19.6**	**122**	
7.1	*Creative intangibles*	*35.5*	*90*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	37.6	119	
7.1.4	ICT & organizational model creation†	33.4	112	
7.2	*Creative goods & services*	*2.0*	*130*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	18.2	105	
7.2.4	Creative goods exports, %	0.1	115	
7.2.5	Creative services exports, %	0.6	80	
7.3	*Online creativity*	*5.2*	*125*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	130	
7.3.2	Country-code TLDs/th pop. 15–69	2.2	113	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	29.6	113	
7.3.4	Video uploads on YouTube/pop. 15–69	18.5	124	

Croatia

Key indicators

Population (millions)	4.4
GDP per capita, PPP$	18,338.5
GDP (US$ billions)	64.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**40.7**	**42**	
Innovation Output Sub-Index		34.9	45	
Innovation Input Sub-Index		46.4	44	
Innovation Efficiency Index		0.8	63	
Global Innovation Index 2011 (out of 125)			44	
GII 2012 rank among GII 2011 economies (125)			41	
1	**Institutions**	**69.2**	**41**	
1.1	*Political environment*	*71.5*	*42*	
1.1.1	Political stability*	79.9	38	
1.1.2	Government effectiveness*	57.2	43	
1.1.3	Press freedom*	77.5	55	
1.2	*Regulatory environment*	*72.6*	*44*	
1.2.1	Regulatory quality*	66.0	46	
1.2.2	Rule of law*	52.7	52	
1.2.3	Cost of redundancy dismissal, salary weeks	15.1	69	
1.3	*Business environment*	*63.5*	*35*	
1.3.1	Ease of starting a business*	68.3	45	
1.3.2	Ease of resolving insolvency*	39.5	85	
1.3.3	Ease of paying taxes*	82.7	25	●
2	**Human capital & research**	**41.9**	**51**	
2.1	*Education*	*57.8*	*48*	
2.1.1	Current expenditure on education, % GNI	3.9	80	
2.1.2	Public expenditure/pupil, % GDP/cap	23.5	38	
2.1.3	School life expectancy, years	13.9	52	
2.1.4	PISA scales in reading, maths, & science	474.0	35	
2.1.5	Pupil-teacher ratio, secondary	8.3	13	●
2.2	*Tertiary education*	*37.7*	*55*	
2.2.1	Tertiary enrolment, % gross	49.2	47	
2.2.2	Graduates in science & engineering, %	24.4	29	
2.2.3	Tertiary inbound mobility, %	0.5	89	○
2.2.4	Gross tertiary outbound enrolment, %	2.4	35	
2.3	*Research & development (R&D)*	*30.0*	*42*	
2.3.1	Researchers, headcounts/mn pop.	2,696.7	33	
2.3.2	Gross expenditure on R&D, % GDP	0.8	40	
2.3.3	Quality of scientific research institutions†	50.9	45	
3	**Infrastructure**	**44.9**	**36**	
3.1	*Information & communication technologies (ICT)*	*51.7*	*39*	
3.1.1	ICT access*	70.5	28	●
3.1.2	ICT use*	43.3	33	
3.1.3	Government's online service*	64.1	40	
3.1.4	E-participation*	29.0	52	
3.2	*General infrastructure*	*32.9*	*89*	
3.2.1	Electricity output, kWh/cap	2,865.7	61	
3.2.2	Electricity consumption, kWh/cap	3,709.4	49	
3.2.3	Quality of trade & transport infrastructure*	34.0	86	
3.2.4	Gross capital formation, % GDP	23.4	58	
3.3	*Ecological sustainability*	*50.0*	*19*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.3	33	
3.3.2	Environmental performance*	64.2	20	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.7	20	●
4	**Market sophistication**	**36.8**	**77**	
4.1	*Credit*	*24.4*	*86*	
4.1.1	Ease of getting credit*	50.4	62	
4.1.2	Domestic credit to private sector, % GDP	70.1	48	
4.1.3	Microfinance gross loans, % GDP	0.0	82	○
4.2	*Investment*	*19.1*	*86*	
4.2.1	Ease of protecting investors*	15.8	110	○
4.2.2	Market capitalization, % GDP	40.9	52	
4.2.3	Total value of stocks traded, % GDP	1.7	65	
4.2.4	Venture capital deals/tr PPP$ GDP	12.3	41	
4.3	*Trade & competition*	*67.0*	*49*	
4.3.1	Applied tariff rate, weighted mean, %	1.2	9	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	41	
4.3.3	Imports of goods & services, % GDP	38.8	74	
4.3.4	Exports of goods & services, % GDP	38.3	69	
4.3.5	Intensity of local competition†	51.5	111	○
5	**Business sophistication**	**39.4**	**64**	
5.1	*Knowledge workers*	*48.0*	*63*	
5.1.1	Knowledge-intensive employment, %	30.1	42	
5.1.2	Firms offering formal training, % firms	28.0	68	○
5.1.3	R&D performed by business, %	40.4	43	
5.1.4	R&D financed by business, %	39.8	41	
5.1.5	GMAT mean score	484.3	85	
5.1.6	GMAT test takers/mn pop. 20–34	113.7	46	
5.2	*Innovation linkages*	*28.2*	*107*	○
5.2.1	University/industry research collaboration†	41.4	74	
5.2.2	State of cluster development†	39.4	76	
5.2.3	R&D financed by abroad, %	7.0	46	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	19.8	67	
5.2.5	PCT patent filings with foreign inventor, %	26.7	69	○
5.3	*Knowledge absorption*	*41.9*	*44*	
5.3.1	Royalty & license fees payments/th GDP	3.7	28	
5.3.2	High-tech imports less re-imports, %	7.5	76	
5.3.3	Computer & comm. service imports, %	52.4	11	●
5.3.4	FDI net inflows, % GDP	0.5	121	○
6	**Knowledge & technology outputs**	**34.0**	**45**	
6.1	*Knowledge creation*	*35.1*	*39*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.5	41	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.6	33	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	27	
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.8	29	
6.2	*Knowledge impact*	*44.9*	*33*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.0	51	
6.2.2	New businesses/th pop. 15–64	2.6	39	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	26.7	18	●
6.3	*Knowledge diffusion*	*22.1*	*91*	○
6.3.1	Royalty & license fees receipts/th GDP	0.5	42	
6.3.2	High-tech exports less re-exports, %	5.8	38	
6.3.3	Computer & comm. service exports, %	14.7	105	○
6.3.4	FDI net outflows, % GDP	-0.2	110	○
7	**Creative outputs**	**35.8**	**50**	
7.1	*Creative intangibles*	*34.9*	*93*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	43.4	40	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.6	12	●
7.1.3	ICT & business model creation†	49.2	75	
7.1.4	ICT & organizational model creation†	36.5	108	○
7.2	*Creative goods & services*	*34.8*	*34*	
7.2.1	Recreation & culture consumption, %	7.6	28	
7.2.2	National feature films/mn pop. 15–69	2.5	42	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	167.8	30	
7.2.4	Creative goods exports, %	2.8	27	●
7.2.5	Creative services exports, %	6.9	30	
7.3	*Online creativity*	*38.7*	*37*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	14.5	40	
7.3.2	Country-code TLDs/th pop. 15–69	46.6	41	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	5,650.9	28	
7.3.4	Video uploads on YouTube/pop. 15–69	65.0	38	

Cyprus

Key indicators

Population (millions)	0.8
GDP per capita, PPP$	29,100.3
GDP (US$ billions)	25.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**47.9**	**28**	
Innovation Output Sub-Index		39.3	32	
Innovation Input Sub-Index		56.4	25	
Innovation Efficiency Index		0.7	82	
Global Innovation Index 2011 (out of 125)			28	
GII 2012 rank among GII 2011 economies (125)			27	
1	**Institutions**	**86.3**	**15**	
1.1	*Political environment*	*83.6*	*20*	
1.1.1	Political stability*	75.1	48	
1.1.2	Government effectiveness*	80.3	18	
1.1.3	Press freedom*	95.3	15	
1.2	*Regulatory environment*	*91.5*	*17*	
1.2.1	Regulatory quality*	86.6	21	
1.2.2	Rule of law*	79.2	25	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*83.9*	*11*	●
1.3.1	Ease of starting a business*	84.8	22	
1.3.2	Ease of resolving insolvency*	85.6	21	
1.3.3	Ease of paying taxes*	81.2	27	
2	**Human capital & research**	**49.3**	**30**	
2.1	*Education*	*64.5*	*19*	
2.1.1	Current expenditure on education, % GNI	4.0	78	
2.1.2	Public expenditure/pupil, % GDP/cap	34.9	4	●
2.1.3	School life expectancy, years	14.7	40	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	9.9	26	
2.2	*Tertiary education*	*59.0*	*6*	●
2.2.1	Tertiary enrolment, % gross	52.0	43	
2.2.2	Graduates in science & engineering, %	13.7	84	○
2.2.3	Tertiary inbound mobility, %	31.8	5	●
2.2.4	Gross tertiary outbound enrolment, %	41.3	1	●
2.3	*Research & development (R&D)*	*24.3*	*61*	
2.3.1	Researchers, headcounts/mn pop.	1,453.1	48	
2.3.2	Gross expenditure on R&D, % GDP	0.5	59	
2.3.3	Quality of scientific research institutions†	51.8	44	
3	**Infrastructure**	**43.3**	**42**	
3.1	*Information & communication technologies (ICT)*	*43.3*	*51*	
3.1.1	ICT access*	61.3	44	
3.1.2	ICT use*	47.8	28	
3.1.3	Government's online service*	56.2	51	
3.1.4	E-participation*	7.9	98	○
3.2	*General infrastructure*	*39.1*	*55*	
3.2.1	Electricity output, kWh/cap	6,558.3	31	
3.2.2	Electricity consumption, kWh/cap	6,250.6	28	
3.2.3	Quality of trade & transport infrastructure*	48.5	44	
3.2.4	Gross capital formation, % GDP	18.4	109	○
3.3	*Ecological sustainability*	*47.4*	*21*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.0	36	
3.3.2	Environmental performance*	57.2	43	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.8	19	
4	**Market sophistication**	**56.2**	**20**	
4.1	*Credit*	*69.3*	*7*	●
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	283.6	1	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*32.4*	*49*	
4.2.1	Ease of protecting investors*	35.9	76	○
4.2.2	Market capitalization, % GDP	19.9	75	○
4.2.3	Total value of stocks traded, % GDP	3.8	59	
4.2.4	Venture capital deals/tr PPP$ GDP	126.3	10	●
4.3	*Trade & competition*	*66.8*	*50*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	46.6	53	
4.3.4	Exports of goods & services, % GDP	40.1	64	
4.3.5	Intensity of local competition†	73.2	28	
5	**Business sophistication**	**47.2**	**37**	
5.1	*Knowledge workers*	*52.5*	*49*	
5.1.1	Knowledge-intensive employment, %	31.4	39	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	22.1	62	○
5.1.4	R&D financed by business, %	17.8	65	○
5.1.5	GMAT mean score	532.2	51	
5.1.6	GMAT test takers/mn pop. 20–34	300.5	18	
5.2	*Innovation linkages*	*53.5*	*15*	
5.2.1	University/industry research collaboration†	48.7	44	
5.2.2	State of cluster development†	50.1	34	
5.2.3	R&D financed by abroad, %	14.7	21	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	146.6	8	●
5.2.5	PCT patent filings with foreign inventor, %	84.4	39	
5.3	*Knowledge absorption*	*35.6*	*66*	
5.3.1	Royalty & license fees payments/th GDP	1.3	62	
5.3.2	High-tech imports less re-imports, %	10.4	48	
5.3.3	Computer & comm. service imports, %	16.9	110	○
5.3.4	FDI net inflows, % GDP	20.9	5	●
6	**Knowledge & technology outputs**	**44.7**	**25**	
6.1	*Knowledge creation*	*36.4*	*36*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.7	59	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.1	31	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	8.6	39	
6.2	*Knowledge impact*	*60.9*	*5*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	1.3	92	○
6.2.2	New businesses/th pop. 15–64	20.3	1	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	27.7	17	
6.3	*Knowledge diffusion*	*36.7*	*36*	
6.3.1	Royalty & license fees receipts/th GDP	0.4	51	
6.3.2	High-tech exports less re-exports, %	19.2	11	●
6.3.3	Computer & comm. service exports, %	28.7	63	
6.3.4	FDI net outflows, % GDP	4.3	13	
7	**Creative outputs**	**34.0**	**63**	
7.1	*Creative intangibles*	*36.5*	*87*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	49.8	33	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.9	23	
7.1.3	ICT & business model creation†	52.3	66	
7.1.4	ICT & organizational model creation†	52.1	54	
7.2	*Creative goods & services*	*26.0*	*56*	
7.2.1	Recreation & culture consumption, %	7.8	24	
7.2.2	National feature films/mn pop. 15–69	1.2	63	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	123.7	47	
7.2.4	Creative goods exports, %	2.1	40	
7.2.5	Creative services exports, %	1.1	69	
7.3	*Online creativity*	*37.1*	*39*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	35.2	23	
7.3.2	Country-code TLDs/th pop. 15–69	35.1	50	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,433.4	46	
7.3.4	Video uploads on YouTube/pop. 15–69	65.9	33	

Czech Republic

Key indicators

Population (millions)	10.5
GDP per capita, PPP$	25,933.8
GDP (US$ billions)	220.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**49.7**	**27**	
Innovation Output Sub-Index	46.1	23	
Innovation Input Sub-Index	53.3	31	
Innovation Efficiency Index	0.9	22	
Global Innovation Index 2011 (out of 125)		27	
GII 2012 rank among GII 2011 economies (125)		26	
1 Institutions	**68.2**	**44**	
1.1 Political environment	*84.3*	*19*	
1.1.1 Political stability*	88.8	17	
1.1.2 Government effectiveness*	67.5	31	
1.1.3 Press freedom*	96.6	13	●
1.2 Regulatory environment	*75.5*	*43*	
1.2.1 Regulatory quality*	83.1	24	
1.2.2 Rule of law*	73.0	30	
1.2.3 Cost of redundancy dismissal, salary weeks	21.7	95	○
1.3 Business environment	*44.8*	*82*	
1.3.1 Ease of starting a business*	24.4	106	○
1.3.2 Ease of resolving insolvency*	79.8	29	
1.3.3 Ease of paying taxes*	30.2	97	○
2 Human capital & research	**49.1**	**31**	
2.1 Education	*57.8*	*49*	
2.1.1 Current expenditure on education, % GNI	4.0	75	
2.1.2 Public expenditure/pupil, % GDP/cap	20.6	52	
2.1.3 School life expectancy, years	15.3	27	
2.1.4 PISA scales in reading, maths, & science	490.5	26	
2.1.5 Pupil-teacher ratio, secondary	11.2	39	
2.2 Tertiary education	*46.3*	*30*	
2.2.1 Tertiary enrolment, % gross	60.7	31	
2.2.2 Graduates in science & engineering, %	23.7	33	
2.2.3 Tertiary inbound mobility, %	7.3	20	
2.2.4 Gross tertiary outbound enrolment, %	1.5	59	
2.3 Research & development (R&D)	*43.3*	*29*	
2.3.1 Researchers, headcounts/mn pop.	4,127.7	23	
2.3.2 Gross expenditure on R&D, % GDP	1.5	24	
2.3.3 Quality of scientific research institutions†	63.6	25	
3 Infrastructure	**52.0**	**24**	
3.1 Information & communication technologies (ICT)	*46.4*	*46*	
3.1.1 ICT access*	64.8	36	
3.1.2 ICT use*	40.3	37	
3.1.3 Government's online service*	54.3	53	
3.1.4 E-participation*	26.3	55	
3.2 General infrastructure	*45.7*	*33*	
3.2.1 Electricity output, kWh/cap	8,120.5	23	
3.2.2 Electricity consumption, kWh/cap	6,343.5	27	
3.2.3 Quality of trade & transport infrastructure*	56.3	33	
3.2.4 Gross capital formation, % GDP	22.6	67	
3.3 Ecological sustainability	*63.8*	*5*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	5.0	74	○
3.3.2 Environmental performance*	64.8	18	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	25.3	1	●
4 Market sophistication	**44.2**	**48**	
4.1 Credit	*37.7*	*49*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	56.2	56	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*18.8*	*87*	○
4.2.1 Ease of protecting investors*	35.9	76	○
4.2.2 Market capitalization, % GDP	22.4	71	○
4.2.3 Total value of stocks traded, % GDP	7.3	53	
4.2.4 Venture capital deals/tr PPP$ GDP	3.7	60	
4.3 Trade & competition	*76.2*	*12*	●
4.3.1 Applied tariff rate, weighted mean, %	1.6	11	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3 Imports of goods & services, % GDP	74.5	16	
4.3.4 Exports of goods & services, % GDP	79.3	12	●
4.3.5 Intensity of local competition†	77.4	15	●
5 Business sophistication	**53.0**	**22**	
5.1 Knowledge workers	*73.4*	*18*	
5.1.1 Knowledge-intensive employment, %	40.5	18	
5.1.2 Firms offering formal training, % firms	70.7	4	●
5.1.3 R&D performed by business, %	60.0	23	
5.1.4 R&D financed by business, %	45.8	28	
5.1.5 GMAT mean score	578.1	14	●
5.1.6 GMAT test takers/mn pop. 20–34	44.3	86	○
5.2 Innovation linkages	*33.6*	*78*	
5.2.1 University/industry research collaboration†	57.8	29	
5.2.2 State of cluster development†	47.1	45	
5.2.3 R&D financed by abroad, %	9.2	35	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	11.7	83	
5.2.5 PCT patent filings with foreign inventor, %	17.5	86	○
5.3 Knowledge absorption	*52.0*	*15*	●
5.3.1 Royalty & license fees payments/th GDP	4.0	24	
5.3.2 High-tech imports less re-imports, %	18.9	11	●
5.3.3 Computer & comm. service imports, %	48.8	18	
5.3.4 FDI net inflows, % GDP	3.5	49	
6 Knowledge & technology outputs	**48.4**	**20**	
6.1 Knowledge creation	*46.2*	*27*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	3.9	38	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.5	36	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	5.9	9	
6.1.4 Scientific & technical articles/bn PPP$ GDP	15.6	23	
6.2 Knowledge impact	*61.8*	*4*	●
6.2.1 Growth rate of PPP$ GDP/worker, %	3.7	38	
6.2.2 New businesses/th pop. 15–64	3.0	34	
6.2.3 Computer software spending, % GDP	1.3	1	●
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	62.0	4	●
6.3 Knowledge diffusion	*37.3*	*35*	
6.3.1 Royalty & license fees receipts/th GDP	0.5	41	
6.3.2 High-tech exports less re-exports, %	15.4	19	
6.3.3 Computer & comm. service exports, %	40.0	41	
6.3.4 FDI net outflows, % GDP	0.9	41	
7 Creative outputs	**43.9**	**26**	
7.1 Creative intangibles	*38.4*	*81*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	86.8	17	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	1.2	17	
7.1.3 ICT & business model creation†	49.4	74	
7.1.4 ICT & organizational model creation†	37.9	102	○
7.2 Creative goods & services	*46.8*	*9*	●
7.2.1 Recreation & culture consumption, %	10.8	11	●
7.2.2 National feature films/mn pop. 15–69	4.8	22	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	172.4	28	
7.2.4 Creative goods exports, %	3.4	23	
7.2.5 Creative services exports, %	9.3	21	
7.3 Online creativity	*52.0*	*24*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	37.5	21	
7.3.2 Country-code TLDs/th pop. 15–69	66.1	16	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	7,029.0	23	
7.3.4 Video uploads on YouTube/pop. 15–69	68.5	29	

Denmark

Key indicators

Population (millions) 5.5
GDP per capita, PPP$ 37,741.9
GDP (US$ billions) 349.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**59.9**	**7**	
Innovation Output Sub-Index		52.5	9	
Innovation Input Sub-Index		67.4	8	
Innovation Efficiency Index		0.8	52	
Global Innovation Index 2011 (out of 125)			6	
GII 2012 rank among GII 2011 economies (125)			7	
1	**Institutions**	**95.3**	**1**	●
1.1	*Political environment*	*94.9*	*2*	●
1.1.1	Political stability*	89.7	14	
1.1.2	Government effectiveness*	97.9	3	●
1.1.3	Press freedom*	97.1	9	
1.2	*Regulatory environment*	*99.4*	*1*	●
1.2.1	Regulatory quality*	100.0	1	●
1.2.2	Rule of law*	97.5	4	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*91.6*	*5*	●
1.3.1	Ease of starting a business*	84.1	23	
1.3.2	Ease of resolving insolvency*	97.1	5	●
1.3.3	Ease of paying taxes*	93.5	10	
2	**Human capital & research**	**62.9**	**5**	●
2.1	*Education*	*75.0*	*4*	●
2.1.1	Current expenditure on education, % GNI	7.4	7	
2.1.2	Public expenditure/pupil, % GDP/cap	30.9	7	
2.1.3	School life expectancy, years	16.8	11	
2.1.4	PISA scales in reading, maths, & science	499.2	19	
2.1.5	Pupil-teacher ratio, secondary	10.1	28	
2.2	*Tertiary education*	*43.9*	*38*	
2.2.1	Tertiary enrolment, % gross	74.4	13	
2.2.2	Graduates in science & engineering, %	19.6	57	○
2.2.3	Tertiary inbound mobility, %	5.4	28	
2.2.4	Gross tertiary outbound enrolment, %	1.6	55	○
2.3	*Research & development (R&D)*	*69.7*	*5*	●
2.3.1	Researchers, headcounts/mn pop.	8,812.0	4	●
2.3.2	Gross expenditure on R&D, % GDP	3.0	6	
2.3.3	Quality of scientific research institutions†	72.7	14	
3	**Infrastructure**	**56.8**	**12**	
3.1	*Information & communication technologies (ICT)*	*73.2*	*13*	
3.1.1	ICT access*	83.3	8	
3.1.2	ICT use*	68.5	6	
3.1.3	Government's online service*	85.6	13	
3.1.4	E-participation*	55.3	28	
3.2	*General infrastructure*	*46.8*	*32*	
3.2.1	Electricity output, kWh/cap	6,968.0	28	
3.2.2	Electricity consumption, kWh/cap	6,370.5	26	
3.2.3	Quality of trade & transport infrastructure*	74.8	15	
3.2.4	Gross capital formation, % GDP	16.4	123	○
3.3	*Ecological sustainability*	*50.4*	*18*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.4	25	
3.3.2	Environmental performance*	63.6	21	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	5.0	21	
4	**Market sophistication**	**66.6**	**8**	
4.1	*Credit*	*78.1*	*5*	●
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	225.0	2	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*54.6*	*15*	
4.2.1	Ease of protecting investors*	76.2	27	
4.2.2	Market capitalization, % GDP	74.7	30	
4.2.3	Total value of stocks traded, % GDP	46.6	23	
4.2.4	Venture capital deals/tr PPP$ GDP	143.4	9	
4.3	*Trade & competition*	*67.1*	*46*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	45.0	55	
4.3.4	Exports of goods & services, % GDP	50.6	43	
4.3.5	Intensity of local competition†	69.4	44	
5	**Business sophistication**	**55.2**	**17**	
5.1	*Knowledge workers*	*78.0*	*10*	
5.1.1	Knowledge-intensive employment, %	45.1	5	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	66.8	15	
5.1.4	R&D financed by business, %	60.2	15	
5.1.5	GMAT mean score	549.5	38	
5.1.6	GMAT test takers/mn pop. 20–34	112.3	47	
5.2	*Innovation linkages*	*45.5*	*35*	
5.2.1	University/industry research collaboration†	69.2	14	
5.2.2	State of cluster development†	61.5	16	
5.2.3	R&D financed by abroad, %	8.7	36	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	54.2	25	
5.2.5	PCT patent filings with foreign inventor, %	37.5	59	○
5.3	*Knowledge absorption*	*42.2*	*41*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	11.7	35	
5.3.3	Computer & comm. service imports, %	34.8	55	○
5.3.4	FDI net inflows, % GDP	-0.2	134	○
6	**Knowledge & technology outputs**	**51.5**	**16**	
6.1	*Knowledge creation*	*64.4*	*11*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	17.2	7	
6.1.2	PCT resident patent ap/bn PPP$ GDP	6.3	6	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.0	33	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	27.1	6	●
6.2	*Knowledge impact*	*48.7*	*22*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.0	32	
6.2.2	New businesses/th pop. 15–64	4.6	20	
6.2.3	Computer software spending, % GDP	0.8	10	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	9.2	49	
6.3	*Knowledge diffusion*	*41.5*	*30*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	9.5	27	
6.3.3	Computer & comm. service exports, %	37.4	47	
6.3.4	FDI net outflows, % GDP	1.1	37	
7	**Creative outputs**	**53.5**	**8**	
7.1	*Creative intangibles*	*46.7*	*39*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	17.5	65	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.9	9	
7.1.3	ICT & business model creation†	72.6	7	
7.1.4	ICT & organizational model creation†	65.2	16	
7.2	*Creative goods & services*	*46.4*	*10*	
7.2.1	Recreation & culture consumption, %	11.2	7	
7.2.2	National feature films/mn pop. 15–69	8.4	11	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	269.8	16	
7.2.4	Creative goods exports, %	3.9	19	
7.2.5	Creative services exports, %	0.7	78	○
7.3	*Online creativity*	*74.1*	*6*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	99.7	6	●
7.3.2	Country-code TLDs/th pop. 15–69	79.7	3	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,116.0	16	
7.3.4	Video uploads on YouTube/pop. 15–69	75.9	13	

Dominican Republic

Key indicators

Population (millions)	10.1
GDP per capita, PPP$	9,289.2
GDP (US$ billions)	54.4

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**30.9**	**86**	
Innovation Output Sub-Index	27.3	77	
Innovation Input Sub-Index	34.6	93	
Innovation Efficiency Index	0.8	46	●
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**43.6**	**104**	
1.1 Political environment	*53.7*	*78*	
1.1.1 Political stability*	65.9	67	
1.1.2 Government effectiveness*	24.5	106	
1.1.3 Press freedom*	70.8	74	
1.2 Regulatory environment	*50.2*	*117*	
1.2.1 Regulatory quality*	46.6	85	
1.2.2 Rule of law*	26.3	112	
1.2.3 Cost of redundancy dismissal, salary weeks	26.2	113	
1.3 Business environment	*26.8*	*115*	
1.3.1 Ease of starting a business*	19.4	113	
1.3.2 Ease of resolving insolvency*	5.7	132	○
1.3.3 Ease of paying taxes*	55.3	63	
2 Human capital & research	**23.7**	**114**	
2.1 Education	*25.8*	*130*	○
2.1.1 Current expenditure on education, % GNI	1.9	126	○
2.1.2 Public expenditure/pupil, % GDP/cap	6.5	115	○
2.1.3 School life expectancy, years	12.3	81	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	28.2	116	○
2.2 Tertiary education	*17.6*	*112*	
2.2.1 Tertiary enrolment, % gross	34.0	69	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.3	113	
2.3 Research & development (R&D)	*27.5*	*50*	●
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	27.5	118	○
3 Infrastructure	**35.6**	**61**	
3.1 Information & communication technologies (ICT)	*37.0*	*60*	
3.1.1 ICT access*	31.2	99	
3.1.2 ICT use*	15.9	71	
3.1.3 Government's online service*	53.6	55	
3.1.4 E-participation*	47.4	34	●
3.2 General infrastructure	*24.7*	*125*	○
3.2.1 Electricity output, kWh/cap	1,544.2	83	
3.2.2 Electricity consumption, kWh/cap	1,318.7	85	
3.2.3 Quality of trade & transport infrastructure*	33.5	90	
3.2.4 Gross capital formation, % GDP	16.5	122	○
3.3 Ecological sustainability	*45.1*	*26*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	13.0	3	●
3.3.2 Environmental performance*	52.4	69	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.4	88	
4 Market sophistication	**36.6**	**79**	
4.1 Credit	*19.3*	*92*	
4.1.1 Ease of getting credit*	38.7	72	
4.1.2 Domestic credit to private sector, % GDP	22.7	112	
4.1.3 Microfinance gross loans, % GDP	1.1	34	●
4.2 Investment	*29.1*	*57*	
4.2.1 Ease of protecting investors*	58.2	48	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*61.3*	*80*	
4.3.1 Applied tariff rate, weighted mean, %	6.1	92	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.4	53	●
4.3.3 Imports of goods & services, % GDP	34.0	94	
4.3.4 Exports of goods & services, % GDP	22.3	117	
4.3.5 Intensity of local competition†	66.8	58	
5 Business sophistication	**33.6**	**101**	
5.1 Knowledge workers	*43.4*	*73*	
5.1.1 Knowledge-intensive employment, %	15.8	84	
5.1.2 Firms offering formal training, % firms	53.3	21	●
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	431.1	114	
5.1.6 GMAT test takers/mn pop. 20–34	42.5	89	
5.2 Innovation linkages	*33.8*	*75*	
5.2.1 University/industry research collaboration†	38.0	87	
5.2.2 State of cluster development†	44.5	55	●
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	6.4	100	
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*23.6*	*131*	○
5.3.1 Royalty & license fees payments/th GDP	1.2	67	
5.3.2 High-tech imports less re-imports, %	6.2	89	
5.3.3 Computer & comm. service imports, %	13.0	117	○
5.3.4 FDI net inflows, % GDP	3.1	56	●
6 Knowledge & technology outputs	**17.2**	**125**	○
6.1 Knowledge creation	*14.8*	*98*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.4	88	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	81	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.1	139	○
6.2 Knowledge impact	*31.1*	*77*	
6.2.1 Growth rate of PPP$ GDP/worker, %	3.4	43	●
6.2.2 New businesses/th pop. 15–64	2.1	44	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.4	104	
6.3 Knowledge diffusion	*5.7*	*133*	○
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	2.1	61	
6.3.3 Computer & comm. service exports, %	6.5	127	○
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**37.3**	**40**	●
7.1 Creative intangibles	*52.2*	*20*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	56.7	51	●
7.1.4 ICT & organizational model creation†	47.7	70	
7.2 Creative goods & services	*25.5*	*57*	●
7.2.1 Recreation & culture consumption, %	2.2	80	
7.2.2 National feature films/mn pop. 15–69	1.0	67	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	38.8	91	
7.2.4 Creative goods exports, %	4.0	18	●
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*19.5*	*76*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.3	78	
7.3.2 Country-code TLDs/th pop. 15–69	18.6	79	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	779.0	73	
7.3.4 Video uploads on YouTube/pop. 15–69	53.0	72	

Ecuador

Key indicators

Population (millions)	15.0
GDP per capita, PPP$	8,335.1
GDP (US$ billions)	65.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**28.5**	**98**	
Innovation Output Sub-Index		25.9	85	
Innovation Input Sub-Index		31.2	109	
Innovation Efficiency Index		0.8	31	●
Global Innovation Index 2011 (out of 125)			93	
GII 2012 rank among GII 2011 economies (125)			93	
1	**Institutions**	**34.4**	**134**	○
1.1	*Political environment*	*47.0*	*89*	
1.1.1	Political stability*	50.1	102	
1.1.2	Government effectiveness*	23.2	111	
1.1.3	Press freedom*	67.6	81	
1.2	*Regulatory environment*	*32.0*	*134*	○
1.2.1	Regulatory quality*	22.7	134	○
1.2.2	Rule of law*	16.8	131	○
1.2.3	Cost of redundancy dismissal, salary weeks	36.1	130	○
1.3	*Business environment*	*24.2*	*120*	
1.3.1	Ease of starting a business*	5.7	132	○
1.3.2	Ease of resolving insolvency*	14.3	120	
1.3.3	Ease of paying taxes*	52.5	67	
2	**Human capital & research**	**25.1**	**109**	
2.1	*Education*	*39.9*	*108*	
2.1.1	Current expenditure on education, % GNI	1.4	134	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.3	63	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	22.4	102	
2.2	*Tertiary education*	*23.6*	*92*	
2.2.1	Tertiary enrolment, % gross	39.8	59	
2.2.2	Graduates in science & engineering, %	12.8	88	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.7	86	
2.3	*Research & development (R&D)*	*11.8*	*122*	
2.3.1	Researchers, headcounts/mn pop.	186.6	85	
2.3.2	Gross expenditure on R&D, % GDP	0.3	74	
2.3.3	Quality of scientific research institutions†	28.4	115	
3	**Infrastructure**	**31.3**	**77**	
3.1	*Information & communication technologies (ICT)*	*29.8*	*78*	
3.1.1	ICT access*	38.0	82	
3.1.2	ICT use*	11.6	85	
3.1.3	Government's online service*	45.8	81	
3.1.4	E-participation*	23.7	59	
3.2	*General infrastructure*	*31.4*	*95*	
3.2.1	Electricity output, kWh/cap	1,182.3	89	
3.2.2	Electricity consumption, kWh/cap	1,167.6	87	
3.2.3	Quality of trade & transport infrastructure*	34.5	82	
3.2.4	Gross capital formation, % GDP	26.2	31	●
3.3	*Ecological sustainability*	*32.8*	*61*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.3	70	
3.3.2	Environmental performance*	60.6	30	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.2	57	●
4	**Market sophistication**	**31.6**	**103**	
4.1	*Credit*	*29.6*	*75*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	30.9	93	
4.1.3	Microfinance gross loans, % GDP	3.5	16	●
4.2	*Investment*	*4.8*	*125*	
4.2.1	Ease of protecting investors*	15.8	110	
4.2.2	Market capitalization, % GDP	8.9	95	
4.2.3	Total value of stocks traded, % GDP	0.3	89	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*60.4*	*84*	
4.3.1	Applied tariff rate, weighted mean, %	6.0	88	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	45	●
4.3.3	Imports of goods & services, % GDP	38.6	75	
4.3.4	Exports of goods & services, % GDP	32.9	82	
4.3.5	Intensity of local competition†	53.3	105	
5	**Business sophistication**	**33.4**	**103**	
5.1	*Knowledge workers*	*42.3*	*78*	
5.1.1	Knowledge-intensive employment, %	18.1	78	
5.1.2	Firms offering formal training, % firms	65.9	7	●
5.1.3	R&D performed by business, %	8.5	76	
5.1.4	R&D financed by business, %	8.5	73	
5.1.5	GMAT mean score	470.3	97	
5.1.6	GMAT test takers/mn pop. 20–34	49.7	80	
5.2	*Innovation linkages*	*31.4*	*93*	
5.2.1	University/industry research collaboration†	37.4	91	
5.2.2	State of cluster development†	35.5	94	
5.2.3	R&D financed by abroad, %	0.5	88	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	6.4	101	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*26.6*	*116*	
5.3.1	Royalty & license fees payments/th GDP	0.9	77	
5.3.2	High-tech imports less re-imports, %	9.5	56	
5.3.3	Computer & comm. service imports, %	19.0	104	
5.3.4	FDI net inflows, % GDP	0.3	127	○
6	**Knowledge & technology outputs**	**18.4**	**115**	
6.1	*Knowledge creation*	*14.9*	*96*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.0	110	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	58	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	52	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.6	127	○
6.2	*Knowledge impact*	*29.1*	*87*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.8	96	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	64	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.3	58	●
6.3	*Knowledge diffusion*	*11.0*	*127*	○
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.3	97	
6.3.3	Computer & comm. service exports, %	18.0	96	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**33.5**	**65**	
7.1	*Creative intangibles*	*45.2*	*48*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	92.9	14	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	48.2	79	
7.1.4	ICT & organizational model creation†	43.4	82	
7.2	*Creative goods & services*	*24.1*	*61*	
7.2.1	Recreation & culture consumption, %	6.0	44	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	75.7	67	
7.2.4	Creative goods exports, %	0.2	109	
7.2.5	Creative services exports, %	9.7	19	●
7.3	*Online creativity*	*19.4*	*77*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	80	
7.3.2	Country-code TLDs/th pop. 15–69	19.5	76	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	738.2	74	
7.3.4	Video uploads on YouTube/pop. 15–69	52.2	73	

Egypt

Key indicators

Population (millions) 79.4
GDP per capita, PPP$ 6,504.6
GDP (US$ billions) 231.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**27.9**	**103**	
Innovation Output Sub-Index		23.3	99	
Innovation Input Sub-Index		32.5	104	
Innovation Efficiency Index		0.7	78	
Global Innovation Index 2011 (out of 125)			87	
GII 2012 rank among GII 2011 economies (125)			97	
1	**Institutions**	**40.4**	**116**	
1.1	*Political environment*	*33.5*	*130*	○
1.1.1	Political stability*	43.4	115	
1.1.2	Government effectiveness*	29.6	91	
1.1.3	Press freedom*	27.4	132	○
1.2	*Regulatory environment*	*44.5*	*126*	○
1.2.1	Regulatory quality*	47.1	84	
1.2.2	Rule of law*	44.9	64	
1.2.3	Cost of redundancy dismissal, salary weeks	36.8	131	○
1.3	*Business environment*	*43.3*	*86*	
1.3.1	Ease of starting a business*	88.4	17	●
1.3.2	Ease of resolving insolvency*	15.8	118	○
1.3.3	Ease of paying taxes*	25.8	104	
2	**Human capital & research**	**25.9**	**108**	
2.1	*Education*	*46.2*	*86*	
2.1.1	Current expenditure on education, % GNI	4.4	58	●
2.1.2	Public expenditure/pupil, % GDP/cap	17.7	77	
2.1.3	School life expectancy, years	11.7	92	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	17.1	81	
2.2	*Tertiary education*	*17.4*	*113*	
2.2.1	Tertiary enrolment, % gross	30.4	72	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.4	67	
2.2.4	Gross tertiary outbound enrolment, %	0.1	136	○
2.3	*Research & development (R&D)*	*14.0*	*110*	
2.3.1	Researchers, headcounts/mn pop.	1,017.5	55	
2.3.2	Gross expenditure on R&D, % GDP	0.2	83	
2.3.3	Quality of scientific research institutions†	30.1	110	
3	**Infrastructure**	**33.6**	**70**	
3.1	*Information & communication technologies (ICT)*	*45.3*	*49*	●
3.1.1	ICT access*	40.7	73	
3.1.2	ICT use*	12.0	84	
3.1.3	Government's online service*	60.1	42	●
3.1.4	E-participation*	68.4	15	●
3.2	*General infrastructure*	*25.7*	*122*	○
3.2.1	Electricity output, kWh/cap	1,809.9	79	
3.2.2	Electricity consumption, kWh/cap	1,487.3	81	
3.2.3	Quality of trade & transport infrastructure*	30.5	102	
3.2.4	Gross capital formation, % GDP	18.9	103	
3.3	*Ecological sustainability*	*29.9*	*70*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.0	73	
3.3.2	Environmental performance*	55.2	58	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.0	62	
4	**Market sophistication**	**30.5**	**108**	
4.1	*Credit*	*16.3*	*105*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	33.1	89	
4.1.3	Microfinance gross loans, % GDP	0.1	71	
4.2	*Investment*	*24.6*	*71*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	37.7	56	
4.2.3	Total value of stocks traded, % GDP	17.0	39	●
4.2.4	Venture capital deals/tr PPP$ GDP	3.9	58	●
4.3	*Trade & competition*	*50.6*	*121*	○
4.3.1	Applied tariff rate, weighted mean, %	8.1	108	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.5	85	
4.3.3	Imports of goods & services, % GDP	26.1	122	○
4.3.4	Exports of goods & services, % GDP	21.3	122	○
4.3.5	Intensity of local competition†	52.3	110	
5	**Business sophistication**	**31.9**	**114**	
5.1	*Knowledge workers*	*42.8*	*75*	
5.1.1	Knowledge-intensive employment, %	30.3	41	●
5.1.2	Firms offering formal training, % firms	21.7	87	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	470.5	96	
5.1.6	GMAT test takers/mn pop. 20–34	45.4	82	
5.2	*Innovation linkages*	*26.8*	*116*	
5.2.1	University/industry research collaboration†	26.6	122	○
5.2.2	State of cluster development†	39.2	77	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	19.5	68	
5.2.5	PCT patent filings with foreign inventor, %	20.0	77	
5.3	*Knowledge absorption*	*26.2*	*119*	○
5.3.1	Royalty & license fees payments/th GDP	1.0	71	
5.3.2	High-tech imports less re-imports, %	5.4	95	
5.3.3	Computer & comm. service imports, %	24.1	87	
5.3.4	FDI net inflows, % GDP	2.9	61	
6	**Knowledge & technology outputs**	**22.6**	**92**	
6.1	*Knowledge creation*	*21.0*	*72*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	65	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	82	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.8	58	●
6.2	*Knowledge impact*	*26.1*	*97*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.9	52	
6.2.2	New businesses/th pop. 15–64	0.1	93	○
6.2.3	Computer software spending, % GDP	0.1	56	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.4	71	
6.3	*Knowledge diffusion*	*20.6*	*104*	
6.3.1	Royalty & license fees receipts/th GDP	0.9	33	●
6.3.2	High-tech exports less re-exports, %	0.4	92	
6.3.3	Computer & comm. service exports, %	16.8	100	
6.3.4	FDI net outflows, % GDP	0.5	52	
7	**Creative outputs**	**24.0**	**106**	
7.1	*Creative intangibles*	*31.3*	*106*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.1	55	○
7.1.3	ICT & business model creation†	51.1	70	
7.1.4	ICT & organizational model creation†	41.4	92	
7.2	*Creative goods & services*	*21.2*	*68*	
7.2.1	Recreation & culture consumption, %	2.0	83	
7.2.2	National feature films/mn pop. 15–69	0.9	69	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	77.4	66	
7.2.4	Creative goods exports, %	4.3	17	●
7.2.5	Creative services exports, %	1.0	71	
7.3	*Online creativity*	*12.2*	*104*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	108	
7.3.2	Country-code TLDs/th pop. 15–69	1.5	120	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	245.1	94	
7.3.4	Video uploads on YouTube/pop. 15–69	45.6	88	

Key indicators

Population (millions)	5.9
GDP per capita, PPP$	7,595.3
GDP (US$ billions)	22.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**29.5**	**93**	
Innovation Output Sub-Index		24.5	91	
Innovation Input Sub-Index		34.6	94	
Innovation Efficiency Index		0.7	81	
Global Innovation Index 2011 (out of 125)			90	
GII 2012 rank among GII 2011 economies (125)			88	
1	**Institutions**	**50.6**	**83**	
1.1	*Political environment*	*65.0*	*49*	
1.1.1	Political stability*	67.0	61	
1.1.2	Government effectiveness*	41.1	67	
1.1.3	Press freedom*	87.0	33	●
1.2	*Regulatory environment*	*56.7*	*100*	
1.2.1	Regulatory quality*	61.2	58	
1.2.2	Rule of law*	24.6	116	
1.2.3	Cost of redundancy dismissal, salary weeks	22.9	103	
1.3	*Business environment*	*30.2*	*107*	
1.3.1	Ease of starting a business*	25.1	105	
1.3.2	Ease of resolving insolvency*	41.0	83	
1.3.3	Ease of paying taxes*	24.4	106	
2	**Human capital & research**	**23.8**	**113**	
2.1	*Education*	*33.7*	*121*	
2.1.1	Current expenditure on education, % GNI	3.0	105	
2.1.2	Public expenditure/pupil, % GDP/cap	10.6	105	
2.1.3	School life expectancy, years	12.0	87	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.4	109	
2.2	*Tertiary education*	*30.3*	*76*	
2.2.1	Tertiary enrolment, % gross	23.4	82	
2.2.2	Graduates in science & engineering, %	26.4	18	●
2.2.3	Tertiary inbound mobility, %	0.5	87	
2.2.4	Gross tertiary outbound enrolment, %	0.5	98	
2.3	*Research & development (R&D)*	*7.4*	*134*	○
2.3.1	Researchers, headcounts/mn pop.	73.9	104	
2.3.2	Gross expenditure on R&D, % GDP	0.1	97	
2.3.3	Quality of scientific research institutions†	19.6	126	○
3	**Infrastructure**	**31.6**	**76**	
3.1	*Information & communication technologies (ICT)*	*41.5*	*55*	
3.1.1	ICT access*	35.3	89	
3.1.2	ICT use*	8.2	93	
3.1.3	Government's online service*	67.3	32	●
3.1.4	E-participation*	55.3	28	●
3.2	*General infrastructure*	*22.4*	*131*	○
3.2.1	Electricity output, kWh/cap	993.8	92	
3.2.2	Electricity consumption, kWh/cap	844.7	96	
3.2.3	Quality of trade & transport infrastructure*	36.0	77	
3.2.4	Gross capital formation, % GDP	13.3	136	○
3.3	*Ecological sustainability*	*30.9*	*68*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.8	40	
3.3.2	Environmental performance*	52.1	72	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	99	
4	**Market sophistication**	**33.1**	**97**	
4.1	*Credit*	*30.7*	*67*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	41.0	79	
4.1.3	Microfinance gross loans, % GDP	1.8	23	●
4.2	*Investment*	*2.2*	*136*	○
4.2.1	Ease of protecting investors*	1.4	136	○
4.2.2	Market capitalization, % GDP	19.4	78	
4.2.3	Total value of stocks traded, % GDP	0.9	72	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*66.3*	*56*	
4.3.1	Applied tariff rate, weighted mean, %	5.5	84	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	19	●
4.3.3	Imports of goods & services, % GDP	43.6	61	
4.3.4	Exports of goods & services, % GDP	26.2	102	
4.3.5	Intensity of local competition†	71.7	38	●
5	**Business sophistication**	**33.7**	**98**	
5.1	*Knowledge workers*	*41.6*	*82*	
5.1.1	Knowledge-intensive employment, %	12.5	93	
5.1.2	Firms offering formal training, % firms	61.0	13	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	0.7	87	○
5.1.5	GMAT mean score	505.0	73	
5.1.6	GMAT test takers/mn pop. 20–34	32.8	99	
5.2	*Innovation linkages*	*33.5*	*80*	
5.2.1	University/industry research collaboration†	35.1	108	
5.2.2	State of cluster development†	37.0	87	
5.2.3	R&D financed by abroad, %	4.5	62	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	8.9	91	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*26.1*	*120*	
5.3.1	Royalty & license fees payments/th GDP	1.5	57	
5.3.2	High-tech imports less re-imports, %	8.3	66	
5.3.3	Computer & comm. service imports, %	17.5	108	
5.3.4	FDI net inflows, % GDP	0.0	133	○
6	**Knowledge & technology outputs**	**19.5**	**109**	
6.1	*Knowledge creation*	*14.3*	*99*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	102	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.1	138	○
6.2	*Knowledge impact*	*21.1*	*115*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	1.2	58	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.3	78	
6.3	*Knowledge diffusion*	*23.1*	*86*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	87	
6.3.2	High-tech exports less re-exports, %	5.3	40	
6.3.3	Computer & comm. service exports, %	22.1	86	
6.3.4	FDI net outflows, % GDP	0.3	65	
7	**Creative outputs**	**29.4**	**80**	
7.1	*Creative intangibles*	*43.5*	*58*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	54.8	55	
7.1.4	ICT & organizational model creation†	32.2	118	
7.2	*Creative goods & services*	*14.6*	*85*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.3	92	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	72.5	68	
7.2.4	Creative goods exports, %	2.6	33	●
7.2.5	Creative services exports, %	0.1	103	○
7.3	*Online creativity*	*16.1*	*91*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	97	
7.3.2	Country-code TLDs/th pop. 15–69	12.0	91	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	255.1	93	
7.3.4	Video uploads on YouTube/pop. 15–69	50.2	77	

Estonia

Key indicators

Population (millions)	1.3
GDP per capita, PPP$	20,182.1
GDP (US$ billions)	22.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**55.3**	**19**	
Innovation Output Sub-Index		53.3	8	●
Innovation Input Sub-Index		57.4	24	
Innovation Efficiency Index		0.9	8	●
Global Innovation Index 2011 (out of 125)			23	
GII 2012 rank among GII 2011 economies (125)			18	
1	**Institutions**	**79.9**	**22**	
1.1	*Political environment*	*84.3*	*18*	
1.1.1	Political stability*	80.7	36	
1.1.2	Government effectiveness*	73.0	24	
1.1.3	Press freedom*	99.3	3	●
1.2	*Regulatory environment*	*86.8*	*23*	
1.2.1	Regulatory quality*	88.5	17	
1.2.2	Rule of law*	78.2	26	
1.2.3	Cost of redundancy dismissal, salary weeks	12.9	53	
1.3	*Business environment*	*68.5*	*32*	
1.3.1	Ease of starting a business*	76.9	33	
1.3.2	Ease of resolving insolvency*	53.2	66	
1.3.3	Ease of paying taxes*	75.5	34	
2	**Human capital & research**	**50.0**	**28**	
2.1	*Education*	*63.7*	*22*	
2.1.1	Current expenditure on education, % GNI	4.4	56	
2.1.2	Public expenditure/pupil, % GDP/cap	24.8	28	
2.1.3	School life expectancy, years	15.8	21	
2.1.4	PISA scales in reading, maths, & science	513.6	12	
2.1.5	Pupil-teacher ratio, secondary	9.4	20	
2.2	*Tertiary education*	*40.8*	*49*	
2.2.1	Tertiary enrolment, % gross	62.7	25	
2.2.2	Graduates in science & engineering, %	19.4	58	○
2.2.3	Tertiary inbound mobility, %	1.6	60	○
2.2.4	Gross tertiary outbound enrolment, %	3.5	25	
2.3	*Research & development (R&D)*	*45.6*	*27*	
2.3.1	Researchers, headcounts/mn pop.	5,383.9	11	
2.3.2	Gross expenditure on R&D, % GDP	1.4	26	
2.3.3	Quality of scientific research institutions†	63.3	26	
3	**Infrastructure**	**54.9**	**19**	
3.1	*Information & communication technologies (ICT)*	*67.2*	*20*	
3.1.1	ICT access*	69.1	31	
3.1.2	ICT use*	40.9	36	
3.1.3	Government's online service*	82.4	18	
3.1.4	E-participation*	76.3	8	●
3.2	*General infrastructure*	*40.4*	*47*	
3.2.1	Electricity output, kWh/cap	9,696.3	14	
3.2.2	Electricity consumption, kWh/cap	5,951.5	32	
3.2.3	Quality of trade & transport infrastructure*	43.8	50	
3.2.4	Gross capital formation, % GDP	20.0	92	○
3.3	*Ecological sustainability*	*57.2*	*9*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.0	88	○
3.3.2	Environmental performance*	56.1	52	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	12.4	5	●
4	**Market sophistication**	**52.8**	**27**	
4.1	*Credit*	*52.0*	*24*	
4.1.1	Ease of getting credit*	71.6	35	
4.1.2	Domestic credit to private sector, % GDP	97.2	32	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*31.7*	*51*	
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	12.1	91	○
4.2.3	Total value of stocks traded, % GDP	1.7	64	○
4.2.4	Venture capital deals/tr PPP$ GDP	37.1	32	
4.3	*Trade & competition*	*74.7*	*16*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	71.6	18	
4.3.4	Exports of goods & services, % GDP	78.3	14	
4.3.5	Intensity of local competition†	73.3	27	
5	**Business sophistication**	**49.5**	**30**	
5.1	*Knowledge workers*	*70.0*	*23*	
5.1.1	Knowledge-intensive employment, %	38.8	23	
5.1.2	Firms offering formal training, % firms	69.3	5	●
5.1.3	R&D performed by business, %	44.7	38	
5.1.4	R&D financed by business, %	38.4	42	
5.1.5	GMAT mean score	560.9	29	
5.1.6	GMAT test takers/mn pop. 20–34	162.0	36	
5.2	*Innovation linkages*	*33.1*	*84*	○
5.2.1	University/industry research collaboration†	55.6	32	
5.2.2	State of cluster development†	41.7	65	○
5.2.3	R&D financed by abroad, %	11.4	28	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	12.7	80	○
5.2.5	PCT patent filings with foreign inventor, %	19.5	83	○
5.3	*Knowledge absorption*	*45.3*	*31*	
5.3.1	Royalty & license fees payments/th GDP	3.1	32	
5.3.2	High-tech imports less re-imports, %	14.3	24	
5.3.3	Computer & comm. service imports, %	40.3	36	
5.3.4	FDI net inflows, % GDP	8.0	21	
6	**Knowledge & technology outputs**	**53.8**	**13**	
6.1	*Knowledge creation*	*55.3*	*18*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	4.5	34	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.3	28	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	6.4	8	
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.8	11	●
6.2	*Knowledge impact*	*70.4*	*2*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	8.6	4	●
6.2.2	New businesses/th pop. 15–64	8.1	7	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	31.2	12	●
6.3	*Knowledge diffusion*	*35.6*	*39*	
6.3.1	Royalty & license fees receipts/th GDP	1.1	30	
6.3.2	High-tech exports less re-exports, %	14.0	23	
6.3.3	Computer & comm. service exports, %	34.3	53	
6.3.4	FDI net outflows, % GDP	0.7	47	
7	**Creative outputs**	**52.8**	**9**	●
7.1	*Creative intangibles*	*51.6*	*22*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	77.5	19	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.6	13	
7.1.3	ICT & business model creation†	71.4	9	●
7.1.4	ICT & organizational model creation†	65.1	17	
7.2	*Creative goods & services*	*42.2*	*16*	
7.2.1	Recreation & culture consumption, %	7.7	26	
7.2.2	National feature films/mn pop. 15–69	10.3	9	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	233.6	19	
7.2.4	Creative goods exports, %	3.3	24	
7.2.5	Creative services exports, %	5.1	39	
7.3	*Online creativity*	*65.7*	*11*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	26.5	31	
7.3.2	Country-code TLDs/th pop. 15–69	59.3	22	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	19,654.9	1	●
7.3.4	Video uploads on YouTube/pop. 15–69	76.9	12	

Ethiopia

Key indicators

Population (millions)	86.8
GDP per capita, PPP$	1,092.7
GDP (US$ billions)	30.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**23.3**	**131**	
Innovation Output Sub-Index		18.1	128	
Innovation Input Sub-Index		28.4	124	
Innovation Efficiency Index		0.6	108	
Global Innovation Index 2011 (out of 125)			121	
GII 2012 rank among GII 2011 economies (125)			119	
1	**Institutions**	**48.8**	**94**	
1.1	*Political environment*	*37.0*	*125*	
1.1.1	Political stability*	24.1	137	
1.1.2	Government effectiveness*	31.8	87	
1.1.3	Press freedom*	55.0	102	
1.2	*Regulatory environment*	*51.8*	*114*	
1.2.1	Regulatory quality*	29.3	126	
1.2.2	Rule of law*	27.7	106	
1.2.3	Cost of redundancy dismissal, salary weeks	20.6	90	
1.3	*Business environment*	*57.5*	*54*	●
1.3.1	Ease of starting a business*	48.2	73	
1.3.2	Ease of resolving insolvency*	44.6	78	
1.3.3	Ease of paying taxes*	79.8	28	●
2	**Human capital & research**	**19.0**	**128**	
2.1	*Education*	*20.3*	*139*	○
2.1.1	Current expenditure on education, % GNI	2.9	110	
2.1.2	Public expenditure/pupil, % GDP/cap	20.4	55	●
2.1.3	School life expectancy, years	8.7	127	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	43.1	132	○
2.2	*Tertiary education*	*23.1*	*94*	
2.2.1	Tertiary enrolment, % gross	5.5	121	
2.2.2	Graduates in science & engineering, %	20.9	51	●
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.1	140	○
2.3	*Research & development (R&D)*	*13.7*	*113*	
2.3.1	Researchers, headcounts/mn pop.	30.6	117	
2.3.2	Gross expenditure on R&D, % GDP	0.2	89	
2.3.3	Quality of scientific research institutions†	37.3	90	
3	**Infrastructure**	**22.9**	**114**	
3.1	*Information & communication technologies (ICT)*	*24.2*	*96*	
3.1.1	ICT access*	15.3	137	○
3.1.2	ICT use*	0.3	138	○
3.1.3	Government's online service*	47.1	77	
3.1.4	E-participation*	34.2	44	●
3.2	*General infrastructure*	*21.2*	*135*	
3.2.1	Electricity output, kWh/cap	49.6	122	
3.2.2	Electricity consumption, kWh/cap	44.9	124	○
3.2.3	Quality of trade & transport infrastructure*	19.3	134	
3.2.4	Gross capital formation, % GDP	21.5	78	
3.3	*Ecological sustainability*	*23.2*	*98*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.4	98	
3.3.2	Environmental performance*	52.7	67	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	115	
4	**Market sophistication**	**22.3**	**128**	
4.1	*Credit*	*11.5*	*118*	
4.1.1	Ease of getting credit*	15.3	112	
4.1.2	Domestic credit to private sector, % GDP	17.8	123	
4.1.3	Microfinance gross loans, % GDP	1.3	32	●
4.2	*Investment*	*11.2*	*109*	
4.2.1	Ease of protecting investors*	22.3	100	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*44.3*	*134*	
4.3.1	Applied tariff rate, weighted mean, %	10.5	125	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.9	91	
4.3.3	Imports of goods & services, % GDP	32.5	97	
4.3.4	Exports of goods & services, % GDP	11.4	138	
4.3.5	Intensity of local competition†	49.5	121	
5	**Business sophistication**	**29.2**	**125**	
5.1	*Knowledge workers*	*30.1*	*113*	
5.1.1	Knowledge-intensive employment, %	12.4	94	
5.1.2	Firms offering formal training, % firms	38.2	46	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	431.8	113	
5.1.6	GMAT test takers/mn pop. 20–34	5.4	131	
5.2	*Innovation linkages*	*35.2*	*69*	●
5.2.1	University/industry research collaboration†	35.5	106	
5.2.2	State of cluster development†	32.7	106	
5.2.3	R&D financed by abroad, %	27.0	10	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*22.4*	*137*	
5.3.1	Royalty & license fees payments/th GDP	0.0	113	
5.3.2	High-tech imports less re-imports, %	5.2	97	
5.3.3	Computer & comm. service imports, %	21.8	94	
5.3.4	FDI net inflows, % GDP	0.6	119	
6	**Knowledge & technology outputs**	**13.6**	**136**	
6.1	*Knowledge creation*	*5.8*	*118*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	99	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	31	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.2	79	
6.2	*Knowledge impact*	*26.8*	*93*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.8	23	●
6.2.2	New businesses/th pop. 15–64	0.0	99	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.3	131	
6.3	*Knowledge diffusion*	*8.1*	*130*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	93	
6.3.2	High-tech exports less re-exports, %	0.2	102	
6.3.3	Computer & comm. service exports, %	19.8	92	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**22.7**	**111**	
7.1	*Creative intangibles*	*44.4*	*52*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	36.3	121	
7.1.4	ICT & organizational model creation†	52.5	52	●
7.2	*Creative goods & services*	*1.9*	*133*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	2.0	131	
7.2.4	Creative goods exports, %	0.3	97	
7.2.5	Creative services exports, %	0.0	106	
7.3	*Online creativity*	*0.1*	*141*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	141	○
7.3.2	Country-code TLDs/th pop. 15–69	0.3	131	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1.8	126	○
7.3.4	Video uploads on YouTube/pop. 15–69	0.0	139	○

Fiji

Key indicators

Population (millions)	0.9
GDP per capita, PPP$	4,624.5
GDP (US$ billions)	3.4

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**27.9**	**101**	
Innovation Output Sub-Index	18.9	124	○
Innovation Input Sub-Index	37.0	84	
Innovation Efficiency Index	0.5	133	○
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**49.8**	**87**	
1.1 Political environment	*46.5*	*93*	
1.1.1 Political stability*	61.7	79	
1.1.2 Government effectiveness*	21.6	115	
1.1.3 Press freedom*	56.1	92	
1.2 Regulatory environment	*62.9*	*81*	
1.2.1 Regulatory quality*	34.5	119	○
1.2.2 Rule of law*	23.8	120	○
1.2.3 Cost of redundancy dismissal, salary weeks	9.7	33	●
1.3 Business environment	*40.0*	*95*	
1.3.1 Ease of starting a business*	38.8	86	
1.3.2 Ease of resolving insolvency*	23.0	108	
1.3.3 Ease of paying taxes*	58.2	59	
2 Human capital & research	**48.9**	**32**	●
2.1 Education	*53.8*	*61*	
2.1.1 Current expenditure on education, % GNI	6.0	19	●
2.1.2 Public expenditure/pupil, % GDP/cap	21.3	48	
2.1.3 School life expectancy, years	13.0	73	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	18.7	92	
2.2 Tertiary education	*44.0*	*37*	●
2.2.1 Tertiary enrolment, % gross	16.1	95	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	32.9	4	●
2.2.4 Gross tertiary outbound enrolment, %	2.3	42	●
2.3 Research & development (R&D)	*n/a*	*n/a*	
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	n/a	n/a	
3 Infrastructure	**21.4**	**122**	○
3.1 Information & communication technologies (ICT)	*22.8*	*98*	
3.1.1 ICT access*	40.9	71	
3.1.2 ICT use*	6.4	101	
3.1.3 Government's online service*	36.0	102	
3.1.4 E-participation*	7.9	98	
3.2 General infrastructure	*37.5*	*62*	
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	24.5	124	○
3.2.4 Gross capital formation, % GDP	24.4	47	●
3.3 Ecological sustainability	*3.8*	*128*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.5	79	
4 Market sophistication	**38.1**	**70**	
4.1 Credit	*33.3*	*57*	
4.1.1 Ease of getting credit*	50.4	62	
4.1.2 Domestic credit to private sector, % GDP	52.4	60	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*20.9*	*81*	
4.2.1 Ease of protecting investors*	66.9	35	●
4.2.2 Market capitalization, % GDP	46.7	46	
4.2.3 Total value of stocks traded, % GDP	0.2	94	○
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*60.2*	*88*	
4.3.1 Applied tariff rate, weighted mean, %	11.0	129	○
4.3.2 Non-agricultural mkt access weighted tariff, %	0.6	60	
4.3.3 Imports of goods & services, % GDP	64.4	30	●
4.3.4 Exports of goods & services, % GDP	52.5	40	●
4.3.5 Intensity of local competition†	n/a	n/a	
5 Business sophistication	**26.6**	**132**	○
5.1 Knowledge workers	*57.1*	*40*	●
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	61.0	12	●
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	448.0	107	
5.1.6 GMAT test takers/mn pop. 20–34	36.5	97	
5.2 Innovation linkages	*0.0*	*140*	○
5.2.1 University/industry research collaboration†	n/a	n/a	
5.2.2 State of cluster development†	n/a	n/a	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*22.6*	*136*	○
5.3.1 Royalty & license fees payments/th GDP	0.3	102	○
5.3.2 High-tech imports less re-imports, %	5.1	100	○
5.3.3 Computer & comm. service imports, %	17.4	109	
5.3.4 FDI net inflows, % GDP	4.0	45	●
6 Knowledge & technology outputs	**22.9**	**88**	
6.1 Knowledge creation	*25.7*	*61*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	7.9	41	●
6.2 Knowledge impact	*28.3*	*90*	
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.5	89	
6.3 Knowledge diffusion	*14.7*	*123*	○
6.3.1 Royalty & license fees receipts/th GDP	0.2	63	
6.3.2 High-tech exports less re-exports, %	0.9	72	
6.3.3 Computer & comm. service exports, %	4.3	129	○
6.3.4 FDI net outflows, % GDP	0.2	72	
7 Creative outputs	**14.9**	**132**	○
7.1 Creative intangibles	*n/a*	*n/a*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	n/a	n/a	
7.1.4 ICT & organizational model creation†	n/a	n/a	
7.2 Creative goods & services	*8.2*	*111*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	1.7	53	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	69.0	70	
7.2.4 Creative goods exports, %	0.9	76	
7.2.5 Creative services exports, %	0.4	89	
7.3 Online creativity	*21.6*	*70*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	5.5	59	
7.3.2 Country-code TLDs/th pop. 15–69	28.6	58	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	424.9	81	
7.3.4 Video uploads on YouTube/pop. 15–69	49.9	79	

Finland

Key indicators

Population (millions) 5.4
GDP per capita, PPP$ 36,723.3
GDP (US$ billions) 270.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**61.8**	**4**	
Innovation Output Sub-Index		56.1	5	
Innovation Input Sub-Index		67.5	6	
Innovation Efficiency Index		0.8	30	
Global Innovation Index 2011 (out of 125)			5	
GII 2012 rank among GII 2011 economies (125)			4	
1	**Institutions**	**92.8**	**6**	
1.1	*Political environment*	*99.5*	*1*	●
1.1.1	Political stability*	98.7	2	●
1.1.2	Government effectiveness*	99.8	2	●
1.1.3	Press freedom*	100.0	1	●
1.2	*Regulatory environment*	*97.5*	*6*	
1.2.1	Regulatory quality*	98.4	3	
1.2.2	Rule of law*	100.0	1	●
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	37	
1.3	*Business environment*	*81.5*	*14*	
1.3.1	Ease of starting a business*	79.8	28	
1.3.2	Ease of resolving insolvency*	96.4	6	
1.3.3	Ease of paying taxes*	68.3	45	
2	**Human capital & research**	**68.2**	**3**	
2.1	*Education*	*69.8*	*10*	
2.1.1	Current expenditure on education, % GNI	5.5	28	
2.1.2	Public expenditure/pupil, % GDP/cap	26.0	21	
2.1.3	School life expectancy, years	16.8	9	
2.1.4	PISA scales in reading, maths, & science	543.5	3	
2.1.5	Pupil-teacher ratio, secondary	9.9	25	
2.2	*Tertiary education*	*55.5*	*12*	
2.2.1	Tertiary enrolment, % gross	91.6	3	
2.2.2	Graduates in science & engineering, %	28.2	13	
2.2.3	Tertiary inbound mobility, %	4.2	32	
2.2.4	Gross tertiary outbound enrolment, %	2.2	45	
2.3	*Research & development (R&D)*	*79.3*	*3*	
2.3.1	Researchers, headcounts/mn pop.	10,382.2	2	●
2.3.2	Gross expenditure on R&D, % GDP	3.8	2	●
2.3.3	Quality of scientific research institutions†	70.4	18	
3	**Infrastructure**	**62.0**	**5**	
3.1	*Information & communication technologies (ICT)*	*77.3*	*8*	
3.1.1	ICT access*	76.1	16	
3.1.2	ICT use*	71.1	4	
3.1.3	Government's online service*	88.2	7	
3.1.4	E-participation*	73.7	11	
3.2	*General infrastructure*	*64.1*	*5*	
3.2.1	Electricity output, kWh/cap	14,949.6	8	
3.2.2	Electricity consumption, kWh/cap	16,439.2	6	
3.2.3	Quality of trade & transport infrastructure*	77.0	8	
3.2.4	Gross capital formation, % GDP	18.6	107	○
3.3	*Ecological sustainability*	*44.5*	*28*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	85	○
3.3.2	Environmental performance*	64.4	19	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.0	18	
4	**Market sophistication**	**53.6**	**26**	
4.1	*Credit*	*51.6*	*26*	
4.1.1	Ease of getting credit*	71.6	35	
4.1.2	Domestic credit to private sector, % GDP	94.9	34	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*45.5*	*23*	
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	49.5	42	
4.2.3	Total value of stocks traded, % GDP	42.7	25	
4.2.4	Venture capital deals/tr PPP$ GDP	95.8	13	
4.3	*Trade & competition*	*63.6*	*70*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	39.0	72	○
4.3.4	Exports of goods & services, % GDP	40.3	63	
4.3.5	Intensity of local competition†	63.3	67	○
5	**Business sophistication**	**60.7**	**7**	
5.1	*Knowledge workers*	*78.3*	*9*	
5.1.1	Knowledge-intensive employment, %	43.8	7	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	71.0	10	
5.1.4	R&D financed by business, %	68.1	8	
5.1.5	GMAT mean score	507.8	70	○
5.1.6	GMAT test takers/mn pop. 20–34	225.0	26	
5.2	*Innovation linkages*	*51.0*	*22*	
5.2.1	University/industry research collaboration†	76.3	4	
5.2.2	State of cluster development†	72.4	1	●
5.2.3	R&D financed by abroad, %	6.6	49	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	66.9	21	
5.2.5	PCT patent filings with foreign inventor, %	46.3	53	○
5.3	*Knowledge absorption*	*52.9*	*14*	
5.3.1	Royalty & license fees payments/th GDP	5.2	15	
5.3.2	High-tech imports less re-imports, %	11.4	40	
5.3.3	Computer & comm. service imports, %	65.2	4	
5.3.4	FDI net inflows, % GDP	1.8	80	○
6	**Knowledge & technology outputs**	**62.9**	**4**	
6.1	*Knowledge creation*	*71.1*	*8*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	18.0	6	
6.1.2	PCT resident patent ap/bn PPP$ GDP	10.5	2	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.9	13	
6.1.4	Scientific & technical articles/bn PPP$ GDP	27.6	5	
6.2	*Knowledge impact*	*46.5*	*27*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.0	50	
6.2.2	New businesses/th pop. 15–64	3.4	30	
6.2.3	Computer software spending, % GDP	0.9	8	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.4	45	
6.3	*Knowledge diffusion*	*71.0*	*4*	
6.3.1	Royalty & license fees receipts/th GDP	9.8	1	●
6.3.2	High-tech exports less re-exports, %	10.1	26	
6.3.3	Computer & comm. service exports, %	77.3	1	●
6.3.4	FDI net outflows, % GDP	4.5	12	
7	**Creative outputs**	**49.3**	**17**	
7.1	*Creative intangibles*	*46.0*	*43*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	53.5	32	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.1	19	
7.1.3	ICT & business model creation†	70.8	12	
7.1.4	ICT & organizational model creation†	64.6	19	
7.2	*Creative goods & services*	*42.5*	*14*	
7.2.1	Recreation & culture consumption, %	11.1	8	
7.2.2	National feature films/mn pop. 15–69	6.3	17	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	537.9	3	
7.2.4	Creative goods exports, %	1.0	72	○
7.2.5	Creative services exports, %	3.6	45	
7.3	*Online creativity*	*62.9*	*13*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	31.6	25	
7.3.2	Country-code TLDs/th pop. 15–69	60.4	20	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	15,167.6	4	
7.3.4	Video uploads on YouTube/pop. 15–69	82.4	3	

France

Key indicators

Population (millions)	63.2
GDP per capita, PPP$	35,048.8
GDP (US$ billions)	2,808.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**51.8**	**24**	
Innovation Output Sub-Index	44.4	26	
Innovation Input Sub-Index	59.1	22	
Innovation Efficiency Index	0.8	64	
Global Innovation Index 2011 (out of 125)		22	
GII 2012 rank among GII 2011 economies (125)		23	
1 Institutions	**82.7**	**20**	
1.1 Political environment	*82.6*	*22*	
1.1.1 Political stability*	82.2	31	
1.1.2 Government effectiveness*	78.8	20	
1.1.3 Press freedom*	86.8	34	
1.2 Regulatory environment	*89.7*	*20*	
1.2.1 Regulatory quality*	85.7	22	
1.2.2 Rule of law*	88.2	19	
1.2.3 Cost of redundancy dismissal, salary weeks	11.8	50	
1.3 Business environment	*76.0*	*22*	
1.3.1 Ease of starting a business*	86.3	20	
1.3.2 Ease of resolving insolvency*	71.9	40	
1.3.3 Ease of paying taxes*	69.7	43	
2 Human capital & research	**55.1**	**17**	
2.1 Education	*63.0*	*26*	
2.1.1 Current expenditure on education, % GNI	5.0	39	
2.1.2 Public expenditure/pupil, % GDP/cap	24.4	30	
2.1.3 School life expectancy, years	16.1	17	
2.1.4 PISA scales in reading, maths, & science	496.9	22	
2.1.5 Pupil-teacher ratio, secondary	12.5	55	
2.2 Tertiary education	*49.2*	*19*	
2.2.1 Tertiary enrolment, % gross	54.5	38	
2.2.2 Graduates in science & engineering, %	26.2	20	
2.2.3 Tertiary inbound mobility, %	11.5	14	
2.2.4 Gross tertiary outbound enrolment, %	1.3	65	
2.3 Research & development (R&D)	*53.0*	*18*	
2.3.1 Researchers, headcounts/mn pop.	4,661.6	19	
2.3.2 Gross expenditure on R&D, % GDP	2.2	14	
2.3.3 Quality of scientific research institutions†	72.5	15	
3 Infrastructure	**54.5**	**20**	
3.1 Information & communication technologies (ICT)	*70.1*	*15*	
3.1.1 ICT access*	77.5	13	●
3.1.2 ICT use*	57.4	18	
3.1.3 Government's online service*	87.6	8	●
3.1.4 E-participation*	57.9	25	
3.2 General infrastructure	*51.8*	*21*	
3.2.1 Electricity output, kWh/cap	9,015.8	15	
3.2.2 Electricity consumption, kWh/cap	7,893.8	21	
3.2.3 Quality of trade & transport infrastructure*	75.0	13	●
3.2.4 Gross capital formation, % GDP	19.4	98	○
3.3 Ecological sustainability	*41.6*	*36*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	6.5	44	
3.3.2 Environmental performance*	69.0	6	●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	2.5	38	
4 Market sophistication	**52.0**	**29**	
4.1 Credit	*48.2*	*29*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	114.4	26	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*43.6*	*27*	
4.2.1 Ease of protecting investors*	46.7	60	○
4.2.2 Market capitalization, % GDP	75.3	29	
4.2.3 Total value of stocks traded, % GDP	32.3	29	
4.2.4 Venture capital deals/tr PPP$ GDP	102.4	12	●
4.3 Trade & competition	*64.1*	*66*	
4.3.1 Applied tariff rate, weighted mean, %	1.6	11	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3 Imports of goods & services, % GDP	27.8	114	○
4.3.4 Exports of goods & services, % GDP	25.5	107	○
4.3.5 Intensity of local competition†	78.5	11	●
5 Business sophistication	**51.3**	**26**	
5.1 Knowledge workers	*75.5*	*15*	
5.1.1 Knowledge-intensive employment, %	40.8	16	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	61.9	21	
5.1.4 R&D financed by business, %	50.7	21	
5.1.5 GMAT mean score	562.5	25	
5.1.6 GMAT test takers/mn pop. 20–34	356.2	13	●
5.2 Innovation linkages	*36.7*	*63*	
5.2.1 University/industry research collaboration†	54.0	34	
5.2.2 State of cluster development†	54.9	25	
5.2.3 R&D financed by abroad, %	8.0	42	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	32.5	47	
5.2.5 PCT patent filings with foreign inventor, %	26.1	70	○
5.3 Knowledge absorption	*41.6*	*47*	
5.3.1 Royalty & license fees payments/th GDP	2.2	46	
5.3.2 High-tech imports less re-imports, %	14.8	22	
5.3.3 Computer & comm. service imports, %	42.0	32	
5.3.4 FDI net inflows, % GDP	1.3	101	○
6 Knowledge & technology outputs	**45.5**	**23**	
6.1 Knowledge creation	*45.5*	*30*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	11.4	17	
6.1.2 PCT resident patent ap/bn PPP$ GDP	3.5	13	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.1	59	○
6.1.4 Scientific & technical articles/bn PPP$ GDP	15.3	25	
6.2 Knowledge impact	*40.4*	*42*	
6.2.1 Growth rate of PPP$ GDP/worker, %	1.6	83	○
6.2.2 New businesses/th pop. 15–64	3.1	32	
6.2.3 Computer software spending, % GDP	0.6	16	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	13.9	37	
6.3 Knowledge diffusion	*50.7*	*21*	
6.3.1 Royalty & license fees receipts/th GDP	4.1	16	
6.3.2 High-tech exports less re-exports, %	20.6	8	●
6.3.3 Computer & comm. service exports, %	40.8	39	
6.3.4 FDI net outflows, % GDP	3.3	18	
7 Creative outputs	**43.3**	**30**	
7.1 Creative intangibles	*42.1*	*62*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	11.2	76	○
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	1.7	10	
7.1.3 ICT & business model creation†	70.2	14	●
7.1.4 ICT & organizational model creation†	55.8	39	
7.2 Creative goods & services	*36.2*	*30*	
7.2.1 Recreation & culture consumption, %	9.2	19	
7.2.2 National feature films/mn pop. 15–69	4.8	21	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	170.9	29	
7.2.4 Creative goods exports, %	3.0	26	
7.2.5 Creative services exports, %	2.1	59	
7.3 Online creativity	*52.7*	*23*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	39.9	20	
7.3.2 Country-code TLDs/th pop. 15–69	55.3	30	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	8,893.1	11	●
7.3.4 Video uploads on YouTube/pop. 15–69	70.6	22	

Gabon

Key indicators

Population (millions)	1.5
GDP per capita, PPP$	16,021.5
GDP (US$ billions)	16.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.5**	**106**	
Innovation Output Sub-Index		22.2	106	
Innovation Input Sub-Index		30.7	112	
Innovation Efficiency Index		0.7	76	
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**43.0**	**106**	
1.1	*Political environment*	*52.6*	*80*	
1.1.1	Political stability*	70.6	55	●
1.1.2	Government effectiveness*	18.5	125	
1.1.3	Press freedom*	68.6	80	
1.2	*Regulatory environment*	*60.8*	*88*	
1.2.1	Regulatory quality*	36.1	116	
1.2.2	Rule of law*	34.1	95	
1.2.3	Cost of redundancy dismissal, salary weeks	14.8	66	
1.3	*Business environment*	*15.5*	*130*	○
1.3.1	Ease of starting a business*	10.0	126	○
1.3.2	Ease of resolving insolvency*	10.0	126	○
1.3.3	Ease of paying taxes*	26.6	103	
2	**Human capital & research**	**29.8**	**93**	
2.1	*Education*	*40.4*	*106*	
2.1.1	Current expenditure on education, % GNI	3.1	104	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.0	72	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*40.6*	*50*	●
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	3.7	21	●
2.3	*Research & development (R&D)*	*8.6*	*130*	○
2.3.1	Researchers, headcounts/mn pop.	359.4	76	
2.3.2	Gross expenditure on R&D, % GDP	0.6	47	
2.3.3	Quality of scientific research institutions†	n/a	n/a	
3	**Infrastructure**	**24.3**	**108**	
3.1	*Information & communication technologies (ICT)*	*16.2*	*116*	
3.1.1	ICT access*	32.6	93	
3.1.2	ICT use*	2.5	124	
3.1.3	Government's online service*	19.0	134	○
3.1.4	E-participation*	10.5	93	
3.2	*General infrastructure*	*28.6*	*109*	
3.2.1	Electricity output, kWh/cap	1,129.5	90	
3.2.2	Electricity consumption, kWh/cap	924.1	94	
3.2.3	Quality of trade & transport infrastructure*	27.3	111	
3.2.4	Gross capital formation, % GDP	25.9	35	●
3.3	*Ecological sustainability*	*28.2*	*79*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.9	76	
3.3.2	Environmental performance*	57.9	39	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	119	
4	**Market sophistication**	**19.2**	**137**	○
4.1	*Credit*	*3.8*	*135*	○
4.1.1	Ease of getting credit*	10.9	120	
4.1.2	Domestic credit to private sector, % GDP	8.2	139	○
4.1.3	Microfinance gross loans, % GDP	0.0	84	○
4.2	*Investment*	*3.6*	*129*	○
4.2.1	Ease of protecting investors*	7.1	123	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*50.2*	*124*	
4.3.1	Applied tariff rate, weighted mean, %	14.5	134	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.5	56	
4.3.3	Imports of goods & services, % GDP	31.3	102	
4.3.4	Exports of goods & services, % GDP	52.3	42	●
4.3.5	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**37.2**	**78**	
5.1	*Knowledge workers*	*34.0*	*109*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	30.9	63	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	29.3	52	
5.1.5	GMAT mean score	395.0	132	○
5.1.6	GMAT test takers/mn pop. 20–34	44.8	83	
5.2	*Innovation linkages*	*28.1*	*109*	
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	3.1	69	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*49.5*	*19*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	35.2	53	
5.3.4	FDI net inflows, % GDP	1.3	102	
6	**Knowledge & technology outputs**	**32.3**	**52**	●
6.1	*Knowledge creation*	*18.0*	*87*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	98	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	63	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.9	118	
6.2	*Knowledge impact*	*23.2*	*107*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	4.3	24	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.8	117	
6.3	*Knowledge diffusion*	*55.6*	*15*	●
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	46.2	28	●
6.3.4	FDI net outflows, % GDP	0.9	43	●
7	**Creative outputs**	**12.1**	**135**	○
7.1	*Creative intangibles*	*n/a*	*n/a*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	*Creative goods & services*	*10.7*	*97*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	6.6	15	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	22.1	102	
7.2.4	Creative goods exports, %	0.0	133	○
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*13.6*	*99*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.1	82	
7.3.2	Country-code TLDs/th pop. 15–69	4.5	107	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	34.1	103	

Gambia

Key indicators

Population (millions)	1.8
GDP per capita, PPP$	2,116.6
GDP (US$ billions)	1.1

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**23.3**	**130**	
Innovation Output Sub-Index	18.7	125	
Innovation Input Sub-Index	27.8	128	
Innovation Efficiency Index	0.7	95	
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**38.9**	**123**	
1.1 Political environment	*46.3*	*96*	
1.1.1 Political stability*	66.7	62	●
1.1.2 Government effectiveness*	23.3	110	
1.1.3 Press freedom*	49.0	115	
1.2 Regulatory environment	*51.2*	*115*	
1.2.1 Regulatory quality*	41.8	100	
1.2.2 Rule of law*	34.2	94	
1.2.3 Cost of redundancy dismissal, salary weeks	26.0	110	
1.3 Business environment	*19.4*	*128*	
1.3.1 Ease of starting a business*	35.2	91	
1.3.2 Ease of resolving insolvency*	20.1	112	
1.3.3 Ease of paying taxes*	2.8	136	○
2 Human capital & research	**19.9**	**126**	
2.1 Education	*26.8*	*129*	
2.1.1 Current expenditure on education, % GNI	3.1	100	
2.1.2 Public expenditure/pupil, % GDP/cap	10.6	104	
2.1.3 School life expectancy, years	8.7	126	○
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	26.6	114	
2.2 Tertiary education	*18.9*	*107*	
2.2.1 Tertiary enrolment, % gross	4.1	124	
2.2.2 Graduates in science & engineering, %	20.0	56	
2.2.3 Tertiary inbound mobility, %	0.0	90	○
2.2.4 Gross tertiary outbound enrolment, %	0.7	84	
2.3 Research & development (R&D)	*14.0*	*111*	
2.3.1 Researchers, headcounts/mn pop.	106.4	100	
2.3.2 Gross expenditure on R&D, % GDP	0.0	114	○
2.3.3 Quality of scientific research institutions†	41.3	73	
3 Infrastructure	**28.1**	**94**	
3.1 Information & communication technologies (ICT)	*14.7*	*121*	
3.1.1 ICT access*	23.3	110	
3.1.2 ICT use*	3.2	118	
3.1.3 Government's online service*	32.0	110	
3.1.4 E-participation*	0.0	127	○
3.2 General infrastructure	*41.5*	*42*	●
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	29.3	104	
3.2.4 Gross capital formation, % GDP	25.9	36	●
3.3 Ecological sustainability	*n/a*	*n/a*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4 Market sophistication	**19.6**	**135**	○
4.1 Credit	*6.2*	*130*	
4.1.1 Ease of getting credit*	10.9	120	
4.1.2 Domestic credit to private sector, % GDP	19.1	119	
4.1.3 Microfinance gross loans, % GDP	0.3	55	
4.2 Investment	*0.7*	*140*	○
4.2.1 Ease of protecting investors*	1.4	136	○
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*51.9*	*117*	
4.3.1 Applied tariff rate, weighted mean, %	14.8	135	○
4.3.2 Non-agricultural mkt access weighted tariff, %	0.2	32	●
4.3.3 Imports of goods & services, % GDP	48.7	51	●
4.3.4 Exports of goods & services, % GDP	29.3	92	
4.3.5 Intensity of local competition†	59.8	82	
5 Business sophistication	**32.7**	**106**	
5.1 Knowledge workers	*29.2*	*117*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	25.6	76	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	397.0	131	
5.1.6 GMAT test takers/mn pop. 20–34	27.9	104	
5.2 Innovation linkages	*33.6*	*77*	
5.2.1 University/industry research collaboration†	42.4	68	●
5.2.2 State of cluster development†	41.6	66	●
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*35.3*	*69*	●
5.3.1 Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	2.6	120	○
5.3.3 Computer & comm. service imports, %	36.0	49	●
5.3.4 FDI net inflows, % GDP	4.6	41	●
6 Knowledge & technology outputs	**14.0**	**134**	○
6.1 Knowledge creation	*19.4*	*78*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	6.0	51	●
6.2 Knowledge impact	*9.5*	*134*	○
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.6	125	
6.3 Knowledge diffusion	*13.0*	*126*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.2	100	
6.3.3 Computer & comm. service exports, %	21.1	90	
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**23.5**	**109**	
7.1 Creative intangibles	*39.4*	*74*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	15.0	69	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	50.9	71	
7.1.4 ICT & organizational model creation†	60.2	24	●
7.2 Creative goods & services	*0.6*	*139*	○
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	4.4	125	
7.2.4 Creative goods exports, %	n/a	n/a	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*14.7*	*95*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.9	101	
7.3.2 Country-code TLDs/th pop. 15–69	10.3	98	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4 Video uploads on YouTube/pop. 15–69	32.9	105	

Georgia

Key indicators

Population (millions)	4.5
GDP per capita, PPP$	5,430.3
GDP (US$ billions)	13.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**34.3**	**71**	
Innovation Output Sub-Index		26.8	81	
Innovation Input Sub-Index		41.7	63	
Innovation Efficiency Index		0.6	106	
Global Innovation Index 2011 (out of 125)			73	
GII 2012 rank among GII 2011 economies (125)			69	
1	**Institutions**	**65.2**	**51**	
1.1	*Political environment*	*55.0*	*74*	
1.1.1	Political stability*	48.9	104	
1.1.2	Government effectiveness*	48.6	52	
1.1.3	Press freedom*	67.6	81	
1.2	*Regulatory environment*	*77.1*	*40*	
1.2.1	Regulatory quality*	66.4	45	
1.2.2	Rule of law*	42.2	69	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*63.5*	*37*	
1.3.1	Ease of starting a business*	94.9	8	●
1.3.2	Ease of resolving insolvency*	29.4	99	
1.3.3	Ease of paying taxes*	66.1	48	
2	**Human capital & research**	**29.6**	**95**	
2.1	*Education*	*45.9*	*87*	
2.1.1	Current expenditure on education, % GNI	2.8	114	
2.1.2	Public expenditure/pupil, % GDP/cap	15.4	88	
2.1.3	School life expectancy, years	13.2	67	
2.1.4	PISA scales in reading, maths, & science	375.5	65	○
2.1.5	Pupil-teacher ratio, secondary	7.6	7	●
2.2	*Tertiary education*	*27.7*	*82*	
2.2.1	Tertiary enrolment, % gross	28.2	76	
2.2.2	Graduates in science & engineering, %	17.4	65	
2.2.3	Tertiary inbound mobility, %	0.8	78	
2.2.4	Gross tertiary outbound enrolment, %	2.3	38	
2.3	*Research & development (R&D)*	*15.3*	*103*	
2.3.1	Researchers, headcounts/mn pop.	1,811.9	41	
2.3.2	Gross expenditure on R&D, % GDP	0.2	88	
2.3.3	Quality of scientific research institutions†	28.7	114	○
3	**Infrastructure**	**29.4**	**87**	
3.1	*Information & communication technologies (ICT)*	*33.7*	*68*	
3.1.1	ICT access*	35.6	88	
3.1.2	ICT use*	18.1	66	
3.1.3	Government's online service*	60.1	42	
3.1.4	E-participation*	21.1	63	
3.2	*General infrastructure*	*26.0*	*120*	
3.2.1	Electricity output, kWh/cap	1,951.7	78	
3.2.2	Electricity consumption, kWh/cap	1,641.3	76	
3.2.3	Quality of trade & transport infrastructure*	29.3	104	
3.2.4	Gross capital formation, % GDP	19.5	95	
3.3	*Ecological sustainability*	*28.4*	*78*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.1	72	
3.3.2	Environmental performance*	56.8	46	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	113	
4	**Market sophistication**	**50.3**	**31**	
4.1	*Credit*	*44.7*	*34*	
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	32.4	92	
4.1.3	Microfinance gross loans, % GDP	3.9	12	●
4.2	*Investment*	*37.5*	*36*	
4.2.1	Ease of protecting investors*	82.0	20	●
4.2.2	Market capitalization, % GDP	9.1	94	○
4.2.3	Total value of stocks traded, % GDP	0.0	104	○
4.2.4	Venture capital deals/tr PPP$ GDP	41.2	30	
4.3	*Trade & competition*	*68.8*	*35*	
4.3.1	Applied tariff rate, weighted mean, %	0.4	4	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	24	●
4.3.3	Imports of goods & services, % GDP	52.3	46	
4.3.4	Exports of goods & services, % GDP	34.8	80	
4.3.5	Intensity of local competition†	48.3	123	○
5	**Business sophistication**	**34.0**	**96**	
5.1	*Knowledge workers*	*40.6*	*87*	
5.1.1	Knowledge-intensive employment, %	22.2	59	
5.1.2	Firms offering formal training, % firms	14.5	98	○
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	525.7	56	
5.1.6	GMAT test takers/mn pop. 20–34	160.4	37	
5.2	*Innovation linkages*	*37.3*	*60*	
5.2.1	University/industry research collaboration†	27.3	120	○
5.2.2	State of cluster development†	34.7	97	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*24.0*	*128*	○
5.3.1	Royalty & license fees payments/th GDP	0.6	83	
5.3.2	High-tech imports less re-imports, %	6.6	87	
5.3.3	Computer & comm. service imports, %	12.3	118	○
5.3.4	FDI net inflows, % GDP	7.0	26	●
6	**Knowledge & technology outputs**	**29.5**	**57**	
6.1	*Knowledge creation*	*33.3*	*43*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.0	26	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	56	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	2.8	14	
6.1.4	Scientific & technical articles/bn PPP$ GDP	6.1	49	
6.2	*Knowledge impact*	*38.7*	*49*	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.1	19	●
6.2.2	New businesses/th pop. 15–64	2.3	42	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.2	79	
6.3	*Knowledge diffusion*	*16.5*	*118*	
6.3.1	Royalty & license fees receipts/th GDP	0.4	49	
6.3.2	High-tech exports less re-exports, %	0.9	76	
6.3.3	Computer & comm. service exports, %	8.0	125	○
6.3.4	FDI net outflows, % GDP	0.1	91	
7	**Creative outputs**	**24.2**	**105**	
7.1	*Creative intangibles*	*26.9*	*124*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	30.3	48	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.4	38	
7.1.3	ICT & business model creation†	41.9	108	
7.1.4	ICT & organizational model creation†	43.0	84	
7.2	*Creative goods & services*	*17.1*	*80*	
7.2.1	Recreation & culture consumption, %	5.7	46	
7.2.2	National feature films/mn pop. 15–69	4.4	27	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	13.6	111	
7.2.4	Creative goods exports, %	0.4	91	
7.2.5	Creative services exports, %	2.2	58	
7.3	*Online creativity*	*25.9*	*53*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.9	86	
7.3.2	Country-code TLDs/th pop. 15–69	27.8	59	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,169.2	41	
7.3.4	Video uploads on YouTube/pop. 15–69	57.7	62	

Germany

Key indicators

Population (millions)	81.4
GDP per capita, PPP$	37,935.5
GDP (US$ billions)	3,628.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**56.2**	**15**	
Innovation Output Sub-Index		53.7	7	●
Innovation Input Sub-Index		58.8	23	
Innovation Efficiency Index		0.9	11	
Global Innovation Index 2011 (out of 125)			12	
GII 2012 rank among GII 2011 economies (125)			15	
1	**Institutions**	**76.7**	**26**	
1.1	*Political environment*	*87.3*	*13*	
1.1.1	Political stability*	84.9	27	
1.1.2	Government effectiveness*	81.8	17	
1.1.3	Press freedom*	95.3	15	
1.2	*Regulatory environment*	*82.2*	*33*	
1.2.1	Regulatory quality*	91.7	14	
1.2.2	Rule of law*	90.9	16	
1.2.3	Cost of redundancy dismissal, salary weeks	21.6	94	○
1.3	*Business environment*	*60.4*	*42*	
1.3.1	Ease of starting a business*	48.9	71	○
1.3.2	Ease of resolving insolvency*	78.4	31	
1.3.3	Ease of paying taxes*	53.9	65	
2	**Human capital & research**	**55.4**	**16**	
2.1	*Education*	*63.6*	*23*	
2.1.1	Current expenditure on education, % GNI	4.3	61	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	510.2	13	
2.1.5	Pupil-teacher ratio, secondary	13.2	57	
2.2	*Tertiary education*	*41.8*	*45*	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	24.6	28	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.8	50	
2.3	*Research & development (R&D)*	*60.7*	*11*	
2.3.1	Researchers, headcounts/mn pop.	5,305.4	12	
2.3.2	Gross expenditure on R&D, % GDP	2.8	8	●
2.3.3	Quality of scientific research institutions†	76.6	10	
3	**Infrastructure**	**55.1**	**16**	
3.1	*Information & communication technologies (ICT)*	*73.1*	*14*	
3.1.1	ICT access*	84.1	6	●
3.1.2	ICT use*	56.9	20	
3.1.3	Government's online service*	75.2	24	
3.1.4	E-participation*	76.3	8	●
3.2	*General infrastructure*	*51.5*	*22*	
3.2.1	Electricity output, kWh/cap	7,525.1	27	
3.2.2	Electricity consumption, kWh/cap	7,107.8	23	
3.2.3	Quality of trade & transport infrastructure*	83.5	1	●
3.2.4	Gross capital formation, % GDP	17.3	116	○
3.3	*Ecological sustainability*	*40.8*	*39*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.0	37	
3.3.2	Environmental performance*	66.9	11	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.0	44	
4	**Market sophistication**	**54.9**	**24**	
4.1	*Credit*	*56.9*	*21*	
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	107.8	27	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*39.1*	*32*	
4.2.1	Ease of protecting investors*	35.9	76	○
4.2.2	Market capitalization, % GDP	43.2	49	
4.2.3	Total value of stocks traded, % GDP	42.5	26	
4.2.4	Venture capital deals/tr PPP$ GDP	90.6	15	
4.3	*Trade & competition*	*68.9*	*34*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	41.4	69	○
4.3.4	Exports of goods & services, % GDP	46.8	49	
4.3.5	Intensity of local competition†	79.9	8	●
5	**Business sophistication**	**51.7**	**24**	
5.1	*Knowledge workers*	*69.8*	*25*	
5.1.1	Knowledge-intensive employment, %	41.9	14	
5.1.2	Firms offering formal training, % firms	35.4	51	
5.1.3	R&D performed by business, %	68.2	13	
5.1.4	R&D financed by business, %	67.3	9	
5.1.5	GMAT mean score	565.5	23	
5.1.6	GMAT test takers/mn pop. 20–34	260.4	24	
5.2	*Innovation linkages*	*39.2*	*55*	
5.2.1	University/industry research collaboration†	69.3	12	
5.2.2	State of cluster development†	62.0	13	
5.2.3	R&D financed by abroad, %	4.0	67	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	21.3	64	
5.2.5	PCT patent filings with foreign inventor, %	24.5	74	○
5.3	*Knowledge absorption*	*46.1*	*26*	
5.3.1	Royalty & license fees payments/th GDP	4.0	25	
5.3.2	High-tech imports less re-imports, %	15.1	19	
5.3.3	Computer & comm. service imports, %	43.6	29	
5.3.4	FDI net inflows, % GDP	1.4	96	○
6	**Knowledge & technology outputs**	**54.9**	**12**	
6.1	*Knowledge creation*	*71.1*	*7*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	25.3	5	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	6.0	8	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	4.7	11	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.0	19	
6.2	*Knowledge impact*	*42.0*	*40*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.1	49	
6.2.2	New businesses/th pop. 15–64	1.2	57	○
6.2.3	Computer software spending, % GDP	0.7	15	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	17.2	29	
6.3	*Knowledge diffusion*	*51.5*	*18*	
6.3.1	Royalty & license fees receipts/th GDP	4.4	14	
6.3.2	High-tech exports less re-exports, %	13.7	24	
6.3.3	Computer & comm. service exports, %	54.2	20	
6.3.4	FDI net outflows, % GDP	3.3	17	
7	**Creative outputs**	**52.6**	**10**	●
7.1	*Creative intangibles*	*46.2*	*40*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	69.4	22	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.5	14	
7.1.3	ICT & business model creation†	65.3	24	
7.1.4	ICT & organizational model creation†	54.1	44	
7.2	*Creative goods & services*	*45.8*	*11*	
7.2.1	Recreation & culture consumption, %	9.5	15	
7.2.2	National feature films/mn pop. 15–69	2.7	40	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	333.6	10	●
7.2.4	Creative goods exports, %	2.2	38	
7.2.5	Creative services exports, %	13.8	9	
7.3	*Online creativity*	*72.2*	*9*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	98.9	7	●
7.3.2	Country-code TLDs/th pop. 15–69	77.5	5	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,223.0	14	
7.3.4	Video uploads on YouTube/pop. 15–69	70.5	24	

Ghana

Key indicators

Population (millions)	24.3
GDP per capita, PPP$	3,081.6
GDP (US$ billions)	38.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**29.6**	**92**	
Innovation Output Sub-Index		24.1	93	
Innovation Input Sub-Index		35.1	91	
Innovation Efficiency Index		0.7	86	
Global Innovation Index 2011 (out of 125)			70	
GII 2012 rank among GII 2011 economies (125)			87	
1	**Institutions**	**49.5**	**90**	
1.1	*Political environment*	*64.3*	*54*	
1.1.1	Political stability*	66.2	64	
1.1.2	Government effectiveness*	40.8	68	
1.1.3	Press freedom*	85.8	37	●
1.2	*Regulatory environment*	*33.6*	*133*	○
1.2.1	Regulatory quality*	54.0	71	
1.2.2	Rule of law*	45.8	61	
1.2.3	Cost of redundancy dismissal, salary weeks	49.8	134	○
1.3	*Business environment*	*50.6*	*66*	
1.3.1	Ease of starting a business*	52.5	67	
1.3.2	Ease of resolving insolvency*	27.3	102	
1.3.3	Ease of paying taxes*	71.9	40	●
2	**Human capital & research**	**27.2**	**102**	
2.1	*Education*	*44.8*	*93*	
2.1.1	Current expenditure on education, % GNI	4.7	51	●
2.1.2	Public expenditure/pupil, % GDP/cap	19.0	68	
2.1.3	School life expectancy, years	10.7	109	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	18.7	91	
2.2	*Tertiary education*	*20.2*	*102*	
2.2.1	Tertiary enrolment, % gross	8.8	111	
2.2.2	Graduates in science & engineering, %	16.7	69	
2.2.3	Tertiary inbound mobility, %	1.4	69	
2.2.4	Gross tertiary outbound enrolment, %	0.3	111	
2.3	*Research & development (R&D)*	*16.5*	*97*	
2.3.1	Researchers, headcounts/mn pop.	28.0	118	○
2.3.2	Gross expenditure on R&D, % GDP	0.2	78	
2.3.3	Quality of scientific research institutions†	44.5	65	
3	**Infrastructure**	**24.6**	**107**	
3.1	*Information & communication technologies (ICT)*	*16.5*	*115*	
3.1.1	ICT access*	22.3	112	
3.1.2	ICT use*	3.2	120	
3.1.3	Government's online service*	30.1	116	
3.1.4	E-participation*	10.5	93	
3.2	*General infrastructure*	*28.6*	*110*	
3.2.1	Electricity output, kWh/cap	387.7	108	
3.2.2	Electricity consumption, kWh/cap	265.0	110	
3.2.3	Quality of trade & transport infrastructure*	38.0	71	
3.2.4	Gross capital formation, % GDP	22.4	71	
3.3	*Ecological sustainability*	*28.9*	*75*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.8	42	●
3.3.2	Environmental performance*	47.5	88	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	125	○
4	**Market sophistication**	**37.1**	**73**	
4.1	*Credit*	*40.8*	*42*	●
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	15.2	129	○
4.1.3	Microfinance gross loans, % GDP	5.1	7	●
4.2	*Investment*	*17.8*	*94*	
4.2.1	Ease of protecting investors*	66.9	35	●
4.2.2	Market capitalization, % GDP	11.3	92	
4.2.3	Total value of stocks traded, % GDP	0.3	87	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*52.7*	*116*	
4.3.1	Applied tariff rate, weighted mean, %	8.6	113	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	119	
4.3.3	Imports of goods & services, % GDP	38.4	76	
4.3.4	Exports of goods & services, % GDP	25.3	108	
4.3.5	Intensity of local competition†	65.0	65	
5	**Business sophistication**	**36.9**	**83**	
5.1	*Knowledge workers*	*37.8*	*97*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	33.0	55	
5.1.3	R&D performed by business, %	4.9	80	
5.1.4	R&D financed by business, %	50.9	19	●
5.1.5	GMAT mean score	437.9	109	
5.1.6	GMAT test takers/mn pop. 20–34	58.6	72	
5.2	*Innovation linkages*	*29.0*	*102*	
5.2.1	University/industry research collaboration†	37.2	92	
5.2.2	State of cluster development†	35.2	95	
5.2.3	R&D financed by abroad, %	11.9	27	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	16.0	72	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*44.0*	*35*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	11.5	38	●
5.3.3	Computer & comm. service imports, %	29.6	68	
5.3.4	FDI net inflows, % GDP	8.1	20	●
6	**Knowledge & technology outputs**	**22.6**	**91**	
6.1	*Knowledge creation*	*18.3*	*83*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	101	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.7	90	
6.2	*Knowledge impact*	*20.9*	*116*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.3	64	
6.2.2	New businesses/th pop. 15–64	0.7	74	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	137	○
6.3	*Knowledge diffusion*	*28.5*	*60*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.2	104	
6.3.3	Computer & comm. service exports, %	27.4	68	
6.3.4	FDI net outflows, % GDP	0.0	95	
7	**Creative outputs**	**25.7**	**98**	
7.1	*Creative intangibles*	*44.4*	*54*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	44.3	97	
7.1.4	ICT & organizational model creation†	44.4	81	
7.2	*Creative goods & services*	*9.5*	*102*	
7.2.1	Recreation & culture consumption, %	3.1	69	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	14.2	109	
7.2.4	Creative goods exports, %	0.1	116	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*4.6*	*132*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	112	
7.3.2	Country-code TLDs/th pop. 15–69	0.0	138	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	23.1	116	○
7.3.4	Video uploads on YouTube/pop. 15–69	18.0	125	○

Greece

Key indicators

Population (millions)	11.2
GDP per capita, PPP$	27,624.3
GDP (US$ billions)	312.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**35.3**	**66**	
Innovation Output Sub-Index		26.5	82	
Innovation Input Sub-Index		44.0	50	
Innovation Efficiency Index		0.6	124	○
Global Innovation Index 2011 (out of 125)			63	
GII 2012 rank among GII 2011 economies (125)			64	
1	**Institutions**	**60.7**	**59**	
1.1	*Political environment*	*64.7*	*51*	
1.1.1	Political stability*	62.6	78	
1.1.2	Government effectiveness*	54.6	46	
1.1.3	Press freedom*	77.0	57	
1.2	*Regulatory environment*	*71.7*	*46*	
1.2.1	Regulatory quality*	68.3	42	
1.2.2	Rule of law*	64.1	42	
1.2.3	Cost of redundancy dismissal, salary weeks	19.5	88	
1.3	*Business environment*	*45.8*	*79*	
1.3.1	Ease of starting a business*	12.2	123	○
1.3.2	Ease of resolving insolvency*	68.3	45	
1.3.3	Ease of paying taxes*	56.8	61	
2	**Human capital & research**	**45.6**	**39**	
2.1	*Education*	*58.5*	*41*	
2.1.1	Current expenditure on education, % GNI	3.3	95	
2.1.2	Public expenditure/pupil, % GDP/cap	20.7	51	
2.1.3	School life expectancy, years	16.3	15	●
2.1.4	PISA scales in reading, maths, & science	473.0	36	
2.1.5	Pupil-teacher ratio, secondary	7.9	9	●
2.2	*Tertiary education*	*56.6*	*9*	●
2.2.1	Tertiary enrolment, % gross	89.4	4	●
2.2.2	Graduates in science & engineering, %	24.9	26	
2.2.3	Tertiary inbound mobility, %	3.5	39	
2.2.4	Gross tertiary outbound enrolment, %	4.6	13	●
2.3	*Research & development (R&D)*	*21.7*	*71*	
2.3.1	Researchers, headcounts/mn pop.	1,873.5	40	
2.3.2	Gross expenditure on R&D, % GDP	0.6	50	
2.3.3	Quality of scientific research institutions†	38.2	87	
3	**Infrastructure**	**43.2**	**43**	
3.1	*Information & communication technologies (ICT)*	*50.2*	*42*	
3.1.1	ICT access*	63.7	39	
3.1.2	ICT use*	45.2	31	
3.1.3	Government's online service*	57.5	48	
3.1.4	E-participation*	34.2	44	
3.2	*General infrastructure*	*36.3*	*68*	
3.2.1	Electricity output, kWh/cap	5,433.6	40	
3.2.2	Electricity consumption, kWh/cap	5,703.8	36	
3.2.3	Quality of trade & transport infrastructure*	48.5	44	
3.2.4	Gross capital formation, % GDP	16.2	125	○
3.3	*Ecological sustainability*	*43.1*	*33*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.4	17	●
3.3.2	Environmental performance*	60.0	32	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.8	47	
4	**Market sophistication**	**34.8**	**88**	
4.1	*Credit*	*39.0*	*46*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	115.9	24	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*6.1*	*123*	○
4.2.1	Ease of protecting investors*	7.1	123	○
4.2.2	Market capitalization, % GDP	23.8	70	
4.2.3	Total value of stocks traded, % GDP	14.1	43	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*59.4*	*91*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	
4.3.3	Imports of goods & services, % GDP	30.4	106	
4.3.4	Exports of goods & services, % GDP	21.5	121	
4.3.5	Intensity of local competition†	60.7	78	
5	**Business sophistication**	**35.8**	**88**	
5.1	*Knowledge workers*	*49.1*	*58*	
5.1.1	Knowledge-intensive employment, %	33.5	34	
5.1.2	Firms offering formal training, % firms	20.0	90	
5.1.3	R&D performed by business, %	26.9	58	
5.1.4	R&D financed by business, %	31.1	49	
5.1.5	GMAT mean score	527.5	54	
5.1.6	GMAT test takers/mn pop. 20–34	700.7	7	●
5.2	*Innovation linkages*	*28.1*	*108*	
5.2.1	University/industry research collaboration†	31.2	114	
5.2.2	State of cluster development†	31.7	110	
5.2.3	R&D financed by abroad, %	19.0	13	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	20.7	65	
5.2.5	PCT patent filings with foreign inventor, %	12.8	88	○
5.3	*Knowledge absorption*	*30.1*	*94*	
5.3.1	Royalty & license fees payments/th GDP	2.1	47	
5.3.2	High-tech imports less re-imports, %	8.8	61	
5.3.3	Computer & comm. service imports, %	23.8	88	
5.3.4	FDI net inflows, % GDP	0.7	116	
6	**Knowledge & technology outputs**	**25.6**	**75**	
6.1	*Knowledge creation*	*29.9*	*53*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.6	48	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	51	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	61	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	14.8	28	
6.2	*Knowledge impact*	*27.1*	*92*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.5	112	○
6.2.2	New businesses/th pop. 15–64	1.2	59	
6.2.3	Computer software spending, % GDP	0.3	27	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	13.6	39	
6.3	*Knowledge diffusion*	*19.7*	*105*	
6.3.1	Royalty & license fees receipts/th GDP	0.2	57	
6.3.2	High-tech exports less re-exports, %	5.8	39	
6.3.3	Computer & comm. service exports, %	9.3	117	○
6.3.4	FDI net outflows, % GDP	0.3	64	
7	**Creative outputs**	**27.5**	**92**	
7.1	*Creative intangibles*	*19.3*	*131*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	5.0	81	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.2	49	
7.1.3	ICT & business model creation†	37.7	118	○
7.1.4	ICT & organizational model creation†	33.4	113	
7.2	*Creative goods & services*	*32.0*	*39*	
7.2.1	Recreation & culture consumption, %	7.5	30	
7.2.2	National feature films/mn pop. 15–69	2.1	50	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	135.6	45	
7.2.4	Creative goods exports, %	3.6	21	●
7.2.5	Creative services exports, %	1.6	63	
7.3	*Online creativity*	*39.3*	*36*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	17.4	39	
7.3.2	Country-code TLDs/th pop. 15–69	53.8	32	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,205.2	39	
7.3.4	Video uploads on YouTube/pop. 15–69	69.8	27	●

Guatemala

Key indicators

Population (millions)	14.7
GDP per capita, PPP$	5,033.2
GDP (US$ billions)	46.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**28.4**	**99**	
Innovation Output Sub-Index		23.1	101	
Innovation Input Sub-Index		33.7	98	
Innovation Efficiency Index		0.7	89	
Global Innovation Index 2011 (out of 125)			86	
GII 2012 rank among GII 2011 economies (125)			94	
1	**Institutions**	**39.9**	**118**	
1.1	*Political environment*	*46.0*	*99*	
1.1.1	Political stability*	46.1	108	
1.1.2	Government effectiveness*	22.4	112	
1.1.3	Press freedom*	69.6	76	
1.2	*Regulatory environment*	*48.1*	*119*	
1.2.1	Regulatory quality*	47.2	83	
1.2.2	Rule of law*	20.3	125	
1.2.3	Cost of redundancy dismissal, salary weeks	27.0	114	
1.3	*Business environment*	*25.6*	*119*	
1.3.1	Ease of starting a business*	4.3	134	○
1.3.2	Ease of resolving insolvency*	35.9	90	
1.3.3	Ease of paying taxes*	36.6	88	
2	**Human capital & research**	**23.4**	**115**	
2.1	*Education*	*36.4*	*115*	
2.1.1	Current expenditure on education, % GNI	2.9	111	
2.1.2	Public expenditure/pupil, % GDP/cap	10.1	109	○
2.1.3	School life expectancy, years	10.7	110	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	16.0	75	
2.2	*Tertiary education*	*21.6*	*98*	
2.2.1	Tertiary enrolment, % gross	17.8	92	
2.2.2	Graduates in science & engineering, %	16.8	67	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.2	124	
2.3	*Research & development (R&D)*	*12.2*	*119*	
2.3.1	Researchers, headcounts/mn pop.	51.9	113	○
2.3.2	Gross expenditure on R&D, % GDP	0.1	103	
2.3.3	Quality of scientific research institutions†	35.3	100	
3	**Infrastructure**	**26.5**	**101**	
3.1	*Information & communication technologies (ICT)*	*27.6*	*84*	
3.1.1	ICT access*	34.4	91	
3.1.2	ICT use*	5.7	103	
3.1.3	Government's online service*	46.4	78	
3.1.4	E-participation*	23.7	59	
3.2	*General infrastructure*	*22.3*	*132*	○
3.2.1	Electricity output, kWh/cap	645.1	102	
3.2.2	Electricity consumption, kWh/cap	548.4	104	
3.2.3	Quality of trade & transport infrastructure*	34.3	84	
3.2.4	Gross capital formation, % GDP	14.7	131	○
3.3	*Ecological sustainability*	*29.6*	*71*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.2	50	
3.3.2	Environmental performance*	51.9	73	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	92	
4	**Market sophistication**	**36.5**	**80**	
4.1	*Credit*	*32.9*	*60*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	23.4	107	
4.1.3	Microfinance gross loans, % GDP	0.4	47	
4.2	*Investment*	*7.9*	*116*	
4.2.1	Ease of protecting investors*	15.8	110	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*68.8*	*36*	●
4.3.1	Applied tariff rate, weighted mean, %	2.4	47	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	3	●
4.3.3	Imports of goods & services, % GDP	36.0	86	
4.3.4	Exports of goods & services, % GDP	25.1	111	
4.3.5	Intensity of local competition†	69.0	48	●
5	**Business sophistication**	**42.1**	**54**	●
5.1	*Knowledge workers*	*45.7*	*68*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	51.9	25	●
5.1.3	R&D performed by business, %	0.9	86	○
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	508.0	69	
5.1.6	GMAT test takers/mn pop. 20–34	32.7	100	
5.2	*Innovation linkages*	*54.6*	*11*	●
5.2.1	University/industry research collaboration†	46.4	52	●
5.2.2	State of cluster development†	45.2	53	●
5.2.3	R&D financed by abroad, %	48.4	5	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	2.7	112	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*25.9*	*121*	
5.3.1	Royalty & license fees payments/th GDP	2.2	42	●
5.3.2	High-tech imports less re-imports, %	8.9	60	
5.3.3	Computer & comm. service imports, %	9.1	126	○
5.3.4	FDI net inflows, % GDP	1.7	88	
6	**Knowledge & technology outputs**	**16.5**	**126**	
6.1	*Knowledge creation*	*8.5*	*116*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	106	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	100	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	54	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.3	135	○
6.2	*Knowledge impact*	*19.7*	*122*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.8	108	
6.2.2	New businesses/th pop. 15–64	0.7	75	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.3	90	
6.3	*Knowledge diffusion*	*21.2*	*99*	
6.3.1	Royalty & license fees receipts/th GDP	0.3	53	
6.3.2	High-tech exports less re-exports, %	2.7	54	
6.3.3	Computer & comm. service exports, %	19.5	93	
6.3.4	FDI net outflows, % GDP	0.1	90	
7	**Creative outputs**	**29.7**	**77**	
7.1	*Creative intangibles*	*45.9*	*44*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	60.8	37	●
7.1.4	ICT & organizational model creation†	30.9	119	
7.2	*Creative goods & services*	*12.4*	*93*	
7.2.1	Recreation & culture consumption, %	3.3	67	
7.2.2	National feature films/mn pop. 15–69	0.1	98	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	63.1	78	
7.2.4	Creative goods exports, %	1.5	56	
7.2.5	Creative services exports, %	0.2	97	
7.3	*Online creativity*	*14.8*	*94*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.0	65	
7.3.2	Country-code TLDs/th pop. 15–69	11.1	96	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	499.2	78	
7.3.4	Video uploads on YouTube/pop. 15–69	41.4	95	

Guyana

Key indicators

Population (millions)	0.8
GDP per capita, PPP$	7,541.4
GDP (US$ billions)	2.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**33.7**	**77**	
Innovation Output Sub-Index		30.6	64	
Innovation Input Sub-Index		36.7	86	
Innovation Efficiency Index		0.8	26	
Global Innovation Index 2011 (out of 125)			61	
GII 2012 rank among GII 2011 economies (125)			75	
1	**Institutions**	**49.7**	**88**	
1.1	*Political environment*	*56.8*	*68*	
1.1.1	Political stability*	53.1	96	
1.1.2	Government effectiveness*	37.4	74	
1.1.3	Press freedom*	80.1	49	
1.2	*Regulatory environment*	*59.7*	*94*	
1.2.1	Regulatory quality*	37.9	109	
1.2.2	Rule of law*	35.1	87	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	77	
1.3	*Business environment*	*32.6*	*102*	
1.3.1	Ease of starting a business*	46.7	75	
1.3.2	Ease of resolving insolvency*	16.5	117	
1.3.3	Ease of paying taxes*	34.5	91	
2	**Human capital & research**	**29.8**	**94**	
2.1	*Education*	*35.3*	*117*	
2.1.1	Current expenditure on education, % GNI	3.4	92	
2.1.2	Public expenditure/pupil, % GDP/cap	13.1	94	
2.1.3	School life expectancy, years	10.3	116	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	21.4	98	
2.2	*Tertiary education*	*18.2*	*110*	
2.2.1	Tertiary enrolment, % gross	11.9	99	
2.2.2	Graduates in science & engineering, %	14.4	80	
2.2.3	Tertiary inbound mobility, %	0.5	88	
2.2.4	Gross tertiary outbound enrolment, %	1.2	67	
2.3	*Research & development (R&D)*	*35.8*	*33*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	35.8	97	
3	**Infrastructure**	**19.4**	**128**	○
3.1	*Information & communication technologies (ICT)*	*16.9*	*114*	
3.1.1	ICT access*	31.1	100	
3.1.2	ICT use*	10.8	86	
3.1.3	Government's online service*	25.5	123	○
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*40.1*	*48*	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	24.8	123	○
3.2.4	Gross capital formation, % GDP	26.7	27	
3.3	*Ecological sustainability*	*1.3*	*133*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	111	
4	**Market sophistication**	**32.7**	**99**	
4.1	*Credit*	*6.9*	*128*	○
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	37.8	85	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*13.0*	*107*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	15.3	89	
4.2.3	Total value of stocks traded, % GDP	0.0	103	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*78.2*	*7*	●
4.3.1	Applied tariff rate, weighted mean, %	6.9	98	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	7	●
4.3.3	Imports of goods & services, % GDP	119.2	4	●
4.3.4	Exports of goods & services, % GDP	84.6	9	●
4.3.5	Intensity of local competition†	61.7	75	
5	**Business sophistication**	**52.1**	**23**	
5.1	*Knowledge workers*	*50.8*	*54*	
5.1.1	Knowledge-intensive employment, %	12.7	92	○
5.1.2	Firms offering formal training, % firms	63.0	10	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	465.2	101	
5.1.6	GMAT test takers/mn pop. 20–34	192.9	30	
5.2	*Innovation linkages*	*48.8*	*26*	
5.2.1	University/industry research collaboration†	34.5	109	
5.2.2	State of cluster development†	37.6	84	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	371.7	1	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*56.6*	*10*	●
5.3.1	Royalty & license fees payments/th GDP	12.4	1	●
5.3.2	High-tech imports less re-imports, %	4.5	113	○
5.3.3	Computer & comm. service imports, %	42.1	31	
5.3.4	FDI net inflows, % GDP	8.4	17	●
6	**Knowledge & technology outputs**	**25.5**	**76**	
6.1	*Knowledge creation*	*1.6*	*137*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.5	129	○
6.2	*Knowledge impact*	*14.8*	*129*	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.0	115	
6.3	*Knowledge diffusion*	*60.2*	*9*	●
6.3.1	Royalty & license fees receipts/th GDP	20.8	1	●
6.3.2	High-tech exports less re-exports, %	0.0	118	○
6.3.3	Computer & comm. service exports, %	62.6	11	●
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**35.7**	**51**	
7.1	*Creative intangibles*	*47.8*	*37*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	44.5	93	
7.1.4	ICT & organizational model creation†	51.2	60	
7.2	*Creative goods & services*	*24.8*	*58*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	16.9	1	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	63.3	77	
7.2.4	Creative goods exports, %	0.5	86	
7.2.5	Creative services exports, %	3.5	47	
7.3	*Online creativity*	*22.2*	*68*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.3	92	
7.3.2	Country-code TLDs/th pop. 15–69	21.7	71	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	43.6	91	

Honduras

Key indicators

Population (millions)	8.2
GDP per capita, PPP$	4,350.1
GDP (US$ billions)	17.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.3**	**111**	
Innovation Output Sub-Index		20.9	116	
Innovation Input Sub-Index		31.8	105	
Innovation Efficiency Index		0.7	99	
Global Innovation Index 2011 (out of 125)			98	
GII 2012 rank among GII 2011 economies (125)			103	
1	**Institutions**	**36.4**	**127**	○
1.1	*Political environment*	*42.6*	*110*	
1.1.1	Political stability*	52.4	98	
1.1.2	Government effectiveness*	23.4	109	
1.1.3	Press freedom*	52.0	109	
1.2	*Regulatory environment*	*45.7*	*123*	○
1.2.1	Regulatory quality*	46.5	86	
1.2.2	Rule of law*	24.7	115	
1.2.3	Cost of redundancy dismissal, salary weeks	30.3	125	○
1.3	*Business environment*	*20.8*	*126*	○
1.3.1	Ease of starting a business*	14.3	120	
1.3.2	Ease of resolving insolvency*	20.8	111	
1.3.3	Ease of paying taxes*	27.3	102	
2	**Human capital & research**	**27.1**	**104**	
2.1	*Education*	*54.2*	*59*	
2.1.1	Current expenditure on education, % GNI	3.5	87	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.4	98	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	11.3	40	●
2.2	*Tertiary education*	*16.5*	*114*	
2.2.1	Tertiary enrolment, % gross	18.8	89	
2.2.2	Graduates in science & engineering, %	12.6	89	
2.2.3	Tertiary inbound mobility, %	0.7	81	
2.2.4	Gross tertiary outbound enrolment, %	0.3	112	
2.3	*Research & development (R&D)*	*10.6*	*125*	○
2.3.1	Researchers, headcounts/mn pop.	81.6	103	
2.3.2	Gross expenditure on R&D, % GDP	0.0	109	○
2.3.3	Quality of scientific research institutions†	30.9	108	
3	**Infrastructure**	**27.6**	**96**	
3.1	*Information & communication technologies (ICT)*	*22.8*	*97*	
3.1.1	ICT access*	34.5	90	
3.1.2	ICT use*	5.6	104	
3.1.3	Government's online service*	37.9	96	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*27.9*	*114*	
3.2.1	Electricity output, kWh/cap	835.2	94	
3.2.2	Electricity consumption, kWh/cap	676.8	98	
3.2.3	Quality of trade & transport infrastructure*	32.8	93	
3.2.4	Gross capital formation, % GDP	23.0	61	
3.3	*Ecological sustainability*	*32.0*	*64*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.2	34	●
3.3.2	Environmental performance*	52.5	68	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	98	
4	**Market sophistication**	**34.1**	**89**	
4.1	*Credit*	*35.6*	*51*	●
4.1.1	Ease of getting credit*	71.6	35	●
4.1.2	Domestic credit to private sector, % GDP	50.5	63	
4.1.3	Microfinance gross loans, % GDP	1.6	26	●
4.2	*Investment*	*1.8*	*137*	○
4.2.1	Ease of protecting investors*	3.5	131	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*64.9*	*63*	
4.3.1	Applied tariff rate, weighted mean, %	6.5	96	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	48	●
4.3.3	Imports of goods & services, % GDP	64.6	29	●
4.3.4	Exports of goods & services, % GDP	43.9	55	●
4.3.5	Intensity of local competition†	57.5	94	
5	**Business sophistication**	**33.8**	**97**	
5.1	*Knowledge workers*	*36.9*	*99*	
5.1.1	Knowledge-intensive employment, %	12.8	91	○
5.1.2	Firms offering formal training, % firms	35.8	50	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	473.6	90	
5.1.6	GMAT test takers/mn pop. 20–34	44.8	85	
5.2	*Innovation linkages*	*32.3*	*86*	
5.2.1	University/industry research collaboration†	39.4	82	
5.2.2	State of cluster development†	41.3	69	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*32.1*	*86*	
5.3.1	Royalty & license fees payments/th GDP	2.0	48	●
5.3.2	High-tech imports less re-imports, %	8.8	62	
5.3.3	Computer & comm. service imports, %	25.0	85	
5.3.4	FDI net inflows, % GDP	5.2	34	●
6	**Knowledge & technology outputs**	**17.2**	**124**	○
6.1	*Knowledge creation*	*9.0*	*115*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	89	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	99	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	50	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.2	137	○
6.2	*Knowledge impact*	*20.9*	*117*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	44	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.8	83	
6.3	*Knowledge diffusion*	*21.7*	*93*	
6.3.1	Royalty & license fees receipts/th GDP	0.1	70	
6.3.2	High-tech exports less re-exports, %	0.4	90	
6.3.3	Computer & comm. service exports, %	27.3	69	
6.3.4	FDI net outflows, % GDP	0.0	104	○
7	**Creative outputs**	**24.6**	**104**	
7.1	*Creative intangibles*	*37.9*	*82*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	36.3	43	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	57.1	50	●
7.1.4	ICT & organizational model creation†	39.6	100	
7.2	*Creative goods & services*	*9.1*	*105*	
7.2.1	Recreation & culture consumption, %	3.7	63	
7.2.2	National feature films/mn pop. 15–69	0.2	94	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	42.6	85	
7.2.4	Creative goods exports, %	0.2	110	
7.2.5	Creative services exports, %	1.1	68	
7.3	*Online creativity*	*13.3*	*100*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.6	110	
7.3.2	Country-code TLDs/th pop. 15–69	11.6	93	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	108.9	104	
7.3.4	Video uploads on YouTube/pop. 15–69	40.6	98	

Hong Kong (China)

Key indicators

Population (millions)	7.2
GDP per capita, PPP$	49,342.0
GDP (US$ billions)	246.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**58.7**	**8**	
Innovation Output Sub-Index		45.5	25	
Innovation Input Sub-Index		72.0	2	
Innovation Efficiency Index		0.6	110	○
Global Innovation Index 2011 (out of 125)			4	
GII 2012 rank among GII 2011 economies (125)			8	
1	**Institutions**	**92.6**	**7**	
1.1	*Political environment*	*85.2*	*17*	
1.1.1	Political stability*	87.2	21	
1.1.2	Government effectiveness*	86.6	11	
1.1.3	Press freedom*	81.8	47	
1.2	*Regulatory environment*	*97.2*	*7*	
1.2.1	Regulatory quality*	99.7	2	
1.2.2	Rule of law*	89.1	18	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*95.4*	*3*	
1.3.1	Ease of starting a business*	96.4	6	
1.3.2	Ease of resolving insolvency*	90.6	14	
1.3.3	Ease of paying taxes*	99.2	2	
2	**Human capital & research**	**51.5**	**26**	
2.1	*Education*	*53.5*	*63*	
2.1.1	Current expenditure on education, % GNI	3.1	103	○
2.1.2	Public expenditure/pupil, % GDP/cap	19.5	64	○
2.1.3	School life expectancy, years	15.5	25	
2.1.4	PISA scales in reading, maths, & science	545.6	2	
2.1.5	Pupil-teacher ratio, secondary	17.8	85	○
2.2	*Tertiary education*	*66.9*	*4*	
2.2.1	Tertiary enrolment, % gross	59.7	34	
2.2.2	Graduates in science & engineering, %	34.7	6	
2.2.3	Tertiary inbound mobility, %	3.9	36	
2.2.4	Gross tertiary outbound enrolment, %	7.4	7	
2.3	*Research & development (R&D)*	*34.3*	*36*	
2.3.1	Researchers, headcounts/mn pop.	3,293.4	29	
2.3.2	Gross expenditure on R&D, % GDP	0.8	41	
2.3.3	Quality of scientific research institutions†	60.3	31	
3	**Infrastructure**	**63.4**	**4**	
3.1	*Information & communication technologies (ICT)*	*77.6*	*7*	
3.1.1	ICT access*	90.6	1	●
3.1.2	ICT use*	64.6	10	
3.1.3	Government's online service*	n/a	n/a	
3.1.4	E-participation*	n/a	n/a	
3.2	*General infrastructure*	*50.6*	*25*	
3.2.1	Electricity output, kWh/cap	5,482.2	39	
3.2.2	Electricity consumption, kWh/cap	5,924.3	33	
3.2.3	Quality of trade & transport infrastructure*	75.0	13	
3.2.4	Gross capital formation, % GDP	23.7	53	
3.3	*Ecological sustainability*	*61.9*	*7*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	16.0	1	●
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.1	31	
4	**Market sophistication**	**85.5**	**1**	●
4.1	*Credit*	*81.4*	*3*	
4.1.1	Ease of getting credit*	97.1	4	
4.1.2	Domestic credit to private sector, % GDP	189.0	9	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*91.0*	*1*	●
4.2.1	Ease of protecting investors*	98.5	3	
4.2.2	Market capitalization, % GDP	1,207.9	1	●
4.2.3	Total value of stocks traded, % GDP	711.7	1	●
4.2.4	Venture capital deals/tr PPP$ GDP	42.3	29	
4.3	*Trade & competition*	*84.2*	*2*	
4.3.1	Applied tariff rate, weighted mean, %	0.0	1	●
4.3.2	Non-agricultural mkt access weighted tariff, %	2.8	127	○
4.3.3	Imports of goods & services, % GDP	217.3	1	●
4.3.4	Exports of goods & services, % GDP	223.0	1	●
4.3.5	Intensity of local competition†	78.0	13	
5	**Business sophistication**	**66.9**	**3**	
5.1	*Knowledge workers*	*71.4*	*21*	
5.1.1	Knowledge-intensive employment, %	36.0	30	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	42.7	40	
5.1.4	R&D financed by business, %	45.8	29	
5.1.5	GMAT mean score	574.0	19	
5.1.6	GMAT test takers/mn pop. 20–34	1,458.4	3	
5.2	*Innovation linkages*	*54.2*	*14*	
5.2.1	University/industry research collaboration†	62.3	22	
5.2.2	State of cluster development†	61.5	15	
5.2.3	R&D financed by abroad, %	6.1	54	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	104.2	12	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*75.0*	*4*	
5.3.1	Royalty & license fees payments/th GDP	8.1	8	
5.3.2	High-tech imports less re-imports, %	43.5	1	●
5.3.3	Computer & comm. service imports, %	27.2	73	○
5.3.4	FDI net inflows, % GDP	30.7	1	●
6	**Knowledge & technology outputs**	**38.4**	**34**	
6.1	*Knowledge creation*	*5.7*	*119*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	85	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	30	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	n/a	n/a	
6.2	*Knowledge impact*	*55.9*	*8*	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.1	18	
6.2.2	New businesses/th pop. 15–64	19.2	1	●
6.2.3	Computer software spending, % GDP	0.2	39	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.1	43	
6.3	*Knowledge diffusion*	*53.5*	*17*	
6.3.1	Royalty & license fees receipts/th GDP	1.8	21	
6.3.2	High-tech exports less re-exports, %	17.1	14	
6.3.3	Computer & comm. service exports, %	39.9	42	
6.3.4	FDI net outflows, % GDP	33.9	1	●
7	**Creative outputs**	**52.6**	**11**	
7.1	*Creative intangibles*	*50.3*	*27*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	45.8	38	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	69.3	18	
7.1.4	ICT & organizational model creation†	60.0	26	
7.2	*Creative goods & services*	*55.0*	*4*	
7.2.1	Recreation & culture consumption, %	6.8	39	
7.2.2	National feature films/mn pop. 15–69	12.8	7	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	400.8	6	
7.2.4	Creative goods exports, %	7.1	1	●
7.2.5	Creative services exports, %	0.2	100	○
7.3	*Online creativity*	*54.7*	*22*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	51.4	19	
7.3.2	Country-code TLDs/th pop. 15–69	50.9	35	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,435.8	13	
7.3.4	Video uploads on YouTube/pop. 15–69	73.5	16	

Hungary

Key indicators

Population (millions) 10.0
GDP per capita, PPP$ 19,647.1
GDP (US$ billions) 147.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**46.5**	**31**	
Innovation Output Sub-Index		41.9	29	
Innovation Input Sub-Index		51.2	37	
Innovation Efficiency Index		0.8	41	
Global Innovation Index 2011 (out of 125)			25	
GII 2012 rank among GII 2011 economies (125)			30	
1	**Institutions**	**72.3**	**32**	
1.1	*Political environment*	*76.1*	*32*	
1.1.1	Political stability*	82.5	30	
1.1.2	Government effectiveness*	59.2	41	
1.1.3	Press freedom*	86.5	36	
1.2	*Regulatory environment*	*81.4*	*34*	
1.2.1	Regulatory quality*	78.5	28	
1.2.2	Rule of law*	68.3	36	
1.2.3	Cost of redundancy dismissal, salary weeks	13.4	59	
1.3	*Business environment*	*59.4*	*46*	
1.3.1	Ease of starting a business*	77.6	32	
1.3.2	Ease of resolving insolvency*	58.9	58	
1.3.3	Ease of paying taxes*	41.7	82	
2	**Human capital & research**	**46.0**	**38**	
2.1	*Education*	*63.5*	*25*	
2.1.1	Current expenditure on education, % GNI	5.3	31	
2.1.2	Public expenditure/pupil, % GDP/cap	24.2	31	
2.1.3	School life expectancy, years	15.3	30	
2.1.4	PISA scales in reading, maths, & science	495.7	24	
2.1.5	Pupil-teacher ratio, secondary	10.3	32	
2.2	*Tertiary education*	*34.1*	*62*	
2.2.1	Tertiary enrolment, % gross	61.7	29	
2.2.2	Graduates in science & engineering, %	14.8	78	
2.2.3	Tertiary inbound mobility, %	3.7	38	
2.2.4	Gross tertiary outbound enrolment, %	1.2	68	
2.3	*Research & development (R&D)*	*40.4*	*31*	
2.3.1	Researchers, headcounts/mn pop.	3,366.5	28	
2.3.2	Gross expenditure on R&D, % GDP	1.1	32	
2.3.3	Quality of scientific research institutions†	69.7	19	
3	**Infrastructure**	**48.5**	**28**	
3.1	*Information & communication technologies (ICT)*	*54.8*	*32*	
3.1.1	ICT access*	63.4	41	
3.1.2	ICT use*	42.6	35	
3.1.3	Government's online service*	68.6	31	
3.1.4	E-participation*	44.7	36	
3.2	*General infrastructure*	*36.1*	*69*	
3.2.1	Electricity output, kWh/cap	3,732.3	54	
3.2.2	Electricity consumption, kWh/cap	3,900.1	47	
3.2.3	Quality of trade & transport infrastructure*	52.0	37	
3.2.4	Gross capital formation, % GDP	18.4	110	○
3.3	*Ecological sustainability*	*54.6*	*13*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.9	55	
3.3.2	Environmental performance*	57.1	44	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.7	8	●
4	**Market sophistication**	**42.2**	**56**	
4.1	*Credit*	*31.7*	*64*	
4.1.1	Ease of getting credit*	71.6	35	
4.1.2	Domestic credit to private sector, % GDP	72.6	45	
4.1.3	Microfinance gross loans, % GDP	0.0	90	○
4.2	*Investment*	*18.5*	*90*	
4.2.1	Ease of protecting investors*	22.3	100	○
4.2.2	Market capitalization, % GDP	21.2	73	
4.2.3	Total value of stocks traded, % GDP	20.3	37	
4.2.4	Venture capital deals/tr PPP$ GDP	5.1	55	
4.3	*Trade & competition*	*76.5*	*11*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	80.0	11	
4.3.4	Exports of goods & services, % GDP	86.5	7	●
4.3.5	Intensity of local competition†	72.1	37	
5	**Business sophistication**	**46.9**	**38**	
5.1	*Knowledge workers*	*54.7*	*45*	
5.1.1	Knowledge-intensive employment, %	36.7	27	
5.1.2	Firms offering formal training, % firms	14.8	97	○
5.1.3	R&D performed by business, %	57.2	25	
5.1.4	R&D financed by business, %	46.4	27	
5.1.5	GMAT mean score	583.8	9	●
5.1.6	GMAT test takers/mn pop. 20–34	72.6	60	
5.2	*Innovation linkages*	*31.1*	*95*	
5.2.1	University/industry research collaboration†	55.9	31	
5.2.2	State of cluster development†	39.1	79	
5.2.3	R&D financed by abroad, %	10.9	29	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	12.2	82	
5.2.5	PCT patent filings with foreign inventor, %	10.8	91	○
5.3	*Knowledge absorption*	*54.7*	*12*	
5.3.1	Royalty & license fees payments/th GDP	10.6	5	●
5.3.2	High-tech imports less re-imports, %	18.3	12	
5.3.3	Computer & comm. service imports, %	61.3	7	●
5.3.4	FDI net inflows, % GDP	-32.6	141	○
6	**Knowledge & technology outputs**	**46.8**	**21**	
6.1	*Knowledge creation*	*34.9*	*40*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	4.0	37	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.7	32	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.3	24	
6.1.4	Scientific & technical articles/bn PPP$ GDP	13.0	30	
6.2	*Knowledge impact*	*55.1*	*12*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	88	○
6.2.2	New businesses/th pop. 15–64	6.3	15	
6.2.3	Computer software spending, % GDP	1.0	6	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	42.8	8	●
6.3	*Knowledge diffusion*	*50.5*	*22*	
6.3.1	Royalty & license fees receipts/th GDP	8.1	8	●
6.3.2	High-tech exports less re-exports, %	20.5	9	●
6.3.3	Computer & comm. service exports, %	51.7	23	
6.3.4	FDI net outflows, % GDP	-35.6	119	○
7	**Creative outputs**	**37.0**	**43**	
7.1	*Creative intangibles*	*29.8*	*111*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	32.1	46	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.9	22	
7.1.3	ICT & business model creation†	44.0	99	○
7.1.4	ICT & organizational model creation†	41.4	91	
7.2	*Creative goods & services*	*39.7*	*20*	
7.2.1	Recreation & culture consumption, %	7.3	32	
7.2.2	National feature films/mn pop. 15–69	3.8	32	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	167.7	31	
7.2.4	Creative goods exports, %	1.0	69	
7.2.5	Creative services exports, %	19.6	5	●
7.3	*Online creativity*	*48.5*	*26*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	27.0	29	
7.3.2	Country-code TLDs/th pop. 15–69	61.9	18	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,047.4	22	
7.3.4	Video uploads on YouTube/pop. 15–69	69.4	28	

Iceland

Key indicators

Population (millions)	0.3
GDP per capita, PPP$	38,079.6
GDP (US$ billions)	14.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**55.7**	**18**	
Innovation Output Sub-Index		50.6	12	
Innovation Input Sub-Index		60.8	19	
Innovation Efficiency Index		0.8	28	
Global Innovation Index 2011 (out of 125)			11	
GII 2012 rank among GII 2011 economies (125)			17	
1	**Institutions**	**87.9**	**14**	
1.1	*Political environment*	*90.1*	*11*	
1.1.1	Political stability*	89.8	13	
1.1.2	Government effectiveness*	82.4	15	
1.1.3	Press freedom*	98.0	6	
1.2	*Regulatory environment*	*89.8*	*19*	
1.2.1	Regulatory quality*	74.8	35	
1.2.2	Rule of law*	92.6	15	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	37	
1.3	*Business environment*	*83.9*	*10*	
1.3.1	Ease of starting a business*	82.7	25	
1.3.2	Ease of resolving insolvency*	89.2	16	
1.3.3	Ease of paying taxes*	79.8	28	
2	**Human capital & research**	**68.3**	**1**	●
2.1	*Education*	*73.3*	*6*	
2.1.1	Current expenditure on education, % GNI	7.3	8	
2.1.2	Public expenditure/pupil, % GDP/cap	25.5	22	
2.1.3	School life expectancy, years	18.3	3	●
2.1.4	PISA scales in reading, maths, & science	500.9	16	
2.1.5	Pupil-teacher ratio, secondary	11.6	41	
2.2	*Tertiary education*	*54.8*	*13*	
2.2.1	Tertiary enrolment, % gross	74.1	14	
2.2.2	Graduates in science & engineering, %	14.5	79	
2.2.3	Tertiary inbound mobility, %	4.6	30	
2.2.4	Gross tertiary outbound enrolment, %	11.5	1	●
2.3	*Research & development (R&D)*	*76.7*	*4*	
2.3.1	Researchers, headcounts/mn pop.	13,384.3	1	●
2.3.2	Gross expenditure on R&D, % GDP	2.6	12	
2.3.3	Quality of scientific research institutions†	68.5	21	
3	**Infrastructure**	**47.6**	**30**	
3.1	*Information & communication technologies (ICT)*	*56.2*	*30*	
3.1.1	ICT access*	89.1	2	●
3.1.2	ICT use*	65.8	8	
3.1.3	Government's online service*	54.3	53	
3.1.4	E-participation*	15.8	78	
3.2	*General infrastructure*	*61.4*	*8*	
3.2.1	Electricity output, kWh/cap	52,814.2	1	●
3.2.2	Electricity consumption, kWh/cap	51,884.0	1	●
3.2.3	Quality of trade & transport infrastructure*	58.3	30	
3.2.4	Gross capital formation, % GDP	12.8	137	○
3.3	*Ecological sustainability*	*25.1*	*93*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.9	118	○
3.3.2	Environmental performance*	66.3	13	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	85	
4	**Market sophistication**	**45.3**	**42**	
4.1	*Credit*	*53.9*	*22*	
4.1.1	Ease of getting credit*	71.6	35	
4.1.2	Domestic credit to private sector, % GDP	107.6	28	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*13.3*	*106*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	15.9	86	○
4.2.3	Total value of stocks traded, % GDP	1.2	69	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*68.7*	*37*	
4.3.1	Applied tariff rate, weighted mean, %	1.1	8	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.5	86	
4.3.3	Imports of goods & services, % GDP	46.0	54	
4.3.4	Exports of goods & services, % GDP	56.0	31	
4.3.5	Intensity of local competition†	62.4	72	
5	**Business sophistication**	**55.1**	**18**	
5.1	*Knowledge workers*	*77.6*	*11*	
5.1.1	Knowledge-intensive employment, %	46.0	4	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	54.6	28	
5.1.4	R&D financed by business, %	50.3	22	
5.1.5	GMAT mean score	545.9	42	
5.1.6	GMAT test takers/mn pop. 20–34	584.3	8	
5.2	*Innovation linkages*	*47.4*	*28*	
5.2.1	University/industry research collaboration†	67.2	16	
5.2.2	State of cluster development†	46.9	46	
5.2.3	R&D financed by abroad, %	10.0	33	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	112.8	11	
5.2.5	PCT patent filings with foreign inventor, %	45.7	54	
5.3	*Knowledge absorption*	*40.2*	*53*	
5.3.1	Royalty & license fees payments/th GDP	0.3	103	○
5.3.2	High-tech imports less re-imports, %	7.9	72	
5.3.3	Computer & comm. service imports, %	40.0	39	
5.3.4	FDI net inflows, % GDP	23.5	4	
6	**Knowledge & technology outputs**	**45.5**	**24**	
6.1	*Knowledge creation*	*64.4*	*12*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	9.2	21	
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.5	12	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.3	13	
6.2	*Knowledge impact*	*55.0*	*13*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-2.9	114	○
6.2.2	New businesses/th pop. 15–64	12.8	1	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	59.8	5	
6.3	*Knowledge diffusion*	*17.0*	*114*	○
6.3.1	Royalty & license fees receipts/th GDP	0.0	101	○
6.3.2	High-tech exports less re-exports, %	3.1	51	
6.3.3	Computer & comm. service exports, %	31.1	57	
6.3.4	FDI net outflows, % GDP	-20.9	118	○
7	**Creative outputs**	**55.8**	**4**	
7.1	*Creative intangibles*	*55.5*	*15*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	103.6	7	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	2.1	8	
7.1.3	ICT & business model creation†	70.6	13	
7.1.4	ICT & organizational model creation†	57.8	31	
7.2	*Creative goods & services*	*30.9*	*40*	
7.2.1	Recreation & culture consumption, %	7.3	31	
7.2.2	National feature films/mn pop. 15–69	35.3	1	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	224.8	21	
7.2.4	Creative goods exports, %	0.1	117	○
7.2.5	Creative services exports, %	0.3	93	○
7.3	*Online creativity*	*81.3*	*1*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	63.9	15	
7.3.2	Country-code TLDs/th pop. 15–69	71.3	12	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	17,673.1	2	●
7.3.4	Video uploads on YouTube/pop. 15–69	100.0	1	●

India

Key indicators

Population (millions)	1,206.9
GDP per capita, PPP$	3,703.5
GDP (US$ billions)	1,843.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**35.7**	**64**	
Innovation Output Sub-Index		37.3	40	
Innovation Input Sub-Index		34.0	96	
Innovation Efficiency Index		1.1	2	●
Global Innovation Index 2011 (out of 125)			62	
GII 2012 rank among GII 2011 economies (125)			62	
1	**Institutions**	**38.4**	**125**	
1.1	*Political environment*	*42.8*	*109*	
1.1.1	Political stability*	33.6	126	
1.1.2	Government effectiveness*	40.8	69	
1.1.3	Press freedom*	54.1	106	
1.2	*Regulatory environment*	*64.3*	*78*	
1.2.1	Regulatory quality*	41.8	99	
1.2.2	Rule of law*	46.2	60	
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	71	
1.3	*Business environment*	*8.1*	*139*	○
1.3.1	Ease of starting a business*	2.8	136	○
1.3.2	Ease of resolving insolvency*	12.9	122	
1.3.3	Ease of paying taxes*	8.6	128	○
2	**Human capital & research**	**18.5**	**131**	○
2.1	*Education*	*24.6*	*133*	○
2.1.1	Current expenditure on education, % GNI	3.1	102	
2.1.2	Public expenditure/pupil, % GDP/cap	12.3	98	
2.1.3	School life expectancy, years	10.8	107	
2.1.4	PISA scales in reading, maths, & science	336.0	69	○
2.1.5	Pupil-teacher ratio, secondary	32.7	124	○
2.2	*Tertiary education*	*5.4*	*135*	○
2.2.1	Tertiary enrolment, % gross	16.2	94	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.2	126	
2.3	*Research & development (R&D)*	*25.6*	*55*	
2.3.1	Researchers, headcounts/mn pop.	136.9	90	
2.3.2	Gross expenditure on R&D, % GDP	0.8	43	
2.3.3	Quality of scientific research institutions†	58.5	33	
3	**Infrastructure**	**31.0**	**78**	
3.1	*Information & communication technologies (ICT)*	*24.7*	*94*	
3.1.1	ICT access*	23.7	108	
3.1.2	ICT use*	3.3	117	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	18.4	71	
3.2	*General infrastructure*	*41.1*	*44*	
3.2.1	Electricity output, kWh/cap	766.1	98	
3.2.2	Electricity consumption, kWh/cap	596.8	101	
3.2.3	Quality of trade & transport infrastructure*	47.8	46	
3.2.4	Gross capital formation, % GDP	34.8	9	●
3.3	*Ecological sustainability*	*27.3*	*87*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.8	43	
3.3.2	Environmental performance*	36.2	117	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.0	63	
4	**Market sophistication**	**44.6**	**46**	
4.1	*Credit*	*30.2*	*70*	
4.1.1	Ease of getting credit*	71.6	35	
4.1.2	Domestic credit to private sector, % GDP	49.0	64	
4.1.3	Microfinance gross loans, % GDP	0.3	50	
4.2	*Investment*	*51.8*	*17*	●
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	93.5	17	●
4.2.3	Total value of stocks traded, % GDP	61.1	18	●
4.2.4	Venture capital deals/tr PPP$ GDP	51.0	26	●
4.3	*Trade & competition*	*51.7*	*118*	
4.3.1	Applied tariff rate, weighted mean, %	8.2	109	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.5	122	
4.3.3	Imports of goods & services, % GDP	24.8	126	
4.3.4	Exports of goods & services, % GDP	21.5	120	
4.3.5	Intensity of local competition†	73.1	29	●
5	**Business sophistication**	**37.6**	**75**	
5.1	*Knowledge workers*	*42.9*	*74*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	15.9	96	○
5.1.3	R&D performed by business, %	33.9	49	
5.1.4	R&D financed by business, %	33.9	48	
5.1.5	GMAT mean score	580.6	12	●
5.1.6	GMAT test takers/mn pop. 20–34	81.0	56	
5.2	*Innovation linkages*	*37.4*	*59*	
5.2.1	University/industry research collaboration†	47.0	47	
5.2.2	State of cluster development†	51.9	31	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	36.0	41	
5.2.5	PCT patent filings with foreign inventor, %	8.6	96	○
5.3	*Knowledge absorption*	*32.5*	*81*	
5.3.1	Royalty & license fees payments/th GDP	1.5	56	
5.3.2	High-tech imports less re-imports, %	8.3	65	
5.3.3	Computer & comm. service imports, %	34.6	60	
5.3.4	FDI net inflows, % GDP	1.4	97	
6	**Knowledge & technology outputs**	**34.0**	**47**	
6.1	*Knowledge creation*	*28.9*	*54*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.0	55	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	49	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.5	55	
6.2	*Knowledge impact*	*33.8*	*67*	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.6	14	●
6.2.2	New businesses/th pop. 15–64	0.1	94	○
6.2.3	Computer software spending, % GDP	0.1	52	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.2	54	
6.3	*Knowledge diffusion*	*39.2*	*33*	
6.3.1	Royalty & license fees receipts/th GDP	0.1	73	
6.3.2	High-tech exports less re-exports, %	4.8	43	
6.3.3	Computer & comm. service exports, %	70.5	4	●
6.3.4	FDI net outflows, % GDP	0.8	45	
7	**Creative outputs**	**40.7**	**34**	
7.1	*Creative intangibles*	*60.8*	*10*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	63.9	31	●
7.1.4	ICT & organizational model creation†	57.6	33	
7.2	*Creative goods & services*	*30.7*	*42*	
7.2.1	Recreation & culture consumption, %	1.3	92	○
7.2.2	National feature films/mn pop. 15–69	1.6	55	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	137.7	43	
7.2.4	Creative goods exports, %	6.2	7	●
7.2.5	Creative services exports, %	3.4	49	
7.3	*Online creativity*	*10.5*	*109*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	99	
7.3.2	Country-code TLDs/th pop. 15–69	12.0	90	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	131.5	102	
7.3.4	Video uploads on YouTube/pop. 15–69	28.2	111	

Indonesia

Key indicators

Population (millions)	240.5
GDP per capita, PPP$	4,668.1
GDP (US$ billions)	834.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**28.1**	**100**	
Innovation Output Sub-Index	25.5	89	
Innovation Input Sub-Index	30.6	113	
Innovation Efficiency Index	0.8	25	●
Global Innovation Index 2011 (out of 125)		99	
GII 2012 rank among GII 2011 economies (125)		95	
1 Institutions	**25.4**	**139**	○
1.1 Political environment	*42.4*	*111*	
1.1.1 Political stability*	43.9	113	
1.1.2 Government effectiveness*	35.8	80	
1.1.3 Press freedom*	47.3	119	
1.2 Regulatory environment	*19.0*	*139*	○
1.2.1 Regulatory quality*	42.2	98	
1.2.2 Rule of law*	31.0	103	
1.2.3 Cost of redundancy dismissal, salary weeks	57.8	136	○
1.3 Business environment	*14.8*	*132*	○
1.3.1 Ease of starting a business*	8.6	128	○
1.3.2 Ease of resolving insolvency*	7.9	129	○
1.3.3 Ease of paying taxes*	28.0	101	
2 Human capital & research	**29.9**	**92**	
2.1 Education	*48.6*	*80*	
2.1.1 Current expenditure on education, % GNI	4.3	62	
2.1.2 Public expenditure/pupil, % GDP/cap	18.5	74	
2.1.3 School life expectancy, years	12.9	76	
2.1.4 PISA scales in reading, maths, & science	385.2	63	
2.1.5 Pupil-teacher ratio, secondary	12.2	47	●
2.2 Tertiary education	*23.9*	*91*	
2.2.1 Tertiary enrolment, % gross	23.1	83	
2.2.2 Graduates in science & engineering, %	22.8	38	
2.2.3 Tertiary inbound mobility, %	0.0	90	○
2.2.4 Gross tertiary outbound enrolment, %	0.2	130	○
2.3 Research & development (R&D)	*17.2*	*90*	
2.3.1 Researchers, headcounts/mn pop.	173.3	87	
2.3.2 Gross expenditure on R&D, % GDP	0.1	101	
2.3.3 Quality of scientific research institutions†	48.9	52	
3 Infrastructure	**30.5**	**80**	
3.1 Information & communication technologies (ICT)	*27.2*	*86*	
3.1.1 ICT access*	31.3	97	
3.1.2 ICT use*	6.9	99	
3.1.3 Government's online service*	49.7	67	
3.1.4 E-participation*	21.1	63	
3.2 General infrastructure	*36.4*	*67*	
3.2.1 Electricity output, kWh/cap	672.0	100	
3.2.2 Electricity consumption, kWh/cap	609.3	100	
3.2.3 Quality of trade & transport infrastructure*	38.5	69	
3.2.4 Gross capital formation, % GDP	32.5	17	●
3.3 Ecological sustainability	*28.0*	*81*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	4.6	79	
3.3.2 Environmental performance*	52.3	71	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.0	60	
4 Market sophistication	**33.0**	**98**	
4.1 Credit	*11.9*	*115*	
4.1.1 Ease of getting credit*	21.1	104	
4.1.2 Domestic credit to private sector, % GDP	29.1	96	
4.1.3 Microfinance gross loans, % GDP	0.6	45	
4.2 Investment	*29.8*	*54*	
4.2.1 Ease of protecting investors*	66.9	35	●
4.2.2 Market capitalization, % GDP	51.0	41	
4.2.3 Total value of stocks traded, % GDP	18.3	38	●
4.2.4 Venture capital deals/tr PPP$ GDP	2.7	62	
4.3 Trade & competition	*57.4*	*101*	
4.3.1 Applied tariff rate, weighted mean, %	2.5	51	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.1	120	
4.3.3 Imports of goods & services, % GDP	23.0	128	
4.3.4 Exports of goods & services, % GDP	24.6	112	
4.3.5 Intensity of local competition†	59.6	85	
5 Business sophistication	**34.2**	**94**	
5.1 Knowledge workers	*17.8*	*139*	○
5.1.1 Knowledge-intensive employment, %	7.4	96	○
5.1.2 Firms offering formal training, % firms	4.7	106	○
5.1.3 R&D performed by business, %	3.7	81	○
5.1.4 R&D financed by business, %	14.7	69	
5.1.5 GMAT mean score	513.5	65	
5.1.6 GMAT test takers/mn pop. 20–34	13.4	120	
5.2 Innovation linkages	*46.0*	*32*	●
5.2.1 University/industry research collaboration†	52.1	38	●
5.2.2 State of cluster development†	55.4	24	●
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	21.5	63	
5.2.5 PCT patent filings with foreign inventor, %	50.0	48	
5.3 Knowledge absorption	*38.8*	*57*	
5.3.1 Royalty & license fees payments/th GDP	2.3	41	●
5.3.2 High-tech imports less re-imports, %	11.5	37	●
5.3.3 Computer & comm. service imports, %	40.1	37	●
5.3.4 FDI net inflows, % GDP	1.9	78	
6 Knowledge & technology outputs	**20.4**	**104**	
6.1 Knowledge creation	*4.4*	*123*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.4	87	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	108	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.3	43	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.3	136	○
6.2 Knowledge impact	*29.9*	*83*	
6.2.1 Growth rate of PPP$ GDP/worker, %	3.9	36	●
6.2.2 New businesses/th pop. 15–64	0.2	92	○
6.2.3 Computer software spending, % GDP	0.1	48	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	6.3	62	
6.3 Knowledge diffusion	*27.0*	*66*	
6.3.1 Royalty & license fees receipts/th GDP	0.1	72	
6.3.2 High-tech exports less re-exports, %	4.5	45	
6.3.3 Computer & comm. service exports, %	34.7	51	
6.3.4 FDI net outflows, % GDP	0.4	62	
7 Creative outputs	**30.6**	**73**	
7.1 Creative intangibles	*54.2*	*18*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	55.9	53	
7.1.4 ICT & organizational model creation†	52.4	53	
7.2 Creative goods & services	*5.0*	*122*	
7.2.1 Recreation & culture consumption, %	1.4	91	○
7.2.2 National feature films/mn pop. 15–69	0.6	77	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	34.8	93	
7.2.4 Creative goods exports, %	n/a	n/a	
7.2.5 Creative services exports, %	0.6	82	
7.3 Online creativity	*9.2*	*113*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.7	105	
7.3.2 Country-code TLDs/th pop. 15–69	1.8	119	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	233.7	96	
7.3.4 Video uploads on YouTube/pop. 15–69	33.1	104	

Iran (Islamic Republic of)

Key indicators

Population (millions)	75.9
GDP per capita, PPP$	12,258.2
GDP (US$ billions)	475.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**27.3**	**104**	
Innovation Output Sub-Index		20.8	117	
Innovation Input Sub-Index		33.9	97	
Innovation Efficiency Index		0.6	118	
Global Innovation Index 2011 (out of 125)			95	
GII 2012 rank among GII 2011 economies (125)			98	
1	**Institutions**	**36.4**	**128**	
1.1	*Political environment*	*18.6*	*139*	○
1.1.1	Political stability*	27.5	135	○
1.1.2	Government effectiveness*	27.4	97	
1.1.3	Press freedom*	0.9	139	○
1.2	*Regulatory environment*	*43.7*	*128*	
1.2.1	Regulatory quality*	10.9	140	○
1.2.2	Rule of law*	23.8	119	
1.2.3	Cost of redundancy dismissal, salary weeks	23.1	104	
1.3	*Business environment*	*46.7*	*75*	
1.3.1	Ease of starting a business*	74.8	35	●
1.3.2	Ease of resolving insolvency*	26.6	103	
1.3.3	Ease of paying taxes*	38.8	86	
2	**Human capital & research**	**40.3**	**54**	●
2.1	*Education*	*45.5*	*90*	
2.1.1	Current expenditure on education, % GNI	4.1	72	
2.1.2	Public expenditure/pupil, % GDP/cap	19.5	65	
2.1.3	School life expectancy, years	13.1	70	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	21.7	99	
2.2	*Tertiary education*	*48.8*	*24*	●
2.2.1	Tertiary enrolment, % gross	42.8	54	●
2.2.2	Graduates in science & engineering, %	44.4	1	●
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.4	109	
2.3	*Research & development (R&D)*	*26.6*	*52*	●
2.3.1	Researchers, headcounts/mn pop.	1,491.4	47	●
2.3.2	Gross expenditure on R&D, % GDP	0.8	42	●
2.3.3	Quality of scientific research institutions†	50.8	46	●
3	**Infrastructure**	**29.3**	**88**	
3.1	*Information & communication technologies (ICT)*	*29.5*	*79*	
3.1.1	ICT access*	46.0	65	
3.1.2	ICT use*	4.7	109	
3.1.3	Government's online service*	49.0	71	
3.1.4	E-participation*	18.4	71	
3.2	*General infrastructure*	*38.3*	*60*	
3.2.1	Electricity output, kWh/cap	2,758.8	63	
3.2.2	Electricity consumption, kWh/cap	2,244.7	65	
3.2.3	Quality of trade & transport infrastructure*	34.0	86	
3.2.4	Gross capital formation, % GDP	33.2	14	●
3.3	*Ecological sustainability*	*20.2*	*114*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.7	105	
3.3.2	Environmental performance*	42.7	109	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	66	
4	**Market sophistication**	**20.3**	**133**	○
4.1	*Credit*	*18.8*	*97*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	36.7	86	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*3.4*	*134*	○
4.2.1	Ease of protecting investors*	3.5	131	○
4.2.2	Market capitalization, % GDP	19.1	79	
4.2.3	Total value of stocks traded, % GDP	5.2	55	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*38.8*	*136*	○
4.3.1	Applied tariff rate, weighted mean, %	19.6	141	○
4.3.2	Non-agricultural mkt access weighted tariff, %	1.0	75	
4.3.3	Imports of goods & services, % GDP	21.5	132	○
4.3.4	Exports of goods & services, % GDP	32.2	83	
4.3.5	Intensity of local competition†	54.1	102	
5	**Business sophistication**	**43.3**	**49**	●
5.1	*Knowledge workers*	*35.3*	*103*	
5.1.1	Knowledge-intensive employment, %	15.0	87	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	10.6	75	
5.1.4	R&D financed by business, %	30.9	50	
5.1.5	GMAT mean score	518.7	60	
5.1.6	GMAT test takers/mn pop. 20–34	26.5	106	
5.2	*Innovation linkages*	*41.5*	*49*	●
5.2.1	University/industry research collaboration†	37.5	90	
5.2.2	State of cluster development†	35.8	92	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	4.0	108	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*53.0*	*13*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	0.9	112	
6	**Knowledge & technology outputs**	**25.9**	**73**	
6.1	*Knowledge creation*	*28.9*	*55*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	8.6	23	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.4	45	●
6.2	*Knowledge impact*	*22.8*	*108*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.6	107	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	60	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.8	74	
6.3	*Knowledge diffusion*	*n/a*	*n/a*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**15.7**	**131**	
7.1	*Creative intangibles*	*22.6*	*130*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	0.0	86	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.0	58	
7.1.3	ICT & business model creation†	44.4	96	
7.1.4	ICT & organizational model creation†	45.2	80	
7.2	*Creative goods & services*	*8.5*	*108*	
7.2.1	Recreation & culture consumption, %	0.9	94	○
7.2.2	National feature films/mn pop. 15–69	0.5	81	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	29.9	96	
7.2.4	Creative goods exports, %	1.2	64	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*9.1*	*115*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.3	79	
7.3.2	Country-code TLDs/th pop. 15–69	23.1	66	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	367.9	84	
7.3.4	Video uploads on YouTube/pop. 15–69	n/a	n/a	

Ireland

Key indicators

Population (millions)	4.6
GDP per capita, PPP$	39,507.9
GDP (US$ billions)	222.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**58.7**	**9**	
Innovation Output Sub-Index		49.9	14	
Innovation Input Sub-Index		67.4	7	
Innovation Efficiency Index		0.7	71	○
Global Innovation Index 2011 (out of 125)			13	
GII 2012 rank among GII 2011 economies (125)			9	
1	**Institutions**	**93.0**	**4**	●
1.1	*Political environment*	*86.9*	*15*	
1.1.1	Political stability*	89.4	16	
1.1.2	Government effectiveness*	75.5	22	
1.1.3	Press freedom*	95.9	14	
1.2	*Regulatory environment*	*97.0*	*8*	
1.2.1	Regulatory quality*	93.7	12	
1.2.2	Rule of law*	94.5	13	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*95.2*	*4*	●
1.3.1	Ease of starting a business*	93.5	9	
1.3.2	Ease of resolving insolvency*	94.2	9	
1.3.3	Ease of paying taxes*	97.8	4	●
2	**Human capital & research**	**59.9**	**7**	
2.1	*Education*	*75.7*	*1*	●
2.1.1	Current expenditure on education, % GNI	5.2	34	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	18.3	4	
2.1.4	PISA scales in reading, maths, & science	496.9	21	
2.1.5	Pupil-teacher ratio, secondary	10.5	35	
2.2	*Tertiary education*	*54.5*	*14*	
2.2.1	Tertiary enrolment, % gross	61.0	30	
2.2.2	Graduates in science & engineering, %	21.6	42	
2.2.3	Tertiary inbound mobility, %	7.1	21	
2.2.4	Gross tertiary outbound enrolment, %	6.1	11	
2.3	*Research & development (R&D)*	*49.6*	*23*	
2.3.1	Researchers, headcounts/mn pop.	4,842.8	15	
2.3.2	Gross expenditure on R&D, % GDP	1.8	21	
2.3.3	Quality of scientific research institutions†	71.5	16	
3	**Infrastructure**	**45.0**	**35**	
3.1	*Information & communication technologies (ICT)*	*48.2*	*43*	
3.1.1	ICT access*	74.5	19	
3.1.2	ICT use*	51.7	23	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	13.2	83	○
3.2	*General infrastructure*	*40.1*	*49*	
3.2.1	Electricity output, kWh/cap	6,320.3	34	
3.2.2	Electricity consumption, kWh/cap	5,898.8	34	
3.2.3	Quality of trade & transport infrastructure*	69.0	19	
3.2.4	Gross capital formation, % GDP	10.8	139	○
3.3	*Ecological sustainability*	*46.7*	*22*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.4	18	
3.3.2	Environmental performance*	58.7	35	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.4	28	
4	**Market sophistication**	**69.4**	**6**	
4.1	*Credit*	*80.5*	*4*	●
4.1.1	Ease of getting credit*	87.6	8	
4.1.2	Domestic credit to private sector, % GDP	210.2	4	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*50.8*	*18*	
4.2.1	Ease of protecting investors*	94.2	5	
4.2.2	Market capitalization, % GDP	16.5	85	○
4.2.3	Total value of stocks traded, % GDP	8.2	50	○
4.2.4	Venture capital deals/tr PPP$ GDP	281.8	4	●
4.3	*Trade & competition*	*76.9*	*9*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	80.1	10	
4.3.4	Exports of goods & services, % GDP	98.8	1	●
4.3.5	Intensity of local competition†	67.1	57	
5	**Business sophistication**	**69.8**	**2**	●
5.1	*Knowledge workers*	*77.0*	*13*	
5.1.1	Knowledge-intensive employment, %	38.8	22	
5.1.2	Firms offering formal training, % firms	73.2	3	●
5.1.3	R&D performed by business, %	66.3	16	
5.1.4	R&D financed by business, %	50.8	20	
5.1.5	GMAT mean score	554.6	35	
5.1.6	GMAT test takers/mn pop. 20–34	307.1	17	
5.2	*Innovation linkages*	*49.4*	*25*	
5.2.1	University/industry research collaboration†	65.9	19	
5.2.2	State of cluster development†	52.7	29	
5.2.3	R&D financed by abroad, %	15.6	17	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	51.3	26	
5.2.5	PCT patent filings with foreign inventor, %	65.1	45	
5.3	*Knowledge absorption*	*82.8*	*2*	●
5.3.1	Royalty & license fees payments/th GDP	182.7	1	●
5.3.2	High-tech imports less re-imports, %	20.4	8	
5.3.3	Computer & comm. service imports, %	75.6	1	●
5.3.4	FDI net inflows, % GDP	12.8	10	
6	**Knowledge & technology outputs**	**60.9**	**6**	
6.1	*Knowledge creation*	*54.2*	*20*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	7.1	27	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.3	18	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.0	20	
6.2	*Knowledge impact*	*51.9*	*16*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.6	39	
6.2.2	New businesses/th pop. 15–64	4.7	18	
6.2.3	Computer software spending, % GDP	1.0	4	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	13.4	41	
6.3	*Knowledge diffusion*	*76.6*	*2*	●
6.3.1	Royalty & license fees receipts/th GDP	10.9	1	●
6.3.2	High-tech exports less re-exports, %	19.6	10	
6.3.3	Computer & comm. service exports, %	70.8	3	●
6.3.4	FDI net outflows, % GDP	8.6	5	
7	**Creative outputs**	**39.0**	**38**	
7.1	*Creative intangibles*	*34.4*	*97*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	38.1	42	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.2	43	○
7.1.3	ICT & business model creation†	64.0	30	
7.1.4	ICT & organizational model creation†	50.7	61	○
7.2	*Creative goods & services*	*30.5*	*43*	
7.2.1	Recreation & culture consumption, %	6.7	40	
7.2.2	National feature films/mn pop. 15–69	9.2	10	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	244.7	18	
7.2.4	Creative goods exports, %	1.3	61	○
7.2.5	Creative services exports, %	2.3	57	○
7.3	*Online creativity*	*56.6*	*21*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	51.5	18	
7.3.2	Country-code TLDs/th pop. 15–69	56.3	27	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,894.5	18	
7.3.4	Video uploads on YouTube/pop. 15–69	78.2	8	

Key indicators

Population (millions) 7.6
GDP per capita, PPP$ 31,004.6
GDP (US$ billions) 245.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**56.0**	**17**	
Innovation Output Sub-Index		50.5	13	
Innovation Input Sub-Index		61.5	17	
Innovation Efficiency Index		0.8	38	
Global Innovation Index 2011 (out of 125)			14	
GII 2012 rank among GII 2011 economies (125)			16	
1	**Institutions**	**67.2**	**47**	
1.1	*Political environment*	*58.4*	*64*	
1.1.1	Political stability*	29.4	129	○
1.1.2	Government effectiveness*	73.6	23	
1.1.3	Press freedom*	72.1	71	
1.2	*Regulatory environment*	*69.1*	*62*	
1.2.1	Regulatory quality*	82.6	25	
1.2.2	Rule of law*	71.0	31	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	120	○
1.3	*Business environment*	*74.1*	*25*	
1.3.1	Ease of starting a business*	78.4	31	
1.3.2	Ease of resolving insolvency*	74.8	36	
1.3.3	Ease of paying taxes*	69.0	44	
2	**Human capital & research**	**66.5**	**4**	●
2.1	*Education*	*61.8*	*29*	
2.1.1	Current expenditure on education, % GNI	5.7	25	
2.1.2	Public expenditure/pupil, % GDP/cap	19.8	61	
2.1.3	School life expectancy, years	15.7	23	
2.1.4	PISA scales in reading, maths, & science	458.6	39	
2.1.5	Pupil-teacher ratio, secondary	9.5	21	
2.2	*Tertiary education*	*43.2*	*43*	
2.2.1	Tertiary enrolment, % gross	62.5	26	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.4	34	
2.3	*Research & development (R&D)*	*94.3*	*1*	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	4.3	1	●
2.3.3	Quality of scientific research institutions†	88.6	1	●
3	**Infrastructure**	**54.2**	**21**	
3.1	*Information & communication technologies (ICT)*	*76.1*	*9*	
3.1.1	ICT access*	73.0	21	
3.1.2	ICT use*	57.1	19	
3.1.3	Government's online service*	85.0	15	
3.1.4	E-participation*	89.5	7	●
3.2	*General infrastructure*	*43.7*	*38*	
3.2.1	Electricity output, kWh/cap	7,703.4	26	
3.2.2	Electricity consumption, kWh/cap	6,648.1	25	
3.2.3	Quality of trade & transport infrastructure*	65.0	23	
3.2.4	Gross capital formation, % GDP	15.6	126	○
3.3	*Ecological sustainability*	*42.6*	*35*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.9	20	
3.3.2	Environmental performance*	54.6	59	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.7	35	
4	**Market sophistication**	**64.9**	**9**	
4.1	*Credit*	*59.8*	*18*	
4.1.1	Ease of getting credit*	87.6	8	
4.1.2	Domestic credit to private sector, % GDP	95.7	33	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*66.7*	*9*	
4.2.1	Ease of protecting investors*	94.2	5	
4.2.2	Market capitalization, % GDP	100.3	16	
4.2.3	Total value of stocks traded, % GDP	61.4	17	
4.2.4	Venture capital deals/tr PPP$ GDP	288.8	3	●
4.3	*Trade & competition*	*68.1*	*40*	
4.3.1	Applied tariff rate, weighted mean, %	3.5	58	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.6	57	
4.3.3	Imports of goods & services, % GDP	34.9	91	○
4.3.4	Exports of goods & services, % GDP	37.0	73	
4.3.5	Intensity of local competition†	74.0	25	
5	**Business sophistication**	**54.8**	**19**	
5.1	*Knowledge workers*	*83.2*	*4*	●
5.1.1	Knowledge-intensive employment, %	41.3	15	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	79.4	2	●
5.1.4	R&D financed by business, %	79.5	2	●
5.1.5	GMAT mean score	484.5	84	○
5.1.6	GMAT test takers/mn pop. 20–34	1,498.2	2	●
5.2	*Innovation linkages*	*35.8*	*66*	
5.2.1	University/industry research collaboration†	73.4	7	
5.2.2	State of cluster development†	42.6	61	
5.2.3	R&D financed by abroad, %	2.8	71	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	59.9	23	
5.2.5	PCT patent filings with foreign inventor, %	10.3	92	○
5.3	*Knowledge absorption*	*45.4*	*30*	
5.3.1	Royalty & license fees payments/th GDP	4.0	26	
5.3.2	High-tech imports less re-imports, %	11.9	33	
5.3.3	Computer & comm. service imports, %	48.1	19	
5.3.4	FDI net inflows, % GDP	2.4	68	
6	**Knowledge & technology outputs**	**57.2**	**10**	
6.1	*Knowledge creation*	*72.9*	*6*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.6	29	
6.1.2	PCT resident patent ap/bn PPP$ GDP	6.2	7	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	30.4	1	●
6.2	*Knowledge impact*	*40.8*	*41*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.3	101	○
6.2.2	New businesses/th pop. 15–64	4.5	22	
6.2.3	Computer software spending, % GDP	0.4	26	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	37.1	9	
6.3	*Knowledge diffusion*	*57.8*	*12*	
6.3.1	Royalty & license fees receipts/th GDP	3.9	17	
6.3.2	High-tech exports less re-exports, %	18.1	13	
6.3.3	Computer & comm. service exports, %	67.6	6	●
6.3.4	FDI net outflows, % GDP	3.7	15	
7	**Creative outputs**	**43.8**	**27**	
7.1	*Creative intangibles*	*43.7*	*57*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	10.9	78	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	69.8	15	
7.1.4	ICT & organizational model creation†	56.3	37	
7.2	*Creative goods & services*	*28.4*	*52*	
7.2.1	Recreation & culture consumption, %	6.8	38	
7.2.2	National feature films/mn pop. 15–69	4.0	30	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	147.9	37	
7.2.4	Creative goods exports, %	0.9	79	○
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*59.4*	*19*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	28.7	27	
7.3.2	Country-code TLDs/th pop. 15–69	54.3	31	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	15,077.7	5	●
7.3.4	Video uploads on YouTube/pop. 15–69	78.1	9	

Italy

Key indicators

Population (millions)	60.6
GDP per capita, PPP$	30,165.5
GDP (US$ billions)	2,245.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**44.5**	**36**	
Innovation Output Sub-Index		37.5	39	
Innovation Input Sub-Index		51.5	34	
Innovation Efficiency Index		0.7	75	
Global Innovation Index 2011 (out of 125)			35	
GII 2012 rank among GII 2011 economies (125)			35	
1	**Institutions**	**70.2**	**36**	
1.1	*Political environment*	*70.4*	*44*	
1.1.1	Political stability*	76.8	45	
1.1.2	Government effectiveness*	54.5	47	
1.1.3	Press freedom*	80.0	52	
1.2	*Regulatory environment*	*82.8*	*30*	
1.2.1	Regulatory quality*	73.3	36	
1.2.2	Rule of law*	57.9	49	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*57.5*	*55*	
1.3.1	Ease of starting a business*	62.5	53	
1.3.2	Ease of resolving insolvency*	80.5	28	
1.3.3	Ease of paying taxes*	29.4	99	○
2	**Human capital & research**	**44.7**	**41**	
2.1	*Education*	*61.9*	*28*	
2.1.1	Current expenditure on education, % GNI	4.1	71	
2.1.2	Public expenditure/pupil, % GDP/cap	24.7	29	
2.1.3	School life expectancy, years	16.2	16	●
2.1.4	PISA scales in reading, maths, & science	485.9	31	
2.1.5	Pupil-teacher ratio, secondary	10.1	29	
2.2	*Tertiary education*	*40.2*	*52*	
2.2.1	Tertiary enrolment, % gross	66.0	21	
2.2.2	Graduates in science & engineering, %	20.5	54	
2.2.3	Tertiary inbound mobility, %	3.3	43	
2.2.4	Gross tertiary outbound enrolment, %	1.3	66	
2.3	*Research & development (R&D)*	*32.0*	*40*	
2.3.1	Researchers, headcounts/mn pop.	2,431.4	37	
2.3.2	Gross expenditure on R&D, % GDP	1.3	28	
2.3.3	Quality of scientific research institutions†	48.4	54	
3	**Infrastructure**	**53.5**	**22**	
3.1	*Information & communication technologies (ICT)*	*50.8*	*41*	
3.1.1	ICT access*	69.3	30	
3.1.2	ICT use*	49.9	26	
3.1.3	Government's online service*	57.5	48	
3.1.4	E-participation*	26.3	55	
3.2	*General infrastructure*	*44.9*	*36*	
3.2.1	Electricity output, kWh/cap	4,889.3	46	
3.2.2	Electricity consumption, kWh/cap	5,363.3	39	
3.2.3	Quality of trade & transport infrastructure*	68.0	20	●
3.2.4	Gross capital formation, % GDP	20.2	90	
3.3	*Ecological sustainability*	*64.9*	*4*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.8	22	
3.3.2	Environmental performance*	68.9	8	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	9.6	9	●
4	**Market sophistication**	**41.1**	**59**	
4.1	*Credit*	*34.3*	*54*	
4.1.1	Ease of getting credit*	27.0	88	○
4.1.2	Domestic credit to private sector, % GDP	122.5	21	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*27.3*	*62*	
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	15.5	88	○
4.2.3	Total value of stocks traded, % GDP	26.3	34	
4.2.4	Venture capital deals/tr PPP$ GDP	4.4	56	
4.3	*Trade & competition*	*61.6*	*77*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	28.5	111	○
4.3.4	Exports of goods & services, % GDP	26.8	98	
4.3.5	Intensity of local competition†	67.3	56	
5	**Business sophistication**	**47.8**	**35**	
5.1	*Knowledge workers*	*69.9*	*24*	
5.1.1	Knowledge-intensive employment, %	39.6	21	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	51.5	33	
5.1.4	R&D financed by business, %	45.2	32	
5.1.5	GMAT mean score	561.1	27	
5.1.6	GMAT test takers/mn pop. 20–34	170.9	34	
5.2	*Innovation linkages*	*32.1*	*90*	
5.2.1	University/industry research collaboration†	41.3	76	
5.2.2	State of cluster development†	63.0	10	●
5.2.3	R&D financed by abroad, %	7.8	43	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	15.8	73	
5.2.5	PCT patent filings with foreign inventor, %	10.0	94	○
5.3	*Knowledge absorption*	*41.4*	*48*	
5.3.1	Royalty & license fees payments/th GDP	3.4	31	
5.3.2	High-tech imports less re-imports, %	11.0	42	
5.3.3	Computer & comm. service imports, %	44.0	26	
5.3.4	FDI net inflows, % GDP	0.5	123	○
6	**Knowledge & technology outputs**	**38.2**	**35**	
6.1	*Knowledge creation*	*36.9*	*35*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.3	50	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.5	26	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	29	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.4	24	
6.2	*Knowledge impact*	*43.9*	*34*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	89	○
6.2.2	New businesses/th pop. 15–64	1.8	48	
6.2.3	Computer software spending, % GDP	0.5	21	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	78.1	1	●
6.3	*Knowledge diffusion*	*33.9*	*45*	
6.3.1	Royalty & license fees receipts/th GDP	1.8	22	
6.3.2	High-tech exports less re-exports, %	6.5	31	
6.3.3	Computer & comm. service exports, %	37.5	46	
6.3.4	FDI net outflows, % GDP	1.6	29	
7	**Creative outputs**	**36.8**	**45**	
7.1	*Creative intangibles*	*29.1*	*115*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	13.7	70	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.3	15	
7.1.3	ICT & business model creation†	45.6	88	
7.1.4	ICT & organizational model creation†	36.7	107	○
7.2	*Creative goods & services*	*40.9*	*17*	●
7.2.1	Recreation & culture consumption, %	6.8	36	
7.2.2	National feature films/mn pop. 15–69	3.1	37	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	113.2	49	
7.2.4	Creative goods exports, %	5.2	11	●
7.2.5	Creative services exports, %	6.7	31	
7.3	*Online creativity*	*47.9*	*29*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	27.1	28	
7.3.2	Country-code TLDs/th pop. 15–69	56.2	28	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,162.9	15	●
7.3.4	Video uploads on YouTube/pop. 15–69	66.8	32	

Jamaica

Key indicators

Population (millions)	2.7
GDP per capita, PPP$	9,003.8
GDP (US$ billions)	14.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**30.2**	**91**	
Innovation Output Sub-Index		22.1	107	
Innovation Input Sub-Index		38.2	77	
Innovation Efficiency Index		0.6	130	○
Global Innovation Index 2011 (out of 125)			92	
GII 2012 rank among GII 2011 economies (125)			86	
1	**Institutions**	**63.8**	**54**	
1.1	*Political environment*	*65.5*	*47*	●
1.1.1	Political stability*	55.6	92	
1.1.2	Government effectiveness*	45.8	55	
1.1.3	Press freedom*	95.3	15	●
1.2	*Regulatory environment*	*67.5*	*68*	
1.2.1	Regulatory quality*	59.3	60	
1.2.2	Rule of law*	34.6	91	
1.2.3	Cost of redundancy dismissal, salary weeks	14.0	62	
1.3	*Business environment*	*58.4*	*53*	
1.3.1	Ease of starting a business*	87.7	18	●
1.3.2	Ease of resolving insolvency*	84.1	23	●
1.3.3	Ease of paying taxes*	3.5	135	○
2	**Human capital & research**	**34.5**	**68**	
2.1	*Education*	*54.7*	*56*	
2.1.1	Current expenditure on education, % GNI	5.8	24	●
2.1.2	Public expenditure/pupil, % GDP/cap	18.7	71	
2.1.3	School life expectancy, years	13.1	69	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	14.6	66	
2.2	*Tertiary education*	*25.6*	*88*	
2.2.1	Tertiary enrolment, % gross	29.0	74	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	2.2	43	●
2.3	*Research & development (R&D)*	*23.2*	*64*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.1	104	○
2.3.3	Quality of scientific research institutions†	45.5	60	
3	**Infrastructure**	**23.9**	**109**	
3.1	*Information & communication technologies (ICT)*	*20.6*	*103*	
3.1.1	ICT access*	38.0	83	
3.1.2	ICT use*	13.7	80	
3.1.3	Government's online service*	30.7	115	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*26.2*	*119*	○
3.2.1	Electricity output, kWh/cap	2,050.0	75	
3.2.2	Electricity consumption, kWh/cap	1,898.5	71	
3.2.3	Quality of trade & transport infrastructure*	26.8	115	○
3.2.4	Gross capital formation, % GDP	20.6	86	
3.3	*Ecological sustainability*	*24.9*	*94*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.5	93	
3.3.2	Environmental performance*	54.4	61	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	82	
4	**Market sophistication**	**29.8**	**112**	
4.1	*Credit*	*11.7*	*116*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	24.8	104	
4.1.3	Microfinance gross loans, % GDP	0.2	65	
4.2	*Investment*	*16.1*	*97*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	47.3	44	
4.2.3	Total value of stocks traded, % GDP	1.5	68	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*61.6*	*78*	
4.3.1	Applied tariff rate, weighted mean, %	7.5	104	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	6	●
4.3.3	Imports of goods & services, % GDP	43.3	63	
4.3.4	Exports of goods & services, % GDP	25.6	105	
4.3.5	Intensity of local competition†	62.8	68	
5	**Business sophistication**	**38.9**	**70**	
5.1	*Knowledge workers*	*40.9*	*86*	
5.1.1	Knowledge-intensive employment, %	20.1	68	
5.1.2	Firms offering formal training, % firms	25.9	73	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	454.9	105	
5.1.6	GMAT test takers/mn pop. 20–34	319.7	15	●
5.2	*Innovation linkages*	*42.9*	*44*	●
5.2.1	University/industry research collaboration†	41.4	73	
5.2.2	State of cluster development†	37.1	86	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*32.8*	*80*	
5.3.1	Royalty & license fees payments/th GDP	2.7	35	●
5.3.2	High-tech imports less re-imports, %	4.8	107	○
5.3.3	Computer & comm. service imports, %	36.7	45	●
5.3.4	FDI net inflows, % GDP	1.6	90	
6	**Knowledge & technology outputs**	**11.7**	**139**	○
6.1	*Knowledge creation*	*5.1*	*121*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.9	70	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.1	80	
6.2	*Knowledge impact*	*13.3*	*130*	○
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.7	113	○
6.2.2	New businesses/th pop. 15–64	1.2	60	
6.2.3	Computer software spending, % GDP	0.1	54	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.7	119	○
6.3	*Knowledge diffusion*	*16.8*	*115*	
6.3.1	Royalty & license fees receipts/th GDP	0.4	52	
6.3.2	High-tech exports less re-exports, %	0.2	98	
6.3.3	Computer & comm. service exports, %	10.2	116	○
6.3.4	FDI net outflows, % GDP	0.4	61	
7	**Creative outputs**	**32.5**	**68**	
7.1	*Creative intangibles*	*49.1*	*31*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	51.7	68	
7.1.4	ICT & organizational model creation†	46.5	74	
7.2	*Creative goods & services*	*10.9*	*94*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	64.8	73	
7.2.4	Creative goods exports, %	1.0	73	
7.2.5	Creative services exports, %	2.5	55	
7.3	*Online creativity*	*21.1*	*72*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.4	72	
7.3.2	Country-code TLDs/th pop. 15–69	21.2	72	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	278.6	90	
7.3.4	Video uploads on YouTube/pop. 15–69	58.3	61	

Japan

Key indicators

Population (millions)	127.9
GDP per capita, PPP$	34,362.1
GDP (US$ billions)	5,855.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**51.7**	**25**	
Innovation Output Sub-Index		42.0	28	
Innovation Input Sub-Index		61.3	18	
Innovation Efficiency Index		0.7	88	
Global Innovation Index 2011 (out of 125)			20	
GII 2012 rank among GII 2011 economies (125)			24	
1	**Institutions**	**79.0**	**23**	
1.1	*Political environment*	*86.0*	*16*	
1.1.1	Political stability*	86.4	23	
1.1.2	Government effectiveness*	77.7	21	
1.1.3	Press freedom*	93.9	21	
1.2	*Regulatory environment*	*89.8*	*18*	
1.2.1	Regulatory quality*	76.6	30	
1.2.2	Rule of law*	82.6	22	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*61.1*	*40*	
1.3.1	Ease of starting a business*	43.1	80	
1.3.2	Ease of resolving insolvency*	100.0	1	●
1.3.3	Ease of paying taxes*	40.2	84	
2	**Human capital & research**	**54.6**	**19**	
2.1	*Education*	*56.6*	*52*	
2.1.1	Current expenditure on education, % GNI	3.2	98	○
2.1.2	Public expenditure/pupil, % GDP/cap	20.3	56	
2.1.3	School life expectancy, years	15.2	31	
2.1.4	PISA scales in reading, maths, & science	529.4	6	
2.1.5	Pupil-teacher ratio, secondary	12.0	45	
2.2	*Tertiary education*	*37.6*	*56*	
2.2.1	Tertiary enrolment, % gross	59.0	36	
2.2.2	Graduates in science & engineering, %	20.6	53	
2.2.3	Tertiary inbound mobility, %	3.4	41	
2.2.4	Gross tertiary outbound enrolment, %	0.6	89	
2.3	*Research & development (R&D)*	*69.6*	*6*	
2.3.1	Researchers, headcounts/mn pop.	7,038.4	6	
2.3.2	Gross expenditure on R&D, % GDP	3.4	4	●
2.3.3	Quality of scientific research institutions†	75.7	11	
3	**Infrastructure**	**61.6**	**7**	
3.1	*Information & communication technologies (ICT)*	*75.5*	*10*	
3.1.1	ICT access*	71.4	26	
3.1.2	ICT use*	70.8	5	
3.1.3	Government's online service*	86.3	9	
3.1.4	E-participation*	73.7	11	
3.2	*General infrastructure*	*53.8*	*17*	
3.2.1	Electricity output, kWh/cap	8,396.3	20	
3.2.2	Electricity consumption, kWh/cap	8,110.3	19	
3.2.3	Quality of trade & transport infrastructure*	79.8	5	
3.2.4	Gross capital formation, % GDP	20.2	88	
3.3	*Ecological sustainability*	*55.4*	*12*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.1	35	
3.3.2	Environmental performance*	63.4	23	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	8.1	11	
4	**Market sophistication**	**57.7**	**18**	
4.1	*Credit*	*68.0*	*9*	
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	169.2	12	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*49.2*	*19*	
4.2.1	Ease of protecting investors*	87.0	16	
4.2.2	Market capitalization, % GDP	74.6	31	
4.2.3	Total value of stocks traded, % GDP	77.9	12	
4.2.4	Venture capital deals/tr PPP$ GDP	6.4	53	
4.3	*Trade & competition*	*55.9*	*110*	○
4.3.1	Applied tariff rate, weighted mean, %	1.6	10	
4.3.2	Non-agricultural mkt access weighted tariff, %	3.7	130	○
4.3.3	Imports of goods & services, % GDP	14.1	140	○
4.3.4	Exports of goods & services, % GDP	15.2	130	○
4.3.5	Intensity of local competition†	82.0	3	●
5	**Business sophistication**	**53.6**	**21**	
5.1	*Knowledge workers*	*78.6*	*8*	
5.1.1	Knowledge-intensive employment, %	37.8	25	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	78.5	3	●
5.1.4	R&D financed by business, %	78.2	3	●
5.1.5	GMAT mean score	546.3	40	
5.1.6	GMAT test takers/mn pop. 20–34	111.9	48	
5.2	*Innovation linkages*	*36.9*	*62*	
5.2.1	University/industry research collaboration†	67.6	15	
5.2.2	State of cluster development†	66.8	3	●
5.2.3	R&D financed by abroad, %	0.4	89	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	40.3	34	
5.2.5	PCT patent filings with foreign inventor, %	4.1	101	○
5.3	*Knowledge absorption*	*45.5*	*28*	
5.3.1	Royalty & license fees payments/th GDP	3.4	29	
5.3.2	High-tech imports less re-imports, %	13.9	26	
5.3.3	Computer & comm. service imports, %	49.7	16	
5.3.4	FDI net inflows, % GDP	0.0	132	○
6	**Knowledge & technology outputs**	**51.7**	**15**	
6.1	*Knowledge creation*	*62.5*	*14*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	67.1	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	8.8	4	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.6	23	
6.1.4	Scientific & technical articles/bn PPP$ GDP	12.1	31	
6.2	*Knowledge impact*	*36.4*	*57*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.9	35	
6.2.2	New businesses/th pop. 15–64	1.3	52	
6.2.3	Computer software spending, % GDP	0.3	33	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	13.6	38	
6.3	*Knowledge diffusion*	*56.3*	*14*	
6.3.1	Royalty & license fees receipts/th GDP	4.9	12	
6.3.2	High-tech exports less re-exports, %	16.2	16	
6.3.3	Computer & comm. service exports, %	62.2	12	
6.3.4	FDI net outflows, % GDP	1.0	39	
7	**Creative outputs**	**32.3**	**69**	
7.1	*Creative intangibles*	*29.8*	*112*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	0.0	87	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.3	40	○
7.1.3	ICT & business model creation†	56.7	52	
7.1.4	ICT & organizational model creation†	55.6	40	
7.2	*Creative goods & services*	*37.6*	*26*	
7.2.1	Recreation & culture consumption, %	10.8	10	
7.2.2	National feature films/mn pop. 15–69	4.6	23	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	562.8	2	●
7.2.4	Creative goods exports, %	0.8	83	
7.2.5	Creative services exports, %	0.2	99	○
7.3	*Online creativity*	*32.2*	*43*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	13.0	41	
7.3.2	Country-code TLDs/th pop. 15–69	38.1	48	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,955.9	43	
7.3.4	Video uploads on YouTube/pop. 15–69	62.8	46	

Jordan

Key indicators

Population (millions)	6.3
GDP per capita, PPP$	5,900.3
GDP (US$ billions)	28.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**37.1**	**56**	
Innovation Output Sub-Index		34.6	46	
Innovation Input Sub-Index		39.7	72	
Innovation Efficiency Index		0.9	21	●
Global Innovation Index 2011 (out of 125)			41	
GII 2012 rank among GII 2011 economies (125)			54	
1	**Institutions**	**61.7**	**57**	
1.1	*Political environment*	*52.3*	*81*	
1.1.1	Political stability*	58.9	87	
1.1.2	Government effectiveness*	43.0	64	
1.1.3	Press freedom*	54.9	103	
1.2	*Regulatory environment*	*77.9*	*39*	
1.2.1	Regulatory quality*	57.9	64	
1.2.2	Rule of law*	53.6	51	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*55.1*	*60*	
1.3.1	Ease of starting a business*	43.8	79	
1.3.2	Ease of resolving insolvency*	33.0	94	
1.3.3	Ease of paying taxes*	88.4	17	●
2	**Human capital & research**	**42.0**	**49**	
2.1	*Education*	*60.9*	*32*	
2.1.1	Current expenditure on education, % GNI	5.6	26	●
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	13.3	66	
2.1.4	PISA scales in reading, maths, & science	402.4	55	
2.1.5	Pupil-teacher ratio, secondary	11.9	44	
2.2	*Tertiary education*	*45.9*	*31*	●
2.2.1	Tertiary enrolment, % gross	41.8	55	
2.2.2	Graduates in science & engineering, %	25.1	24	
2.2.3	Tertiary inbound mobility, %	10.4	15	●
2.2.4	Gross tertiary outbound enrolment, %	1.6	54	
2.3	*Research & development (R&D)*	*19.3*	*83*	
2.3.1	Researchers, headcounts/mn pop.	1,933.7	39	
2.3.2	Gross expenditure on R&D, % GDP	0.4	62	
2.3.3	Quality of scientific research institutions†	34.0	101	
3	**Infrastructure**	**27.5**	**97**	
3.1	*Information & communication technologies (ICT)*	*27.0*	*87*	
3.1.1	ICT access*	43.2	69	
3.1.2	ICT use*	15.2	76	
3.1.3	Government's online service*	39.2	95	
3.1.4	E-participation*	10.5	93	
3.2	*General infrastructure*	*28.1*	*113*	
3.2.1	Electricity output, kWh/cap	2,386.6	69	
3.2.2	Electricity consumption, kWh/cap	2,099.1	67	
3.2.3	Quality of trade & transport infrastructure*	42.3	54	
3.2.4	Gross capital formation, % GDP	15.3	128	○
3.3	*Ecological sustainability*	*27.4*	*85*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.7	77	
3.3.2	Environmental performance*	42.2	112	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.0	45	
4	**Market sophistication**	**35.3**	**85**	
4.1	*Credit*	*15.2*	*109*	
4.1.1	Ease of getting credit*	15.3	112	○
4.1.2	Domestic credit to private sector, % GDP	70.3	47	
4.1.3	Microfinance gross loans, % GDP	0.6	43	
4.2	*Investment*	*35.4*	*41*	
4.2.1	Ease of protecting investors*	22.3	100	
4.2.2	Market capitalization, % GDP	111.9	14	●
4.2.3	Total value of stocks traded, % GDP	34.3	28	
4.2.4	Venture capital deals/tr PPP$ GDP	27.1	37	
4.3	*Trade & competition*	*55.2*	*112*	
4.3.1	Applied tariff rate, weighted mean, %	5.2	82	
4.3.2	Non-agricultural mkt access weighted tariff, %	4.6	132	○
4.3.3	Imports of goods & services, % GDP	65.9	27	●
4.3.4	Exports of goods & services, % GDP	44.5	52	
4.3.5	Intensity of local competition†	72.7	32	
5	**Business sophistication**	**31.7**	**116**	
5.1	*Knowledge workers*	*37.9*	*96*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	23.9	83	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	435.0	111	
5.1.6	GMAT test takers/mn pop. 20–34	170.4	35	
5.2	*Innovation linkages*	*30.0*	*99*	
5.2.1	University/industry research collaboration†	34.5	110	○
5.2.2	State of cluster development†	40.3	71	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	32.5	45	
5.2.5	PCT patent filings with foreign inventor, %	14.3	87	○
5.3	*Knowledge absorption*	*27.3*	*111*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	5.1	101	○
5.3.3	Computer & comm. service imports, %	10.3	125	○
5.3.4	FDI net inflows, % GDP	6.2	31	●
6	**Knowledge & technology outputs**	**24.1**	**83**	
6.1	*Knowledge creation*	*20.8*	*73*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.3	62	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	11.2	33	
6.2	*Knowledge impact*	*28.7*	*88*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	98	○
6.2.2	New businesses/th pop. 15–64	0.7	72	
6.2.3	Computer software spending, % GDP	0.1	49	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	17.6	28	●
6.3	*Knowledge diffusion*	*22.9*	*88*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	1.7	63	
6.3.3	Computer & comm. service exports, %	11.7	115	○
6.3.4	FDI net outflows, % GDP	0.1	82	
7	**Creative outputs**	**45.1**	**24**	●
7.1	*Creative intangibles*	*68.8*	*5*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	211.7	1	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	52.8	64	
7.1.4	ICT & organizational model creation†	53.5	48	
7.2	*Creative goods & services*	*24.6*	*59*	
7.2.1	Recreation & culture consumption, %	2.4	77	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	86.3	62	
7.2.4	Creative goods exports, %	2.8	29	●
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*18.1*	*81*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.5	69	
7.3.2	Country-code TLDs/th pop. 15–69	10.6	97	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	805.8	71	
7.3.4	Video uploads on YouTube/pop. 15–69	54.3	71	

Kazakhstan

Key indicators

Population (millions)	16.5
GDP per capita, PPP$	13,060.0
GDP (US$ billions)	180.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**31.9**	**83**	
Innovation Output Sub-Index		22.4	105	
Innovation Input Sub-Index		41.4	67	
Innovation Efficiency Index		0.5	131	○
Global Innovation Index 2011 (out of 125)			84	
GII 2012 rank among GII 2011 economies (125)			79	
1	**Institutions**	**64.5**	**52**	
1.1	*Political environment*	*50.3*	*83*	
1.1.1	Political stability*	76.5	46	
1.1.2	Government effectiveness*	33.7	84	
1.1.3	Press freedom*	40.9	124	○
1.2	*Regulatory environment*	*68.0*	*65*	
1.2.1	Regulatory quality*	43.5	93	
1.2.2	Rule of law*	31.3	102	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	23	●
1.3	*Business environment*	*75.0*	*23*	●
1.3.1	Ease of starting a business*	71.9	40	
1.3.2	Ease of resolving insolvency*	69.0	44	
1.3.3	Ease of paying taxes*	84.1	23	●
2	**Human capital & research**	**31.2**	**85**	
2.1	*Education*	*51.6*	*69*	
2.1.1	Current expenditure on education, % GNI	4.4	57	
2.1.2	Public expenditure/pupil, % GDP/cap	11.6	101	
2.1.3	School life expectancy, years	15.3	29	●
2.1.4	PISA scales in reading, maths, & science	398.6	59	
2.1.5	Pupil-teacher ratio, secondary	8.9	15	●
2.2	*Tertiary education*	*29.5*	*78*	
2.2.1	Tertiary enrolment, % gross	40.8	56	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.6	59	
2.2.4	Gross tertiary outbound enrolment, %	2.3	41	
2.3	*Research & development (R&D)*	*12.5*	*118*	
2.3.1	Researchers, headcounts/mn pop.	637.3	68	
2.3.2	Gross expenditure on R&D, % GDP	0.2	79	
2.3.3	Quality of scientific research institutions†	28.0	116	○
3	**Infrastructure**	**37.3**	**58**	
3.1	*Information & communication technologies (ICT)*	*58.4*	*27*	●
3.1.1	ICT access*	46.1	63	
3.1.2	ICT use*	14.4	79	
3.1.3	Government's online service*	78.4	21	●
3.1.4	E-participation*	94.7	3	●
3.2	*General infrastructure*	*38.7*	*58*	
3.2.1	Electricity output, kWh/cap	4,859.2	47	
3.2.2	Electricity consumption, kWh/cap	4,505.6	43	
3.2.3	Quality of trade & transport infrastructure*	41.5	55	
3.2.4	Gross capital formation, % GDP	25.1	41	
3.3	*Ecological sustainability*	*14.9*	*123*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.0	115	○
3.3.2	Environmental performance*	32.9	121	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	71	
4	**Market sophistication**	**34.0**	**92**	
4.1	*Credit*	*17.2*	*102*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	39.3	82	
4.1.3	Microfinance gross loans, % GDP	0.1	69	
4.2	*Investment*	*20.8*	*82*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	42.5	50	
4.2.3	Total value of stocks traded, % GDP	1.6	66	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*63.9*	*67*	
4.3.1	Applied tariff rate, weighted mean, %	3.4	56	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	40	
4.3.3	Imports of goods & services, % GDP	29.2	108	
4.3.4	Exports of goods & services, % GDP	44.0	54	
4.3.5	Intensity of local competition†	50.9	113	
5	**Business sophistication**	**40.2**	**62**	
5.1	*Knowledge workers*	*45.0*	*69*	
5.1.1	Knowledge-intensive employment, %	28.3	46	
5.1.2	Firms offering formal training, % firms	40.9	43	
5.1.3	R&D performed by business, %	32.7	51	
5.1.4	R&D financed by business, %	13.5	70	
5.1.5	GMAT mean score	476.8	88	
5.1.6	GMAT test takers/mn pop. 20–34	73.2	59	
5.2	*Innovation linkages*	*33.4*	*82*	
5.2.1	University/industry research collaboration†	32.3	113	
5.2.2	State of cluster development†	41.5	67	
5.2.3	R&D financed by abroad, %	1.0	83	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	26.6	54	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*42.3*	*39*	
5.3.1	Royalty & license fees payments/th GDP	0.6	85	
5.3.2	High-tech imports less re-imports, %	8.2	68	
5.3.3	Computer & comm. service imports, %	63.4	6	●
5.3.4	FDI net inflows, % GDP	6.7	29	●
6	**Knowledge & technology outputs**	**23.8**	**85**	
6.1	*Knowledge creation*	*13.1*	*103*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	105	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	74	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.5	37	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.5	130	○
6.2	*Knowledge impact*	*37.1*	*54*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.1	30	
6.2.2	New businesses/th pop. 15–64	2.6	38	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.4	77	
6.3	*Knowledge diffusion*	*21.3*	*97*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	104	○
6.3.2	High-tech exports less re-exports, %	4.2	46	
6.3.3	Computer & comm. service exports, %	13.7	108	
6.3.4	FDI net outflows, % GDP	5.2	11	●
7	**Creative outputs**	**21.0**	**119**	
7.1	*Creative intangibles*	*29.2*	*114*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	31.0	47	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.2	46	
7.1.3	ICT & business model creation†	47.1	83	
7.1.4	ICT & organizational model creation†	51.3	57	
7.2	*Creative goods & services*	*8.4*	*109*	
7.2.1	Recreation & culture consumption, %	2.4	76	
7.2.2	National feature films/mn pop. 15–69	1.1	66	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	28.5	99	
7.2.4	Creative goods exports, %	0.0	125	○
7.2.5	Creative services exports, %	3.5	48	
7.3	*Online creativity*	*17.3*	*85*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.2	93	
7.3.2	Country-code TLDs/th pop. 15–69	21.7	70	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,060.6	58	
7.3.4	Video uploads on YouTube/pop. 15–69	40.8	96	

Kenya

Key indicators

Population (millions)	40.9
GDP per capita, PPP$	1,750.8
GDP (US$ billions)	36.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**28.9**	**96**	
Innovation Output Sub-Index		21.3	114	
Innovation Input Sub-Index		36.6	89	
Innovation Efficiency Index		0.6	129	○
Global Innovation Index 2011 (out of 125)			89	
GII 2012 rank among GII 2011 economies (125)			91	
1	**Institutions**	**43.7**	**103**	
1.1	*Political environment*	*45.5*	*101*	
1.1.1	Political stability*	36.3	122	
1.1.2	Government effectiveness*	26.9	99	
1.1.3	Press freedom*	73.3	67	
1.2	*Regulatory environment*	*59.7*	*92*	
1.2.1	Regulatory quality*	48.5	80	
1.2.2	Rule of law*	20.9	123	○
1.2.3	Cost of redundancy dismissal, salary weeks	15.8	71	
1.3	*Business environment*	*25.8*	*118*	
1.3.1	Ease of starting a business*	25.8	104	
1.3.2	Ease of resolving insolvency*	42.4	81	
1.3.3	Ease of paying taxes*	9.3	127	○
2	**Human capital & research**	**33.0**	**72**	
2.1	*Education*	*44.2*	*96*	
2.1.1	Current expenditure on education, % GNI	5.9	21	●
2.1.2	Public expenditure/pupil, % GDP/cap	23.7	36	
2.1.3	School life expectancy, years	11.1	103	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.7	120	○
2.2	*Tertiary education*	*34.7*	*61*	
2.2.1	Tertiary enrolment, % gross	4.0	125	○
2.2.2	Graduates in science & engineering, %	30.2	10	●
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.3	114	
2.3	*Research & development (R&D)*	*20.0*	*75*	
2.3.1	Researchers, headcounts/mn pop.	93.6	101	
2.3.2	Gross expenditure on R&D, % GDP	0.4	63	
2.3.3	Quality of scientific research institutions†	50.1	50	
3	**Infrastructure**	**21.6**	**120**	
3.1	*Information & communication technologies (ICT)*	*20.1*	*104*	
3.1.1	ICT access*	21.7	115	
3.1.2	ICT use*	10.5	88	
3.1.3	Government's online service*	43.1	86	
3.1.4	E-participation*	5.3	110	
3.2	*General infrastructure*	*24.3*	*126*	○
3.2.1	Electricity output, kWh/cap	178.1	116	○
3.2.2	Electricity consumption, kWh/cap	146.2	116	○
3.2.3	Quality of trade & transport infrastructure*	28.5	106	
3.2.4	Gross capital formation, % GDP	21.3	82	
3.3	*Ecological sustainability*	*20.2*	*112*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.4	109	○
3.3.2	Environmental performance*	49.3	80	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	94	
4	**Market sophistication**	**45.6**	**41**	
4.1	*Credit*	*47.7*	*30*	●
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	33.8	87	
4.1.3	Microfinance gross loans, % GDP	3.8	14	●
4.2	*Investment*	*32.1*	*50*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	46.0	47	
4.2.3	Total value of stocks traded, % GDP	3.5	61	
4.2.4	Venture capital deals/tr PPP$ GDP	69.8	19	●
4.3	*Trade & competition*	*56.9*	*105*	
4.3.1	Applied tariff rate, weighted mean, %	9.2	120	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	67	
4.3.3	Imports of goods & services, % GDP	38.9	73	
4.3.4	Exports of goods & services, % GDP	26.0	103	
4.3.5	Intensity of local competition†	65.4	64	
5	**Business sophistication**	**39.1**	**66**	
5.1	*Knowledge workers*	*38.3*	*95*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	48.5	32	
5.1.3	R&D performed by business, %	11.7	73	
5.1.4	R&D financed by business, %	16.8	66	
5.1.5	GMAT mean score	427.3	115	
5.1.6	GMAT test takers/mn pop. 20–34	61.8	71	
5.2	*Innovation linkages*	*47.1*	*29*	●
5.2.1	University/industry research collaboration†	47.9	46	
5.2.2	State of cluster development†	45.6	51	
5.2.3	R&D financed by abroad, %	17.6	15	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	30.7	49	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*32.0*	*87*	
5.3.1	Royalty & license fees payments/th GDP	0.6	87	
5.3.2	High-tech imports less re-imports, %	13.8	27	●
5.3.3	Computer & comm. service imports, %	26.4	78	
5.3.4	FDI net inflows, % GDP	0.6	120	
6	**Knowledge & technology outputs**	**20.8**	**102**	
6.1	*Knowledge creation*	*18.1*	*85*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.2	66	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	62	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.3	45	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.7	60	
6.2	*Knowledge impact*	*20.1*	*120*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.4	86	
6.2.2	New businesses/th pop. 15–64	0.9	66	
6.2.3	Computer software spending, % GDP	0.3	28	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	134	○
6.3	*Knowledge diffusion*	*24.0*	*80*	
6.3.1	Royalty & license fees receipts/th GDP	1.7	24	●
6.3.2	High-tech exports less re-exports, %	2.3	56	
6.3.3	Computer & comm. service exports, %	18.3	95	
6.3.4	FDI net outflows, % GDP	0.0	98	
7	**Creative outputs**	**21.9**	**116**	
7.1	*Creative intangibles*	*33.2*	*102*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	27.5	55	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.1	50	
7.1.3	ICT & business model creation†	58.2	45	
7.1.4	ICT & organizational model creation†	58.9	29	●
7.2	*Creative goods & services*	*12.9*	*87*	
7.2.1	Recreation & culture consumption, %	4.2	59	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	14.1	110	
7.2.4	Creative goods exports, %	1.0	71	
7.2.5	Creative services exports, %	0.1	104	○
7.3	*Online creativity*	*8.2*	*119*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.9	102	
7.3.2	Country-code TLDs/th pop. 15–69	8.6	100	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	25.8	114	○
7.3.4	Video uploads on YouTube/pop. 15–69	23.1	118	

Korea (Republic of)

Key indicators

Population (millions)	49.0
GDP per capita, PPP$	31,753.5
GDP (US$ billions)	1,163.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**53.9**	**21**	
Innovation Output Sub-Index		45.9	24	
Innovation Input Sub-Index		61.8	16	
Innovation Efficiency Index		0.7	69	
Global Innovation Index 2011 (out of 125)			16	
GII 2012 rank among GII 2011 economies (125)			20	
1	**Institutions**	**73.8**	**27**	
1.1	*Political environment*	*74.9*	*36*	
1.1.1	Political stability*	67.7	59	
1.1.2	Government effectiveness*	72.2	25	
1.1.3	Press freedom*	84.7	40	
1.2	*Regulatory environment*	*68.0*	*66*	
1.2.1	Regulatory quality*	74.9	34	
1.2.2	Rule of law*	74.0	29	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	117	○
1.3	*Business environment*	*78.6*	*19*	
1.3.1	Ease of starting a business*	66.1	47	
1.3.2	Ease of resolving insolvency*	92.0	12	
1.3.3	Ease of paying taxes*	77.6	32	
2	**Human capital & research**	**59.0**	**8**	
2.1	*Education*	*58.2*	*45*	
2.1.1	Current expenditure on education, % GNI	3.9	79	
2.1.2	Public expenditure/pupil, % GDP/cap	20.5	54	
2.1.3	School life expectancy, years	17.0	6	●
2.1.4	PISA scales in reading, maths, & science	541.2	5	
2.1.5	Pupil-teacher ratio, secondary	18.0	86	○
2.2	*Tertiary education*	*55.9*	*11*	
2.2.1	Tertiary enrolment, % gross	103.9	1	●
2.2.2	Graduates in science & engineering, %	31.5	8	
2.2.3	Tertiary inbound mobility, %	1.6	62	
2.2.4	Gross tertiary outbound enrolment, %	1.6	58	
2.3	*Research & development (R&D)*	*63.0*	*10*	
2.3.1	Researchers, headcounts/mn pop.	6,285.9	9	
2.3.2	Gross expenditure on R&D, % GDP	3.4	5	●
2.3.3	Quality of scientific research institutions†	63.6	24	
3	**Infrastructure**	**64.2**	**3**	●
3.1	*Information & communication technologies (ICT)*	*90.2*	*1*	●
3.1.1	ICT access*	82.1	10	
3.1.2	ICT use*	78.5	1	●
3.1.3	Government's online service*	100.0	1	●
3.1.4	E-participation*	100.0	1	●
3.2	*General infrastructure*	*57.6*	*13*	
3.2.1	Electricity output, kWh/cap	9,780.7	13	
3.2.2	Electricity consumption, kWh/cap	9,509.6	14	
3.2.3	Quality of trade & transport infrastructure*	65.5	22	
3.2.4	Gross capital formation, % GDP	29.2	21	
3.3	*Ecological sustainability*	*44.7*	*27*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.9	75	○
3.3.2	Environmental performance*	57.2	42	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.6	16	
4	**Market sophistication**	**60.5**	**16**	
4.1	*Credit*	*60.7*	*16*	
4.1.1	Ease of getting credit*	87.6	8	
4.1.2	Domestic credit to private sector, % GDP	100.8	31	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*63.0*	*10*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	107.4	15	
4.2.3	Total value of stocks traded, % GDP	160.3	1	●
4.2.4	Venture capital deals/tr PPP$ GDP	45.6	28	
4.3	*Trade & competition*	*57.9*	*95*	○
4.3.1	Applied tariff rate, weighted mean, %	8.7	115	○
4.3.2	Non-agricultural mkt access weighted tariff, %	2.8	126	○
4.3.3	Imports of goods & services, % GDP	49.6	50	
4.3.4	Exports of goods & services, % GDP	52.4	41	
4.3.5	Intensity of local competition†	77.4	14	
5	**Business sophistication**	**51.7**	**25**	
5.1	*Knowledge workers*	*64.9*	*31*	
5.1.1	Knowledge-intensive employment, %	22.4	58	
5.1.2	Firms offering formal training, % firms	39.5	44	
5.1.3	R&D performed by business, %	75.4	4	●
5.1.4	R&D financed by business, %	72.9	5	
5.1.5	GMAT mean score	583.1	10	
5.1.6	GMAT test takers/mn pop. 20–34	505.6	10	
5.2	*Innovation linkages*	*32.2*	*88*	○
5.2.1	University/industry research collaboration†	61.0	24	
5.2.2	State of cluster development†	54.8	26	
5.2.3	R&D financed by abroad, %	0.3	90	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	36.9	38	
5.2.5	PCT patent filings with foreign inventor, %	6.5	99	○
5.3	*Knowledge absorption*	*57.9*	*7*	
5.3.1	Royalty & license fees payments/th GDP	8.8	7	
5.3.2	High-tech imports less re-imports, %	15.6	18	
5.3.3	Computer & comm. service imports, %	49.8	15	
5.3.4	FDI net inflows, % GDP	0.0	131	○
6	**Knowledge & technology outputs**	**57.5**	**9**	
6.1	*Knowledge creation*	*81.5*	*3*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	89.9	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	6.7	5	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	9.0	6	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.3	18	
6.2	*Knowledge impact*	*40.0*	*43*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.9	20	
6.2.2	New businesses/th pop. 15–64	1.7	49	
6.2.3	Computer software spending, % GDP	0.2	35	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	16.9	31	
6.3	*Knowledge diffusion*	*50.9*	*20*	
6.3.1	Royalty & license fees receipts/th GDP	3.1	18	
6.3.2	High-tech exports less re-exports, %	24.0	6	
6.3.3	Computer & comm. service exports, %	43.2	35	
6.3.4	FDI net outflows, % GDP	1.9	24	
7	**Creative outputs**	**34.3**	**59**	
7.1	*Creative intangibles*	*38.8*	*78*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	32.9	44	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.2	44	○
7.1.3	ICT & business model creation†	68.9	19	
7.1.4	ICT & organizational model creation†	66.6	14	
7.2	*Creative goods & services*	*29.8*	*46*	
7.2.1	Recreation & culture consumption, %	7.8	25	
7.2.2	National feature films/mn pop. 15–69	4.3	28	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	351.4	9	
7.2.4	Creative goods exports, %	0.9	80	○
7.2.5	Creative services exports, %	2.7	54	
7.3	*Online creativity*	*29.8*	*48*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	13.0	42	
7.3.2	Country-code TLDs/th pop. 15–69	48.0	40	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,826.0	52	
7.3.4	Video uploads on YouTube/pop. 15–69	49.1	80	

Kuwait

Key indicators

Population (millions)	3.7
GDP per capita, PPP$	40,740.2
GDP (US$ billions)	171.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**37.2**	**55**	
Innovation Output Sub-Index		32.4	54	
Innovation Input Sub-Index		42.0	61	
Innovation Efficiency Index		0.8	54	
Global Innovation Index 2011 (out of 125)			52	
GII 2012 rank among GII 2011 economies (125)			53	
1	**Institutions**	**60.2**	**60**	
1.1	*Political environment*	*64.5*	*53*	
1.1.1	Political stability*	75.6	47	
1.1.2	Government effectiveness*	43.6	61	
1.1.3	Press freedom*	74.3	61	
1.2	*Regulatory environment*	*59.7*	*93*	
1.2.1	Regulatory quality*	56.2	68	
1.2.2	Rule of law*	62.2	44	
1.2.3	Cost of redundancy dismissal, salary weeks	28.1	122	○
1.3	*Business environment*	*56.3*	*58*	
1.3.1	Ease of starting a business*	17.2	116	
1.3.2	Ease of resolving insolvency*	59.7	57	
1.3.3	Ease of paying taxes*	92.0	12	●
2	**Human capital & research**	**37.6**	**61**	
2.1	*Education*	*55.4*	*54*	
2.1.1	Current expenditure on education, % GNI	3.2	97	
2.1.2	Public expenditure/pupil, % GDP/cap	22.0	45	
2.1.3	School life expectancy, years	14.2	48	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	8.0	10	●
2.2	*Tertiary education*	*42.5*	*44*	
2.2.1	Tertiary enrolment, % gross	21.9	85	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	5.8	12	●
2.3	*Research & development (R&D)*	*15.0*	*105*	
2.3.1	Researchers, headcounts/mn pop.	151.9	88	
2.3.2	Gross expenditure on R&D, % GDP	0.1	98	
2.3.3	Quality of scientific research institutions†	41.9	72	
3	**Infrastructure**	**34.8**	**65**	
3.1	*Information & communication technologies (ICT)*	*33.6*	*70*	
3.1.1	ICT access*	45.0	66	
3.1.2	ICT use*	12.9	83	
3.1.3	Government's online service*	58.2	47	
3.1.4	E-participation*	18.4	71	
3.2	*General infrastructure*	*55.0*	*15*	
3.2.1	Electricity output, kWh/cap	15,270.0	6	●
3.2.2	Electricity consumption, kWh/cap	16,673.0	5	●
3.2.3	Quality of trade & transport infrastructure*	58.3	30	
3.2.4	Gross capital formation, % GDP	13.9	133	○
3.3	*Ecological sustainability*	*15.9*	*120*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.4	108	○
3.3.2	Environmental performance*	35.5	118	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	87	
4	**Market sophistication**	**43.2**	**51**	
4.1	*Credit*	*27.1*	*80*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	82.4	41	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*36.9*	*38*	
4.2.1	Ease of protecting investors*	76.2	27	
4.2.2	Market capitalization, % GDP	87.6	20	
4.2.3	Total value of stocks traded, % GDP	63.9	16	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*65.5*	*62*	
4.3.1	Applied tariff rate, weighted mean, %	4.1	71	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	66	
4.3.3	Imports of goods & services, % GDP	28.0	113	
4.3.4	Exports of goods & services, % GDP	56.4	30	
4.3.5	Intensity of local competition†	61.6	76	
5	**Business sophistication**	**34.0**	**95**	
5.1	*Knowledge workers*	*34.4*	*107*	
5.1.1	Knowledge-intensive employment, %	18.7	74	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	2.3	83	○
5.1.5	GMAT mean score	391.4	134	○
5.1.6	GMAT test takers/mn pop. 20–34	547.7	9	●
5.2	*Innovation linkages*	*34.5*	*72*	
5.2.1	University/industry research collaboration†	36.0	102	
5.2.2	State of cluster development†	38.9	80	
5.2.3	R&D financed by abroad, %	1.2	80	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	36.8	39	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*33.1*	*77*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	11.2	122	○
5.3.4	FDI net inflows, % GDP	1.0	109	
6	**Knowledge & technology outputs**	**32.0**	**53**	
6.1	*Knowledge creation*	*5.1*	*122*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	92	
6.2	*Knowledge impact*	*18.4*	*125*	○
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.5	111	○
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	55	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.1	94	
6.3	*Knowledge diffusion*	*72.5*	*3*	●
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	64.1	9	●
6.3.4	FDI net outflows, % GDP	7.9	6	●
7	**Creative outputs**	**32.8**	**66**	
7.1	*Creative intangibles*	*39.5*	*72*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	41.7	110	
7.1.4	ICT & organizational model creation†	37.3	105	
7.2	*Creative goods & services*	*28.6*	*51*	
7.2.1	Recreation & culture consumption, %	3.8	62	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	505.7	4	●
7.2.4	Creative goods exports, %	0.2	103	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*23.7*	*59*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.1	57	
7.3.2	Country-code TLDs/th pop. 15–69	13.2	86	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	2,049.2	49	
7.3.4	Video uploads on YouTube/pop. 15–69	65.3	36	

Kyrgyzstan

Key indicators

Population (millions)	5.5
GDP per capita, PPP$	2,380.8
GDP (US$ billions)	5.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.4**	**109**	
Innovation Output Sub-Index		17.3	131	
Innovation Input Sub-Index		35.5	90	
Innovation Efficiency Index		0.5	134	○
Global Innovation Index 2011 (out of 125)			85	
GII 2012 rank among GII 2011 economies (125)			102	
1	**Institutions**	**46.2**	**100**	
1.1	*Political environment*	*44.3*	*105*	
1.1.1	Political stability*	42.2	117	
1.1.2	Government effectiveness*	24.4	108	
1.1.3	Press freedom*	66.2	85	
1.2	*Regulatory environment*	*55.5*	*103*	
1.2.1	Regulatory quality*	45.4	89	
1.2.2	Rule of law*	13.5	137	○
1.2.3	Cost of redundancy dismissal, salary weeks	17.3	80	
1.3	*Business environment*	*38.8*	*97*	
1.3.1	Ease of starting a business*	91.3	13	●
1.3.2	Ease of resolving insolvency*	10.7	125	
1.3.3	Ease of paying taxes*	14.3	120	
2	**Human capital & research**	**30.5**	**86**	
2.1	*Education*	*50.1*	*72*	
2.1.1	Current expenditure on education, % GNI	6.0	20	●
2.1.2	Public expenditure/pupil, % GDP/cap	22.9	43	
2.1.3	School life expectancy, years	12.6	78	
2.1.4	PISA scales in reading, maths, & science	324.9	70	○
2.1.5	Pupil-teacher ratio, secondary	15.2	70	
2.2	*Tertiary education*	*33.8*	*65*	
2.2.1	Tertiary enrolment, % gross	48.8	49	
2.2.2	Graduates in science & engineering, %	15.2	76	
2.2.3	Tertiary inbound mobility, %	6.9	22	
2.2.4	Gross tertiary outbound enrolment, %	0.7	85	
2.3	*Research & development (R&D)*	*7.6*	*131*	
2.3.1	Researchers, headcounts/mn pop.	434.5	74	
2.3.2	Gross expenditure on R&D, % GDP	0.2	91	
2.3.3	Quality of scientific research institutions†	16.5	131	○
3	**Infrastructure**	**26.3**	**102**	
3.1	*Information & communication technologies (ICT)*	*25.9*	*91*	
3.1.1	ICT access*	23.8	107	
3.1.2	ICT use*	8.2	94	
3.1.3	Government's online service*	42.5	88	
3.1.4	E-participation*	29.0	52	
3.2	*General infrastructure*	*31.4*	*96*	
3.2.1	Electricity output, kWh/cap	2,048.7	76	
3.2.2	Electricity consumption, kWh/cap	1,402.0	84	
3.2.3	Quality of trade & transport infrastructure*	27.3	111	
3.2.4	Gross capital formation, % GDP	28.4	23	●
3.3	*Ecological sustainability*	*21.7*	*103*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.7	92	
3.3.2	Environmental performance*	46.3	96	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	114	
4	**Market sophistication**	**47.8**	**34**	
4.1	*Credit*	*48.5*	*28*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	15.1	130	
4.1.3	Microfinance gross loans, % GDP	4.6	9	●
4.2	*Investment*	*22.8*	*75*	
4.2.1	Ease of protecting investors*	90.6	12	●
4.2.2	Market capitalization, % GDP	1.7	102	○
4.2.3	Total value of stocks traded, % GDP	0.2	93	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*72.2*	*19*	●
4.3.1	Applied tariff rate, weighted mean, %	2.3	46	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	52	
4.3.3	Imports of goods & services, % GDP	89.2	6	●
4.3.4	Exports of goods & services, % GDP	57.7	27	
4.3.5	Intensity of local competition†	48.6	122	
5	**Business sophistication**	**26.9**	**131**	
5.1	*Knowledge workers*	*40.1*	*90*	
5.1.1	Knowledge-intensive employment, %	18.3	77	
5.1.2	Firms offering formal training, % firms	29.7	66	
5.1.3	R&D performed by business, %	23.3	61	
5.1.4	R&D financed by business, %	36.4	44	
5.1.5	GMAT mean score	532.4	50	
5.1.6	GMAT test takers/mn pop. 20–34	41.4	91	
5.2	*Innovation linkages*	*15.0*	*138*	○
5.2.1	University/industry research collaboration†	16.1	132	○
5.2.2	State of cluster development†	21.4	129	○
5.2.3	R&D financed by abroad, %	0.7	85	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	45.6	30	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*25.6*	*124*	
5.3.1	Royalty & license fees payments/th GDP	0.6	86	
5.3.2	High-tech imports less re-imports, %	4.7	110	
5.3.3	Computer & comm. service imports, %	19.2	103	
5.3.4	FDI net inflows, % GDP	9.5	14	●
6	**Knowledge & technology outputs**	**17.6**	**119**	
6.1	*Knowledge creation*	*25.6*	*62*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.5	16	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	79	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.0	32	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.3	102	
6.2	*Knowledge impact*	*4.9*	*139*	○
6.2.1	Growth rate of PPP$ GDP/worker, %	-5.5	117	○
6.2.2	New businesses/th pop. 15–64	1.3	55	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	123	
6.3	*Knowledge diffusion*	*22.3*	*89*	
6.3.1	Royalty & license fees receipts/th GDP	0.2	55	
6.3.2	High-tech exports less re-exports, %	0.2	99	
6.3.3	Computer & comm. service exports, %	28.4	64	
6.3.4	FDI net outflows, % GDP	0.0	102	
7	**Creative outputs**	**17.0**	**130**	
7.1	*Creative intangibles*	*19.0*	*132*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	26.3	56	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.1	53	
7.1.3	ICT & business model creation†	37.1	120	
7.1.4	ICT & organizational model creation†	24.6	128	○
7.2	*Creative goods & services*	*20.6*	*72*	
7.2.1	Recreation & culture consumption, %	0.8	95	○
7.2.2	National feature films/mn pop. 15–69	0.3	90	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	18.6	104	
7.2.4	Creative goods exports, %	0.2	111	
7.2.5	Creative services exports, %	21.7	3	●
7.3	*Online creativity*	*9.4*	*112*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	111	
7.3.2	Country-code TLDs/th pop. 15–69	12.9	88	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	117.0	103	
7.3.4	Video uploads on YouTube/pop. 15–69	23.8	116	

Lao People's Democratic Republic

Key indicators

Population (millions)	6.6
GDP per capita, PPP$	2,659.2
GDP (US$ billions)	7.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**20.2**	**138**	○
Innovation Output Sub-Index		13.1	139	○
Innovation Input Sub-Index		27.3	129	
Innovation Efficiency Index		0.5	135	
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**29.6**	**138**	○
1.1	*Political environment*	*36.4*	*126*	
1.1.1	Political stability*	59.9	84	
1.1.2	Government effectiveness*	16.2	130	
1.1.3	Press freedom*	33.1	131	
1.2	*Regulatory environment*	*23.6*	*137*	○
1.2.1	Regulatory quality*	25.6	130	
1.2.2	Rule of law*	24.0	118	
1.2.3	Cost of redundancy dismissal, salary weeks	47.2	133	○
1.3	*Business environment*	*28.7*	*112*	
1.3.1	Ease of starting a business*	50.3	70	●
1.3.2	Ease of resolving insolvency*	0.0	139	○
1.3.3	Ease of paying taxes*	35.9	90	
2	**Human capital & research**	**12.6**	**140**	○
2.1	*Education*	*24.2*	*134*	
2.1.1	Current expenditure on education, % GNI	1.1	136	○
2.1.2	Public expenditure/pupil, % GDP/cap	9.1	111	
2.1.3	School life expectancy, years	9.6	119	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	22.8	104	
2.2	*Tertiary education*	*13.5*	*118*	
2.2.1	Tertiary enrolment, % gross	13.4	97	
2.2.2	Graduates in science & engineering, %	12.8	87	
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	93	
2.3	*Research & development (R&D)*	*0.3*	*138*	○
2.3.1	Researchers, headcounts/mn pop.	38.0	116	○
2.3.2	Gross expenditure on R&D, % GDP	0.0	111	○
2.3.3	Quality of scientific research institutions†	n/a	n/a	
3	**Infrastructure**	**17.4**	**133**	
3.1	*Information & communication technologies (ICT)*	*11.6*	*134*	
3.1.1	ICT access*	22.1	114	
3.1.2	ICT use*	2.6	123	
3.1.3	Government's online service*	21.6	130	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*38.9*	*57*	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	23.8	125	
3.2.4	Gross capital formation, % GDP	26.1	32	●
3.3	*Ecological sustainability*	*1.8*	*131*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	100	
4	**Market sophistication**	**30.2**	**109**	
4.1	*Credit*	*3.8*	*133*	
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	20.4	117	
4.1.3	Microfinance gross loans, % GDP	0.3	52	
4.2	*Investment*	*35.3*	*44*	●
4.2.1	Ease of protecting investors*	0.0	140	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	57.4	23	●
4.3	*Trade & competition*	*51.4*	*119*	
4.3.1	Applied tariff rate, weighted mean, %	13.2	132	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	47	●
4.3.3	Imports of goods & services, % GDP	40.9	71	●
4.3.4	Exports of goods & services, % GDP	36.3	74	
4.3.5	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**46.8**	**39**	●
5.1	*Knowledge workers*	*23.1*	*129*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	11.1	100	
5.1.3	R&D performed by business, %	36.9	47	
5.1.4	R&D financed by business, %	36.0	45	●
5.1.5	GMAT mean score	404.0	128	
5.1.6	GMAT test takers/mn pop. 20–34	3.1	137	○
5.2	*Innovation linkages*	*76.7*	*1*	●
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	54.0	1	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	11.5	84	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*40.4*	*52*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	17.7	107	
5.3.4	FDI net inflows, % GDP	4.8	37	●
6	**Knowledge & technology outputs**	**19.9**	**107**	
6.1	*Knowledge creation*	*31.3*	*48*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	52	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.8	119	
6.2	*Knowledge impact*	*9.5*	*133*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	124	
6.3	*Knowledge diffusion*	*18.8*	*107*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	16.1	102	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**6.3**	**139**	○
7.1	*Creative intangibles*	*n/a*	*n/a*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	*Creative goods & services*	*1.7*	*134*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.5	82	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	2.6	130	
7.2.4	Creative goods exports, %	n/a	n/a	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*10.9*	*107*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.7	104	
7.3.2	Country-code TLDs/th pop. 15–69	16.0	81	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	42.4	108	
7.3.4	Video uploads on YouTube/pop. 15–69	26.7	113	

Latvia

Key indicators

Population (millions) 2.2
GDP per capita, PPP$ 15,448.1
GDP (US$ billions) 27.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**47.0**	**30**	
Innovation Output Sub-Index		42.6	27	
Innovation Input Sub-Index		51.4	36	
Innovation Efficiency Index		0.8	33	
Global Innovation Index 2011 (out of 125)			36	
GII 2012 rank among GII 2011 economies (125)			29	
1	**Institutions**	**72.8**	**30**	
1.1	*Political environment*	*73.1*	*39*	
1.1.1	Political stability*	76.8	44	
1.1.2	Government effectiveness*	59.3	40	
1.1.3	Press freedom*	83.1	44	
1.2	*Regulatory environment*	*84.8*	*24*	
1.2.1	Regulatory quality*	76.5	31	
1.2.2	Rule of law*	69.4	34	
1.2.3	Cost of redundancy dismissal, salary weeks	9.7	33	
1.3	*Business environment*	*60.6*	*41*	
1.3.1	Ease of starting a business*	71.2	41	
1.3.2	Ease of resolving insolvency*	45.3	77	
1.3.3	Ease of paying taxes*	65.4	49	
2	**Human capital & research**	**42.0**	**50**	
2.1	*Education*	*65.3*	*16*	●
2.1.1	Current expenditure on education, % GNI	5.6	27	
2.1.2	Public expenditure/pupil, % GDP/cap	27.0	16	●
2.1.3	School life expectancy, years	14.8	37	
2.1.4	PISA scales in reading, maths, & science	486.6	30	
2.1.5	Pupil-teacher ratio, secondary	9.0	18	●
2.2	*Tertiary education*	*32.7*	*70*	
2.2.1	Tertiary enrolment, % gross	60.1	33	
2.2.2	Graduates in science & engineering, %	14.3	82	○
2.2.3	Tertiary inbound mobility, %	1.6	61	
2.2.4	Gross tertiary outbound enrolment, %	2.3	40	
2.3	*Research & development (R&D)*	*27.9*	*49*	
2.3.1	Researchers, headcounts/mn pop.	3,278.9	30	
2.3.2	Gross expenditure on R&D, % GDP	0.5	60	
2.3.3	Quality of scientific research institutions†	48.9	53	
3	**Infrastructure**	**44.7**	**38**	
3.1	*Information & communication technologies (ICT)*	*45.7*	*48*	
3.1.1	ICT access*	60.3	45	
3.1.2	ICT use*	42.6	34	
3.1.3	Government's online service*	58.8	45	
3.1.4	E-participation*	21.1	63	
3.2	*General infrastructure*	*34.2*	*83*	
3.2.1	Electricity output, kWh/cap	2,463.1	67	
3.2.2	Electricity consumption, kWh/cap	2,874.5	58	
3.2.3	Quality of trade & transport infrastructure*	47.0	48	
3.2.4	Gross capital formation, % GDP	20.7	85	
3.3	*Ecological sustainability*	*54.3*	*14*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.4	47	
3.3.2	Environmental performance*	70.4	2	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.3	13	●
4	**Market sophistication**	**55.1**	**22**	
4.1	*Credit*	*66.0*	*10*	●
4.1.1	Ease of getting credit*	97.1	4	●
4.1.2	Domestic credit to private sector, % GDP	103.7	29	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*32.7*	*48*	
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	5.2	98	○
4.2.3	Total value of stocks traded, % GDP	0.1	97	○
4.2.4	Venture capital deals/tr PPP$ GDP	57.8	22	
4.3	*Trade & competition*	*66.5*	*55*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	54.2	42	
4.3.4	Exports of goods & services, % GDP	53.4	38	
4.3.5	Intensity of local competition†	61.5	77	
5	**Business sophistication**	**42.2**	**53**	
5.1	*Knowledge workers*	*62.1*	*36*	
5.1.1	Knowledge-intensive employment, %	40.2	19	
5.1.2	Firms offering formal training, % firms	43.4	41	
5.1.3	R&D performed by business, %	36.4	48	
5.1.4	R&D financed by business, %	36.9	43	
5.1.5	GMAT mean score	581.4	11	●
5.1.6	GMAT test takers/mn pop. 20–34	153.0	39	
5.2	*Innovation linkages*	*33.3*	*83*	
5.2.1	University/industry research collaboration†	46.2	54	
5.2.2	State of cluster development†	36.7	89	○
5.2.3	R&D financed by abroad, %	15.4	18	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	34.7	42	
5.2.5	PCT patent filings with foreign inventor, %	20.0	77	○
5.3	*Knowledge absorption*	*31.3*	*91*	
5.3.1	Royalty & license fees payments/th GDP	1.4	61	
5.3.2	High-tech imports less re-imports, %	7.2	81	○
5.3.3	Computer & comm. service imports, %	34.3	61	
5.3.4	FDI net inflows, % GDP	1.5	92	○
6	**Knowledge & technology outputs**	**37.8**	**37**	
6.1	*Knowledge creation*	*35.8*	*38*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.5	30	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.5	39	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.0	57	
6.2	*Knowledge impact*	*53.1*	*15*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	4.9	21	
6.2.2	New businesses/th pop. 15–64	4.6	19	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	24.8	20	●
6.3	*Knowledge diffusion*	*24.5*	*75*	
6.3.1	Royalty & license fees receipts/th GDP	0.5	45	
6.3.2	High-tech exports less re-exports, %	5.2	41	
6.3.3	Computer & comm. service exports, %	22.9	82	
6.3.4	FDI net outflows, % GDP	0.1	86	○
7	**Creative outputs**	**47.4**	**21**	
7.1	*Creative intangibles*	*51.5*	*23*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	65.0	26	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	4.0	3	●
7.1.3	ICT & business model creation†	50.7	72	
7.1.4	ICT & organizational model creation†	40.1	99	○
7.2	*Creative goods & services*	*38.3*	*24*	
7.2.1	Recreation & culture consumption, %	8.1	23	
7.2.2	National feature films/mn pop. 15–69	7.2	13	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	131.7	46	
7.2.4	Creative goods exports, %	2.7	31	
7.2.5	Creative services exports, %	7.3	27	
7.3	*Online creativity*	*48.1*	*27*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	20.3	35	
7.3.2	Country-code TLDs/th pop. 15–69	56.8	25	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,238.2	21	
7.3.4	Video uploads on YouTube/pop. 15–69	78.3	7	●

Lebanon

Key indicators

Population (millions) 4.0
GDP per capita, PPP$ 15,597.0
GDP (US$ billions) 41.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**36.2**	**61**	
Innovation Output Sub-Index		30.6	63	
Innovation Input Sub-Index		41.8	62	
Innovation Efficiency Index		0.7	73	
Global Innovation Index 2011 (out of 125)			49	
GII 2012 rank among GII 2011 economies (125)			59	
1	**Institutions**	**53.9**	**75**	
1.1	*Political environment*	*44.1*	*106*	
1.1.1	Political stability*	28.4	131	○
1.1.2	Government effectiveness*	31.9	86	
1.1.3	Press freedom*	72.0	72	
1.2	*Regulatory environment*	*70.1*	*56*	
1.2.1	Regulatory quality*	52.7	72	
1.2.2	Rule of law*	30.2	104	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	23	
1.3	*Business environment*	*47.4*	*73*	
1.3.1	Ease of starting a business*	39.5	85	
1.3.2	Ease of resolving insolvency*	19.4	113	
1.3.3	Ease of paying taxes*	83.4	24	
2	**Human capital & research**	**39.4**	**57**	
2.1	*Education*	*40.8*	*104*	
2.1.1	Current expenditure on education, % GNI	1.6	132	○
2.1.2	Public expenditure/pupil, % GDP/cap	6.2	116	○
2.1.3	School life expectancy, years	13.9	51	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	8.9	16	●
2.2	*Tertiary education*	*53.9*	*15*	●
2.2.1	Tertiary enrolment, % gross	54.0	40	
2.2.2	Graduates in science & engineering, %	25.0	25	
2.2.3	Tertiary inbound mobility, %	15.0	11	●
2.2.4	Gross tertiary outbound enrolment, %	3.4	27	
2.3	*Research & development (R&D)*	*23.6*	*62*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	23.6	121	○
3	**Infrastructure**	**33.5**	**72**	
3.1	*Information & communication technologies (ICT)*	*32.8*	*72*	
3.1.1	ICT access*	38.9	79	
3.1.2	ICT use*	12.9	82	
3.1.3	Government's online service*	47.7	75	
3.1.4	E-participation*	31.6	47	
3.2	*General infrastructure*	*45.1*	*34*	
3.2.1	Electricity output, kWh/cap	3,570.4	56	
3.2.2	Electricity consumption, kWh/cap	3,110.1	57	
3.2.3	Quality of trade & transport infrastructure*	51.3	40	
3.2.4	Gross capital formation, % GDP	32.7	16	●
3.3	*Ecological sustainability*	*22.6*	*100*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.9	89	
3.3.2	Environmental performance*	47.4	90	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	110	
4	**Market sophistication**	**34.0**	**90**	
4.1	*Credit*	*22.3*	*88*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	81.3	42	
4.1.3	Microfinance gross loans, % GDP	0.1	67	
4.2	*Investment*	*12.6*	*108*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	32.1	59	
4.2.3	Total value of stocks traded, % GDP	4.8	56	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*67.2*	*45*	
4.3.1	Applied tariff rate, weighted mean, %	4.8	77	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	1	●
4.3.3	Imports of goods & services, % GDP	43.8	60	
4.3.4	Exports of goods & services, % GDP	20.9	124	○
4.3.5	Intensity of local competition†	73.9	26	
5	**Business sophistication**	**48.3**	**33**	
5.1	*Knowledge workers*	*64.8*	*33*	
5.1.1	Knowledge-intensive employment, %	31.9	38	
5.1.2	Firms offering formal training, % firms	52.4	23	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	484.7	83	
5.1.6	GMAT test takers/mn pop. 20–34	1,178.6	4	●
5.2	*Innovation linkages*	*41.9*	*47*	
5.2.1	University/industry research collaboration†	35.3	107	
5.2.2	State of cluster development†	32.4	108	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	26.7	53	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*38.2*	*59*	
5.3.1	Royalty & license fees payments/th GDP	0.3	99	○
5.3.2	High-tech imports less re-imports, %	4.0	117	○
5.3.3	Computer & comm. service imports, %	55.9	10	●
5.3.4	FDI net inflows, % GDP	12.7	11	●
6	**Knowledge & technology outputs**	**33.9**	**48**	
6.1	*Knowledge creation*	*15.2*	*95*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.7	59	
6.2	*Knowledge impact*	*45.5*	*29*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.4	60	
6.3	*Knowledge diffusion*	*40.9*	*31*	
6.3.1	Royalty & license fees receipts/th GDP	0.2	61	
6.3.2	High-tech exports less re-exports, %	14.2	22	
6.3.3	Computer & comm. service exports, %	55.5	18	●
6.3.4	FDI net outflows, % GDP	1.5	31	
7	**Creative outputs**	**27.3**	**93**	
7.1	*Creative intangibles*	*27.0*	*122*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	34.6	124	○
7.1.4	ICT & organizational model creation†	19.3	132	○
7.2	*Creative goods & services*	*38.4*	*23*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	2.7	39	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	88.3	60	
7.2.4	Creative goods exports, %	5.4	10	●
7.2.5	Creative services exports, %	7.2	28	
7.3	*Online creativity*	*17.1*	*86*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.5	54	
7.3.2	Country-code TLDs/th pop. 15–69	9.7	99	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	335.9	87	
7.3.4	Video uploads on YouTube/pop. 15–69	50.2	76	

Lesotho

Key indicators

Population (millions)	2.6
GDP per capita, PPP$	1,425.1
GDP (US$ billions)	2.7

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**25.7**	**116**	
Innovation Output Sub-Index	16.5	133	○
Innovation Input Sub-Index	34.8	92	
Innovation Efficiency Index	0.5	137	○
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**57.0**	**65**	
1.1 Political environment	*62.4*	*58*	
1.1.1 Political stability*	76.8	43	●
1.1.2 Government effectiveness*	31.3	88	
1.1.3 Press freedom*	79.1	53	●
1.2 Regulatory environment	*62.0*	*82*	
1.2.1 Regulatory quality*	36.0	117	
1.2.2 Rule of law*	39.8	73	
1.2.3 Cost of redundancy dismissal, salary weeks	15.0	68	
1.3 Business environment	*46.7*	*77*	
1.3.1 Ease of starting a business*	17.9	115	
1.3.2 Ease of resolving insolvency*	54.6	64	
1.3.3 Ease of paying taxes*	67.6	46	●
2 Human capital & research	**30.2**	**90**	
2.1 Education	*75.1*	*3*	●
2.1.1 Current expenditure on education, % GNI	9.4	1	●
2.1.2 Public expenditure/pupil, % GDP/cap	50.7	1	●
2.1.3 School life expectancy, years	9.6	118	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	18.0	87	
2.2 Tertiary education	*7.9*	*129*	
2.2.1 Tertiary enrolment, % gross	3.5	128	○
2.2.2 Graduates in science & engineering, %	3.6	103	○
2.2.3 Tertiary inbound mobility, %	0.6	84	
2.2.4 Gross tertiary outbound enrolment, %	1.7	53	●
2.3 Research & development (R&D)	*7.6*	*132*	○
2.3.1 Researchers, headcounts/mn pop.	106.6	99	
2.3.2 Gross expenditure on R&D, % GDP	0.0	112	○
2.3.3 Quality of scientific research institutions†	21.8	124	
3 Infrastructure	**29.8**	**84**	
3.1 Information & communication technologies (ICT)	*12.0*	*131*	
3.1.1 ICT access*	14.0	139	○
3.1.2 ICT use*	1.2	133	○
3.1.3 Government's online service*	30.1	116	
3.1.4 E-participation*	2.6	115	
3.2 General infrastructure	*47.7*	*27*	●
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	25.0	119	
3.2.4 Gross capital formation, % GDP	33.7	11	●
3.3 Ecological sustainability	*n/a*	*n/a*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4 Market sophistication	**27.1**	**121**	
4.1 Credit	*8.8*	*123*	
4.1.1 Ease of getting credit*	15.3	112	
4.1.2 Domestic credit to private sector, % GDP	13.6	132	○
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*6.5*	*119*	
4.2.1 Ease of protecting investors*	12.9	119	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*65.9*	*59*	
4.3.1 Applied tariff rate, weighted mean, %	10.5	126	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.0	15	●
4.3.3 Imports of goods & services, % GDP	113.8	5	●
4.3.4 Exports of goods & services, % GDP	49.2	46	●
4.3.5 Intensity of local competition†	53.4	104	
5 Business sophistication	**30.1**	**121**	
5.1 Knowledge workers	*36.3*	*101*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	42.5	42	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	3.4	79	
5.1.5 GMAT mean score	483.0	86	
5.1.6 GMAT test takers/mn pop. 20–34	9.7	125	
5.2 Innovation linkages	*25.7*	*120*	
5.2.1 University/industry research collaboration†	30.0	116	
5.2.2 State of cluster development†	34.3	99	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*28.2*	*101*	
5.3.1 Royalty & license fees payments/th GDP	1.5	59	
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	10.9	124	
5.3.4 FDI net inflows, % GDP	5.5	33	●
6 Knowledge & technology outputs	**14.7**	**132**	
6.1 Knowledge creation	*3.3*	*126*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.1	111	
6.2 Knowledge impact	*4.9*	*138*	○
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.3	130	
6.3 Knowledge diffusion	*36.0*	*38*	●
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	17.7	97	
6.3.4 FDI net outflows, % GDP	-0.1	106	
7 Creative outputs	**18.4**	**126**	
7.1 Creative intangibles	*31.2*	*108*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	32.5	126	○
7.1.4 ICT & organizational model creation†	30.0	122	
7.2 Creative goods & services	*0.1*	*141*	○
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	n/a	n/a	
7.2.4 Creative goods exports, %	n/a	n/a	
7.2.5 Creative services exports, %	0.0	108	○
7.3 Online creativity	*10.9*	*108*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.2	126	
7.3.2 Country-code TLDs/th pop. 15–69	5.3	106	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4 Video uploads on YouTube/pop. 15–69	27.2	112	

Key indicators

Population (millions) 3.3
GDP per capita, PPP$ 18,769.5
GDP (US$ billions) 43.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**44.0**	**38**	
Innovation Output Sub-Index		37.8	37	
Innovation Input Sub-Index		50.2	38	
Innovation Efficiency Index		0.8	62	
Global Innovation Index 2011 (out of 125)			40	
GII 2012 rank among GII 2011 economies (125)			37	
1	**Institutions**	**70.0**	**37**	
1.1	*Political environment*	*77.3*	*31*	
1.1.1	Political stability*	81.4	34	
1.1.2	Government effectiveness*	60.0	38	
1.1.3	Press freedom*	90.5	27	
1.2	*Regulatory environment*	*69.7*	*58*	
1.2.1	Regulatory quality*	76.5	32	
1.2.2	Rule of law*	67.9	37	
1.2.3	Cost of redundancy dismissal, salary weeks	24.6	109	○
1.3	*Business environment*	*63.0*	*38*	
1.3.1	Ease of starting a business*	48.9	71	
1.3.2	Ease of resolving insolvency*	75.5	35	
1.3.3	Ease of paying taxes*	64.7	50	
2	**Human capital & research**	**46.3**	**37**	
2.1	*Education*	*60.3*	*37*	
2.1.1	Current expenditure on education, % GNI	4.4	59	
2.1.2	Public expenditure/pupil, % GDP/cap	20.2	58	
2.1.3	School life expectancy, years	15.9	20	●
2.1.4	PISA scales in reading, maths, & science	478.8	34	
2.1.5	Pupil-teacher ratio, secondary	8.9	17	●
2.2	*Tertiary education*	*43.3*	*42*	
2.2.1	Tertiary enrolment, % gross	77.4	10	●
2.2.2	Graduates in science & engineering, %	21.0	48	
2.2.3	Tertiary inbound mobility, %	1.3	70	
2.2.4	Gross tertiary outbound enrolment, %	2.9	29	
2.3	*Research & development (R&D)*	*35.3*	*35*	
2.3.1	Researchers, headcounts/mn pop.	4,023.5	25	
2.3.2	Gross expenditure on R&D, % GDP	0.8	39	
2.3.3	Quality of scientific research institutions†	56.6	35	
3	**Infrastructure**	**50.5**	**26**	
3.1	*Information & communication technologies (ICT)*	*56.8*	*28*	
3.1.1	ICT access*	64.8	37	
3.1.2	ICT use*	39.7	39	
3.1.3	Government's online service*	69.9	29	
3.1.4	E-participation*	52.6	30	
3.2	*General infrastructure*	*31.9*	*93*	
3.2.1	Electricity output, kWh/cap	4,384.1	48	
3.2.2	Electricity consumption, kWh/cap	3,430.2	52	
3.2.3	Quality of trade & transport infrastructure*	43.0	53	
3.2.4	Gross capital formation, % GDP	16.8	120	○
3.3	*Ecological sustainability*	*62.8*	*6*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.5	65	
3.3.2	Environmental performance*	65.5	17	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	12.1	6	●
4	**Market sophistication**	**46.8**	**38**	
4.1	*Credit*	*39.5*	*45*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	66.4	52	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*29.6*	*55*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	15.6	87	○
4.2.3	Total value of stocks traded, % GDP	0.8	73	
4.2.4	Venture capital deals/tr PPP$ GDP	81.4	16	●
4.3	*Trade & competition*	*71.3*	*22*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	69.6	22	
4.3.4	Exports of goods & services, % GDP	68.2	19	●
4.3.5	Intensity of local competition†	65.8	62	
5	**Business sophistication**	**37.5**	**76**	
5.1	*Knowledge workers*	*57.3*	*38*	
5.1.1	Knowledge-intensive employment, %	39.6	20	
5.1.2	Firms offering formal training, % firms	46.0	37	
5.1.3	R&D performed by business, %	23.7	60	
5.1.4	R&D financed by business, %	21.0	61	
5.1.5	GMAT mean score	560.0	30	
5.1.6	GMAT test takers/mn pop. 20–34	143.9	40	
5.2	*Innovation linkages*	*31.4*	*92*	
5.2.1	University/industry research collaboration†	57.3	30	
5.2.2	State of cluster development†	31.2	112	○
5.2.3	R&D financed by abroad, %	13.1	23	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	6.5	99	
5.2.5	PCT patent filings with foreign inventor, %	20.0	77	○
5.3	*Knowledge absorption*	*23.7*	*130*	○
5.3.1	Royalty & license fees payments/th GDP	1.0	75	
5.3.2	High-tech imports less re-imports, %	5.0	103	○
5.3.3	Computer & comm. service imports, %	19.7	100	○
5.3.4	FDI net inflows, % GDP	1.7	86	
6	**Knowledge & technology outputs**	**35.3**	**42**	
6.1	*Knowledge creation*	*31.6*	*46*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.1	53	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	43	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.0	46	
6.2	*Knowledge impact*	*53.6*	*14*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	7.3	6	●
6.2.2	New businesses/th pop. 15–64	2.2	43	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	21.3	23	
6.3	*Knowledge diffusion*	*20.9*	*103*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	83	○
6.3.2	High-tech exports less re-exports, %	6.1	37	
6.3.3	Computer & comm. service exports, %	14.0	107	○
6.3.4	FDI net outflows, % GDP	0.2	69	
7	**Creative outputs**	**40.3**	**35**	
7.1	*Creative intangibles*	*39.5*	*73*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	44.8	39	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.1	18	
7.1.3	ICT & business model creation†	65.5	22	
7.1.4	ICT & organizational model creation†	47.8	68	
7.2	*Creative goods & services*	*37.9*	*25*	
7.2.1	Recreation & culture consumption, %	8.4	22	
7.2.2	National feature films/mn pop. 15–69	2.5	43	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	233.5	20	●
7.2.4	Creative goods exports, %	3.8	20	●
7.2.5	Creative services exports, %	3.2	51	
7.3	*Online creativity*	*44.3*	*30*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	18.8	37	
7.3.2	Country-code TLDs/th pop. 15–69	56.8	26	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,535.7	26	
7.3.4	Video uploads on YouTube/pop. 15–69	68.2	30	

Luxembourg

Key indicators

Population (millions)	0.5
GDP per capita, PPP$	84,829.3
GDP (US$ billions)	62.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**57.7**	**11**	
Innovation Output Sub-Index		52.4	10	
Innovation Input Sub-Index		63.0	14	
Innovation Efficiency Index		0.8	29	
Global Innovation Index 2011 (out of 125)			17	
GII 2012 rank among GII 2011 economies (125)			11	
1	**Institutions**	**83.8**	**19**	
1.1	*Political environment*	*94.6*	*4*	●
1.1.1	Political stability*	100.0	1	●
1.1.2	Government effectiveness*	85.8	13	
1.1.3	Press freedom*	98.0	6	
1.2	*Regulatory environment*	*84.1*	*26*	
1.2.1	Regulatory quality*	94.5	10	
1.2.2	Rule of law*	96.1	6	
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	95	○
1.3	*Business environment*	*72.6*	*26*	
1.3.1	Ease of starting a business*	55.3	62	
1.3.2	Ease of resolving insolvency*	71.2	41	
1.3.3	Ease of paying taxes*	91.3	13	
2	**Human capital & research**	**56.5**	**12**	
2.1	*Education*	*53.5*	*62*	
2.1.1	Current expenditure on education, % GNI	3.5	90	○
2.1.2	Public expenditure/pupil, % GDP/cap	19.7	63	
2.1.3	School life expectancy, years	13.5	60	
2.1.4	PISA scales in reading, maths, & science	481.7	33	
2.1.5	Pupil-teacher ratio, secondary	10.2	30	
2.2	*Tertiary education*	*70.6*	*3*	●
2.2.1	Tertiary enrolment, % gross	10.5	103	○
2.2.2	Graduates in science & engineering, %	32.5	7	
2.2.3	Tertiary inbound mobility, %	43.8	1	●
2.2.4	Gross tertiary outbound enrolment, %	23.2	1	●
2.3	*Research & development (R&D)*	*45.3*	*28*	
2.3.1	Researchers, headcounts/mn pop.	4,747.6	17	
2.3.2	Gross expenditure on R&D, % GDP	1.7	22	
2.3.3	Quality of scientific research institutions†	61.6	28	
3	**Infrastructure**	**55.0**	**18**	
3.1	*Information & communication technologies (ICT)*	*67.5*	*19*	
3.1.1	ICT access*	88.0	3	●
3.1.2	ICT use*	72.4	3	●
3.1.3	Government's online service*	69.9	29	
3.1.4	E-participation*	39.5	38	
3.2	*General infrastructure*	*58.8*	*11*	
3.2.1	Electricity output, kWh/cap	6,376.7	33	
3.2.2	Electricity consumption, kWh/cap	16,879.4	4	●
3.2.3	Quality of trade & transport infrastructure*	76.5	9	
3.2.4	Gross capital formation, % GDP	18.7	106	○
3.3	*Ecological sustainability*	*38.7*	*48*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.5	32	
3.3.2	Environmental performance*	69.2	4	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	83	
4	**Market sophistication**	**55.0**	**23**	
4.1	*Credit*	*39.9*	*44*	
4.1.1	Ease of getting credit*	15.3	112	○
4.1.2	Domestic credit to private sector, % GDP	185.4	10	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*41.8*	*29*	
4.2.1	Ease of protecting investors*	22.3	100	○
4.2.2	Market capitalization, % GDP	183.5	4	
4.2.3	Total value of stocks traded, % GDP	0.3	88	○
4.2.4	Venture capital deals/tr PPP$ GDP	91.6	14	
4.3	*Trade & competition*	*83.4*	*3*	●
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	133.8	1	●
4.3.4	Exports of goods & services, % GDP	165.0	1	●
4.3.5	Intensity of local competition†	70.8	39	
5	**Business sophistication**	**64.6**	**5**	
5.1	*Knowledge workers*	*83.8*	*3*	●
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	73.7	5	
5.1.4	R&D financed by business, %	76.0	4	
5.1.5	GMAT mean score	559.3	31	
5.1.6	GMAT test takers/mn pop. 20–34	290.1	20	
5.2	*Innovation linkages*	*53.3*	*16*	
5.2.1	University/industry research collaboration†	67.1	17	
5.2.2	State of cluster development†	63.9	7	
5.2.3	R&D financed by abroad, %	5.7	58	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	80.8	15	
5.2.5	PCT patent filings with foreign inventor, %	93.8	37	
5.3	*Knowledge absorption*	*56.8*	*9*	
5.3.1	Royalty & license fees payments/th GDP	7.4	10	
5.3.2	High-tech imports less re-imports, %	11.0	43	
5.3.3	Computer & comm. service imports, %	30.9	65	
5.3.4	FDI net inflows, % GDP	288.4	1	●
6	**Knowledge & technology outputs**	**49.8**	**18**	
6.1	*Knowledge creation*	*50.3*	*23*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	12.2	14	
6.1.2	PCT resident patent ap/bn PPP$ GDP	5.6	9	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.5	68	
6.2	*Knowledge impact*	*40.0*	*44*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.0	74	○
6.2.2	New businesses/th pop. 15–64	7.4	11	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.6	86	
6.3	*Knowledge diffusion*	*59.2*	*10*	
6.3.1	Royalty & license fees receipts/th GDP	8.6	6	
6.3.2	High-tech exports less re-exports, %	7.7	30	
6.3.3	Computer & comm. service exports, %	24.0	77	
6.3.4	FDI net outflows, % GDP	347.1	1	●
7	**Creative outputs**	**55.0**	**6**	
7.1	*Creative intangibles*	*55.3*	*16*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	66.9	24	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	65.0	27	
7.1.4	ICT & organizational model creation†	69.5	11	
7.2	*Creative goods & services*	*34.1*	*36*	
7.2.1	Recreation & culture consumption, %	7.2	33	
7.2.2	National feature films/mn pop. 15–69	13.6	6	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	315.1	13	
7.2.4	Creative goods exports, %	0.6	84	○
7.2.5	Creative services exports, %	2.9	52	
7.3	*Online creativity*	*75.0*	*5*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	85.2	9	
7.3.2	Country-code TLDs/th pop. 15–69	72.9	9	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	13,634.1	6	
7.3.4	Video uploads on YouTube/pop. 15–69	72.6	19	

Macedonia (the former Yugoslav Republic of)

Key indicators

Population (millions) 2.1
GDP per capita, PPP$ 10,369.5
GDP (US$ billions) 10.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**36.2**	**62**	
Innovation Output Sub-Index		29.2	71	
Innovation Input Sub-Index		43.2	52	
Innovation Efficiency Index		0.7	93	
Global Innovation Index 2011 (out of 125)			67	
GII 2012 rank among GII 2011 economies (125)			60	
1	**Institutions**	**68.8**	**42**	
1.1	*Political environment*	*54.0*	*77*	
1.1.1	Political stability*	54.0	95	
1.1.2	Government effectiveness*	36.3	79	
1.1.3	Press freedom*	71.8	73	
1.2	*Regulatory environment*	*69.8*	*57*	
1.2.1	Regulatory quality*	58.9	61	
1.2.2	Rule of law*	39.9	72	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	55	
1.3	*Business environment*	*82.7*	*12*	●
1.3.1	Ease of starting a business*	97.1	5	●
1.3.2	Ease of resolving insolvency*	66.1	48	
1.3.3	Ease of paying taxes*	84.8	22	●
2	**Human capital & research**	**36.6**	**65**	
2.1	*Education*	*53.1*	*64*	
2.1.1	Current expenditure on education, % GNI	4.9	42	
2.1.2	Public expenditure/pupil, % GDP/cap	16.9	81	
2.1.3	School life expectancy, years	13.3	65	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	12.4	49	
2.2	*Tertiary education*	*39.7*	*53*	
2.2.1	Tertiary enrolment, % gross	40.4	57	
2.2.2	Graduates in science & engineering, %	21.4	44	
2.2.3	Tertiary inbound mobility, %	2.2	53	
2.2.4	Gross tertiary outbound enrolment, %	3.6	24	●
2.3	*Research & development (R&D)*	*17.0*	*92*	
2.3.1	Researchers, headcounts/mn pop.	1,001.7	56	
2.3.2	Gross expenditure on R&D, % GDP	0.2	80	
2.3.3	Quality of scientific research institutions†	38.7	83	
3	**Infrastructure**	**35.1**	**62**	
3.1	*Information & communication technologies (ICT)*	*36.3*	*63*	
3.1.1	ICT access*	55.7	49	
3.1.2	ICT use*	31.1	48	
3.1.3	Government's online service*	45.1	84	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*36.0*	*71*	
3.2.1	Electricity output, kWh/cap	3,327.5	57	
3.2.2	Electricity consumption, kWh/cap	3,466.7	51	
3.2.3	Quality of trade & transport infrastructure*	38.8	68	
3.2.4	Gross capital formation, % GDP	25.4	39	
3.3	*Ecological sustainability*	*33.2*	*60*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.4	68	
3.3.2	Environmental performance*	47.0	92	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.1	32	
4	**Market sophistication**	**43.1**	**52**	
4.1	*Credit*	*34.3*	*55*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	45.3	71	
4.1.3	Microfinance gross loans, % GDP	2.6	18	●
4.2	*Investment*	*24.4*	*72*	
4.2.1	Ease of protecting investors*	87.0	16	●
4.2.2	Market capitalization, % GDP	29.0	62	
4.2.3	Total value of stocks traded, % GDP	0.4	85	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*70.7*	*26*	●
4.3.1	Applied tariff rate, weighted mean, %	2.7	53	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	1	●
4.3.3	Imports of goods & services, % GDP	66.0	26	●
4.3.4	Exports of goods & services, % GDP	47.3	48	
4.3.5	Intensity of local competition†	52.9	106	○
5	**Business sophistication**	**32.2**	**110**	○
5.1	*Knowledge workers*	*34.9*	*105*	
5.1.1	Knowledge-intensive employment, %	25.5	50	
5.1.2	Firms offering formal training, % firms	19.0	93	○
5.1.3	R&D performed by business, %	28.5	55	
5.1.4	R&D financed by business, %	7.8	76	○
5.1.5	GMAT mean score	473.6	91	
5.1.6	GMAT test takers/mn pop. 20–34	67.7	67	
5.2	*Innovation linkages*	*25.8*	*119*	○
5.2.1	University/industry research collaboration†	38.0	89	
5.2.2	State of cluster development†	34.9	96	
5.2.3	R&D financed by abroad, %	8.6	37	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*35.8*	*65*	
5.3.1	Royalty & license fees payments/th GDP	1.9	49	
5.3.2	High-tech imports less re-imports, %	6.1	90	
5.3.3	Computer & comm. service imports, %	45.0	24	●
5.3.4	FDI net inflows, % GDP	3.2	53	
6	**Knowledge & technology outputs**	**28.8**	**60**	
6.1	*Knowledge creation*	*21.4*	*70*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.7	57	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	69	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.9	71	
6.2	*Knowledge impact*	*34.7*	*64*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.2	103	○
6.2.2	New businesses/th pop. 15–64	5.6	16	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.6	69	
6.3	*Knowledge diffusion*	*30.2*	*53*	
6.3.1	Royalty & license fees receipts/th GDP	0.8	36	
6.3.2	High-tech exports less re-exports, %	2.9	53	
6.3.3	Computer & comm. service exports, %	42.9	36	
6.3.4	FDI net outflows, % GDP	0.0	97	○
7	**Creative outputs**	**29.6**	**78**	
7.1	*Creative intangibles*	*34.8*	*96*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.6	30	
7.1.3	ICT & business model creation†	43.0	100	○
7.1.4	ICT & organizational model creation†	48.1	66	
7.2	*Creative goods & services*	*21.1*	*69*	
7.2.1	Recreation & culture consumption, %	3.0	71	
7.2.2	National feature films/mn pop. 15–69	0.7	74	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	104.8	54	
7.2.4	Creative goods exports, %	0.9	77	
7.2.5	Creative services exports, %	12.0	14	●
7.3	*Online creativity*	*27.7*	*52*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.4	62	
7.3.2	Country-code TLDs/th pop. 15–69	24.7	62	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,906.9	35	
7.3.4	Video uploads on YouTube/pop. 15–69	62.0	51	

Madagascar

Key indicators

Population (millions)	21.9
GDP per capita, PPP$	943.2
GDP (US$ billions)	9.4

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**24.2**	**126**	
Innovation Output Sub-Index	18.2	126	
Innovation Input Sub-Index	30.2	116	
Innovation Efficiency Index	0.6	123	
Global Innovation Index 2011 (out of 125)		113	
GII 2012 rank among GII 2011 economies (125)		116	
1 Institutions	**49.5**	**89**	
1.1 Political environment	*43.5*	*108*	
1.1.1 Political stability*	37.9	120	
1.1.2 Government effectiveness*	19.4	121	
1.1.3 Press freedom*	73.3	67	
1.2 Regulatory environment	*61.3*	*85*	
1.2.1 Regulatory quality*	36.7	113	
1.2.2 Rule of law*	25.4	114	
1.2.3 Cost of redundancy dismissal, salary weeks	12.3	52	●
1.3 Business environment	*43.6*	*85*	
1.3.1 Ease of starting a business*	60.4	56	●
1.3.2 Ease of resolving insolvency*	9.3	127	
1.3.3 Ease of paying taxes*	61.1	55	●
2 Human capital & research	**21.0**	**119**	
2.1 Education	*31.0*	*123*	
2.1.1 Current expenditure on education, % GNI	2.7	115	
2.1.2 Public expenditure/pupil, % GDP/cap	11.5	102	
2.1.3 School life expectancy, years	10.4	113	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	23.5	106	
2.2 Tertiary education	*21.3*	*100*	
2.2.1 Tertiary enrolment, % gross	3.7	127	
2.2.2 Graduates in science & engineering, %	18.2	62	
2.2.3 Tertiary inbound mobility, %	1.8	58	
2.2.4 Gross tertiary outbound enrolment, %	0.2	123	
2.3 Research & development (R&D)	*10.8*	*124*	
2.3.1 Researchers, headcounts/mn pop.	90.3	102	
2.3.2 Gross expenditure on R&D, % GDP	0.1	94	
2.3.3 Quality of scientific research institutions†	28.9	113	
3 Infrastructure	**22.9**	**115**	
3.1 Information & communication technologies (ICT)	*13.6*	*125*	
3.1.1 ICT access*	18.9	122	
3.1.2 ICT use*	0.9	135	○
3.1.3 Government's online service*	32.0	110	
3.1.4 E-participation*	2.6	115	
3.2 General infrastructure	*54.7*	*16*	●
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	40.8	59	
3.2.4 Gross capital formation, % GDP	33.0	15	●
3.3 Ecological sustainability	*0.3*	*137*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.1	129	○
4 Market sophistication	**30.6**	**107**	
4.1 Credit	*3.0*	*136*	○
4.1.1 Ease of getting credit*	0.7	139	○
4.1.2 Domestic credit to private sector, % GDP	11.7	134	○
4.1.3 Microfinance gross loans, % GDP	0.6	44	
4.2 Investment	*29.1*	*57*	
4.2.1 Ease of protecting investors*	58.2	48	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*59.8*	*89*	
4.3.1 Applied tariff rate, weighted mean, %	7.7	107	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.1	26	●
4.3.3 Imports of goods & services, % GDP	52.8	45	●
4.3.4 Exports of goods & services, % GDP	28.8	93	
4.3.5 Intensity of local competition†	52.6	108	
5 Business sophistication	**27.2**	**130**	
5.1 Knowledge workers	*23.2*	*128*	
5.1.1 Knowledge-intensive employment, %	2.4	105	○
5.1.2 Firms offering formal training, % firms	27.0	71	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	533.0	49	●
5.1.6 GMAT test takers/mn pop. 20–34	2.6	139	○
5.2 Innovation linkages	*23.1*	*128*	
5.2.1 University/industry research collaboration†	36.7	97	
5.2.2 State of cluster development†	24.2	126	
5.2.3 R&D financed by abroad, %	8.4	39	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	9.7	89	
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*35.4*	*68*	
5.3.1 Royalty & license fees payments/th GDP	1.8	52	
5.3.2 High-tech imports less re-imports, %	7.0	83	
5.3.3 Computer & comm. service imports, %	34.7	58	
5.3.4 FDI net inflows, % GDP	9.9	13	●
6 Knowledge & technology outputs	**12.5**	**138**	○
6.1 Knowledge creation	*18.4*	*82*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.5	81	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	71	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.8	85	
6.2 Knowledge impact	*5.3*	*137*	○
6.2.1 Growth rate of PPP$ GDP/worker, %	-5.3	116	○
6.2.2 New businesses/th pop. 15–64	0.1	97	○
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.3	107	
6.3 Knowledge diffusion	*13.7*	*125*	
6.3.1 Royalty & license fees receipts/th GDP	0.5	47	
6.3.2 High-tech exports less re-exports, %	0.6	85	
6.3.3 Computer & comm. service exports, %	28.1	65	
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**24.0**	**107**	
7.1 Creative intangibles	*29.4*	*113*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	97.5	9	●
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.1	52	
7.1.3 ICT & business model creation†	40.2	114	
7.1.4 ICT & organizational model creation†	29.2	123	
7.2 Creative goods & services	*32.2*	*38*	●
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	10.5	115	
7.2.4 Creative goods exports, %	5.6	9	●
7.2.5 Creative services exports, %	0.4	87	
7.3 Online creativity	*5.0*	*128*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.0	138	○
7.3.2 Country-code TLDs/th pop. 15–69	1.2	124	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	22.0	117	
7.3.4 Video uploads on YouTube/pop. 15–69	18.7	122	

Malawi

Key indicators

Population (millions)	16.2
GDP per capita, PPP$	852.7
GDP (US$ billions)	5.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**25.4**	**120**	
Innovation Output Sub-Index		19.9	122	
Innovation Input Sub-Index		30.8	110	
Innovation Efficiency Index		0.6	105	
Global Innovation Index 2011 (out of 125)			108	
GII 2012 rank among GII 2011 economies (125)			110	
1	**Institutions**	**50.8**	**82**	
1.1	*Political environment*	*48.4*	*86*	
1.1.1	Political stability*	67.3	60	●
1.1.2	Government effectiveness*	30.5	90	
1.1.3	Press freedom*	47.3	119	
1.2	*Regulatory environment*	*61.8*	*83*	
1.2.1	Regulatory quality*	37.4	111	
1.2.2	Rule of law*	44.1	66	
1.2.3	Cost of redundancy dismissal, salary weeks	16.7	77	
1.3	*Business environment*	*42.4*	*90*	
1.3.1	Ease of starting a business*	23.0	108	
1.3.2	Ease of resolving insolvency*	17.9	115	
1.3.3	Ease of paying taxes*	86.3	20	●
2	**Human capital & research**	**24.2**	**110**	
2.1	*Education*	*44.3*	*95*	
2.1.1	Current expenditure on education, % GNI	5.3	32	●
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	10.4	114	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*5.8*	*133*	○
2.2.1	Tertiary enrolment, % gross	0.7	134	○
2.2.2	Graduates in science & engineering, %	7.0	100	○
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.2	128	
2.3	*Research & development (R&D)*	*22.4*	*67*	
2.3.1	Researchers, headcounts/mn pop.	53.9	111	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	44.5	63	
3	**Infrastructure**	**16.4**	**138**	○
3.1	*Information & communication technologies (ICT)*	*9.2*	*139*	○
3.1.1	ICT access*	14.4	138	○
3.1.2	ICT use*	0.7	136	○
3.1.3	Government's online service*	21.6	130	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*39.5*	*50*	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	28.3	108	
3.2.4	Gross capital formation, % GDP	24.5	45	●
3.3	*Ecological sustainability*	*0.6*	*136*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	123	
4	**Market sophistication**	**29.1**	**116**	
4.1	*Credit*	*12.9*	*114*	
4.1.1	Ease of getting credit*	21.1	104	
4.1.2	Domestic credit to private sector, % GDP	16.0	126	
4.1.3	Microfinance gross loans, % GDP	1.2	33	●
4.2	*Investment*	*14.1*	*103*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	26.7	65	
4.2.3	Total value of stocks traded, % GDP	0.4	86	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*60.2*	*87*	
4.3.1	Applied tariff rate, weighted mean, %	6.6	97	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	21	●
4.3.3	Imports of goods & services, % GDP	36.1	85	
4.3.4	Exports of goods & services, % GDP	26.3	99	
4.3.5	Intensity of local competition†	56.3	97	
5	**Business sophistication**	**33.7**	**99**	
5.1	*Knowledge workers*	*40.9*	*85*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	48.4	33	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	420.0	119	
5.1.6	GMAT test takers/mn pop. 20–34	7.0	129	
5.2	*Innovation linkages*	*35.4*	*68*	
5.2.1	University/industry research collaboration†	43.9	61	
5.2.2	State of cluster development†	41.5	68	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	10.4	86	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*24.8*	*126*	
5.3.1	Royalty & license fees payments/th GDP	0.1	110	○
5.3.2	High-tech imports less re-imports, %	9.9	52	●
5.3.3	Computer & comm. service imports, %	14.9	115	
5.3.4	FDI net inflows, % GDP	2.7	64	
6	**Knowledge & technology outputs**	**21.5**	**99**	
6.1	*Knowledge creation*	*14.3*	*100*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	4.4	61	●
6.2	*Knowledge impact*	*22.5*	*109*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.9	53	●
6.2.2	New businesses/th pop. 15–64	0.1	95	○
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.4	128	
6.3	*Knowledge diffusion*	*27.7*	*62*	●
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.2	103	
6.3.3	Computer & comm. service exports, %	26.1	71	
6.3.4	FDI net outflows, % GDP	-0.4	113	○
7	**Creative outputs**	**18.3**	**127**	
7.1	*Creative intangibles*	*32.5*	*104*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.0	77	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	46.1	86	
7.1.4	ICT & organizational model creation†	46.1	76	
7.2	*Creative goods & services*	*4.1*	*124*	
7.2.1	Recreation & culture consumption, %	1.5	89	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	2.9	129	○
7.2.4	Creative goods exports, %	0.2	105	
7.2.5	Creative services exports, %	0.6	79	
7.3	*Online creativity*	*4.1*	*133*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	116	
7.3.2	Country-code TLDs/th pop. 15–69	2.8	109	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	9.2	135	○

Malaysia

Key indicators

Population (millions)	28.7
GDP per capita, PPP$	15,579.0
GDP (US$ billions)	247.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**45.9**	**32**	
Innovation Output Sub-Index		37.6	38	
Innovation Input Sub-Index		54.2	29	
Innovation Efficiency Index		0.7	84	
Global Innovation Index 2011 (out of 125)			31	
GII 2012 rank among GII 2011 economies (125)			31	
1	**Institutions**	**63.5**	**55**	
1.1	*Political environment*	*64.7*	*52*	
1.1.1	Political stability*	68.8	56	
1.1.2	Government effectiveness*	69.8	28	
1.1.3	Press freedom*	55.4	97	○
1.2	*Regulatory environment*	*66.2*	*70*	
1.2.1	Regulatory quality*	66.5	44	
1.2.2	Rule of law*	61.3	45	
1.2.3	Cost of redundancy dismissal, salary weeks	23.9	108	○
1.3	*Business environment*	*59.7*	*44*	
1.3.1	Ease of starting a business*	35.9	90	○
1.3.2	Ease of resolving insolvency*	64.7	50	
1.3.3	Ease of paying taxes*	78.4	31	
2	**Human capital & research**	**44.5**	**42**	
2.1	*Education*	*49.6*	*74*	
2.1.1	Current expenditure on education, % GNI	4.1	70	
2.1.2	Public expenditure/pupil, % GDP/cap	21.6	47	
2.1.3	School life expectancy, years	12.6	79	
2.1.4	PISA scales in reading, maths, & science	413.4	53	○
2.1.5	Pupil-teacher ratio, secondary	13.7	60	
2.2	*Tertiary education*	*56.0*	*10*	
2.2.1	Tertiary enrolment, % gross	40.2	58	
2.2.2	Graduates in science & engineering, %	37.7	3	●
2.2.3	Tertiary inbound mobility, %	5.8	27	
2.2.4	Gross tertiary outbound enrolment, %	2.2	44	
2.3	*Research & development (R&D)*	*28.0*	*48*	
2.3.1	Researchers, headcounts/mn pop.	715.4	63	
2.3.2	Gross expenditure on R&D, % GDP	0.6	49	
2.3.3	Quality of scientific research institutions†	64.4	23	
3	**Infrastructure**	**44.1**	**41**	
3.1	*Information & communication technologies (ICT)*	*51.9*	*38*	
3.1.1	ICT access*	47.0	60	
3.1.2	ICT use*	31.5	47	
3.1.3	Government's online service*	79.1	20	
3.1.4	E-participation*	50.0	31	
3.2	*General infrastructure*	*41.6*	*40*	
3.2.1	Electricity output, kWh/cap	3,767.0	53	
3.2.2	Electricity consumption, kWh/cap	3,676.9	50	
3.2.3	Quality of trade & transport infrastructure*	62.5	27	
3.2.4	Gross capital formation, % GDP	21.4	80	
3.3	*Ecological sustainability*	*38.9*	*46*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	83	○
3.3.2	Environmental performance*	62.5	25	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.0	23	
4	**Market sophistication**	**60.8**	**14**	
4.1	*Credit*	*46.8*	*31*	
4.1.1	Ease of getting credit*	100.0	1	●
4.1.2	Domestic credit to private sector, % GDP	114.9	25	
4.1.3	Microfinance gross loans, % GDP	0.1	68	○
4.2	*Investment*	*54.7*	*14*	
4.2.1	Ease of protecting investors*	97.8	4	●
4.2.2	Market capitalization, % GDP	172.6	5	●
4.2.3	Total value of stocks traded, % GDP	37.9	27	
4.2.4	Venture capital deals/tr PPP$ GDP	6.7	52	
4.3	*Trade & competition*	*81.0*	*4*	●
4.3.1	Applied tariff rate, weighted mean, %	4.0	68	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.5	54	
4.3.3	Imports of goods & services, % GDP	79.5	12	
4.3.4	Exports of goods & services, % GDP	97.3	5	●
4.3.5	Intensity of local competition†	74.1	24	
5	**Business sophistication**	**58.2**	**11**	
5.1	*Knowledge workers*	*68.4*	*28*	
5.1.1	Knowledge-intensive employment, %	26.8	49	
5.1.2	Firms offering formal training, % firms	50.1	30	
5.1.3	R&D performed by business, %	84.9	1	●
5.1.4	R&D financed by business, %	84.5	1	●
5.1.5	GMAT mean score	545.9	41	
5.1.6	GMAT test takers/mn pop. 20–34	65.1	69	
5.2	*Innovation linkages*	*42.4*	*45*	
5.2.1	University/industry research collaboration†	65.1	20	
5.2.2	State of cluster development†	65.4	4	●
5.2.3	R&D financed by abroad, %	0.2	91	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	78.4	18	
5.2.5	PCT patent filings with foreign inventor, %	33.2	62	○
5.3	*Knowledge absorption*	*63.7*	*6*	●
5.3.1	Royalty & license fees payments/th GDP	5.9	11	
5.3.2	High-tech imports less re-imports, %	32.7	1	●
5.3.3	Computer & comm. service imports, %	38.3	41	
5.3.4	FDI net inflows, % GDP	4.0	47	
6	**Knowledge & technology outputs**	**38.0**	**36**	
6.1	*Knowledge creation*	*22.8*	*65*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.0	45	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.6	34	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	60	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.5	67	
6.2	*Knowledge impact*	*42.5*	*39*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.6	24	
6.2.2	New businesses/th pop. 15–64	2.5	40	
6.2.3	Computer software spending, % GDP	0.3	29	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	20.7	24	
6.3	*Knowledge diffusion*	*48.7*	*24*	
6.3.1	Royalty & license fees receipts/th GDP	1.4	26	
6.3.2	High-tech exports less re-exports, %	33.0	3	●
6.3.3	Computer & comm. service exports, %	28.0	67	
6.3.4	FDI net outflows, % GDP	5.7	10	
7	**Creative outputs**	**37.3**	**42**	
7.1	*Creative intangibles*	*50.5*	*26*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	13.5	71	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	72.5	8	
7.1.4	ICT & organizational model creation†	72.6	9	
7.2	*Creative goods & services*	*23.8*	*62*	
7.2.1	Recreation & culture consumption, %	5.1	53	
7.2.2	National feature films/mn pop. 15–69	1.5	58	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	139.7	42	
7.2.4	Creative goods exports, %	2.0	43	
7.2.5	Creative services exports, %	4.5	43	
7.3	*Online creativity*	*24.3*	*56*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	5.4	60	
7.3.2	Country-code TLDs/th pop. 15–69	30.3	55	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,054.0	59	
7.3.4	Video uploads on YouTube/pop. 15–69	56.1	64	

Mali

Key indicators

Population (millions)	13.8
GDP per capita, PPP$	1,328.1
GDP (US$ billions)	11.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**25.4**	**119**	
Innovation Output Sub-Index		23.8	97	
Innovation Input Sub-Index		27.0	131	
Innovation Efficiency Index		0.9	19	●
Global Innovation Index 2011 (out of 125)			107	
GII 2012 rank among GII 2011 economies (125)			109	
1	**Institutions**	**48.0**	**96**	
1.1	*Political environment*	*56.8*	*69*	●
1.1.1	Political stability*	59.2	86	
1.1.2	Government effectiveness*	17.8	126	
1.1.3	Press freedom*	93.2	23	●
1.2	*Regulatory environment*	*63.2*	*80*	
1.2.1	Regulatory quality*	39.8	104	
1.2.2	Rule of law*	35.5	85	
1.2.3	Cost of redundancy dismissal, salary weeks	13.7	60	●
1.3	*Business environment*	*24.1*	*121*	
1.3.1	Ease of starting a business*	33.0	94	
1.3.2	Ease of resolving insolvency*	28.7	100	
1.3.3	Ease of paying taxes*	10.7	125	
2	**Human capital & research**	**18.5**	**130**	
2.1	*Education*	*35.2*	*119*	
2.1.1	Current expenditure on education, % GNI	3.9	82	
2.1.2	Public expenditure/pupil, % GDP/cap	23.5	39	●
2.1.3	School life expectancy, years	7.3	130	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	24.7	111	
2.2	*Tertiary education*	*3.4*	*139*	○
2.2.1	Tertiary enrolment, % gross	5.8	118	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.2	121	
2.3	*Research & development (R&D)*	*16.9*	*93*	
2.3.1	Researchers, headcounts/mn pop.	62.5	107	
2.3.2	Gross expenditure on R&D, % GDP	0.2	76	
2.3.3	Quality of scientific research institutions†	45.1	61	●
3	**Infrastructure**	**16.6**	**135**	○
3.1	*Information & communication technologies (ICT)*	*12.9*	*126*	
3.1.1	ICT access*	18.4	127	
3.1.2	ICT use*	1.3	131	
3.1.3	Government's online service*	32.0	110	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*35.6*	*75*	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	25.0	119	
3.2.4	Gross capital formation, % GDP	22.4	72	●
3.3	*Ecological sustainability*	*1.3*	*132*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	108	
4	**Market sophistication**	**19.5**	**136**	○
4.1	*Credit*	*5.8*	*131*	
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	18.4	120	
4.1.3	Microfinance gross loans, % GDP	0.9	39	●
4.2	*Investment*	*6.5*	*119*	
4.2.1	Ease of protecting investors*	12.9	119	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*46.2*	*129*	
4.3.1	Applied tariff rate, weighted mean, %	8.4	112	
4.3.2	Non-agricultural mkt access weighted tariff, %	3.4	128	
4.3.3	Imports of goods & services, % GDP	35.6	88	
4.3.4	Exports of goods & services, % GDP	26.2	101	
4.3.5	Intensity of local competition†	58.0	91	
5	**Business sophistication**	**32.4**	**108**	
5.1	*Knowledge workers*	*22.1*	*131*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	32.1	58	
5.1.3	R&D performed by business, %	3.0	82	
5.1.4	R&D financed by business, %	10.1	72	
5.1.5	GMAT mean score	405.0	126	
5.1.6	GMAT test takers/mn pop. 20–34	7.1	128	
5.2	*Innovation linkages*	*51.5*	*18*	●
5.2.1	University/industry research collaboration†	38.0	88	
5.2.2	State of cluster development†	32.4	109	
5.2.3	R&D financed by abroad, %	49.0	1	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	32.7	44	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*23.5*	*132*	
5.3.1	Royalty & license fees payments/th GDP	0.3	101	
5.3.2	High-tech imports less re-imports, %	4.2	115	○
5.3.3	Computer & comm. service imports, %	25.0	82	
5.3.4	FDI net inflows, % GDP	1.6	91	
6	**Knowledge & technology outputs**	**22.6**	**93**	
6.1	*Knowledge creation*	*17.7*	*88*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	95	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	72	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	95	
6.2	*Knowledge impact*	*26.2*	*96*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	66	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.2	135	○
6.3	*Knowledge diffusion*	*23.8*	*81*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	82	
6.3.2	High-tech exports less re-exports, %	0.2	105	
6.3.3	Computer & comm. service exports, %	34.9	49	●
6.3.4	FDI net outflows, % GDP	-0.3	111	
7	**Creative outputs**	**25.0**	**100**	
7.1	*Creative intangibles*	*47.9*	*36*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	47.5	82	
7.1.4	ICT & organizational model creation†	48.3	65	●
7.2	*Creative goods & services*	*1.6*	*135*	○
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	5.2	123	
7.2.4	Creative goods exports, %	0.1	121	
7.2.5	Creative services exports, %	0.8	75	
7.3	*Online creativity*	*2.6*	*138*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	139	○
7.3.2	Country-code TLDs/th pop. 15–69	0.0	139	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	10.4	124	○
7.3.4	Video uploads on YouTube/pop. 15–69	10.4	134	○

Malta

Key indicators

Population (millions)	0.4
GDP per capita, PPP$	25,782.7
GDP (US$ billions)	9.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**56.1**	**16**	
Innovation Output Sub-Index	57.0	4	●
Innovation Input Sub-Index	55.3	27	
Innovation Efficiency Index	1.0	4	●
Global Innovation Index 2011 (out of 125)		n/a	
GII 2012 rank among GII 2011 economies (125)		n/a	
1 Institutions	**84.4**	**18**	
1.1 Political environment	*81.4*	*25*	
1.1.1 Political stability*	93.0	7	
1.1.2 Government effectiveness*	71.3	27	
1.1.3 Press freedom*	80.1	49	
1.2 Regulatory environment	*87.4*	*21*	
1.2.1 Regulatory quality*	87.8	19	
1.2.2 Rule of law*	87.0	20	
1.2.3 Cost of redundancy dismissal, salary weeks	n/a	n/a	
1.3 Business environment	*n/a*	*n/a*	
1.3.1 Ease of starting a business*	n/a	n/a	
1.3.2 Ease of resolving insolvency*	n/a	n/a	
1.3.3 Ease of paying taxes*	n/a	n/a	
2 Human capital & research	**42.3**	**47**	
2.1 Education	*66.6*	*13*	
2.1.1 Current expenditure on education, % GNI	6.2	16	
2.1.2 Public expenditure/pupil, % GDP/cap	28.8	10	
2.1.3 School life expectancy, years	14.6	43	
2.1.4 PISA scales in reading, maths, & science	455.4	40	○
2.1.5 Pupil-teacher ratio, secondary	8.2	12	
2.2 Tertiary education	*35.3*	*58*	
2.2.1 Tertiary enrolment, % gross	33.4	70	
2.2.2 Graduates in science & engineering, %	15.0	77	○
2.2.3 Tertiary inbound mobility, %	4.3	31	
2.2.4 Gross tertiary outbound enrolment, %	3.7	20	
2.3 Research & development (R&D)	*25.1*	*58*	
2.3.1 Researchers, headcounts/mn pop.	2,638.0	34	
2.3.2 Gross expenditure on R&D, % GDP	0.6	51	
2.3.3 Quality of scientific research institutions†	43.2	70	○
3 Infrastructure	**42.3**	**46**	
3.1 Information & communication technologies (ICT)	*52.7*	*36*	
3.1.1 ICT access*	76.4	15	
3.1.2 ICT use*	46.6	30	
3.1.3 Government's online service*	61.4	41	
3.1.4 E-participation*	26.3	55	
3.2 General infrastructure	*34.9*	*80*	○
3.2.1 Electricity output, kWh/cap	5,209.1	41	
3.2.2 Electricity consumption, kWh/cap	4,404.8	44	
3.2.3 Quality of trade & transport infrastructure*	47.3	47	
3.2.4 Gross capital formation, % GDP	16.8	119	○
3.3 Ecological sustainability	*39.3*	*44*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	9.7	15	
3.3.2 Environmental performance*	48.5	84	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.5	51	
4 Market sophistication	**42.1**	**57**	
4.1 Credit	*44.9*	*32*	
4.1.1 Ease of getting credit*	n/a	n/a	
4.1.2 Domestic credit to private sector, % GDP	131.4	16	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*3.0*	*135*	○
4.2.1 Ease of protecting investors*	n/a	n/a	
4.2.2 Market capitalization, % GDP	24.8	67	○
4.2.3 Total value of stocks traded, % GDP	0.2	91	○
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*78.5*	*6*	●
4.3.1 Applied tariff rate, weighted mean, %	1.6	11	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3 Imports of goods & services, % GDP	83.4	8	
4.3.4 Exports of goods & services, % GDP	85.2	8	
4.3.5 Intensity of local competition†	79.6	10	
5 Business sophistication	**65.2**	**4**	●
5.1 Knowledge workers	*69.6*	*26*	
5.1.1 Knowledge-intensive employment, %	35.9	32	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	62.4	18	
5.1.4 R&D financed by business, %	51.4	18	
5.1.5 GMAT mean score	578.0	15	
5.1.6 GMAT test takers/mn pop. 20–34	63.8	70	
5.2 Innovation linkages	*44.3*	*39*	
5.2.1 University/industry research collaboration†	46.4	51	
5.2.2 State of cluster development†	42.0	63	
5.2.3 R&D financed by abroad, %	17.2	16	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	26.2	55	
5.2.5 PCT patent filings with foreign inventor, %	92.3	38	
5.3 Knowledge absorption	*81.5*	*3*	●
5.3.1 Royalty & license fees payments/th GDP	20.9	1	●
5.3.2 High-tech imports less re-imports, %	23.5	5	●
5.3.3 Computer & comm. service imports, %	64.9	5	●
5.3.4 FDI net inflows, % GDP	12.1	12	
6 Knowledge & technology outputs	**53.1**	**14**	
6.1 Knowledge creation	*35.8*	*37*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	4.1	36	
6.1.2 PCT resident patent ap/bn PPP$ GDP	1.7	25	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	3.8	63	
6.2 Knowledge impact	*55.4*	*10*	
6.2.1 Growth rate of PPP$ GDP/worker, %	0.5	99	○
6.2.2 New businesses/th pop. 15–64	9.5	5	●
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	45.7	6	●
6.3 Knowledge diffusion	*67.9*	*6*	●
6.3.1 Royalty & license fees receipts/th GDP	4.2	15	
6.3.2 High-tech exports less re-exports, %	50.4	1	●
6.3.3 Computer & comm. service exports, %	59.6	13	
6.3.4 FDI net outflows, % GDP	1.1	38	
7 Creative outputs	**60.9**	**2**	●
7.1 Creative intangibles	*57.3*	*14*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	62.9	27	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	65.8	21	
7.1.4 ICT & organizational model creation†	76.4	4	●
7.2 Creative goods & services	*86.3*	*1*	●
7.2.1 Recreation & culture consumption, %	10.9	9	
7.2.2 National feature films/mn pop. 15–69	16.1	5	●
7.2.3 Paid-for dailies, circulation/th pop. 15–69	322.0	11	
7.2.4 Creative goods exports, %	6.5	6	●
7.2.5 Creative services exports, %	70.3	1	●
7.3 Online creativity	*42.8*	*33*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	37.1	22	
7.3.2 Country-code TLDs/th pop. 15–69	42.2	44	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	3,201.1	40	
7.3.4 Video uploads on YouTube/pop. 15–69	75.5	14	

Mauritius

Key indicators

Population (millions) 1.3
GDP per capita, PPP$ 15,015.7
GDP (US$ billions) 11.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**39.2**	**49**	
Innovation Output Sub-Index		33.8	48	
Innovation Input Sub-Index		44.7	49	
Innovation Efficiency Index		0.8	60	
Global Innovation Index 2011 (out of 125)			53	
GII 2012 rank among GII 2011 economies (125)			47	
1	**Institutions**	**78.8**	**24**	
1.1	*Political environment*	*73.6*	*38*	
1.1.1	Political stability*	78.0	39	
1.1.2	Government effectiveness*	61.1	37	
1.1.3	Press freedom*	81.8	47	
1.2	*Regulatory environment*	*83.2*	*28*	
1.2.1	Regulatory quality*	73.2	37	
1.2.2	Rule of law*	70.1	33	
1.2.3	Cost of redundancy dismissal, salary weeks	10.6	43	
1.3	*Business environment*	*79.6*	*17*	
1.3.1	Ease of starting a business*	92.0	12	●
1.3.2	Ease of resolving insolvency*	52.5	67	
1.3.3	Ease of paying taxes*	94.2	9	●
2	**Human capital & research**	**34.1**	**70**	
2.1	*Education*	*42.6*	*101*	
2.1.1	Current expenditure on education, % GNI	3.1	101	
2.1.2	Public expenditure/pupil, % GDP/cap	12.6	97	○
2.1.3	School life expectancy, years	13.6	58	
2.1.4	PISA scales in reading, maths, & science	414.6	50	
2.1.5	Pupil-teacher ratio, secondary	15.9	74	
2.2	*Tertiary education*	*35.2*	*60*	
2.2.1	Tertiary enrolment, % gross	24.9	80	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	7.4	6	●
2.3	*Research & development (R&D)*	*24.7*	*60*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	0.4	67	
2.3.3	Quality of scientific research institutions†	41.2	74	
3	**Infrastructure**	**23.5**	**112**	○
3.1	*Information & communication technologies (ICT)*	*29.2*	*81*	
3.1.1	ICT access*	46.5	61	
3.1.2	ICT use*	19.1	64	
3.1.3	Government's online service*	43.1	86	
3.1.4	E-participation*	7.9	98	○
3.2	*General infrastructure*	*39.3*	*52*	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	32.3	96	
3.2.4	Gross capital formation, % GDP	22.5	69	
3.3	*Ecological sustainability*	*2.0*	*130*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	96	
4	**Market sophistication**	**46.1**	**39**	
4.1	*Credit*	*33.9*	*56*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	87.8	38	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*29.2*	*56*	
4.2.1	Ease of protecting investors*	90.6	12	●
4.2.2	Market capitalization, % GDP	66.9	35	
4.2.3	Total value of stocks traded, % GDP	3.7	60	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*75.1*	*15*	●
4.3.1	Applied tariff rate, weighted mean, %	1.1	7	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	9	●
4.3.3	Imports of goods & services, % GDP	57.6	38	
4.3.4	Exports of goods & services, % GDP	45.2	51	
4.3.5	Intensity of local competition†	67.3	55	
5	**Business sophistication**	**40.9**	**58**	
5.1	*Knowledge workers*	*43.7*	*71*	
5.1.1	Knowledge-intensive employment, %	15.8	85	○
5.1.2	Firms offering formal training, % firms	25.6	75	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	566.8	22	
5.1.6	GMAT test takers/mn pop. 20–34	175.2	32	
5.2	*Innovation linkages*	*46.1*	*31*	
5.2.1	University/industry research collaboration†	36.8	95	
5.2.2	State of cluster development†	48.4	39	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	10.3	87	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*33.1*	*78*	
5.3.1	Royalty & license fees payments/th GDP	1.2	66	
5.3.2	High-tech imports less re-imports, %	6.0	91	○
5.3.3	Computer & comm. service imports, %	39.9	40	
5.3.4	FDI net inflows, % GDP	4.4	43	
6	**Knowledge & technology outputs**	**24.9**	**78**	
6.1	*Knowledge creation*	*2.1*	*134*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.1	104	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.2	106	○
6.2	*Knowledge impact*	*49.5*	*20*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	7.3	12	●
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.3	66	
6.3	*Knowledge diffusion*	*23.0*	*87*	
6.3.1	Royalty & license fees receipts/th GDP	0.1	78	
6.3.2	High-tech exports less re-exports, %	0.4	91	○
6.3.3	Computer & comm. service exports, %	30.0	59	
6.3.4	FDI net outflows, % GDP	1.3	33	
7	**Creative outputs**	**42.7**	**31**	
7.1	*Creative intangibles*	*53.0*	*19*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	52.4	65	
7.1.4	ICT & organizational model creation†	53.7	47	
7.2	*Creative goods & services*	*42.5*	*15*	●
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	20.1	1	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	110.8	50	
7.2.4	Creative goods exports, %	4.7	13	●
7.2.5	Creative services exports, %	0.6	84	○
7.3	*Online creativity*	*22.3*	*67*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.0	58	
7.3.2	Country-code TLDs/th pop. 15–69	30.6	53	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,042.7	61	
7.3.4	Video uploads on YouTube/pop. 15–69	47.3	85	

Mexico

Key indicators

Population (millions)	109.7
GDP per capita, PPP$	15,121.4
GDP (US$ billions)	1,185.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**32.9**	**79**	
Innovation Output Sub-Index		25.9	86	
Innovation Input Sub-Index		39.8	70	
Innovation Efficiency Index		0.6	101	
Global Innovation Index 2011 (out of 125)			81	
GII 2012 rank among GII 2011 economies (125)			76	
1	**Institutions**	**55.9**	**72**	
1.1	*Political environment*	*45.2*	*102*	
1.1.1	Political stability*	46.2	107	○
1.1.2	Government effectiveness*	45.4	56	
1.1.3	Press freedom*	44.1	122	○
1.2	*Regulatory environment*	*59.1*	*96*	
1.2.1	Regulatory quality*	58.8	62	
1.2.2	Rule of law*	32.9	98	
1.2.3	Cost of redundancy dismissal, salary weeks	22.0	101	
1.3	*Business environment*	*63.5*	*35*	●
1.3.1	Ease of starting a business*	63.3	52	
1.3.2	Ease of resolving insolvency*	84.8	22	●
1.3.3	Ease of paying taxes*	42.4	81	
2	**Human capital & research**	**31.8**	**81**	
2.1	*Education*	*47.8*	*82*	
2.1.1	Current expenditure on education, % GNI	4.8	47	
2.1.2	Public expenditure/pupil, % GDP/cap	16.1	85	
2.1.3	School life expectancy, years	13.6	55	
2.1.4	PISA scales in reading, maths, & science	419.9	49	
2.1.5	Pupil-teacher ratio, secondary	17.6	84	
2.2	*Tertiary education*	*27.6*	*83*	
2.2.1	Tertiary enrolment, % gross	27.0	77	
2.2.2	Graduates in science & engineering, %	25.6	22	●
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.3	117	○
2.3	*Research & development (R&D)*	*20.0*	*76*	
2.3.1	Researchers, headcounts/mn pop.	352.9	77	
2.3.2	Gross expenditure on R&D, % GDP	0.4	69	
2.3.3	Quality of scientific research institutions†	49.2	51	
3	**Infrastructure**	**38.4**	**50**	
3.1	*Information & communication technologies (ICT)*	*47.3*	*44*	
3.1.1	ICT access*	39.4	76	
3.1.2	ICT use*	18.6	65	
3.1.3	Government's online service*	73.2	28	●
3.1.4	E-participation*	57.9	25	●
3.2	*General infrastructure*	*37.1*	*64*	
3.2.1	Electricity output, kWh/cap	2,471.1	66	
3.2.2	Electricity consumption, kWh/cap	2,077.4	68	
3.2.3	Quality of trade & transport infrastructure*	48.8	43	
3.2.4	Gross capital formation, % GDP	25.0	43	
3.3	*Ecological sustainability*	*30.9*	*66*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.0	38	●
3.3.2	Environmental performance*	49.1	81	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.5	78	
4	**Market sophistication**	**36.8**	**76**	
4.1	*Credit*	*21.9*	*89*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	24.6	105	
4.1.3	Microfinance gross loans, % GDP	0.2	64	
4.2	*Investment*	*26.7*	*65*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	43.7	48	
4.2.3	Total value of stocks traded, % GDP	10.4	49	
4.2.4	Venture capital deals/tr PPP$ GDP	1.8	64	
4.3	*Trade & competition*	*61.8*	*76*	
4.3.1	Applied tariff rate, weighted mean, %	6.1	91	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.1	23	●
4.3.3	Imports of goods & services, % GDP	31.8	100	
4.3.4	Exports of goods & services, % GDP	30.3	86	
4.3.5	Intensity of local competition†	60.3	80	
5	**Business sophistication**	**36.1**	**87**	
5.1	*Knowledge workers*	*51.1*	*53*	
5.1.1	Knowledge-intensive employment, %	18.4	76	
5.1.2	Firms offering formal training, % firms	50.8	29	●
5.1.3	R&D performed by business, %	47.4	35	
5.1.4	R&D financed by business, %	45.1	33	
5.1.5	GMAT mean score	505.1	72	
5.1.6	GMAT test takers/mn pop. 20–34	68.6	65	
5.2	*Innovation linkages*	*28.0*	*110*	○
5.2.1	University/industry research collaboration†	50.7	42	
5.2.2	State of cluster development†	48.1	42	
5.2.3	R&D financed by abroad, %	1.4	78	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	6.8	96	
5.2.5	PCT patent filings with foreign inventor, %	19.7	82	○
5.3	*Knowledge absorption*	*29.4*	*98*	
5.3.1	Royalty & license fees payments/th GDP	0.5	89	○
5.3.2	High-tech imports less re-imports, %	19.4	9	●
5.3.3	Computer & comm. service imports, %	3.5	132	○
5.3.4	FDI net inflows, % GDP	1.8	83	
6	**Knowledge & technology outputs**	**22.3**	**94**	
6.1	*Knowledge creation*	*16.4*	*91*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.6	75	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	61	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.3	42	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.8	72	
6.2	*Knowledge impact*	*26.1*	*98*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.2	48	
6.2.2	New businesses/th pop. 15–64	0.6	76	○
6.2.3	Computer software spending, % GDP	0.1	51	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.9	82	
6.3	*Knowledge diffusion*	*24.3*	*76*	
6.3.1	Royalty & license fees receipts/th GDP	0.1	76	
6.3.2	High-tech exports less re-exports, %	16.5	15	●
6.3.3	Computer & comm. service exports, %	1.9	134	○
6.3.4	FDI net outflows, % GDP	1.3	34	●
7	**Creative outputs**	**29.5**	**79**	
7.1	*Creative intangibles*	*38.8*	*77*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	28.6	53	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	57.3	49	
7.1.4	ICT & organizational model creation†	45.7	77	
7.2	*Creative goods & services*	*16.3*	*81*	
7.2.1	Recreation & culture consumption, %	4.9	55	
7.2.2	National feature films/mn pop. 15–69	0.9	68	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	64.5	74	
7.2.4	Creative goods exports, %	1.3	60	
7.2.5	Creative services exports, %	1.0	70	
7.3	*Online creativity*	*24.1*	*58*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.5	70	
7.3.2	Country-code TLDs/th pop. 15–69	29.2	57	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	911.9	66	
7.3.4	Video uploads on YouTube/pop. 15–69	59.1	59	

Moldova (Republic of)

Key indicators

Population (millions)	3.6
GDP per capita, PPP$	3,383.0
GDP (US$ billions)	7.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**39.2**	**50**	
Innovation Output Sub-Index		40.7	30	
Innovation Input Sub-Index		37.8	79	
Innovation Efficiency Index		1.1	3	●
Global Innovation Index 2011 (out of 125)			39	
GII 2012 rank among GII 2011 economies (125)			48	
1	**Institutions**	**52.6**	**78**	
1.1	*Political environment*	*54.0*	*76*	
1.1.1	Political stability*	55.3	94	
1.1.2	Government effectiveness*	24.5	107	
1.1.3	Press freedom*	82.4	46	
1.2	*Regulatory environment*	*57.0*	*99*	
1.2.1	Regulatory quality*	48.8	79	
1.2.2	Rule of law*	37.2	80	
1.2.3	Cost of redundancy dismissal, salary weeks	22.6	102	
1.3	*Business environment*	*46.7*	*76*	
1.3.1	Ease of starting a business*	45.3	77	
1.3.2	Ease of resolving insolvency*	37.4	88	
1.3.3	Ease of paying taxes*	57.5	60	
2	**Human capital & research**	**39.9**	**55**	
2.1	*Education*	*71.7*	*8*	●
2.1.1	Current expenditure on education, % GNI	7.7	5	●
2.1.2	Public expenditure/pupil, % GDP/cap	46.8	2	●
2.1.3	School life expectancy, years	11.8	90	
2.1.4	PISA scales in reading, maths, & science	399.5	57	
2.1.5	Pupil-teacher ratio, secondary	10.5	34	
2.2	*Tertiary education*	*32.4*	*71*	
2.2.1	Tertiary enrolment, % gross	38.1	62	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.2	71	
2.2.4	Gross tertiary outbound enrolment, %	3.7	22	●
2.3	*Research & development (R&D)*	*15.7*	*100*	
2.3.1	Researchers, headcounts/mn pop.	988.4	57	
2.3.2	Gross expenditure on R&D, % GDP	0.5	53	
2.3.3	Quality of scientific research institutions†	27.8	117	○
3	**Infrastructure**	**29.8**	**85**	
3.1	*Information & communication technologies (ICT)*	*41.3*	*56*	
3.1.1	ICT access*	51.7	55	
3.1.2	ICT use*	22.6	57	
3.1.3	Government's online service*	51.6	61	
3.1.4	E-participation*	39.5	38	
3.2	*General infrastructure*	*26.7*	*118*	
3.2.1	Electricity output, kWh/cap	1,009.0	91	
3.2.2	Electricity consumption, kWh/cap	1,007.2	92	
3.2.3	Quality of trade & transport infrastructure*	26.3	117	○
3.2.4	Gross capital formation, % GDP	23.7	55	
3.3	*Ecological sustainability*	*21.4*	*106*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.5	94	
3.3.2	Environmental performance*	45.2	103	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	97	
4	**Market sophistication**	**33.1**	**96**	
4.1	*Credit*	*18.9*	*96*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	33.3	88	
4.1.3	Microfinance gross loans, % GDP	1.7	25	
4.2	*Investment*	*9.8*	*113*	
4.2.1	Ease of protecting investors*	29.4	91	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	0.2	90	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*70.5*	*27*	
4.3.1	Applied tariff rate, weighted mean, %	2.5	50	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	46	
4.3.3	Imports of goods & services, % GDP	78.2	13	●
4.3.4	Exports of goods & services, % GDP	39.6	65	
4.3.5	Intensity of local competition†	55.9	100	
5	**Business sophistication**	**33.4**	**104**	
5.1	*Knowledge workers*	*41.1*	*84*	
5.1.1	Knowledge-intensive employment, %	28.2	47	
5.1.2	Firms offering formal training, % firms	33.1	53	
5.1.3	R&D performed by business, %	11.3	74	
5.1.4	R&D financed by business, %	0.0	90	○
5.1.5	GMAT mean score	542.9	46	
5.1.6	GMAT test takers/mn pop. 20–34	102.0	51	
5.2	*Innovation linkages*	*28.9*	*103*	
5.2.1	University/industry research collaboration†	28.3	118	○
5.2.2	State of cluster development†	24.4	125	○
5.2.3	R&D financed by abroad, %	6.5	51	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*30.2*	*93*	
5.3.1	Royalty & license fees payments/th GDP	2.2	45	
5.3.2	High-tech imports less re-imports, %	7.3	79	
5.3.3	Computer & comm. service imports, %	23.7	89	
5.3.4	FDI net inflows, % GDP	3.3	51	
6	**Knowledge & technology outputs**	**38.9**	**31**	
6.1	*Knowledge creation*	*54.7*	*19*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	11.8	15	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	73	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	19.1	1	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	7.8	42	
6.2	*Knowledge impact*	*34.9*	*62*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.7	56	
6.2.2	New businesses/th pop. 15–64	1.3	51	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.4	55	
6.3	*Knowledge diffusion*	*27.0*	*67*	
6.3.1	Royalty & license fees receipts/th GDP	0.8	35	
6.3.2	High-tech exports less re-exports, %	2.2	57	
6.3.3	Computer & comm. service exports, %	33.8	55	
6.3.4	FDI net outflows, % GDP	0.1	89	
7	**Creative outputs**	**42.5**	**32**	
7.1	*Creative intangibles*	*61.9*	*9*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	180.8	4	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	3.9	4	●
7.1.3	ICT & business model creation†	42.0	107	
7.1.4	ICT & organizational model creation†	37.4	104	
7.2	*Creative goods & services*	*22.9*	*66*	
7.2.1	Recreation & culture consumption, %	0.5	96	○
7.2.2	National feature films/mn pop. 15–69	0.4	89	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	147.4	38	
7.2.4	Creative goods exports, %	4.6	15	●
7.2.5	Creative services exports, %	3.5	46	
7.3	*Online creativity*	*23.5*	*60*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.0	85	
7.3.2	Country-code TLDs/th pop. 15–69	23.0	68	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,482.0	55	
7.3.4	Video uploads on YouTube/pop. 15–69	61.5	54	

Mongolia

Key indicators

Population (millions)	2.8
GDP per capita, PPP$	4,509.7
GDP (US$ billions)	8.8

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**35.0**	**68**	
Innovation Output Sub-Index	27.1	79	
Innovation Input Sub-Index	42.8	53	
Innovation Efficiency Index	0.6	109	
Global Innovation Index 2011 (out of 125)		68	
GII 2012 rank among GII 2011 economies (125)		66	
1 Institutions	**58.2**	**63**	
1.1 Political environment	*57.2*	*67*	
1.1.1 Political stability*	77.6	40	
1.1.2 Government effectiveness*	24.8	105	
1.1.3 Press freedom*	69.1	79	
1.2 Regulatory environment	*69.6*	*59*	
1.2.1 Regulatory quality*	44.6	92	
1.2.2 Rule of law*	36.5	83	
1.2.3 Cost of redundancy dismissal, salary weeks	8.7	23	
1.3 Business environment	*47.9*	*71*	
1.3.1 Ease of starting a business*	51.0	69	
1.3.2 Ease of resolving insolvency*	21.5	110	
1.3.3 Ease of paying taxes*	71.2	41	
2 Human capital & research	**31.8**	**80**	
2.1 Education	*48.6*	*79*	
2.1.1 Current expenditure on education, % GNI	5.1	37	
2.1.2 Public expenditure/pupil, % GDP/cap	16.7	82	
2.1.3 School life expectancy, years	13.9	50	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	21.1	97	
2.2 Tertiary education	*33.2*	*68*	
2.2.1 Tertiary enrolment, % gross	53.3	41	
2.2.2 Graduates in science & engineering, %	17.1	66	
2.2.3 Tertiary inbound mobility, %	0.6	85	
2.2.4 Gross tertiary outbound enrolment, %	3.0	28	
2.3 Research & development (R&D)	*13.7*	*112*	
2.3.1 Researchers, headcounts/mn pop.	644.6	66	
2.3.2 Gross expenditure on R&D, % GDP	0.2	77	
2.3.3 Quality of scientific research institutions†	31.2	107	
3 Infrastructure	**32.6**	**74**	
3.1 Information & communication technologies (ICT)	*41.0*	*57*	
3.1.1 ICT access*	36.0	86	
3.1.2 ICT use*	8.6	92	
3.1.3 Government's online service*	58.8	45	
3.1.4 E-participation*	60.5	24	
3.2 General infrastructure	*38.6*	*59*	
3.2.1 Electricity output, kWh/cap	1,542.4	84	
3.2.2 Electricity consumption, kWh/cap	1,432.0	83	
3.2.3 Quality of trade & transport infrastructure*	23.5	126	○
3.2.4 Gross capital formation, % GDP	40.8	3	●
3.3 Ecological sustainability	*18.2*	*116*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.3	113	○
3.3.2 Environmental performance*	45.4	102	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.1	124	○
4 Market sophistication	**52.6**	**28**	
4.1 Credit	*50.1*	*27*	
4.1.1 Ease of getting credit*	38.7	72	
4.1.2 Domestic credit to private sector, % GDP	39.6	81	
4.1.3 Microfinance gross loans, % GDP	14.8	1	●
4.2 Investment	*39.8*	*31*	
4.2.1 Ease of protecting investors*	76.2	27	
4.2.2 Market capitalization, % GDP	18.0	81	
4.2.3 Total value of stocks traded, % GDP	0.8	74	
4.2.4 Venture capital deals/tr PPP$ GDP	79.3	17	●
4.3 Trade & competition	*68.0*	*41*	
4.3.1 Applied tariff rate, weighted mean, %	5.1	80	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.4	50	
4.3.3 Imports of goods & services, % GDP	62.4	33	
4.3.4 Exports of goods & services, % GDP	54.7	33	
4.3.5 Intensity of local competition†	58.0	92	
5 Business sophistication	**38.9**	**69**	
5.1 Knowledge workers	*42.8*	*76*	
5.1.1 Knowledge-intensive employment, %	20.2	67	
5.1.2 Firms offering formal training, % firms	61.2	11	●
5.1.3 R&D performed by business, %	6.9	78	○
5.1.4 R&D financed by business, %	3.6	78	○
5.1.5 GMAT mean score	471.9	93	
5.1.6 GMAT test takers/mn pop. 20–34	139.9	41	
5.2 Innovation linkages	*41.7*	*48*	
5.2.1 University/industry research collaboration†	36.8	94	
5.2.2 State of cluster development†	26.3	122	○
5.2.3 R&D financed by abroad, %	1.8	75	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	224.3	1	●
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*32.3*	*83*	
5.3.1 Royalty & license fees payments/th GDP	0.4	93	
5.3.2 High-tech imports less re-imports, %	5.8	92	
5.3.3 Computer & comm. service imports, %	20.8	98	
5.3.4 FDI net inflows, % GDP	23.5	3	●
6 Knowledge & technology outputs	**22.7**	**90**	
6.1 Knowledge creation	*49.4*	*24*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	9.9	19	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	75	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	11.5	1	●
6.1.4 Scientific & technical articles/bn PPP$ GDP	4.1	62	
6.2 Knowledge impact	*2.8*	*140*	○
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.2	133	○
6.3 Knowledge diffusion	*15.8*	*119*	○
6.3.1 Royalty & license fees receipts/th GDP	0.1	74	
6.3.2 High-tech exports less re-exports, %	0.4	93	
6.3.3 Computer & comm. service exports, %	8.9	124	○
6.3.4 FDI net outflows, % GDP	0.8	46	
7 Creative outputs	**31.6**	**71**	
7.1 Creative intangibles	*48.5*	*33*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	316.9	1	●
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.2	47	
7.1.3 ICT & business model creation†	44.9	91	
7.1.4 ICT & organizational model creation†	45.4	79	
7.2 Creative goods & services	*10.6*	*98*	
7.2.1 Recreation & culture consumption, %	2.0	82	
7.2.2 National feature films/mn pop. 15–69	7.9	12	●
7.2.3 Paid-for dailies, circulation/th pop. 15–69	25.9	101	
7.2.4 Creative goods exports, %	0.3	100	
7.2.5 Creative services exports, %	0.1	101	○
7.3 Online creativity	*19.0*	*79*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.8	88	
7.3.2 Country-code TLDs/th pop. 15–69	25.6	61	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	389.6	82	
7.3.4 Video uploads on YouTube/pop. 15–69	46.5	86	

Montenegro

Key indicators

Population (millions) 0.6
GDP per capita, PPP$ 11,228.2
GDP (US$ billions) 4.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**40.1**	**45**	
Innovation Output Sub-Index		35.3	44	
Innovation Input Sub-Index		45.0	48	
Innovation Efficiency Index		0.8	50	
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**58.5**	**62**	
1.1	*Political environment*	*62.5*	*57*	
1.1.1	Political stability*	77.5	41	
1.1.2	Government effectiveness*	43.1	63	
1.1.3	Press freedom*	66.9	84	
1.2	*Regulatory environment*	*54.4*	*104*	○
1.2.1	Regulatory quality*	50.2	75	
1.2.2	Rule of law*	47.3	59	
1.2.3	Cost of redundancy dismissal, salary weeks	28.1	123	○
1.3	*Business environment*	*58.7*	*52*	
1.3.1	Ease of starting a business*	72.6	38	
1.3.2	Ease of resolving insolvency*	69.7	43	
1.3.3	Ease of paying taxes*	33.8	93	
2	**Human capital & research**	**49.3**	**29**	●
2.1	*Education*	*56.0*	*53*	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	15.0	35	
2.1.4	PISA scales in reading, maths, & science	403.8	54	○
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*63.2*	*5*	●
2.2.1	Tertiary enrolment, % gross	47.6	51	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	7.3	8	●
2.3	*Research & development (R&D)*	*28.8*	*45*	
2.3.1	Researchers, headcounts/mn pop.	1,068.5	54	
2.3.2	Gross expenditure on R&D, % GDP	1.1	31	
2.3.3	Quality of scientific research institutions†	51.8	43	
3	**Infrastructure**	**34.0**	**68**	
3.1	*Information & communication technologies (ICT)*	*43.2*	*52*	
3.1.1	ICT access*	55.5	50	
3.1.2	ICT use*	34.6	43	
3.1.3	Government's online service*	51.0	64	
3.1.4	E-participation*	31.6	47	
3.2	*General infrastructure*	*41.7*	*39*	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	36.3	75	
3.2.4	Gross capital formation, % GDP	22.8	65	
3.3	*Ecological sustainability*	*17.0*	*118*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.2	41	
4	**Market sophistication**	**44.8**	**45**	
4.1	*Credit*	*40.1*	*43*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	67.0	51	
4.1.3	Microfinance gross loans, % GDP	0.9	38	
4.2	*Investment*	*27.2*	*63*	
4.2.1	Ease of protecting investors*	76.2	27	
4.2.2	Market capitalization, % GDP	90.0	18	●
4.2.3	Total value of stocks traded, % GDP	0.8	76	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*67.1*	*47*	
4.3.1	Applied tariff rate, weighted mean, %	3.5	57	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	5	●
4.3.3	Imports of goods & services, % GDP	63.6	32	●
4.3.4	Exports of goods & services, % GDP	35.6	76	
4.3.5	Intensity of local competition†	50.5	117	○
5	**Business sophistication**	**38.4**	**73**	
5.1	*Knowledge workers*	*39.0*	*91*	
5.1.1	Knowledge-intensive employment, %	35.9	31	
5.1.2	Firms offering formal training, % firms	25.2	78	○
5.1.3	R&D performed by business, %	5.2	79	○
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	n/a	n/a	
5.1.6	GMAT test takers/mn pop. 20–34	n/a	n/a	
5.2	*Innovation linkages*	*31.2*	*94*	
5.2.1	University/industry research collaboration†	44.7	60	
5.2.2	State of cluster development†	33.3	104	○
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*45.0*	*32*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	5.2	98	○
5.3.3	Computer & comm. service imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	18.5	7	●
6	**Knowledge & technology outputs**	**26.0**	**71**	
6.1	*Knowledge creation*	*26.1*	*60*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.4	43	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	53	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.6	93	
6.2	*Knowledge impact*	*46.4*	*28*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	6.6	8	●
6.2.2	New businesses/th pop. 15–64	0.9	63	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	12.6	42	
6.3	*Knowledge diffusion*	*5.5*	*134*	○
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	2.1	60	
6.3.3	Computer & comm. service exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**44.6**	**25**	●
7.1	*Creative intangibles*	*44.9*	*49*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.7	28	
7.1.3	ICT & business model creation†	58.3	44	
7.1.4	ICT & organizational model creation†	60.7	22	●
7.2	*Creative goods & services*	*17.3*	*79*	
7.2.1	Recreation & culture consumption, %	3.3	68	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	137.1	44	
7.2.4	Creative goods exports, %	0.8	81	
7.2.5	Creative services exports, %	4.6	42	
7.3	*Online creativity*	*71.3*	*10*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	100.0	1	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,413.8	33	
7.3.4	Video uploads on YouTube/pop. 15–69	62.8	47	

Morocco

Key indicators

Population (millions)	32.2
GDP per capita, PPP$	5,069.8
GDP (US$ billions)	101.8

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**30.7**	**88**	
Innovation Output Sub-Index	24.7	90	
Innovation Input Sub-Index	36.6	88	
Innovation Efficiency Index	0.7	94	
Global Innovation Index 2011 (out of 125)		94	
GII 2012 rank among GII 2011 economies (125)		83	
1 Institutions	**50.4**	**85**	
1.1 Political environment	*46.6*	*92*	
1.1.1 Political stability*	52.8	97	
1.1.2 Government effectiveness*	36.5	78	
1.1.3 Press freedom*	50.5	112	○
1.2 Regulatory environment	*60.4*	*90*	
1.2.1 Regulatory quality*	48.9	78	
1.2.2 Rule of law*	42.8	67	
1.2.3 Cost of redundancy dismissal, salary weeks	20.7	91	
1.3 Business environment	*44.1*	*83*	
1.3.1 Ease of starting a business*	53.2	66	
1.3.2 Ease of resolving insolvency*	60.4	56	
1.3.3 Ease of paying taxes*	18.7	113	○
2 Human capital & research	**36.7**	**64**	
2.1 Education	*48.7*	*78*	
2.1.1 Current expenditure on education, % GNI	5.2	36	●
2.1.2 Public expenditure/pupil, % GDP/cap	24.1	32	●
2.1.3 School life expectancy, years	10.4	115	○
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	18.7	93	
2.2 Tertiary education	*41.8*	*46*	●
2.2.1 Tertiary enrolment, % gross	13.2	98	
2.2.2 Graduates in science & engineering, %	34.9	5	●
2.2.3 Tertiary inbound mobility, %	1.9	56	
2.2.4 Gross tertiary outbound enrolment, %	1.3	63	
2.3 Research & development (R&D)	*19.5*	*79*	
2.3.1 Researchers, headcounts/mn pop.	934.7	58	
2.3.2 Gross expenditure on R&D, % GDP	0.6	48	
2.3.3 Quality of scientific research institutions†	37.2	93	
3 Infrastructure	**32.6**	**73**	
3.1 Information & communication technologies (ICT)	*21.5*	*100*	
3.1.1 ICT access*	40.5	74	
3.1.2 ICT use*	20.5	62	
3.1.3 Government's online service*	24.8	126	○
3.1.4 E-participation*	0.0	127	○
3.2 General infrastructure	*36.6*	*66*	
3.2.1 Electricity output, kWh/cap	679.1	99	
3.2.2 Electricity consumption, kWh/cap	747.1	97	
3.2.3 Quality of trade & transport infrastructure*	33.3	91	
3.2.4 Gross capital formation, % GDP	35.1	8	●
3.3 Ecological sustainability	*39.8*	*41*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	11.6	5	●
3.3.2 Environmental performance*	45.8	100	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.4	86	
4 Market sophistication	**33.8**	**93**	
4.1 Credit	*18.9*	*95*	
4.1.1 Ease of getting credit*	27.0	88	
4.1.2 Domestic credit to private sector, % GDP	68.8	49	●
4.1.3 Microfinance gross loans, % GDP	0.6	42	
4.2 Investment	*21.6*	*79*	
4.2.1 Ease of protecting investors*	7.1	123	○
4.2.2 Market capitalization, % GDP	75.8	28	●
4.2.3 Total value of stocks traded, % GDP	11.8	48	
4.2.4 Venture capital deals/tr PPP$ GDP	12.3	42	●
4.3 Trade & competition	*60.9*	*82*	
4.3.1 Applied tariff rate, weighted mean, %	7.1	101	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.0	71	
4.3.3 Imports of goods & services, % GDP	42.9	65	
4.3.4 Exports of goods & services, % GDP	33.0	81	
4.3.5 Intensity of local competition†	68.3	51	
5 Business sophistication	**29.5**	**124**	○
5.1 Knowledge workers	*29.6*	*115*	○
5.1.1 Knowledge-intensive employment, %	6.8	100	○
5.1.2 Firms offering formal training, % firms	24.7	82	
5.1.3 R&D performed by business, %	22.0	63	
5.1.4 R&D financed by business, %	22.7	60	
5.1.5 GMAT mean score	517.3	61	
5.1.6 GMAT test takers/mn pop. 20–34	40.6	94	
5.2 Innovation linkages	*27.2*	*113*	○
5.2.1 University/industry research collaboration†	36.5	99	
5.2.2 State of cluster development†	47.1	44	●
5.2.3 R&D financed by abroad, %	2.6	72	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	14.9	76	
5.2.5 PCT patent filings with foreign inventor, %	33.3	61	
5.3 Knowledge absorption	*31.8*	*89*	
5.3.1 Royalty & license fees payments/th GDP	0.3	97	○
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	30.4	66	
5.3.4 FDI net inflows, % GDP	1.4	99	
6 Knowledge & technology outputs	**24.5**	**80**	
6.1 Knowledge creation	*20.4*	*76*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	1.0	69	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	66	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	2.7	74	
6.2 Knowledge impact	*25.5*	*100*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.3	63	
6.2.2 New businesses/th pop. 15–64	1.3	53	
6.2.3 Computer software spending, % GDP	0.2	45	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.7	85	
6.3 Knowledge diffusion	*27.6*	*63*	
6.3.1 Royalty & license fees receipts/th GDP	0.0	80	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	24.8	74	
6.3.4 FDI net outflows, % GDP	0.6	48	
7 Creative outputs	**24.9**	**102**	
7.1 Creative intangibles	*38.4*	*80*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	95.7	11	●
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.5	33	
7.1.3 ICT & business model creation†	44.1	98	
7.1.4 ICT & organizational model creation†	53.4	49	
7.2 Creative goods & services	*7.2*	*116*	○
7.2.1 Recreation & culture consumption, %	1.2	93	○
7.2.2 National feature films/mn pop. 15–69	0.6	75	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	15.8	107	
7.2.4 Creative goods exports, %	1.1	68	
7.2.5 Creative services exports, %	0.9	72	
7.3 Online creativity	*15.7*	*93*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.0	98	
7.3.2 Country-code TLDs/th pop. 15–69	15.0	83	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	228.6	97	
7.3.4 Video uploads on YouTube/pop. 15–69	45.5	89	

Mozambique

Key indicators

Population (millions)	22.0
GDP per capita, PPP$	1,085.9
GDP (US$ billions)	12.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.3**	**110**	
Innovation Output Sub-Index		21.0	115	
Innovation Input Sub-Index		31.7	107	
Innovation Efficiency Index		0.7	98	
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**46.4**	**98**	
1.1	*Political environment*	*60.2*	*61*	
1.1.1	Political stability*	73.1	51	●
1.1.2	Government effectiveness*	28.7	94	
1.1.3	Press freedom*	78.7	54	
1.2	*Regulatory environment*	*36.4*	*132*	
1.2.1	Regulatory quality*	42.5	96	
1.2.2	Rule of law*	34.5	92	
1.2.3	Cost of redundancy dismissal, salary weeks	41.1	132	○
1.3	*Business environment*	*42.6*	*89*	
1.3.1	Ease of starting a business*	64.0	51	●
1.3.2	Ease of resolving insolvency*	17.2	116	
1.3.3	Ease of paying taxes*	46.7	75	
2	**Human capital & research**	**19.0**	**129**	
2.1	*Education*	*31.7*	*122*	
2.1.1	Current expenditure on education, % GNI	4.0	74	
2.1.2	Public expenditure/pupil, % GDP/cap	23.4	41	●
2.1.3	School life expectancy, years	9.2	121	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	35.0	127	○
2.2	*Tertiary education*	*12.0*	*120*	
2.2.1	Tertiary enrolment, % gross	1.5	132	○
2.2.2	Graduates in science & engineering, %	12.1	92	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.1	134	○
2.3	*Research & development (R&D)*	*13.4*	*114*	
2.3.1	Researchers, headcounts/mn pop.	23.9	119	○
2.3.2	Gross expenditure on R&D, % GDP	0.2	84	
2.3.3	Quality of scientific research institutions†	35.6	98	
3	**Infrastructure**	**21.5**	**121**	
3.1	*Information & communication technologies (ICT)*	*17.1*	*113*	
3.1.1	ICT access*	16.7	130	
3.1.2	ICT use*	1.9	127	
3.1.3	Government's online service*	36.6	99	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*25.9*	*121*	
3.2.1	Electricity output, kWh/cap	801.6	96	
3.2.2	Electricity consumption, kWh/cap	452.7	106	
3.2.3	Quality of trade & transport infrastructure*	26.0	118	
3.2.4	Gross capital formation, % GDP	23.7	54	
3.3	*Ecological sustainability*	*21.3*	*107*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.3	99	
3.3.2	Environmental performance*	47.8	86	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	117	
4	**Market sophistication**	**33.3**	**95**	
4.1	*Credit*	*9.0*	*122*	
4.1.1	Ease of getting credit*	15.3	112	
4.1.2	Domestic credit to private sector, % GDP	25.8	102	
4.1.3	Microfinance gross loans, % GDP	0.4	48	
4.2	*Investment*	*33.5*	*46*	●
4.2.1	Ease of protecting investors*	66.9	35	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*57.3*	*102*	
4.3.1	Applied tariff rate, weighted mean, %	4.8	75	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	77	
4.3.3	Imports of goods & services, % GDP	43.2	64	
4.3.4	Exports of goods & services, % GDP	25.3	109	
4.3.5	Intensity of local competition†	48.3	124	
5	**Business sophistication**	**38.2**	**74**	
5.1	*Knowledge workers*	*16.1*	*141*	○
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	22.1	86	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	398.2	130	
5.1.6	GMAT test takers/mn pop. 20–34	1.3	140	○
5.2	*Innovation linkages*	*58.1*	*9*	●
5.2.1	University/industry research collaboration†	46.5	49	
5.2.2	State of cluster development†	34.5	98	
5.2.3	R&D financed by abroad, %	64.3	1	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	75.3	20	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*40.5*	*51*	●
5.3.1	Royalty & license fees payments/th GDP	0.4	92	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	41.1	33	●
5.3.4	FDI net inflows, % GDP	8.2	19	●
6	**Knowledge & technology outputs**	**23.3**	**86**	
6.1	*Knowledge creation*	*3.0*	*130*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.0	68	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.1	56	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.4	99	
6.2	*Knowledge impact*	*35.5*	*60*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.2	28	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	121	
6.3	*Knowledge diffusion*	*31.5*	*49*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	100	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	34.7	52	
6.3.4	FDI net outflows, % GDP	0.0	103	
7	**Creative outputs**	**18.7**	**125**	
7.1	*Creative intangibles*	*27.8*	*120*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	29.1	50	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.4	39	
7.1.3	ICT & business model creation†	42.8	102	
7.1.4	ICT & organizational model creation†	47.0	72	
7.2	*Creative goods & services*	*15.8*	*83*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	0.1	99	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	1.5	134	○
7.2.4	Creative goods exports, %	0.0	130	○
7.2.5	Creative services exports, %	13.8	10	●
7.3	*Online creativity*	*3.3*	*136*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	135	○
7.3.2	Country-code TLDs/th pop. 15–69	2.0	115	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	19.8	119	
7.3.4	Video uploads on YouTube/pop. 15–69	10.9	132	

Namibia

Key indicators

Population (millions)	2.1
GDP per capita, PPP$	7,276.4
GDP (US$ billions)	13.0

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**34.1**	**73**	
Innovation Output Sub-Index	25.9	87	
Innovation Input Sub-Index	42.4	56	
Innovation Efficiency Index	0.6	120	
Global Innovation Index 2011 (out of 125)		78	
GII 2012 rank among GII 2011 economies (125)		71	
1 Institutions	**65.6**	**50**	
1.1 Political environment	*73.9*	*37*	
1.1.1 Political stability*	83.5	29	●
1.1.2 Government effectiveness*	43.6	60	
1.1.3 Press freedom*	94.6	19	●
1.2 Regulatory environment	*75.6*	*42*	
1.2.1 Regulatory quality*	55.3	70	
1.2.2 Rule of law*	53.8	50	
1.2.3 Cost of redundancy dismissal, salary weeks	9.7	33	
1.3 Business environment	*47.2*	*74*	
1.3.1 Ease of starting a business*	27.3	102	
1.3.2 Ease of resolving insolvency*	66.9	47	
1.3.3 Ease of paying taxes*	47.4	74	
2 Human capital & research	**38.1**	**59**	
2.1 Education	*52.8*	*65*	
2.1.1 Current expenditure on education, % GNI	8.0	4	●
2.1.2 Public expenditure/pupil, % GDP/cap	19.9	59	
2.1.3 School life expectancy, years	11.8	91	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	24.6	110	
2.2 Tertiary education	*22.1*	*96*	
2.2.1 Tertiary enrolment, % gross	9.0	108	
2.2.2 Graduates in science & engineering, %	2.6	104	○
2.2.3 Tertiary inbound mobility, %	10.2	16	●
2.2.4 Gross tertiary outbound enrolment, %	3.4	26	●
2.3 Research & development (R&D)	*39.3*	*32*	●
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	39.3	80	
3 Infrastructure	**27.0**	**100**	
3.1 Information & communication technologies (ICT)	*16.1*	*117*	
3.1.1 ICT access*	26.9	103	
3.1.2 ICT use*	4.9	107	
3.1.3 Government's online service*	30.1	116	
3.1.4 E-participation*	2.6	115	○
3.2 General infrastructure	*24.2*	*127*	○
3.2.1 Electricity output, kWh/cap	828.3	95	
3.2.2 Electricity consumption, kWh/cap	1,627.8	78	
3.2.3 Quality of trade & transport infrastructure*	17.8	135	○
3.2.4 Gross capital formation, % GDP	23.5	56	
3.3 Ecological sustainability	*40.6*	*40*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	11.0	9	●
3.3.2 Environmental performance*	50.7	75	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.6	72	
4 Market sophistication	**42.8**	**53**	
4.1 Credit	*30.4*	*68*	
4.1.1 Ease of getting credit*	77.4	21	●
4.1.2 Domestic credit to private sector, % GDP	45.6	70	
4.1.3 Microfinance gross loans, % GDP	0.0	87	○
4.2 Investment	*30.7*	*53*	
4.2.1 Ease of protecting investors*	46.7	60	
4.2.2 Market capitalization, % GDP	9.7	93	○
4.2.3 Total value of stocks traded, % GDP	0.2	95	○
4.2.4 Venture capital deals/tr PPP$ GDP	64.3	20	●
4.3 Trade & competition	*67.3*	*44*	
4.3.1 Applied tariff rate, weighted mean, %	1.8	39	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.6	58	
4.3.3 Imports of goods & services, % GDP	37.8	78	
4.3.4 Exports of goods & services, % GDP	38.9	67	
4.3.5 Intensity of local competition†	59.6	83	
5 Business sophistication	**38.8**	**71**	
5.1 Knowledge workers	*38.3*	*94*	
5.1.1 Knowledge-intensive employment, %	16.9	83	
5.1.2 Firms offering formal training, % firms	44.5	38	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	416.2	121	○
5.1.6 GMAT test takers/mn pop. 20–34	25.6	107	
5.2 Innovation linkages	*45.6*	*34*	●
5.2.1 University/industry research collaboration†	41.4	75	
5.2.2 State of cluster development†	37.8	83	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	25.7	56	
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*32.4*	*82*	
5.3.1 Royalty & license fees payments/th GDP	0.7	82	
5.3.2 High-tech imports less re-imports, %	5.0	104	○
5.3.3 Computer & comm. service imports, %	40.9	34	
5.3.4 FDI net inflows, % GDP	7.0	25	●
6 Knowledge & technology outputs	**24.8**	**79**	
6.1 Knowledge creation	*39.1*	*33*	●
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	1.2	30	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.0	115	
6.2 Knowledge impact	*21.6*	*113*	
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.6	100	
6.3 Knowledge diffusion	*13.8*	*124*	○
6.3.1 Royalty & license fees receipts/th GDP	0.0	105	○
6.3.2 High-tech exports less re-exports, %	0.5	88	
6.3.3 Computer & comm. service exports, %	3.8	130	○
6.3.4 FDI net outflows, % GDP	0.0	94	
7 Creative outputs	**26.9**	**95**	
7.1 Creative intangibles	*43.8*	*56*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	42.1	106	
7.1.4 ICT & organizational model creation†	45.4	78	
7.2 Creative goods & services	*7.7*	*113*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	0.8	70	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	40.3	88	
7.2.4 Creative goods exports, %	1.1	67	
7.2.5 Creative services exports, %	0.6	85	
7.3 Online creativity	*12.2*	*103*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	7.5	50	
7.3.2 Country-code TLDs/th pop. 15–69	2.0	117	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	237.5	95	
7.3.4 Video uploads on YouTube/pop. 15–69	38.2	100	

Nepal

Key indicators

Population (millions)	28.5
GDP per capita, PPP$	1,328.1
GDP (US$ billions)	18.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.0**	**113**	
Innovation Output Sub-Index		24.0	95	
Innovation Input Sub-Index		28.0	127	
Innovation Efficiency Index		0.9	23	●
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**41.3**	**110**	
1.1	*Political environment*	*37.5*	*123*	
1.1.1	Political stability*	24.6	136	○
1.1.2	Government effectiveness*	20.8	117	
1.1.3	Press freedom*	67.1	83	
1.2	*Regulatory environment*	*44.4*	*127*	
1.2.1	Regulatory quality*	32.9	122	
1.2.2	Rule of law*	20.7	124	
1.2.3	Cost of redundancy dismissal, salary weeks	27.2	115	
1.3	*Business environment*	*41.9*	*91*	
1.3.1	Ease of starting a business*	46.0	76	
1.3.2	Ease of resolving insolvency*	28.0	101	
1.3.3	Ease of paying taxes*	51.7	68	
2	**Human capital & research**	**20.4**	**124**	
2.1	*Education*	*24.6*	*132*	
2.1.1	Current expenditure on education, % GNI	4.2	67	●
2.1.2	Public expenditure/pupil, % GDP/cap	13.0	95	
2.1.3	School life expectancy, years	8.9	124	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	36.9	129	○
2.2	*Tertiary education*	*26.9*	*85*	
2.2.1	Tertiary enrolment, % gross	5.6	119	
2.2.2	Graduates in science & engineering, %	23.2	37	●
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	2.8	30	●
2.3	*Research & development (R&D)*	*9.6*	*127*	
2.3.1	Researchers, headcounts/mn pop.	117.4	98	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	18.4	129	○
3	**Infrastructure**	**23.8**	**110**	
3.1	*Information & communication technologies (ICT)*	*12.8*	*128*	
3.1.1	ICT access*	17.5	129	
3.1.2	ICT use*	2.5	125	
3.1.3	Government's online service*	28.8	122	
3.1.4	E-participation*	2.6	115	
3.2	*General infrastructure*	*30.9*	*97*	
3.2.1	Electricity output, kWh/cap	111.7	120	○
3.2.2	Electricity consumption, kWh/cap	91.3	121	○
3.2.3	Quality of trade & transport infrastructure*	20.0	132	○
3.2.4	Gross capital formation, % GDP	34.7	10	●
3.3	*Ecological sustainability*	*27.8*	*84*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.5	81	
3.3.2	Environmental performance*	58.0	37	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	101	
4	**Market sophistication**	**29.9**	**111**	
4.1	*Credit*	*26.5*	*82*	
4.1.1	Ease of getting credit*	50.4	62	
4.1.2	Domestic credit to private sector, % GDP	55.6	57	●
4.1.3	Microfinance gross loans, % GDP	1.0	37	●
4.2	*Investment*	*14.5*	*101*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	30.8	61	
4.2.3	Total value of stocks traded, % GDP	0.6	80	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*48.6*	*126*	
4.3.1	Applied tariff rate, weighted mean, %	12.1	130	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	44	●
4.3.3	Imports of goods & services, % GDP	37.1	81	
4.3.4	Exports of goods & services, % GDP	9.8	141	○
4.3.5	Intensity of local competition†	50.5	119	
5	**Business sophistication**	**24.8**	**136**	○
5.1	*Knowledge workers*	*20.9*	*132*	
5.1.1	Knowledge-intensive employment, %	4.8	101	
5.1.2	Firms offering formal training, % firms	8.8	104	○
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	471.7	95	
5.1.6	GMAT test takers/mn pop. 20–34	68.0	66	●
5.2	*Innovation linkages*	*25.7*	*121*	
5.2.1	University/industry research collaboration†	26.4	123	
5.2.2	State of cluster development†	36.5	91	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	4.4	105	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*27.8*	*106*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	7.8	74	
5.3.3	Computer & comm. service imports, %	11.6	119	
5.3.4	FDI net inflows, % GDP	0.3	126	
6	**Knowledge & technology outputs**	**13.8**	**135**	
6.1	*Knowledge creation*	*5.3*	*120*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.7	91	
6.2	*Knowledge impact*	*20.5*	*118*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	102	
6.3	*Knowledge diffusion*	*15.7*	*120*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.5	87	
6.3.3	Computer & comm. service exports, %	24.6	75	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**34.2**	**61**	●
7.1	*Creative intangibles*	*29.0*	*116*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	20.7	63	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	40.8	112	
7.1.4	ICT & organizational model creation†	36.5	109	
7.2	*Creative goods & services*	*68.8*	*2*	●
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	39.1	89	
7.2.4	Creative goods exports, %	12.9	1	●
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*9.9*	*110*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.7	106	
7.3.2	Country-code TLDs/th pop. 15–69	12.9	87	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	108.7	105	
7.3.4	Video uploads on YouTube/pop. 15–69	25.4	114	

Netherlands

Key indicators

Population (millions)	16.7
GDP per capita, PPP$	42,330.7
GDP (US$ billions)	858.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**60.5**	**6**	
Innovation Output Sub-Index	58.2	3	●
Innovation Input Sub-Index	62.9	15	
Innovation Efficiency Index	0.9	9	
Global Innovation Index 2011 (out of 125)		9	
GII 2012 rank among GII 2011 economies (125)		6	
1 Institutions	**88.7**	**11**	
1.1 Political environment	*91.2*	*10*	
1.1.1 Political stability*	87.9	19	
1.1.2 Government effectiveness*	86.5	12	
1.1.3 Press freedom*	99.3	3	●
1.2 Regulatory environment	*97.6*	*4*	●
1.2.1 Regulatory quality*	97.3	5	●
1.2.2 Rule of law*	95.7	7	
1.2.3 Cost of redundancy dismissal, salary weeks	8.7	23	
1.3 Business environment	*77.4*	*20*	
1.3.1 Ease of starting a business*	61.8	54	
1.3.2 Ease of resolving insolvency*	93.5	10	
1.3.3 Ease of paying taxes*	76.9	33	
2 Human capital & research	**48.4**	**34**	
2.1 Education	*63.6*	*24*	
2.1.1 Current expenditure on education, % GNI	4.7	48	
2.1.2 Public expenditure/pupil, % GDP/cap	24.0	34	
2.1.3 School life expectancy, years	16.9	7	
2.1.4 PISA scales in reading, maths, & science	518.8	10	
2.1.5 Pupil-teacher ratio, secondary	13.4	59	○
2.2 Tertiary education	*33.7*	*66*	○
2.2.1 Tertiary enrolment, % gross	62.7	24	
2.2.2 Graduates in science & engineering, %	14.0	83	○
2.2.3 Tertiary inbound mobility, %	3.8	37	
2.2.4 Gross tertiary outbound enrolment, %	1.1	69	○
2.3 Research & development (R&D)	*48.0*	*24*	
2.3.1 Researchers, headcounts/mn pop.	3,088.9	32	
2.3.2 Gross expenditure on R&D, % GDP	1.8	18	
2.3.3 Quality of scientific research institutions†	78.0	8	
3 Infrastructure	**58.7**	**11**	
3.1 Information & communication technologies (ICT)	*85.7*	*2*	●
3.1.1 ICT access*	82.9	9	
3.1.2 ICT use*	63.8	12	
3.1.3 Government's online service*	96.1	5	●
3.1.4 E-participation*	100.0	1	●
3.2 General infrastructure	*51.0*	*23*	
3.2.1 Electricity output, kWh/cap	6,905.4	30	
3.2.2 Electricity consumption, kWh/cap	6,794.7	24	
3.2.3 Quality of trade & transport infrastructure*	81.3	2	●
3.2.4 Gross capital formation, % GDP	18.7	105	○
3.3 Ecological sustainability	*39.5*	*43*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	6.4	46	
3.3.2 Environmental performance*	65.7	16	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	2.2	42	
4 Market sophistication	**60.8**	**15**	
4.1 Credit	*63.6*	*13*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	199.3	7	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*42.1*	*28*	
4.2.1 Ease of protecting investors*	29.4	91	○
4.2.2 Market capitalization, % GDP	84.4	22	
4.2.3 Total value of stocks traded, % GDP	75.6	13	
4.2.4 Venture capital deals/tr PPP$ GDP	34.0	33	
4.3 Trade & competition	*76.6*	*10*	
4.3.1 Applied tariff rate, weighted mean, %	1.6	11	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3 Imports of goods & services, % GDP	70.6	19	
4.3.4 Exports of goods & services, % GDP	78.0	15	
4.3.5 Intensity of local competition†	81.2	5	
5 Business sophistication	**58.0**	**12**	
5.1 Knowledge workers	*75.2*	*16*	
5.1.1 Knowledge-intensive employment, %	47.2	2	●
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	47.9	34	
5.1.4 R&D financed by business, %	48.8	23	
5.1.5 GMAT mean score	542.1	47	
5.1.6 GMAT test takers/mn pop. 20–34	310.9	16	
5.2 Innovation linkages	*48.6*	*27*	
5.2.1 University/industry research collaboration†	72.1	8	
5.2.2 State of cluster development†	61.2	17	
5.2.3 R&D financed by abroad, %	10.6	31	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	39.9	35	
5.2.5 PCT patent filings with foreign inventor, %	57.0	46	○
5.3 Knowledge absorption	*50.1*	*18*	
5.3.1 Royalty & license fees payments/th GDP	4.7	18	
5.3.2 High-tech imports less re-imports, %	16.5	16	
5.3.3 Computer & comm. service imports, %	51.4	12	
5.3.4 FDI net inflows, % GDP	-2.3	138	○
6 Knowledge & technology outputs	**59.4**	**7**	
6.1 Knowledge creation	*66.2*	*10*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	8.8	22	
6.1.2 PCT resident patent ap/bn PPP$ GDP	4.9	10	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	22.4	8	
6.2 Knowledge impact	*50.2*	*19*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.4	61	○
6.2.2 New businesses/th pop. 15–64	3.1	31	
6.2.3 Computer software spending, % GDP	1.1	3	●
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	16.5	33	
6.3 Knowledge diffusion	*61.7*	*7*	
6.3.1 Royalty & license fees receipts/th GDP	7.0	10	
6.3.2 High-tech exports less re-exports, %	15.7	18	
6.3.3 Computer & comm. service exports, %	57.2	15	
6.3.4 FDI net outflows, % GDP	6.3	9	
7 Creative outputs	**57.0**	**3**	●
7.1 Creative intangibles	*44.7*	*50*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	15.9	68	○
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	71.0	10	
7.1.4 ICT & organizational model creation†	55.6	41	
7.2 Creative goods & services	*57.8*	*3*	●
7.2.1 Recreation & culture consumption, %	10.2	13	
7.2.2 National feature films/mn pop. 15–69	3.9	31	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	297.3	14	
7.2.4 Creative goods exports, %	1.4	58	
7.2.5 Creative services exports, %	29.5	1	●
7.3 Online creativity	*80.7*	*2*	●
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2 Country-code TLDs/th pop. 15–69	84.1	2	●
7.3.3 Wikipedia monthly edits/mn pop. 15–69	11,586.5	8	
7.3.4 Video uploads on YouTube/pop. 15–69	79.7	4	●

New Zealand

Key indicators

Population (millions)	4.4
GDP per capita, PPP$	27,966.8
GDP (US$ billions)	168.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**56.6**	**13**	
Innovation Output Sub-Index		49.9	15	
Innovation Input Sub-Index		63.4	12	
Innovation Efficiency Index		0.8	47	
Global Innovation Index 2011 (out of 125)			15	
GII 2012 rank among GII 2011 economies (125)			13	
1	**Institutions**	**93.9**	**3**	●
1.1	*Political environment*	*93.4*	*8*	
1.1.1	Political stability*	93.2	6	●
1.1.2	Government effectiveness*	90.1	7	
1.1.3	Press freedom*	96.8	12	
1.2	*Regulatory environment*	*98.6*	*2*	●
1.2.1	Regulatory quality*	97.2	6	●
1.2.2	Rule of law*	97.1	5	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*89.7*	*7*	
1.3.1	Ease of starting a business*	100.0	1	●
1.3.2	Ease of resolving insolvency*	89.9	15	
1.3.3	Ease of paying taxes*	79.1	30	
2	**Human capital & research**	**57.6**	**11**	
2.1	*Education*	*73.7*	*5*	●
2.1.1	Current expenditure on education, % GNI	7.2	11	
2.1.2	Public expenditure/pupil, % GDP/cap	24.1	33	
2.1.3	School life expectancy, years	19.7	1	●
2.1.4	PISA scales in reading, maths, & science	524.1	8	
2.1.5	Pupil-teacher ratio, secondary	14.5	65	
2.2	*Tertiary education*	*49.1*	*20*	
2.2.1	Tertiary enrolment, % gross	82.6	7	
2.2.2	Graduates in science & engineering, %	19.1	60	
2.2.3	Tertiary inbound mobility, %	14.2	13	
2.2.4	Gross tertiary outbound enrolment, %	1.4	61	
2.3	*Research & development (R&D)*	*50.1*	*22*	
2.3.1	Researchers, headcounts/mn pop.	7,017.2	7	
2.3.2	Gross expenditure on R&D, % GDP	1.2	30	
2.3.3	Quality of scientific research institutions†	70.7	17	
3	**Infrastructure**	**51.9**	**25**	
3.1	*Information & communication technologies (ICT)*	*68.8*	*18*	
3.1.1	ICT access*	75.3	18	
3.1.2	ICT use*	63.5	14	
3.1.3	Government's online service*	78.4	21	
3.1.4	E-participation*	57.9	25	
3.2	*General infrastructure*	*50.8*	*24*	
3.2.1	Electricity output, kWh/cap	10,258.6	12	
3.2.2	Electricity consumption, kWh/cap	9,536.7	13	
3.2.3	Quality of trade & transport infrastructure*	63.5	25	
3.2.4	Gross capital formation, % GDP	19.9	94	○
3.3	*Ecological sustainability*	*36.2*	*56*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.8	58	
3.3.2	Environmental performance*	66.0	14	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.4	53	
4	**Market sophistication**	**62.6**	**12**	
4.1	*Credit*	*74.2*	*6*	●
4.1.1	Ease of getting credit*	97.1	4	
4.1.2	Domestic credit to private sector, % GDP	149.0	13	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*46.7*	*21*	
4.2.1	Ease of protecting investors*	100.0	1	●
4.2.2	Market capitalization, % GDP	52.9	40	
4.2.3	Total value of stocks traded, % GDP	29.4	30	
4.2.4	Venture capital deals/tr PPP$ GDP	16.2	40	
4.3	*Trade & competition*	*67.0*	*48*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	38	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.7	63	
4.3.3	Imports of goods & services, % GDP	27.2	117	○
4.3.4	Exports of goods & services, % GDP	28.7	94	○
4.3.5	Intensity of local competition†	69.5	43	
5	**Business sophistication**	**50.9**	**27**	
5.1	*Knowledge workers*	*72.3*	*19*	
5.1.1	Knowledge-intensive employment, %	42.9	10	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	42.7	39	
5.1.4	R&D financed by business, %	40.1	40	
5.1.5	GMAT mean score	600.9	2	●
5.1.6	GMAT test takers/mn pop. 20–34	202.6	27	
5.2	*Innovation linkages*	*38.1*	*56*	
5.2.1	University/industry research collaboration†	62.2	23	
5.2.2	State of cluster development†	43.7	57	
5.2.3	R&D financed by abroad, %	4.8	61	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	79.4	16	
5.2.5	PCT patent filings with foreign inventor, %	29.1	65	○
5.3	*Knowledge absorption*	*42.2*	*42*	
5.3.1	Royalty & license fees payments/th GDP	4.8	17	
5.3.2	High-tech imports less re-imports, %	12.7	30	
5.3.3	Computer & comm. service imports, %	36.0	48	
5.3.4	FDI net inflows, % GDP	-1.0	136	○
6	**Knowledge & technology outputs**	**49.2**	**19**	
6.1	*Knowledge creation*	*75.7*	*5*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	13.4	11	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.6	17	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	27.7	4	●
6.2	*Knowledge impact*	*47.6*	*23*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.6	80	○
6.2.2	New businesses/th pop. 15–64	17.1	1	●
6.2.3	Computer software spending, % GDP	0.2	37	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.4	53	
6.3	*Knowledge diffusion*	*24.3*	*77*	
6.3.1	Royalty & license fees receipts/th GDP	1.3	28	
6.3.2	High-tech exports less re-exports, %	2.0	62	
6.3.3	Computer & comm. service exports, %	23.6	78	○
6.3.4	FDI net outflows, % GDP	-1.1	114	○
7	**Creative outputs**	**50.5**	**15**	
7.1	*Creative intangibles*	*52.0*	*21*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	55.9	30	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	64.9	28	
7.1.4	ICT & organizational model creation†	64.7	18	
7.2	*Creative goods & services*	*36.6*	*28*	
7.2.1	Recreation & culture consumption, %	11.6	2	●
7.2.2	National feature films/mn pop. 15–69	4.6	24	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	207.6	23	
7.2.4	Creative goods exports, %	0.9	78	○
7.2.5	Creative services exports, %	5.5	34	
7.3	*Online creativity*	*61.5*	*16*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	60.0	16	
7.3.2	Country-code TLDs/th pop. 15–69	70.4	14	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,446.1	12	
7.3.4	Video uploads on YouTube/pop. 15–69	72.8	18	

Nicaragua

Key indicators

Population (millions)	5.9
GDP per capita, PPP$	3,185.4
GDP (US$ billions)	7.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.7**	**105**	
Innovation Output Sub-Index		20.4	119	
Innovation Input Sub-Index		32.9	102	
Innovation Efficiency Index		0.6	114	
Global Innovation Index 2011 (out of 125)			110	
GII 2012 rank among GII 2011 economies (125)			99	
1	**Institutions**	**46.3**	**99**	
1.1	*Political environment*	*47.7*	*87*	
1.1.1	Political stability*	50.7	100	
1.1.2	Government effectiveness*	15.7	131	○
1.1.3	Press freedom*	76.8	58	
1.2	*Regulatory environment*	*60.2*	*91*	
1.2.1	Regulatory quality*	42.3	97	
1.2.2	Rule of law*	25.8	113	
1.2.3	Cost of redundancy dismissal, salary weeks	14.9	67	
1.3	*Business environment*	*30.9*	*105*	
1.3.1	Ease of starting a business*	30.9	97	
1.3.2	Ease of resolving insolvency*	49.6	71	
1.3.3	Ease of paying taxes*	12.2	123	
2	**Human capital & research**	**14.9**	**136**	○
2.1	*Education*	*26.9*	*128*	
2.1.1	Current expenditure on education, % GNI	3.0	108	
2.1.2	Public expenditure/pupil, % GDP/cap	10.2	108	○
2.1.3	School life expectancy, years	10.8	106	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	30.8	122	○
2.2	*Tertiary education*	*10.3*	*124*	
2.2.1	Tertiary enrolment, % gross	18.0	91	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.4	107	
2.3	*Research & development (R&D)*	*7.5*	*133*	○
2.3.1	Researchers, headcounts/mn pop.	60.9	108	
2.3.2	Gross expenditure on R&D, % GDP	0.0	107	○
2.3.3	Quality of scientific research institutions†	21.4	125	○
3	**Infrastructure**	**27.0**	**99**	
3.1	*Information & communication technologies (ICT)*	*18.7*	*106*	
3.1.1	ICT access*	25.3	104	
3.1.2	ICT use*	4.8	108	
3.1.3	Government's online service*	31.4	113	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*30.1*	*102*	
3.2.1	Electricity output, kWh/cap	601.4	104	
3.2.2	Electricity consumption, kWh/cap	456.9	105	
3.2.3	Quality of trade & transport infrastructure*	30.8	100	
3.2.4	Gross capital formation, % GDP	27.5	26	●
3.3	*Ecological sustainability*	*32.3*	*63*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.3	49	●
3.3.2	Environmental performance*	59.2	34	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	95	
4	**Market sophistication**	**39.3**	**66**	
4.1	*Credit*	*30.8*	*66*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	32.5	91	
4.1.3	Microfinance gross loans, % GDP	4.7	8	●
4.2	*Investment*	*18.0*	*92*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*69.1*	*33*	●
4.3.1	Applied tariff rate, weighted mean, %	2.3	45	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	38	●
4.3.3	Imports of goods & services, % GDP	69.6	21	●
4.3.4	Exports of goods & services, % GDP	41.3	59	
4.3.5	Intensity of local competition†	50.9	114	
5	**Business sophistication**	**37.1**	**80**	
5.1	*Knowledge workers*	*41.8*	*81*	
5.1.1	Knowledge-intensive employment, %	14.8	88	
5.1.2	Firms offering formal training, % firms	47.2	36	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	467.5	98	
5.1.6	GMAT test takers/mn pop. 20–34	31.0	103	
5.2	*Innovation linkages*	*37.9*	*58*	
5.2.1	University/industry research collaboration†	30.8	115	
5.2.2	State of cluster development†	32.8	105	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*31.7*	*90*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	8.0	71	
5.3.3	Computer & comm. service imports, %	11.1	123	○
5.3.4	FDI net inflows, % GDP	7.8	22	●
6	**Knowledge & technology outputs**	**18.6**	**111**	
6.1	*Knowledge creation*	*21.4*	*69*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	88	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.7	122	
6.2	*Knowledge impact*	*24.9*	*104*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.0	95	
6.3	*Knowledge diffusion*	*9.5*	*128*	○
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.3	95	
6.3.3	Computer & comm. service exports, %	15.5	104	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**22.3**	**113**	
7.1	*Creative intangibles*	*33.3*	*101*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	42.2	105	
7.1.4	ICT & organizational model creation†	24.4	129	○
7.2	*Creative goods & services*	*8.2*	*112*	
7.2.1	Recreation & culture consumption, %	2.6	73	
7.2.2	National feature films/mn pop. 15–69	0.3	91	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	48.0	82	
7.2.4	Creative goods exports, %	0.1	112	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*14.4*	*97*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	100	
7.3.2	Country-code TLDs/th pop. 15–69	14.4	84	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	276.3	91	
7.3.4	Video uploads on YouTube/pop. 15–69	40.7	97	

Niger

Key indicators

Population (millions)	15.1
GDP per capita, PPP$	795.3
GDP (US$ billions)	6.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**18.6**	**140**	○
Innovation Output Sub-Index		11.9	140	○
Innovation Input Sub-Index		25.4	136	
Innovation Efficiency Index		0.5	138	
Global Innovation Index 2011 (out of 125)			122	
GII 2012 rank among GII 2011 economies (125)			124	
1	**Institutions**	**43.3**	**105**	
1.1	*Political environment*	*50.6*	*82*	
1.1.1	Political stability*	37.9	121	
1.1.2	Government effectiveness*	22.3	113	
1.1.3	Press freedom*	91.6	26	●
1.2	*Regulatory environment*	*65.8*	*72*	●
1.2.1	Regulatory quality*	39.0	108	
1.2.2	Rule of law*	32.7	99	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	41	●
1.3	*Business environment*	*13.4*	*134*	
1.3.1	Ease of starting a business*	6.4	131	
1.3.2	Ease of resolving insolvency*	11.5	124	
1.3.3	Ease of paying taxes*	22.3	108	
2	**Human capital & research**	**16.0**	**135**	
2.1	*Education*	*29.4*	*126*	
2.1.1	Current expenditure on education, % GNI	3.5	91	
2.1.2	Public expenditure/pupil, % GDP/cap	28.2	13	●
2.1.3	School life expectancy, years	4.9	133	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.6	119	
2.2	*Tertiary education*	*18.6*	*109*	
2.2.1	Tertiary enrolment, % gross	1.5	133	○
2.2.2	Graduates in science & engineering, %	10.5	95	
2.2.3	Tertiary inbound mobility, %	6.6	23	●
2.2.4	Gross tertiary outbound enrolment, %	0.2	131	
2.3	*Research & development (R&D)*	*0.0*	*139*	○
2.3.1	Researchers, headcounts/mn pop.	9.9	120	○
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	n/a	n/a	
3	**Infrastructure**	**16.5**	**137**	
3.1	*Information & communication technologies (ICT)*	*8.9*	*140*	○
3.1.1	ICT access*	15.5	135	
3.1.2	ICT use*	0.3	139	○
3.1.3	Government's online service*	19.6	132	
3.1.4	E-participation*	0.0	127	○
3.2	*General infrastructure*	*39.3*	*53*	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	32.0	97	
3.2.4	Gross capital formation, % GDP	22.6	68	●
3.3	*Ecological sustainability*	*1.3*	*134*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	112	
4	**Market sophistication**	**19.0**	**138**	
4.1	*Credit*	*2.8*	*138*	
4.1.1	Ease of getting credit*	2.8	126	
4.1.2	Domestic credit to private sector, % GDP	12.6	133	
4.1.3	Microfinance gross loans, % GDP	0.3	54	
4.2	*Investment*	*3.6*	*129*	
4.2.1	Ease of protecting investors*	7.1	123	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*50.5*	*122*	
4.3.1	Applied tariff rate, weighted mean, %	9.1	119	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.7	62	●
4.3.3	Imports of goods & services, % GDP	24.2	127	
4.3.4	Exports of goods & services, % GDP	15.0	132	
4.3.5	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**32.1**	**112**	
5.1	*Knowledge workers*	*19.9*	*136*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	32.1	58	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	344.0	140	○
5.1.6	GMAT test takers/mn pop. 20–34	2.6	138	
5.2	*Innovation linkages*	*50.0*	*24*	●
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*26.5*	*118*	
5.3.1	Royalty & license fees payments/th GDP	0.4	95	
5.3.2	High-tech imports less re-imports, %	3.7	119	
5.3.3	Computer & comm. service imports, %	16.6	111	
5.3.4	FDI net inflows, % GDP	17.1	8	●
6	**Knowledge & technology outputs**	**18.5**	**114**	
6.1	*Knowledge creation*	*18.6*	*81*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.8	72	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	70	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.5	97	
6.2	*Knowledge impact*	*15.7*	*128*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-0.2	106	
6.2.2	New businesses/th pop. 15–64	0.0	101	○
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.6	122	
6.3	*Knowledge diffusion*	*21.1*	*101*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	103	
6.3.2	High-tech exports less re-exports, %	1.0	71	
6.3.3	Computer & comm. service exports, %	23.1	79	
6.3.4	FDI net outflows, % GDP	1.7	26	●
7	**Creative outputs**	**5.3**	**140**	○
7.1	*Creative intangibles*	*n/a*	*n/a*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	*Creative goods & services*	*5.5*	*121*	
7.2.1	Recreation & culture consumption, %	2.6	74	
7.2.2	National feature films/mn pop. 15–69	0.4	88	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	0.5	136	○
7.2.4	Creative goods exports, %	0.0	123	
7.2.5	Creative services exports, %	0.9	73	
7.3	*Online creativity*	*5.1*	*127*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	114	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	134	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	14.8	128	

Nigeria

Key indicators

Population (millions)	160.3
GDP per capita, PPP$	2,589.0
GDP (US$ billions)	247.1

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**24.6**	**123**	
Innovation Output Sub-Index	23.1	102	
Innovation Input Sub-Index	26.1	134	
Innovation Efficiency Index	0.9	17	●
Global Innovation Index 2011 (out of 125)		96	
GII 2012 rank among GII 2011 economies (125)		113	
1 Institutions	**39.3**	**120**	
1.1 Political environment	*26.9*	*135*	
1.1.1 Political stability*	15.9	138	○
1.1.2 Government effectiveness*	9.6	137	○
1.1.3 Press freedom*	55.1	101	
1.2 Regulatory environment	*53.8*	*105*	
1.2.1 Regulatory quality*	31.9	123	
1.2.2 Rule of law*	15.8	133	
1.2.3 Cost of redundancy dismissal, salary weeks	16.2	75	
1.3 Business environment	*37.3*	*98*	
1.3.1 Ease of starting a business*	36.6	89	
1.3.2 Ease of resolving insolvency*	32.3	95	
1.3.3 Ease of paying taxes*	43.1	80	
2 Human capital & research	**12.7**	**139**	○
2.1 Education	*18.3*	*140*	○
2.1.1 Current expenditure on education, % GNI	0.9	138	○
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	9.0	123	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	33.1	125	
2.2 Tertiary education	*5.5*	*134*	
2.2.1 Tertiary enrolment, % gross	10.3	104	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.2	122	
2.3 Research & development (R&D)	*14.3*	*109*	
2.3.1 Researchers, headcounts/mn pop.	119.9	97	
2.3.2 Gross expenditure on R&D, % GDP	0.2	81	
2.3.3 Quality of scientific research institutions†	37.3	89	
3 Infrastructure	**16.8**	**134**	
3.1 Information & communication technologies (ICT)	*17.5*	*111*	
3.1.1 ICT access*	18.7	124	
3.1.2 ICT use*	10.5	89	
3.1.3 Government's online service*	22.2	129	
3.1.4 E-participation*	18.4	71	
3.2 General infrastructure	*18.1*	*139*	○
3.2.1 Electricity output, kWh/cap	130.2	118	
3.2.2 Electricity consumption, kWh/cap	120.3	118	
3.2.3 Quality of trade & transport infrastructure*	35.8	81	
3.2.4 Gross capital formation, % GDP	n/a	n/a	
3.3 Ecological sustainability	*15.0*	*122*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	1.7	120	
3.3.2 Environmental performance*	40.1	113	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.1	127	
4 Market sophistication	**34.0**	**91**	
4.1 Credit	*15.7*	*106*	
4.1.1 Ease of getting credit*	38.7	72	
4.1.2 Domestic credit to private sector, % GDP	29.4	95	
4.1.3 Microfinance gross loans, % GDP	0.0	73	
4.2 Investment	*28.5*	*61*	●
4.2.1 Ease of protecting investors*	58.2	48	●
4.2.2 Market capitalization, % GDP	26.3	66	
4.2.3 Total value of stocks traded, % GDP	2.7	62	
4.2.4 Venture capital deals/tr PPP$ GDP	12.0	43	●
4.3 Trade & competition	*57.8*	*96*	
4.3.1 Applied tariff rate, weighted mean, %	10.6	127	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.0	13	●
4.3.3 Imports of goods & services, % GDP	26.6	121	
4.3.4 Exports of goods & services, % GDP	39.4	66	●
4.3.5 Intensity of local competition†	62.7	69	
5 Business sophistication	**27.5**	**129**	
5.1 Knowledge workers	*27.2*	*123*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	25.7	74	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	0.2	89	○
5.1.5 GMAT mean score	434.8	112	
5.1.6 GMAT test takers/mn pop. 20–34	37.5	95	
5.2 Innovation linkages	*25.3*	*123*	
5.2.1 University/industry research collaboration†	35.7	105	
5.2.2 State of cluster development†	48.3	41	●
5.2.3 R&D financed by abroad, %	1.0	82	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	8.8	92	
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*30.1*	*95*	
5.3.1 Royalty & license fees payments/th GDP	1.1	70	
5.3.2 High-tech imports less re-imports, %	7.4	78	
5.3.3 Computer & comm. service imports, %	30.0	67	
5.3.4 FDI net inflows, % GDP	3.1	57	●
6 Knowledge & technology outputs	**16.4**	**127**	
6.1 Knowledge creation	*9.4*	*113*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	107	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.3	101	
6.2 Knowledge impact	*22.1*	*112*	
6.2.1 Growth rate of PPP$ GDP/worker, %	4.9	22	●
6.2.2 New businesses/th pop. 15–64	0.8	69	
6.2.3 Computer software spending, % GDP	0.0	72	○
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.1	139	○
6.3 Knowledge diffusion	*17.8*	*111*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.1	112	
6.3.3 Computer & comm. service exports, %	2.9	131	○
6.3.4 FDI net outflows, % GDP	0.5	57	●
7 Creative outputs	**29.7**	**76**	
7.1 Creative intangibles	*50.9*	*24*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	54.0	59	●
7.1.4 ICT & organizational model creation†	47.8	69	
7.2 Creative goods & services	*16.1*	*82*	
7.2.1 Recreation & culture consumption, %	2.1	81	
7.2.2 National feature films/mn pop. 15–69	11.6	8	●
7.2.3 Paid-for dailies, circulation/th pop. 15–69	5.6	121	
7.2.4 Creative goods exports, %	0.0	127	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*1.0*	*140*	○
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.3	119	
7.3.2 Country-code TLDs/th pop. 15–69	0.2	135	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	8.6	125	○
7.3.4 Video uploads on YouTube/pop. 15–69	3.3	138	○

Norway

Key indicators

Population (millions) 5.0
GDP per capita, PPP$ 53,376.2
GDP (US$ billions) 479.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**56.4**	**14**	
Innovation Output Sub-Index		48.8	17	
Innovation Input Sub-Index		64.0	11	
Innovation Efficiency Index		0.8	58	
Global Innovation Index 2011 (out of 125)			18	
GII 2012 rank among GII 2011 economies (125)			14	
1	**Institutions**	**93.0**	**5**	
1.1	*Political environment*	*94.8*	*3*	●
1.1.1	Political stability*	96.4	3	●
1.1.2	Government effectiveness*	88.1	10	
1.1.3	Press freedom*	100.0	1	●
1.2	*Regulatory environment*	*96.4*	*10*	
1.2.1	Regulatory quality*	89.3	16	
1.2.2	Rule of law*	98.8	3	●
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	23	
1.3	*Business environment*	*87.7*	*9*	
1.3.1	Ease of starting a business*	79.8	28	
1.3.2	Ease of resolving insolvency*	97.8	4	
1.3.3	Ease of paying taxes*	85.6	21	
2	**Human capital & research**	**56.1**	**13**	
2.1	*Education*	*63.8*	*21*	
2.1.1	Current expenditure on education, % GNI	6.2	15	
2.1.2	Public expenditure/pupil, % GDP/cap	25.1	25	
2.1.3	School life expectancy, years	17.3	5	
2.1.4	PISA scales in reading, maths, & science	500.4	17	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*47.0*	*28*	
2.2.1	Tertiary enrolment, % gross	73.8	15	
2.2.2	Graduates in science & engineering, %	15.2	75	○
2.2.3	Tertiary inbound mobility, %	8.0	19	
2.2.4	Gross tertiary outbound enrolment, %	4.1	17	
2.3	*Research & development (R&D)*	*57.6*	*13*	
2.3.1	Researchers, headcounts/mn pop.	9,237.4	3	●
2.3.2	Gross expenditure on R&D, % GDP	1.8	20	
2.3.3	Quality of scientific research institutions†	62.1	27	
3	**Infrastructure**	**64.3**	**2**	●
3.1	*Information & communication technologies (ICT)*	*74.7*	*12*	
3.1.1	ICT access*	78.8	12	
3.1.2	ICT use*	66.0	7	
3.1.3	Government's online service*	85.6	13	
3.1.4	E-participation*	68.4	15	
3.2	*General infrastructure*	*74.8*	*1*	●
3.2.1	Electricity output, kWh/cap	25,275.9	1	●
3.2.2	Electricity consumption, kWh/cap	25,181.1	1	●
3.2.3	Quality of trade & transport infrastructure*	80.5	3	
3.2.4	Gross capital formation, % GDP	21.3	81	○
3.3	*Ecological sustainability*	*43.5*	*31*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.1	51	
3.3.2	Environmental performance*	69.9	3	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.4	26	
4	**Market sophistication**	**57.5**	**19**	
4.1	*Credit*	*43.3*	*38*	
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	87.0	39	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*56.9*	*12*	
4.2.1	Ease of protecting investors*	82.0	20	
4.2.2	Market capitalization, % GDP	60.5	37	
4.2.3	Total value of stocks traded, % GDP	52.4	21	
4.2.4	Venture capital deals/tr PPP$ GDP	188.8	7	
4.3	*Trade & competition*	*72.3*	*18*	
4.3.1	Applied tariff rate, weighted mean, %	0.4	5	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.4	51	
4.3.3	Imports of goods & services, % GDP	28.6	110	○
4.3.4	Exports of goods & services, % GDP	41.9	57	
4.3.5	Intensity of local competition†	73.0	30	
5	**Business sophistication**	**49.3**	**31**	
5.1	*Knowledge workers*	*70.8*	*22*	
5.1.1	Knowledge-intensive employment, %	43.5	8	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	52.6	30	
5.1.4	R&D financed by business, %	45.3	31	
5.1.5	GMAT mean score	512.4	67	○
5.1.6	GMAT test takers/mn pop. 20–34	292.0	19	
5.2	*Innovation linkages*	*40.6*	*53*	
5.2.1	University/industry research collaboration†	63.1	21	
5.2.2	State of cluster development†	58.6	22	
5.2.3	R&D financed by abroad, %	8.3	41	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	49.0	27	
5.2.5	PCT patent filings with foreign inventor, %	21.1	75	○
5.3	*Knowledge absorption*	*36.4*	*63*	○
5.3.1	Royalty & license fees payments/th GDP	1.3	63	○
5.3.2	High-tech imports less re-imports, %	12.0	32	
5.3.3	Computer & comm. service imports, %	36.6	46	
5.3.4	FDI net inflows, % GDP	2.8	63	○
6	**Knowledge & technology outputs**	**42.1**	**26**	
6.1	*Knowledge creation*	*55.7*	*17*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	6.4	31	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.7	16	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.7	15	
6.2	*Knowledge impact*	*37.1*	*53*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	100	○
6.2.2	New businesses/th pop. 15–64	4.5	21	
6.2.3	Computer software spending, % GDP	0.6	18	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.4	56	
6.3	*Knowledge diffusion*	*33.4*	*46*	
6.3.1	Royalty & license fees receipts/th GDP	1.2	29	
6.3.2	High-tech exports less re-exports, %	3.8	48	
6.3.3	Computer & comm. service exports, %	44.1	32	
6.3.4	FDI net outflows, % GDP	3.0	19	
7	**Creative outputs**	**55.5**	**5**	
7.1	*Creative intangibles*	*45.4*	*47*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	48.0	35	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	1.3	16	
7.1.3	ICT & business model creation†	74.1	5	
7.1.4	ICT & organizational model creation†	58.4	30	
7.2	*Creative goods & services*	*53.2*	*6*	
7.2.1	Recreation & culture consumption, %	13.6	1	●
7.2.2	National feature films/mn pop. 15–69	6.9	14	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	604.2	1	●
7.2.4	Creative goods exports, %	0.2	104	○
7.2.5	Creative services exports, %	11.4	16	
7.3	*Online creativity*	*78.0*	*3*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	74.5	10	
7.3.2	Country-code TLDs/th pop. 15–69	70.9	13	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	17,624.9	3	●
7.3.4	Video uploads on YouTube/pop. 15–69	77.1	11	

Oman

Key indicators

Population (millions)	3.1
GDP per capita, PPP$	26,272.4
GDP (US$ billions)	66.8

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**39.5**	**47**	
Innovation Output Sub-Index	32.1	55	
Innovation Input Sub-Index	46.9	42	
Innovation Efficiency Index	0.7	90	
Global Innovation Index 2011 (out of 125)		57	
GII 2012 rank among GII 2011 economies (125)		45	
1 Institutions	**71.9**	**33**	●
1.1 Political environment	*64.8*	*50*	
1.1.1 Political stability*	81.9	32	●
1.1.2 Government effectiveness*	56.3	45	
1.1.3 Press freedom*	56.1	92	
1.2 Regulatory environment	*82.5*	*32*	●
1.2.1 Regulatory quality*	64.6	49	
1.2.2 Rule of law*	65.5	40	
1.2.3 Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3 Business environment	*68.3*	*33*	●
1.3.1 Ease of starting a business*	57.5	60	
1.3.2 Ease of resolving insolvency*	51.7	68	
1.3.3 Ease of paying taxes*	95.6	7	●
2 Human capital & research	**48.1**	**36**	●
2.1 Education	*49.3*	*75*	
2.1.1 Current expenditure on education, % GNI	4.2	66	
2.1.2 Public expenditure/pupil, % GDP/cap	16.0	86	
2.1.3 School life expectancy, years	13.5	59	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	14.8	67	
2.2 Tertiary education	*49.0*	*21*	●
2.2.1 Tertiary enrolment, % gross	24.5	81	
2.2.2 Graduates in science & engineering, %	38.9	2	●
2.2.3 Tertiary inbound mobility, %	2.3	52	
2.2.4 Gross tertiary outbound enrolment, %	1.6	57	
2.3 Research & development (R&D)	*45.9*	*26*	●
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	45.9	59	
3 Infrastructure	**38.3**	**51**	
3.1 Information & communication technologies (ICT)	*46.7*	*45*	
3.1.1 ICT access*	50.0	56	
3.1.2 ICT use*	25.5	51	
3.1.3 Government's online service*	66.7	35	●
3.1.4 E-participation*	44.7	36	
3.2 General infrastructure	*47.0*	*30*	●
3.2.1 Electricity output, kWh/cap	6,182.1	35	
3.2.2 Electricity consumption, kWh/cap	5,456.6	38	
3.2.3 Quality of trade & transport infrastructure*	51.5	39	
3.2.4 Gross capital formation, % GDP	29.6	20	●
3.3 Ecological sustainability	*21.2*	*108*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.3	100	
3.3.2 Environmental performance*	44.0	105	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.6	73	
4 Market sophistication	**32.6**	**100**	
4.1 Credit	*15.1*	*110*	
4.1.1 Ease of getting credit*	15.3	112	○
4.1.2 Domestic credit to private sector, % GDP	48.2	65	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*14.2*	*102*	
4.2.1 Ease of protecting investors*	35.9	76	
4.2.2 Market capitalization, % GDP	36.9	57	
4.2.3 Total value of stocks traded, % GDP	12.4	47	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*68.6*	*38*	
4.3.1 Applied tariff rate, weighted mean, %	3.2	55	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.0	70	
4.3.3 Imports of goods & services, % GDP	41.5	67	
4.3.4 Exports of goods & services, % GDP	52.6	39	
4.3.5 Intensity of local competition†	68.3	52	
5 Business sophistication	**43.8**	**47**	
5.1 Knowledge workers	*29.3*	*116*	○
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	20.9	89	○
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	406.6	125	○
5.1.6 GMAT test takers/mn pop. 20–34	52.5	77	
5.2 Innovation linkages	*66.0*	*4*	●
5.2.1 University/industry research collaboration†	46.3	53	
5.2.2 State of cluster development†	51.8	32	●
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	191.0	1	●
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*36.2*	*64*	
5.3.1 Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	4.9	105	○
5.3.3 Computer & comm. service imports, %	34.0	62	
5.3.4 FDI net inflows, % GDP	3.2	52	
6 Knowledge & technology outputs	**26.8**	**67**	
6.1 Knowledge creation	*22.8*	*66*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	89	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.6	94	
6.2 Knowledge impact	*32.0*	*74*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.0	75	
6.2.2 New businesses/th pop. 15–64	1.7	50	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	5.2	67	
6.3 Knowledge diffusion	*25.8*	*70*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.1	114	○
6.3.3 Computer & comm. service exports, %	21.3	89	
6.3.4 FDI net outflows, % GDP	0.2	73	
7 Creative outputs	**37.3**	**41**	
7.1 Creative intangibles	*64.4*	*8*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	58.7	42	
7.1.4 ICT & organizational model creation†	70.1	10	●
7.2 Creative goods & services	*7.4*	*115*	○
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	0.0	100	○
7.2.3 Paid-for dailies, circulation/th pop. 15–69	143.4	40	
7.2.4 Creative goods exports, %	0.2	106	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*12.9*	*102*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.2	95	
7.3.2 Country-code TLDs/th pop. 15–69	0.3	132	○
7.3.3 Wikipedia monthly edits/mn pop. 15–69	294.6	89	
7.3.4 Video uploads on YouTube/pop. 15–69	48.8	81	

Pakistan

Key indicators

Population (millions)	175.3
GDP per capita, PPP$	2,791.8
GDP (US$ billions)	204.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**23.1**	**133**	
Innovation Output Sub-Index		21.8	110	
Innovation Input Sub-Index		24.3	140	○
Innovation Efficiency Index		0.9	15	●
Global Innovation Index 2011 (out of 125)			105	
GII 2012 rank among GII 2011 economies (125)			121	
1	**Institutions**	**39.0**	**122**	
1.1	*Political environment*	*21.1*	*138*	○
1.1.1	Political stability*	0.0	141	○
1.1.2	Government effectiveness*	20.8	116	
1.1.3	Press freedom*	42.6	123	
1.2	*Regulatory environment*	*46.9*	*122*	
1.2.1	Regulatory quality*	36.6	114	
1.2.2	Rule of law*	26.9	110	
1.2.3	Cost of redundancy dismissal, salary weeks	27.2	115	
1.3	*Business environment*	*49.1*	*69*	●
1.3.1	Ease of starting a business*	51.7	68	●
1.3.2	Ease of resolving insolvency*	56.1	62	●
1.3.3	Ease of paying taxes*	39.5	85	
2	**Human capital & research**	**10.0**	**141**	○
2.1	*Education*	*10.0*	*141*	○
2.1.1	Current expenditure on education, % GNI	1.6	133	○
2.1.2	Public expenditure/pupil, % GDP/cap	11.7	100	
2.1.3	School life expectancy, years	7.3	131	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	41.9	131	○
2.2	*Tertiary education*	*2.2*	*140*	○
2.2.1	Tertiary enrolment, % gross	6.4	114	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.2	125	
2.3	*Research & development (R&D)*	*17.6*	*88*	
2.3.1	Researchers, headcounts/mn pop.	320.8	79	
2.3.2	Gross expenditure on R&D, % GDP	0.5	58	
2.3.3	Quality of scientific research institutions†	40.2	76	
3	**Infrastructure**	**20.9**	**123**	
3.1	*Information & communication technologies (ICT)*	*19.9*	*105*	
3.1.1	ICT access*	24.0	106	
3.1.2	ICT use*	6.0	102	
3.1.3	Government's online service*	36.6	99	
3.1.4	E-participation*	13.2	83	
3.2	*General infrastructure*	*20.2*	*137*	○
3.2.1	Electricity output, kWh/cap	567.2	106	
3.2.2	Electricity consumption, kWh/cap	451.4	107	
3.2.3	Quality of trade & transport infrastructure*	27.0	114	
3.2.4	Gross capital formation, % GDP	15.4	127	
3.3	*Ecological sustainability*	*22.6*	*101*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.6	80	
3.3.2	Environmental performance*	39.6	114	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	77	
4	**Market sophistication**	**23.4**	**126**	
4.1	*Credit*	*19.2*	*93*	
4.1.1	Ease of getting credit*	50.4	62	●
4.1.2	Domestic credit to private sector, % GDP	21.5	116	
4.1.3	Microfinance gross loans, % GDP	0.2	63	
4.2	*Investment*	*22.1*	*77*	
4.2.1	Ease of protecting investors*	76.2	27	●
4.2.2	Market capitalization, % GDP	21.8	72	
4.2.3	Total value of stocks traded, % GDP	7.4	52	●
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*28.8*	*139*	○
4.3.1	Applied tariff rate, weighted mean, %	9.5	121	
4.3.2	Non-agricultural mkt access weighted tariff, %	6.8	138	○
4.3.3	Imports of goods & services, % GDP	18.8	135	○
4.3.4	Exports of goods & services, % GDP	13.6	134	
4.3.5	Intensity of local competition†	59.0	87	
5	**Business sophistication**	**28.3**	**127**	
5.1	*Knowledge workers*	*30.0*	*114*	
5.1.1	Knowledge-intensive employment, %	19.5	71	
5.1.2	Firms offering formal training, % firms	6.7	105	○
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	507.6	71	●
5.1.6	GMAT test takers/mn pop. 20–34	22.8	110	
5.2	*Innovation linkages*	*27.7*	*111*	
5.2.1	University/industry research collaboration†	42.7	66	●
5.2.2	State of cluster development†	46.2	49	●
5.2.3	R&D financed by abroad, %	0.9	84	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	3.8	109	
5.2.5	PCT patent filings with foreign inventor, %	40.0	58	
5.3	*Knowledge absorption*	*27.3*	*110*	
5.3.1	Royalty & license fees payments/th GDP	0.7	81	
5.3.2	High-tech imports less re-imports, %	6.3	88	
5.3.3	Computer & comm. service imports, %	29.3	69	
5.3.4	FDI net inflows, % GDP	1.1	107	
6	**Knowledge & technology outputs**	**18.1**	**117**	
6.1	*Knowledge creation*	*4.0*	*124*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	101	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.3	78	
6.2	*Knowledge impact*	*24.4*	*106*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.9	76	
6.2.2	New businesses/th pop. 15–64	0.0	100	○
6.2.3	Computer software spending, % GDP	0.1	50	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	4.5	70	●
6.3	*Knowledge diffusion*	*25.7*	*71*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	88	
6.3.2	High-tech exports less re-exports, %	1.3	69	
6.3.3	Computer & comm. service exports, %	38.3	44	●
6.3.4	FDI net outflows, % GDP	0.0	96	
7	**Creative outputs**	**25.6**	**99**	
7.1	*Creative intangibles*	*31.3*	*107*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	5.1	80	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	48.9	77	
7.1.4	ICT & organizational model creation†	42.4	88	
7.2	*Creative goods & services*	*28.3*	*53*	●
7.2.1	Recreation & culture consumption, %	1.8	84	
7.2.2	National feature films/mn pop. 15–69	0.3	93	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	58.2	80	
7.2.4	Creative goods exports, %	6.5	5	●
7.2.5	Creative services exports, %	1.5	65	
7.3	*Online creativity*	*11.4*	*105*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.4	113	
7.3.2	Country-code TLDs/th pop. 15–69	1.2	123	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	139.3	101	
7.3.4	Video uploads on YouTube/pop. 15–69	43.4	92	

Panama

Key indicators

Population (millions)	3.6
GDP per capita, PPP$	13,595.2
GDP (US$ billions)	30.2

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**30.9**	**87**	
Innovation Output Sub-Index	23.1	100	
Innovation Input Sub-Index	38.7	75	
Innovation Efficiency Index	0.6	126	
Global Innovation Index 2011 (out of 125)		77	
GII 2012 rank among GII 2011 economies (125)		82	
1 Institutions	**56.5**	**68**	
1.1 Political environment	*57.6*	*65*	
1.1.1 Political stability*	65.9	66	
1.1.2 Government effectiveness*	44.6	58	
1.1.3 Press freedom*	62.4	88	
1.2 Regulatory environment	*65.7*	*73*	
1.2.1 Regulatory quality*	62.0	53	
1.2.2 Rule of law*	44.3	65	
1.2.3 Cost of redundancy dismissal, salary weeks	19.0	85	
1.3 Business environment	*46.2*	*78*	
1.3.1 Ease of starting a business*	85.6	21	●
1.3.2 Ease of resolving insolvency*	47.4	74	
1.3.3 Ease of paying taxes*	5.7	132	○
2 Human capital & research	**30.4**	**88**	
2.1 Education	*42.0*	*102*	
2.1.1 Current expenditure on education, % GNI	3.5	89	
2.1.2 Public expenditure/pupil, % GDP/cap	13.8	93	
2.1.3 School life expectancy, years	13.2	68	
2.1.4 PISA scales in reading, maths, & science	368.8	67	○
2.1.5 Pupil-teacher ratio, secondary	15.3	71	
2.2 Tertiary education	*32.7*	*69*	
2.2.1 Tertiary enrolment, % gross	44.6	53	
2.2.2 Graduates in science & engineering, %	19.2	59	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.8	82	
2.3 Research & development (R&D)	*16.4*	*98*	
2.3.1 Researchers, headcounts/mn pop.	135.9	92	
2.3.2 Gross expenditure on R&D, % GDP	0.2	86	
2.3.3 Quality of scientific research institutions†	44.0	67	
3 Infrastructure	**37.0**	**59**	
3.1 Information & communication technologies (ICT)	*36.3*	*62*	
3.1.1 ICT access*	47.5	59	
3.1.2 ICT use*	19.7	63	
3.1.3 Government's online service*	46.4	78	
3.1.4 E-participation*	31.6	47	
3.2 General infrastructure	*35.0*	*78*	
3.2.1 Electricity output, kWh/cap	2,004.9	77	
3.2.2 Electricity consumption, kWh/cap	1,739.4	74	
3.2.3 Quality of trade & transport infrastructure*	40.8	59	
3.2.4 Gross capital formation, % GDP	26.7	28	●
3.3 Ecological sustainability	*39.6*	*42*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	9.8	14	●
3.3.2 Environmental performance*	57.9	38	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.3	91	
4 Market sophistication	**29.1**	**115**	
4.1 Credit	*29.7*	*74*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	91.5	37	
4.1.3 Microfinance gross loans, % GDP	0.1	70	
4.2 Investment	*11.1*	*112*	
4.2.1 Ease of protecting investors*	29.4	91	
4.2.2 Market capitalization, % GDP	40.8	53	
4.2.3 Total value of stocks traded, % GDP	0.7	77	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*46.5*	*128*	
4.3.1 Applied tariff rate, weighted mean, %	7.6	105	
4.3.2 Non-agricultural mkt access weighted tariff, %	7.6	138	○
4.3.3 Imports of goods & services, % GDP	69.2	23	●
4.3.4 Exports of goods & services, % GDP	65.2	22	●
4.3.5 Intensity of local competition†	70.0	41	
5 Business sophistication	**40.5**	**61**	
5.1 Knowledge workers	*23.4*	*127*	
5.1.1 Knowledge-intensive employment, %	17.7	80	
5.1.2 Firms offering formal training, % firms	11.0	101	○
5.1.3 R&D performed by business, %	0.2	88	○
5.1.4 R&D financed by business, %	2.2	84	○
5.1.5 GMAT mean score	465.3	100	
5.1.6 GMAT test takers/mn pop. 20–34	84.1	54	
5.2 Innovation linkages	*60.0*	*7*	●
5.2.1 University/industry research collaboration†	43.9	63	
5.2.2 State of cluster development†	47.5	43	
5.2.3 R&D financed by abroad, %	46.6	6	●
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	12.3	81	
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*38.2*	*60*	
5.3.1 Royalty & license fees payments/th GDP	1.7	54	
5.3.2 High-tech imports less re-imports, %	20.6	6	●
5.3.3 Computer & comm. service imports, %	11.3	121	
5.3.4 FDI net inflows, % GDP	8.9	16	●
6 Knowledge & technology outputs	**6.4**	**141**	○
6.1 Knowledge creation	*3.5*	*125*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.2	49	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.8	86	
6.2 Knowledge impact	*10.7*	*132*	○
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	0.3	88	
6.2.3 Computer software spending, % GDP	0.0	71	○
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.3	91	
6.3 Knowledge diffusion	*4.9*	*135*	○
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.1	110	○
6.3.3 Computer & comm. service exports, %	9.1	120	
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**39.9**	**36**	
7.1 Creative intangibles	*49.9*	*29*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	69.5	20	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	59.0	41	
7.1.4 ICT & organizational model creation†	57.8	32	
7.2 Creative goods & services	*36.5*	*29*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	0.5	86	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	99.7	57	
7.2.4 Creative goods exports, %	89.5	1	●
7.2.5 Creative services exports, %	0.0	111	○
7.3 Online creativity	*23.4*	*61*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	17.9	38	
7.3.2 Country-code TLDs/th pop. 15–69	18.7	78	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	354.2	85	
7.3.4 Video uploads on YouTube/pop. 15–69	55.1	69	

Paraguay

Key indicators

Population (millions)	6.5
GDP per capita, PPP$	5,548.9
GDP (US$ billions)	22.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**31.6**	**84**	
Innovation Output Sub-Index		30.6	62	
Innovation Input Sub-Index		32.6	103	
Innovation Efficiency Index		0.9	6	●
Global Innovation Index 2011 (out of 125)		74		
GII 2012 rank among GII 2011 economies (125)		80		
1	**Institutions**	**41.7**	**107**	
1.1	*Political environment*	*44.8*	*104*	
1.1.1	Political stability*	44.2	112	
1.1.2	Government effectiveness*	16.7	129	
1.1.3	Press freedom*	73.6	63	
1.2	*Regulatory environment*	*48.6*	*118*	
1.2.1	Regulatory quality*	42.8	95	
1.2.2	Rule of law*	23.3	121	
1.2.3	Cost of redundancy dismissal, salary weeks	26.1	112	
1.3	*Business environment*	*31.6*	*104*	
1.3.1	Ease of starting a business*	41.7	82	
1.3.2	Ease of resolving insolvency*	12.2	123	
1.3.3	Ease of paying taxes*	41.0	83	
2	**Human capital & research**	**23.9**	**111**	
2.1	*Education*	*45.9*	*88*	
2.1.1	Current expenditure on education, % GNI	3.6	85	
2.1.2	Public expenditure/pupil, % GDP/cap	13.9	92	
2.1.3	School life expectancy, years	12.1	86	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	11.8	43	●
2.2	*Tertiary education*	*19.4*	*105*	
2.2.1	Tertiary enrolment, % gross	36.6	64	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.4	104	
2.3	*Research & development (R&D)*	*6.5*	*135*	○
2.3.1	Researchers, headcounts/mn pop.	136.4	91	
2.3.2	Gross expenditure on R&D, % GDP	0.1	105	○
2.3.3	Quality of scientific research institutions†	17.7	130	○
3	**Infrastructure**	**28.8**	**91**	
3.1	*Information & communication technologies (ICT)*	*25.3*	*93*	
3.1.1	ICT access*	30.3	101	
3.1.2	ICT use*	9.5	91	
3.1.3	Government's online service*	45.8	81	
3.1.4	E-participation*	15.8	78	
3.2	*General infrastructure*	*32.1*	*92*	
3.2.1	Electricity output, kWh/cap	8,755.6	17	●
3.2.2	Electricity consumption, kWh/cap	1,054.8	89	
3.2.3	Quality of trade & transport infrastructure*	36.0	77	
3.2.4	Gross capital formation, % GDP	19.5	97	
3.3	*Ecological sustainability*	*28.9*	*74*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.0	52	
3.3.2	Environmental performance*	52.4	70	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	121	
4	**Market sophistication**	**38.4**	**69**	
4.1	*Credit*	*32.8*	*61*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	32.8	90	
4.1.3	Microfinance gross loans, % GDP	4.2	11	●
4.2	*Investment*	*14.6*	*100*	
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	0.2	107	○
4.2.3	Total value of stocks traded, % GDP	0.1	99	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*67.9*	*42*	●
4.3.1	Applied tariff rate, weighted mean, %	3.7	61	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	65	
4.3.3	Imports of goods & services, % GDP	55.0	41	●
4.3.4	Exports of goods & services, % GDP	57.1	28	●
4.3.5	Intensity of local competition†	57.0	96	
5	**Business sophistication**	**30.1**	**122**	
5.1	*Knowledge workers*	*37.0*	*98*	
5.1.1	Knowledge-intensive employment, %	14.0	90	
5.1.2	Firms offering formal training, % firms	54.9	19	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	0.3	88	○
5.1.5	GMAT mean score	519.0	59	
5.1.6	GMAT test takers/mn pop. 20–34	4.2	134	○
5.2	*Innovation linkages*	*25.0*	*124*	
5.2.1	University/industry research collaboration†	29.6	117	
5.2.2	State of cluster development†	31.3	111	
5.2.3	R&D financed by abroad, %	12.3	26	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	5.5	102	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*28.2*	*102*	
5.3.1	Royalty & license fees payments/th GDP	0.1	108	○
5.3.2	High-tech imports less re-imports, %	19.0	10	●
5.3.3	Computer & comm. service imports, %	2.8	133	○
5.3.4	FDI net inflows, % GDP	2.3	71	
6	**Knowledge & technology outputs**	**36.5**	**38**	●
6.1	*Knowledge creation*	*1.5*	*138*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	78	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.4	133	○
6.2	*Knowledge impact*	*47.2*	*25*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	6.9	59	
6.3	*Knowledge diffusion*	*60.8*	*8*	●
6.3.1	Royalty & license fees receipts/th GDP	13.8	1	●
6.3.2	High-tech exports less re-exports, %	1.1	70	
6.3.3	Computer & comm. service exports, %	69.0	5	●
6.3.4	FDI net outflows, % GDP	0.0	93	
7	**Creative outputs**	**24.8**	**103**	
7.1	*Creative intangibles*	*36.7*	*85*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	45.0	90	
7.1.4	ICT & organizational model creation†	28.5	124	○
7.2	*Creative goods & services*	*7.7*	*114*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	1.3	62	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	28.8	98	
7.2.4	Creative goods exports, %	0.4	90	
7.2.5	Creative services exports, %	3.2	50	
7.3	*Online creativity*	*18.1*	*83*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	2.2	81	
7.3.2	Country-code TLDs/th pop. 15–69	20.1	74	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	735.1	75	
7.3.4	Video uploads on YouTube/pop. 15–69	46.1	87	

Peru

Key indicators

Population (millions)	30.0
GDP per capita, PPP$	10,000.7
GDP (US$ billions)	168.5

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**34.1**	**75**	
Innovation Output Sub-Index	25.8	88	
Innovation Input Sub-Index	42.3	57	
Innovation Efficiency Index	0.6	119	
Global Innovation Index 2011 (out of 125)		83	
GII 2012 rank among GII 2011 economies (125)		73	
1 Institutions	**56.2**	**70**	
1.1 Political environment	*46.2*	*98*	
1.1.1 Political stability*	44.4	111	
1.1.2 Government effectiveness*	35.5	81	
1.1.3 Press freedom*	58.6	90	
1.2 Regulatory environment	*70.3*	*55*	
1.2.1 Regulatory quality*	63.2	52	
1.2.2 Rule of law*	31.5	101	
1.2.3 Cost of redundancy dismissal, salary weeks	11.4	46	
1.3 Business environment	*52.0*	*65*	
1.3.1 Ease of starting a business*	70.5	42	
1.3.2 Ease of resolving insolvency*	34.5	92	
1.3.3 Ease of paying taxes*	51.0	69	
2 Human capital & research	**21.9**	**117**	
2.1 Education	*34.7*	*120*	○
2.1.1 Current expenditure on education, % GNI	2.1	124	○
2.1.2 Public expenditure/pupil, % GDP/cap	8.2	113	○
2.1.3 School life expectancy, years	13.0	71	
2.1.4 PISA scales in reading, maths, & science	368.1	68	○
2.1.5 Pupil-teacher ratio, secondary	16.5	77	
2.2 Tertiary education	*19.3*	*106*	
2.2.1 Tertiary enrolment, % gross	35.0	67	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.5	94	
2.3 Research & development (R&D)	*11.9*	*121*	○
2.3.1 Researchers, headcounts/mn pop.	182.3	86	
2.3.2 Gross expenditure on R&D, % GDP	0.1	93	
2.3.3 Quality of scientific research institutions†	31.3	106	
3 Infrastructure	**38.0**	**53**	
3.1 Information & communication technologies (ICT)	*35.7*	*65*	
3.1.1 ICT access*	36.2	85	
3.1.2 ICT use*	15.6	73	
3.1.3 Government's online service*	51.6	61	
3.1.4 E-participation*	39.5	38	●
3.2 General infrastructure	*32.5*	*90*	
3.2.1 Electricity output, kWh/cap	1,214.9	87	
3.2.2 Electricity consumption, kWh/cap	1,120.1	88	
3.2.3 Quality of trade & transport infrastructure*	41.5	55	
3.2.4 Gross capital formation, % GDP	24.4	46	
3.3 Ecological sustainability	*45.6*	*24*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	12.3	4	●
3.3.2 Environmental performance*	50.3	78	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.5	52	
4 Market sophistication	**54.8**	**25**	●
4.1 Credit	*61.2*	*14*	●
4.1.1 Ease of getting credit*	77.4	21	●
4.1.2 Domestic credit to private sector, % GDP	24.3	106	
4.1.3 Microfinance gross loans, % GDP	8.3	1	●
4.2 Investment	*37.1*	*37*	●
4.2.1 Ease of protecting investors*	82.0	20	●
4.2.2 Market capitalization, % GDP	64.9	36	
4.2.3 Total value of stocks traded, % GDP	2.6	63	
4.2.4 Venture capital deals/tr PPP$ GDP	10.0	46	
4.3 Trade & competition	*66.1*	*58*	
4.3.1 Applied tariff rate, weighted mean, %	2.5	52	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.3	36	●
4.3.3 Imports of goods & services, % GDP	22.2	129	○
4.3.4 Exports of goods & services, % GDP	25.1	110	
4.3.5 Intensity of local competition†	68.2	53	
5 Business sophistication	**40.6**	**59**	
5.1 Knowledge workers	*53.7*	*46*	
5.1.1 Knowledge-intensive employment, %	18.5	75	
5.1.2 Firms offering formal training, % firms	60.1	15	●
5.1.3 R&D performed by business, %	29.2	54	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	550.5	36	●
5.1.6 GMAT test takers/mn pop. 20–34	72.3	61	
5.2 Innovation linkages	*35.9*	*65*	
5.2.1 University/industry research collaboration†	36.5	100	
5.2.2 State of cluster development†	41.9	64	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	17.7	69	
5.2.5 PCT patent filings with foreign inventor, %	50.0	48	
5.3 Knowledge absorption	*32.2*	*84*	
5.3.1 Royalty & license fees payments/th GDP	1.3	64	
5.3.2 High-tech imports less re-imports, %	9.7	54	
5.3.3 Computer & comm. service imports, %	28.0	71	
5.3.4 FDI net inflows, % GDP	4.7	39	●
6 Knowledge & technology outputs	**20.3**	**105**	
6.1 Knowledge creation	*7.7*	*117*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.1	103	○
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	104	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.3	46	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.6	126	○
6.2 Knowledge impact	*36.4*	*58*	
6.2.1 Growth rate of PPP$ GDP/worker, %	6.1	10	●
6.2.2 New businesses/th pop. 15–64	2.7	36	
6.2.3 Computer software spending, % GDP	0.1	61	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	4.7	68	
6.3 Knowledge diffusion	*16.7*	*117*	
6.3.1 Royalty & license fees receipts/th GDP	0.0	86	
6.3.2 High-tech exports less re-exports, %	0.8	78	
6.3.3 Computer & comm. service exports, %	11.9	114	○
6.3.4 FDI net outflows, % GDP	0.1	78	
7 Creative outputs	**31.4**	**72**	
7.1 Creative intangibles	*49.1*	*30*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	55.9	54	
7.1.4 ICT & organizational model creation†	42.3	89	
7.2 Creative goods & services	*5.8*	*119*	
7.2.1 Recreation & culture consumption, %	1.7	87	○
7.2.2 National feature films/mn pop. 15–69	0.4	87	○
7.2.3 Paid-for dailies, circulation/th pop. 15–69	n/a	n/a	
7.2.4 Creative goods exports, %	0.6	85	
7.2.5 Creative services exports, %	0.2	95	
7.3 Online creativity	*21.7*	*69*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.8	76	
7.3.2 Country-code TLDs/th pop. 15–69	19.3	77	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	988.4	65	
7.3.4 Video uploads on YouTube/pop. 15–69	59.7	58	

Philippines

Key indicators

Population (millions)	95.8
GDP per capita, PPP$	4,111.1
GDP (US$ billions)	216.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**29.0**	**95**	
Innovation Output Sub-Index		26.3	83	
Innovation Input Sub-Index		31.7	106	
Innovation Efficiency Index		0.8	32	●
Global Innovation Index 2011 (out of 125)			91	
GII 2012 rank among GII 2011 economies (125)			90	
1	**Institutions**	**34.6**	**132**	○
1.1	*Political environment*	*38.5*	*121*	
1.1.1	Political stability*	27.7	134	○
1.1.2	Government effectiveness*	38.2	72	
1.1.3	Press freedom*	49.7	114	
1.2	*Regulatory environment*	*50.4*	*116*	
1.2.1	Regulatory quality*	45.0	90	
1.2.2	Rule of law*	33.4	97	
1.2.3	Cost of redundancy dismissal, salary weeks	27.4	120	
1.3	*Business environment*	*14.8*	*133*	○
1.3.1	Ease of starting a business*	9.3	127	○
1.3.2	Ease of resolving insolvency*	2.8	136	○
1.3.3	Ease of paying taxes*	32.3	95	
2	**Human capital & research**	**20.7**	**121**	
2.1	*Education*	*23.6*	*135*	○
2.1.1	Current expenditure on education, % GNI	2.5	119	
2.1.2	Public expenditure/pupil, % GDP/cap	9.4	110	○
2.1.3	School life expectancy, years	11.7	94	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	34.8	126	○
2.2	*Tertiary education*	*26.4*	*87*	
2.2.1	Tertiary enrolment, % gross	28.9	75	
2.2.2	Graduates in science & engineering, %	24.3	30	●
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.1	139	○
2.3	*Research & development (R&D)*	*12.2*	*120*	
2.3.1	Researchers, headcounts/mn pop.	129.6	94	
2.3.2	Gross expenditure on R&D, % GDP	0.1	96	
2.3.3	Quality of scientific research institutions†	33.5	103	
3	**Infrastructure**	**33.8**	**69**	
3.1	*Information & communication technologies (ICT)*	*29.2*	*80*	
3.1.1	ICT access*	31.4	96	
3.1.2	ICT use*	14.9	78	
3.1.3	Government's online service*	49.7	67	
3.1.4	E-participation*	21.1	63	
3.2	*General infrastructure*	*28.2*	*112*	
3.2.1	Electricity output, kWh/cap	671.4	101	
3.2.2	Electricity consumption, kWh/cap	591.7	102	
3.2.3	Quality of trade & transport infrastructure*	39.3	64	
3.2.4	Gross capital formation, % GDP	20.5	87	
3.3	*Ecological sustainability*	*44.1*	*29*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	11.6	6	●
3.3.2	Environmental performance*	57.4	41	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	74	
4	**Market sophistication**	**30.7**	**106**	
4.1	*Credit*	*11.0*	*120*	
4.1.1	Ease of getting credit*	21.1	104	
4.1.2	Domestic credit to private sector, % GDP	29.6	94	
4.1.3	Microfinance gross loans, % GDP	0.3	53	
4.2	*Investment*	*18.6*	*89*	
4.2.1	Ease of protecting investors*	15.8	110	
4.2.2	Market capitalization, % GDP	78.8	27	●
4.2.3	Total value of stocks traded, % GDP	13.4	45	
4.2.4	Venture capital deals/tr PPP$ GDP	2.5	63	
4.3	*Trade & competition*	*62.5*	*74*	
4.3.1	Applied tariff rate, weighted mean, %	4.8	76	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.3	81	
4.3.3	Imports of goods & services, % GDP	36.6	82	
4.3.4	Exports of goods & services, % GDP	34.8	79	
4.3.5	Intensity of local competition†	69.4	45	●
5	**Business sophistication**	**38.8**	**72**	
5.1	*Knowledge workers*	*48.3*	*62*	
5.1.1	Knowledge-intensive employment, %	19.7	69	
5.1.2	Firms offering formal training, % firms	31.1	61	
5.1.3	R&D performed by business, %	56.9	26	●
5.1.4	R&D financed by business, %	62.0	12	●
5.1.5	GMAT mean score	531.6	52	
5.1.6	GMAT test takers/mn pop. 20–34	15.9	119	
5.2	*Innovation linkages*	*34.9*	*70*	
5.2.1	University/industry research collaboration†	39.9	80	
5.2.2	State of cluster development†	44.8	54	
5.2.3	R&D financed by abroad, %	4.1	66	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	46.7	28	●
5.2.5	PCT patent filings with foreign inventor, %	66.7	43	
5.3	*Knowledge absorption*	*33.1*	*79*	
5.3.1	Royalty & license fees payments/th GDP	2.2	43	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	22.6	91	
5.3.4	FDI net inflows, % GDP	0.9	113	
6	**Knowledge & technology outputs**	**28.9**	**59**	
6.1	*Knowledge creation*	*14.0*	*102*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	82	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	92	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.6	22	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.7	125	
6.2	*Knowledge impact*	*26.7*	*94*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.6	25	●
6.2.2	New businesses/th pop. 15–64	0.2	91	○
6.2.3	Computer software spending, % GDP	0.1	70	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.6	88	
6.3	*Knowledge diffusion*	*46.1*	*26*	●
6.3.1	Royalty & license fees receipts/th GDP	0.0	85	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	67.2	7	●
6.3.4	FDI net outflows, % GDP	0.2	68	
7	**Creative outputs**	**23.7**	**108**	
7.1	*Creative intangibles*	*34.9*	*94*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	20.8	62	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	54.1	58	
7.1.4	ICT & organizational model creation†	40.7	96	
7.2	*Creative goods & services*	*7.1*	*117*	
7.2.1	Recreation & culture consumption, %	0.5	97	○
7.2.2	National feature films/mn pop. 15–69	1.4	59	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	66.7	72	
7.2.4	Creative goods exports, %	1.0	70	
7.2.5	Creative services exports, %	0.8	74	
7.3	*Online creativity*	*17.8*	*84*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.2	94	
7.3.2	Country-code TLDs/th pop. 15–69	11.9	92	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	601.0	77	
7.3.4	Video uploads on YouTube/pop. 15–69	55.2	68	

Poland

Key indicators

Population (millions) 38.1
GDP per capita, PPP$ 20,136.9
GDP (US$ billions) 531.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**40.4**	**44**	
Innovation Output Sub-Index		33.6	50	
Innovation Input Sub-Index		47.1	41	
Innovation Efficiency Index		0.7	80	
Global Innovation Index 2011 (out of 125)			43	
GII 2012 rank among GII 2011 economies (125)			43	
1	**Institutions**	**68.1**	**45**	
1.1	*Political environment*	*80.9*	*26*	
1.1.1	Political stability*	89.4	15	●
1.1.2	Government effectiveness*	59.5	39	
1.1.3	Press freedom*	93.7	22	●
1.2	*Regulatory environment*	*83.5*	*27*	
1.2.1	Regulatory quality*	76.5	33	
1.2.2	Rule of law*	65.9	39	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	37	
1.3	*Business environment*	*40.0*	*95*	○
1.3.1	Ease of starting a business*	34.5	92	
1.3.2	Ease of resolving insolvency*	53.9	65	
1.3.3	Ease of paying taxes*	31.6	96	○
2	**Human capital & research**	**40.5**	**53**	
2.1	*Education*	*61.4*	*30*	
2.1.1	Current expenditure on education, % GNI	4.8	44	
2.1.2	Public expenditure/pupil, % GDP/cap	22.7	44	
2.1.3	School life expectancy, years	15.2	32	
2.1.4	PISA scales in reading, maths, & science	501.1	15	
2.1.5	Pupil-teacher ratio, secondary	10.7	37	
2.2	*Tertiary education*	*31.5*	*73*	
2.2.1	Tertiary enrolment, % gross	70.5	19	●
2.2.2	Graduates in science & engineering, %	15.7	73	○
2.2.3	Tertiary inbound mobility, %	0.8	77	○
2.2.4	Gross tertiary outbound enrolment, %	1.1	71	
2.3	*Research & development (R&D)*	*28.7*	*46*	
2.3.1	Researchers, headcounts/mn pop.	2,550.4	36	
2.3.2	Gross expenditure on R&D, % GDP	0.7	44	
2.3.3	Quality of scientific research institutions†	51.8	42	
3	**Infrastructure**	**39.7**	**48**	
3.1	*Information & communication technologies (ICT)*	*43.8*	*50*	
3.1.1	ICT access*	64.9	35	
3.1.2	ICT use*	38.4	40	
3.1.3	Government's online service*	53.6	55	
3.1.4	E-participation*	18.4	71	
3.2	*General infrastructure*	*37.2*	*63*	
3.2.1	Electricity output, kWh/cap	4,120.9	50	
3.2.2	Electricity consumption, kWh/cap	3,768.0	48	
3.2.3	Quality of trade & transport infrastructure*	49.5	42	
3.2.4	Gross capital formation, % GDP	21.0	83	
3.3	*Ecological sustainability*	*38.2*	*50*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.8	56	
3.3.2	Environmental performance*	63.5	22	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.5	37	
4	**Market sophistication**	**44.8**	**44**	
4.1	*Credit*	*35.0*	*52*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	54.8	58	
4.1.3	Microfinance gross loans, % GDP	0.0	80	○
4.2	*Investment*	*33.0*	*47*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	40.6	54	
4.2.3	Total value of stocks traded, % GDP	16.5	40	
4.2.4	Venture capital deals/tr PPP$ GDP	9.1	49	
4.3	*Trade & competition*	*66.5*	*54*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	43.5	62	
4.3.4	Exports of goods & services, % GDP	42.3	56	
4.3.5	Intensity of local competition†	72.3	36	
5	**Business sophistication**	**42.3**	**52**	
5.1	*Knowledge workers*	*57.3*	*39*	
5.1.1	Knowledge-intensive employment, %	32.8	35	
5.1.2	Firms offering formal training, % firms	60.9	14	●
5.1.3	R&D performed by business, %	28.5	56	
5.1.4	R&D financed by business, %	27.1	54	
5.1.5	GMAT mean score	549.6	37	
5.1.6	GMAT test takers/mn pop. 20–34	37.3	96	○
5.2	*Innovation linkages*	*23.6*	*126*	○
5.2.1	University/industry research collaboration†	43.9	62	
5.2.2	State of cluster development†	32.6	107	○
5.2.3	R&D financed by abroad, %	5.5	59	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	7.6	95	
5.2.5	PCT patent filings with foreign inventor, %	12.0	89	○
5.3	*Knowledge absorption*	*45.9*	*27*	
5.3.1	Royalty & license fees payments/th GDP	4.8	16	●
5.3.2	High-tech imports less re-imports, %	11.7	34	
5.3.3	Computer & comm. service imports, %	45.9	23	●
5.3.4	FDI net inflows, % GDP	1.9	77	
6	**Knowledge & technology outputs**	**32.9**	**51**	
6.1	*Knowledge creation*	*31.1*	*49*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	4.7	33	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.3	50	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.2	28	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.7	35	
6.2	*Knowledge impact*	*36.0*	*59*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.5	59	
6.2.2	New businesses/th pop. 15–64	0.5	81	○
6.2.3	Computer software spending, % GDP	0.4	25	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	16.9	32	
6.3	*Knowledge diffusion*	*31.7*	*48*	
6.3.1	Royalty & license fees receipts/th GDP	0.5	44	
6.3.2	High-tech exports less re-exports, %	6.1	35	
6.3.3	Computer & comm. service exports, %	41.8	38	
6.3.4	FDI net outflows, % GDP	1.2	36	
7	**Creative outputs**	**34.3**	**60**	
7.1	*Creative intangibles*	*28.6*	*117*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	46.7	37	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.4	36	
7.1.3	ICT & business model creation†	47.9	80	
7.1.4	ICT & organizational model creation†	35.4	110	○
7.2	*Creative goods & services*	*36.0*	*31*	
7.2.1	Recreation & culture consumption, %	7.0	34	
7.2.2	National feature films/mn pop. 15–69	1.5	57	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	110.4	51	
7.2.4	Creative goods exports, %	3.1	25	
7.2.5	Creative services exports, %	10.8	18	●
7.3	*Online creativity*	*44.0*	*31*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	25.9	32	
7.3.2	Country-code TLDs/th pop. 15–69	61.6	19	●
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,624.0	31	
7.3.4	Video uploads on YouTube/pop. 15–69	65.0	39	

Portugal

Key indicators

Population (millions)	10.7
GDP per capita, PPP$	23,204.5
GDP (US$ billions)	241.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**45.3**	**35**	
Innovation Output Sub-Index		38.7	33	
Innovation Input Sub-Index		51.9	33	
Innovation Efficiency Index		0.7	67	
Global Innovation Index 2011 (out of 125)			33	
GII 2012 rank among GII 2011 economies (125)			34	
1	**Institutions**	**70.6**	**34**	
1.1	*Political environment*	*79.9*	*28*	
1.1.1	Political stability*	81.7	33	
1.1.2	Government effectiveness*	68.2	29	
1.1.3	Press freedom*	89.6	30	
1.2	*Regulatory environment*	*61.4*	*84*	
1.2.1	Regulatory quality*	72.5	38	
1.2.2	Rule of law*	75.3	27	
1.2.3	Cost of redundancy dismissal, salary weeks	33.9	128	○
1.3	*Business environment*	*70.7*	*30*	
1.3.1	Ease of starting a business*	66.1	47	
1.3.2	Ease of resolving insolvency*	87.0	19	●
1.3.3	Ease of paying taxes*	58.9	58	
2	**Human capital & research**	**55.6**	**15**	●
2.1	*Education*	*66.6*	*12*	●
2.1.1	Current expenditure on education, % GNI	5.3	30	
2.1.2	Public expenditure/pupil, % GDP/cap	24.8	27	
2.1.3	School life expectancy, years	16.0	19	●
2.1.4	PISA scales in reading, maths, & science	489.7	27	
2.1.5	Pupil-teacher ratio, secondary	7.3	6	●
2.2	*Tertiary education*	*48.0*	*26*	
2.2.1	Tertiary enrolment, % gross	62.2	28	
2.2.2	Graduates in science & engineering, %	28.8	11	●
2.2.3	Tertiary inbound mobility, %	2.4	51	
2.2.4	Gross tertiary outbound enrolment, %	2.1	46	
2.3	*Research & development (R&D)*	*52.2*	*19*	●
2.3.1	Researchers, headcounts/mn pop.	7,059.3	5	●
2.3.2	Gross expenditure on R&D, % GDP	1.7	23	
2.3.3	Quality of scientific research institutions†	65.5	22	
3	**Infrastructure**	**46.5**	**32**	
3.1	*Information & communication technologies (ICT)*	*56.4*	*29*	
3.1.1	ICT access*	71.4	25	
3.1.2	ICT use*	51.9	22	
3.1.3	Government's online service*	65.4	38	
3.1.4	E-participation*	36.8	41	
3.2	*General infrastructure*	*39.0*	*56*	
3.2.1	Electricity output, kWh/cap	4,952.5	45	
3.2.2	Electricity consumption, kWh/cap	4,888.9	41	
3.2.3	Quality of trade & transport infrastructure*	54.3	34	
3.2.4	Gross capital formation, % GDP	19.0	102	○
3.3	*Ecological sustainability*	*44.0*	*30*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.2	26	
3.3.2	Environmental performance*	57.6	40	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	3.4	27	
4	**Market sophistication**	**47.4**	**37**	
4.1	*Credit*	*43.8*	*37*	
4.1.1	Ease of getting credit*	21.1	104	○
4.1.2	Domestic credit to private sector, % GDP	190.8	8	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*35.3*	*43*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	35.9	58	
4.2.3	Total value of stocks traded, % GDP	13.7	44	
4.2.4	Venture capital deals/tr PPP$ GDP	20.2	38	
4.3	*Trade & competition*	*63.3*	*73*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	38.1	77	
4.3.4	Exports of goods & services, % GDP	30.9	85	
4.3.5	Intensity of local competition†	67.7	54	
5	**Business sophistication**	**39.3**	**65**	
5.1	*Knowledge workers*	*52.5*	*51*	
5.1.1	Knowledge-intensive employment, %	24.4	51	
5.1.2	Firms offering formal training, % firms	31.9	60	
5.1.3	R&D performed by business, %	46.7	36	
5.1.4	R&D financed by business, %	48.1	25	
5.1.5	GMAT mean score	536.6	48	
5.1.6	GMAT test takers/mn pop. 20–34	287.2	21	●
5.2	*Innovation linkages*	*30.0*	*100*	○
5.2.1	University/industry research collaboration†	60.0	26	
5.2.2	State of cluster development†	42.2	62	
5.2.3	R&D financed by abroad, %	3.0	70	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	9.5	90	○
5.2.5	PCT patent filings with foreign inventor, %	20.5	76	○
5.3	*Knowledge absorption*	*35.5*	*67*	
5.3.1	Royalty & license fees payments/th GDP	2.4	39	
5.3.2	High-tech imports less re-imports, %	7.9	73	
5.3.3	Computer & comm. service imports, %	40.0	38	
5.3.4	FDI net inflows, % GDP	0.6	117	○
6	**Knowledge & technology outputs**	**33.8**	**49**	
6.1	*Knowledge creation*	*33.0*	*44*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	2.3	49	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.4	45	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.4	40	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.2	16	●
6.2	*Knowledge impact*	*45.2*	*30*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.7	58	
6.2.2	New businesses/th pop. 15–64	3.9	28	
6.2.3	Computer software spending, % GDP	0.6	20	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	22.6	22	
6.3	*Knowledge diffusion*	*23.2*	*85*	
6.3.1	Royalty & license fees receipts/th GDP	0.2	62	
6.3.2	High-tech exports less re-exports, %	2.9	52	
6.3.3	Computer & comm. service exports, %	29.9	60	
6.3.4	FDI net outflows, % GDP	-3.6	115	○
7	**Creative outputs**	**43.6**	**28**	
7.1	*Creative intangibles*	*48.1*	*34*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	99.9	8	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.6	32	
7.1.3	ICT & business model creation†	64.8	29	
7.1.4	ICT & organizational model creation†	68.1	12	●
7.2	*Creative goods & services*	*34.3*	*35*	
7.2.1	Recreation & culture consumption, %	7.5	29	
7.2.2	National feature films/mn pop. 15–69	4.4	26	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	69.5	69	
7.2.4	Creative goods exports, %	2.7	30	
7.2.5	Creative services exports, %	7.7	25	
7.3	*Online creativity*	*43.7*	*32*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	26.6	30	
7.3.2	Country-code TLDs/th pop. 15–69	55.8	29	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	4,431.2	32	
7.3.4	Video uploads on YouTube/pop. 15–69	70.0	26	

Qatar

Key indicators

Population (millions)	1.8
GDP per capita, PPP$	102,891.2
GDP (US$ billions)	173.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**45.5**	**33**	
Innovation Output Sub-Index		36.9	41	
Innovation Input Sub-Index		54.1	30	
Innovation Efficiency Index		0.7	91	
Global Innovation Index 2011 (out of 125)			26	
GII 2012 rank among GII 2011 economies (125)			32	
1	**Institutions**	**70.2**	**35**	
1.1	*Political environment*	*72.9*	*40*	
1.1.1	Political stability*	91.0	11	
1.1.2	Government effectiveness*	65.5	33	
1.1.3	Press freedom*	62.2	89	
1.2	*Regulatory environment*	*69.0*	*63*	
1.2.1	Regulatory quality*	65.5	47	
1.2.2	Rule of law*	70.8	32	
1.2.3	Cost of redundancy dismissal, salary weeks	23.2	107	
1.3	*Business environment*	*68.8*	*31*	
1.3.1	Ease of starting a business*	28.7	100	
1.3.2	Ease of resolving insolvency*	77.6	32	
1.3.3	Ease of paying taxes*	100.0	1	●
2	**Human capital & research**	**55.7**	**14**	
2.1	*Education*	*40.6*	*105*	
2.1.1	Current expenditure on education, % GNI	1.8	129	○
2.1.2	Public expenditure/pupil, % GDP/cap	15.9	87	
2.1.3	School life expectancy, years	12.2	82	
2.1.4	PISA scales in reading, maths, & science	373.1	66	○
2.1.5	Pupil-teacher ratio, secondary	9.9	27	
2.2	*Tertiary education*	*45.9*	*32*	
2.2.1	Tertiary enrolment, % gross	10.0	107	○
2.2.2	Graduates in science & engineering, %	24.0	32	
2.2.3	Tertiary inbound mobility, %	38.9	3	●
2.2.4	Gross tertiary outbound enrolment, %	1.9	48	
2.3	*Research & development (R&D)*	*80.5*	*2*	●
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	80.5	6	●
3	**Infrastructure**	**49.0**	**27**	
3.1	*Information & communication technologies (ICT)*	*61.4*	*25*	
3.1.1	ICT access*	70.9	27	
3.1.2	ICT use*	37.5	41	
3.1.3	Government's online service*	73.9	27	
3.1.4	E-participation*	63.2	22	
3.2	*General infrastructure*	*67.4*	*3*	●
3.2.1	Electricity output, kWh/cap	15,128.7	7	●
3.2.2	Electricity consumption, kWh/cap	16,352.7	7	●
3.2.3	Quality of trade & transport infrastructure*	43.8	50	
3.2.4	Gross capital formation, % GDP	38.9	5	●
3.3	*Ecological sustainability*	*18.2*	*117*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.5	122	○
3.3.2	Environmental performance*	46.6	95	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	76	
4	**Market sophistication**	**35.3**	**84**	
4.1	*Credit*	*15.6*	*107*	
4.1.1	Ease of getting credit*	15.3	112	○
4.1.2	Domestic credit to private sector, % GDP	51.5	62	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*21.0*	*80*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	89.4	19	
4.2.3	Total value of stocks traded, % GDP	25.9	35	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*69.2*	*32*	
4.3.1	Applied tariff rate, weighted mean, %	3.8	63	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.0	72	
4.3.3	Imports of goods & services, % GDP	31.2	103	
4.3.4	Exports of goods & services, % GDP	46.7	50	
4.3.5	Intensity of local competition†	81.4	4	●
5	**Business sophistication**	**60.3**	**8**	
5.1	*Knowledge workers*	*48.6*	*61*	
5.1.1	Knowledge-intensive employment, %	24.2	52	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	485.2	81	
5.1.6	GMAT test takers/mn pop. 20–34	43.4	88	
5.2	*Innovation linkages*	*67.8*	*3*	●
5.2.1	University/industry research collaboration†	71.2	10	
5.2.2	State of cluster development†	63.9	8	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	116.1	10	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*64.6*	*5*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	8.3	18	
6	**Knowledge & technology outputs**	**25.2**	**77**	
6.1	*Knowledge creation*	*1.5*	*139*	○
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.5	131	○
6.2	*Knowledge impact*	*74.2*	*1*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	14.8	1	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.8	97	
6.3	*Knowledge diffusion*	*0.0*	*139*	○
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.0	121	○
6.3.3	Computer & comm. service exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**48.6**	**19**	
7.1	*Creative intangibles*	*76.2*	*1*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	73.8	6	●
7.1.4	ICT & organizational model creation†	78.6	2	●
7.2	*Creative goods & services*	*22.9*	*64*	
7.2.1	Recreation & culture consumption, %	6.9	35	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	88.1	61	
7.2.4	Creative goods exports, %	0.1	120	○
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*19.2*	*78*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.6	61	
7.3.2	Country-code TLDs/th pop. 15–69	1.4	121	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,986.7	50	
7.3.4	Video uploads on YouTube/pop. 15–69	60.5	57	

Romania

Key indicators

Population (millions)	21.4
GDP per capita, PPP$	12,357.9
GDP (US$ billions)	185.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**37.8**	**52**	
Innovation Output Sub-Index		31.7	57	
Innovation Input Sub-Index		43.9	51	
Innovation Efficiency Index		0.7	77	
Global Innovation Index 2011 (out of 125)			50	
GII 2012 rank among GII 2011 economies (125)			50	
1	**Institutions**	**62.1**	**56**	
1.1	*Political environment*	*64.2*	*55*	
1.1.1	Political stability*	71.5	54	
1.1.2	Government effectiveness*	37.2	75	
1.1.3	Press freedom*	83.8	41	
1.2	*Regulatory environment*	*79.1*	*37*	
1.2.1	Regulatory quality*	68.5	41	
1.2.2	Rule of law*	49.1	57	
1.2.3	Cost of redundancy dismissal, salary weeks	8.3	21	●
1.3	*Business environment*	*43.1*	*87*	
1.3.1	Ease of starting a business*	82.0	26	
1.3.2	Ease of resolving insolvency*	30.2	98	
1.3.3	Ease of paying taxes*	17.2	116	○
2	**Human capital & research**	**36.1**	**67**	
2.1	*Education*	*51.6*	*70*	
2.1.1	Current expenditure on education, % GNI	3.4	94	
2.1.2	Public expenditure/pupil, % GDP/cap	20.6	53	
2.1.3	School life expectancy, years	14.7	38	
2.1.4	PISA scales in reading, maths, & science	426.6	46	
2.1.5	Pupil-teacher ratio, secondary	12.4	51	
2.2	*Tertiary education*	*37.0*	*57*	
2.2.1	Tertiary enrolment, % gross	63.8	22	●
2.2.2	Graduates in science & engineering, %	21.7	41	
2.2.3	Tertiary inbound mobility, %	0.9	72	
2.2.4	Gross tertiary outbound enrolment, %	1.4	62	
2.3	*Research & development (R&D)*	*19.6*	*78*	
2.3.1	Researchers, headcounts/mn pop.	1,429.6	49	
2.3.2	Gross expenditure on R&D, % GDP	0.5	57	
2.3.3	Quality of scientific research institutions†	37.4	88	
3	**Infrastructure**	**44.3**	**40**	
3.1	*Information & communication technologies (ICT)*	*36.6*	*61*	
3.1.1	ICT access*	55.0	51	
3.1.2	ICT use*	32.0	45	
3.1.3	Government's online service*	51.6	61	
3.1.4	E-participation*	7.9	98	○
3.2	*General infrastructure*	*36.1*	*70*	
3.2.1	Electricity output, kWh/cap	2,690.4	64	
3.2.2	Electricity consumption, kWh/cap	2,266.5	64	
3.2.3	Quality of trade & transport infrastructure*	31.3	98	
3.2.4	Gross capital formation, % GDP	31.4	18	●
3.3	*Ecological sustainability*	*60.1*	*8*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.8	57	
3.3.2	Environmental performance*	48.3	85	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	29.1	1	●
4	**Market sophistication**	**39.7**	**63**	
4.1	*Credit*	*34.7*	*53*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	46.1	68	
4.1.3	Microfinance gross loans, % GDP	0.2	60	
4.2	*Investment*	*25.5*	*67*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	20.0	74	
4.2.3	Total value of stocks traded, % GDP	1.1	70	
4.2.4	Venture capital deals/tr PPP$ GDP	3.8	59	
4.3	*Trade & competition*	*58.8*	*93*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	29.8	107	○
4.3.4	Exports of goods & services, % GDP	23.5	116	○
4.3.5	Intensity of local competition†	57.6	93	
5	**Business sophistication**	**37.4**	**77**	
5.1	*Knowledge workers*	*46.0*	*67*	
5.1.1	Knowledge-intensive employment, %	21.8	61	
5.1.2	Firms offering formal training, % firms	24.9	79	
5.1.3	R&D performed by business, %	40.2	45	
5.1.4	R&D financed by business, %	34.8	47	
5.1.5	GMAT mean score	576.2	16	●
5.1.6	GMAT test takers/mn pop. 20–34	92.1	53	
5.2	*Innovation linkages*	*23.5*	*127*	○
5.2.1	University/industry research collaboration†	33.3	111	○
5.2.2	State of cluster development†	31.2	113	○
5.2.3	R&D financed by abroad, %	8.3	40	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	4.3	107	○
5.2.5	PCT patent filings with foreign inventor, %	25.0	71	
5.3	*Knowledge absorption*	*42.7*	*37*	
5.3.1	Royalty & license fees payments/th GDP	2.6	36	
5.3.2	High-tech imports less re-imports, %	10.8	45	
5.3.3	Computer & comm. service imports, %	51.0	14	●
5.3.4	FDI net inflows, % GDP	2.1	73	
6	**Knowledge & technology outputs**	**34.0**	**46**	
6.1	*Knowledge creation*	*21.4*	*71*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	5.5	32	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	80	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	47	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.4	56	
6.2	*Knowledge impact*	*36.7*	*55*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.1	109	○
6.2.2	New businesses/th pop. 15–64	3.7	29	
6.2.3	Computer software spending, % GDP	0.2	38	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	63.5	3	●
6.3	*Knowledge diffusion*	*43.9*	*28*	
6.3.1	Royalty & license fees receipts/th GDP	2.9	19	
6.3.2	High-tech exports less re-exports, %	9.1	28	
6.3.3	Computer & comm. service exports, %	55.6	17	●
6.3.4	FDI net outflows, % GDP	0.1	79	
7	**Creative outputs**	**29.3**	**82**	
7.1	*Creative intangibles*	*26.9*	*123*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	56.0	29	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.3	42	
7.1.3	ICT & business model creation†	41.8	109	○
7.1.4	ICT & organizational model creation†	34.1	111	○
7.2	*Creative goods & services*	*29.0*	*50*	
7.2.1	Recreation & culture consumption, %	4.5	58	
7.2.2	National feature films/mn pop. 15–69	1.3	61	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	77.8	65	
7.2.4	Creative goods exports, %	2.4	35	
7.2.5	Creative services exports, %	12.1	13	●
7.3	*Online creativity*	*34.4*	*41*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.8	45	
7.3.2	Country-code TLDs/th pop. 15–69	50.7	36	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,886.9	51	
7.3.4	Video uploads on YouTube/pop. 15–69	65.5	34	

Russian Federation

Key indicators

Population (millions)	142.4
GDP per capita, PPP$	16,687.4
GDP (US$ billions)	1,884.9

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**37.9**	**51**	
Innovation Output Sub-Index	33.8	49	
Innovation Input Sub-Index	42.0	60	
Innovation Efficiency Index	0.8	43	
Global Innovation Index 2011 (out of 125)		56	
GII 2012 rank among GII 2011 economies (125)		49	
1 Institutions	**49.1**	**93**	
1.1 Political environment	*41.1*	*114*	○
1.1.1 Political stability*	43.9	114	○
1.1.2 Government effectiveness*	30.6	89	
1.1.3 Press freedom*	48.6	116	○
1.2 Regulatory environment	*57.9*	*97*	
1.2.1 Regulatory quality*	41.7	101	
1.2.2 Rule of law*	27.0	109	○
1.2.3 Cost of redundancy dismissal, salary weeks	17.3	80	
1.3 Business environment	*48.4*	*70*	
1.3.1 Ease of starting a business*	38.1	87	
1.3.2 Ease of resolving insolvency*	62.5	53	
1.3.3 Ease of paying taxes*	44.6	78	
2 Human capital & research	**43.8**	**43**	
2.1 Education	*55.2*	*55*	
2.1.1 Current expenditure on education, % GNI	3.5	88	
2.1.2 Public expenditure/pupil, % GDP/cap	19.7	62	
2.1.3 School life expectancy, years	14.3	47	
2.1.4 PISA scales in reading, maths, & science	468.5	37	
2.1.5 Pupil-teacher ratio, secondary	8.5	14	●
2.2 Tertiary education	*44.3*	*36*	
2.2.1 Tertiary enrolment, % gross	75.9	12	●
2.2.2 Graduates in science & engineering, %	28.1	14	●
2.2.3 Tertiary inbound mobility, %	1.4	68	
2.2.4 Gross tertiary outbound enrolment, %	0.4	108	○
2.3 Research & development (R&D)	*31.8*	*41*	
2.3.1 Researchers, headcounts/mn pop.	2,580.9	35	
2.3.2 Gross expenditure on R&D, % GDP	1.3	29	
2.3.3 Quality of scientific research institutions†	47.4	57	
3 Infrastructure	**37.8**	**54**	
3.1 Information & communication technologies (ICT)	*55.5*	*31*	
3.1.1 ICT access*	63.8	38	
3.1.2 ICT use*	26.2	50	
3.1.3 Government's online service*	66.0	37	
3.1.4 E-participation*	65.8	19	●
3.2 General infrastructure	*37.7*	*61*	
3.2.1 Electricity output, kWh/cap	6,923.4	29	
3.2.2 Electricity consumption, kWh/cap	6,133.2	29	
3.2.3 Quality of trade & transport infrastructure*	34.5	82	
3.2.4 Gross capital formation, % GDP	22.8	62	
3.3 Ecological sustainability	*20.4*	*111*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.4	110	○
3.3.2 Environmental performance*	45.4	101	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.9	65	
4 Market sophistication	**35.0**	**87**	
4.1 Credit	*13.6*	*112*	○
4.1.1 Ease of getting credit*	27.0	88	
4.1.2 Domestic credit to private sector, % GDP	45.1	72	
4.1.3 Microfinance gross loans, % GDP	0.0	83	○
4.2 Investment	*31.0*	*52*	
4.2.1 Ease of protecting investors*	29.4	91	
4.2.2 Market capitalization, % GDP	67.9	34	
4.2.3 Total value of stocks traded, % GDP	54.0	20	
4.2.4 Venture capital deals/tr PPP$ GDP	7.2	51	
4.3 Trade & competition	*60.3*	*85*	
4.3.1 Applied tariff rate, weighted mean, %	3.8	64	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.3	42	
4.3.3 Imports of goods & services, % GDP	21.7	130	○
4.3.4 Exports of goods & services, % GDP	30.0	87	
4.3.5 Intensity of local competition†	49.8	120	○
5 Business sophistication	**44.3**	**43**	
5.1 Knowledge workers	*64.8*	*32*	
5.1.1 Knowledge-intensive employment, %	40.7	17	●
5.1.2 Firms offering formal training, % firms	52.2	24	
5.1.3 R&D performed by business, %	62.4	19	
5.1.4 R&D financed by business, %	26.6	55	
5.1.5 GMAT mean score	562.2	26	
5.1.6 GMAT test takers/mn pop. 20–34	55.2	75	
5.2 Innovation linkages	*25.8*	*118*	○
5.2.1 University/industry research collaboration†	41.4	72	
5.2.2 State of cluster development†	35.8	93	
5.2.3 R&D financed by abroad, %	6.5	52	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	29.6	50	
5.2.5 PCT patent filings with foreign inventor, %	11.2	90	○
5.3 Knowledge absorption	*42.3*	*40*	
5.3.1 Royalty & license fees payments/th GDP	3.4	30	
5.3.2 High-tech imports less re-imports, %	10.7	46	
5.3.3 Computer & comm. service imports, %	44.7	25	
5.3.4 FDI net inflows, % GDP	2.9	62	
6 Knowledge & technology outputs	**38.4**	**32**	
6.1 Knowledge creation	*45.5*	*29*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	13.0	12	●
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.4	44	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	5.3	10	●
6.1.4 Scientific & technical articles/bn PPP$ GDP	6.6	47	
6.2 Knowledge impact	*39.9*	*45*	
6.2.1 Growth rate of PPP$ GDP/worker, %	3.2	47	
6.2.2 New businesses/th pop. 15–64	2.6	37	
6.2.3 Computer software spending, % GDP	0.2	36	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	27.9	16	●
6.3 Knowledge diffusion	*29.9*	*56*	
6.3.1 Royalty & license fees receipts/th GDP	0.4	48	
6.3.2 High-tech exports less re-exports, %	1.3	68	
6.3.3 Computer & comm. service exports, %	43.6	34	
6.3.4 FDI net outflows, % GDP	3.5	16	●
7 Creative outputs	**29.1**	**84**	
7.1 Creative intangibles	*27.8*	*121*	○
7.1.1 Domestic res trademark reg/bn PPP$ GDP	28.8	51	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.5	34	
7.1.3 ICT & business model creation†	44.4	95	
7.1.4 ICT & organizational model creation†	42.2	90	
7.2 Creative goods & services	*27.9*	*55*	
7.2.1 Recreation & culture consumption, %	5.2	49	
7.2.2 National feature films/mn pop. 15–69	0.7	72	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	n/a	n/a	
7.2.4 Creative goods exports, %	0.3	96	
7.2.5 Creative services exports, %	15.9	8	●
7.3 Online creativity	*33.0*	*42*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	11.0	46	
7.3.2 Country-code TLDs/th pop. 15–69	52.4	34	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	2,616.1	45	
7.3.4 Video uploads on YouTube/pop. 15–69	55.4	67	

Rwanda

Key indicators

Population (millions)	10.2
GDP per capita, PPP$	1,318.5
GDP (US$ billions)	6.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**27.9**	**102**	
Innovation Output Sub-Index		21.5	113	
Innovation Input Sub-Index		34.3	95	
Innovation Efficiency Index		0.6	111	
Global Innovation Index 2011 (out of 125)			109	
GII 2012 rank among GII 2011 economies (125)			96	
1	**Institutions**	**57.6**	**64**	
1.1	*Political environment*	*46.9*	*90*	
1.1.1	Political stability*	62.7	75	
1.1.2	Government effectiveness*	39.6	70	
1.1.3	Press freedom*	38.5	125	
1.2	*Regulatory environment*	*66.8*	*69*	
1.2.1	Regulatory quality*	47.3	82	
1.2.2	Rule of law*	39.5	74	
1.2.3	Cost of redundancy dismissal, salary weeks	13.0	54	●
1.3	*Business environment*	*59.2*	*47*	●
1.3.1	Ease of starting a business*	93.5	9	●
1.3.2	Ease of resolving insolvency*	2.1	137	○
1.3.3	Ease of paying taxes*	82.0	26	●
2	**Human capital & research**	**20.9**	**120**	
2.1	*Education*	*35.8*	*116*	
2.1.1	Current expenditure on education, % GNI	4.2	68	
2.1.2	Public expenditure/pupil, % GDP/cap	17.9	76	
2.1.3	School life expectancy, years	10.9	104	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	29.4	118	
2.2	*Tertiary education*	*6.9*	*131*	
2.2.1	Tertiary enrolment, % gross	5.5	120	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.7	80	
2.2.4	Gross tertiary outbound enrolment, %	0.2	120	
2.3	*Research & development (R&D)*	*20.1*	*74*	
2.3.1	Researchers, headcounts/mn pop.	54.7	110	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	39.8	77	
3	**Infrastructure**	**22.0**	**118**	
3.1	*Information & communication technologies (ICT)*	*13.9*	*124*	
3.1.1	ICT access*	16.1	133	
3.1.2	ICT use*	3.0	121	
3.1.3	Government's online service*	34.0	106	
3.1.4	E-participation*	2.6	115	
3.2	*General infrastructure*	*30.1*	*101*	
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	15.8	137	○
3.2.4	Gross capital formation, % GDP	21.6	77	
3.3	*Ecological sustainability*	*n/a*	*n/a*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**40.4**	**61**	
4.1	*Credit*	*25.7*	*84*	
4.1.1	Ease of getting credit*	71.6	35	●
4.1.2	Domestic credit to private sector, % GDP	11.2	138	○
4.1.3	Microfinance gross loans, % GDP	0.3	51	
4.2	*Investment*	*38.1*	*35*	●
4.2.1	Ease of protecting investors*	76.2	27	●
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*57.6*	*99*	
4.3.1	Applied tariff rate, weighted mean, %	6.0	89	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	33	●
4.3.3	Imports of goods & services, % GDP	29.0	109	
4.3.4	Exports of goods & services, % GDP	11.6	136	
4.3.5	Intensity of local competition†	56.2	98	
5	**Business sophistication**	**30.4**	**120**	
5.1	*Knowledge workers*	*27.3*	*122*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	27.6	69	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	382.7	136	○
5.1.6	GMAT test takers/mn pop. 20–34	16.5	117	
5.2	*Innovation linkages*	*36.4*	*64*	
5.2.1	University/industry research collaboration†	45.2	57	
5.2.2	State of cluster development†	45.9	50	●
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*27.6*	*107*	
5.3.1	Royalty & license fees payments/th GDP	0.0	117	○
5.3.2	High-tech imports less re-imports, %	11.6	36	●
5.3.3	Computer & comm. service imports, %	21.7	95	
5.3.4	FDI net inflows, % GDP	0.8	115	
6	**Knowledge & technology outputs**	**6.9**	**140**	○
6.1	*Knowledge creation*	*3.2*	*127*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.0	112	
6.2	*Knowledge impact*	*2.4*	*141*	○
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.5	82	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	138	○
6.3	*Knowledge diffusion*	*15.2*	*122*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	94	
6.3.2	High-tech exports less re-exports, %	0.9	75	
6.3.3	Computer & comm. service exports, %	7.7	126	
6.3.4	FDI net outflows, % GDP	-0.3	112	
7	**Creative outputs**	**36.1**	**47**	●
7.1	*Creative intangibles*	*68.1*	*6*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	58.2	46	●
7.1.4	ICT & organizational model creation†	78.1	3	●
7.2	*Creative goods & services*	*1.9*	*131*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	1.7	132	○
7.2.4	Creative goods exports, %	0.3	95	
7.2.5	Creative services exports, %	0.0	109	○
7.3	*Online creativity*	*6.1*	*122*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	120	
7.3.2	Country-code TLDs/th pop. 15–69	2.0	118	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	16.2	127	

Saudi Arabia

Key indicators

Population (millions)	28.2
GDP per capita, PPP$	24,056.7
GDP (US$ billions)	560.3

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**39.3**	**48**	
Innovation Output Sub-Index	29.4	70	
Innovation Input Sub-Index	49.2	39	
Innovation Efficiency Index	0.6	127	○
Global Innovation Index 2011 (out of 125)		54	
GII 2012 rank among GII 2011 economies (125)		46	
1 Institutions	**63.8**	**53**	
1.1 Political environment	*45.2*	*103*	
1.1.1 Political stability*	59.8	85	
1.1.2 Government effectiveness*	38.8	71	
1.1.3 Press freedom*	37.0	127	○
1.2 Regulatory environment	*65.5*	*74*	
1.2.1 Regulatory quality*	55.5	69	
1.2.2 Rule of law*	52.0	53	
1.2.3 Cost of redundancy dismissal, salary weeks	19.5	87	
1.3 Business environment	*80.8*	*15*	●
1.3.1 Ease of starting a business*	90.6	14	●
1.3.2 Ease of resolving insolvency*	56.8	61	
1.3.3 Ease of paying taxes*	94.9	8	●
2 Human capital & research	**44.8**	**40**	
2.1 Education	*65.5*	*15*	●
2.1.1 Current expenditure on education, % GNI	7.2	9	●
2.1.2 Public expenditure/pupil, % GDP/cap	21.0	50	
2.1.3 School life expectancy, years	14.3	46	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	9.7	24	
2.2 Tertiary education	*49.0*	*22*	
2.2.1 Tertiary enrolment, % gross	36.8	63	
2.2.2 Graduates in science & engineering, %	35.8	4	●
2.2.3 Tertiary inbound mobility, %	3.0	46	
2.2.4 Gross tertiary outbound enrolment, %	1.4	60	
2.3 Research & development (R&D)	*19.8*	*77*	
2.3.1 Researchers, headcounts/mn pop.	47.4	115	○
2.3.2 Gross expenditure on R&D, % GDP	0.1	100	○
2.3.3 Quality of scientific research institutions†	57.7	34	
3 Infrastructure	**42.6**	**45**	
3.1 Information & communication technologies (ICT)	*60.6*	*26*	
3.1.1 ICT access*	63.7	40	
3.1.2 ICT use*	35.9	42	
3.1.3 Government's online service*	79.7	19	●
3.1.4 E-participation*	63.2	22	
3.2 General infrastructure	*47.0*	*31*	
3.2.1 Electricity output, kWh/cap	8,142.6	22	
3.2.2 Electricity consumption, kWh/cap	7,842.0	22	
3.2.3 Quality of trade & transport infrastructure*	56.8	32	
3.2.4 Gross capital formation, % GDP	22.0	74	
3.3 Ecological sustainability	*20.2*	*113*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.4	111	○
3.3.2 Environmental performance*	50.0	79	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.2	104	
4 Market sophistication	**47.5**	**36**	
4.1 Credit	*36.1*	*50*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	47.6	66	
4.1.3 Microfinance gross loans, % GDP	n/a	n/a	
4.2 Investment	*36.3*	*40*	
4.2.1 Ease of protecting investors*	87.0	16	●
4.2.2 Market capitalization, % GDP	81.3	25	
4.2.3 Total value of stocks traded, % GDP	46.7	22	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*70.2*	*29*	
4.3.1 Applied tariff rate, weighted mean, %	3.9	66	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.9	69	
4.3.3 Imports of goods & services, % GDP	35.4	89	
4.3.4 Exports of goods & services, % GDP	56.8	29	
4.3.5 Intensity of local competition†	77.2	16	●
5 Business sophistication	**47.5**	**36**	
5.1 Knowledge workers	*40.1*	*89*	
5.1.1 Knowledge-intensive employment, %	22.9	56	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	349.5	139	○
5.1.6 GMAT test takers/mn pop. 20–34	260.4	25	
5.2 Innovation linkages	*61.4*	*6*	●
5.2.1 University/industry research collaboration†	59.3	27	
5.2.2 State of cluster development†	62.7	11	●
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	79.0	17	●
5.2.5 PCT patent filings with foreign inventor, %	78.4	41	
5.3 Knowledge absorption	*41.0*	*50*	
5.3.1 Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	11.4	39	
5.3.3 Computer & comm. service imports, %	26.6	77	
5.3.4 FDI net inflows, % GDP	5.0	35	
6 Knowledge & technology outputs	**15.3**	**130**	○
6.1 Knowledge creation	*2.7*	*132*	○
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.5	80	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.2	107	
6.2 Knowledge impact	*25.4*	*102*	
6.2.1 Growth rate of PPP$ GDP/worker, %	0.7	97	○
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	0.2	40	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.1	93	
6.3 Knowledge diffusion	*17.9*	*110*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.1	111	○
6.3.3 Computer & comm. service exports, %	2.8	132	○
6.3.4 FDI net outflows, % GDP	0.9	42	
7 Creative outputs	**43.4**	**29**	
7.1 Creative intangibles	*72.4*	*3*	●
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	69.3	17	●
7.1.4 ICT & organizational model creation†	75.5	5	●
7.2 Creative goods & services	*8.4*	*110*	
7.2.1 Recreation & culture consumption, %	1.5	90	○
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	103.9	56	
7.2.4 Creative goods exports, %	0.2	102	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*20.3*	*74*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.5	77	
7.3.2 Country-code TLDs/th pop. 15–69	12.5	89	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	857.9	69	
7.3.4 Video uploads on YouTube/pop. 15–69	62.0	50	

Senegal

Key indicators

Population (millions)	13.4
GDP per capita, PPP$	1,893.4
GDP (US$ billions)	14.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**28.8**	**97**	
Innovation Output Sub-Index		27.2	78	
Innovation Input Sub-Index		30.4	114	
Innovation Efficiency Index		0.9	16	●
Global Innovation Index 2011 (out of 125)			100	
GII 2012 rank among GII 2011 economies (125)			92	
1	**Institutions**	**49.3**	**92**	
1.1	*Political environment*	*53.0*	*79*	
1.1.1	Political stability*	55.9	90	
1.1.2	Government effectiveness*	27.6	96	
1.1.3	Press freedom*	75.7	59	
1.2	*Regulatory environment*	*64.8*	*75*	
1.2.1	Regulatory quality*	44.8	91	
1.2.2	Rule of law*	37.0	82	
1.2.3	Cost of redundancy dismissal, salary weeks	13.7	61	
1.3	*Business environment*	*30.2*	*107*	
1.3.1	Ease of starting a business*	40.2	84	
1.3.2	Ease of resolving insolvency*	46.0	76	
1.3.3	Ease of paying taxes*	4.3	134	○
2	**Human capital & research**	**22.5**	**116**	
2.1	*Education*	*37.0*	*113*	
2.1.1	Current expenditure on education, % GNI	5.2	35	●
2.1.2	Public expenditure/pupil, % GDP/cap	26.3	18	●
2.1.3	School life expectancy, years	8.2	128	○
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	32.3	123	
2.2	*Tertiary education*	*8.7*	*127*	
2.2.1	Tertiary enrolment, % gross	7.9	112	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.0	75	
2.3	*Research & development (R&D)*	*21.8*	*69*	
2.3.1	Researchers, headcounts/mn pop.	666.7	65	
2.3.2	Gross expenditure on R&D, % GDP	0.4	68	
2.3.3	Quality of scientific research institutions†	52.2	41	
3	**Infrastructure**	**28.7**	**92**	
3.1	*Information & communication technologies (ICT)*	*21.3*	*102*	
3.1.1	ICT access*	22.8	111	
3.1.2	ICT use*	6.5	100	
3.1.3	Government's online service*	34.6	105	
3.1.4	E-participation*	21.1	63	
3.2	*General infrastructure*	*34.0*	*84*	
3.2.1	Electricity output, kWh/cap	222.9	115	
3.2.2	Electricity consumption, kWh/cap	189.3	114	
3.2.3	Quality of trade & transport infrastructure*	41.0	58	
3.2.4	Gross capital formation, % GDP	28.9	22	●
3.3	*Ecological sustainability*	*30.9*	*67*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.7	31	●
3.3.2	Environmental performance*	46.7	93	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	105	
4	**Market sophistication**	**19.6**	**134**	○
4.1	*Credit*	*13.4*	*113*	
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	25.9	101	
4.1.3	Microfinance gross loans, % GDP	2.5	19	●
4.2	*Investment*	*1.8*	*137*	○
4.2.1	Ease of protecting investors*	3.5	131	○
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*43.8*	*135*	○
4.3.1	Applied tariff rate, weighted mean, %	8.9	118	
4.3.2	Non-agricultural mkt access weighted tariff, %	4.6	133	○
4.3.3	Imports of goods & services, % GDP	44.0	57	
4.3.4	Exports of goods & services, % GDP	24.5	113	
4.3.5	Intensity of local competition†	66.8	59	
5	**Business sophistication**	**32.0**	**113**	
5.1	*Knowledge workers*	*20.4*	*134*	○
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	16.3	95	
5.1.3	R&D performed by business, %	0.9	87	○
5.1.4	R&D financed by business, %	4.0	77	
5.1.5	GMAT mean score	467.1	99	
5.1.6	GMAT test takers/mn pop. 20–34	21.2	112	
5.2	*Innovation linkages*	*51.8*	*17*	●
5.2.1	University/industry research collaboration†	45.2	58	
5.2.2	State of cluster development†	34.0	101	
5.2.3	R&D financed by abroad, %	38.3	8	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*23.7*	*129*	
5.3.1	Royalty & license fees payments/th GDP	0.9	76	
5.3.2	High-tech imports less re-imports, %	4.5	114	○
5.3.3	Computer & comm. service imports, %	20.9	97	
5.3.4	FDI net inflows, % GDP	1.8	82	
6	**Knowledge & technology outputs**	**21.7**	**97**	
6.1	*Knowledge creation*	*18.3*	*84*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	86	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	76	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.5	77	
6.2	*Knowledge impact*	*20.2*	*119*	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.8	95	
6.2.2	New businesses/th pop. 15–64	0.2	89	
6.2.3	Computer software spending, % GDP	0.2	42	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.8	98	
6.3	*Knowledge diffusion*	*26.8*	*68*	
6.3.1	Royalty & license fees receipts/th GDP	0.1	71	
6.3.2	High-tech exports less re-exports, %	0.4	94	
6.3.3	Computer & comm. service exports, %	41.9	37	●
6.3.4	FDI net outflows, % GDP	0.6	50	
7	**Creative outputs**	**32.6**	**67**	
7.1	*Creative intangibles*	*59.1*	*12*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	61.6	35	●
7.1.4	ICT & organizational model creation†	56.6	36	●
7.2	*Creative goods & services*	*2.6*	*128*	
7.2.1	Recreation & culture consumption, %	0.4	98	○
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	29.8	97	
7.2.4	Creative goods exports, %	0.3	98	
7.2.5	Creative services exports, %	0.3	92	
7.3	*Online creativity*	*9.8*	*111*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	115	
7.3.2	Country-code TLDs/th pop. 15–69	5.9	105	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	23.3	117	

Serbia

Key indicators

Population (millions) 7.4
GDP per capita, PPP$ 10,661.3
GDP (US$ billions) 46.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**40.0**	**46**	
Innovation Output Sub-Index		38.5	36	
Innovation Input Sub-Index		41.5	65	
Innovation Efficiency Index		0.9	7	●
Global Innovation Index 2011 (out of 125)			55	
GII 2012 rank among GII 2011 economies (125)			44	
1	**Institutions**	**56.0**	**71**	
1.1	*Political environment*	*55.7*	*71*	
1.1.1	Political stability*	55.5	93	
1.1.2	Government effectiveness*	38.0	73	
1.1.3	Press freedom*	73.6	63	
1.2	*Regulatory environment*	*72.2*	*45*	
1.2.1	Regulatory quality*	51.2	74	
1.2.2	Rule of law*	37.4	79	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*40.2*	*94*	
1.3.1	Ease of starting a business*	53.9	65	
1.3.2	Ease of resolving insolvency*	41.7	82	
1.3.3	Ease of paying taxes*	25.1	105	○
2	**Human capital & research**	**43.1**	**44**	
2.1	*Education*	*60.7*	*35*	
2.1.1	Current expenditure on education, % GNI	5.0	40	
2.1.2	Public expenditure/pupil, % GDP/cap	28.8	11	●
2.1.3	School life expectancy, years	13.6	56	
2.1.4	PISA scales in reading, maths, & science	442.4	42	
2.1.5	Pupil-teacher ratio, secondary	9.6	22	●
2.2	*Tertiary education*	*43.4*	*41*	
2.2.1	Tertiary enrolment, % gross	49.1	48	
2.2.2	Graduates in science & engineering, %	23.7	34	
2.2.3	Tertiary inbound mobility, %	4.2	33	
2.2.4	Gross tertiary outbound enrolment, %	2.4	37	
2.3	*Research & development (R&D)*	*25.4*	*56*	
2.3.1	Researchers, headcounts/mn pop.	1,218.7	50	
2.3.2	Gross expenditure on R&D, % GDP	0.9	36	
2.3.3	Quality of scientific research institutions†	46.8	58	
3	**Infrastructure**	**35.1**	**63**	
3.1	*Information & communication technologies (ICT)*	*42.3*	*54*	
3.1.1	ICT access*	63.2	42	
3.1.2	ICT use*	24.7	52	
3.1.3	Government's online service*	57.5	48	
3.1.4	E-participation*	23.7	59	
3.2	*General infrastructure*	*33.9*	*85*	
3.2.1	Electricity output, kWh/cap	5,069.0	42	
3.2.2	Electricity consumption, kWh/cap	4,224.9	46	
3.2.3	Quality of trade & transport infrastructure*	32.5	94	
3.2.4	Gross capital formation, % GDP	22.8	63	
3.3	*Ecological sustainability*	*29.0*	*72*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.3	112	○
3.3.2	Environmental performance*	46.1	98	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4.2	22	●
4	**Market sophistication**	**36.7**	**78**	
4.1	*Credit*	*38.3*	*47*	
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	51.5	61	
4.1.3	Microfinance gross loans, % GDP	1.8	24	
4.2	*Investment*	*14.0*	*104*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	24.8	68	
4.2.3	Total value of stocks traded, % GDP	0.6	81	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*57.8*	*97*	
4.3.1	Applied tariff rate, weighted mean, %	6.0	90	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.8	68	
4.3.3	Imports of goods & services, % GDP	51.4	48	
4.3.4	Exports of goods & services, % GDP	34.9	78	
4.3.5	Intensity of local competition†	43.4	130	○
5	**Business sophistication**	**36.3**	**86**	
5.1	*Knowledge workers*	*42.4*	*77*	
5.1.1	Knowledge-intensive employment, %	28.7	43	
5.1.2	Firms offering formal training, % firms	36.5	48	
5.1.3	R&D performed by business, %	14.3	71	○
5.1.4	R&D financed by business, %	8.3	74	○
5.1.5	GMAT mean score	515.8	62	
5.1.6	GMAT test takers/mn pop. 20–34	81.0	55	
5.2	*Innovation linkages*	*27.1*	*114*	○
5.2.1	University/industry research collaboration†	40.5	78	
5.2.2	State of cluster development†	27.1	120	○
5.2.3	R&D financed by abroad, %	7.2	45	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	7.6	94	
5.2.5	PCT patent filings with foreign inventor, %	50.0	48	
5.3	*Knowledge absorption*	*39.4*	*56*	
5.3.1	Royalty & license fees payments/th GDP	4.1	22	
5.3.2	High-tech imports less re-imports, %	6.9	84	
5.3.3	Computer & comm. service imports, %	40.4	35	
5.3.4	FDI net inflows, % GDP	3.5	50	
6	**Knowledge & technology outputs**	**40.0**	**29**	
6.1	*Knowledge creation*	*33.9*	*42*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.8	39	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.2	57	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.3	25	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.8	22	●
6.2	*Knowledge impact*	*51.8*	*17*	●
6.2.1	Growth rate of PPP$ GDP/worker, %	6.6	8	●
6.2.2	New businesses/th pop. 15–64	1.9	47	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	23.6	21	●
6.3	*Knowledge diffusion*	*34.5*	*41*	
6.3.1	Royalty & license fees receipts/th GDP	1.0	31	
6.3.2	High-tech exports less re-exports, %	3.2	50	
6.3.3	Computer & comm. service exports, %	52.5	22	●
6.3.4	FDI net outflows, % GDP	0.5	55	
7	**Creative outputs**	**36.9**	**44**	
7.1	*Creative intangibles*	*38.9*	*76*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	22.7	58	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	3.7	5	●
7.1.3	ICT & business model creation†	32.2	127	○
7.1.4	ICT & organizational model creation†	33.3	114	○
7.2	*Creative goods & services*	*40.2*	*19*	●
7.2.1	Recreation & culture consumption, %	6.7	42	
7.2.2	National feature films/mn pop. 15–69	3.7	33	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	148.9	35	
7.2.4	Creative goods exports, %	1.8	48	
7.2.5	Creative services exports, %	18.9	7	●
7.3	*Online creativity*	*29.3*	*50*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	3.0	74	
7.3.2	Country-code TLDs/th pop. 15–69	33.3	52	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,670.2	37	
7.3.4	Video uploads on YouTube/pop. 15–69	62.5	48	

Singapore

Key indicators

Population (millions)	5.3
GDP per capita, PPP$	59,937.0
GDP (US$ billions)	266.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**63.5**	**3**	
Innovation Output Sub-Index		52.0	11	
Innovation Input Sub-Index		74.9	1	●
Innovation Efficiency Index		0.7	83	○
Global Innovation Index 2011 (out of 125)			3	
GII 2012 rank among GII 2011 economies (125)			3	
1	**Institutions**	**92.5**	**8**	
1.1	*Political environment*	*81.5*	*24*	
1.1.1	Political stability*	92.5	8	
1.1.2	Government effectiveness*	100.0	1	●
1.1.3	Press freedom*	52.0	109	○
1.2	*Regulatory environment*	*97.5*	*5*	
1.2.1	Regulatory quality*	97.5	4	
1.2.2	Rule of law*	92.7	14	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*98.5*	*1*	●
1.3.1	Ease of starting a business*	97.8	4	
1.3.2	Ease of resolving insolvency*	99.2	2	
1.3.3	Ease of paying taxes*	98.5	3	
2	**Human capital & research**	**68.3**	**2**	
2.1	*Education*	*58.2*	*44*	
2.1.1	Current expenditure on education, % GNI	3.0	107	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	543.2	4	
2.1.5	Pupil-teacher ratio, secondary	14.9	69	○
2.2	*Tertiary education*	*83.3*	*1*	●
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	22.8	7	
2.2.4	Gross tertiary outbound enrolment, %	n/a	n/a	
2.3	*Research & development (R&D)*	*63.3*	*9*	
2.3.1	Researchers, headcounts/mn pop.	6,991.5	8	
2.3.2	Gross expenditure on R&D, % GDP	2.7	11	
2.3.3	Quality of scientific research institutions†	75.5	12	
3	**Infrastructure**	**60.6**	**9**	
3.1	*Information & communication technologies (ICT)*	*84.1*	*4*	
3.1.1	ICT access*	81.4	11	
3.1.2	ICT use*	60.3	15	
3.1.3	Government's online service*	100.0	1	●
3.1.4	E-participation*	94.7	3	
3.2	*General infrastructure*	*56.3*	*14*	
3.2.1	Electricity output, kWh/cap	8,233.4	21	
3.2.2	Electricity consumption, kWh/cap	7,948.3	20	
3.2.3	Quality of trade & transport infrastructure*	80.5	3	
3.2.4	Gross capital formation, % GDP	23.8	50	
3.3	*Ecological sustainability*	*41.4*	*38*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	7.9	30	
3.3.2	Environmental performance*	56.4	50	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.8	33	
4	**Market sophistication**	**76.3**	**4**	
4.1	*Credit*	*61.0*	*15*	
4.1.1	Ease of getting credit*	87.6	8	
4.1.2	Domestic credit to private sector, % GDP	102.1	30	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*76.9*	*4*	
4.2.1	Ease of protecting investors*	99.2	2	
4.2.2	Market capitalization, % GDP	166.2	7	
4.2.3	Total value of stocks traded, % GDP	126.7	7	
4.2.4	Venture capital deals/tr PPP$ GDP	54.0	25	
4.3	*Trade & competition*	*91.1*	*1*	●
4.3.1	Applied tariff rate, weighted mean, %	0.0	1	●
4.3.2	Non-agricultural mkt access weighted tariff, %	0.6	59	○
4.3.3	Imports of goods & services, % GDP	183.0	1	●
4.3.4	Exports of goods & services, % GDP	211.1	1	●
4.3.5	Intensity of local competition†	73.0	31	
5	**Business sophistication**	**76.9**	**1**	●
5.1	*Knowledge workers*	*91.8*	*1*	●
5.1.1	Knowledge-intensive employment, %	51.0	1	●
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	71.8	9	
5.1.4	R&D financed by business, %	63.5	11	
5.1.5	GMAT mean score	596.3	3	
5.1.6	GMAT test takers/mn pop. 20–34	1,150.1	5	
5.2	*Innovation linkages*	*54.4*	*13*	
5.2.1	University/industry research collaboration†	74.5	6	
5.2.2	State of cluster development†	69.1	2	
5.2.3	R&D financed by abroad, %	5.3	60	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	84.2	14	
5.2.5	PCT patent filings with foreign inventor, %	77.5	42	
5.3	*Knowledge absorption*	*84.5*	*1*	●
5.3.1	Royalty & license fees payments/th GDP	71.2	1	●
5.3.2	High-tech imports less re-imports, %	32.6	3	
5.3.3	Computer & comm. service imports, %	44.0	27	
5.3.4	FDI net inflows, % GDP	18.5	6	
6	**Knowledge & technology outputs**	**64.9**	**3**	
6.1	*Knowledge creation*	*49.3*	*25*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.1	44	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.1	21	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	16.6	17	
6.2	*Knowledge impact*	*67.9*	*3*	
6.2.1	Growth rate of PPP$ GDP/worker, %	13.6	2	
6.2.2	New businesses/th pop. 15–64	7.4	10	
6.2.3	Computer software spending, % GDP	0.5	23	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	13.4	40	
6.3	*Knowledge diffusion*	*77.5*	*1*	●
6.3.1	Royalty & license fees receipts/th GDP	8.4	7	
6.3.2	High-tech exports less re-exports, %	38.1	1	●
6.3.3	Computer & comm. service exports, %	46.8	27	
6.3.4	FDI net outflows, % GDP	9.5	4	
7	**Creative outputs**	**39.2**	**37**	
7.1	*Creative intangibles*	*44.4*	*53*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	16.9	66	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.6	31	○
7.1.3	ICT & business model creation†	75.3	4	
7.1.4	ICT & organizational model creation†	81.4	1	●
7.2	*Creative goods & services*	*29.6*	*49*	
7.2.1	Recreation & culture consumption, %	8.7	20	
7.2.2	National feature films/mn pop. 15–69	1.6	56	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	269.8	15	
7.2.4	Creative goods exports, %	2.0	45	
7.2.5	Creative services exports, %	0.2	96	○
7.3	*Online creativity*	*38.3*	*38*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	23.4	34	
7.3.2	Country-code TLDs/th pop. 15–69	50.1	38	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,280.5	56	○
7.3.4	Video uploads on YouTube/pop. 15–69	73.1	17	

Slovakia

Key indicators

Population (millions)	5.4
GDP per capita, PPP$	23,384.1
GDP (US$ billions)	97.2

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**41.4**	**40**	
Innovation Output Sub-Index	35.4	43	
Innovation Input Sub-Index	47.3	40	
Innovation Efficiency Index	0.7	65	
Global Innovation Index 2011 (out of 125)		37	
GII 2012 rank among GII 2011 economies (125)		39	
1 Institutions	**69.8**	**38**	
1.1 Political environment	*82.2*	*23*	●
1.1.1 Political stability*	90.0	12	●
1.1.2 Government effectiveness*	63.4	35	
1.1.3 Press freedom*	93.2	23	●
1.2 Regulatory environment	*70.5*	*53*	
1.2.1 Regulatory quality*	78.5	29	
1.2.2 Rule of law*	63.2	43	
1.2.3 Cost of redundancy dismissal, salary weeks	23.1	104	○
1.3 Business environment	*56.8*	*57*	
1.3.1 Ease of starting a business*	58.2	58	
1.3.2 Ease of resolving insolvency*	79.1	30	
1.3.3 Ease of paying taxes*	33.0	94	
2 Human capital & research	**42.6**	**46**	
2.1 Education	*52.8*	*66*	
2.1.1 Current expenditure on education, % GNI	3.6	84	
2.1.2 Public expenditure/pupil, % GDP/cap	16.4	83	
2.1.3 School life expectancy, years	14.6	42	
2.1.4 PISA scales in reading, maths, & science	488.1	28	
2.1.5 Pupil-teacher ratio, secondary	12.4	50	
2.2 Tertiary education	*49.0*	*23*	●
2.2.1 Tertiary enrolment, % gross	54.2	39	
2.2.2 Graduates in science & engineering, %	20.6	52	
2.2.3 Tertiary inbound mobility, %	2.7	49	
2.2.4 Gross tertiary outbound enrolment, %	6.5	10	●
2.3 Research & development (R&D)	*26.0*	*53*	
2.3.1 Researchers, headcounts/mn pop.	4,004.4	26	
2.3.2 Gross expenditure on R&D, % GDP	0.5	56	
2.3.3 Quality of scientific research institutions†	37.2	94	
3 Infrastructure	**46.3**	**33**	
3.1 Information & communication technologies (ICT)	*42.4*	*53*	
3.1.1 ICT access*	61.6	43	
3.1.2 ICT use*	44.4	32	
3.1.3 Government's online service*	50.3	66	
3.1.4 E-participation*	13.2	83	
3.2 General infrastructure	*41.0*	*45*	
3.2.1 Electricity output, kWh/cap	5,033.3	43	
3.2.2 Electricity consumption, kWh/cap	5,130.0	40	
3.2.3 Quality of trade & transport infrastructure*	50.0	41	
3.2.4 Gross capital formation, % GDP	23.4	57	
3.3 Ecological sustainability	*55.6*	*11*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	5.5	64	
3.3.2 Environmental performance*	66.6	12	●
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	9.1	10	●
4 Market sophistication	**38.1**	**71**	
4.1 Credit	*30.3*	*69*	
4.1.1 Ease of getting credit*	77.4	21	
4.1.2 Domestic credit to private sector, % GDP	44.9	73	
4.1.3 Microfinance gross loans, % GDP	0.0	92	○
4.2 Investment	*7.8*	*118*	○
4.2.1 Ease of protecting investors*	29.4	91	
4.2.2 Market capitalization, % GDP	4.7	99	○
4.2.3 Total value of stocks traded, % GDP	0.2	92	○
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*76.1*	*13*	●
4.3.1 Applied tariff rate, weighted mean, %	1.6	11	
4.3.2 Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3 Imports of goods & services, % GDP	82.4	9	●
4.3.4 Exports of goods & services, % GDP	81.1	10	●
4.3.5 Intensity of local competition†	72.6	35	
5 Business sophistication	**39.7**	**63**	
5.1 Knowledge workers	*54.8*	*44*	
5.1.1 Knowledge-intensive employment, %	34.6	33	
5.1.2 Firms offering formal training, % firms	33.1	54	
5.1.3 R&D performed by business, %	41.0	41	
5.1.4 R&D financed by business, %	35.1	46	
5.1.5 GMAT mean score	575.9	17	●
5.1.6 GMAT test takers/mn pop. 20–34	69.4	63	
5.2 Innovation linkages	*29.7*	*101*	
5.2.1 University/industry research collaboration†	36.3	101	○
5.2.2 State of cluster development†	39.2	78	
5.2.3 R&D financed by abroad, %	12.8	25	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	3.1	111	○
5.2.5 PCT patent filings with foreign inventor, %	34.8	60	
5.3 Knowledge absorption	*34.7*	*72*	
5.3.1 Royalty & license fees payments/th GDP	1.7	55	
5.3.2 High-tech imports less re-imports, %	10.6	47	
5.3.3 Computer & comm. service imports, %	35.3	50	
5.3.4 FDI net inflows, % GDP	0.6	118	○
6 Knowledge & technology outputs	**36.5**	**39**	
6.1 Knowledge creation	*31.1*	*50*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	2.1	51	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.5	40	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	2.5	15	
6.1.4 Scientific & technical articles/bn PPP$ GDP	8.7	38	
6.2 Knowledge impact	*50.9*	*18*	●
6.2.1 Growth rate of PPP$ GDP/worker, %	5.8	12	●
6.2.2 New businesses/th pop. 15–64	4.0	27	
6.2.3 Computer software spending, % GDP	0.4	24	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	32.3	11	●
6.3 Knowledge diffusion	*27.5*	*64*	
6.3.1 Royalty & license fees receipts/th GDP	0.5	43	
6.3.2 High-tech exports less re-exports, %	6.2	33	
6.3.3 Computer & comm. service exports, %	29.5	62	
6.3.4 FDI net outflows, % GDP	0.4	63	
7 Creative outputs	**34.4**	**57**	
7.1 Creative intangibles	*34.0*	*98*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	55.3	31	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	1.0	21	
7.1.3 ICT & business model creation†	50.1	73	
7.1.4 ICT & organizational model creation†	37.7	103	○
7.2 Creative goods & services	*29.7*	*48*	
7.2.1 Recreation & culture consumption, %	8.6	21	
7.2.2 National feature films/mn pop. 15–69	1.7	54	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	104.1	55	
7.2.4 Creative goods exports, %	1.7	50	
7.2.5 Creative services exports, %	5.5	35	
7.3 Online creativity	*40.0*	*35*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	19.3	36	
7.3.2 Country-code TLDs/th pop. 15–69	58.2	24	●
7.3.3 Wikipedia monthly edits/mn pop. 15–69	3,818.3	36	
7.3.4 Video uploads on YouTube/pop. 15–69	62.9	45	

Slovenia

Key indicators

Population (millions)	2.0
GDP per capita, PPP$	29,179.1
GDP (US$ billions)	52.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**49.9**	**26**	
Innovation Output Sub-Index		46.6	22	
Innovation Input Sub-Index		53.2	32	
Innovation Efficiency Index		0.9	20	●
Global Innovation Index 2011 (out of 125)			30	
GII 2012 rank among GII 2011 economies (125)			25	
1	**Institutions**	**78.0**	**25**	
1.1	*Political environment*	*80.1*	*27*	
1.1.1	Political stability*	85.0	25	
1.1.2	Government effectiveness*	68.1	30	
1.1.3	Press freedom*	87.1	32	
1.2	*Regulatory environment*	*83.0*	*29*	
1.2.1	Regulatory quality*	70.9	40	
1.2.2	Rule of law*	74.8	28	
1.2.3	Cost of redundancy dismissal, salary weeks	11.4	45	
1.3	*Business environment*	*70.9*	*29*	
1.3.1	Ease of starting a business*	83.4	24	
1.3.2	Ease of resolving insolvency*	76.2	34	
1.3.3	Ease of paying taxes*	53.2	66	
2	**Human capital & research**	**51.5**	**27**	
2.1	*Education*	*66.4*	*14*	●
2.1.1	Current expenditure on education, % GNI	4.9	41	
2.1.2	Public expenditure/pupil, % GDP/cap	25.2	24	
2.1.3	School life expectancy, years	16.9	8	●
2.1.4	PISA scales in reading, maths, & science	498.8	20	
2.1.5	Pupil-teacher ratio, secondary	9.2	19	
2.2	*Tertiary education*	*41.2*	*47*	
2.2.1	Tertiary enrolment, % gross	86.9	5	●
2.2.2	Graduates in science & engineering, %	18.2	63	
2.2.3	Tertiary inbound mobility, %	1.8	57	
2.2.4	Gross tertiary outbound enrolment, %	1.9	49	
2.3	*Research & development (R&D)*	*46.9*	*25*	
2.3.1	Researchers, headcounts/mn pop.	5,016.4	14	●
2.3.2	Gross expenditure on R&D, % GDP	1.9	17	
2.3.3	Quality of scientific research institutions†	60.0	32	
3	**Infrastructure**	**47.8**	**29**	
3.1	*Information & communication technologies (ICT)*	*51.9*	*37*	
3.1.1	ICT access*	72.1	24	
3.1.2	ICT use*	47.8	29	
3.1.3	Government's online service*	66.7	35	
3.1.4	E-participation*	21.1	63	
3.2	*General infrastructure*	*40.5*	*46*	
3.2.1	Electricity output, kWh/cap	8,051.5	24	
3.2.2	Electricity consumption, kWh/cap	6,096.5	30	
3.2.3	Quality of trade & transport infrastructure*	41.3	57	
3.2.4	Gross capital formation, % GDP	22.6	66	
3.3	*Ecological sustainability*	*50.9*	*17*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.4	45	
3.3.2	Environmental performance*	62.3	28	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.0	14	●
4	**Market sophistication**	**40.9**	**60**	
4.1	*Credit*	*29.3*	*76*	
4.1.1	Ease of getting credit*	27.0	88	○
4.1.2	Domestic credit to private sector, % GDP	94.4	36	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*22.3*	*76*	
4.2.1	Ease of protecting investors*	82.0	20	
4.2.2	Market capitalization, % GDP	19.7	76	○
4.2.3	Total value of stocks traded, % GDP	0.6	83	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*71.1*	*24*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	64.9	28	
4.3.4	Exports of goods & services, % GDP	65.4	20	●
4.3.5	Intensity of local competition†	68.7	49	
5	**Business sophistication**	**47.9**	**34**	
5.1	*Knowledge workers*	*67.4*	*29*	
5.1.1	Knowledge-intensive employment, %	38.0	24	
5.1.2	Firms offering formal training, % firms	47.5	35	
5.1.3	R&D performed by business, %	64.6	17	
5.1.4	R&D financed by business, %	58.0	17	
5.1.5	GMAT mean score	567.0	21	
5.1.6	GMAT test takers/mn pop. 20–34	65.3	68	
5.2	*Innovation linkages*	*28.8*	*104*	○
5.2.1	University/industry research collaboration†	49.2	43	
5.2.2	State of cluster development†	43.5	58	
5.2.3	R&D financed by abroad, %	6.0	55	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	23.7	59	
5.2.5	PCT patent filings with foreign inventor, %	9.4	95	○
5.3	*Knowledge absorption*	*47.4*	*22*	
5.3.1	Royalty & license fees payments/th GDP	7.7	9	●
5.3.2	High-tech imports less re-imports, %	6.7	85	
5.3.3	Computer & comm. service imports, %	46.4	22	
5.3.4	FDI net inflows, % GDP	0.8	114	○
6	**Knowledge & technology outputs**	**41.7**	**27**	
6.1	*Knowledge creation*	*49.0*	*26*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	10.2	18	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.1	20	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.2	51	○
6.1.4	Scientific & technical articles/bn PPP$ GDP	22.3	9	●
6.2	*Knowledge impact*	*47.4*	*24*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.5	40	
6.2.2	New businesses/th pop. 15–64	4.2	25	
6.2.3	Computer software spending, % GDP	0.5	22	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	30.0	14	●
6.3	*Knowledge diffusion*	*28.7*	*58*	
6.3.1	Royalty & license fees receipts/th GDP	1.4	25	
6.3.2	High-tech exports less re-exports, %	4.7	44	
6.3.3	Computer & comm. service exports, %	29.7	61	
6.3.4	FDI net outflows, % GDP	-0.2	108	○
7	**Creative outputs**	**51.5**	**13**	●
7.1	*Creative intangibles*	*58.9*	*13*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	93.2	13	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	4.7	1	●
7.1.3	ICT & business model creation†	51.2	69	
7.1.4	ICT & organizational model creation†	40.2	98	○
7.2	*Creative goods & services*	*39.2*	*21*	
7.2.1	Recreation & culture consumption, %	10.3	12	●
7.2.2	National feature films/mn pop. 15–69	2.7	41	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	197.3	25	
7.2.4	Creative goods exports, %	2.3	37	
7.2.5	Creative services exports, %	7.6	26	
7.3	*Online creativity*	*49.2*	*25*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	30.2	26	
7.3.2	Country-code TLDs/th pop. 15–69	58.9	23	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	7,306.7	20	
7.3.4	Video uploads on YouTube/pop. 15–69	70.4	25	

South Africa

Key indicators

Population (millions)	50.6
GDP per capita, PPP$	10,977.1
GDP (US$ billions)	422.0

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**37.4**	**54**	
Innovation Output Sub-Index	28.5	73	
Innovation Input Sub-Index	46.4	45	
Innovation Efficiency Index	0.6	116	○
Global Innovation Index 2011 (out of 125)		59	
GII 2012 rank among GII 2011 economies (125)		52	
1 Institutions	**69.7**	**39**	
1.1 Political environment	*66.6*	*46*	
1.1.1 Political stability*	64.7	71	
1.1.2 Government effectiveness*	49.9	50	
1.1.3 Press freedom*	85.1	38	
1.2 Regulatory environment	*76.7*	*41*	
1.2.1 Regulatory quality*	61.7	55	
1.2.2 Rule of law*	50.3	56	
1.2.3 Cost of redundancy dismissal, salary weeks	9.3	31	
1.3 Business environment	*65.9*	*34*	
1.3.1 Ease of starting a business*	58.2	58	
1.3.2 Ease of resolving insolvency*	50.3	70	
1.3.3 Ease of paying taxes*	89.2	16	●
2 Human capital & research	**27.2**	**103**	
2.1 Education	*51.4*	*71*	
2.1.1 Current expenditure on education, % GNI	5.4	29	
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	n/a	n/a	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	25.0	112	○
2.2 Tertiary education	*0.7*	*141*	○
2.2.1 Tertiary enrolment, % gross	n/a	n/a	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.1	137	○
2.3 Research & development (R&D)	*29.5*	*43*	
2.3.1 Researchers, headcounts/mn pop.	820.7	60	
2.3.2 Gross expenditure on R&D, % GDP	0.9	35	
2.3.3 Quality of scientific research institutions†	61.1	29	
3 Infrastructure	**30.8**	**79**	
3.1 Information & communication technologies (ICT)	*25.9*	*90*	
3.1.1 ICT access*	31.5	94	
3.1.2 ICT use*	10.4	90	
3.1.3 Government's online service*	45.8	81	
3.1.4 E-participation*	15.8	78	
3.2 General infrastructure	*45.1*	*35*	
3.2.1 Electricity output, kWh/cap	4,989.8	44	
3.2.2 Electricity consumption, kWh/cap	4,532.0	42	
3.2.3 Quality of trade & transport infrastructure*	60.5	28	●
3.2.4 Gross capital formation, % GDP	25.0	42	
3.3 Ecological sustainability	*21.4*	*105*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.7	91	
3.3.2 Environmental performance*	34.5	120	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	1.6	50	
4 Market sophistication	**62.5**	**13**	●
4.1 Credit	*51.8*	*25*	●
4.1.1 Ease of getting credit*	100.0	1	●
4.1.2 Domestic credit to private sector, % GDP	145.5	14	●
4.1.3 Microfinance gross loans, % GDP	0.4	46	
4.2 Investment	*75.1*	*5*	●
4.2.1 Ease of protecting investors*	92.8	10	●
4.2.2 Market capitalization, % GDP	278.4	1	●
4.2.3 Total value of stocks traded, % GDP	93.5	9	●
4.2.4 Venture capital deals/tr PPP$ GDP	16.2	39	
4.3 Trade & competition	*60.7*	*83*	
4.3.1 Applied tariff rate, weighted mean, %	4.4	74	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.3	80	
4.3.3 Imports of goods & services, % GDP	27.1	118	○
4.3.4 Exports of goods & services, % GDP	25.5	106	
4.3.5 Intensity of local competition†	69.2	47	
5 Business sophistication	**41.9**	**55**	
5.1 Knowledge workers	*48.7*	*60*	
5.1.1 Knowledge-intensive employment, %	23.7	55	
5.1.2 Firms offering formal training, % firms	36.8	47	
5.1.3 R&D performed by business, %	57.7	24	
5.1.4 R&D financed by business, %	42.7	38	
5.1.5 GMAT mean score	472.0	92	
5.1.6 GMAT test takers/mn pop. 20–34	57.6	73	
5.2 Innovation linkages	*35.7*	*67*	
5.2.1 University/industry research collaboration†	60.3	25	●
5.2.2 State of cluster development†	46.4	48	
5.2.3 R&D financed by abroad, %	10.7	30	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	20.2	66	
5.2.5 PCT patent filings with foreign inventor, %	19.9	81	○
5.3 Knowledge absorption	*41.2*	*49*	
5.3.1 Royalty & license fees payments/th GDP	5.3	14	●
5.3.2 High-tech imports less re-imports, %	13.4	28	
5.3.3 Computer & comm. service imports, %	26.3	79	
5.3.4 FDI net inflows, % GDP	0.4	124	○
6 Knowledge & technology outputs	**28.2**	**61**	
6.1 Knowledge creation	*30.6*	*51*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	1.6	60	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.6	35	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	5.7	52	
6.2 Knowledge impact	*35.2*	*61*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.0	72	
6.2.2 New businesses/th pop. 15–64	0.8	71	
6.2.3 Computer software spending, % GDP	0.7	14	●
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	6.3	61	
6.3 Knowledge diffusion	*18.9*	*106*	
6.3.1 Royalty & license fees receipts/th GDP	0.2	64	
6.3.2 High-tech exports less re-exports, %	2.2	58	
6.3.3 Computer & comm. service exports, %	14.7	106	○
6.3.4 FDI net outflows, % GDP	0.1	81	
7 Creative outputs	**28.8**	**86**	
7.1 Creative intangibles	*42.3*	*61*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	65.5	25	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	54.7	56	
7.1.4 ICT & organizational model creation†	41.1	94	
7.2 Creative goods & services	*9.5*	*101*	
7.2.1 Recreation & culture consumption, %	3.6	65	
7.2.2 National feature films/mn pop. 15–69	0.5	80	○
7.2.3 Paid-for dailies, circulation/th pop. 15–69	47.9	84	
7.2.4 Creative goods exports, %	0.4	92	
7.2.5 Creative services exports, %	0.5	86	
7.3 Online creativity	*21.0*	*73*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	7.4	51	
7.3.2 Country-code TLDs/th pop. 15–69	43.2	42	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	178.0	99	○
7.3.4 Video uploads on YouTube/pop. 15–69	32.6	108	○

Spain

Key indicators

Population (millions)	46.1
GDP per capita, PPP$	30,622.2
GDP (US$ billions)	1,536.5

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**47.2**	**29**	
Innovation Output Sub-Index		38.5	35	
Innovation Input Sub-Index		56.0	26	
Innovation Efficiency Index		0.7	87	○
Global Innovation Index 2011 (out of 125)			32	
GII 2012 rank among GII 2011 economies (125)			28	
1	**Institutions**	**68.5**	**43**	
1.1	*Political environment*	*71.5*	*43*	
1.1.1	Political stability*	61.0	80	
1.1.2	Government effectiveness*	66.8	32	
1.1.3	Press freedom*	86.7	35	
1.2	*Regulatory environment*	*81.1*	*35*	
1.2.1	Regulatory quality*	82.0	26	
1.2.2	Rule of law*	79.4	24	
1.2.3	Cost of redundancy dismissal, salary weeks	17.4	83	○
1.3	*Business environment*	*53.0*	*62*	
1.3.1	Ease of starting a business*	12.9	122	○
1.3.2	Ease of resolving insolvency*	86.3	20	
1.3.3	Ease of paying taxes*	59.7	57	
2	**Human capital & research**	**48.7**	**33**	
2.1	*Education*	*60.7*	*34*	
2.1.1	Current expenditure on education, % GNI	4.0	77	
2.1.2	Public expenditure/pupil, % GDP/cap	23.1	42	
2.1.3	School life expectancy, years	16.4	12	●
2.1.4	PISA scales in reading, maths, & science	484.3	32	
2.1.5	Pupil-teacher ratio, secondary	10.5	36	
2.2	*Tertiary education*	*44.6*	*35*	
2.2.1	Tertiary enrolment, % gross	73.2	16	●
2.2.2	Graduates in science & engineering, %	25.3	23	
2.2.3	Tertiary inbound mobility, %	2.7	48	
2.2.4	Gross tertiary outbound enrolment, %	0.9	80	
2.3	*Research & development (R&D)*	*40.7*	*30*	
2.3.1	Researchers, headcounts/mn pop.	4,822.5	16	●
2.3.2	Gross expenditure on R&D, % GDP	1.4	27	
2.3.3	Quality of scientific research institutions†	54.2	37	
3	**Infrastructure**	**59.7**	**10**	●
3.1	*Information & communication technologies (ICT)*	*62.3*	*23*	
3.1.1	ICT access*	69.8	29	
3.1.2	ICT use*	53.5	21	
3.1.3	Government's online service*	75.8	23	
3.1.4	E-participation*	50.0	31	
3.2	*General infrastructure*	*47.4*	*28*	
3.2.1	Electricity output, kWh/cap	6,417.0	32	
3.2.2	Electricity consumption, kWh/cap	6,053.1	31	
3.2.3	Quality of trade & transport infrastructure*	64.5	24	
3.2.4	Gross capital formation, % GDP	23.0	60	
3.3	*Ecological sustainability*	*69.5*	*1*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.2	27	
3.3.2	Environmental performance*	60.3	31	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	13.4	1	●
4	**Market sophistication**	**58.3**	**17**	●
4.1	*Credit*	*65.8*	*11*	●
4.1.1	Ease of getting credit*	57.7	43	
4.1.2	Domestic credit to private sector, % GDP	211.6	3	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*45.7*	*22*	
4.2.1	Ease of protecting investors*	35.9	76	○
4.2.2	Market capitalization, % GDP	83.2	23	
4.2.3	Total value of stocks traded, % GDP	66.6	15	●
4.2.4	Venture capital deals/tr PPP$ GDP	76.4	18	●
4.3	*Trade & competition*	*63.4*	*71*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	28.4	112	○
4.3.4	Exports of goods & services, % GDP	26.3	100	○
4.3.5	Intensity of local competition†	74.8	21	
5	**Business sophistication**	**45.0**	**41**	
5.1	*Knowledge workers*	*63.4*	*34*	
5.1.1	Knowledge-intensive employment, %	32.4	36	
5.1.2	Firms offering formal training, % firms	51.3	27	
5.1.3	R&D performed by business, %	51.9	32	
5.1.4	R&D financed by business, %	45.0	34	
5.1.5	GMAT mean score	578.8	13	●
5.1.6	GMAT test takers/mn pop. 20–34	110.8	49	
5.2	*Innovation linkages*	*31.6*	*91*	○
5.2.1	University/industry research collaboration†	51.9	39	
5.2.2	State of cluster development†	48.3	40	
5.2.3	R&D financed by abroad, %	5.7	57	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	24.1	58	
5.2.5	PCT patent filings with foreign inventor, %	18.1	85	○
5.3	*Knowledge absorption*	*39.9*	*54*	
5.3.1	Royalty & license fees payments/th GDP	1.9	50	
5.3.2	High-tech imports less re-imports, %	9.4	57	
5.3.3	Computer & comm. service imports, %	51.1	13	●
5.3.4	FDI net inflows, % GDP	1.8	84	
6	**Knowledge & technology outputs**	**38.4**	**33**	
6.1	*Knowledge creation*	*39.4*	*32*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	3.6	40	
6.1.2	PCT resident patent ap/bn PPP$ GDP	1.2	29	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.8	20	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.9	21	
6.2	*Knowledge impact*	*46.5*	*26*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.8	77	○
6.2.2	New businesses/th pop. 15–64	2.9	35	
6.2.3	Computer software spending, % GDP	0.7	13	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	43.6	7	●
6.3	*Knowledge diffusion*	*29.3*	*57*	
6.3.1	Royalty & license fees receipts/th GDP	0.6	39	
6.3.2	High-tech exports less re-exports, %	4.9	42	
6.3.3	Computer & comm. service exports, %	35.6	48	
6.3.4	FDI net outflows, % GDP	1.5	32	
7	**Creative outputs**	**38.5**	**39**	
7.1	*Creative intangibles*	*33.7*	*99*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	57.7	28	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.4	37	
7.1.3	ICT & business model creation†	57.8	48	
7.1.4	ICT & organizational model creation†	41.0	95	○
7.2	*Creative goods & services*	*38.7*	*22*	
7.2.1	Recreation & culture consumption, %	9.9	14	
7.2.2	National feature films/mn pop. 15–69	5.9	19	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	118.1	48	
7.2.4	Creative goods exports, %	2.1	41	
7.2.5	Creative services exports, %	7.7	24	
7.3	*Online creativity*	*48.0*	*28*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	32.2	24	
7.3.2	Country-code TLDs/th pop. 15–69	53.3	33	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	6,915.5	25	
7.3.4	Video uploads on YouTube/pop. 15–69	71.4	21	

Sri Lanka

Key indicators

Population (millions)	20.5
GDP per capita, PPP$	5,609.4
GDP (US$ billions)	58.8

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**29.1**	**94**	
Innovation Output Sub-Index	28.0	76	
Innovation Input Sub-Index	30.3	115	
Innovation Efficiency Index	0.9	10	●
Global Innovation Index 2011 (out of 125)		82	
GII 2012 rank among GII 2011 economies (125)		89	
1 Institutions	**38.0**	**126**	
1.1 Political environment	*38.7*	*119*	
1.1.1 Political stability*	45.4	110	
1.1.2 Government effectiveness*	36.6	77	
1.1.3 Press freedom*	34.1	130	○
1.2 Regulatory environment	*23.0*	*138*	○
1.2.1 Regulatory quality*	46.5	87	
1.2.2 Rule of law*	45.4	63	
1.2.3 Cost of redundancy dismissal, salary weeks	58.5	137	○
1.3 Business environment	*52.2*	*64*	
1.3.1 Ease of starting a business*	79.1	30	●
1.3.2 Ease of resolving insolvency*	72.6	39	●
1.3.3 Ease of paying taxes*	5.0	133	○
2 Human capital & research	**23.8**	**112**	
2.1 Education	*45.1*	*91*	
2.1.1 Current expenditure on education, % GNI	1.7	130	○
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	12.7	77	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	16.7	78	
2.2 Tertiary education	*8.2*	*128*	○
2.2.1 Tertiary enrolment, % gross	15.5	96	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	0.0	90	○
2.2.4 Gross tertiary outbound enrolment, %	1.0	76	
2.3 Research & development (R&D)	*18.1*	*86*	
2.3.1 Researchers, headcounts/mn pop.	197.2	84	
2.3.2 Gross expenditure on R&D, % GDP	0.1	95	
2.3.3 Quality of scientific research institutions†	50.7	47	
3 Infrastructure	**30.4**	**81**	
3.1 Information & communication technologies (ICT)	*21.3*	*101*	
3.1.1 ICT access*	31.5	95	
3.1.2 ICT use*	7.7	96	
3.1.3 Government's online service*	37.9	96	
3.1.4 E-participation*	7.9	98	
3.2 General infrastructure	*27.2*	*117*	
3.2.1 Electricity output, kWh/cap	488.3	107	
3.2.2 Electricity consumption, kWh/cap	415.8	108	
3.2.3 Quality of trade & transport infrastructure*	22.0	128	○
3.2.4 Gross capital formation, % GDP	27.8	24	●
3.3 Ecological sustainability	*42.7*	*34*	●
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	11.0	8	●
3.3.2 Environmental performance*	55.7	53	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.8	68	
4 Market sophistication	**27.0**	**122**	
4.1 Credit	*19.5*	*91*	
4.1.1 Ease of getting credit*	38.7	72	
4.1.2 Domestic credit to private sector, % GDP	26.7	99	
4.1.3 Microfinance gross loans, % GDP	1.1	35	
4.2 Investment	*16.3*	*96*	
4.2.1 Ease of protecting investors*	46.7	60	
4.2.2 Market capitalization, % GDP	40.2	55	
4.2.3 Total value of stocks traded, % GDP	6.7	54	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*45.2*	*131*	○
4.3.1 Applied tariff rate, weighted mean, %	6.9	99	
4.3.2 Non-agricultural mkt access weighted tariff, %	4.9	135	○
4.3.3 Imports of goods & services, % GDP	30.8	105	
4.3.4 Exports of goods & services, % GDP	21.7	119	
4.3.5 Intensity of local competition†	72.7	33	●
5 Business sophistication	**32.1**	**111**	
5.1 Knowledge workers	*36.3*	*102*	
5.1.1 Knowledge-intensive employment, %	19.7	70	
5.1.2 Firms offering formal training, % firms	32.6	56	
5.1.3 R&D performed by business, %	18.3	67	
5.1.4 R&D financed by business, %	19.9	63	
5.1.5 GMAT mean score	495.1	78	
5.1.6 GMAT test takers/mn pop. 20–34	32.2	101	
5.2 Innovation linkages	*33.5*	*79*	
5.2.1 University/industry research collaboration†	41.6	70	
5.2.2 State of cluster development†	49.9	35	●
5.2.3 R&D financed by abroad, %	4.3	64	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	76.5	19	●
5.2.5 PCT patent filings with foreign inventor, %	25.0	71	
5.3 Knowledge absorption	*26.7*	*114*	
5.3.1 Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	5.0	102	
5.3.3 Computer & comm. service imports, %	15.2	114	
5.3.4 FDI net inflows, % GDP	1.0	110	
6 Knowledge & technology outputs	**27.1**	**66**	
6.1 Knowledge creation	*20.4*	*75*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	2.1	52	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	67	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.4	100	
6.2 Knowledge impact	*30.0*	*82*	
6.2.1 Growth rate of PPP$ GDP/worker, %	5.9	11	●
6.2.2 New businesses/th pop. 15–64	0.3	87	
6.2.3 Computer software spending, % GDP	0.0	73	○
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	3.8	73	
6.3 Knowledge diffusion	*30.7*	*52*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.8	79	
6.3.3 Computer & comm. service exports, %	31.2	56	
6.3.4 FDI net outflows, % GDP	0.1	85	
7 Creative outputs	**28.9**	**85**	
7.1 Creative intangibles	*41.7*	*64*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	5.4	79	○
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	58.1	47	
7.1.4 ICT & organizational model creation†	64.6	20	●
7.2 Creative goods & services	*20.7*	*71*	
7.2.1 Recreation & culture consumption, %	2.9	72	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	40.7	87	
7.2.4 Creative goods exports, %	2.0	42	●
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*11.3*	*106*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.1	96	
7.3.2 Country-code TLDs/th pop. 15–69	6.4	104	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	342.5	86	
7.3.4 Video uploads on YouTube/pop. 15–69	36.1	101	

Sudan

Key indicators

Population (millions)	32.7
GDP per capita, PPP$	2,981.1
GDP (US$ billions)	63.3

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**16.8**	**141**	○
Innovation Output Sub-Index		10.3	141	○
Innovation Input Sub-Index		23.3	141	○
Innovation Efficiency Index		0.4	141	○
Global Innovation Index 2011 (out of 125)			124	
GII 2012 rank among GII 2011 economies (125)			125	
1	**Institutions**	**30.4**	**137**	
1.1	*Political environment*	*10.1*	*141*	○
1.1.1	Political stability*	0.1	140	○
1.1.2	Government effectiveness*	5.0	139	○
1.1.3	Press freedom*	25.2	134	
1.2	*Regulatory environment*	*39.7*	*131*	
1.2.1	Regulatory quality*	17.2	137	
1.2.2	Rule of law*	12.8	138	○
1.2.3	Cost of redundancy dismissal, salary weeks	26.0	110	
1.3	*Business environment*	*41.4*	*92*	
1.3.1	Ease of starting a business*	29.4	99	
1.3.2	Ease of resolving insolvency*	46.7	75	●
1.3.3	Ease of paying taxes*	48.2	73	●
2	**Human capital & research**	**14.5**	**137**	
2.1	*Education*	*28.6*	*127*	
2.1.1	Current expenditure on education, % GNI	0.9	137	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	22.2	100	
2.2	*Tertiary education*	*10.8*	*123*	
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	1.0	73	●
2.3	*Research & development (R&D)*	*4.2*	*136*	○
2.3.1	Researchers, headcounts/mn pop.	291.8	80	
2.3.2	Gross expenditure on R&D, % GDP	0.3	71	
2.3.3	Quality of scientific research institutions†	n/a	n/a	
3	**Infrastructure**	**20.9**	**124**	
3.1	*Information & communication technologies (ICT)*	*14.0*	*123*	
3.1.1	ICT access*	18.9	123	
3.1.2	ICT use*	3.6	115	
3.1.3	Government's online service*	25.5	123	
3.1.4	E-participation*	7.9	98	
3.2	*General infrastructure*	*22.8*	*130*	
3.2.1	Electricity output, kWh/cap	172.6	117	
3.2.2	Electricity consumption, kWh/cap	114.8	119	
3.2.3	Quality of trade & transport infrastructure*	19.5	133	
3.2.4	Gross capital formation, % GDP	23.3	59	●
3.3	*Ecological sustainability*	*25.9*	*91*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.7	59	●
3.3.2	Environmental performance*	46.0	99	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.0	133	○
4	**Market sophistication**	**16.4**	**140**	○
4.1	*Credit*	*1.5*	*141*	○
4.1.1	Ease of getting credit*	2.8	126	
4.1.2	Domestic credit to private sector, % GDP	11.6	135	
4.1.3	Microfinance gross loans, % GDP	0.0	89	
4.2	*Investment*	*3.6*	*129*	
4.2.1	Ease of protecting investors*	7.1	123	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*44.3*	*133*	
4.3.1	Applied tariff rate, weighted mean, %	14.8	135	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.0	14	●
4.3.3	Imports of goods & services, % GDP	18.9	134	
4.3.4	Exports of goods & services, % GDP	19.8	127	
4.3.5	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**34.4**	**93**	
5.1	*Knowledge workers*	*28.4*	*119*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	33.7	50	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	423.5	117	
5.1.6	GMAT test takers/mn pop. 20–34	3.4	136	
5.2	*Innovation linkages*	*54.9*	*10*	●
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	16.4	71	●
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*19.9*	*140*	○
5.3.1	Royalty & license fees payments/th GDP	0.2	106	
5.3.2	High-tech imports less re-imports, %	8.3	67	●
5.3.3	Computer & comm. service imports, %	1.6	134	○
5.3.4	FDI net inflows, % GDP	4.7	40	●
6	**Knowledge & technology outputs**	**18.2**	**116**	
6.1	*Knowledge creation*	*9.7*	*112*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.0	108	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	103	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	0.7	123	
6.2	*Knowledge impact*	*29.4*	*85*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	65	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.7	118	
6.3	*Knowledge diffusion*	*15.4*	*121*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	79	
6.3.2	High-tech exports less re-exports, %	0.1	109	
6.3.3	Computer & comm. service exports, %	9.0	122	
6.3.4	FDI net outflows, % GDP	0.2	74	
7	**Creative outputs**	**2.4**	**141**	○
7.1	*Creative intangibles*	*2.7*	*136*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.5	74	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.0	61	○
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	*Creative goods & services*	*1.9*	*132*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	3.9	128	
7.2.4	Creative goods exports, %	0.0	132	○
7.2.5	Creative services exports, %	1.3	66	
7.3	*Online creativity*	*2.2*	*139*	○
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	134	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	133	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	16.5	121	
7.3.4	Video uploads on YouTube/pop. 15–69	8.6	136	○

Swaziland

Key indicators

Population (millions)	1.2
GDP per capita, PPP$	5,179.1
GDP (US$ billions)	3.9

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**32.0**	**82**	
Innovation Output Sub-Index	30.4	65	
Innovation Input Sub-Index	33.7	99	
Innovation Efficiency Index	0.9	12	●
Global Innovation Index 2011 (out of 125)		101	
GII 2012 rank among GII 2011 economies (125)		78	
1 Institutions	**51.0**	**81**	
1.1 Political environment	*46.4*	*95*	
1.1.1 Political stability*	64.0	73	
1.1.2 Government effectiveness*	27.2	98	
1.1.3 Press freedom*	48.0	118	
1.2 Regulatory environment	*61.0*	*87*	
1.2.1 Regulatory quality*	35.2	118	
1.2.2 Rule of law*	34.6	90	
1.2.3 Cost of redundancy dismissal, salary weeks	14.6	65	
1.3 Business environment	*45.5*	*80*	
1.3.1 Ease of starting a business*	7.9	129	
1.3.2 Ease of resolving insolvency*	58.2	59	
1.3.3 Ease of paying taxes*	70.5	42	
2 Human capital & research	**30.3**	**89**	
2.1 Education	*58.5*	*43*	
2.1.1 Current expenditure on education, % GNI	7.2	10	●
2.1.2 Public expenditure/pupil, % GDP/cap	29.6	8	●
2.1.3 School life expectancy, years	10.7	108	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	18.2	89	
2.2 Tertiary education	*12.8*	*119*	
2.2.1 Tertiary enrolment, % gross	4.4	122	
2.2.2 Graduates in science & engineering, %	2.4	105	○
2.2.3 Tertiary inbound mobility, %	2.1	54	
2.2.4 Gross tertiary outbound enrolment, %	2.8	31	●
2.3 Research & development (R&D)	*19.5*	*81*	
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	19.5	128	○
3 Infrastructure	**16.6**	**136**	○
3.1 Information & communication technologies (ICT)	*10.9*	*135*	○
3.1.1 ICT access*	21.1	116	
3.1.2 ICT use*	2.7	122	
3.1.3 Government's online service*	14.4	138	○
3.1.4 E-participation*	5.3	110	
3.2 General infrastructure	*33.9*	*86*	
3.2.1 Electricity output, kWh/cap	n/a	n/a	
3.2.2 Electricity consumption, kWh/cap	n/a	n/a	
3.2.3 Quality of trade & transport infrastructure*	n/a	n/a	
3.2.4 Gross capital formation, % GDP	16.6	121	
3.3 Ecological sustainability	*5.0*	*127*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2 Environmental performance*	n/a	n/a	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.7	70	
4 Market sophistication	**26.4**	**123**	
4.1 Credit	*27.0*	*81*	
4.1.1 Ease of getting credit*	57.7	43	
4.1.2 Domestic credit to private sector, % GDP	23.0	111	
4.1.3 Microfinance gross loans, % GDP	1.5	30	
4.2 Investment	*6.2*	*122*	
4.2.1 Ease of protecting investors*	22.3	100	
4.2.2 Market capitalization, % GDP	6.9	96	
4.2.3 Total value of stocks traded, % GDP	0.0	108	○
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*46.1*	*130*	
4.3.1 Applied tariff rate, weighted mean, %	10.2	124	
4.3.2 Non-agricultural mkt access weighted tariff, %	4.7	134	○
4.3.3 Imports of goods & services, % GDP	76.9	15	●
4.3.4 Exports of goods & services, % GDP	58.1	24	●
4.3.5 Intensity of local competition†	50.7	115	
5 Business sophistication	**44.0**	**46**	
5.1 Knowledge workers	*46.1*	*66*	
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	51.0	28	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	416.9	120	
5.1.6 GMAT test takers/mn pop. 20–34	21.9	111	
5.2 Innovation linkages	*34.8*	*71*	
5.2.1 University/industry research collaboration†	24.8	124	○
5.2.2 State of cluster development†	29.7	114	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*51.1*	*16*	●
5.3.1 Royalty & license fees payments/th GDP	4.4	19	●
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	47.7	20	●
5.3.4 FDI net inflows, % GDP	2.5	67	
6 Knowledge & technology outputs	**35.9**	**40**	
6.1 Knowledge creation	*32.8*	*45*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.3	48	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.3	103	
6.2 Knowledge impact	*30.1*	*80*	
6.2.1 Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.8	84	
6.3 Knowledge diffusion	*44.9*	*27*	●
6.3.1 Royalty & license fees receipts/th GDP	0.1	75	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	64.2	8	●
6.3.4 FDI net outflows, % GDP	0.1	80	
7 Creative outputs	**24.9**	**101**	
7.1 Creative intangibles	*25.8*	*125*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	24.0	132	○
7.1.4 ICT & organizational model creation†	27.6	126	○
7.2 Creative goods & services	*30.0*	*44*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	36.3	92	
7.2.4 Creative goods exports, %	n/a	n/a	
7.2.5 Creative services exports, %	12.4	11	●
7.3 Online creativity	*18.1*	*82*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.6	109	
7.3.2 Country-code TLDs/th pop. 15–69	13.5	85	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4 Video uploads on YouTube/pop. 15–69	40.1	99	

Sweden

Key indicators

Population (millions)	9.4
GDP per capita, PPP$	40,613.8
GDP (US$ billions)	571.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**64.8**	**2**	●
Innovation Output Sub-Index		60.7	2	●
Innovation Input Sub-Index		68.8	3	●
Innovation Efficiency Index		0.9	18	
Global Innovation Index 2011 (out of 125)			2	
GII 2012 rank among GII 2011 economies (125)			2	
1	**Institutions**	**88.6**	**12**	
1.1	*Political environment*	*94.1*	*6*	
1.1.1	Political stability*	91.3	10	
1.1.2	Government effectiveness*	93.9	4	●
1.1.3	Press freedom*	97.0	11	
1.2	*Regulatory environment*	*92.3*	*16*	
1.2.1	Regulatory quality*	95.4	8	
1.2.2	Rule of law*	99.4	2	●
1.2.3	Cost of redundancy dismissal, salary weeks	14.4	64	○
1.3	*Business environment*	*79.6*	*16*	
1.3.1	Ease of starting a business*	76.2	34	
1.3.2	Ease of resolving insolvency*	88.4	17	
1.3.3	Ease of paying taxes*	74.1	37	
2	**Human capital & research**	**62.8**	**6**	
2.1	*Education*	*69.2*	*11*	
2.1.1	Current expenditure on education, % GNI	6.1	17	
2.1.2	Public expenditure/pupil, % GDP/cap	29.0	9	
2.1.3	School life expectancy, years	15.8	22	
2.1.4	PISA scales in reading, maths, & science	495.6	25	
2.1.5	Pupil-teacher ratio, secondary	9.6	23	
2.2	*Tertiary education*	*50.2*	*18*	
2.2.1	Tertiary enrolment, % gross	70.8	18	
2.2.2	Graduates in science & engineering, %	24.2	31	
2.2.3	Tertiary inbound mobility, %	6.4	24	
2.2.4	Gross tertiary outbound enrolment, %	2.5	33	
2.3	*Research & development (R&D)*	*68.9*	*7*	
2.3.1	Researchers, headcounts/mn pop.	5,238.7	13	
2.3.2	Gross expenditure on R&D, % GDP	3.6	3	●
2.3.3	Quality of scientific research institutions†	83.0	4	
3	**Infrastructure**	**69.8**	**1**	●
3.1	*Information & communication technologies (ICT)*	*78.5*	*6*	
3.1.1	ICT access*	85.7	5	
3.1.2	ICT use*	75.5	2	●
3.1.3	Government's online service*	84.3	16	
3.1.4	E-participation*	68.4	15	
3.2	*General infrastructure*	*63.6*	*6*	
3.2.1	Electricity output, kWh/cap	16,380.9	5	
3.2.2	Electricity consumption, kWh/cap	15,476.5	8	
3.2.3	Quality of trade & transport infrastructure*	75.8	10	
3.2.4	Gross capital formation, % GDP	18.4	108	○
3.3	*Ecological sustainability*	*67.3*	*2*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	6.0	54	○
3.3.2	Environmental performance*	68.8	10	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	13.0	1	●
4	**Market sophistication**	**64.3**	**10**	
4.1	*Credit*	*52.8*	*23*	
4.1.1	Ease of getting credit*	57.7	43	○
4.1.2	Domestic credit to private sector, % GDP	140.0	15	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*70.4*	*7*	
4.2.1	Ease of protecting investors*	76.2	27	
4.2.2	Market capitalization, % GDP	126.9	12	
4.2.3	Total value of stocks traded, % GDP	96.0	8	
4.2.4	Venture capital deals/tr PPP$ GDP	315.8	1	●
4.3	*Trade & competition*	*69.5*	*30*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	43.9	58	
4.3.4	Exports of goods & services, % GDP	50.0	45	
4.3.5	Intensity of local competition†	79.7	9	
5	**Business sophistication**	**58.6**	**10**	
5.1	*Knowledge workers*	*77.6*	*12*	
5.1.1	Knowledge-intensive employment, %	44.5	6	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	70.5	12	
5.1.4	R&D financed by business, %	58.9	16	
5.1.5	GMAT mean score	513.0	66	○
5.1.6	GMAT test takers/mn pop. 20–34	273.9	22	
5.2	*Innovation linkages*	*50.0*	*23*	
5.2.1	University/industry research collaboration†	75.3	5	
5.2.2	State of cluster development†	64.5	5	
5.2.3	R&D financed by abroad, %	10.5	32	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	63.7	22	
5.2.5	PCT patent filings with foreign inventor, %	42.2	57	○
5.3	*Knowledge absorption*	*48.2*	*21*	
5.3.1	Royalty & license fees payments/th GDP	3.0	33	
5.3.2	High-tech imports less re-imports, %	14.9	21	
5.3.3	Computer & comm. service imports, %	56.5	9	
5.3.4	FDI net inflows, % GDP	1.2	106	○
6	**Knowledge & technology outputs**	**67.9**	**2**	●
6.1	*Knowledge creation*	*84.6*	*2*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	16.2	9	
6.1.2	PCT resident patent ap/bn PPP$ GDP	9.1	3	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	28.4	3	●
6.2	*Knowledge impact*	*49.1*	*21*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.2	46	
6.2.2	New businesses/th pop. 15–64	4.1	26	
6.2.3	Computer software spending, % GDP	0.8	9	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	16.0	34	
6.3	*Knowledge diffusion*	*70.0*	*5*	
6.3.1	Royalty & license fees receipts/th GDP	13.4	1	●
6.3.2	High-tech exports less re-exports, %	14.5	21	
6.3.3	Computer & comm. service exports, %	62.7	10	
6.3.4	FDI net outflows, % GDP	7.0	8	
7	**Creative outputs**	**53.6**	**7**	
7.1	*Creative intangibles*	*47.9*	*35*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	49.4	34	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.8	27	○
7.1.3	ICT & business model creation†	79.9	1	●
7.1.4	ICT & organizational model creation†	72.7	8	
7.2	*Creative goods & services*	*45.1*	*13*	
7.2.1	Recreation & culture consumption, %	11.3	5	
7.2.2	National feature films/mn pop. 15–69	6.3	16	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	485.5	5	
7.2.4	Creative goods exports, %	2.6	32	
7.2.5	Creative services exports, %	0.6	81	○
7.3	*Online creativity*	*73.3*	*7*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	73.5	12	
7.3.2	Country-code TLDs/th pop. 15–69	73.1	8	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	13,527.5	7	
7.3.4	Video uploads on YouTube/pop. 15–69	77.6	10	

Switzerland

Key indicators

Population (millions)	7.8
GDP per capita, PPP$	43,508.6
GDP (US$ billions)	665.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**68.2**	**1**	●
Innovation Output Sub-Index		68.5	1	●
Innovation Input Sub-Index		68.0	4	
Innovation Efficiency Index		1.0	5	
Global Innovation Index 2011 (out of 125)			1	
GII 2012 rank among GII 2011 economies (125)			1	
1	**Institutions**	**88.0**	**13**	
1.1	*Political environment*	*94.4*	*5*	
1.1.1	Political stability*	94.5	5	
1.1.2	Government effectiveness*	91.2	5	
1.1.3	Press freedom*	97.4	8	
1.2	*Regulatory environment*	*95.0*	*12*	
1.2.1	Regulatory quality*	93.7	13	
1.2.2	Rule of law*	94.9	10	
1.2.3	Cost of redundancy dismissal, salary weeks	10.1	37	
1.3	*Business environment*	*74.6*	*24*	
1.3.1	Ease of starting a business*	56.8	61	○
1.3.2	Ease of resolving insolvency*	74.1	37	
1.3.3	Ease of paying taxes*	92.8	11	
2	**Human capital & research**	**57.9**	**10**	
2.1	*Education*	*58.1*	*47*	
2.1.1	Current expenditure on education, % GNI	4.8	45	
2.1.2	Public expenditure/pupil, % GDP/cap	27.4	15	
2.1.3	School life expectancy, years	15.5	26	
2.1.4	PISA scales in reading, maths, & science	517.0	11	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*47.9*	*27*	
2.2.1	Tertiary enrolment, % gross	51.5	45	
2.2.2	Graduates in science & engineering, %	21.6	43	○
2.2.3	Tertiary inbound mobility, %	14.9	12	
2.2.4	Gross tertiary outbound enrolment, %	2.4	36	
2.3	*Research & development (R&D)*	*67.7*	*8*	
2.3.1	Researchers, headcounts/mn pop.	6,057.4	10	
2.3.2	Gross expenditure on R&D, % GDP	3.0	7	
2.3.3	Quality of scientific research institutions†	87.8	2	●
3	**Infrastructure**	**60.8**	**8**	
3.1	*Information & communication technologies (ICT)*	*63.1*	*21*	
3.1.1	ICT access*	87.0	4	
3.1.2	ICT use*	63.7	13	
3.1.3	Government's online service*	67.3	32	
3.1.4	E-participation*	34.2	44	
3.2	*General infrastructure*	*53.2*	*18*	
3.2.1	Electricity output, kWh/cap	8,544.9	19	
3.2.2	Electricity consumption, kWh/cap	8,327.8	17	
3.2.3	Quality of trade & transport infrastructure*	79.3	6	
3.2.4	Gross capital formation, % GDP	19.2	101	○
3.3	*Ecological sustainability*	*66.2*	*3*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.2	12	
3.3.2	Environmental performance*	76.7	1	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	7.9	12	
4	**Market sophistication**	**69.8**	**5**	
4.1	*Credit*	*69.0*	*8*	
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	174.6	11	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*67.8*	*8*	
4.2.1	Ease of protecting investors*	3.5	131	○
4.2.2	Market capitalization, % GDP	234.7	3	
4.2.3	Total value of stocks traded, % GDP	166.0	1	●
4.2.4	Venture capital deals/tr PPP$ GDP	120.3	11	
4.3	*Trade & competition*	*72.5*	*17*	
4.3.1	Applied tariff rate, weighted mean, %	0.0	1	●
4.3.2	Non-agricultural mkt access weighted tariff, %	1.4	84	○
4.3.3	Imports of goods & services, % GDP	42.2	66	○
4.3.4	Exports of goods & services, % GDP	53.6	37	
4.3.5	Intensity of local competition†	74.3	22	
5	**Business sophistication**	**63.5**	**6**	
5.1	*Knowledge workers*	*85.8*	*2*	●
5.1.1	Knowledge-intensive employment, %	47.1	3	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	73.5	6	
5.1.4	R&D financed by business, %	68.2	7	
5.1.5	GMAT mean score	561.0	28	
5.1.6	GMAT test takers/mn pop. 20–34	400.4	12	
5.2	*Innovation linkages*	*54.5*	*12*	
5.2.1	University/industry research collaboration†	79.6	1	●
5.2.2	State of cluster development†	61.9	14	
5.2.3	R&D financed by abroad, %	6.0	56	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	84.7	13	
5.2.5	PCT patent filings with foreign inventor, %	79.2	40	
5.3	*Knowledge absorption*	*50.3*	*17*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	15.8	17	
5.3.3	Computer & comm. service imports, %	43.5	30	
5.3.4	FDI net inflows, % GDP	-1.2	137	○
6	**Knowledge & technology outputs**	**72.0**	**1**	●
6.1	*Knowledge creation*	*99.7*	*1*	●
6.1.1	Domestic resident patent ap/bn PPP$ GDP	25.6	1	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	11.7	1	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	30.1	2	●
6.2	*Knowledge impact*	*57.2*	*7*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	71	○
6.2.2	New businesses/th pop. 15–64	4.9	17	
6.2.3	Computer software spending, % GDP	1.2	2	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	37.1	10	
6.3	*Knowledge diffusion*	*59.0*	*11*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	22.5	7	
6.3.3	Computer & comm. service exports, %	44.2	31	
6.3.4	FDI net outflows, % GDP	7.4	7	
7	**Creative outputs**	**65.0**	**1**	●
7.1	*Creative intangibles*	*67.9*	*7*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	95.2	12	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	9.5	1	●
7.1.3	ICT & business model creation†	69.4	16	
7.1.4	ICT & organizational model creation†	57.1	34	
7.2	*Creative goods & services*	*51.6*	*7*	
7.2.1	Recreation & culture consumption, %	7.7	27	
7.2.2	National feature films/mn pop. 15–69	19.0	1	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	383.5	7	
7.2.4	Creative goods exports, %	4.9	12	
7.2.5	Creative services exports, %	0.0	112	○
7.3	*Online creativity*	*72.8*	*8*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	79.6	4	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	8,060.6	17	
7.3.4	Video uploads on YouTube/pop. 15–69	70.5	23	

Syrian Arab Republic

Key indicators

Population (millions)	21.2
GDP per capita, PPP$	5,078.8
GDP (US$ billions)	64.7

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**23.1**	**132**	
Innovation Output Sub-Index	17.6	130	
Innovation Input Sub-Index	28.6	123	
Innovation Efficiency Index	0.6	115	
Global Innovation Index 2011 (out of 125)		115	
GII 2012 rank among GII 2011 economies (125)		120	
1 Institutions	**41.0**	**111**	
1.1 Political environment	*24.1*	*136*	○
1.1.1 Political stability*	45.6	109	
1.1.2 Government effectiveness*	26.5	101	
1.1.3 Press freedom*	0.0	140	○
1.2 Regulatory environment	*64.7*	*76*	●
1.2.1 Regulatory quality*	28.0	129	
1.2.2 Rule of law*	33.4	96	
1.2.3 Cost of redundancy dismissal, salary weeks	8.7	23	●
1.3 Business environment	*34.3*	*100*	
1.3.1 Ease of starting a business*	22.3	109	
1.3.2 Ease of resolving insolvency*	35.2	91	
1.3.3 Ease of paying taxes*	45.3	77	
2 Human capital & research	**27.0**	**105**	
2.1 Education	*47.4*	*84*	
2.1.1 Current expenditure on education, % GNI	2.6	117	
2.1.2 Public expenditure/pupil, % GDP/cap	18.6	73	
2.1.3 School life expectancy, years	11.3	101	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	7.2	5	●
2.2 Tertiary education	*6.6*	*132*	
2.2.1 Tertiary enrolment, % gross	n/a	n/a	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	n/a	n/a	
2.2.4 Gross tertiary outbound enrolment, %	0.7	87	
2.3 Research & development (R&D)	*27.0*	*51*	●
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	27.0	119	
3 Infrastructure	**22.3**	**117**	
3.1 Information & communication technologies (ICT)	*18.2*	*109*	
3.1.1 ICT access*	39.6	75	●
3.1.2 ICT use*	7.5	98	
3.1.3 Government's online service*	22.9	128	
3.1.4 E-participation*	2.6	115	
3.2 General infrastructure	*27.7*	*115*	
3.2.1 Electricity output, kWh/cap	2,083.4	73	
3.2.2 Electricity consumption, kWh/cap	1,484.7	82	
3.2.3 Quality of trade & transport infrastructure*	36.3	75	
3.2.4 Gross capital formation, % GDP	18.8	104	
3.3 Ecological sustainability	*20.9*	*109*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.5	96	
3.3.2 Environmental performance*	42.8	108	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.4	84	
4 Market sophistication	**27.6**	**120**	
4.1 Credit	*2.5*	*139*	○
4.1.1 Ease of getting credit*	1.4	137	○
4.1.2 Domestic credit to private sector, % GDP	22.5	113	
4.1.3 Microfinance gross loans, % GDP	0.0	74	
4.2 Investment	*14.7*	*98*	
4.2.1 Ease of protecting investors*	29.4	91	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*65.5*	*61*	●
4.3.1 Applied tariff rate, weighted mean, %	6.1	93	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.0	12	●
4.3.3 Imports of goods & services, % GDP	35.8	87	
4.3.4 Exports of goods & services, % GDP	35.3	77	●
4.3.5 Intensity of local competition†	69.5	42	●
5 Business sophistication	**25.4**	**134**	○
5.1 Knowledge workers	*36.7*	*100*	
5.1.1 Knowledge-intensive employment, %	15.5	86	
5.1.2 Firms offering formal training, % firms	38.3	45	●
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	457.3	103	
5.1.6 GMAT test takers/mn pop. 20–34	18.8	113	
5.2 Innovation linkages	*23.0*	*129*	
5.2.1 University/industry research collaboration†	23.4	126	○
5.2.2 State of cluster development†	34.1	100	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*16.6*	*141*	○
5.3.1 Royalty & license fees payments/th GDP	0.6	84	
5.3.2 High-tech imports less re-imports, %	2.4	121	○
5.3.3 Computer & comm. service imports, %	6.1	130	○
5.3.4 FDI net inflows, % GDP	2.3	70	●
6 Knowledge & technology outputs	**16.1**	**129**	
6.1 Knowledge creation	*15.6*	*94*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	1.5	61	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	91	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.7	124	
6.2 Knowledge impact	*30.5*	*78*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.0	73	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.2	109	
6.3 Knowledge diffusion	*2.3*	*136*	○
6.3.1 Royalty & license fees receipts/th GDP	0.0	84	
6.3.2 High-tech exports less re-exports, %	0.6	83	
6.3.3 Computer & comm. service exports, %	5.7	128	○
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**19.1**	**123**	
7.1 Creative intangibles	*23.8*	*129*	○
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.1	56	
7.1.3 ICT & business model creation†	28.7	128	○
7.1.4 ICT & organizational model creation†	41.3	93	
7.2 Creative goods & services	*12.8*	*88*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	31.5	94	
7.2.4 Creative goods exports, %	1.6	52	●
7.2.5 Creative services exports, %	2.0	61	●
7.3 Online creativity	*16.0*	*92*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.6	107	
7.3.2 Country-code TLDs/th pop. 15–69	0.0	140	○
7.3.3 Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4 Video uploads on YouTube/pop. 15–69	47.4	84	

Tajikistan

Key indicators

Population (millions)	7.8
GDP per capita, PPP$	2,039.9
GDP (US$ billions)	6.8

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**26.4**	**108**	
Innovation Output Sub-Index	22.0	109	
Innovation Input Sub-Index	30.8	111	
Innovation Efficiency Index	0.7	79	
Global Innovation Index 2011 (out of 125)		116	
GII 2012 rank among GII 2011 economies (125)		101	
1 Institutions	**39.9**	**119**	
1.1 Political environment	*38.6*	*120*	
1.1.1 Political stability*	43.3	116	
1.1.2 Government effectiveness*	17.2	128	
1.1.3 Press freedom*	55.4	97	
1.2 Regulatory environment	*52.8*	*109*	
1.2.1 Regulatory quality*	24.8	132	○
1.2.2 Rule of law*	16.0	132	○
1.2.3 Cost of redundancy dismissal, salary weeks	15.5	70	
1.3 Business environment	*28.2*	*113*	
1.3.1 Ease of starting a business*	20.1	112	
1.3.2 Ease of resolving insolvency*	57.5	60	●
1.3.3 Ease of paying taxes*	7.1	130	
2 Human capital & research	**29.1**	**96**	
2.1 Education	*40.3*	*107*	
2.1.1 Current expenditure on education, % GNI	3.2	96	
2.1.2 Public expenditure/pupil, % GDP/cap	14.0	91	
2.1.3 School life expectancy, years	11.5	97	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	17.1	82	
2.2 Tertiary education	*33.8*	*64*	●
2.2.1 Tertiary enrolment, % gross	19.7	87	
2.2.2 Graduates in science & engineering, %	26.0	21	●
2.2.3 Tertiary inbound mobility, %	2.1	55	
2.2.4 Gross tertiary outbound enrolment, %	0.8	81	
2.3 Research & development (R&D)	*13.3*	*115*	
2.3.1 Researchers, headcounts/mn pop.	253.9	81	
2.3.2 Gross expenditure on R&D, % GDP	0.1	99	
2.3.3 Quality of scientific research institutions†	36.5	96	
3 Infrastructure	**22.5**	**116**	
3.1 Information & communication technologies (ICT)	*11.6*	*133*	○
3.1.1 ICT access*	19.0	121	
3.1.2 ICT use*	3.2	119	
3.1.3 Government's online service*	24.2	127	
3.1.4 E-participation*	0.0	127	○
3.2 General infrastructure	*27.3*	*116*	
3.2.1 Electricity output, kWh/cap	2,141.7	71	
3.2.2 Electricity consumption, kWh/cap	1,937.1	70	
3.2.3 Quality of trade & transport infrastructure*	25.0	119	
3.2.4 Gross capital formation, % GDP	22.8	64	●
3.3 Ecological sustainability	*28.7*	*76*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	3.8	90	
3.3.2 Environmental performance*	38.8	115	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4 Market sophistication	**39.4**	**65**	
4.1 Credit	*33.1*	*58*	●
4.1.1 Ease of getting credit*	1.4	137	○
4.1.2 Domestic credit to private sector, % GDP	28.9	97	
4.1.3 Microfinance gross loans, % GDP	7.5	5	●
4.2 Investment	*29.1*	*57*	●
4.2.1 Ease of protecting investors*	58.2	48	●
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*56.0*	*109*	
4.3.1 Applied tariff rate, weighted mean, %	5.9	87	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.4	83	
4.3.3 Imports of goods & services, % GDP	61.1	35	●
4.3.4 Exports of goods & services, % GDP	15.2	131	
4.3.5 Intensity of local competition†	51.4	112	
5 Business sophistication	**23.3**	**137**	○
5.1 Knowledge workers	*17.3*	*140*	○
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	21.1	88	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	1.1	86	○
5.1.5 GMAT mean score	383.9	135	○
5.1.6 GMAT test takers/mn pop. 20–34	9.2	126	
5.2 Innovation linkages	*18.7*	*133*	○
5.2.1 University/industry research collaboration†	36.8	96	
5.2.2 State of cluster development†	27.3	117	
5.2.3 R&D financed by abroad, %	0.6	86	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*33.8*	*75*	
5.3.1 Royalty & license fees payments/th GDP	0.0	116	○
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	38.2	42	●
5.3.4 FDI net inflows, % GDP	0.3	128	
6 Knowledge & technology outputs	**26.7**	**68**	
6.1 Knowledge creation	*30.5*	*52*	●
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.6	74	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	9.9	5	●
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.9	117	
6.2 Knowledge impact	*21.2*	*114*	
6.2.1 Growth rate of PPP$ GDP/worker, %	2.7	57	
6.2.2 New businesses/th pop. 15–64	0.5	83	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.1	140	○
6.3 Knowledge diffusion	*28.3*	*61*	●
6.3.1 Royalty & license fees receipts/th GDP	0.1	69	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	43.8	33	●
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**17.4**	**129**	
7.1 Creative intangibles	*24.2*	*127*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	13.2	72	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.1	51	
7.1.3 ICT & business model creation†	38.6	117	
7.1.4 ICT & organizational model creation†	49.5	64	
7.2 Creative goods & services	*4.4*	*123*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	2.0	51	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	n/a	n/a	
7.2.4 Creative goods exports, %	n/a	n/a	
7.2.5 Creative services exports, %	0.2	94	
7.3 Online creativity	*16.5*	*89*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	1.4	91	
7.3.2 Country-code TLDs/th pop. 15–69	23.9	64	●
7.3.3 Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4 Video uploads on YouTube/pop. 15–69	24.3	115	

Tanzania (United Republic of)

Key indicators

Population (millions)	42.2
GDP per capita, PPP$	1,505.7
GDP (US$ billions)	23.2

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**23.9**	**128**	
Innovation Output Sub-Index		18.0	129	
Innovation Input Sub-Index		29.7	117	
Innovation Efficiency Index		0.6	122	
Global Innovation Index 2011 (out of 125)			104	
GII 2012 rank among GII 2011 economies (125)			117	
1	**Institutions**	**52.7**	**77**	
1.1	*Political environment*	*60.7*	*60*	●
1.1.1	Political stability*	65.1	68	
1.1.2	Government effectiveness*	27.8	95	
1.1.3	Press freedom*	89.2	31	●
1.2	*Regulatory environment*	*67.5*	*67*	
1.2.1	Regulatory quality*	41.3	102	
1.2.2	Rule of law*	34.2	93	
1.2.3	Cost of redundancy dismissal, salary weeks	9.3	31	●
1.3	*Business environment*	*29.9*	*109*	
1.3.1	Ease of starting a business*	30.2	98	
1.3.2	Ease of resolving insolvency*	25.1	105	
1.3.3	Ease of paying taxes*	34.5	91	
2	**Human capital & research**	**20.7**	**122**	
2.1	*Education*	*23.1*	*136*	
2.1.1	Current expenditure on education, % GNI	2.4	120	
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	9.1	122	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	*Tertiary education*	*20.8*	*101*	
2.2.1	Tertiary enrolment, % gross	2.1	131	○
2.2.2	Graduates in science & engineering, %	21.1	47	●
2.2.3	Tertiary inbound mobility, %	0.6	83	
2.2.4	Gross tertiary outbound enrolment, %	0.1	133	
2.3	*Research & development (R&D)*	*18.2*	*85*	
2.3.1	Researchers, headcounts/mn pop.	67.1	106	
2.3.2	Gross expenditure on R&D, % GDP	0.4	61	
2.3.3	Quality of scientific research institutions†	44.5	64	
3	**Infrastructure**	**21.7**	**119**	
3.1	*Information & communication technologies (ICT)*	*16.0*	*118*	
3.1.1	ICT access*	16.4	131	
3.1.2	ICT use*	4.4	112	
3.1.3	Government's online service*	35.3	104	
3.1.4	E-participation*	7.9	98	
3.2	*General infrastructure*	*29.6*	*106*	
3.2.1	Electricity output, kWh/cap	114.2	119	
3.2.2	Electricity consumption, kWh/cap	85.3	123	○
3.2.3	Quality of trade & transport infrastructure*	25.0	119	
3.2.4	Gross capital formation, % GDP	30.6	19	●
3.3	*Ecological sustainability*	*19.5*	*115*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.6	121	○
3.3.2	Environmental performance*	54.3	62	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	128	
4	**Market sophistication**	**21.7**	**130**	
4.1	*Credit*	*11.2*	*119*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	16.1	125	
4.1.3	Microfinance gross loans, % GDP	0.3	56	
4.2	*Investment*	*9.5*	*114*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	5.5	97	
4.2.3	Total value of stocks traded, % GDP	0.1	98	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*44.3*	*132*	
4.3.1	Applied tariff rate, weighted mean, %	8.2	111	
4.3.2	Non-agricultural mkt access weighted tariff, %	3.6	129	
4.3.3	Imports of goods & services, % GDP	37.7	79	
4.3.4	Exports of goods & services, % GDP	24.0	115	
4.3.5	Intensity of local competition†	52.7	107	
5	**Business sophistication**	**31.7**	**117**	
5.1	*Knowledge workers*	*20.8*	*133*	
5.1.1	Knowledge-intensive employment, %	2.6	103	○
5.1.2	Firms offering formal training, % firms	36.5	49	●
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	392.6	133	
5.1.6	GMAT test takers/mn pop. 20–34	7.3	127	
5.2	*Innovation linkages*	*51.4*	*19*	●
5.2.1	University/industry research collaboration†	45.1	59	●
5.2.2	State of cluster development†	39.9	74	
5.2.3	R&D financed by abroad, %	38.4	7	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	56.7	24	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*22.9*	*135*	
5.3.1	Royalty & license fees payments/th GDP	0.0	115	○
5.3.2	High-tech imports less re-imports, %	8.2	69	
5.3.3	Computer & comm. service imports, %	14.8	116	
5.3.4	FDI net inflows, % GDP	1.9	79	
6	**Knowledge & technology outputs**	**18.0**	**118**	
6.1	*Knowledge creation*	*17.6*	*89*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	105	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	2.8	73	
6.2	*Knowledge impact*	*29.5*	*84*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.5	41	●
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	0.1	141	○
6.3	*Knowledge diffusion*	*6.8*	*131*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	106	○
6.3.2	High-tech exports less re-exports, %	0.9	73	
6.3.3	Computer & comm. service exports, %	15.6	103	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**18.0**	**128**	
7.1	*Creative intangibles*	*28.3*	*118*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	0.8	85	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	41.7	111	
7.1.4	ICT & organizational model creation†	42.9	86	
7.2	*Creative goods & services*	*12.8*	*89*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	7.2	117	
7.2.4	Creative goods exports, %	2.2	39	●
7.2.5	Creative services exports, %	0.1	102	
7.3	*Online creativity*	*2.8*	*137*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.1	133	
7.3.2	Country-code TLDs/th pop. 15–69	2.3	112	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	20.9	118	
7.3.4	Video uploads on YouTube/pop. 15–69	8.5	137	○

Thailand

Key indicators

Population (millions)	64.3
GDP per capita, PPP$	9,693.4
GDP (US$ billions)	339.4

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**36.9**	**57**	
Innovation Output Sub-Index	31.8	56	
Innovation Input Sub-Index	42.1	59	
Innovation Efficiency Index	0.8	61	
Global Innovation Index 2011 (out of 125)		48	
GII 2012 rank among GII 2011 economies (125)		55	
1 Institutions	**48.6**	**95**	
1.1 Political environment	*43.6*	*107*	○
1.1.1 Political stability*	35.8	124	○
1.1.2 Government effectiveness*	43.2	62	
1.1.3 Press freedom*	51.7	111	○
1.2 Regulatory environment	*47.1*	*120*	○
1.2.1 Regulatory quality*	56.6	66	
1.2.2 Rule of law*	42.6	68	
1.2.3 Cost of redundancy dismissal, salary weeks	36.0	129	○
1.3 Business environment	*55.1*	*59*	
1.3.1 Ease of starting a business*	44.6	78	
1.3.2 Ease of resolving insolvency*	70.5	42	
1.3.3 Ease of paying taxes*	50.3	70	
2 Human capital & research	**27.6**	**101**	
2.1 Education	*43.8*	*97*	
2.1.1 Current expenditure on education, % GNI	4.1	73	
2.1.2 Public expenditure/pupil, % GDP/cap	18.6	72	
2.1.3 School life expectancy, years	12.2	84	
2.1.4 PISA scales in reading, maths, & science	421.8	48	
2.1.5 Pupil-teacher ratio, secondary	19.9	95	○
2.2 Tertiary education	*20.0*	*103*	○
2.2.1 Tertiary enrolment, % gross	47.7	50	
2.2.2 Graduates in science & engineering, %	9.7	96	○
2.2.3 Tertiary inbound mobility, %	0.8	76	
2.2.4 Gross tertiary outbound enrolment, %	0.5	99	
2.3 Research & development (R&D)	*18.8*	*84*	
2.3.1 Researchers, headcounts/mn pop.	575.0	70	
2.3.2 Gross expenditure on R&D, % GDP	0.2	82	
2.3.3 Quality of scientific research institutions†	47.7	56	
3 Infrastructure	**36.9**	**60**	
3.1 Information & communication technologies (ICT)	*32.3*	*75*	
3.1.1 ICT access*	36.2	84	
3.1.2 ICT use*	10.5	87	
3.1.3 Government's online service*	51.0	64	
3.1.4 E-participation*	31.6	47	
3.2 General infrastructure	*39.4*	*51*	
3.2.1 Electricity output, kWh/cap	2,335.9	70	
3.2.2 Electricity consumption, kWh/cap	2,073.3	69	
3.2.3 Quality of trade & transport infrastructure*	54.0	35	
3.2.4 Gross capital formation, % GDP	25.9	33	
3.3 Ecological sustainability	*39.0*	*45*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	5.3	69	
3.3.2 Environmental performance*	60.0	33	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	3.7	24	●
4 Market sophistication	**48.9**	**33**	
4.1 Credit	*30.0*	*71*	
4.1.1 Ease of getting credit*	50.4	62	
4.1.2 Domestic credit to private sector, % GDP	116.6	23	●
4.1.3 Microfinance gross loans, % GDP	0.0	91	○
4.2 Investment	*47.4*	*20*	●
4.2.1 Ease of protecting investors*	90.6	12	●
4.2.2 Market capitalization, % GDP	87.1	21	
4.2.3 Total value of stocks traded, % GDP	68.4	14	●
4.2.4 Venture capital deals/tr PPP$ GDP	3.2	61	
4.3 Trade & competition	*69.3*	*31*	
4.3.1 Applied tariff rate, weighted mean, %	4.9	78	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.5	87	
4.3.3 Imports of goods & services, % GDP	63.9	31	
4.3.4 Exports of goods & services, % GDP	71.3	18	●
4.3.5 Intensity of local competition†	68.6	50	
5 Business sophistication	**48.6**	**32**	
5.1 Knowledge workers	*55.8*	*41*	
5.1.1 Knowledge-intensive employment, %	10.8	95	○
5.1.2 Firms offering formal training, % firms	75.3	2	●
5.1.3 R&D performed by business, %	45.0	37	
5.1.4 R&D financed by business, %	48.7	24	
5.1.5 GMAT mean score	503.8	74	
5.1.6 GMAT test takers/mn pop. 20–34	116.1	45	
5.2 Innovation linkages	*32.3*	*87*	
5.2.1 University/industry research collaboration†	52.6	37	
5.2.2 State of cluster development†	54.3	27	
5.2.3 R&D financed by abroad, %	1.8	74	○
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	36.5	40	
5.2.5 PCT patent filings with foreign inventor, %	18.2	84	○
5.3 Knowledge absorption	*57.9*	*8*	●
5.3.1 Royalty & license fees payments/th GDP	9.7	6	●
5.3.2 High-tech imports less re-imports, %	17.5	14	●
5.3.3 Computer & comm. service imports, %	37.9	43	
5.3.4 FDI net inflows, % GDP	2.0	76	
6 Knowledge & technology outputs	**33.5**	**50**	
6.1 Knowledge creation	*22.0*	*68*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	2.1	54	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.1	65	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	2.2	17	
6.1.4 Scientific & technical articles/bn PPP$ GDP	3.8	64	
6.2 Knowledge impact	*43.2*	*36*	
6.2.1 Growth rate of PPP$ GDP/worker, %	5.7	13	●
6.2.2 New businesses/th pop. 15–64	0.6	78	○
6.2.3 Computer software spending, % GDP	0.6	19	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	11.5	44	
6.3 Knowledge diffusion	*35.5*	*40*	
6.3.1 Royalty & license fees receipts/th GDP	0.5	46	
6.3.2 High-tech exports less re-exports, %	19.0	12	●
6.3.3 Computer & comm. service exports, %	27.1	70	
6.3.4 FDI net outflows, % GDP	1.7	28	
7 Creative outputs	**30.0**	**75**	
7.1 Creative intangibles	*35.9*	*89*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	22.5	59	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	53.9	60	
7.1.4 ICT & organizational model creation†	43.0	85	
7.2 Creative goods & services	*30.0*	*45*	
7.2.1 Recreation & culture consumption, %	5.1	51	
7.2.2 National feature films/mn pop. 15–69	0.7	71	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	148.8	36	
7.2.4 Creative goods exports, %	2.8	28	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*18.3*	*80*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	3.5	71	
7.3.2 Country-code TLDs/th pop. 15–69	11.5	94	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	491.7	79	
7.3.4 Video uploads on YouTube/pop. 15–69	55.7	66	

Togo

Key indicators

Population (millions)	7.1
GDP per capita, PPP$	892.8
GDP (US$ billions)	3.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**20.5**	**136**	
Innovation Output Sub-Index		15.6	136	
Innovation Input Sub-Index		25.4	135	
Innovation Efficiency Index		0.6	117	
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**41.7**	**108**	
1.1	*Political environment*	*46.5*	*94*	
1.1.1	Political stability*	60.8	82	
1.1.2	Government effectiveness*	4.6	140	○
1.1.3	Press freedom*	74.0	62	
1.2	*Regulatory environment*	*59.5*	*95*	
1.2.1	Regulatory quality*	29.0	127	
1.2.2	Rule of law*	23.3	122	
1.2.3	Cost of redundancy dismissal, salary weeks	11.6	47	●
1.3	*Business environment*	*19.1*	*129*	
1.3.1	Ease of starting a business*	1.4	138	○
1.3.2	Ease of resolving insolvency*	43.1	80	
1.3.3	Ease of paying taxes*	12.9	122	
2	**Human capital & research**	**13.9**	**138**	○
2.1	*Education*	*29.7*	*125*	
2.1.1	Current expenditure on education, % GNI	4.4	55	●
2.1.2	Public expenditure/pupil, % GDP/cap	14.1	90	
2.1.3	School life expectancy, years	10.6	111	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	35.5	128	○
2.2	*Tertiary education*	*10.9*	*122*	
2.2.1	Tertiary enrolment, % gross	5.9	117	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	1.4	65	
2.2.4	Gross tertiary outbound enrolment, %	0.5	95	
2.3	*Research & development (R&D)*	*1.0*	*137*	○
2.3.1	Researchers, headcounts/mn pop.	147.5	89	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	n/a	n/a	
3	**Infrastructure**	**20.7**	**125**	
3.1	*Information & communication technologies (ICT)*	*10.2*	*136*	
3.1.1	ICT access*	20.0	118	
3.1.2	ICT use*	1.8	128	
3.1.3	Government's online service*	13.7	139	○
3.1.4	E-participation*	5.3	110	
3.2	*General infrastructure*	*19.4*	*138*	○
3.2.1	Electricity output, kWh/cap	18.6	123	○
3.2.2	Electricity consumption, kWh/cap	98.8	120	
3.2.3	Quality of trade & transport infrastructure*	20.5	131	
3.2.4	Gross capital formation, % GDP	18.3	111	
3.3	*Ecological sustainability*	*32.3*	*62*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	3.4	97	
3.3.2	Environmental performance*	48.7	82	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	n/a	n/a	
4	**Market sophistication**	**31.9**	**101**	
4.1	*Credit*	*17.1*	*103*	
4.1.1	Ease of getting credit*	2.8	126	○
4.1.2	Domestic credit to private sector, % GDP	23.0	110	
4.1.3	Microfinance gross loans, % GDP	3.5	15	●
4.2	*Investment*	*56.4*	*13*	●
4.2.1	Ease of protecting investors*	12.9	119	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Total value of stocks traded, % GDP	n/a	n/a	
4.2.4	Venture capital deals/tr PPP$ GDP	313.8	2	●
4.3	*Trade & competition*	*22.2*	*141*	○
4.3.1	Applied tariff rate, weighted mean, %	14.2	133	
4.3.2	Non-agricultural mkt access weighted tariff, %	6.8	137	○
4.3.3	Imports of goods & services, % GDP	61.8	34	●
4.3.4	Exports of goods & services, % GDP	41.5	58	●
4.3.5	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**19.0**	**140**	○
5.1	*Knowledge workers*	*33.6*	*110*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	31.0	62	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	424.0	116	
5.1.6	GMAT test takers/mn pop. 20–34	17.7	115	
5.2	*Innovation linkages*	*0.0*	*140*	○
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	0.0	114	○
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*23.5*	*133*	
5.3.1	Royalty & license fees payments/th GDP	1.5	58	
5.3.2	High-tech imports less re-imports, %	5.2	99	
5.3.3	Computer & comm. service imports, %	15.9	112	
5.3.4	FDI net inflows, % GDP	1.3	103	
6	**Knowledge & technology outputs**	**18.6**	**112**	
6.1	*Knowledge creation*	*23.8*	*64*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.4	84	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.5	38	●
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.2	108	
6.2	*Knowledge impact*	*7.7*	*136*	
6.2.1	Growth rate of PPP$ GDP/worker, %	n/a	n/a	
6.2.2	New businesses/th pop. 15–64	0.0	98	○
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.0	114	
6.3	*Knowledge diffusion*	*24.2*	*78*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	98	
6.3.2	High-tech exports less re-exports, %	0.2	106	
6.3.3	Computer & comm. service exports, %	34.8	50	●
6.3.4	FDI net outflows, % GDP	1.2	35	●
7	**Creative outputs**	**12.6**	**134**	
7.1	*Creative intangibles*	*n/a*	*n/a*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	*Creative goods & services*	*8.9*	*107*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	1.5	135	○
7.2.4	Creative goods exports, %	1.6	54	●
7.2.5	Creative services exports, %	0.0	107	
7.3	*Online creativity*	*16.4*	*90*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	136	
7.3.2	Country-code TLDs/th pop. 15–69	n/a	n/a	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	n/a	n/a	
7.3.4	Video uploads on YouTube/pop. 15–69	32.7	106	

Trinidad and Tobago

Key indicators

Population (millions)	1.3
GDP per capita, PPP$	20,301.4
GDP (US$ billions)	22.1

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**32.5**	**81**	
Innovation Output Sub-Index	26.0	84	
Innovation Input Sub-Index	39.0	74	
Innovation Efficiency Index	0.7	97	
Global Innovation Index 2011 (out of 125)		72	
GII 2012 rank among GII 2011 economies (125)		77	
1 Institutions	**56.8**	**66**	
1.1 Political environment	*65.1*	*48*	
1.1.1 Political stability*	64.5	72	
1.1.2 Government effectiveness*	47.7	53	
1.1.3 Press freedom*	83.1	44	
1.2 Regulatory environment	*64.1*	*79*	
1.2.1 Regulatory quality*	64.2	50	
1.2.2 Rule of law*	41.8	71	
1.2.3 Cost of redundancy dismissal, salary weeks	20.5	89	
1.3 Business environment	*41.2*	*93*	
1.3.1 Ease of starting a business*	61.1	55	
1.3.2 Ease of resolving insolvency*	13.6	121	
1.3.3 Ease of paying taxes*	48.9	72	
2 Human capital & research	**37.1**	**63**	
2.1 Education	*48.3*	*81*	
2.1.1 Current expenditure on education, % GNI	4.0	76	
2.1.2 Public expenditure/pupil, % GDP/cap	18.9	69	
2.1.3 School life expectancy, years	12.3	80	
2.1.4 PISA scales in reading, maths, & science	413.6	51	
2.1.5 Pupil-teacher ratio, secondary	12.3	48	
2.2 Tertiary education	*48.5*	*25*	●
2.2.1 Tertiary enrolment, % gross	11.5	100	
2.2.2 Graduates in science & engineering, %	30.4	9	●
2.2.3 Tertiary inbound mobility, %	5.8	26	●
2.2.4 Gross tertiary outbound enrolment, %	4.4	15	●
2.3 Research & development (R&D)	*14.6*	*107*	
2.3.1 Researchers, headcounts/mn pop.	556.7	71	
2.3.2 Gross expenditure on R&D, % GDP	0.0	108	○
2.3.3 Quality of scientific research institutions†	39.2	81	
3 Infrastructure	**24.8**	**104**	
3.1 Information & communication technologies (ICT)	*32.9*	*71*	
3.1.1 ICT access*	53.2	52	
3.1.2 ICT use*	22.2	58	
3.1.3 Government's online service*	48.4	73	
3.1.4 E-participation*	7.9	98	
3.2 General infrastructure	*25.4*	*123*	○
3.2.1 Electricity output, kWh/cap	5,904.6	37	●
3.2.2 Electricity consumption, kWh/cap	5,650.5	37	●
3.2.3 Quality of trade & transport infrastructure*	n/a	n/a	
3.2.4 Gross capital formation, % GDP	11.4	138	○
3.3 Ecological sustainability	*16.2*	*119*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	1.0	124	○
3.3.2 Environmental performance*	47.0	91	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.2	102	
4 Market sophistication	**39.0**	**67**	
4.1 Credit	*27.8*	*77*	
4.1.1 Ease of getting credit*	71.6	35	
4.1.2 Domestic credit to private sector, % GDP	39.2	83	
4.1.3 Microfinance gross loans, % GDP	0.0	78	
4.2 Investment	*25.9*	*66*	
4.2.1 Ease of protecting investors*	82.0	20	●
4.2.2 Market capitalization, % GDP	59.6	38	
4.2.3 Total value of stocks traded, % GDP	0.7	79	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*63.3*	*72*	
4.3.1 Applied tariff rate, weighted mean, %	10.0	123	○
4.3.2 Non-agricultural mkt access weighted tariff, %	0.1	25	●
4.3.3 Imports of goods & services, % GDP	37.6	80	
4.3.4 Exports of goods & services, % GDP	65.3	21	●
4.3.5 Intensity of local competition†	64.4	66	
5 Business sophistication	**37.1**	**79**	
5.1 Knowledge workers	*43.9*	*70*	
5.1.1 Knowledge-intensive employment, %	22.8	57	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	1.9	85	○
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	481.0	87	
5.1.6 GMAT test takers/mn pop. 20–34	431.7	11	●
5.2 Innovation linkages	*34.2*	*74*	
5.2.1 University/industry research collaboration†	42.8	65	
5.2.2 State of cluster development†	38.3	82	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	14.9	75	
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*33.2*	*76*	
5.3.1 Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	7.2	82	
5.3.3 Computer & comm. service imports, %	22.4	93	
5.3.4 FDI net inflows, % GDP	2.7	65	
6 Knowledge & technology outputs	**21.5**	**98**	
6.1 Knowledge creation	*10.7*	*109*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.0	109	○
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.0	96	○
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.1	58	○
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.8	84	
6.2 Knowledge impact	*32.4*	*71*	
6.2.1 Growth rate of PPP$ GDP/worker, %	1.4	87	
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	2.6	87	
6.3 Knowledge diffusion	*21.5*	*96*	
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.0	116	○
6.3.3 Computer & comm. service exports, %	9.0	121	○
6.3.4 FDI net outflows, % GDP	2.6	20	●
7 Creative outputs	**30.4**	**74**	
7.1 Creative intangibles	*45.5*	*46*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	47.7	81	
7.1.4 ICT & organizational model creation†	43.3	83	
7.2 Creative goods & services	*9.4*	*103*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	139.7	41	
7.2.4 Creative goods exports, %	0.2	107	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*21.3*	*71*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	2.9	75	
7.3.2 Country-code TLDs/th pop. 15–69	17.0	80	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	827.2	70	
7.3.4 Video uploads on YouTube/pop. 15–69	61.3	55	

Key indicators

Population (millions) 10.7
GDP per capita, PPP$ 9,557.5
GDP (US$ billions) 48.9

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**36.5**	**59**	
Innovation Output Sub-Index		31.6	58	
Innovation Input Sub-Index		41.5	64	
Innovation Efficiency Index		0.8	59	
Global Innovation Index 2011 (out of 125)			66	
GII 2012 rank among GII 2011 economies (125)			57	
1	**Institutions**	**66.3**	**49**	
1.1	*Political environment*	*55.4*	*72*	
1.1.1	Political stability*	67.7	58	
1.1.2	Government effectiveness*	46.1	54	
1.1.3	Press freedom*	52.5	108	○
1.2	*Regulatory environment*	*71.5*	*47*	
1.2.1	Regulatory quality*	51.4	73	
1.2.2	Rule of law*	50.7	54	
1.2.3	Cost of redundancy dismissal, salary weeks	12.1	51	
1.3	*Business environment*	*72.1*	*28*	●
1.3.1	Ease of starting a business*	72.6	38	
1.3.2	Ease of resolving insolvency*	76.9	33	●
1.3.3	Ease of paying taxes*	66.9	47	
2	**Human capital & research**	**38.0**	**60**	
2.1	*Education*	*59.0*	*40*	
2.1.1	Current expenditure on education, % GNI	6.7	13	●
2.1.2	Public expenditure/pupil, % GDP/cap	23.8	35	
2.1.3	School life expectancy, years	14.5	44	
2.1.4	PISA scales in reading, maths, & science	391.9	61	○
2.1.5	Pupil-teacher ratio, secondary	13.9	62	
2.2	*Tertiary education*	*21.8*	*97*	
2.2.1	Tertiary enrolment, % gross	34.4	68	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	0.7	82	○
2.2.4	Gross tertiary outbound enrolment, %	1.8	51	
2.3	*Research & development (R&D)*	*33.3*	*38*	
2.3.1	Researchers, headcounts/mn pop.	3,239.8	31	●
2.3.2	Gross expenditure on R&D, % GDP	1.1	33	
2.3.3	Quality of scientific research institutions†	50.3	49	
3	**Infrastructure**	**34.9**	**64**	
3.1	*Information & communication technologies (ICT)*	*33.9*	*67*	
3.1.1	ICT access*	36.0	87	
3.1.2	ICT use*	15.2	77	
3.1.3	Government's online service*	47.7	75	
3.1.4	E-participation*	36.8	41	
3.2	*General infrastructure*	*33.4*	*88*	
3.2.1	Electricity output, kWh/cap	1,503.9	85	
3.2.2	Electricity consumption, kWh/cap	1,312.1	86	
3.2.3	Quality of trade & transport infrastructure*	39.0	65	
3.2.4	Gross capital formation, % GDP	26.4	30	●
3.3	*Ecological sustainability*	*37.4*	*51*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	9.8	13	●
3.3.2	Environmental performance*	46.7	94	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.9	64	
4	**Market sophistication**	**30.9**	**105**	
4.1	*Credit*	*17.0*	*104*	
4.1.1	Ease of getting credit*	27.0	88	
4.1.2	Domestic credit to private sector, % GDP	68.8	50	
4.1.3	Microfinance gross loans, % GDP	0.1	66	
4.2	*Investment*	*19.5*	*83*	
4.2.1	Ease of protecting investors*	66.9	35	
4.2.2	Market capitalization, % GDP	24.1	69	
4.2.3	Total value of stocks traded, % GDP	3.8	58	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*56.4*	*107*	○
4.3.1	Applied tariff rate, weighted mean, %	16.0	139	○
4.3.2	Non-agricultural mkt access weighted tariff, %	0.2	31	●
4.3.3	Imports of goods & services, % GDP	54.0	43	
4.3.4	Exports of goods & services, % GDP	48.7	47	
4.3.5	Intensity of local competition†	70.5	40	
5	**Business sophistication**	**37.0**	**82**	
5.1	*Knowledge workers*	*41.8*	*80*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	20.0	65	
5.1.4	R&D financed by business, %	20.0	62	
5.1.5	GMAT mean score	544.6	43	
5.1.6	GMAT test takers/mn pop. 20–34	24.8	109	○
5.2	*Innovation linkages*	*42.0*	*46*	
5.2.1	University/industry research collaboration†	45.8	55	
5.2.2	State of cluster development†	40.3	70	
5.2.3	R&D financed by abroad, %	14.9	20	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	5.3	103	
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*27.3*	*109*	○
5.3.1	Royalty & license fees payments/th GDP	0.3	96	○
5.3.2	High-tech imports less re-imports, %	9.0	58	
5.3.3	Computer & comm. service imports, %	22.6	90	
5.3.4	FDI net inflows, % GDP	3.2	55	
6	**Knowledge & technology outputs**	**26.7**	**69**	
6.1	*Knowledge creation*	*27.8*	*58*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.8	71	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	77	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	10.7	34	●
6.2	*Knowledge impact*	*28.5*	*89*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.1	70	
6.2.2	New businesses/th pop. 15–64	1.2	56	
6.2.3	Computer software spending, % GDP	0.2	41	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	5.8	64	
6.3	*Knowledge diffusion*	*23.8*	*82*	
6.3.1	Royalty & license fees receipts/th GDP	0.6	40	
6.3.2	High-tech exports less re-exports, %	6.1	36	
6.3.3	Computer & comm. service exports, %	18.5	94	
6.3.4	FDI net outflows, % GDP	0.1	77	
7	**Creative outputs**	**36.4**	**46**	
7.1	*Creative intangibles*	*60.0*	*11*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	59.7	39	
7.1.4	ICT & organizational model creation†	60.3	23	●
7.2	*Creative goods & services*	*12.6*	*91*	
7.2.1	Recreation & culture consumption, %	3.1	70	
7.2.2	National feature films/mn pop. 15–69	0.1	97	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	53.8	81	
7.2.4	Creative goods exports, %	1.7	51	
7.2.5	Creative services exports, %	0.3	90	○
7.3	*Online creativity*	*13.1*	*101*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.8	90	
7.3.2	Country-code TLDs/th pop. 15–69	6.6	103	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	265.7	92	
7.3.4	Video uploads on YouTube/pop. 15–69	42.6	94	

Turkey

Key indicators

Population (millions)	72.2
GDP per capita, PPP$	14,615.5
GDP (US$ billions)	763.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**34.1**	**74**	
Innovation Output Sub-Index		30.7	61	
Innovation Input Sub-Index		37.5	81	
Innovation Efficiency Index		0.8	40	●
Global Innovation Index 2011 (out of 125)			65	
GII 2012 rank among GII 2011 economies (125)			72	
1	**Institutions**	**50.0**	**86**	
1.1	*Political environment*	*45.8*	*100*	
1.1.1	Political stability*	41.2	118	
1.1.2	Government effectiveness*	50.2	49	
1.1.3	Press freedom*	45.9	121	○
1.2	*Regulatory environment*	*56.4*	*101*	
1.2.1	Regulatory quality*	61.4	57	
1.2.2	Rule of law*	50.5	55	
1.2.3	Cost of redundancy dismissal, salary weeks	29.8	124	○
1.3	*Business environment*	*47.7*	*72*	
1.3.1	Ease of starting a business*	64.7	50	
1.3.2	Ease of resolving insolvency*	23.7	107	
1.3.3	Ease of paying taxes*	54.6	64	
2	**Human capital & research**	**31.8**	**82**	
2.1	*Education*	*41.2*	*103*	
2.1.1	Current expenditure on education, % GNI	2.6	116	
2.1.2	Public expenditure/pupil, % GDP/cap	12.2	99	○
2.1.3	School life expectancy, years	12.9	75	
2.1.4	PISA scales in reading, maths, & science	454.5	41	
2.1.5	Pupil-teacher ratio, secondary	16.9	80	
2.2	*Tertiary education*	*30.8*	*75*	
2.2.1	Tertiary enrolment, % gross	45.8	52	
2.2.2	Graduates in science & engineering, %	20.9	50	
2.2.3	Tertiary inbound mobility, %	0.7	79	
2.2.4	Gross tertiary outbound enrolment, %	0.7	83	
2.3	*Research & development (R&D)*	*23.3*	*63*	
2.3.1	Researchers, headcounts/mn pop.	1,592.8	46	
2.3.2	Gross expenditure on R&D, % GDP	0.8	38	
2.3.3	Quality of scientific research institutions†	38.5	86	
3	**Infrastructure**	**34.0**	**67**	
3.1	*Information & communication technologies (ICT)*	*31.5*	*76*	
3.1.1	ICT access*	49.7	57	
3.1.2	ICT use*	24.6	53	
3.1.3	Government's online service*	46.4	78	
3.1.4	E-participation*	5.3	110	
3.2	*General infrastructure*	*35.3*	*77*	
3.2.1	Electricity output, kWh/cap	2,960.5	60	
3.2.2	Electricity consumption, kWh/cap	2,489.0	63	
3.2.3	Quality of trade & transport infrastructure*	52.0	37	●
3.2.4	Gross capital formation, % GDP	19.9	93	
3.3	*Ecological sustainability*	*35.3*	*58*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.2	28	●
3.3.2	Environmental performance*	44.8	104	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.7	48	
4	**Market sophistication**	**39.4**	**64**	
4.1	*Credit*	*17.3*	*100*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	44.0	77	
4.1.3	Microfinance gross loans, % GDP	0.0	88	○
4.2	*Investment*	*36.5*	*39*	●
4.2.1	Ease of protecting investors*	58.2	48	
4.2.2	Market capitalization, % GDP	41.7	51	
4.2.3	Total value of stocks traded, % GDP	57.3	19	●
4.2.4	Venture capital deals/tr PPP$ GDP	7.6	50	
4.3	*Trade & competition*	*64.5*	*64*	
4.3.1	Applied tariff rate, weighted mean, %	2.4	48	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.4	82	
4.3.3	Imports of goods & services, % GDP	26.6	120	○
4.3.4	Exports of goods & services, % GDP	21.1	123	○
4.3.5	Intensity of local competition†	78.3	12	●
5	**Business sophistication**	**32.5**	**107**	
5.1	*Knowledge workers*	*47.0*	*64*	
5.1.1	Knowledge-intensive employment, %	22.1	60	
5.1.2	Firms offering formal training, % firms	28.8	67	
5.1.3	R&D performed by business, %	40.0	46	
5.1.4	R&D financed by business, %	41.0	39	
5.1.5	GMAT mean score	547.4	39	●
5.1.6	GMAT test takers/mn pop. 20–34	94.4	52	
5.2	*Innovation linkages*	*22.9*	*130*	○
5.2.1	University/industry research collaboration†	41.5	71	
5.2.2	State of cluster development†	40.1	73	
5.2.3	R&D financed by abroad, %	1.1	81	○
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	24.6	57	
5.2.5	PCT patent filings with foreign inventor, %	4.5	100	○
5.3	*Knowledge absorption*	*27.5*	*108*	
5.3.1	Royalty & license fees payments/th GDP	1.1	69	
5.3.2	High-tech imports less re-imports, %	9.9	53	
5.3.3	Computer & comm. service imports, %	18.5	105	
5.3.4	FDI net inflows, % GDP	1.3	104	
6	**Knowledge & technology outputs**	**27.8**	**63**	
6.1	*Knowledge creation*	*31.6*	*47*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.3	93	○
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.5	37	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	3.2	12	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	9.4	37	●
6.2	*Knowledge impact*	*30.1*	*81*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.2	67	
6.2.2	New businesses/th pop. 15–64	0.9	65	
6.2.3	Computer software spending, % GDP	0.2	46	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	11.0	46	●
6.3	*Knowledge diffusion*	*21.8*	*92*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	1.7	64	
6.3.3	Computer & comm. service exports, %	9.0	123	○
6.3.4	FDI net outflows, % GDP	0.2	70	
7	**Creative outputs**	**33.7**	**64**	
7.1	*Creative intangibles*	*40.4*	*69*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	96.6	10	●
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.8	25	
7.1.3	ICT & business model creation†	52.9	63	
7.1.4	ICT & organizational model creation†	46.1	75	
7.2	*Creative goods & services*	*30.8*	*41*	●
7.2.1	Recreation & culture consumption, %	4.1	61	
7.2.2	National feature films/mn pop. 15–69	1.3	60	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	94.6	59	
7.2.4	Creative goods exports, %	4.6	14	●
7.2.5	Creative services exports, %	5.3	37	
7.3	*Online creativity*	*23.1*	*63*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	9.2	49	
7.3.2	Country-code TLDs/th pop. 15–69	26.2	60	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	1,024.5	62	
7.3.4	Video uploads on YouTube/pop. 15–69	51.8	74	

Uganda

Key indicators

Population (millions) 35.2
GDP per capita, PPP$ 1,305.4
GDP (US$ billions) 16.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**25.6**	**117**	
Innovation Output Sub-Index		21.7	112	
Innovation Input Sub-Index		29.4	121	
Innovation Efficiency Index		0.7	72	
Global Innovation Index 2011 (out of 125)			106	
GII 2012 rank among GII 2011 economies (125)			107	
1	**Institutions**	**52.8**	**76**	
1.1	*Political environment*	*38.2*	*122*	
1.1.1	Political stability*	38.3	119	
1.1.2	Government effectiveness*	26.4	102	
1.1.3	Press freedom*	50.0	113	
1.2	*Regulatory environment*	*70.7*	*50*	●
1.2.1	Regulatory quality*	48.4	81	
1.2.2	Rule of law*	37.1	81	
1.2.3	Cost of redundancy dismissal, salary weeks	8.7	23	●
1.3	*Business environment*	*49.6*	*67*	
1.3.1	Ease of starting a business*	20.8	111	
1.3.2	Ease of resolving insolvency*	64.0	51	●
1.3.3	Ease of paying taxes*	64.0	51	●
2	**Human capital & research**	**20.1**	**125**	
2.1	*Education*	*35.3*	*118*	
2.1.1	Current expenditure on education, % GNI	3.0	109	
2.1.2	Public expenditure/pupil, % GDP/cap	10.3	106	
2.1.3	School life expectancy, years	11.1	102	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	19.2	94	
2.2	*Tertiary education*	*9.5*	*126*	
2.2.1	Tertiary enrolment, % gross	4.2	123	
2.2.2	Graduates in science & engineering, %	9.5	98	○
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.1	138	○
2.3	*Research & development (R&D)*	*15.6*	*101*	
2.3.1	Researchers, headcounts/mn pop.	52.6	112	○
2.3.2	Gross expenditure on R&D, % GDP	0.4	64	
2.3.3	Quality of scientific research institutions†	37.3	91	
3	**Infrastructure**	**18.9**	**130**	
3.1	*Information & communication technologies (ICT)*	*14.4*	*122*	
3.1.1	ICT access*	15.8	134	○
3.1.2	ICT use*	4.4	111	
3.1.3	Government's online service*	29.4	120	
3.1.4	E-participation*	7.9	98	
3.2	*General infrastructure*	*41.4*	*43*	●
3.2.1	Electricity output, kWh/cap	n/a	n/a	
3.2.2	Electricity consumption, kWh/cap	n/a	n/a	
3.2.3	Quality of trade & transport infrastructure*	33.8	88	
3.2.4	Gross capital formation, % GDP	23.7	52	●
3.3	*Ecological sustainability*	*1.0*	*135*	○
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	n/a	n/a	
3.3.2	Environmental performance*	n/a	n/a	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	116	
4	**Market sophistication**	**27.8**	**119**	
4.1	*Credit*	*26.3*	*83*	
4.1.1	Ease of getting credit*	57.7	43	●
4.1.2	Domestic credit to private sector, % GDP	15.8	127	
4.1.3	Microfinance gross loans, % GDP	1.5	29	●
4.2	*Investment*	*4.0*	*128*	
4.2.1	Ease of protecting investors*	15.8	110	
4.2.2	Market capitalization, % GDP	1.2	103	○
4.2.3	Total value of stocks traded, % GDP	0.1	101	○
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*53.0*	*115*	
4.3.1	Applied tariff rate, weighted mean, %	8.2	109	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.7	90	
4.3.3	Imports of goods & services, % GDP	34.3	93	
4.3.4	Exports of goods & services, % GDP	24.0	114	
4.3.5	Intensity of local competition†	61.8	74	
5	**Business sophistication**	**27.5**	**128**	
5.1	*Knowledge workers*	*18.9*	*137*	○
5.1.1	Knowledge-intensive employment, %	4.3	102	○
5.1.2	Firms offering formal training, % firms	35.0	52	
5.1.3	R&D performed by business, %	8.2	77	
5.1.4	R&D financed by business, %	8.2	75	
5.1.5	GMAT mean score	381.2	137	○
5.1.6	GMAT test takers/mn pop. 20–34	12.8	121	
5.2	*Innovation linkages*	*37.0*	*61*	●
5.2.1	University/industry research collaboration†	41.7	69	
5.2.2	State of cluster development†	33.6	103	
5.2.3	R&D financed by abroad, %	26.1	11	●
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	4.4	106	
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*26.7*	*115*	
5.3.1	Royalty & license fees payments/th GDP	0.3	104	
5.3.2	High-tech imports less re-imports, %	10.3	49	●
5.3.3	Computer & comm. service imports, %	15.8	113	
5.3.4	FDI net inflows, % GDP	4.8	36	●
6	**Knowledge & technology outputs**	**16.2**	**128**	
6.1	*Knowledge creation*	*16.8*	*90*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.2	100	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	93	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	3.6	65	
6.2	*Knowledge impact*	*25.4*	*101*	
6.2.1	Growth rate of PPP$ GDP/worker, %	2.4	60	
6.2.2	New businesses/th pop. 15–64	0.7	73	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.3	108	
6.3	*Knowledge diffusion*	*6.4*	*132*	○
6.3.1	Royalty & license fees receipts/th GDP	0.2	56	
6.3.2	High-tech exports less re-exports, %	0.6	84	
6.3.3	Computer & comm. service exports, %	13.6	109	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**27.1**	**94**	
7.1	*Creative intangibles*	*50.5*	*25*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	46.8	84	
7.1.4	ICT & organizational model creation†	54.2	43	●
7.2	*Creative goods & services*	*2.8*	*126*	
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	6.2	120	
7.2.4	Creative goods exports, %	0.3	101	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*4.8*	*131*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.2	125	
7.3.2	Country-code TLDs/th pop. 15–69	2.6	111	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	14.9	122	○
7.3.4	Video uploads on YouTube/pop. 15–69	16.5	126	

Ukraine

Key indicators

Population (millions)	45.6
GDP per capita, PPP$	7,198.9
GDP (US$ billions)	162.9

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**36.1**	**63**	
Innovation Output Sub-Index	34.2	47	
Innovation Input Sub-Index	38.0	78	
Innovation Efficiency Index	0.9	14	●
Global Innovation Index 2011 (out of 125)		60	
GII 2012 rank among GII 2011 economies (125)		61	
1 Institutions	**40.0**	**117**	○
1.1 Political environment	*46.7*	*91*	
1.1.1 Political stability*	62.8	74	
1.1.2 Government effectiveness*	20.6	118	○
1.1.3 Press freedom*	56.8	91	
1.2 Regulatory environment	*61.1*	*86*	
1.2.1 Regulatory quality*	37.8	110	
1.2.2 Rule of law*	26.4	111	○
1.2.3 Cost of redundancy dismissal, salary weeks	13.0	55	
1.3 Business environment	*12.2*	*137*	○
1.3.1 Ease of starting a business*	31.6	95	
1.3.2 Ease of resolving insolvency*	4.3	134	○
1.3.3 Ease of paying taxes*	0.7	139	○
2 Human capital & research	**42.2**	**48**	
2.1 Education	*56.6*	*51*	
2.1.1 Current expenditure on education, % GNI	5.9	22	●
2.1.2 Public expenditure/pupil, % GDP/cap	26.0	20	●
2.1.3 School life expectancy, years	14.8	36	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	n/a	n/a	
2.2 Tertiary education	*44.8*	*34*	
2.2.1 Tertiary enrolment, % gross	79.5	8	●
2.2.2 Graduates in science & engineering, %	26.3	19	●
2.2.3 Tertiary inbound mobility, %	1.4	64	
2.2.4 Gross tertiary outbound enrolment, %	1.0	72	
2.3 Research & development (R&D)	*25.1*	*57*	
2.3.1 Researchers, headcounts/mn pop.	1,665.7	44	
2.3.2 Gross expenditure on R&D, % GDP	0.9	37	
2.3.3 Quality of scientific research institutions†	43.4	69	
3 Infrastructure	**27.1**	**98**	
3.1 Information & communication technologies (ICT)	*29.9*	*77*	
3.1.1 ICT access*	47.9	58	
3.1.2 ICT use*	13.5	81	
3.1.3 Government's online service*	42.5	88	
3.1.4 E-participation*	15.8	78	
3.2 General infrastructure	*30.8*	*98*	
3.2.1 Electricity output, kWh/cap	3,774.4	52	
3.2.2 Electricity consumption, kWh/cap	3,203.6	55	
3.2.3 Quality of trade & transport infrastructure*	36.0	77	
3.2.4 Gross capital formation, % GDP	19.3	99	
3.3 Ecological sustainability	*20.4*	*110*	○
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.5	107	○
3.3.2 Environmental performance*	46.3	97	○
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.7	69	
4 Market sophistication	**38.7**	**68**	
4.1 Credit	*33.1*	*59*	
4.1.1 Ease of getting credit*	77.4	21	
4.1.2 Domestic credit to private sector, % GDP	61.7	54	
4.1.3 Microfinance gross loans, % GDP	0.2	61	
4.2 Investment	*18.6*	*88*	
4.2.1 Ease of protecting investors*	29.4	91	
4.2.2 Market capitalization, % GDP	28.6	63	
4.2.3 Total value of stocks traded, % GDP	1.5	67	
4.2.4 Venture capital deals/tr PPP$ GDP	6.1	54	
4.3 Trade & competition	*64.2*	*65*	
4.3.1 Applied tariff rate, weighted mean, %	2.8	54	
4.3.2 Non-agricultural mkt access weighted tariff, %	1.3	79	
4.3.3 Imports of goods & services, % GDP	53.0	44	
4.3.4 Exports of goods & services, % GDP	50.2	44	
4.3.5 Intensity of local competition†	50.6	116	○
5 Business sophistication	**42.3**	**51**	
5.1 Knowledge workers	*49.2*	*55*	
5.1.1 Knowledge-intensive employment, %	32.1	37	
5.1.2 Firms offering formal training, % firms	24.8	81	
5.1.3 R&D performed by business, %	54.8	27	
5.1.4 R&D financed by business, %	25.9	57	
5.1.5 GMAT mean score	543.5	45	
5.1.6 GMAT test takers/mn pop. 20–34	41.6	90	
5.2 Innovation linkages	*33.1*	*85*	
5.2.1 University/industry research collaboration†	42.6	67	
5.2.2 State of cluster development†	28.6	115	○
5.2.3 R&D financed by abroad, %	22.3	12	●
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	10.9	85	
5.2.5 PCT patent filings with foreign inventor, %	27.3	68	
5.3 Knowledge absorption	*44.7*	*33*	
5.3.1 Royalty & license fees payments/th GDP	5.4	13	●
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	25.0	83	
5.3.4 FDI net inflows, % GDP	4.7	38	
6 Knowledge & technology outputs	**39.2**	**30**	●
6.1 Knowledge creation	*53.8*	*21*	●
6.1.1 Domestic resident patent ap/bn PPP$ GDP	8.3	25	●
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.4	41	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	34.4	1	●
6.1.4 Scientific & technical articles/bn PPP$ GDP	5.6	53	
6.2 Knowledge impact	*33.9*	*66*	
6.2.1 Growth rate of PPP$ GDP/worker, %	4.0	34	
6.2.2 New businesses/th pop. 15–64	0.6	77	
6.2.3 Computer software spending, % GDP	0.3	31	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	8.5	52	
6.3 Knowledge diffusion	*29.9*	*55*	
6.3.1 Royalty & license fees receipts/th GDP	1.0	32	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	23.1	81	
6.3.4 FDI net outflows, % GDP	0.5	53	
7 Creative outputs	**29.2**	**83**	
7.1 Creative intangibles	*33.5*	*100*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	81.5	18	●
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	0.8	24	
7.1.3 ICT & business model creation†	45.9	87	
7.1.4 ICT & organizational model creation†	32.6	116	○
7.2 Creative goods & services	*19.7*	*75*	
7.2.1 Recreation & culture consumption, %	4.1	60	
7.2.2 National feature films/mn pop. 15–69	0.1	96	○
7.2.3 Paid-for dailies, circulation/th pop. 15–69	84.1	64	
7.2.4 Creative goods exports, %	1.2	65	
7.2.5 Creative services exports, %	7.7	23	●
7.3 Online creativity	*30.0*	*47*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	6.8	52	
7.3.2 Country-code TLDs/th pop. 15–69	41.3	45	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	3,076.4	42	
7.3.4 Video uploads on YouTube/pop. 15–69	56.2	63	

United Arab Emirates

Key indicators

Population (millions)	5.4
GDP per capita, PPP$	48,597.7
GDP (US$ billions)	358.1

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**44.4**	**37**	
Innovation Output Sub-Index		33.6	51	
Innovation Input Sub-Index		55.2	28	
Innovation Efficiency Index		0.6	121	○
Global Innovation Index 2011 (out of 125)			34	
GII 2012 rank among GII 2011 economies (125)			36	
1	**Institutions**	**69.6**	**40**	
1.1	*Political environment*	*69.8*	*45*	
1.1.1	Political stability*	85.2	24	
1.1.2	Government effectiveness*	61.5	36	
1.1.3	Press freedom*	62.8	87	
1.2	*Regulatory environment*	*79.9*	*36*	
1.2.1	Regulatory quality*	61.5	56	
1.2.2	Rule of law*	58.0	48	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*59.2*	*47*	
1.3.1	Ease of starting a business*	74.1	37	
1.3.2	Ease of resolving insolvency*	6.4	131	○
1.3.3	Ease of paying taxes*	97.1	5	●
2	**Human capital & research**	**53.3**	**23**	
2.1	*Education*	*49.3*	*77*	
2.1.1	Current expenditure on education, % GNI	n/a	n/a	
2.1.2	Public expenditure/pupil, % GDP/cap	8.3	112	○
2.1.3	School life expectancy, years	13.3	64	
2.1.4	PISA scales in reading, maths, & science	459.5	38	
2.1.5	Pupil-teacher ratio, secondary	12.4	53	
2.2	*Tertiary education*	*56.9*	*8*	●
2.2.1	Tertiary enrolment, % gross	30.4	73	
2.2.2	Graduates in science & engineering, %	27.3	16	
2.2.3	Tertiary inbound mobility, %	39.2	2	●
2.2.4	Gross tertiary outbound enrolment, %	3.6	23	
2.3	*Research & development (R&D)*	*53.8*	*15*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	53.8	38	
3	**Infrastructure**	**55.0**	**17**	
3.1	*Information & communication technologies (ICT)*	*69.7*	*17*	
3.1.1	ICT access*	67.6	32	
3.1.2	ICT use*	51.2	25	
3.1.3	Government's online service*	86.3	9	●
3.1.4	E-participation*	73.7	11	●
3.2	*General infrastructure*	*69.3*	*2*	●
3.2.1	Electricity output, kWh/cap	17,878.6	3	●
3.2.2	Electricity consumption, kWh/cap	17,295.9	1	●
3.2.3	Quality of trade & transport infrastructure*	70.3	17	
3.2.4	Gross capital formation, % GDP	25.3	40	
3.3	*Ecological sustainability*	*25.9*	*92*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	2.0	116	○
3.3.2	Environmental performance*	50.9	74	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.7	36	
4	**Market sophistication**	**42.5**	**55**	
4.1	*Credit*	*31.1*	*65*	
4.1.1	Ease of getting credit*	38.7	72	
4.1.2	Domestic credit to private sector, % GDP	72.5	46	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*25.2*	*68*	
4.2.1	Ease of protecting investors*	22.3	100	○
4.2.2	Market capitalization, % GDP	47.6	43	
4.2.3	Total value of stocks traded, % GDP	28.5	31	
4.2.4	Venture capital deals/tr PPP$ GDP	11.5	44	
4.3	*Trade & competition*	*71.2*	*23*	
4.3.1	Applied tariff rate, weighted mean, %	3.7	62	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.4	121	○
4.3.3	Imports of goods & services, % GDP	68.8	24	
4.3.4	Exports of goods & services, % GDP	77.9	16	
4.3.5	Intensity of local competition†	76.7	18	
5	**Business sophistication**	**55.6**	**16**	
5.1	*Knowledge workers*	*63.1*	*35*	
5.1.1	Knowledge-intensive employment, %	36.1	29	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	502.1	75	
5.1.6	GMAT test takers/mn pop. 20–34	54.1	76	
5.2	*Innovation linkages*	*68.7*	*2*	●
5.2.1	University/industry research collaboration†	53.4	35	
5.2.2	State of cluster development†	58.9	19	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	147.8	7	●
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*34.8*	*71*	
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	7.3	80	
5.3.3	Computer & comm. service imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	1.3	100	
6	**Knowledge & technology outputs**	**18.7**	**110**	○
6.1	*Knowledge creation*	*28.2*	*56*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	60	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.1	109	○
6.2	*Knowledge impact*	*27.7*	*91*	
6.2.1	Growth rate of PPP$ GDP/worker, %	-1.4	110	○
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.1	62	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	14.8	36	
6.3	*Knowledge diffusion*	*0.3*	*138*	○
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.1	108	○
6.3.3	Computer & comm. service exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**48.5**	**20**	
7.1	*Creative intangibles*	*70.8*	*4*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	68.7	20	
7.1.4	ICT & organizational model creation†	72.9	7	●
7.2	*Creative goods & services*	*23.0*	*63*	
7.2.1	Recreation & culture consumption, %	2.2	79	○
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	180.0	27	
7.2.4	Creative goods exports, %	2.0	44	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*29.2*	*51*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	11.0	47	
7.3.2	Country-code TLDs/th pop. 15–69	40.6	46	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	804.7	72	
7.3.4	Video uploads on YouTube/pop. 15–69	61.2	56	

United Kingdom

Key indicators

Population (millions) 62.6
GDP per capita, PPP$ 35,974.4
GDP (US$ billions) 2,481.0

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**61.2**	**5**	●
Innovation Output Sub-Index		54.5	6	
Innovation Input Sub-Index		68.0	5	●
Innovation Efficiency Index		0.8	44	
Global Innovation Index 2011 (out of 125)			10	
GII 2012 rank among GII 2011 economies (125)			5	
1	**Institutions**	**90.4**	**9**	
1.1	*Political environment*	*83.0*	*21*	
1.1.1	Political stability*	75.1	49	
1.1.2	Government effectiveness*	82.0	16	
1.1.3	Press freedom*	91.9	25	
1.2	*Regulatory environment*	*97.7*	*3*	●
1.2.1	Regulatory quality*	96.0	7	
1.2.2	Rule of law*	94.7	12	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*90.6*	*6*	
1.3.1	Ease of starting a business*	89.2	16	
1.3.2	Ease of resolving insolvency*	95.6	7	
1.3.3	Ease of paying taxes*	87.0	19	
2	**Human capital & research**	**53.8**	**21**	
2.1	*Education*	*62.8*	*27*	
2.1.1	Current expenditure on education, % GNI	5.1	38	
2.1.2	Public expenditure/pupil, % GDP/cap	24.8	26	
2.1.3	School life expectancy, years	16.4	14	
2.1.4	PISA scales in reading, maths, & science	500.1	18	
2.1.5	Pupil-teacher ratio, secondary	14.3	64	
2.2	*Tertiary education*	*45.3*	*33*	
2.2.1	Tertiary enrolment, % gross	58.5	37	
2.2.2	Graduates in science & engineering, %	21.7	40	
2.2.3	Tertiary inbound mobility, %	15.3	10	
2.2.4	Gross tertiary outbound enrolment, %	0.6	91	○
2.3	*Research & development (R&D)*	*53.2*	*17*	
2.3.1	Researchers, headcounts/mn pop.	4,269.2	20	
2.3.2	Gross expenditure on R&D, % GDP	1.8	19	
2.3.3	Quality of scientific research institutions†	85.3	3	●
3	**Infrastructure**	**61.8**	**6**	
3.1	*Information & communication technologies (ICT)*	*84.4*	*3*	●
3.1.1	ICT access*	83.6	7	
3.1.2	ICT use*	64.4	11	
3.1.3	Government's online service*	97.4	4	●
3.1.4	E-participation*	92.1	5	
3.2	*General infrastructure*	*44.3*	*37*	
3.2.1	Electricity output, kWh/cap	6,076.6	36	
3.2.2	Electricity consumption, kWh/cap	5,741.8	35	
3.2.3	Quality of trade & transport infrastructure*	73.8	16	
3.2.4	Gross capital formation, % GDP	15.0	130	○
3.3	*Ecological sustainability*	*56.8*	*10*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	8.6	23	
3.3.2	Environmental performance*	68.8	9	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.6	17	
4	**Market sophistication**	**76.6**	**3**	●
4.1	*Credit*	*85.6*	*1*	●
4.1.1	Ease of getting credit*	100.0	1	●
4.1.2	Domestic credit to private sector, % GDP	204.0	5	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*78.2*	*3*	●
4.2.1	Ease of protecting investors*	92.8	10	
4.2.2	Market capitalization, % GDP	138.3	9	
4.2.3	Total value of stocks traded, % GDP	133.9	6	
4.2.4	Venture capital deals/tr PPP$ GDP	146.9	8	
4.3	*Trade & competition*	*66.1*	*57*	
4.3.1	Applied tariff rate, weighted mean, %	1.6	11	
4.3.2	Non-agricultural mkt access weighted tariff, %	2.0	92	○
4.3.3	Imports of goods & services, % GDP	32.8	95	○
4.3.4	Exports of goods & services, % GDP	29.4	90	○
4.3.5	Intensity of local competition†	82.1	2	●
5	**Business sophistication**	**57.3**	**15**	
5.1	*Knowledge workers*	*75.0*	*17*	
5.1.1	Knowledge-intensive employment, %	42.5	12	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	62.0	20	
5.1.4	R&D financed by business, %	45.4	30	
5.1.5	GMAT mean score	586.1	7	
5.1.6	GMAT test takers/mn pop. 20–34	132.0	42	
5.2	*Innovation linkages*	*51.4*	*21*	
5.2.1	University/industry research collaboration†	79.2	2	●
5.2.2	State of cluster development†	62.4	12	
5.2.3	R&D financed by abroad, %	17.7	14	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	42.7	32	
5.2.5	PCT patent filings with foreign inventor, %	32.4	64	○
5.3	*Knowledge absorption*	*45.5*	*29*	
5.3.1	Royalty & license fees payments/th GDP	4.3	20	
5.3.2	High-tech imports less re-imports, %	13.1	29	
5.3.3	Computer & comm. service imports, %	43.8	28	
5.3.4	FDI net inflows, % GDP	2.1	75	○
6	**Knowledge & technology outputs**	**57.6**	**8**	
6.1	*Knowledge creation*	*63.2*	*13*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	9.6	20	
6.1.2	PCT resident patent ap/bn PPP$ GDP	2.1	19	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	21.5	12	
6.2	*Knowledge impact*	*55.3*	*11*	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.7	79	○
6.2.2	New businesses/th pop. 15–64	8.0	8	
6.2.3	Computer software spending, % GDP	1.0	5	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	20.6	25	
6.3	*Knowledge diffusion*	*54.3*	*16*	
6.3.1	Royalty & license fees receipts/th GDP	6.3	11	
6.3.2	High-tech exports less re-exports, %	15.9	17	
6.3.3	Computer & comm. service exports, %	46.2	29	
6.3.4	FDI net outflows, % GDP	0.5	56	
7	**Creative outputs**	**51.4**	**14**	
7.1	*Creative intangibles*	*41.5*	*65*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	41.6	41	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.5	35	○
7.1.3	ICT & business model creation†	76.5	3	●
7.1.4	ICT & organizational model creation†	59.8	27	
7.2	*Creative goods & services*	*47.0*	*8*	
7.2.1	Recreation & culture consumption, %	11.4	3	●
7.2.2	National feature films/mn pop. 15–69	2.2	47	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	321.0	12	
7.2.4	Creative goods exports, %	4.5	16	
7.2.5	Creative services exports, %	2.4	56	○
7.3	*Online creativity*	*75.6*	*4*	●
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	100.0	1	●
7.3.2	Country-code TLDs/th pop. 15–69	75.9	7	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	9,311.9	10	
7.3.4	Video uploads on YouTube/pop. 15–69	78.9	5	●

United States of America

Key indicators

Population (millions)	312.9
GDP per capita, PPP$	48,147.2
GDP (US$ billions)	15,064.8

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**57.7**	**10**	
Innovation Output Sub-Index		49.1	16	
Innovation Input Sub-Index		66.3	9	
Innovation Efficiency Index		0.7	70	
Global Innovation Index 2011 (out of 125)			7	
GII 2012 rank among GII 2011 economies (125)			10	
1	**Institutions**	**85.1**	**17**	
1.1	*Political environment*	*78.5*	*29*	
1.1.1	Political stability*	72.8	52	
1.1.2	Government effectiveness*	78.8	19	
1.1.3	Press freedom*	83.8	41	
1.2	*Regulatory environment*	*94.4*	*13*	
1.2.1	Regulatory quality*	87.7	20	
1.2.2	Rule of law*	89.8	17	
1.2.3	Cost of redundancy dismissal, salary weeks	8.0	1	●
1.3	*Business environment*	*82.5*	*13*	
1.3.1	Ease of starting a business*	92.8	11	
1.3.2	Ease of resolving insolvency*	91.3	13	
1.3.3	Ease of paying taxes*	63.3	52	
2	**Human capital & research**	**53.4**	**22**	
2.1	*Education*	*61.3*	*31*	
2.1.1	Current expenditure on education, % GNI	4.8	46	
2.1.2	Public expenditure/pupil, % GDP/cap	22.0	46	
2.1.3	School life expectancy, years	16.8	10	
2.1.4	PISA scales in reading, maths, & science	496.4	23	
2.1.5	Pupil-teacher ratio, secondary	13.8	61	
2.2	*Tertiary education*	*38.8*	*54*	
2.2.1	Tertiary enrolment, % gross	94.8	2	●
2.2.2	Graduates in science & engineering, %	15.5	74	○
2.2.3	Tertiary inbound mobility, %	3.4	42	
2.2.4	Gross tertiary outbound enrolment, %	0.2	119	○
2.3	*Research & development (R&D)*	*60.1*	*12*	
2.3.1	Researchers, headcounts/mn pop.	4,663.3	18	
2.3.2	Gross expenditure on R&D, % GDP	2.8	9	
2.3.3	Quality of scientific research institutions†	80.4	7	
3	**Infrastructure**	**56.1**	**14**	
3.1	*Information & communication technologies (ICT)*	*80.9*	*5*	●
3.1.1	ICT access*	72.4	22	
3.1.2	ICT use*	58.9	17	
3.1.3	Government's online service*	100.0	1	●
3.1.4	E-participation*	92.1	5	●
3.2	*General infrastructure*	*58.5*	*12*	
3.2.1	Electricity output, kWh/cap	13,990.7	9	
3.2.2	Electricity consumption, kWh/cap	13,268.1	11	
3.2.3	Quality of trade & transport infrastructure*	78.8	7	
3.2.4	Gross capital formation, % GDP	15.1	129	○
3.3	*Ecological sustainability*	*29.0*	*73*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	5.2	71	
3.3.2	Environmental performance*	56.6	48	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.3	93	○
4	**Market sophistication**	**76.8**	**2**	●
4.1	*Credit*	*83.8*	*2*	●
4.1.1	Ease of getting credit*	97.1	4	
4.1.2	Domestic credit to private sector, % GDP	202.2	6	●
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	*Investment*	*83.0*	*2*	●
4.2.1	Ease of protecting investors*	94.2	5	
4.2.2	Market capitalization, % GDP	117.5	13	
4.2.3	Total value of stocks traded, % GDP	208.8	1	●
4.2.4	Venture capital deals/tr PPP$ GDP	243.3	5	●
4.3	*Trade & competition*	*63.7*	*69*	
4.3.1	Applied tariff rate, weighted mean, %	1.8	41	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.1	76	
4.3.3	Imports of goods & services, % GDP	16.2	139	○
4.3.4	Exports of goods & services, % GDP	12.6	135	○
4.3.5	Intensity of local competition†	76.8	17	
5	**Business sophistication**	**59.9**	**9**	
5.1	*Knowledge workers*	*79.3*	*6*	●
5.1.1	Knowledge-intensive employment, %	36.3	28	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	R&D performed by business, %	72.6	8	
5.1.4	R&D financed by business, %	67.3	10	
5.1.5	GMAT mean score	529.4	53	
5.1.6	GMAT test takers/mn pop. 20–34	1,832.0	1	●
5.2	*Innovation linkages*	*58.5*	*8*	
5.2.1	University/industry research collaboration†	78.5	3	●
5.2.2	State of cluster development†	63.2	9	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	46.1	29	
5.2.5	PCT patent filings with foreign inventor, %	42.3	56	
5.3	*Knowledge absorption*	*41.7*	*46*	
5.3.1	Royalty & license fees payments/th GDP	2.3	40	
5.3.2	High-tech imports less re-imports, %	17.3	15	
5.3.3	Computer & comm. service imports, %	34.7	57	
5.3.4	FDI net inflows, % GDP	1.6	89	○
6	**Knowledge & technology outputs**	**56.1**	**11**	
6.1	*Knowledge creation*	*66.8*	*9*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	16.7	8	
6.1.2	PCT resident patent ap/bn PPP$ GDP	3.2	14	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	15.0	27	
6.2	*Knowledge impact*	*45.0*	*31*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.5	42	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.9	7	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.8	96	○
6.3	*Knowledge diffusion*	*56.3*	*13*	
6.3.1	Royalty & license fees receipts/th GDP	7.3	9	
6.3.2	High-tech exports less re-exports, %	14.8	20	
6.3.3	Computer & comm. service exports, %	45.4	30	
6.3.4	FDI net outflows, % GDP	2.4	22	
7	**Creative outputs**	**42.2**	**33**	
7.1	*Creative intangibles*	*37.0*	*84*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	11.2	75	○
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.3	41	○
7.1.3	ICT & business model creation†	77.0	2	●
7.1.4	ICT & organizational model creation†	60.1	25	
7.2	*Creative goods & services*	*37.2*	*27*	
7.2.1	Recreation & culture consumption, %	9.3	18	
7.2.2	National feature films/mn pop. 15–69	3.5	34	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	212.4	22	
7.2.4	Creative goods exports, %	2.5	34	
7.2.5	Creative services exports, %	5.4	36	
7.3	*Online creativity*	*57.6*	*20*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	91.2	8	
7.3.2	Country-code TLDs/th pop. 15–69	30.4	54	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	5,004.9	30	
7.3.4	Video uploads on YouTube/pop. 15–69	83.2	2	●

Uruguay

Key indicators

Population (millions)	3.4
GDP per capita, PPP$	15,469.7
GDP (US$ billions)	49.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**35.1**	**67**	
Innovation Output Sub-Index		30.0	67	
Innovation Input Sub-Index		40.3	68	
Innovation Efficiency Index		0.7	68	
Global Innovation Index 2011 (out of 125)			64	
GII 2012 rank among GII 2011 economies (125)			65	
1	**Institutions**	**60.1**	**61**	
1.1	*Political environment*	*78.4*	*30*	
1.1.1	Political stability*	86.7	22	●
1.1.2	Government effectiveness*	58.2	42	
1.1.3	Press freedom*	90.4	29	●
1.2	*Regulatory environment*	*69.5*	*60*	
1.2.1	Regulatory quality*	61.9	54	
1.2.2	Rule of law*	66.7	38	
1.2.3	Cost of redundancy dismissal, salary weeks	20.8	92	
1.3	*Business environment*	*32.4*	*103*	
1.3.1	Ease of starting a business*	18.7	114	
1.3.2	Ease of resolving insolvency*	63.3	52	
1.3.3	Ease of paying taxes*	15.1	119	
2	**Human capital & research**	**32.9**	**74**	
2.1	*Education*	*44.9*	*92*	
2.1.1	Current expenditure on education, % GNI	2.3	121	○
2.1.2	Public expenditure/pupil, % GDP/cap	10.2	107	○
2.1.3	School life expectancy, years	15.5	24	●
2.1.4	PISA scales in reading, maths, & science	426.6	47	
2.1.5	Pupil-teacher ratio, secondary	12.4	54	
2.2	*Tertiary education*	*31.0*	*74*	
2.2.1	Tertiary enrolment, % gross	63.3	23	●
2.2.2	Graduates in science & engineering, %	13.6	85	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.9	79	
2.3	*Research & development (R&D)*	*22.7*	*66*	
2.3.1	Researchers, headcounts/mn pop.	643.5	67	
2.3.2	Gross expenditure on R&D, % GDP	0.7	45	
2.3.3	Quality of scientific research institutions†	48.4	55	
3	**Infrastructure**	**37.8**	**55**	
3.1	*Information & communication technologies (ICT)*	*38.4*	*59*	
3.1.1	ICT access*	57.5	47	
3.1.2	ICT use*	22.6	56	
3.1.3	Government's online service*	54.9	52	
3.1.4	E-participation*	18.4	71	
3.2	*General infrastructure*	*29.7*	*105*	
3.2.1	Electricity output, kWh/cap	2,647.8	65	
3.2.2	Electricity consumption, kWh/cap	2,670.9	61	
3.2.3	Quality of trade & transport infrastructure*	39.5	63	
3.2.4	Gross capital formation, % GDP	17.9	113	
3.3	*Ecological sustainability*	*45.5*	*25*	●
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	10.3	11	●
3.3.2	Environmental performance*	57.1	45	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.2	40	
4	**Market sophistication**	**33.7**	**94**	
4.1	*Credit*	*18.6*	*98*	
4.1.1	Ease of getting credit*	50.4	62	
4.1.2	Domestic credit to private sector, % GDP	22.3	114	
4.1.3	Microfinance gross loans, % GDP	0.0	79	○
4.2	*Investment*	*24.9*	*70*	
4.2.1	Ease of protecting investors*	35.9	76	
4.2.2	Market capitalization, % GDP	0.4	105	○
4.2.3	Total value of stocks traded, % GDP	0.0	106	○
4.2.4	Venture capital deals/tr PPP$ GDP	38.4	31	
4.3	*Trade & competition*	*57.5*	*100*	
4.3.1	Applied tariff rate, weighted mean, %	3.6	59	
4.3.2	Non-agricultural mkt access weighted tariff, %	1.5	88	
4.3.3	Imports of goods & services, % GDP	25.0	124	○
4.3.4	Exports of goods & services, % GDP	25.9	104	
4.3.5	Intensity of local competition†	56.1	99	
5	**Business sophistication**	**37.1**	**81**	
5.1	*Knowledge workers*	*49.1*	*57*	
5.1.1	Knowledge-intensive employment, %	21.4	63	
5.1.2	Firms offering formal training, % firms	48.6	31	
5.1.3	R&D performed by business, %	18.1	68	
5.1.4	R&D financed by business, %	24.6	59	
5.1.5	GMAT mean score	595.2	4	●
5.1.6	GMAT test takers/mn pop. 20–34	77.6	58	
5.2	*Innovation linkages*	*33.6*	*76*	
5.2.1	University/industry research collaboration†	46.5	50	
5.2.2	State of cluster development†	42.9	60	
5.2.3	R&D financed by abroad, %	2.3	73	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	26.9	52	
5.2.5	PCT patent filings with foreign inventor, %	66.7	43	
5.3	*Knowledge absorption*	*28.4*	*100*	
5.3.1	Royalty & license fees payments/th GDP	0.4	94	
5.3.2	High-tech imports less re-imports, %	10.2	51	
5.3.3	Computer & comm. service imports, %	21.4	96	
5.3.4	FDI net inflows, % GDP	4.0	46	
6	**Knowledge & technology outputs**	**24.2**	**82**	
6.1	*Knowledge creation*	*9.2*	*114*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.5	79	
6.1.2	PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.9	34	
6.1.4	Scientific & technical articles/bn PPP$ GDP	5.6	54	
6.2	*Knowledge impact*	*44.9*	*32*	
6.2.1	Growth rate of PPP$ GDP/worker, %	7.6	5	●
6.2.2	New businesses/th pop. 15–64	2.1	46	
6.2.3	Computer software spending, % GDP	0.1	67	○
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	25.3	19	●
6.3	*Knowledge diffusion*	*18.7*	*108*	
6.3.1	Royalty & license fees receipts/th GDP	0.0	99	○
6.3.2	High-tech exports less re-exports, %	1.5	67	
6.3.3	Computer & comm. service exports, %	16.7	101	
6.3.4	FDI net outflows, % GDP	0.0	105	○
7	**Creative outputs**	**35.7**	**52**	
7.1	*Creative intangibles*	*45.6*	*45*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	32.7	45	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	65.1	25	●
7.1.4	ICT & organizational model creation†	56.2	38	
7.2	*Creative goods & services*	*19.5*	*76*	
7.2.1	Recreation & culture consumption, %	5.2	50	
7.2.2	National feature films/mn pop. 15–69	6.2	18	●
7.2.3	Paid-for dailies, circulation/th pop. 15–69	64.0	76	
7.2.4	Creative goods exports, %	1.3	62	
7.2.5	Creative services exports, %	0.0	110	○
7.3	*Online creativity*	*32.0*	*44*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6.3	56	
7.3.2	Country-code TLDs/th pop. 15–69	39.1	47	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	3,948.1	34	
7.3.4	Video uploads on YouTube/pop. 15–69	62.4	49	

Uzbekistan

Key indicators

Population (millions)	28.6
GDP per capita, PPP$	3,293.7
GDP (US$ billions)	43.7

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**23.9**	**127**	
Innovation Output Sub-Index		14.7	137	○
Innovation Input Sub-Index		33.2	100	
Innovation Efficiency Index		0.4	140	○
Global Innovation Index 2011 (out of 125)			n/a	
GII 2012 rank among GII 2011 economies (125)			n/a	
1	**Institutions**	**34.4**	**133**	
1.1	*Political environment*	*34.6*	*128*	
1.1.1	Political stability*	46.6	106	
1.1.2	Government effectiveness*	20.0	119	
1.1.3	Press freedom*	37.2	126	
1.2	*Regulatory environment*	*42.2*	*129*	
1.2.1	Regulatory quality*	11.4	139	○
1.2.2	Rule of law*	11.4	139	○
1.2.3	Cost of redundancy dismissal, salary weeks	21.7	95	
1.3	*Business environment*	*26.6*	*117*	
1.3.1	Ease of starting a business*	37.4	88	
1.3.2	Ease of resolving insolvency*	25.8	104	
1.3.3	Ease of paying taxes*	16.5	117	
2	**Human capital & research**	**48.4**	**35**	●
2.1	*Education*	*75.4*	*2*	●
2.1.1	Current expenditure on education, % GNI	9.4	2	●
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	11.6	96	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	13.3	58	●
2.2	*Tertiary education*	*21.4*	*99*	
2.2.1	Tertiary enrolment, % gross	8.9	109	
2.2.2	Graduates in science & engineering, %	21.1	45	●
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	1.0	78	
2.3	*Research & development (R&D)*	*n/a*	*n/a*	
2.3.1	Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2	Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3	Quality of scientific research institutions†	n/a	n/a	
3	**Infrastructure**	**23.7**	**111**	
3.1	*Information & communication technologies (ICT)*	*25.6*	*92*	
3.1.1	ICT access*	20.8	117	
3.1.2	ICT use*	8.1	95	
3.1.3	Government's online service*	49.7	67	
3.1.4	E-participation*	23.7	59	●
3.2	*General infrastructure*	*33.8*	*87*	
3.2.1	Electricity output, kWh/cap	1,787.8	80	
3.2.2	Electricity consumption, kWh/cap	1,635.9	77	
3.2.3	Quality of trade & transport infrastructure*	38.5	69	
3.2.4	Gross capital formation, % GDP	26.5	29	●
3.3	*Ecological sustainability*	*11.8*	*124*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.4	123	○
3.3.2	Environmental performance*	32.2	122	○
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.1	122	
4	**Market sophistication**	**24.1**	**125**	
4.1	*Credit*	*7.7*	*126*	
4.1.1	Ease of getting credit*	10.9	120	
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	
4.1.3	Microfinance gross loans, % GDP	0.4	49	
4.2	*Investment*	*4.3*	*127*	
4.2.1	Ease of protecting investors*	15.8	110	
4.2.2	Market capitalization, % GDP	4.2	100	
4.2.3	Total value of stocks traded, % GDP	0.1	100	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*60.3*	*86*	
4.3.1	Applied tariff rate, weighted mean, %	6.9	100	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.3	35	●
4.3.3	Imports of goods & services, % GDP	30.9	104	
4.3.4	Exports of goods & services, % GDP	31.5	84	
4.3.5	Intensity of local competition†	n/a	n/a	
5	**Business sophistication**	**35.5**	**89**	
5.1	*Knowledge workers*	*28.8*	*118*	
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	9.6	103	○
5.1.3	R&D performed by business, %	n/a	n/a	
5.1.4	R&D financed by business, %	n/a	n/a	
5.1.5	GMAT mean score	513.9	64	
5.1.6	GMAT test takers/mn pop. 20–34	17.2	116	
5.2	*Innovation linkages*	*22.7*	*131*	
5.2.1	University/industry research collaboration†	n/a	n/a	
5.2.2	State of cluster development†	n/a	n/a	
5.2.3	R&D financed by abroad, %	n/a	n/a	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	38.2	37	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*54.9*	*11*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	n/a	n/a	
5.3.3	Computer & comm. service imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	2.1	74	
6	**Knowledge & technology outputs**	**22.7**	**89**	
6.1	*Knowledge creation*	*12.1*	*107*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	4.3	35	●
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	109	○
6.1.3	Domestic res utility model ap/bn PPP$ GDP	1.9	19	●
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.8	87	
6.2	*Knowledge impact*	*33.4*	*69*	
6.2.1	Growth rate of PPP$ GDP/worker, %	5.4	17	●
6.2.2	New businesses/th pop. 15–64	0.8	70	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	103	
6.3	*Knowledge diffusion*	*n/a*	*n/a*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	n/a	n/a	
6.3.3	Computer & comm. service exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	n/a	n/a	
7	**Creative outputs**	**6.6**	**138**	○
7.1	*Creative intangibles*	*5.3*	*135*	○
7.1.1	Domestic res trademark reg/bn PPP$ GDP	22.3	60	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.0	60	○
7.1.3	ICT & business model creation†	n/a	n/a	
7.1.4	ICT & organizational model creation†	n/a	n/a	
7.2	*Creative goods & services*	*10.6*	*99*	
7.2.1	Recreation & culture consumption, %	2.4	78	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	1.7	133	○
7.2.4	Creative goods exports, %	n/a	n/a	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*5.2*	*126*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.3	122	
7.3.2	Country-code TLDs/th pop. 15–69	7.6	102	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	31.5	112	
7.3.4	Video uploads on YouTube/pop. 15–69	12.7	131	

Venezuela (Bolivarian Republic of)

Key indicators

Population (millions)	29.8
GDP per capita, PPP$	12,407.2
GDP (US$ billions)	309.8

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**25.4**	**118**	
Innovation Output Sub-Index	22.8	103	
Innovation Input Sub-Index	28.1	126	
Innovation Efficiency Index	0.8	42	●
Global Innovation Index 2011 (out of 125)		102	
GII 2012 rank among GII 2011 economies (125)		108	
1 Institutions	**16.2**	**140**	○
1.1 Political environment	*34.2*	*129*	
1.1.1 Political stability*	32.2	127	
1.1.2 Government effectiveness*	14.2	132	
1.1.3 Press freedom*	56.1	92	
1.2 Regulatory environment	*7.9*	*140*	○
1.2.1 Regulatory quality*	11.6	138	○
1.2.2 Rule of law*	4.2	140	○
1.2.3 Cost of redundancy dismissal, salary weeks	n/a	n/a	
1.3 Business environment	*6.7*	*140*	○
1.3.1 Ease of starting a business*	15.1	119	
1.3.2 Ease of resolving insolvency*	3.5	135	
1.3.3 Ease of paying taxes*	1.4	138	○
2 Human capital & research	**34.4**	**69**	
2.1 Education	*60.7*	*33*	●
2.1.1 Current expenditure on education, % GNI	3.6	86	
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	14.4	45	●
2.1.4 PISA scales in reading, maths, & science	413.4	52	
2.1.5 Pupil-teacher ratio, secondary	6.8	3	●
2.2 Tertiary education	*26.5*	*86*	
2.2.1 Tertiary enrolment, % gross	78.1	9	●
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	0.0	90	○
2.2.4 Gross tertiary outbound enrolment, %	0.5	100	
2.3 Research & development (R&D)	*16.0*	*99*	
2.3.1 Researchers, headcounts/mn pop.	239.4	83	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	30.3	109	
3 Infrastructure	**29.7**	**86**	
3.1 Information & communication technologies (ICT)	*33.7*	*69*	
3.1.1 ICT access*	38.3	81	
3.1.2 ICT use*	21.8	59	
3.1.3 Government's online service*	48.4	73	
3.1.4 E-participation*	26.3	55	
3.2 General infrastructure	*32.2*	*91*	
3.2.1 Electricity output, kWh/cap	4,314.7	49	●
3.2.2 Electricity consumption, kWh/cap	3,151.6	56	
3.2.3 Quality of trade & transport infrastructure*	36.0	77	
3.2.4 Gross capital formation, % GDP	20.8	84	
3.3 Ecological sustainability	*23.1*	*99*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.9	102	
3.3.2 Environmental performance*	55.6	54	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.2	109	
4 Market sophistication	**16.9**	**139**	○
4.1 Credit	*1.9*	*140*	○
4.1.1 Ease of getting credit*	0.0	140	○
4.1.2 Domestic credit to private sector, % GDP	21.7	115	
4.1.3 Microfinance gross loans, % GDP	0.0	76	
4.2 Investment	*0.2*	*141*	○
4.2.1 Ease of protecting investors*	0.7	139	○
4.2.2 Market capitalization, % GDP	1.0	104	
4.2.3 Total value of stocks traded, % GDP	0.0	105	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*48.6*	*127*	
4.3.1 Applied tariff rate, weighted mean, %	10.6	128	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.2	34	●
4.3.3 Imports of goods & services, % GDP	17.2	138	○
4.3.4 Exports of goods & services, % GDP	28.7	95	
4.3.5 Intensity of local competition†	39.0	132	○
5 Business sophistication	**43.4**	**48**	●
5.1 Knowledge workers	*55.7*	*42*	●
5.1.1 Knowledge-intensive employment, %	23.9	54	
5.1.2 Firms offering formal training, % firms	56.0	18	●
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	499.8	76	
5.1.6 GMAT test takers/mn pop. 20–34	77.8	57	●
5.2 Innovation linkages	*40.0*	*54*	●
5.2.1 University/industry research collaboration†	41.1	77	
5.2.2 State of cluster development†	24.7	124	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	13.8	79	
5.2.5 PCT patent filings with foreign inventor, %	100.0	1	●
5.3 Knowledge absorption	*34.4*	*73*	
5.3.1 Royalty & license fees payments/th GDP	1.2	68	
5.3.2 High-tech imports less re-imports, %	n/a	n/a	
5.3.3 Computer & comm. service imports, %	33.4	63	
5.3.4 FDI net inflows, % GDP	-0.4	135	
6 Knowledge & technology outputs	**17.4**	**121**	
6.1 Knowledge creation	*3.1*	*128*	
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	1.0	113	
6.2 Knowledge impact	*12.6*	*131*	
6.2.1 Growth rate of PPP$ GDP/worker, %	-3.4	115	○
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	0.1	58	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	1.7	99	
6.3 Knowledge diffusion	*36.5*	*37*	●
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	n/a	n/a	
6.3.3 Computer & comm. service exports, %	17.7	98	
6.3.4 FDI net outflows, % GDP	0.6	49	
7 Creative outputs	**28.2**	**87**	
7.1 Creative intangibles	*36.3*	*88*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	42.5	104	
7.1.4 ICT & organizational model creation†	30.1	121	
7.2 Creative goods & services	*17.6*	*78*	
7.2.1 Recreation & culture consumption, %	6.3	43	
7.2.2 National feature films/mn pop. 15–69	0.5	84	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	95.0	58	
7.2.4 Creative goods exports, %	0.0	129	
7.2.5 Creative services exports, %	4.6	41	●
7.3 Online creativity	*22.4*	*65*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	3.8	67	
7.3.2 Country-code TLDs/th pop. 15–69	33.9	51	●
7.3.3 Wikipedia monthly edits/mn pop. 15–69	720.1	76	
7.3.4 Video uploads on YouTube/pop. 15–69	48.3	83	

Viet Nam

Key indicators

Population (millions)	89.3
GDP per capita, PPP$	3,354.8
GDP (US$ billions)	121.6

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**33.9**	**76**	
Innovation Output Sub-Index		30.8	59	
Innovation Input Sub-Index		37.0	83	
Innovation Efficiency Index		0.8	27	●
Global Innovation Index 2011 (out of 125)			51	
GII 2012 rank among GII 2011 economies (125)			74	
1	**Institutions**	**40.9**	**112**	○
1.1	*Political environment*	*39.2*	*117*	○
1.1.1	Political stability*	68.4	57	
1.1.2	Government effectiveness*	32.8	85	
1.1.3	Press freedom*	16.2	136	○
1.2	*Regulatory environment*	*53.0*	*108*	
1.2.1	Regulatory quality*	37.1	112	○
1.2.2	Rule of law*	34.9	88	
1.2.3	Cost of redundancy dismissal, salary weeks	23.1	104	
1.3	*Business environment*	*30.4*	*106*	
1.3.1	Ease of starting a business*	42.4	81	
1.3.2	Ease of resolving insolvency*	18.7	114	○
1.3.3	Ease of paying taxes*	30.2	97	
2	**Human capital & research**	**26.1**	**107**	
2.1	*Education*	*42.9*	*100*	
2.1.1	Current expenditure on education, % GNI	2.8	113	○
2.1.2	Public expenditure/pupil, % GDP/cap	21.3	49	
2.1.3	School life expectancy, years	11.9	89	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	18.6	90	
2.2	*Tertiary education*	*18.8*	*108*	
2.2.1	Tertiary enrolment, % gross	22.3	84	
2.2.2	Graduates in science & engineering, %	16.8	68	
2.2.3	Tertiary inbound mobility, %	0.0	90	○
2.2.4	Gross tertiary outbound enrolment, %	0.5	96	
2.3	*Research & development (R&D)*	*16.7*	*94*	
2.3.1	Researchers, headcounts/mn pop.	510.8	73	
2.3.2	Gross expenditure on R&D, % GDP	0.2	87	
2.3.3	Quality of scientific research institutions†	42.5	71	
3	**Infrastructure**	**32.5**	**75**	
3.1	*Information & communication technologies (ICT)*	*28.2*	*83*	
3.1.1	ICT access*	43.9	67	
3.1.2	ICT use*	15.7	72	
3.1.3	Government's online service*	42.5	88	
3.1.4	E-participation*	10.5	93	
3.2	*General infrastructure*	*41.5*	*41*	
3.2.1	Electricity output, kWh/cap	953.9	93	
3.2.2	Electricity consumption, kWh/cap	904.4	95	
3.2.3	Quality of trade & transport infrastructure*	39.0	65	
3.2.4	Gross capital formation, % GDP	38.9	6	●
3.3	*Ecological sustainability*	*27.8*	*83*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	4.7	78	
3.3.2	Environmental performance*	50.6	76	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	1.1	59	
4	**Market sophistication**	**44.1**	**49**	
4.1	*Credit*	*58.1*	*20*	●
4.1.1	Ease of getting credit*	77.4	21	
4.1.2	Domestic credit to private sector, % GDP	125.0	20	●
4.1.3	Microfinance gross loans, % GDP	4.5	10	●
4.2	*Investment*	*16.9*	*95*	
4.2.1	Ease of protecting investors*	1.4	136	○
4.2.2	Market capitalization, % GDP	19.7	77	
4.2.3	Total value of stocks traded, % GDP	28.4	32	
4.2.4	Venture capital deals/tr PPP$ GDP	10.0	45	
4.3	*Trade & competition*	*57.3*	*103*	
4.3.1	Applied tariff rate, weighted mean, %	5.7	86	
4.3.2	Non-agricultural mkt access weighted tariff, %	5.3	136	○
4.3.3	Imports of goods & services, % GDP	87.8	7	●
4.3.4	Exports of goods & services, % GDP	77.5	17	●
4.3.5	Intensity of local competition†	66.2	60	
5	**Business sophistication**	**41.5**	**56**	
5.1	*Knowledge workers*	*34.6*	*106*	
5.1.1	Knowledge-intensive employment, %	7.4	97	○
5.1.2	Firms offering formal training, % firms	43.6	40	
5.1.3	R&D performed by business, %	14.5	70	
5.1.4	R&D financed by business, %	18.1	64	
5.1.5	GMAT mean score	521.3	58	
5.1.6	GMAT test takers/mn pop. 20–34	50.1	79	
5.2	*Innovation linkages*	*43.8*	*41*	
5.2.1	University/industry research collaboration†	40.1	79	
5.2.2	State of cluster development†	59.4	18	●
5.2.3	R&D financed by abroad, %	6.3	53	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	43.1	31	●
5.2.5	PCT patent filings with foreign inventor, %	100.0	1	●
5.3	*Knowledge absorption*	*46.2*	*25*	●
5.3.1	Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2	High-tech imports less re-imports, %	11.2	41	
5.3.3	Computer & comm. service imports, %	n/a	n/a	
5.3.4	FDI net inflows, % GDP	7.5	23	●
6	**Knowledge & technology outputs**	**29.4**	**58**	
6.1	*Knowledge creation*	*14.2*	*101*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	1.1	67	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.1	84	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	0.8	36	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.3	104	
6.2	*Knowledge impact*	*39.7*	*46*	
6.2.1	Growth rate of PPP$ GDP/worker, %	4.3	27	
6.2.2	New businesses/th pop. 15–64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.2	43	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.3	57	
6.3	*Knowledge diffusion*	*34.3*	*43*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	6.2	34	
6.3.3	Computer & comm. service exports, %	n/a	n/a	
6.3.4	FDI net outflows, % GDP	0.8	44	
7	**Creative outputs**	**32.2**	**70**	
7.1	*Creative intangibles*	*34.8*	*95*	
7.1.1	Domestic res trademark reg/bn PPP$ GDP	67.6	23	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	0.2	45	
7.1.3	ICT & business model creation†	49.1	76	
7.1.4	ICT & organizational model creation†	54.5	42	
7.2	*Creative goods & services*	*36.0*	*32*	
7.2.1	Recreation & culture consumption, %	1.7	88	○
7.2.2	National feature films/mn pop. 15–69	0.2	95	○
7.2.3	Paid-for dailies, circulation/th pop. 15–69	64.2	75	
7.2.4	Creative goods exports, %	6.5	4	●
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*23.2*	*62*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4.0	64	
7.3.2	Country-code TLDs/th pop. 15–69	35.6	49	
7.3.3	Wikipedia monthly edits/mn pop. 15–69	378.2	83	
7.3.4	Video uploads on YouTube/pop. 15–69	51.1	75	

Yemen

Key indicators

Population (millions)	25.1
GDP per capita, PPP$	2,520.7
GDP (US$ billions)	36.7

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**19.2**	**139**	○
Innovation Output Sub-Index	13.1	138	
Innovation Input Sub-Index	25.2	138	
Innovation Efficiency Index	0.5	132	
Global Innovation Index 2011 (out of 125)		123	
GII 2012 rank among GII 2011 economies (125)		123	
1 Institutions	**34.9**	**130**	
1.1 Political environment	*16.8*	*140*	○
1.1.1 Political stability*	11.6	139	○
1.1.2 Government effectiveness*	13.8	133	
1.1.3 Press freedom*	25.0	135	
1.2 Regulatory environment	*44.9*	*124*	
1.2.1 Regulatory quality*	36.5	115	
1.2.2 Rule of law*	19.9	128	
1.2.3 Cost of redundancy dismissal, salary weeks	27.4	117	
1.3 Business environment	*42.9*	*88*	
1.3.1 Ease of starting a business*	69.7	43	●
1.3.2 Ease of resolving insolvency*	38.8	86	
1.3.3 Ease of paying taxes*	20.1	112	
2 Human capital & research	**28.3**	**98**	
2.1 Education	*58.2*	*46*	●
2.1.1 Current expenditure on education, % GNI	4.2	69	
2.1.2 Public expenditure/pupil, % GDP/cap	42.9	3	●
2.1.3 School life expectancy, years	8.7	125	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	11.7	42	●
2.2 Tertiary education	*15.5*	*117*	
2.2.1 Tertiary enrolment, % gross	10.2	105	
2.2.2 Graduates in science & engineering, %	n/a	n/a	
2.2.3 Tertiary inbound mobility, %	2.7	47	●
2.2.4 Gross tertiary outbound enrolment, %	0.3	110	
2.3 Research & development (R&D)	*11.3*	*123*	
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	11.3	132	○
3 Infrastructure	**18.1**	**132**	
3.1 Information & communication technologies (ICT)	*10.2*	*137*	
3.1.1 ICT access*	19.3	119	
3.1.2 ICT use*	3.8	114	
3.1.3 Government's online service*	17.7	136	
3.1.4 E-participation*	0.0	127	○
3.2 General infrastructure	*28.4*	*111*	
3.2.1 Electricity output, kWh/cap	284.7	110	
3.2.2 Electricity consumption, kWh/cap	216.5	112	
3.2.3 Quality of trade & transport infrastructure*	33.8	88	
3.2.4 Gross capital formation, % GDP	24.4	49	●
3.3 Ecological sustainability	*15.7*	*121*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.8	104	
3.3.2 Environmental performance*	35.5	119	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	0.0	134	○
4 Market sophistication	**26.1**	**124**	
4.1 Credit	*3.8*	*134*	
4.1.1 Ease of getting credit*	10.9	120	
4.1.2 Domestic credit to private sector, % GDP	7.4	140	○
4.1.3 Microfinance gross loans, % GDP	0.0	75	
4.2 Investment	*7.9*	*116*	
4.2.1 Ease of protecting investors*	15.8	110	
4.2.2 Market capitalization, % GDP	n/a	n/a	
4.2.3 Total value of stocks traded, % GDP	n/a	n/a	
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*66.6*	*53*	●
4.3.1 Applied tariff rate, weighted mean, %	4.2	72	
4.3.2 Non-agricultural mkt access weighted tariff, %	0.1	27	●
4.3.3 Imports of goods & services, % GDP	41.4	68	●
4.3.4 Exports of goods & services, % GDP	38.0	71	
4.3.5 Intensity of local competition†	62.3	73	
5 Business sophistication	**18.7**	**141**	○
5.1 Knowledge workers	*17.8*	*138*	
5.1.1 Knowledge-intensive employment, %	17.0	82	
5.1.2 Firms offering formal training, % firms	12.9	99	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	367.0	138	○
5.1.6 GMAT test takers/mn pop. 20–34	4.0	135	
5.2 Innovation linkages	*12.5*	*139*	○
5.2.1 University/industry research collaboration†	8.4	133	○
5.2.2 State of cluster development†	22.0	128	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	3.2	110	
5.2.5 PCT patent filings with foreign inventor, %	n/a	n/a	
5.3 Knowledge absorption	*25.7*	*123*	
5.3.1 Royalty & license fees payments/th GDP	0.2	107	
5.3.2 High-tech imports less re-imports, %	3.8	118	
5.3.3 Computer & comm. service imports, %	34.7	59	●
5.3.4 FDI net inflows, % GDP	0.5	122	
6 Knowledge & technology outputs	**14.7**	**131**	
6.1 Knowledge creation	*1.2*	*140*	○
6.1.1 Domestic resident patent ap/bn PPP$ GDP	0.3	90	
6.1.2 PCT resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4 Scientific & technical articles/bn PPP$ GDP	0.4	132	
6.2 Knowledge impact	*33.7*	*68*	●
6.2.1 Growth rate of PPP$ GDP/worker, %	4.2	29	●
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	n/a	n/a	
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	0.3	129	
6.3 Knowledge diffusion	*9.4*	*129*	
6.3.1 Royalty & license fees receipts/th GDP	1.3	27	●
6.3.2 High-tech exports less re-exports, %	0.0	120	○
6.3.3 Computer & comm. service exports, %	12.9	111	
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**11.5**	**137**	
7.1 Creative intangibles	*18.5*	*133*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	28.3	54	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	25.9	130	
7.1.4 ICT & organizational model creation†	16.4	133	○
7.2 Creative goods & services	*0.8*	*138*	
7.2.1 Recreation & culture consumption, %	0.3	100	○
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	13.5	112	
7.2.4 Creative goods exports, %	0.1	118	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*8.2*	*118*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.2	124	
7.3.2 Country-code TLDs/th pop. 15–69	0.8	127	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	44.6	107	
7.3.4 Video uploads on YouTube/pop. 15–69	31.4	109	

Zambia

Key indicators

Population (millions)	13.6
GDP per capita, PPP$	1,612.9
GDP (US$ billions)	18.4

		Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)		**26.4**	**107**	
Innovation Output Sub-Index		24.0	96	
Innovation Input Sub-Index		28.9	122	
Innovation Efficiency Index		0.8	34	●
Global Innovation Index 2011 (out of 125)			114	
GII 2012 rank among GII 2011 economies (125)			100	
1	**Institutions**	**47.2**	**97**	
1.1	*Political environment*	*56.6*	*70*	
1.1.1	Political stability*	76.9	42	●
1.1.2	Government effectiveness*	19.9	120	
1.1.3	Press freedom*	73.0	69	
1.2	*Regulatory environment*	*26.3*	*135*	○
1.2.1	Regulatory quality*	39.2	107	
1.2.2	Rule of law*	34.7	89	
1.2.3	Cost of redundancy dismissal, salary weeks	50.6	135	○
1.3	*Business environment*	*58.7*	*50*	●
1.3.1	Ease of starting a business*	67.6	46	●
1.3.2	Ease of resolving insolvency*	33.8	93	
1.3.3	Ease of paying taxes*	74.8	36	●
2	**Human capital & research**	**17.0**	**133**	
2.1	*Education*	*29.9*	*124*	
2.1.1	Current expenditure on education, % GNI	1.3	135	○
2.1.2	Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3	School life expectancy, years	n/a	n/a	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	23.2	105	
2.2	*Tertiary education*	*3.9*	*138*	○
2.2.1	Tertiary enrolment, % gross	n/a	n/a	
2.2.2	Graduates in science & engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	n/a	n/a	
2.2.4	Gross tertiary outbound enrolment, %	0.4	105	
2.3	*Research & development (R&D)*	*17.1*	*91*	
2.3.1	Researchers, headcounts/mn pop.	49.4	114	○
2.3.2	Gross expenditure on R&D, % GDP	0.3	70	
2.3.3	Quality of scientific research institutions†	43.6	68	
3	**Infrastructure**	**19.3**	**129**	
3.1	*Information & communication technologies (ICT)*	*12.9*	*127*	
3.1.1	ICT access*	15.4	136	○
3.1.2	ICT use*	2.3	126	
3.1.3	Government's online service*	31.4	113	
3.1.4	E-participation*	2.6	115	
3.2	*General infrastructure*	*23.4*	*128*	
3.2.1	Electricity output, kWh/cap	796.9	97	
3.2.2	Electricity consumption, kWh/cap	624.7	99	
3.2.3	Quality of trade & transport infrastructure*	20.8	130	
3.2.4	Gross capital formation, % GDP	22.4	70	
3.3	*Ecological sustainability*	*21.6*	*104*	
3.3.1	GDP/unit of energy use, 2000 PPP$/kg oil eq	1.7	119	○
3.3.2	Environmental performance*	55.6	55	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.6	75	
4	**Market sophistication**	**36.2**	**81**	
4.1	*Credit*	*29.8*	*73*	
4.1.1	Ease of getting credit*	87.6	8	●
4.1.2	Domestic credit to private sector, % GDP	11.5	137	○
4.1.3	Microfinance gross loans, % GDP	0.0	77	
4.2	*Investment*	*13.3*	*105*	
4.2.1	Ease of protecting investors*	46.7	60	
4.2.2	Market capitalization, % GDP	17.4	82	
4.2.3	Total value of stocks traded, % GDP	0.8	75	
4.2.4	Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3	*Trade & competition*	*65.6*	*60*	
4.3.1	Applied tariff rate, weighted mean, %	3.8	65	
4.3.2	Non-agricultural mkt access weighted tariff, %	0.7	61	
4.3.3	Imports of goods & services, % GDP	35.0	90	
4.3.4	Exports of goods & services, % GDP	44.1	53	●
4.3.5	Intensity of local competition†	62.7	70	
5	**Business sophistication**	**24.8**	**135**	○
5.1	*Knowledge workers*	*20.3*	*135*	○
5.1.1	Knowledge-intensive employment, %	n/a	n/a	
5.1.2	Firms offering formal training, % firms	26.0	72	
5.1.3	R&D performed by business, %	2.0	84	
5.1.4	R&D financed by business, %	3.2	82	
5.1.5	GMAT mean score	409.9	124	
5.1.6	GMAT test takers/mn pop. 20–34	16.2	118	
5.2	*Innovation linkages*	*28.7*	*105*	
5.2.1	University/industry research collaboration†	45.8	56	●
5.2.2	State of cluster development†	43.4	59	
5.2.3	R&D financed by abroad, %	1.6	77	
5.2.4	JV–strategic alliance deals/tr PPP$ GDP	27.4	51	●
5.2.5	PCT patent filings with foreign inventor, %	n/a	n/a	
5.3	*Knowledge absorption*	*25.5*	*125*	
5.3.1	Royalty & license fees payments/th GDP	0.0	114	○
5.3.2	High-tech imports less re-imports, %	4.5	111	
5.3.3	Computer & comm. service imports, %	26.0	80	
5.3.4	FDI net inflows, % GDP	6.4	30	●
6	**Knowledge & technology outputs**	**22.1**	**95**	
6.1	*Knowledge creation*	*16.0*	*92*	
6.1.1	Domestic resident patent ap/bn PPP$ GDP	0.6	76	
6.1.2	PCT resident patent ap/bn PPP$ GDP	0.0	90	
6.1.3	Domestic res utility model ap/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	1.9	83	
6.2	*Knowledge impact*	*29.3*	*86*	
6.2.1	Growth rate of PPP$ GDP/worker, %	3.7	37	●
6.2.2	New businesses/th pop. 15–64	0.9	64	
6.2.3	Computer software spending, % GDP	n/a	n/a	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.4	106	
6.3	*Knowledge diffusion*	*21.2*	*100*	
6.3.1	Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2	High-tech exports less re-exports, %	0.1	113	
6.3.3	Computer & comm. service exports, %	9.2	118	
6.3.4	FDI net outflows, % GDP	1.8	25	●
7	**Creative outputs**	**25.8**	**97**	
7.1	*Creative intangibles*	*48.7*	*32*	●
7.1.1	Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2	Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3	ICT & business model creation†	46.2	85	
7.1.4	ICT & organizational model creation†	51.2	58	
7.2	*Creative goods & services*	*0.9*	*137*	○
7.2.1	Recreation & culture consumption, %	n/a	n/a	
7.2.2	National feature films/mn pop. 15–69	n/a	n/a	
7.2.3	Paid-for dailies, circulation/th pop. 15–69	12.1	113	
7.2.4	Creative goods exports, %	0.0	124	
7.2.5	Creative services exports, %	n/a	n/a	
7.3	*Online creativity*	*4.9*	*130*	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	0.0	137	○
7.3.2	Country-code TLDs/th pop. 15–69	0.1	137	○
7.3.3	Wikipedia monthly edits/mn pop. 15–69	24.5	115	
7.3.4	Video uploads on YouTube/pop. 15–69	19.3	120	

Zimbabwe

Key indicators

Population (millions)	12.6
GDP per capita, PPP$	471.7
GDP (US$ billions)	9.2

	Score (0–100) or value (hard data)	Rank	
Global Innovation Index 2012 (out of 141)	**25.7**	**115**	
Innovation Output Sub-Index	24.4	92	
Innovation Input Sub-Index	27.0	130	
Innovation Efficiency Index	0.9	13	●
Global Innovation Index 2011 (out of 125)		119	
GII 2012 rank among GII 2011 economies (125)		106	
1 Institutions	**15.4**	**141**	○
1.1 Political environment	*30.7*	*134*	
1.1.1 Political stability*	36.1	123	
1.1.2 Government effectiveness*	0.0	141	○
1.1.3 Press freedom*	56.1	92	
1.2 Regulatory environment	*0.0*	*141*	○
1.2.1 Regulatory quality*	0.0	141	○
1.2.2 Rule of law*	0.0	141	○
1.2.3 Cost of redundancy dismissal, salary weeks	82.3	137	○
1.3 Business environment	*15.5*	*131*	
1.3.1 Ease of starting a business*	16.5	117	
1.3.2 Ease of resolving insolvency*	1.4	138	○
1.3.3 Ease of paying taxes*	28.7	100	
2 Human capital & research	**33.5**	**71**	
2.1 Education	*38.2*	*112*	
2.1.1 Current expenditure on education, % GNI	2.5	118	
2.1.2 Public expenditure/pupil, % GDP/cap	n/a	n/a	
2.1.3 School life expectancy, years	n/a	n/a	
2.1.4 PISA scales in reading, maths, & science	n/a	n/a	
2.1.5 Pupil-teacher ratio, secondary	22.3	101	
2.2 Tertiary education	*28.7*	*80*	
2.2.1 Tertiary enrolment, % gross	6.2	115	
2.2.2 Graduates in science & engineering, %	24.8	27	●
2.2.3 Tertiary inbound mobility, %	0.9	73	
2.2.4 Gross tertiary outbound enrolment, %	1.3	64	
2.3 Research & development (R&D)	*33.6*	*37*	●
2.3.1 Researchers, headcounts/mn pop.	n/a	n/a	
2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a	
2.3.3 Quality of scientific research institutions†	33.6	102	
3 Infrastructure	**15.4**	**139**	○
3.1 Information & communication technologies (ICT)	*9.5*	*138*	
3.1.1 ICT access*	18.6	125	
3.1.2 ICT use*	4.2	113	
3.1.3 Government's online service*	12.7	140	○
3.1.4 E-participation*	2.6	115	
3.2 General infrastructure	*8.6*	*141*	○
3.2.1 Electricity output, kWh/cap	626.5	103	
3.2.2 Electricity consumption, kWh/cap	1,022.2	91	
3.2.3 Quality of trade & transport infrastructure*	21.8	129	
3.2.4 Gross capital formation, % GDP	0.5	140	○
3.3 Ecological sustainability	*27.9*	*82*	
3.3.1 GDP/unit of energy use, 2000 PPP$/kg oil eq	2.1	114	
3.3.2 Environmental performance*	52.8	66	
3.3.3 ISO 14001 environmental certificates/bn PPP$ GDP	3.1	30	●
4 Market sophistication	**27.9**	**118**	
4.1 Credit	*11.5*	*117*	
4.1.1 Ease of getting credit*	21.1	104	
4.1.2 Domestic credit to private sector, % GDP	44.5	76	
4.1.3 Microfinance gross loans, % GDP	0.0	86	
4.2 Investment	*21.7*	*78*	
4.2.1 Ease of protecting investors*	22.3	100	
4.2.2 Market capitalization, % GDP	153.6	8	●
4.2.3 Total value of stocks traded, % GDP	15.3	41	●
4.2.4 Venture capital deals/tr PPP$ GDP	0.0	65	○
4.3 Trade & competition	*50.4*	*123*	
4.3.1 Applied tariff rate, weighted mean, %	17.3	140	○
4.3.2 Non-agricultural mkt access weighted tariff, %	0.2	28	●
4.3.3 Imports of goods & services, % GDP	56.4	40	●
4.3.4 Exports of goods & services, % GDP	37.3	72	
4.3.5 Intensity of local competition†	58.5	90	
5 Business sophistication	**43.0**	**50**	●
5.1 Knowledge workers	*52.8*	*47*	●
5.1.1 Knowledge-intensive employment, %	n/a	n/a	
5.1.2 Firms offering formal training, % firms	n/a	n/a	
5.1.3 R&D performed by business, %	n/a	n/a	
5.1.4 R&D financed by business, %	n/a	n/a	
5.1.5 GMAT mean score	489.9	80	
5.1.6 GMAT test takers/mn pop. 20–34	41.2	92	
5.2 Innovation linkages	*46.0*	*33*	●
5.2.1 University/industry research collaboration†	36.6	98	
5.2.2 State of cluster development†	27.3	118	
5.2.3 R&D financed by abroad, %	n/a	n/a	
5.2.4 JV–strategic alliance deals/tr PPP$ GDP	168.6	1	●
5.2.5 PCT patent filings with foreign inventor, %	50.0	48	
5.3 Knowledge absorption	*30.3*	*92*	
5.3.1 Royalty & license fees payments/th GDP	n/a	n/a	
5.3.2 High-tech imports less re-imports, %	4.5	112	
5.3.3 Computer & comm. service imports, %	n/a	n/a	
5.3.4 FDI net inflows, % GDP	1.4	95	
6 Knowledge & technology outputs	**26.2**	**70**	
6.1 Knowledge creation	*34.1*	*41*	●
6.1.1 Domestic resident patent ap/bn PPP$ GDP	n/a	n/a	
6.1.2 PCT resident patent ap/bn PPP$ GDP	0.3	46	
6.1.3 Domestic res utility model ap/bn PPP$ GDP	0.4	38	
6.1.4 Scientific & technical articles/bn PPP$ GDP	11.3	32	●
6.2 Knowledge impact	*43.7*	*35*	●
6.2.1 Growth rate of PPP$ GDP/worker, %	5.5	15	●
6.2.2 New businesses/th pop. 15–64	n/a	n/a	
6.2.3 Computer software spending, % GDP	0.0	74	○
6.2.4 ISO 9001 quality certificates/bn PPP$ GDP	17.0	30	●
6.3 Knowledge diffusion	*0.8*	*137*	○
6.3.1 Royalty & license fees receipts/th GDP	n/a	n/a	
6.3.2 High-tech exports less re-exports, %	0.3	96	
6.3.3 Computer & comm. service exports, %	n/a	n/a	
6.3.4 FDI net outflows, % GDP	n/a	n/a	
7 Creative outputs	**22.7**	**112**	
7.1 Creative intangibles	*36.6*	*86*	
7.1.1 Domestic res trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.2 Madrid resident trademark reg/bn PPP$ GDP	n/a	n/a	
7.1.3 ICT & business model creation†	36.1	122	
7.1.4 ICT & organizational model creation†	37.0	106	
7.2 Creative goods & services	*9.0*	*106*	
7.2.1 Recreation & culture consumption, %	n/a	n/a	
7.2.2 National feature films/mn pop. 15–69	n/a	n/a	
7.2.3 Paid-for dailies, circulation/th pop. 15–69	5.5	122	
7.2.4 Creative goods exports, %	0.9	74	
7.2.5 Creative services exports, %	n/a	n/a	
7.3 Online creativity	*8.6*	*116*	
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69	0.2	128	
7.3.2 Country-code TLDs/th pop. 15–69	1.3	122	
7.3.3 Wikipedia monthly edits/mn pop. 15–69	11.3	123	
7.3.4 Video uploads on YouTube/pop. 15–69	32.7	107	

Appendix II

Data Tables

Data Tables

This appendix provides tables for each of the 84 indicators that make up the Global Innovation Index 2012 (GII).

A total of 62 variables are hard data; 16 are composite indicators, distinguished with an asterisk (*); and six are survey questions from the World Economic Forum's Executive Opinion Survey, singled out with a dagger (†).

The source of each indicator is indicated at the bottom of the page.

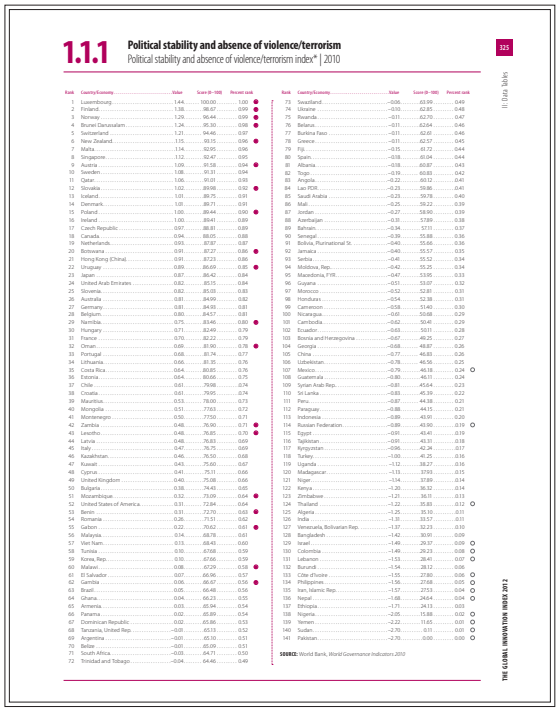
Details on each indicator can be found in Appendix III, Sources and Definitions.

Structure

Each table is identified by indicator number, with the first digit representing the pillar, the second representing the sub-pillar, and the final digit representing the indicator within that particular sub-pillar. For example Table **2.1.4** shows results for **indicator 2.1.4, Assessment in reading, mathematics, and science,** which is the fourth indicator of **sub-pillar 2.1, Education,** within **pillar 2, Human capital and research.**

The subheading text provides a detailed description of each indicator, with information on the units of each variable, the scaling factor (if any), the question asked (for survey questions), and the most frequent year for which data were available.

For each indicator for each economy, the most recent value within the period 2001–11 was used. In instances where this base year does not correspond to the most frequent year reported in the sub-heading, the year of the value appears in parentheses after the economy name.



1.1.1 Political stability and absence of violence/terrorism

Political stability and absence of violence/terrorism index* | 2010

Twenty-two indicators that were assigned half weight are singled out with an 'a'. Normally higher values indicate better outcomes; five indicators for which higher scores indicate worse outcomes (commonly known as 'bads') are differentiated with a 'b'. Five composite indicators calculated as percent ranks at the source are singled out with an 'r'.

Explanation of scores

The tables list the economies by their rank order, with the best performers at the top. After the rank comes the country/economy name, the original value of the specific indicator for that country (in the units specified in the subheading), the normalized score in the [0, 100] range, and the percentage of economies with scores that fall below the normalized score (i.e., percent ranks).

To the far right of each column, a solid circle indicates that an indicator is a strength for the country/economy in question, and a hollow circle indicates that it is a weakness (refer to Appendix I Country/Economy Profiles for details).

- Strengths are all ranks of 1, as well as all scores with percent ranks greater than the 10th highest percent rank among the 84 indicators in a specific economy.

- Weaknesses are all scores with percent ranks lower than the 10th smallest percent rank among the 84 indicators in a specific economy.

For three hard data series (7.3.1, 7.3.2, and 7.3.4), the raw data were provided under the condition that only the normalized scores be published and therefore the original value equals the normalized score. For indicator 3.3.2, the range for both measures is the same, [0, 100], and therefore both measures are also identical. In the case of five composite indicators that were calculated as percent ranks at the source (indicators 1.3.1, 1.3.2, 1.3.3, 4.1.1, and 4.2.1, singled out with '★r'), the normalized scores correspond to the percent ranks recalculated for the sample of 141 economies times 100.

Details on the computation methodology can be found in Appendix IV, Technical Notes.

Index of Data Tables

5 Business sophistication

5.1 Knowledge workers

5.2 Innovation linkages

5.3 Knowledge absorption

6 Knowledge and technology outputs

6.1 Knowledge creation

6.2 Knowledge impact

6.3 Knowledge diffusion

7 Creative outputs

7.1 Creative intangibles

7.2 Creative goods and services

7.3 Creation of online content

1.1.1 Political stability and absence of violence/terrorism

Political stability and absence of violence/terrorism index* | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Luxembourg	1.44	100.00	1.00	●
2	Finland	1.38	98.67	0.99	●
3	Norway	1.29	96.44	0.99	●
4	Brunei Darussalam	1.24	95.30	0.98	●
5	Switzerland	1.21	94.46	0.97	
6	New Zealand	1.15	93.15	0.96	●
7	Malta	1.14	92.95	0.96	
8	Singapore	1.12	92.47	0.95	
9	Austria	1.09	91.58	0.94	●
10	Sweden	1.08	91.31	0.94	
11	Qatar	1.06	91.01	0.93	
12	Slovakia	1.02	89.98	0.92	●
13	Iceland	1.01	89.75	0.91	
14	Denmark	1.01	89.71	0.91	
15	Poland	1.00	89.44	0.90	●
16	Ireland	1.00	89.41	0.89	
17	Czech Republic	0.97	88.81	0.89	
18	Canada	0.94	88.05	0.88	
19	Netherlands	0.93	87.87	0.87	
20	Botswana	0.91	87.27	0.86	●
21	Hong Kong (China)	0.91	87.23	0.86	
22	Uruguay	0.89	86.69	0.85	●
23	Japan	0.87	86.42	0.84	
24	United Arab Emirates	0.82	85.15	0.84	
25	Slovenia	0.82	85.03	0.83	
26	Australia	0.81	84.99	0.82	
27	Germany	0.81	84.93	0.81	
28	Belgium	0.80	84.57	0.81	
29	Namibia	0.75	83.46	0.80	●
30	Hungary	0.71	82.49	0.79	
31	France	0.70	82.22	0.79	
32	Oman	0.69	81.90	0.78	●
33	Portugal	0.68	81.74	0.77	
34	Lithuania	0.66	81.35	0.76	
35	Costa Rica	0.64	80.85	0.76	
36	Estonia	0.64	80.66	0.75	
37	Chile	0.61	79.98	0.74	
38	Croatia	0.61	79.95	0.74	
39	Mauritius	0.53	78.00	0.73	
40	Mongolia	0.51	77.63	0.72	
41	Montenegro	0.50	77.50	0.71	
42	Zambia	0.48	76.90	0.71	●
43	Lesotho	0.48	76.85	0.70	●
44	Latvia	0.48	76.83	0.69	
45	Italy	0.47	76.75	0.69	
46	Kazakhstan	0.46	76.50	0.68	
47	Kuwait	0.43	75.60	0.67	
48	Cyprus	0.41	75.11	0.66	
49	United Kingdom	0.40	75.08	0.66	
50	Bulgaria	0.38	74.43	0.65	
51	Mozambique	0.32	73.09	0.64	●
52	United States of America	0.31	72.84	0.64	
53	Benin	0.31	72.70	0.63	●
54	Romania	0.26	71.51	0.62	
55	Gabon	0.22	70.62	0.61	●
56	Malaysia	0.14	68.78	0.61	
57	Viet Nam	0.13	68.43	0.60	
58	Tunisia	0.10	67.68	0.59	
59	Korea, Rep.	0.10	67.66	0.59	
60	Malawi	0.08	67.29	0.58	●
61	El Salvador	0.07	66.96	0.57	
62	Gambia	0.06	66.67	0.56	●
63	Brazil	0.05	66.48	0.56	
64	Ghana	0.04	66.23	0.55	
65	Armenia	0.03	65.94	0.54	
66	Panama	0.02	65.89	0.54	
67	Dominican Republic	0.02	65.86	0.53	
68	Tanzania, United Rep.	–0.01	65.13	0.52	
69	Argentina	–0.01	65.10	0.51	
70	Belize	–0.01	65.09	0.51	
71	South Africa	–0.03	64.71	0.50	
72	Trinidad and Tobago	–0.04	64.46	0.49	
73	Swaziland	–0.06	63.99	0.49	
74	Ukraine	–0.10	62.85	0.48	
75	Rwanda	–0.11	62.70	0.47	
76	Belarus	–0.11	62.64	0.46	
77	Burkina Faso	–0.11	62.61	0.46	
78	Greece	–0.11	62.57	0.45	
79	Fiji	–0.15	61.72	0.44	
80	Spain	–0.18	61.04	0.44	
81	Albania	–0.18	60.87	0.43	
82	Togo	–0.19	60.83	0.42	
83	Angola	–0.22	60.12	0.41	
84	Lao PDR	–0.23	59.86	0.41	
85	Saudi Arabia	–0.23	59.78	0.40	
86	Mali	–0.25	59.22	0.39	
87	Jordan	–0.27	58.90	0.39	
88	Azerbaijan	–0.31	57.89	0.38	
89	Bahrain	–0.34	57.11	0.37	
90	Senegal	–0.39	55.88	0.36	
91	Bolivia, Plurinational St.	–0.40	55.66	0.36	
92	Jamaica	–0.40	55.57	0.35	
93	Serbia	–0.41	55.52	0.34	
94	Moldova, Rep.	–0.42	55.25	0.34	
95	Macedonia, FYR	–0.47	53.95	0.33	
96	Guyana	–0.51	53.07	0.32	
97	Morocco	–0.52	52.81	0.31	
98	Honduras	–0.54	52.38	0.31	
99	Cameroon	–0.58	51.40	0.30	
100	Nicaragua	–0.61	50.68	0.29	
101	Cambodia	–0.62	50.41	0.29	
102	Ecuador	–0.63	50.11	0.28	
103	Bosnia and Herzegovina	–0.67	49.25	0.27	
104	Georgia	–0.68	48.87	0.26	
105	China	–0.77	46.83	0.26	
106	Uzbekistan	–0.78	46.56	0.25	
107	Mexico	–0.79	46.18	0.24	○
108	Guatemala	–0.80	46.11	0.24	
109	Syrian Arab Rep.	–0.81	45.64	0.23	
110	Sri Lanka	–0.83	45.39	0.22	
111	Peru	–0.87	44.38	0.21	
112	Paraguay	–0.88	44.15	0.21	
113	Indonesia	–0.89	43.91	0.20	
114	Russian Federation	–0.89	43.90	0.19	○
115	Egypt	–0.91	43.41	0.19	
116	Tajikistan	–0.91	43.31	0.18	
117	Kyrgyzstan	–0.96	42.24	0.17	
118	Turkey	–1.00	41.25	0.16	
119	Uganda	–1.12	38.27	0.16	
120	Madagascar	–1.13	37.93	0.15	
121	Niger	–1.14	37.89	0.14	
122	Kenya	–1.20	36.32	0.14	
123	Zimbabwe	–1.21	36.11	0.13	
124	Thailand	–1.22	35.83	0.12	○
125	Algeria	–1.25	35.10	0.11	
126	India	–1.31	33.57	0.11	
127	Venezuela, Bolivarian Rep.	–1.37	32.23	0.10	
128	Bangladesh	–1.42	30.91	0.09	
129	Israel	–1.49	29.37	0.09	○
130	Colombia	–1.49	29.23	0.08	○
131	Lebanon	–1.53	28.41	0.07	○
132	Burundi	–1.54	28.12	0.06	
133	Côte d'Ivoire	–1.55	27.80	0.06	○
134	Philippines	–1.56	27.68	0.05	○
135	Iran, Islamic Rep.	–1.57	27.53	0.04	○
136	Nepal	–1.68	24.64	0.04	○
137	Ethiopia	–1.71	24.13	0.03	
138	Nigeria	–2.05	15.88	0.02	○
139	Yemen	–2.22	11.65	0.01	○
140	Sudan	–2.70	0.11	0.01	○
141	Pakistan	–2.70	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators 2010*

1.1.2 Government effectiveness

Government effectiveness index* | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Singapore	2.25	100.00	1.00	●
2	Finland	2.24	99.81	0.99	●
3	Denmark	2.17	97.88	0.99	●
4	Sweden	2.02	93.92	0.98	●
5	Switzerland	1.91	91.18	0.97	
6	Austria	1.89	90.55	0.96	●
7	New Zealand	1.87	90.07	0.96	
8	Canada	1.87	89.96	0.95	
9	Australia	1.82	88.67	0.94	●
10	Norway	1.79	88.09	0.94	
11	Hong Kong (China)	1.74	86.60	0.93	
12	Netherlands	1.73	86.49	0.92	
13	Luxembourg	1.71	85.82	0.91	
14	Belgium	1.59	82.77	0.91	
15	Iceland	1.58	82.44	0.90	
16	United Kingdom	1.56	81.96	0.89	
17	Germany	1.55	81.80	0.89	
18	Cyprus	1.50	80.32	0.88	
19	United States of America	1.44	78.84	0.87	
20	France	1.44	78.80	0.86	
21	Japan	1.40	77.67	0.86	
22	Ireland	1.31	75.46	0.85	
23	Israel	1.24	73.61	0.84	
24	Estonia	1.22	73.05	0.84	
25	Korea, Rep.	1.19	72.21	0.83	
26	Chile	1.18	71.95	0.82	●
27	Malta	1.16	71.31	0.81	
28	Malaysia	1.10	69.79	0.81	
29	Portugal	1.04	68.24	0.80	
30	Slovenia	1.03	68.11	0.79	
31	Czech Republic	1.01	67.45	0.79	
32	Spain	0.98	66.80	0.78	
33	Qatar	0.94	65.55	0.77	
34	Brunei Darussalam	0.88	64.20	0.76	
35	Slovakia	0.85	63.41	0.76	
36	United Arab Emirates	0.78	61.54	0.75	
37	Mauritius	0.77	61.09	0.74	
38	Lithuania	0.72	59.97	0.74	
39	Poland	0.71	59.51	0.73	
40	Latvia	0.70	59.28	0.72	
41	Hungary	0.69	59.20	0.71	
42	Uruguay	0.66	58.17	0.71	
43	Croatia	0.62	57.15	0.70	
44	Bahrain	0.59	56.59	0.69	
45	Oman	0.59	56.34	0.69	
46	Greece	0.52	54.65	0.68	
47	Italy	0.52	54.50	0.67	
48	Botswana	0.51	54.34	0.66	
49	Turkey	0.35	50.16	0.66	
50	South Africa	0.34	49.88	0.65	
51	Costa Rica	0.32	49.35	0.64	
52	Georgia	0.29	48.61	0.64	
53	Trinidad and Tobago	0.25	47.65	0.63	
54	Tunisia	0.19	46.07	0.62	
55	Jamaica	0.18	45.78	0.61	
56	Mexico	0.17	45.37	0.61	
57	Colombia	0.14	44.74	0.60	
58	Panama	0.14	44.59	0.59	
59	China	0.12	44.20	0.59	
60	Namibia	0.10	43.61	0.58	
61	Kuwait	0.10	43.61	0.57	
62	Thailand	0.09	43.20	0.56	
63	Montenegro	0.08	43.05	0.56	
64	Jordan	0.08	43.04	0.55	
65	Brazil	0.07	42.84	0.54	
66	Bulgaria	0.01	41.15	0.54	
67	El Salvador	0.01	41.13	0.53	
68	Ghana	–0.01	40.80	0.52	
69	India	–0.01	40.77	0.51	
70	Rwanda	–0.05	39.60	0.51	
71	Saudi Arabia	–0.08	38.84	0.50	
72	Philippines	–0.10	38.25	0.49	
73	Serbia	–0.11	38.00	0.49	
74	Guyana	–0.14	37.36	0.48	
75	Romania	–0.14	37.19	0.47	
76	Armenia	–0.15	36.97	0.46	
77	Sri Lanka	–0.17	36.56	0.46	
78	Morocco	–0.17	36.51	0.45	
79	Macedonia, FYR	–0.18	36.31	0.44	
80	Indonesia	–0.20	35.85	0.44	
81	Peru	–0.21	35.55	0.43	
82	Argentina	–0.21	35.44	0.42	
83	Albania	–0.27	33.80	0.41	
84	Kazakhstan	–0.28	33.65	0.41	
85	Viet Nam	–0.31	32.84	0.40	
86	Lebanon	–0.34	31.92	0.39	
87	Ethiopia	–0.35	31.80	0.39	
88	Lesotho	–0.37	31.29	0.38	
89	Russian Federation	–0.39	30.62	0.37	
90	Malawi	–0.40	30.48	0.36	
91	Egypt	–0.43	29.65	0.36	
92	Belize	–0.44	29.36	0.35	
93	Bolivia, Plurinational St.	–0.45	29.11	0.34	
94	Mozambique	–0.47	28.68	0.34	
95	Tanzania, United Rep.	–0.50	27.77	0.33	
96	Senegal	–0.51	27.59	0.32	
97	Iran, Islamic Rep.	–0.52	27.36	0.31	
98	Swaziland	–0.52	27.25	0.31	
99	Kenya	–0.54	26.91	0.30	
100	Benin	–0.54	26.89	0.29	
101	Syrian Arab Rep.	–0.55	26.51	0.29	
102	Uganda	–0.55	26.44	0.28	
103	Algeria	–0.56	26.21	0.27	
104	Burkina Faso	–0.58	25.72	0.26	
105	Mongolia	–0.61	24.82	0.26	
106	Dominican Republic	–0.63	24.52	0.25	
107	Moldova, Rep.	–0.63	24.46	0.24	
108	Kyrgyzstan	–0.63	24.40	0.24	
109	Honduras	–0.67	23.41	0.23	
110	Gambia	–0.67	23.27	0.22	
111	Ecuador	–0.68	23.23	0.21	
112	Guatemala	–0.71	22.41	0.21	
113	Niger	–0.71	22.33	0.20	
114	Bosnia and Herzegovina	–0.73	21.69	0.19	
115	Fiji	–0.74	21.62	0.19	
116	Pakistan	–0.77	20.82	0.18	
117	Nepal	–0.77	20.79	0.17	
118	Ukraine	–0.77	20.63	0.16	○
119	Uzbekistan	–0.80	20.05	0.16	
120	Zambia	–0.80	19.92	0.15	
121	Madagascar	–0.82	19.35	0.14	
122	Cambodia	–0.83	19.27	0.14	
123	Azerbaijan	–0.84	18.93	0.13	
124	Bangladesh	–0.84	18.83	0.12	
125	Gabon	–0.86	18.51	0.11	
126	Mali	–0.88	17.84	0.11	
127	Cameroon	–0.89	17.72	0.10	
128	Tajikistan	–0.91	17.18	0.09	
129	Paraguay	–0.92	16.74	0.09	
130	Lao PDR	–0.94	16.22	0.08	
131	Nicaragua	–0.96	15.71	0.07	○
132	Venezuela, Bolivarian Rep.	–1.02	14.21	0.06	
133	Yemen	–1.03	13.84	0.06	
134	Burundi	–1.09	12.27	0.05	
135	Angola	–1.12	11.44	0.04	
136	Belarus	–1.13	11.26	0.04	○
137	Nigeria	–1.20	9.59	0.03	○
138	Côte d'Ivoire	–1.33	6.08	0.02	○
139	Sudan	–1.37	5.00	0.01	○
140	Togo	–1.39	4.56	0.01	○
141	Zimbabwe	–1.56	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators 2010*

1.1.3 Press freedom

Press freedom index* | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Finland	–10.00	100.00	0.99	●	
1	Norway	–10.00	100.00	0.99	●	
3	Estonia	–9.00	99.32	0.98	●	
3	Netherlands	–9.00	99.32	0.98	●	
5	Austria	–8.00	98.65	0.97	●	
6	Iceland	–7.00	97.97	0.96		
6	Luxembourg	–7.00	97.97	0.96		
8	Switzerland	–6.20	97.43	0.95		
9	Canada	–5.67	97.07	0.94		
9	Denmark	–5.67	97.07	0.94		
11	Sweden	–5.50	96.96	0.93		
12	New Zealand	–5.33	96.84	0.92		
13	Czech Republic	–5.00	96.62	0.91	●	
14	Ireland	–4.00	95.95	0.91		
15	Cyprus	–3.00	95.27	0.88		
15	Germany	–3.00	95.27	0.88		
15	Jamaica	–3.00	95.27	0.88	●	
18	Costa Rica	–2.25	94.76	0.88	●	
19	Belgium	–2.00	94.59	0.86		
19	Namibia	–2.00	94.59	0.86	●	
21	Japan	–1.00	93.92	0.86		
22	Poland	–0.67	93.70	0.85	●	
23	Mali	0.00	93.24	0.83	●	
23	Slovakia	0.00	93.24	0.83	●	
25	United Kingdom	2.00	91.89	0.83		
26	Niger	2.50	91.55	0.82	●	
27	Australia	4.00	90.54	0.81		
27	Lithuania	4.00	90.54	0.81		
29	Uruguay	4.25	90.37	0.80	●	
30	Portugal	5.33	89.64	0.79		
31	Tanzania, United Rep.	6.00	89.19	0.78	●	
32	Slovenia	9.14	87.07	0.78		
33	El Salvador	9.30	86.96	0.77	●	
34	France	9.50	86.82	0.76		
35	Spain	9.75	86.66	0.76		
36	Hungary	10.00	86.49	0.75		
37	Ghana	11.00	85.81	0.74	●	
38	Botswana	12.00	85.14	0.73		
38	South Africa	12.00	85.14	0.73		
40	Korea, Rep.	12.67	84.68	0.72		
41	Argentina	14.00	83.78	0.70		
41	Romania	14.00	83.78	0.70		
41	United States of America	14.00	83.78	0.70		
44	Latvia	15.00	83.11	0.68		
44	Trinidad and Tobago	15.00	83.11	0.68		
46	Moldova, Rep.	16.00	82.43	0.68		
47	Hong Kong (China)	17.00	81.76	0.66		
47	Mauritius	17.00	81.76	0.66		
49	Bosnia and Herzegovina	19.50	80.07	0.64		
49	Guyana	19.50	80.07	0.64		
49	Malta	19.50	80.07	0.64		
52	Italy	19.67	79.95	0.63		
53	Lesotho	21.00	79.05	0.63	●	
54	Mozambique	21.50	78.72	0.62		
55	Burkina Faso	23.33	77.48	0.60	●	
55	Croatia	23.33	77.48	0.60		
57	Greece	24.00	77.03	0.60		
58	Nicaragua	24.33	76.80	0.59		
59	Senegal	26.00	75.68	0.58		
60	Armenia	27.00	75.00	0.58		
61	Kuwait	28.00	74.32	0.57		
62	Togo	28.50	73.99	0.56		
63	Bulgaria	29.00	73.65	0.53		
63	Chile	29.00	73.65	0.53		
63	Paraguay	29.00	73.65	0.53		
63	Serbia	29.00	73.65	0.53		
67	Kenya	29.50	73.31	0.52		
67	Madagascar	29.50	73.31	0.52		
69	Zambia	30.00	72.97	0.51		
70	Benin	31.00	72.30	0.50	●	
71	Israel	31.25	72.13	0.50		
72	Lebanon	31.50	71.96	0.49		
73	Macedonia, FYR	31.67	71.84	0.48		
74	Dominican Republic	33.25	70.78	0.47		
75	Albania	34.44	69.97	0.47		
76	Cameroon	35.00	69.59	0.45		
76	Guatemala	35.00	69.59	0.45		
78	Brazil	35.33	69.37	0.45		
79	Mongolia	35.75	69.09	0.44		
80	Gabon	36.50	68.58	0.43		
81	Ecuador	38.00	67.57	0.42		
81	Georgia	38.00	67.57	0.42		
83	Nepal	38.75	67.06	0.41		
84	Montenegro	39.00	66.89	0.40		
85	Bolivia, Plurinational St.	40.00	66.22	0.39		
85	Kyrgyzstan	40.00	66.22	0.39		
87	United Arab Emirates	45.00	62.84	0.38		
88	Panama	45.67	62.39	0.37		
89	Qatar	46.00	62.16	0.37		
90	Peru	51.25	58.61	0.36		
91	Ukraine	54.00	56.76	0.35		
92	Cambodia	55.00	56.08	0.32		
92	Fiji	55.00	56.08	0.32		
92	Oman	55.00	56.08	0.32		
92	Venezuela, Bolivarian Rep.	55.00	56.08	0.32		
92	Zimbabwe	55.00	56.08	0.32		
97	Algeria	56.00	55.41	0.29		
97	Malaysia	56.00	55.41	0.29		○
97	Tajikistan	56.00	55.41	0.29		
100	Brunei Darussalam	56.20	55.27	0.29		
101	Nigeria	56.40	55.14	0.28		
102	Ethiopia	56.60	55.00	0.27		
103	Jordan	56.80	54.86	0.27		
104	Bangladesh	57.00	54.73	0.26		
105	Burundi	57.75	54.22	0.25		
106	India	58.00	54.05	0.24		
107	Angola	58.43	53.76	0.24		
108	Tunisia	60.25	52.53	0.23		○
109	Honduras	61.00	52.03	0.22		
109	Singapore	61.00	52.03	0.22		○
111	Thailand	61.50	51.69	0.21		○
112	Morocco	63.29	50.48	0.20		○
113	Uganda	64.00	50.00	0.19		
114	Philippines	64.50	49.66	0.19		
115	Gambia	65.50	48.99	0.18		
116	Russian Federation	66.00	48.65	0.17		○
117	Colombia	66.50	48.31	0.17		○
118	Swaziland	67.00	47.97	0.16		
119	Indonesia	68.00	47.30	0.14		
119	Malawi	68.00	47.30	0.14		
121	Turkey	70.00	45.95	0.14		○
122	Mexico	72.67	44.14	0.13		○
123	Pakistan	75.00	42.57	0.12		
124	Kazakhstan	77.50	40.88	0.12		○
125	Rwanda	81.00	38.51	0.11		
126	Uzbekistan	83.00	37.16	0.10		
127	Saudi Arabia	83.25	36.99	0.09		○
128	Côte d'Ivoire	83.50	36.82	0.09		
129	Azerbaijan	87.25	34.29	0.08		○
130	Sri Lanka	87.50	34.12	0.07		○
131	Lao PDR	89.00	33.11	0.06		
132	Egypt	97.50	27.36	0.06		○
133	Belarus	99.00	26.35	0.05		○
134	Sudan	100.75	25.17	0.04		
135	Yemen	101.00	25.00	0.04		
136	Viet Nam	114.00	16.22	0.03		○
137	Bahrain	125.00	8.78	0.02		○
138	China	136.00	1.35	0.01		○
139	Iran, Islamic Rep.	136.60	0.95	0.01		○
140	Syrian Arab Rep.	138.00	0.00	0.00		○
n/a	Belize	n/a	n/a	n/a		

SOURCE: Reporters Without Borders, *Press Freedom Index 2011–2012*

1.2.1 Regulatory quality

Regulatory quality index*[a] | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Denmark	1.90	100.00	1.00	●
2	Hong Kong (China)	1.89	99.73	0.99	
3	Finland	1.84	98.36	0.99	
4	Singapore	1.80	97.49	0.98	
5	Netherlands	1.79	97.26	0.97	●
6	New Zealand	1.79	97.18	0.96	●
7	United Kingdom	1.75	96.03	0.96	
8	Sweden	1.72	95.39	0.95	
9	Canada	1.69	94.55	0.94	
10	Luxembourg	1.69	94.55	0.94	
11	Australia	1.66	93.79	0.93	
12	Ireland	1.65	93.66	0.92	
13	Switzerland	1.65	93.66	0.91	
14	Germany	1.58	91.72	0.91	
15	Austria	1.52	90.44	0.90	
16	Norway	1.48	89.34	0.89	
17	Estonia	1.45	88.47	0.89	
18	Chile	1.44	88.34	0.88	●
19	Malta	1.42	87.82	0.87	
20	United States of America	1.42	87.74	0.86	
21	Cyprus	1.37	86.57	0.86	
22	France	1.34	85.70	0.85	
23	Belgium	1.30	84.83	0.84	
24	Czech Republic	1.24	83.12	0.84	
25	Israel	1.22	82.58	0.83	
26	Spain	1.19	81.98	0.82	
27	Brunei Darussalam	1.11	80.01	0.81	●
28	Hungary	1.05	78.51	0.81	
29	Slovakia	1.05	78.49	0.80	
30	Japan	0.98	76.62	0.79	
31	Latvia	0.98	76.54	0.79	
32	Lithuania	0.97	76.46	0.78	
33	Poland	0.97	76.46	0.77	
34	Korea, Rep.	0.91	74.93	0.76	
35	Iceland	0.91	74.81	0.76	
36	Italy	0.85	73.28	0.75	
37	Mauritius	0.85	73.24	0.74	
38	Portugal	0.82	72.51	0.74	
39	Bahrain	0.77	71.32	0.73	
40	Slovenia	0.75	70.86	0.72	
41	Romania	0.66	68.52	0.71	
42	Greece	0.65	68.32	0.71	
43	Bulgaria	0.61	67.14	0.70	
44	Malaysia	0.58	66.50	0.69	
45	Georgia	0.58	66.38	0.69	
46	Croatia	0.56	66.01	0.68	
47	Qatar	0.54	65.48	0.67	
48	Costa Rica	0.51	64.59	0.66	
49	Oman	0.51	64.58	0.66	
50	Trinidad and Tobago	0.49	64.17	0.65	
51	Botswana	0.47	63.71	0.64	
52	Peru	0.45	63.20	0.64	
53	Panama	0.40	61.96	0.63	
54	Uruguay	0.40	61.90	0.62	
55	South Africa	0.39	61.66	0.61	
56	United Arab Emirates	0.38	61.48	0.61	
57	Turkey	0.38	61.44	0.60	
58	El Salvador	0.37	61.18	0.59	
59	Colombia	0.31	59.50	0.59	
60	Jamaica	0.30	59.27	0.58	
61	Macedonia, FYR	0.28	58.90	0.57	
62	Mexico	0.28	58.79	0.56	
63	Armenia	0.28	58.78	0.56	
64	Jordan	0.24	57.94	0.55	
65	Albania	0.23	57.51	0.54	
66	Thailand	0.19	56.65	0.54	
67	Brazil	0.19	56.54	0.53	
68	Kuwait	0.18	56.19	0.52	
69	Saudi Arabia	0.15	55.47	0.51	
70	Namibia	0.14	55.30	0.51	
71	Ghana	0.09	54.03	0.50	
72	Lebanon	0.04	52.70	0.49	
73	Tunisia	–0.02	51.35	0.49	
74	Serbia	–0.02	51.24	0.48	
75	Montenegro	–0.06	50.20	0.47	
76	Bosnia and Herzegovina	–0.10	49.22	0.46	
77	Burkina Faso	–0.11	49.05	0.46	
78	Morocco	–0.11	48.85	0.45	
79	Moldova, Rep.	–0.12	48.78	0.44	
80	Kenya	–0.13	48.51	0.44	
81	Uganda	–0.13	48.39	0.43	
82	Rwanda	–0.18	47.29	0.42	
83	Guatemala	–0.18	47.24	0.41	
84	Egypt	–0.18	47.15	0.41	
85	Dominican Republic	–0.20	46.64	0.40	
86	Honduras	–0.20	46.55	0.39	
87	Sri Lanka	–0.21	46.49	0.39	
88	China	–0.23	45.88	0.38	
89	Kyrgyzstan	–0.25	45.45	0.37	
90	Philippines	–0.26	45.03	0.36	
91	Senegal	–0.27	44.78	0.36	
92	Mongolia	–0.28	44.58	0.35	
93	Kazakhstan	–0.32	43.53	0.34	
94	Benin	–0.33	43.48	0.34	
95	Paraguay	–0.35	42.80	0.33	
96	Mozambique	–0.37	42.45	0.32	
97	Nicaragua	–0.37	42.26	0.31	
98	Indonesia	–0.38	42.22	0.31	
99	India	–0.39	41.77	0.30	
100	Gambia	–0.39	41.75	0.29	
101	Russian Federation	–0.39	41.72	0.29	
102	Tanzania, United Rep.	–0.41	41.28	0.28	
103	Azerbaijan	–0.44	40.46	0.27	
104	Mali	–0.47	39.83	0.26	
105	Belize	–0.47	39.83	0.26	
106	Cambodia	–0.48	39.67	0.25	
107	Zambia	–0.49	39.23	0.24	
108	Niger	–0.50	39.05	0.24	
109	Guyana	–0.55	37.86	0.23	
110	Ukraine	–0.55	37.77	0.22	
111	Malawi	–0.57	37.39	0.21	
112	Viet Nam	–0.58	37.07	0.21	○
113	Madagascar	–0.59	36.72	0.20	
114	Pakistan	–0.60	36.60	0.19	
115	Yemen	–0.60	36.50	0.19	
116	Gabon	–0.62	36.09	0.18	
117	Lesotho	–0.62	36.00	0.17	
118	Swaziland	–0.65	35.25	0.16	
119	Fiji	–0.68	34.51	0.16	○
120	Argentina	–0.69	34.24	0.15	○
121	Cameroon	–0.72	33.55	0.14	
122	Nepal	–0.74	32.92	0.14	
123	Nigeria	–0.78	31.95	0.13	
124	Bolivia, Plurinational St.	–0.82	30.96	0.12	○
125	Bangladesh	–0.86	29.87	0.11	
126	Ethiopia	–0.88	29.30	0.11	
127	Togo	–0.89	29.04	0.10	
128	Côte d'Ivoire	–0.91	28.77	0.09	
129	Syrian Arab Rep.	–0.94	28.01	0.09	
130	Lao PDR	–1.03	25.59	0.08	
131	Angola	–1.05	25.17	0.07	
132	Tajikistan	–1.06	24.84	0.06	○
133	Burundi	–1.14	22.91	0.06	
134	Ecuador	–1.15	22.67	0.05	○
135	Algeria	–1.15	22.61	0.04	○
136	Belarus	–1.17	22.17	0.04	○
137	Sudan	–1.36	17.19	0.03	
138	Venezuela, Bolivarian Rep.	–1.58	11.62	0.02	○
139	Uzbekistan	–1.59	11.41	0.01	○
140	Iran, Islamic Rep.	–1.61	10.94	0.01	○
141	Zimbabwe	–2.04	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators 2010*

1.2.2 Rule of law

Rule of law index*[a] | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	1.97	100.00	1.00	●
2	Sweden	1.95	99.39	0.99	●
3	Norway	1.93	98.79	0.99	●
4	Denmark	1.88	97.54	0.98	●
5	New Zealand	1.86	97.12	0.97	●
6	Luxembourg	1.82	96.12	0.96	
7	Netherlands	1.81	95.70	0.96	
8	Austria	1.80	95.36	0.95	●
9	Canada	1.79	95.17	0.94	
10	Switzerland	1.78	94.90	0.94	
11	Australia	1.77	94.67	0.93	
12	United Kingdom	1.77	94.66	0.92	
13	Ireland	1.76	94.48	0.91	
14	Singapore	1.69	92.67	0.91	
15	Iceland	1.69	92.64	0.90	
16	Germany	1.63	90.90	0.89	
17	United States of America	1.58	89.75	0.89	
18	Hong Kong (China)	1.56	89.08	0.88	
19	France	1.52	88.16	0.87	
20	Malta	1.48	86.97	0.86	
21	Belgium	1.40	84.84	0.86	
22	Japan	1.31	82.57	0.85	
23	Chile	1.29	81.94	0.84	●
24	Spain	1.19	79.41	0.84	
25	Cyprus	1.19	79.25	0.83	
26	Estonia	1.15	78.19	0.82	
27	Portugal	1.04	75.35	0.81	
28	Slovenia	1.02	74.84	0.81	
29	Korea, Rep.	0.99	73.96	0.80	
30	Czech Republic	0.95	73.01	0.79	
31	Israel	0.88	70.98	0.79	
32	Qatar	0.87	70.75	0.78	
33	Mauritius	0.84	70.07	0.77	
34	Latvia	0.82	69.35	0.76	
35	Brunei Darussalam	0.80	68.87	0.76	
36	Hungary	0.78	68.35	0.75	
37	Lithuania	0.76	67.90	0.74	
38	Uruguay	0.72	66.74	0.74	
39	Poland	0.69	65.95	0.73	
40	Oman	0.67	65.49	0.72	
41	Botswana	0.66	65.33	0.71	
42	Greece	0.62	64.05	0.71	
43	Slovakia	0.58	63.15	0.70	
44	Kuwait	0.54	62.17	0.69	
45	Malaysia	0.51	61.28	0.69	
46	Costa Rica	0.50	61.05	0.68	
47	Bahrain	0.45	59.65	0.67	
48	United Arab Emirates	0.39	57.99	0.66	
49	Italy	0.38	57.88	0.66	
50	Namibia	0.23	53.84	0.65	
51	Jordan	0.22	53.56	0.64	
52	Croatia	0.19	52.68	0.64	
53	Saudi Arabia	0.16	52.04	0.63	
54	Tunisia	0.11	50.73	0.62	
55	Turkey	0.10	50.50	0.61	
56	South Africa	0.10	50.33	0.61	
57	Romania	0.05	49.06	0.60	
58	Brazil	0.00	47.80	0.59	
59	Montenegro	−0.02	47.35	0.59	
60	India	−0.06	46.21	0.58	
61	Ghana	−0.07	45.84	0.57	
62	Bulgaria	−0.08	45.62	0.56	
63	Sri Lanka	−0.09	45.42	0.56	
64	Egypt	−0.11	44.86	0.55	
65	Panama	−0.13	44.30	0.54	
66	Malawi	−0.14	44.06	0.54	
67	Morocco	−0.19	42.83	0.53	
68	Thailand	−0.20	42.56	0.52	
69	Georgia	−0.21	42.20	0.51	
70	Burkina Faso	−0.21	42.07	0.51	
71	Trinidad and Tobago	−0.22	41.80	0.50	
72	Macedonia, FYR	−0.29	39.93	0.49	
73	Lesotho	−0.30	39.83	0.49	
74	Rwanda	−0.31	39.47	0.48	
75	Colombia	−0.33	38.93	0.47	
76	China	−0.35	38.55	0.46	
77	Bosnia and Herzegovina	−0.36	38.09	0.46	
78	Belize	−0.36	38.08	0.45	
79	Serbia	−0.39	37.43	0.44	
80	Moldova, Rep.	−0.40	37.16	0.44	
81	Uganda	−0.40	37.05	0.43	
82	Senegal	−0.41	37.01	0.42	
83	Mongolia	−0.43	36.46	0.41	
84	Albania	−0.44	36.15	0.41	
85	Mali	−0.46	35.53	0.40	
86	Armenia	−0.47	35.27	0.39	
87	Guyana	−0.48	35.14	0.39	
88	Viet Nam	−0.48	34.94	0.38	
89	Zambia	−0.49	34.65	0.37	
90	Swaziland	−0.50	34.60	0.36	
91	Jamaica	−0.50	34.57	0.36	
92	Mozambique	−0.50	34.48	0.35	
93	Tanzania, United Rep.	−0.51	34.18	0.34	
94	Gambia	−0.51	34.17	0.34	
95	Gabon	−0.51	34.15	0.33	
96	Syrian Arab Rep.	−0.54	33.39	0.32	
97	Philippines	−0.54	33.39	0.31	
98	Mexico	−0.56	32.89	0.31	
99	Niger	−0.57	32.68	0.30	
100	Argentina	−0.58	32.48	0.29	
101	Peru	−0.61	31.48	0.29	
102	Kazakhstan	−0.62	31.29	0.28	
103	Indonesia	−0.63	31.04	0.27	
104	Lebanon	−0.66	30.18	0.26	
105	Benin	−0.73	28.35	0.26	
106	Ethiopia	−0.76	27.72	0.25	
107	Algeria	−0.76	27.63	0.24	
108	Bangladesh	−0.77	27.37	0.24	
109	Russian Federation	−0.78	26.97	0.23	○
110	Pakistan	−0.79	26.92	0.22	
111	Ukraine	−0.80	26.43	0.21	○
112	Dominican Republic	−0.81	26.35	0.21	
113	Nicaragua	−0.83	25.80	0.20	
114	Madagascar	−0.84	25.41	0.19	
115	Honduras	−0.87	24.66	0.19	
116	El Salvador	−0.87	24.65	0.18	
117	Azerbaijan	−0.88	24.34	0.17	
118	Lao PDR	−0.90	23.97	0.16	
119	Iran, Islamic Rep.	−0.90	23.85	0.16	
120	Fiji	−0.90	23.80	0.15	○
121	Paraguay	−0.92	23.35	0.14	
122	Togo	−0.92	23.30	0.14	
123	Kenya	−1.01	20.93	0.13	○
124	Nepal	−1.02	20.68	0.12	
125	Guatemala	−1.04	20.27	0.11	
126	Cameroon	−1.04	20.08	0.11	
127	Belarus	−1.05	20.02	0.10	○
128	Yemen	−1.05	19.87	0.09	
129	Bolivia, Plurinational St.	−1.06	19.51	0.09	○
130	Cambodia	−1.09	18.91	0.08	
131	Ecuador	−1.17	16.83	0.07	○
132	Tajikistan	−1.20	16.03	0.06	○
133	Nigeria	−1.21	15.78	0.06	
134	Burundi	−1.21	15.64	0.05	
135	Côte d'Ivoire	−1.22	15.46	0.04	○
136	Angola	−1.24	14.77	0.04	
137	Kyrgyzstan	−1.29	13.50	0.03	○
138	Sudan	−1.32	12.75	0.02	○
139	Uzbekistan	−1.37	11.36	0.01	○
140	Venezuela, Bolivarian Rep.	−1.64	4.19	0.01	○
141	Zimbabwe	−1.80	0.00	0.00	○

SOURCE: World Bank, *World Governance Indicators 2010*

1.2.3 Cost of redundancy dismissal

Sum of notice period and severance pay for redundancy dismissal (in salary weeks, averages for workers with 1, 5, and 10 years of tenure, with a minimum threshold of 8 weeks) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Austria	8.00	100.00	0.86	●
1	Bahrain	8.00	100.00	0.86	●
1	Belgium	8.00	100.00	0.86	●
1	Brunei Darussalam	8.00	100.00	0.86	●
1	Bulgaria	8.00	100.00	0.86	●
1	Cyprus	8.00	100.00	0.86	●
1	Denmark	8.00	100.00	0.86	●
1	Georgia	8.00	100.00	0.86	●
1	Hong Kong (China)	8.00	100.00	0.86	●
1	Ireland	8.00	100.00	0.86	●
1	Italy	8.00	100.00	0.86	●
1	Japan	8.00	100.00	0.86	●
1	Jordan	8.00	100.00	0.86	●
1	New Zealand	8.00	100.00	0.86	●
1	Oman	8.00	100.00	0.86	●
1	Serbia	8.00	100.00	0.86	●
1	Singapore	8.00	100.00	0.86	●
1	United Arab Emirates	8.00	100.00	0.86	●
1	United Kingdom	8.00	100.00	0.86	●
1	United States of America	8.00	100.00	0.86	●
21	Belize	8.33	99.34	0.85	●
21	Romania	8.33	99.34	0.85	●
23	Kazakhstan	8.67	98.68	0.80	●
23	Lebanon	8.67	98.68	0.80	
23	Mongolia	8.67	98.68	0.80	
23	Netherlands	8.67	98.68	0.80	
23	Norway	8.67	98.68	0.80	
23	Syrian Arab Rep.	8.67	98.68	0.80	●
23	Uganda	8.67	98.68	0.80	●
30	Bosnia and Herzegovina	9.22	97.58	0.79	●
31	South Africa	9.33	97.36	0.77	
31	Tanzania, United Rep.	9.33	97.36	0.77	●
33	Fiji	9.67	96.70	0.75	●
33	Latvia	9.67	96.70	0.75	
33	Namibia	9.67	96.70	0.75	
36	Canada	10.00	96.04	0.74	
37	Finland	10.11	95.82	0.72	
37	Iceland	10.11	95.82	0.72	
37	Poland	10.11	95.82	0.72	
37	Switzerland	10.11	95.82	0.72	
41	Niger	10.12	95.80	0.71	●
42	Burkina Faso	10.47	95.10	0.70	●
43	Mauritius	10.62	94.81	0.69	
44	Armenia	11.00	94.06	0.69	
45	Slovenia	11.42	93.23	0.68	
46	Peru	11.43	93.21	0.67	
47	Benin	11.63	92.82	0.66	●
47	Togo	11.63	92.82	0.66	●
49	Australia	11.67	92.74	0.65	
50	France	11.84	92.39	0.64	
51	Tunisia	12.10	91.89	0.64	
52	Madagascar	12.25	91.58	0.63	●
53	Estonia	12.90	90.29	0.62	
54	Rwanda	12.95	90.19	0.61	●
55	Macedonia, FYR	13.00	90.10	0.60	
55	Ukraine	13.00	90.10	0.60	
57	Côte d'Ivoire	13.07	89.96	0.59	●
58	Brazil	13.16	89.78	0.58	
59	Hungary	13.41	89.28	0.58	
60	Mali	13.65	88.81	0.57	●
61	Senegal	13.69	88.72	0.56	
62	Jamaica	14.00	88.12	0.55	
63	Cameroon	14.20	87.72	0.55	●
64	Sweden	14.44	87.24	0.54	○
65	Swaziland	14.57	86.99	0.53	
66	Gabon	14.78	86.58	0.53	
67	Nicaragua	14.93	86.29	0.52	
68	Lesotho	15.00	86.14	0.51	
69	Croatia	15.11	85.92	0.50	
70	Tajikistan	15.53	85.09	0.50	
71	India	15.76	84.63	0.48	
71	Kenya	15.76	84.63	0.48	
73	Angola	15.84	84.47	0.47	●
74	Burundi	15.89	84.38	0.47	●
75	Nigeria	16.20	83.76	0.46	
76	Chile	16.29	83.59	0.45	
77	Colombia	16.67	82.84	0.43	
77	Guyana	16.67	82.84	0.43	
77	Malawi	16.67	82.84	0.43	
80	Algeria	17.33	81.52	0.41	
80	Kyrgyzstan	17.33	81.52	0.41	
80	Russian Federation	17.33	81.52	0.41	
83	Spain	17.38	81.42	0.40	○
84	Costa Rica	18.70	78.81	0.39	
85	Panama	19.00	78.22	0.39	
86	Cambodia	19.37	77.49	0.38	
87	Saudi Arabia	19.45	77.32	0.37	
88	Greece	19.50	77.23	0.36	
89	Trinidad and Tobago	20.51	75.22	0.36	
90	Ethiopia	20.59	75.07	0.35	
91	Morocco	20.69	74.87	0.34	
92	Uruguay	20.80	74.65	0.34	
93	Albania	20.83	74.60	0.33	
94	Germany	21.56	73.16	0.32	○
95	Azerbaijan	21.67	72.94	0.28	
95	Belarus	21.67	72.94	0.28	
95	Czech Republic	21.67	72.94	0.28	○
95	Luxembourg	21.67	72.94	0.28	○
95	Uzbekistan	21.67	72.94	0.28	
100	Botswana	21.69	72.89	0.28	
101	Mexico	22.00	72.28	0.27	
102	Moldova, Rep.	22.60	71.09	0.26	
103	El Salvador	22.86	70.58	0.26	
104	Iran, Islamic Rep.	23.11	70.08	0.23	
104	Slovakia	23.11	70.08	0.23	○
104	Viet Nam	23.11	70.08	0.23	
107	Qatar	23.22	69.86	0.23	
108	Malaysia	23.89	68.54	0.22	○
109	Lithuania	24.56	67.22	0.21	○
110	Gambia	26.00	64.36	0.20	
110	Sudan	26.00	64.36	0.20	
112	Paraguay	26.07	64.21	0.19	
113	Dominican Republic	26.18	64.00	0.18	
114	Guatemala	26.96	62.45	0.18	
115	Nepal	27.19	62.00	0.16	
115	Pakistan	27.19	62.00	0.16	
117	China	27.40	61.59	0.14	
117	Korea, Rep.	27.40	61.59	0.14	○
117	Yemen	27.40	61.59	0.14	
120	Israel	27.44	61.50	0.12	○
120	Philippines	27.44	61.50	0.12	
122	Kuwait	28.12	60.16	0.12	○
123	Montenegro	28.14	60.11	0.11	○
124	Turkey	29.78	56.88	0.10	○
125	Argentina	30.33	55.78	0.09	○
125	Honduras	30.33	55.78	0.09	○
127	Bangladesh	31.00	54.46	0.08	
128	Portugal	33.86	48.80	0.07	○
129	Thailand	36.00	44.55	0.07	○
130	Ecuador	36.11	44.33	0.06	○
131	Egypt	36.83	42.90	0.05	○
132	Mozambique	41.12	34.42	0.04	○
133	Lao PDR	47.16	22.45	0.04	○
134	Ghana	49.78	17.27	0.03	○
135	Zambia	50.56	15.73	0.02	○
136	Indonesia	57.78	1.43	0.01	○
137	Sri Lanka	58.50	0.00	0.00	○
137	Zimbabwe	82.33	0.00	0.00	○
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: World Bank, *Doing Business 2012, Employing Workers*

1.3.1 Ease of starting a business

Ease of starting a business, percent rank index*[r] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	New Zealand	1.00	100.00	1.00	●
2	Australia	0.99	99.20	0.99	●
3	Canada	0.99	98.50	0.99	●
4	Singapore	0.98	97.80	0.98	
5	Macedonia, FYR	0.98	97.10	0.97	●
6	Hong Kong (China)	0.97	96.40	0.96	
7	Belarus	0.97	95.60	0.96	●
8	Georgia	0.96	94.90	0.95	●
9	Ireland	0.96	93.50	0.94	
9	Rwanda	0.96	93.50	0.94	●
11	United States of America	0.95	92.80	0.93	
12	Mauritius	0.94	92.00	0.92	●
13	Kyrgyzstan	0.93	91.30	0.91	●
14	Saudi Arabia	0.93	90.60	0.91	●
15	Azerbaijan	0.92	89.90	0.90	●
16	United Kingdom	0.91	89.20	0.89	
17	Egypt	0.91	88.40	0.88	●
18	Jamaica	0.90	87.70	0.88	●
19	Armenia	0.90	87.00	0.87	●
20	France	0.88	86.30	0.86	
21	Panama	0.88	85.60	0.86	●
22	Cyprus	0.86	84.80	0.85	
23	Denmark	0.86	84.10	0.84	
24	Slovenia	0.85	83.40	0.83	
25	Iceland	0.85	82.70	0.83	
26	Romania	0.84	82.00	0.82	
27	Belgium	0.83	81.20	0.81	
28	Finland	0.82	79.80	0.80	
28	Norway	0.82	79.80	0.80	
30	Sri Lanka	0.81	79.10	0.79	●
31	Israel	0.81	78.40	0.78	
32	Hungary	0.80	77.60	0.78	
33	Estonia	0.80	76.90	0.77	
34	Sweden	0.79	76.20	0.76	
35	Bulgaria	0.77	74.80	0.75	
35	Iran, Islamic Rep.	0.77	74.80	0.75	●
37	United Arab Emirates	0.76	74.10	0.74	
38	Montenegro	0.75	72.60	0.73	
38	Tunisia	0.75	72.60	0.73	
40	Kazakhstan	0.74	71.90	0.72	
41	Latvia	0.72	71.20	0.71	
42	Peru	0.71	70.50	0.71	
43	Yemen	0.70	69.70	0.70	●
44	Albania	0.70	69.00	0.69	
45	Croatia	0.69	68.30	0.68	
46	Zambia	0.69	67.60	0.68	●
47	Korea, Rep.	0.68	66.10	0.66	
47	Portugal	0.68	66.10	0.66	
49	Chile	0.66	65.40	0.65	
50	Turkey	0.66	64.70	0.65	
51	Mozambique	0.65	64.00	0.64	●
52	Mexico	0.64	63.30	0.63	
53	Italy	0.64	62.50	0.63	
54	Netherlands	0.63	61.80	0.62	
55	Trinidad and Tobago	0.63	61.10	0.61	
56	Madagascar	0.62	60.40	0.60	●
57	Colombia	0.60	59.70	0.60	
58	Slovakia	0.60	58.20	0.58	
58	South Africa	0.60	58.20	0.58	
60	Oman	0.59	57.50	0.58	
61	Switzerland	0.58	56.80	0.57	○
62	Bahrain	0.58	55.30	0.55	
62	Luxembourg	0.58	55.30	0.55	
64	Bangladesh	0.57	54.60	0.55	
65	Serbia	0.56	53.90	0.54	
66	Morocco	0.55	53.20	0.53	
67	Ghana	0.54	52.50	0.53	
68	Pakistan	0.53	51.70	0.52	●
69	Mongolia	0.53	51.00	0.51	
70	Lao PDR	0.52	50.30	0.50	●
71	Germany	0.52	48.90	0.49	○
71	Lithuania	0.52	48.90	0.49	
73	Ethiopia	0.51	48.20	0.48	
74	Botswana	0.50	47.40	0.47	
75	Guyana	0.49	46.70	0.47	
76	Nepal	0.48	46.00	0.46	
77	Moldova, Rep.	0.48	45.30	0.45	
78	Thailand	0.47	44.60	0.45	
79	Jordan	0.47	43.80	0.44	
80	Japan	0.46	43.10	0.43	
81	Viet Nam	0.46	42.40	0.42	
82	Paraguay	0.45	41.70	0.42	
83	Burundi	0.45	41.00	0.41	●
84	Senegal	0.44	40.20	0.40	
85	Lebanon	0.43	39.50	0.40	
86	Fiji	0.43	38.80	0.39	
87	Russian Federation	0.42	38.10	0.38	
88	Uzbekistan	0.42	37.40	0.37	
89	Nigeria	0.41	36.60	0.37	
90	Malaysia	0.40	35.90	0.36	○
91	Gambia	0.38	35.20	0.35	
92	Poland	0.37	34.50	0.35	
93	Costa Rica	0.37	33.80	0.34	
94	Mali	0.36	33.00	0.33	
95	Burkina Faso	0.36	31.60	0.32	
95	Ukraine	0.36	31.60	0.32	
97	Nicaragua	0.34	30.90	0.31	
98	Tanzania, United Rep.	0.34	30.20	0.30	
99	Sudan	0.33	29.40	0.29	
100	Qatar	0.32	28.70	0.29	
101	Brazil	0.32	28.00	0.28	
102	Namibia	0.31	27.30	0.27	
103	Austria	0.31	26.60	0.27	○
104	Kenya	0.30	25.80	0.26	
105	El Salvador	0.30	25.10	0.25	
106	Czech Republic	0.29	24.40	0.24	○
107	Cameroon	0.29	23.70	0.24	
108	Malawi	0.28	23.00	0.23	
109	Syrian Arab Rep.	0.27	22.30	0.22	
110	Brunei Darussalam	0.27	21.50	0.22	
111	Uganda	0.26	20.80	0.21	
112	Tajikistan	0.25	20.10	0.20	
113	Dominican Republic	0.25	19.40	0.19	
114	Uruguay	0.24	18.70	0.19	
115	Lesotho	0.24	17.90	0.18	
116	Kuwait	0.23	17.20	0.17	
117	Zimbabwe	0.23	16.50	0.17	
118	Argentina	0.22	15.80	0.16	○
119	Venezuela, Bolivarian Rep.	0.21	15.10	0.15	
120	Honduras	0.20	14.30	0.14	
121	Belize	0.20	13.60	0.14	
122	Spain	0.19	12.90	0.13	○
123	Greece	0.19	12.20	0.12	○
124	Algeria	0.18	10.70	0.11	
124	China	0.18	10.70	0.11	○
126	Gabon	0.16	10.00	0.10	○
127	Philippines	0.15	9.30	0.09	○
128	Indonesia	0.15	8.60	0.09	○
129	Swaziland	0.14	7.90	0.08	
130	Benin	0.14	7.10	0.07	
131	Niger	0.13	6.40	0.06	
132	Ecuador	0.13	5.70	0.06	○
133	Bosnia and Herzegovina	0.12	5.00	0.05	○
134	Guatemala	0.11	4.30	0.04	○
135	Angola	0.10	3.50	0.04	
136	India	0.09	2.80	0.03	○
137	Bolivia, Plurinational St.	0.09	2.10	0.02	○
138	Togo	0.08	1.40	0.01	○
139	Cambodia	0.07	0.70	0.01	○
140	Côte d'Ivoire	0.07	0.00	0.00	○
n/a	Malta	n/a	n/a	n/a	

SOURCE: World Bank, Ease of Doing Business Index 2012, *Doing Business 2012*

1.3.2 Ease of resolving insolvency

Ease of resolving insolvency, percent rank index*r | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Japan	1.00	100.00	1.00	●
2	Singapore	0.99	99.20	0.99	
3	Canada	0.99	98.50	0.99	●
4	Norway	0.98	97.80	0.98	
5	Denmark	0.98	97.10	0.97	●
6	Finland	0.97	96.40	0.96	
7	United Kingdom	0.97	95.60	0.96	
8	Belgium	0.96	94.90	0.95	●
9	Ireland	0.96	94.20	0.94	
10	Netherlands	0.95	93.50	0.94	
11	Australia	0.94	92.80	0.93	
12	Korea, Rep.	0.93	92.00	0.92	
13	United States of America	0.93	91.30	0.91	
14	Hong Kong (China)	0.92	90.60	0.91	
15	New Zealand	0.92	89.90	0.90	
16	Iceland	0.91	89.20	0.89	
17	Sweden	0.91	88.40	0.88	
18	Austria	0.90	87.70	0.88	
19	Portugal	0.90	87.00	0.87	●
20	Spain	0.89	86.30	0.86	
21	Cyprus	0.88	85.60	0.86	
22	Mexico	0.88	84.80	0.85	●
23	Jamaica	0.87	84.10	0.84	●
24	Bahrain	0.86	83.40	0.83	
25	Botswana	0.86	82.70	0.83	●
26	Belize	0.85	82.00	0.82	●
27	Colombia	0.85	81.20	0.81	
28	Italy	0.84	80.50	0.81	
29	Czech Republic	0.83	79.80	0.80	
30	Slovakia	0.82	79.10	0.79	
31	Germany	0.81	78.40	0.78	
32	Qatar	0.81	77.60	0.78	
33	Tunisia	0.80	76.90	0.77	●
34	Slovenia	0.80	76.20	0.76	
35	Lithuania	0.79	75.50	0.76	
36	Israel	0.79	74.80	0.75	
37	Switzerland	0.77	74.10	0.74	
38	Brunei Darussalam	0.77	73.30	0.73	
39	Sri Lanka	0.76	72.60	0.73	●
40	France	0.76	71.90	0.72	
41	Luxembourg	0.75	71.20	0.71	
42	Thailand	0.75	70.50	0.71	
43	Montenegro	0.74	69.70	0.70	
44	Kazakhstan	0.74	69.00	0.69	
45	Greece	0.73	68.30	0.68	
46	Algeria	0.72	67.60	0.68	●
47	Namibia	0.71	66.90	0.67	
48	Macedonia, FYR	0.70	66.10	0.66	
49	Armenia	0.70	65.40	0.65	
50	Malaysia	0.69	64.70	0.65	
51	Uganda	0.69	64.00	0.64	●
52	Uruguay	0.68	63.30	0.63	
53	Russian Federation	0.68	62.50	0.63	
54	Bolivia, Plurinational St.	0.67	61.80	0.62	●
55	Albania	0.66	61.10	0.61	
56	Morocco	0.66	60.40	0.60	
57	Kuwait	0.65	59.70	0.60	
58	Hungary	0.64	58.90	0.59	
59	Swaziland	0.64	58.20	0.58	
60	Tajikistan	0.63	57.50	0.58	●
61	Saudi Arabia	0.63	56.80	0.57	
62	Pakistan	0.62	56.10	0.56	●
63	China	0.61	55.30	0.55	
64	Lesotho	0.60	54.60	0.55	
65	Poland	0.60	53.90	0.54	
66	Estonia	0.59	53.20	0.53	
67	Mauritius	0.59	52.50	0.53	
68	Oman	0.58	51.70	0.52	
69	Bosnia and Herzegovina	0.58	51.00	0.51	
70	South Africa	0.57	50.30	0.50	
71	Nicaragua	0.57	49.60	0.50	
72	Côte d'Ivoire	0.56	48.90	0.49	●
73	Argentina	0.55	48.20	0.48	
74	Panama	0.55	47.40	0.47	
75	Sudan	0.54	46.70	0.47	●
76	Senegal	0.54	46.00	0.46	
77	Latvia	0.53	45.30	0.45	
78	Ethiopia	0.53	44.60	0.45	
79	Bulgaria	0.52	43.80	0.44	
80	Togo	0.52	43.10	0.43	
81	Kenya	0.51	42.40	0.42	
82	Serbia	0.51	41.70	0.42	
83	El Salvador	0.50	41.00	0.41	
84	Azerbaijan	0.49	40.20	0.40	
85	Croatia	0.49	39.50	0.40	
86	Yemen	0.48	38.80	0.39	
87	Chile	0.48	38.10	0.38	
88	Moldova, Rep.	0.47	37.40	0.37	
89	Belarus	0.47	36.60	0.37	
90	Guatemala	0.46	35.90	0.36	
91	Syrian Arab Rep.	0.46	35.20	0.35	
92	Peru	0.45	34.50	0.35	
93	Zambia	0.44	33.80	0.34	
94	Jordan	0.43	33.00	0.33	
95	Nigeria	0.43	32.30	0.32	
96	Burkina Faso	0.42	31.60	0.32	
97	Bangladesh	0.41	30.90	0.31	
98	Romania	0.41	30.20	0.30	
99	Georgia	0.40	29.40	0.29	
100	Mali	0.39	28.70	0.29	
101	Nepal	0.38	28.00	0.28	
102	Ghana	0.37	27.30	0.27	
103	Iran, Islamic Rep.	0.36	26.60	0.27	
104	Uzbekistan	0.35	25.80	0.26	
105	Tanzania, United Rep.	0.35	25.10	0.25	
106	Costa Rica	0.34	24.40	0.24	
107	Turkey	0.34	23.70	0.24	
108	Fiji	0.33	23.00	0.23	
109	Benin	0.32	22.30	0.22	
110	Mongolia	0.32	21.50	0.22	
111	Honduras	0.31	20.80	0.21	
112	Gambia	0.31	20.10	0.20	
113	Lebanon	0.30	19.40	0.19	
114	Viet Nam	0.29	18.70	0.19	○
115	Malawi	0.29	17.90	0.18	
116	Mozambique	0.27	17.20	0.17	
117	Guyana	0.26	16.50	0.17	
118	Egypt	0.26	15.80	0.16	○
119	Brazil	0.25	15.10	0.15	○
120	Ecuador	0.25	14.30	0.14	
121	Trinidad and Tobago	0.24	13.60	0.14	
122	India	0.24	12.90	0.13	
123	Paraguay	0.23	12.20	0.12	
124	Niger	0.23	11.50	0.12	
125	Kyrgyzstan	0.21	10.70	0.11	
126	Gabon	0.21	10.00	0.10	○
127	Madagascar	0.20	9.30	0.09	
128	Cameroon	0.19	8.60	0.09	
129	Indonesia	0.19	7.90	0.08	○
130	Cambodia	0.18	7.10	0.07	
131	United Arab Emirates	0.18	6.40	0.06	○
132	Dominican Republic	0.16	5.70	0.06	○
133	Angola	0.15	5.00	0.05	
134	Ukraine	0.14	4.30	0.04	○
135	Venezuela, Bolivarian Rep.	0.13	3.50	0.04	
136	Philippines	0.12	2.80	0.03	○
137	Rwanda	0.11	2.10	0.02	○
138	Zimbabwe	0.09	1.40	0.01	○
139	Burundi	0.09	0.00	0.00	○
139	Lao PDR	0.09	0.00	0.00	○
n/a	Malta	n/a	n/a	n/a	

SOURCE: World Bank, Ease of Doing Business Index 2012, *Doing Business 2012*

1.3.3 Ease of paying taxes

Ease of paying taxes, percent rank index*r | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Qatar	0.99	100.00	1.00	●
2	Hong Kong (China)	0.99	99.20	0.99	
3	Singapore	0.98	98.50	0.99	
4	Ireland	0.98	97.80	0.98	●
5	United Arab Emirates	0.97	97.10	0.97	●
6	Canada	0.96	96.40	0.96	●
7	Oman	0.96	95.60	0.96	●
8	Saudi Arabia	0.95	94.90	0.95	●
9	Mauritius	0.95	94.20	0.94	●
10	Denmark	0.94	93.50	0.94	
11	Switzerland	0.93	92.80	0.93	
12	Kuwait	0.93	92.00	0.92	●
13	Luxembourg	0.92	91.30	0.91	
14	Bahrain	0.92	90.60	0.91	
15	Brunei Darussalam	0.91	89.90	0.90	●
16	South Africa	0.91	89.20	0.89	●
17	Jordan	0.90	88.40	0.88	●
18	Botswana	0.90	87.70	0.88	●
19	United Kingdom	0.89	87.00	0.87	
20	Malawi	0.88	86.30	0.86	●
21	Norway	0.88	85.60	0.86	
22	Macedonia, FYR	0.87	84.80	0.85	●
23	Kazakhstan	0.86	84.10	0.84	●
24	Lebanon	0.85	83.40	0.83	
25	Croatia	0.84	82.70	0.83	●
26	Rwanda	0.82	82.00	0.82	●
27	Cyprus	0.82	81.20	0.81	
28	Ethiopia	0.81	79.80	0.80	●
28	Iceland	0.81	79.80	0.80	
30	New Zealand	0.80	79.10	0.79	
31	Malaysia	0.79	78.40	0.78	
32	Korea, Rep.	0.79	77.60	0.78	
33	Netherlands	0.78	76.90	0.77	
34	Chile	0.77	75.50	0.76	
34	Estonia	0.77	75.50	0.76	
36	Zambia	0.76	74.80	0.75	●
37	Sweden	0.75	74.10	0.74	
38	Australia	0.74	73.30	0.73	
39	Cambodia	0.73	72.60	0.73	●
40	Ghana	0.72	71.90	0.72	●
41	Mongolia	0.71	71.20	0.71	
42	Swaziland	0.71	70.50	0.71	
43	France	0.70	69.70	0.70	
44	Israel	0.69	69.00	0.69	
45	Finland	0.68	68.30	0.68	
46	Lesotho	0.68	67.60	0.68	●
47	Tunisia	0.67	66.90	0.67	
48	Georgia	0.66	66.10	0.66	
49	Latvia	0.65	65.40	0.65	
50	Lithuania	0.64	64.70	0.65	
51	Uganda	0.63	64.00	0.64	●
52	United States of America	0.62	63.30	0.63	
53	Bulgaria	0.61	62.50	0.63	
54	Belize	0.60	61.80	0.62	
55	Madagascar	0.60	61.10	0.61	●
56	Belgium	0.59	60.40	0.60	
57	Spain	0.59	59.70	0.60	
58	Portugal	0.58	58.90	0.59	
59	Fiji	0.58	58.20	0.58	
60	Moldova, Rep.	0.57	57.50	0.58	
61	Greece	0.57	56.80	0.57	
62	Austria	0.56	56.10	0.56	
63	Dominican Republic	0.55	55.30	0.55	
64	Turkey	0.55	54.60	0.55	
65	Germany	0.54	53.90	0.54	
66	Slovenia	0.53	53.20	0.53	
67	Ecuador	0.52	52.50	0.53	
68	Nepal	0.51	51.70	0.52	
69	Peru	0.49	51.00	0.51	
70	Thailand	0.49	50.30	0.50	
71	Bangladesh	0.48	49.60	0.50	
72	Trinidad and Tobago	0.47	48.90	0.49	
73	Sudan	0.46	48.20	0.48	●
74	Namibia	0.46	47.40	0.47	
75	Mozambique	0.43	46.70	0.47	
76	Azerbaijan	0.43	46.00	0.46	
77	Syrian Arab Rep.	0.42	45.30	0.45	
78	Russian Federation	0.42	44.60	0.45	
79	Bosnia and Herzegovina	0.41	43.80	0.44	
80	Nigeria	0.41	43.10	0.43	
81	Mexico	0.40	42.40	0.42	
82	Hungary	0.38	41.70	0.42	
83	Paraguay	0.38	41.00	0.41	
84	Japan	0.37	40.20	0.40	
85	Pakistan	0.37	39.50	0.40	
86	Iran, Islamic Rep.	0.36	38.80	0.39	
87	China	0.35	38.10	0.38	
88	Colombia	0.35	36.60	0.37	
88	Guatemala	0.35	36.60	0.37	
90	Lao PDR	0.34	35.90	0.36	
91	Guyana	0.33	34.50	0.35	
91	Tanzania, United Rep.	0.33	34.50	0.35	
93	Montenegro	0.32	33.80	0.34	
94	Slovakia	0.31	33.00	0.33	
95	Philippines	0.31	32.30	0.32	
96	Poland	0.30	31.60	0.32	○
97	Czech Republic	0.30	30.20	0.30	○
97	Viet Nam	0.30	30.20	0.30	
99	Italy	0.29	29.40	0.29	○
100	Zimbabwe	0.28	28.70	0.29	
101	Indonesia	0.27	28.00	0.28	
102	Honduras	0.26	27.30	0.27	
103	Gabon	0.25	26.60	0.27	
104	Egypt	0.24	25.80	0.26	
105	Serbia	0.24	25.10	0.25	○
106	El Salvador	0.23	24.40	0.24	
107	Burundi	0.23	23.70	0.24	
108	Argentina	0.22	22.30	0.22	
108	Niger	0.22	22.30	0.22	
110	Angola	0.21	21.50	0.22	
111	Burkina Faso	0.20	20.80	0.21	
112	Yemen	0.20	20.10	0.20	
113	Brazil	0.19	18.70	0.19	○
113	Morocco	0.19	18.70	0.19	○
115	Albania	0.18	17.90	0.18	
116	Romania	0.18	17.20	0.17	○
117	Uzbekistan	0.17	16.50	0.17	
118	Côte d'Ivoire	0.16	15.80	0.16	
119	Uruguay	0.16	15.10	0.15	
120	Kyrgyzstan	0.15	14.30	0.14	
121	Costa Rica	0.15	13.60	0.14	
122	Togo	0.14	12.90	0.13	
123	Nicaragua	0.14	12.20	0.12	
124	Armenia	0.13	11.50	0.12	
125	Mali	0.13	10.70	0.11	
126	Algeria	0.12	10.00	0.10	
127	Kenya	0.11	9.30	0.09	○
128	India	0.10	8.60	0.09	○
129	Benin	0.09	7.90	0.08	
130	Tajikistan	0.08	7.10	0.07	
131	Cameroon	0.08	6.40	0.06	○
132	Panama	0.07	5.70	0.06	○
133	Sri Lanka	0.07	5.00	0.05	○
134	Senegal	0.06	4.30	0.04	○
135	Jamaica	0.04	3.50	0.04	○
136	Gambia	0.04	2.80	0.03	○
137	Bolivia, Plurinational St.	0.03	2.10	0.02	○
138	Venezuela, Bolivarian Rep.	0.03	1.40	0.01	○
139	Ukraine	0.01	0.70	0.01	○
140	Belarus	0.00	0.00	0.00	○
n/a	Malta	n/a	n/a	n/a	

SOURCE: World Bank, Ease of Doing Business Index 2012, *Doing Business 2012*

2.1.1 Expenditure on education

Current expenditure on education (% of GNI) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Lesotho	9.43	100.00	1.00	●
2	Uzbekistan	9.37	99.37	0.99	●
3	Burundi (2010)	8.72	91.75	0.99	●
4	Namibia (2010)	7.97	82.97	0.98	●
5	Moldova, Rep. (2010)	7.74	80.29	0.97	●
6	Botswana	7.61	78.82	0.96	●
7	Denmark	7.44	76.83	0.96	
8	Iceland	7.26	74.77	0.95	
9	Saudi Arabia	7.19	73.86	0.94	●
10	Swaziland	7.18	73.75	0.93	●
11	New Zealand (2010)	7.16	73.58	0.93	
12	Belize	6.92	70.78	0.92	●
13	Tunisia	6.66	67.77	0.91	●
14	Costa Rica	6.24	62.82	0.91	●
15	Norway	6.16	61.85	0.90	
16	Malta	6.15	61.83	0.89	
17	Sweden	6.08	60.97	0.88	
18	Argentina	6.01	60.15	0.88	●
19	Fiji	6.01	60.11	0.87	●
20	Kyrgyzstan	5.96	59.53	0.86	●
21	Kenya (2010)	5.92	59.05	0.85	●
22	Ukraine	5.86	58.43	0.85	●
23	Belgium	5.77	57.40	0.84	
24	Jamaica	5.77	57.33	0.83	●
25	Israel	5.65	55.97	0.82	
26	Jordan	5.61	55.49	0.82	●
27	Latvia	5.57	55.06	0.81	
28	Finland	5.54	54.66	0.80	
29	South Africa	5.43	53.44	0.80	
30	Portugal	5.32	52.05	0.79	
31	Hungary	5.27	51.51	0.78	
32	Malawi (2011)	5.27	51.50	0.77	●
33	Austria	5.24	51.19	0.77	
34	Ireland	5.23	51.05	0.76	
35	Senegal (2010)	5.22	50.94	0.75	●
36	Morocco	5.20	50.72	0.74	●
37	Mongolia (2010)	5.09	49.47	0.74	
38	United Kingdom	5.09	49.45	0.73	
39	France	5.04	48.79	0.72	
40	Serbia	5.00	48.33	0.72	
41	Slovenia	4.95	47.79	0.71	
42	Macedonia, FYR	4.90	47.24	0.70	
43	Brazil	4.82	46.31	0.69	
44	Poland	4.81	46.14	0.69	
45	Switzerland	4.79	45.98	0.68	
46	United States of America	4.79	45.92	0.67	
47	Mexico	4.75	45.48	0.66	
48	Netherlands	4.74	45.30	0.66	
49	Canada	4.67	44.53	0.65	
50	Bolivia, Plurinational St.	4.66	44.45	0.64	●
51	Ghana (2010)	4.66	44.38	0.64	●
52	Chile	4.56	43.25	0.63	
53	Australia	4.54	42.97	0.62	
54	Algeria	4.47	42.17	0.61	●
55	Togo (2010)	4.44	41.85	0.61	●
56	Estonia	4.42	41.59	0.60	
57	Kazakhstan	4.41	41.54	0.59	
58	Egypt	4.41	41.51	0.58	●
59	Lithuania	4.40	41.42	0.58	
60	Belarus	4.40	41.35	0.57	
61	Germany	4.33	40.55	0.56	
62	Indonesia (2010)	4.33	40.54	0.55	
63	Côte d'Ivoire	4.32	40.50	0.55	●
64	Burkina Faso	4.28	40.03	0.54	●
65	Benin	4.27	39.82	0.53	●
66	Oman	4.22	39.31	0.53	
67	Nepal	4.20	39.08	0.52	●
68	Rwanda (2011)	4.17	38.73	0.51	
69	Yemen	4.16	38.53	0.50	
70	Malaysia	4.15	38.41	0.50	
71	Italy	4.14	38.33	0.49	
72	Iran, Islamic Rep. (2010)	4.11	38.01	0.48	
73	Thailand	4.06	37.41	0.47	
74	Mozambique	4.02	37.00	0.47	
75	Czech Republic	4.02	36.95	0.46	
76	Trinidad and Tobago	4.01	36.79	0.45	
77	Spain	3.98	36.44	0.45	
78	Cyprus	3.96	36.23	0.44	
79	Korea, Rep.	3.94	36.06	0.43	
80	Croatia	3.94	36.05	0.42	
81	Colombia	3.91	35.64	0.42	
82	Mali (2010)	3.89	35.43	0.41	
83	Bulgaria	3.83	34.71	0.40	
84	Slovakia	3.62	32.24	0.39	
85	Paraguay	3.59	32.00	0.39	
86	Venezuela, Bolivarian Rep.	3.55	31.50	0.38	
87	Honduras	3.55	31.43	0.37	
88	Russian Federation	3.54	31.41	0.36	
89	Panama	3.53	31.28	0.36	
90	Luxembourg	3.53	31.21	0.35	○
91	Niger (2010)	3.52	31.07	0.34	
92	Guyana (2010)	3.43	30.05	0.34	
93	Azerbaijan	3.42	29.99	0.33	
94	Romania	3.36	29.23	0.32	
95	Greece	3.26	28.05	0.31	
96	Tajikistan	3.21	27.47	0.31	
97	Kuwait	3.19	27.23	0.30	
98	Japan	3.19	27.22	0.29	○
99	Cameroon (2010)	3.11	26.29	0.28	
100	Gambia (2010)	3.10	26.22	0.28	
101	Mauritius	3.08	26.04	0.27	
102	India	3.07	25.89	0.26	
103	Hong Kong (China) (2010)	3.06	25.81	0.26	○
104	Gabon	3.06	25.80	0.25	
105	El Salvador (2010)	3.03	25.44	0.24	
106	Bahrain	3.03	25.39	0.23	○
107	Singapore (2010)	3.02	25.26	0.23	○
108	Nicaragua	2.96	24.65	0.22	
109	Uganda	2.96	24.65	0.21	
110	Ethiopia (2010)	2.88	23.69	0.20	
111	Guatemala	2.88	23.62	0.20	
112	Albania	2.84	23.23	0.19	
113	Viet Nam	2.81	22.89	0.18	○
114	Georgia	2.79	22.65	0.18	
115	Madagascar	2.66	21.08	0.17	
116	Turkey	2.64	20.91	0.16	
117	Syrian Arab Rep.	2.60	20.35	0.15	
118	Zimbabwe (2010)	2.54	19.71	0.15	
119	Philippines	2.45	18.69	0.14	
120	Tanzania, United Rep.	2.39	17.99	0.13	
121	Uruguay	2.30	16.95	0.12	○
122	Angola	2.27	16.53	0.12	
123	Armenia	2.22	15.97	0.11	○
124	Peru	2.15	15.11	0.10	○
125	Brunei Darussalam (2010)	2.03	13.70	0.09	○
126	Dominican Republic	1.88	11.97	0.09	○
127	Bangladesh	1.81	11.20	0.08	
128	China	1.81	11.15	0.07	○
129	Qatar (2008)	1.79	10.97	0.07	○
130	Sri Lanka	1.74	10.42	0.06	○
131	Cambodia	1.63	9.11	0.05	
132	Lebanon	1.59	8.60	0.04	○
133	Pakistan (2010)	1.56	8.33	0.04	○
134	Ecuador	1.38	6.13	0.03	○
135	Zambia	1.33	5.55	0.02	○
136	Lao PDR	1.09	2.77	0.01	○
137	Sudan	0.87	0.22	0.01	○
138	Nigeria	0.85	0.00	0.00	○
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; United Nations database *UNdata*; World Bank *World Development Indicators* database (2008–11)

2.1.2 Public expenditure on education per pupil

Public expenditure per pupil, all levels (% of GDP per capita) | 2008

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Lesotho (2006)	50.69	100.00	1.00	●
2	Moldova, Rep. (2010)	46.84	91.37	0.99	●
3	Yemen (2001)	42.85	82.42	0.98	●
4	Cyprus	34.92	64.62	0.97	●
5	Burkina Faso (2007)	34.47	63.60	0.97	●
6	Burundi (2010)	34.11	62.80	0.96	●
7	Denmark	30.86	55.51	0.95	
8	Swaziland (2006)	29.55	52.58	0.94	●
9	Sweden	28.98	51.30	0.93	
10	Malta	28.83	50.96	0.92	
11	Serbia (2009)	28.82	50.93	0.91	●
12	Belgium	28.76	50.81	0.91	
13	Niger (2010)	28.22	49.60	0.90	●
14	Botswana (2007)	27.91	48.90	0.89	●
15	Switzerland	27.42	47.80	0.88	
16	Latvia (2009)	27.00	46.86	0.87	●
17	Austria	26.93	46.70	0.86	
18	Senegal (2010)	26.34	45.37	0.85	●
19	Côte d'Ivoire (2002)	26.29	45.26	0.84	●
20	Ukraine (2007)	26.04	44.71	0.84	●
21	Finland	26.03	44.68	0.83	
22	Iceland	25.46	43.39	0.82	
23	Bulgaria	25.38	43.22	0.81	
24	Slovenia	25.21	42.84	0.80	
25	Norway	25.12	42.63	0.79	
26	United Kingdom	24.82	41.97	0.78	
27	Portugal	24.81	41.93	0.78	
28	Estonia	24.75	41.81	0.77	
29	Italy	24.70	41.70	0.76	
30	France	24.37	40.94	0.75	
31	Hungary	24.25	40.67	0.74	
32	Morocco (2006)	24.15	40.45	0.73	●
33	New Zealand (2010)	24.15	40.45	0.72	
34	Netherlands	23.99	40.10	0.72	
35	Tunisia (2007)	23.79	39.65	0.71	
36	Kenya (2006)	23.73	39.52	0.70	
37	Belarus (2007)	23.56	39.13	0.69	
38	Croatia	23.54	39.08	0.68	
39	Mali (2010)	23.50	38.99	0.67	●
40	Canada (2002)	23.46	38.91	0.66	
41	Mozambique (2006)	23.36	38.69	0.66	●
42	Spain	23.06	38.01	0.65	
43	Kyrgyzstan (2009)	22.94	37.73	0.64	
44	Poland	22.71	37.22	0.63	
45	Kuwait (2004)	22.02	35.69	0.62	
46	United States of America	21.99	35.62	0.61	
47	Malaysia (2009)	21.56	34.65	0.60	
48	Fiji (2004)	21.32	34.10	0.59	
49	Viet Nam	21.29	34.03	0.59	
50	Saudi Arabia	20.96	33.30	0.58	
51	Greece (2005)	20.74	32.80	0.57	
52	Czech Republic	20.57	32.43	0.56	
53	Romania (2007)	20.55	32.39	0.55	
54	Korea, Rep.	20.51	32.30	0.54	
55	Ethiopia (2010)	20.44	32.13	0.53	●
56	Japan	20.34	31.91	0.53	
57	Belize (2009)	20.33	31.89	0.52	
58	Lithuania	20.21	31.62	0.51	
59	Namibia (2003)	19.92	30.96	0.50	
60	Argentina (2009)	19.81	30.72	0.49	
61	Israel	19.76	30.60	0.48	
62	Russian Federation	19.69	30.46	0.47	
63	Luxembourg (2001)	19.66	30.39	0.47	
64	Hong Kong (China) (2010)	19.50	30.02	0.46	○
65	Iran, Islamic Rep. (2009)	19.48	29.97	0.45	
66	Australia (2009)	19.14	29.21	0.44	○
67	Brazil	19.10	29.12	0.43	
68	Ghana (2010)	19.04	29.00	0.42	
69	Trinidad and Tobago (2002)	18.90	28.67	0.41	
70	Costa Rica (2004)	18.69	28.22	0.41	
71	Jamaica (2010)	18.66	28.15	0.40	
72	Thailand (2009)	18.63	28.07	0.39	
73	Syrian Arab Rep. (2007)	18.62	28.05	0.38	
74	Indonesia (2010)	18.49	27.75	0.37	
75	Bolivia, Plurinational St. (2003)	17.89	26.41	0.36	
76	Rwanda (2010)	17.85	26.33	0.35	
77	Egypt (2004)	17.67	25.93	0.34	
78	Chile (2009)	17.35	25.21	0.34	○
79	Benin (2005)	17.03	24.49	0.33	
80	Colombia (2010)	16.94	24.28	0.32	
81	Macedonia, FYR (2002)	16.93	24.25	0.31	
82	Mongolia (2009)	16.71	23.78	0.30	
83	Slovakia	16.39	23.05	0.29	
84	Armenia (2010)	16.34	22.93	0.28	
85	Mexico	16.13	22.47	0.28	
86	Oman (2009)	15.99	22.14	0.27	
87	Qatar	15.90	21.96	0.26	
88	Georgia	15.40	20.82	0.25	
89	Azerbaijan (2009)	15.09	20.13	0.24	
90	Togo (2007)	14.08	17.86	0.23	
91	Tajikistan (2010)	14.01	17.71	0.22	
92	Paraguay (2007)	13.92	17.51	0.22	
93	Panama	13.76	17.14	0.21	
94	Guyana (2010)	13.10	15.67	0.20	
95	Nepal (2003)	13.00	15.45	0.19	
96	Cameroon (2010)	12.80	15.00	0.18	
97	Mauritius	12.60	14.55	0.17	○
98	India (2006)	12.34	13.97	0.16	
99	Turkey (2006)	12.18	13.60	0.16	○
100	Pakistan (2005)	11.67	12.46	0.15	
101	Kazakhstan (2009)	11.59	12.27	0.14	
102	Madagascar (2009)	11.50	12.08	0.13	
103	Bangladesh (2009)	10.75	10.39	0.12	
104	Gambia (2003)	10.63	10.13	0.11	
105	El Salvador (2010)	10.60	10.06	0.10	
106	Uganda (2009)	10.30	9.38	0.09	
107	Uruguay (2006)	10.22	9.21	0.09	○
108	Nicaragua (2003)	10.22	9.20	0.08	○
109	Guatemala (2007)	10.14	9.03	0.07	○
110	Philippines (2007)	9.41	7.38	0.06	○
111	Lao PDR	9.13	6.76	0.05	
112	United Arab Emirates (2009)	8.29	4.87	0.04	○
113	Peru (2006)	8.21	4.69	0.03	○
114	Brunei Darussalam (2010)	7.16	2.35	0.03	○
115	Dominican Republic (2003)	6.48	0.82	0.02	○
116	Lebanon (2009)	6.22	0.23	0.01	○
117	Cambodia (2007)	6.12	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	China	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–10)

2.1.3 School life expectancy

School life expectancy, primary to tertiary education (years) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	New Zealand (2010)	19.67	100.00	1.00	●
2	Australia	19.25	97.16	0.99	●
3	Iceland	18.31	90.82	0.98	●
4	Ireland	18.31	90.80	0.98	
5	Norway	17.28	83.83	0.97	
6	Korea, Rep.	16.99	81.86	0.96	●
7	Netherlands	16.86	80.95	0.95	
8	Slovenia	16.86	80.95	0.95	●
9	Finland	16.83	80.76	0.94	
10	United States of America (2010)	16.76	80.30	0.93	
11	Denmark	16.75	80.24	0.92	
12	Spain	16.43	78.06	0.92	●
13	Belgium	16.39	77.80	0.91	
14	United Kingdom	16.38	77.71	0.90	
15	Greece (2007)	16.25	76.85	0.89	●
16	Italy	16.18	76.39	0.89	●
17	France	16.14	76.06	0.88	
18	Argentina	16.10	75.83	0.87	●
19	Portugal	16.01	75.18	0.86	●
20	Lithuania	15.89	74.40	0.86	●
21	Estonia	15.82	73.93	0.85	
22	Sweden	15.77	73.56	0.84	
23	Israel	15.70	73.12	0.83	
24	Uruguay	15.55	72.06	0.83	●
25	Hong Kong (China) (2010)	15.49	71.71	0.82	
26	Switzerland	15.45	71.41	0.81	
27	Czech Republic	15.34	70.68	0.80	
28	Austria	15.33	70.58	0.80	
29	Kazakhstan (2011)	15.28	70.26	0.79	●
30	Hungary	15.27	70.18	0.78	
31	Japan	15.21	69.80	0.77	
32	Poland	15.15	69.40	0.77	
33	Canada (2002)	15.13	69.27	0.76	
34	Brunei Darussalam (2010)	15.03	68.57	0.75	
35	Montenegro (2010)	14.99	68.29	0.74	
36	Ukraine (2010)	14.76	66.72	0.73	
37	Latvia (2010)	14.76	66.71	0.73	
38	Romania	14.72	66.48	0.72	
39	Chile	14.72	66.44	0.71	
40	Cyprus	14.71	66.37	0.70	
41	Belarus (2007)	14.66	66.05	0.70	
42	Slovakia	14.64	65.94	0.69	
43	Malta	14.59	65.57	0.68	
44	Tunisia	14.51	65.03	0.67	
45	Venezuela, Bolivarian Rep.	14.38	64.12	0.67	●
46	Saudi Arabia (2010)	14.31	63.67	0.66	
47	Russian Federation	14.26	63.31	0.65	
48	Kuwait (2004)	14.17	62.73	0.64	
49	Brazil (2008)	14.02	61.68	0.64	
50	Mongolia	13.93	61.09	0.63	
51	Lebanon (2010)	13.89	60.85	0.62	
52	Croatia	13.85	60.56	0.61	
53	Bulgaria	13.77	59.98	0.61	
54	Algeria	13.62	58.97	0.60	
55	Mexico	13.61	58.92	0.59	
56	Serbia (2010)	13.60	58.89	0.58	
57	Colombia (2010)	13.60	58.86	0.58	
58	Mauritius (2008)	13.60	58.85	0.57	
59	Oman	13.52	58.31	0.56	
60	Luxembourg (2008)	13.48	58.08	0.55	
61	Bolivia, Plurinational St. (2007)	13.48	58.08	0.55	
62	Bosnia and Herzegovina (2010)	13.36	57.27	0.54	
63	Ecuador (2007)	13.33	57.02	0.53	
64	United Arab Emirates	13.33	57.00	0.52	
65	Macedonia, FYR	13.32	56.99	0.52	
66	Jordan (2008)	13.32	56.97	0.51	
67	Georgia	13.18	56.03	0.50	
68	Panama	13.17	55.92	0.49	
69	Jamaica (2010)	13.09	55.39	0.48	
70	Iran, Islamic Rep.	13.09	55.38	0.48	
71	Peru (2006)	13.04	55.05	0.47	
72	Gabon (2002)	13.03	55.00	0.46	
73	Fiji (2005)	12.95	54.46	0.45	
74	Belize (2010)	12.86	53.83	0.45	
75	Turkey	12.86	53.82	0.44	
76	Indonesia (2010)	12.86	53.81	0.43	
77	Sri Lanka (2004)	12.68	52.65	0.42	
78	Kyrgyzstan	12.60	52.11	0.42	
79	Malaysia (2008)	12.59	52.00	0.41	
80	Trinidad and Tobago (2007)	12.33	50.25	0.40	
81	Dominican Republic (2004)	12.28	49.89	0.39	
82	Qatar (2010)	12.24	49.67	0.39	
83	Botswana (2007)	12.17	49.14	0.38	
84	Thailand (2010)	12.16	49.11	0.37	
85	Armenia (2010)	12.16	49.08	0.36	
86	Paraguay	12.08	48.57	0.36	
87	El Salvador (2010)	12.01	48.06	0.35	
88	Costa Rica (2005)	11.94	47.58	0.34	
89	Viet Nam (2010)	11.92	47.50	0.33	
90	Moldova, Rep. (2010)	11.85	46.96	0.33	
91	Namibia (2008)	11.84	46.91	0.32	
92	Egypt (2004)	11.74	46.26	0.31	
93	China (2010)	11.72	46.13	0.30	
94	Philippines (2008)	11.68	45.83	0.30	
95	Azerbaijan (2010)	11.66	45.69	0.29	
96	Uzbekistan (2011)	11.60	45.29	0.28	
97	Tajikistan (2010)	11.55	44.96	0.27	
98	Honduras (2008)	11.44	44.23	0.27	
99	Albania (2004)	11.44	44.19	0.26	
100	Burundi (2010)	11.33	43.48	0.25	
101	Syrian Arab Rep. (2007)	11.27	43.06	0.24	
102	Uganda	11.07	41.70	0.23	
103	Kenya	11.05	41.57	0.23	
104	Rwanda (2010)	10.94	40.86	0.22	
105	Cameroon (2010)	10.87	40.37	0.21	
106	Nicaragua (2003)	10.83	40.11	0.20	
107	India (2008)	10.83	40.09	0.20	
108	Swaziland (2007)	10.75	39.53	0.19	
109	Ghana	10.70	39.23	0.18	
110	Guatemala (2007)	10.66	38.95	0.17	
111	Togo (2007)	10.59	38.45	0.17	
112	Cambodia (2008)	10.52	38.00	0.16	
113	Madagascar	10.44	37.45	0.15	
114	Malawi (2010)	10.39	37.11	0.14	
115	Morocco (2007)	10.36	36.90	0.14	○
116	Guyana (2010)	10.29	36.45	0.13	
117	Angola (2010)	10.22	35.96	0.12	
118	Lesotho (2007)	9.62	31.85	0.11	
119	Lao PDR (2008)	9.60	31.76	0.11	
120	Benin (2005)	9.36	30.09	0.10	
121	Mozambique (2007)	9.20	29.01	0.09	
122	Tanzania, United Rep. (2007)	9.08	28.23	0.08	
123	Nigeria (2005)	8.98	27.52	0.08	
124	Nepal (2002)	8.93	27.17	0.07	
125	Yemen (2005)	8.74	25.88	0.06	
126	Gambia (2008)	8.71	25.72	0.05	○
127	Ethiopia (2010)	8.66	25.34	0.05	
128	Senegal (2010)	8.18	22.11	0.04	○
129	Bangladesh (2007)	8.14	21.83	0.03	○
130	Mali (2010)	7.32	16.27	0.02	○
131	Pakistan	7.27	15.95	0.02	○
132	Burkina Faso (2010)	6.43	10.23	0.01	○
133	Niger (2010)	4.92	0.00	0.00	○
n/a	Bahrain	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2002–11)

2.1.4 Assessment in reading, mathematics, and science

PISA average scales in reading, mathematics, and science[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China	576.83	100.00	1.00	●
2	Hong Kong (China)	545.57	87.59	0.99	
3	Finland	543.50	86.77	0.97	
4	Singapore	543.20	86.65	0.96	
5	Korea, Rep.	541.17	85.84	0.94	
6	Japan	529.43	81.19	0.93	
7	Canada	526.57	80.05	0.91	
8	New Zealand	524.07	79.06	0.90	
9	Australia	518.83	76.98	0.88	
10	Netherlands	518.80	76.96	0.87	
11	Switzerland	517.03	76.26	0.86	
12	Estonia	513.63	74.91	0.84	
13	Germany	510.17	73.54	0.83	
14	Belgium	509.27	73.18	0.81	
15	Poland	501.13	69.95	0.80	
16	Iceland	500.87	69.85	0.78	
17	Norway	500.37	69.65	0.77	
18	United Kingdom	500.10	69.54	0.75	
19	Denmark	499.17	69.17	0.74	
20	Slovenia	498.80	69.03	0.72	
21	Ireland	496.90	68.27	0.71	
22	France	496.87	68.26	0.70	
23	United States of America	496.40	68.07	0.68	
24	Hungary	495.67	67.78	0.67	
25	Sweden	495.57	67.74	0.65	
26	Czech Republic	490.50	65.73	0.64	
27	Portugal	489.70	65.41	0.62	
28	Slovakia	488.13	64.79	0.61	
29	Austria	486.83	64.28	0.59	
30	Latvia	486.63	64.20	0.58	
31	Italy	485.93	63.92	0.57	
32	Spain	484.27	63.26	0.55	
33	Luxembourg	481.73	62.25	0.54	
34	Lithuania	478.80	61.09	0.52	
35	Croatia	474.00	59.18	0.51	
36	Greece	473.00	58.79	0.49	
37	Russian Federation	468.50	57.00	0.48	
38	United Arab Emirates	459.47	53.41	0.46	
39	Israel	458.60	53.07	0.45	
40	Malta (2010)	455.43	51.81	0.43	○
41	Turkey	454.53	51.46	0.42	
42	Serbia	442.40	46.64	0.41	
43	Chile	439.33	45.42	0.39	
44	Bulgaria	432.17	42.58	0.38	
45	Costa Rica (2010)	427.50	40.73	0.36	
46	Romania	426.60	40.37	0.35	
47	Uruguay	426.57	40.35	0.33	
48	Thailand	421.77	38.45	0.32	
49	Mexico	419.90	37.71	0.30	
50	Mauritius (2010)	414.60	35.60	0.29	
51	Trinidad and Tobago	413.57	35.19	0.28	
52	Venezuela, Bolivarian Rep. (2010)	413.43	35.14	0.26	
53	Malaysia (2010)	413.43	35.14	0.25	○
54	Montenegro	403.77	31.30	0.23	○
55	Jordan	402.37	30.75	0.22	
56	Brazil	401.00	30.21	0.20	○
57	Moldova, Rep. (2010)	399.47	29.60	0.19	
58	Colombia	398.60	29.25	0.17	○
59	Kazakhstan	398.57	29.24	0.16	
60	Argentina	395.73	28.12	0.14	○
61	Tunisia	391.93	26.61	0.13	○
62	Azerbaijan	388.57	25.27	0.12	
63	Indonesia	385.20	23.93	0.10	
64	Albania	384.33	23.59	0.09	
65	Georgia (2010)	375.50	20.08	0.07	○
66	Qatar	373.07	19.12	0.06	○
67	Panama	368.77	17.41	0.04	○
68	Peru	368.07	17.13	0.03	○
69	India (2010)	336.02	4.41	0.01	○
70	Kyrgyzstan	324.90	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Macedonia, FYR	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Ukraine	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: OECD Programme for International Student Assessment (PISA) 2009 and 2010 (2009–10)

2.1.5 Pupil-teacher ratio, secondary

Pupil-teacher ratio, secondary | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Belgium	6.51	100.00	1.00	●	
2	Armenia (2010)	6.67	99.57	0.99	●	
3	Venezuela, Bolivarian Rep. (2010)	6.77	99.30	0.98	●	
4	Canada (2008)	7.08	98.44	0.98	●	
5	Syrian Arab Rep. (2010)	7.24	98.01	0.97	●	
6	Portugal	7.28	97.90	0.96	●	
7	Georgia	7.57	97.11	0.95	●	
8	Azerbaijan (2007)	7.82	96.42	0.95	●	
9	Greece (2007)	7.88	96.24	0.94	●	
10	Kuwait (2010)	7.97	96.02	0.93	●	
11	Belarus (2007)	8.10	95.65	0.92	●	
12	Malta	8.19	95.42	0.92		
13	Croatia	8.33	95.02	0.91	●	
14	Russian Federation	8.47	94.65	0.90	●	
15	Kazakhstan (2011)	8.87	93.55	0.89	●	
16	Lebanon (2010)	8.94	93.35	0.89	●	
17	Lithuania	8.95	93.33	0.88	●	
18	Latvia (2010)	9.00	93.19	0.87	●	
19	Slovenia	9.18	92.69	0.86		
20	Estonia	9.44	91.98	0.85		
21	Israel	9.47	91.89	0.85		
22	Serbia (2010)	9.60	91.55	0.84	●	
23	Sweden	9.62	91.50	0.83		
24	Saudi Arabia (2010)	9.75	91.14	0.82		
25	Finland	9.89	90.76	0.82		
26	Cyprus	9.91	90.69	0.81		
27	Qatar (2010)	9.93	90.63	0.80		
28	Denmark (2001)	10.05	90.31	0.79		
29	Italy (2007)	10.10	90.18	0.79		
30	Luxembourg (2008)	10.20	89.92	0.78		
31	Austria	10.28	89.68	0.77		
32	Hungary	10.33	89.55	0.76		
33	Brunei Darussalam	10.46	89.20	0.76		
34	Moldova, Rep. (2010)	10.50	89.09	0.75		
35	Ireland (2006)	10.54	88.96	0.74		
36	Spain	10.55	88.95	0.73		
37	Poland	10.68	88.59	0.73		
38	Argentina (2008)	10.90	87.99	0.72		
39	Czech Republic	11.15	87.30	0.71		
40	Honduras (2008)	11.32	86.84	0.70	●	
41	Iceland	11.65	85.94	0.69		
42	Yemen (2010)	11.69	85.82	0.69	●	
43	Paraguay (2004)	11.84	85.43	0.68	●	
44	Jordan (2008)	11.86	85.35	0.67		
45	Japan	11.97	85.07	0.66		
46	Bulgaria	11.99	85.01	0.66		
47	Indonesia (2010)	12.18	84.50	0.65	●	
48	Trinidad and Tobago (2010)	12.33	84.07	0.64		
49	Macedonia, FYR	12.36	84.01	0.63		
50	Slovakia	12.37	83.96	0.63		
51	Romania	12.39	83.92	0.62		
52	Bahrain (2002)	12.40	83.90	0.61		
53	United Arab Emirates (2010)	12.42	83.82	0.60		
54	Uruguay	12.43	83.82	0.60		
55	France	12.50	83.63	0.59		
56	Bosnia and Herzegovina (2010)	12.60	83.33	0.58		
57	Germany	13.24	81.60	0.57		
58	Uzbekistan (2011)	13.28	81.49	0.56	●	
59	Netherlands	13.40	81.16	0.56	○	
60	Malaysia	13.65	80.46	0.55		
61	United States of America (2010)	13.76	80.17	0.54		
62	Tunisia	13.86	79.91	0.53		
63	Botswana (2007)	13.88	79.85	0.53		
64	United Kingdom (2008)	14.27	78.78	0.52		
65	New Zealand (2010)	14.50	78.14	0.51		
66	Jamaica (2010)	14.55	78.00	0.50		
67	Oman	14.78	77.39	0.50		
68	Albania (2010)	14.78	77.39	0.49		
69	Singapore	14.91	77.02	0.48	○	
70	Kyrgyzstan (2010)	15.21	76.21	0.47		
71	Panama (2010)	15.34	75.86	0.47		
72	China (2010)	15.46	75.52	0.46		
73	Costa Rica (2010)	15.51	75.39	0.45		
74	Mauritius (2010)	15.93	74.25	0.44		
75	Guatemala (2010)	15.99	74.08	0.44		
76	Cameroon (2006)	16.17	73.58	0.43		
77	Peru	16.53	72.59	0.42		
78	Sri Lanka (2010)	16.68	72.17	0.41		
79	Belize (2010)	16.84	71.76	0.40		
80	Turkey	16.92	71.52	0.40		
81	Egypt (2004)	17.08	71.09	0.39		
82	Tajikistan (2010)	17.10	71.04	0.38		
83	Brazil	17.14	70.93	0.37		
84	Mexico	17.64	69.56	0.37		
85	Hong Kong (China) (2005)	17.76	69.24	0.36		○
86	Korea, Rep.	17.98	68.63	0.35		○
87	Lesotho (2010)	18.02	68.51	0.34		
88	Bolivia, Plurinational St. (2007)	18.17	68.12	0.34		
89	Swaziland (2010)	18.18	68.07	0.33		
90	Viet Nam (2010)	18.55	67.07	0.32		
91	Ghana (2011)	18.67	66.75	0.31		
92	Fiji (2008)	18.72	66.61	0.31		
93	Morocco (2004)	18.73	66.59	0.30		
94	Uganda (2010)	19.17	65.37	0.29		
95	Thailand (2011)	19.91	63.36	0.28		○
96	Algeria (2004)	20.85	60.79	0.27		
97	Mongolia (2007)	21.09	60.14	0.27		
98	Guyana (2010)	21.42	59.22	0.26		
99	Iran, Islamic Rep. (2008)	21.69	58.48	0.25		
100	Sudan	22.23	57.01	0.24		
101	Zimbabwe (2003)	22.32	56.75	0.24		
102	Ecuador	22.39	56.56	0.23		
103	Chile	22.41	56.52	0.22		○
104	Lao PDR (2008)	22.76	55.55	0.21		
105	Zambia (2008)	23.23	54.28	0.21		
106	Madagascar	23.48	53.58	0.20		
107	Cambodia (2010)	23.91	52.42	0.19		
108	Benin (2004)	23.93	52.35	0.18		
109	El Salvador	24.36	51.17	0.18		
110	Namibia (2007)	24.62	50.46	0.17		
111	Mali (2011)	24.70	50.27	0.16		
112	South Africa	25.05	49.30	0.15		○
113	Burkina Faso (2011)	26.49	45.36	0.15		
114	Gambia	26.60	45.04	0.14		
115	Colombia (2010)	27.15	43.56	0.13		○
116	Dominican Republic (2010)	28.19	40.70	0.12		○
117	Bangladesh (2010)	28.48	39.90	0.11		
118	Rwanda (2010)	29.40	37.41	0.11		
119	Niger (2010)	29.61	36.82	0.10		
120	Kenya	29.68	36.64	0.09		○
121	Burundi (2010)	29.94	35.92	0.08		
122	Nicaragua (2010)	30.83	33.49	0.08		○
123	Senegal (2010)	32.32	29.41	0.07		
124	India (2004)	32.70	28.37	0.06		○
125	Nigeria (2010)	33.08	27.33	0.05		
126	Philippines	34.81	22.59	0.05		○
127	Mozambique (2010)	34.95	22.21	0.04		○
128	Togo (2007)	35.51	20.70	0.03		○
129	Nepal (2011)	36.93	16.81	0.02		○
130	Angola (2010)	38.67	12.04	0.02		○
131	Pakistan (2004)	41.86	3.33	0.01		○
132	Ethiopia (2010)	43.07	0.00	0.00		○
n/a	Australia	n/a	n/a	n/a		
n/a	Côte d'Ivoire	n/a	n/a	n/a		
n/a	Gabon	n/a	n/a	n/a		
n/a	Malawi	n/a	n/a	n/a		
n/a	Montenegro	n/a	n/a	n/a		
n/a	Norway	n/a	n/a	n/a		
n/a	Switzerland	n/a	n/a	n/a		
n/a	Tanzania, United Rep.	n/a	n/a	n/a		
n/a	Ukraine	n/a	n/a	n/a		

SOURCE: UNESCO Institute for Statistics, *UIS online database*, and World Bank *World Development Indicators* database (2001–11)

2.2.1 Tertiary enrolment

School enrolment, tertiary (% gross)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	103.87	100.00	1.00	●
2	United States of America (2010)	94.81	91.21	0.99	●
3	Finland	91.59	88.10	0.98	
4	Greece (2007)	89.38	85.95	0.98	●
5	Slovenia	86.93	83.57	0.97	●
6	Belarus (2010)	82.95	79.72	0.96	●
7	New Zealand (2010)	82.56	79.33	0.95	
8	Ukraine (2010)	79.47	76.34	0.95	●
9	Venezuela, Bolivarian Rep.	78.13	75.04	0.94	●
10	Lithuania	77.37	74.31	0.93	●
11	Australia	75.91	72.90	0.92	
12	Russian Federation	75.89	72.87	0.92	●
13	Denmark	74.40	71.43	0.91	
14	Iceland	74.10	71.13	0.90	
15	Norway	73.79	70.84	0.89	
16	Spain	73.24	70.31	0.89	●
17	Argentina	71.23	68.36	0.88	●
18	Sweden	70.78	67.92	0.87	
19	Poland	70.54	67.68	0.86	●
20	Belgium	67.46	64.70	0.86	
21	Italy	65.98	63.27	0.85	
22	Romania	63.77	61.12	0.84	●
23	Uruguay	63.28	60.65	0.83	●
24	Netherlands	62.70	60.09	0.83	
25	Estonia	62.70	60.08	0.82	
26	Israel	62.48	59.87	0.81	
27	Canada (2004)	62.27	59.67	0.80	
28	Portugal	62.20	59.60	0.80	
29	Hungary	61.68	59.10	0.79	
30	Ireland	60.96	58.40	0.78	
31	Czech Republic	60.65	58.10	0.77	
32	Austria	60.20	57.67	0.77	
33	Latvia (2010)	60.10	57.57	0.76	
34	Hong Kong (China) (2010)	59.72	57.19	0.75	
35	Chile	59.18	56.67	0.74	
36	Japan	59.02	56.52	0.74	
37	United Kingdom	58.53	56.04	0.73	
38	France	54.53	52.17	0.72	
39	Slovakia	54.16	51.80	0.71	
40	Lebanon (2010)	54.02	51.67	0.71	
41	Mongolia (2010)	53.30	50.97	0.70	
42	Bulgaria	53.02	50.70	0.69	
43	Cyprus	52.00	49.72	0.68	
44	Armenia (2010)	51.53	49.26	0.68	
45	Switzerland	51.45	49.18	0.67	
46	Bahrain (2010)	51.21	48.94	0.66	
47	Croatia	49.17	46.97	0.65	
48	Serbia (2010)	49.08	46.88	0.65	
49	Kyrgyzstan	48.81	46.62	0.64	
50	Thailand (2011)	47.70	45.54	0.63	
51	Montenegro (2010)	47.64	45.49	0.62	
52	Turkey	45.82	43.72	0.62	
53	Panama	44.65	42.58	0.61	
54	Iran, Islamic Rep. (2010)	42.77	40.77	0.60	●
55	Jordan	41.84	39.86	0.59	
56	Kazakhstan (2011)	40.81	38.87	0.59	
57	Macedonia, FYR	40.42	38.49	0.58	
58	Malaysia	40.24	38.31	0.57	
59	Ecuador (2008)	39.84	37.92	0.56	
60	Colombia (2010)	39.13	37.24	0.56	
61	Bolivia, Plurinational St. (2007)	38.65	36.77	0.55	
62	Moldova, Rep. (2010)	38.15	36.28	0.54	
63	Saudi Arabia (2010)	36.76	34.94	0.53	
64	Paraguay	36.64	34.83	0.53	
65	Brazil	36.07	34.27	0.52	
66	Bosnia and Herzegovina (2010)	35.90	34.11	0.51	
67	Peru (2006)	34.99	33.22	0.50	
68	Tunisia	34.40	32.65	0.50	
69	Dominican Republic (2004)	34.00	32.27	0.49	
70	Malta	33.37	31.65	0.48	
71	Algeria (2010)	30.76	29.13	0.47	
72	Egypt (2008)	30.44	28.81	0.47	
73	United Arab Emirates	30.40	28.78	0.46	
74	Jamaica (2010)	28.95	27.37	0.45	
75	Philippines (2008)	28.89	27.31	0.44	
76	Georgia (2010)	28.25	26.69	0.44	
77	Mexico	27.04	25.51	0.43	
78	China (2010)	25.95	24.46	0.42	
79	Costa Rica (2005)	25.55	24.07	0.41	
80	Mauritius (2008)	24.86	23.41	0.41	
81	Oman (2010)	24.47	23.02	0.40	
82	El Salvador (2010)	23.45	22.03	0.39	
83	Indonesia (2010)	23.12	21.72	0.38	
84	Viet Nam (2010)	22.29	20.91	0.38	
85	Kuwait (2004)	21.86	20.50	0.37	
86	Belize (2010)	21.49	20.13	0.36	
87	Tajikistan (2010)	19.67	18.37	0.35	
88	Azerbaijan (2010)	19.26	17.97	0.35	
89	Honduras (2008)	18.82	17.55	0.34	
90	Albania (2004)	18.38	17.12	0.33	
91	Nicaragua (2003)	17.97	16.72	0.32	
92	Guatemala (2007)	17.83	16.58	0.32	
93	Brunei Darussalam (2010)	17.25	16.02	0.31	
94	India	16.23	15.04	0.30	
95	Fiji (2005)	16.15	14.96	0.29	
96	Sri Lanka (2010)	15.46	14.29	0.29	
97	Lao PDR (2008)	13.41	12.31	0.28	
98	Morocco	13.22	12.11	0.27	
99	Guyana (2010)	11.89	10.83	0.26	
100	Trinidad and Tobago (2005)	11.52	10.47	0.26	
101	Cameroon (2010)	11.48	10.43	0.25	
102	Bangladesh	10.59	9.57	0.24	
103	Luxembourg (2008)	10.53	9.51	0.23	○
104	Nigeria (2005)	10.26	9.25	0.23	
105	Yemen (2007)	10.19	9.18	0.22	
106	Cambodia	10.00	9.00	0.21	
107	Qatar (2010)	9.97	8.97	0.20	○
108	Namibia (2008)	8.96	7.98	0.20	
109	Uzbekistan (2011)	8.87	7.90	0.19	
110	Côte d'Ivoire (2007)	8.87	7.90	0.18	
111	Ghana	8.80	7.83	0.17	
112	Senegal (2010)	7.92	6.98	0.17	
113	Botswana (2006)	7.44	6.51	0.16	
114	Pakistan	6.41	5.52	0.15	
115	Zimbabwe (2010)	6.19	5.30	0.14	
116	Benin (2006)	6.03	5.15	0.14	
117	Togo (2007)	5.88	5.00	0.13	
118	Mali (2010)	5.80	4.92	0.12	
119	Nepal (2004)	5.56	4.69	0.11	
120	Rwanda (2010)	5.49	4.63	0.11	
121	Ethiopia (2010)	5.46	4.60	0.10	
122	Swaziland (2006)	4.43	3.59	0.09	
123	Uganda	4.19	3.36	0.08	
124	Gambia (2008)	4.12	3.29	0.08	
125	Kenya	4.03	3.21	0.07	○
126	Angola (2010)	3.71	2.90	0.06	
127	Madagascar (2010)	3.69	2.88	0.05	
128	Lesotho (2006)	3.52	2.71	0.05	○
129	Burkina Faso (2010)	3.33	2.53	0.04	
130	Burundi (2010)	3.25	2.45	0.03	
131	Tanzania, United Rep. (2010)	2.11	1.35	0.02	○
132	Mozambique (2005)	1.46	0.72	0.02	○
133	Niger (2010)	1.46	0.72	0.01	○
134	Malawi (2010)	0.72	0.00	0.00	○
n/a	Gabon	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; World Bank *World Development Indicators* database (2003–11)

2.2.2 Graduates in science and engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iran, Islamic Rep. (2010)	44.42	100.00	1.00	●
2	Oman (2010)	38.94	86.95	0.99	●
3	Malaysia	37.72	84.05	0.98	●
4	Saudi Arabia (2010)	35.78	79.44	0.97	●
5	Morocco (2010)	34.91	77.36	0.96	●
6	Hong Kong (China) (2006)	34.67	76.79	0.95	
7	Luxembourg (2008)	32.54	71.74	0.94	
8	Korea, Rep.	31.46	69.16	0.93	
9	Trinidad and Tobago (2004)	30.38	66.60	0.92	●
10	Kenya (2001)	30.24	66.25	0.91	●
11	Portugal	28.82	62.87	0.90	●
12	Austria	28.68	62.54	0.89	
13	Finland	28.17	61.32	0.88	
14	Russian Federation	28.11	61.19	0.88	●
15	Algeria (2010)	27.99	60.90	0.87	●
16	United Arab Emirates	27.34	59.36	0.86	
17	Belarus (2010)	26.62	57.64	0.85	●
18	El Salvador (2010)	26.37	57.06	0.84	●
19	Ukraine (2010)	26.26	56.79	0.83	●
20	France (2008)	26.25	56.76	0.82	
21	Tajikistan (2010)	25.99	56.16	0.81	●
22	Mexico	25.58	55.17	0.80	●
23	Spain	25.31	54.52	0.79	
24	Jordan (2007)	25.11	54.06	0.78	
25	Lebanon (2010)	24.95	53.68	0.77	
26	Greece (2008)	24.86	53.46	0.76	
27	Zimbabwe (2010)	24.83	53.40	0.75	●
28	Germany	24.62	52.89	0.74	
29	Croatia	24.36	52.27	0.73	
30	Philippines (2004)	24.31	52.16	0.72	●
31	Sweden	24.18	51.84	0.71	
32	Qatar (2010)	24.00	51.42	0.70	
33	Czech Republic	23.72	50.76	0.69	
34	Serbia (2010)	23.65	50.59	0.68	
35	Burkina Faso (2010)	23.33	49.83	0.67	●
36	Colombia (2010)	23.24	49.60	0.66	
37	Nepal (2010)	23.23	49.58	0.65	●
38	Indonesia (2010)	22.77	48.48	0.64	
39	Brunei Darussalam (2010)	21.91	46.44	0.63	
40	United Kingdom	21.71	45.96	0.63	
41	Romania	21.67	45.88	0.62	
42	Ireland	21.62	45.76	0.61	
43	Switzerland	21.56	45.60	0.60	○
44	Macedonia, FYR	21.45	45.34	0.59	
45	Uzbekistan (2011)	21.14	44.60	0.58	●
46	Canada (2002)	21.06	44.41	0.57	
47	Tanzania, United Rep. (2004)	21.05	44.40	0.56	●
48	Lithuania	21.03	44.36	0.55	
49	Cameroon (2010)	21.02	44.33	0.54	●
50	Turkey	20.91	44.06	0.53	
51	Ethiopia (2010)	20.88	44.00	0.52	●
52	Slovakia	20.62	43.37	0.51	
53	Japan	20.55	43.21	0.50	
54	Italy (2007)	20.48	43.03	0.49	
55	Chile	20.45	42.96	0.48	
56	Gambia (2004)	20.00	41.90	0.47	
57	Denmark	19.62	40.99	0.46	○
58	Estonia	19.38	40.41	0.45	○
59	Panama	19.24	40.09	0.44	
60	New Zealand	19.12	39.80	0.43	
61	Bulgaria	18.80	39.04	0.42	
62	Madagascar (2010)	18.24	37.72	0.41	
63	Slovenia	18.18	37.57	0.40	
64	Australia (2008)	17.69	36.40	0.39	○
65	Georgia (2010)	17.44	35.80	0.38	
66	Mongolia (2010)	17.13	35.08	0.38	
67	Guatemala (2007)	16.76	34.20	0.37	
68	Viet Nam (2010)	16.76	34.20	0.36	
69	Ghana	16.68	33.99	0.35	
70	Azerbaijan (2010)	16.59	33.78	0.34	
71	Belgium	16.30	33.11	0.33	○
72	Armenia (2010)	15.92	32.18	0.32	
73	Poland	15.65	31.56	0.31	○
74	United States of America (2010)	15.47	31.12	0.30	○
75	Norway	15.23	30.56	0.29	○
76	Kyrgyzstan	15.18	30.44	0.28	
77	Malta	15.05	30.12	0.27	○
78	Hungary	14.76	29.43	0.26	
79	Iceland	14.50	28.83	0.25	
80	Guyana (2010)	14.38	28.53	0.24	
81	Argentina	14.35	28.45	0.23	
82	Latvia (2010)	14.32	28.38	0.22	○
83	Netherlands	14.00	27.61	0.21	○
84	Cyprus	13.69	26.88	0.20	○
85	Uruguay	13.64	26.76	0.19	
86	Botswana (2002)	12.95	25.14	0.18	
87	Lao PDR (2006)	12.81	24.79	0.17	
88	Ecuador (2008)	12.81	24.78	0.16	
89	Honduras (2003)	12.56	24.20	0.15	
90	Cambodia (2008)	12.49	24.04	0.14	
91	Brazil	12.24	23.43	0.13	○
92	Mozambique (2005)	12.14	23.21	0.13	
93	Angola (2010)	11.94	22.73	0.12	
94	Costa Rica (2002)	11.93	22.70	0.11	○
95	Niger (2010)	10.47	19.24	0.10	
96	Thailand	9.65	17.29	0.09	○
97	Burundi (2010)	9.58	17.12	0.08	
98	Uganda (2004)	9.53	16.99	0.07	○
99	Bangladesh	8.13	13.66	0.06	○
100	Malawi (2007)	7.01	10.99	0.05	○
101	Albania (2003)	6.13	8.91	0.04	○
102	Belize (2004)	6.00	8.59	0.03	○
103	Lesotho (2003)	3.56	2.80	0.02	○
104	Namibia (2008)	2.64	0.61	0.01	○
105	Swaziland (2006)	2.39	0.00	0.00	○
n/a	Bahrain	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	China	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kazakhstan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Moldova, Rep.	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–11)

2.2.3 Tertiary inbound mobility

Tertiary inbound mobility ratio (%)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Luxembourg (2008)	43.81	100.00	1.00	●
2	United Arab Emirates	39.22	97.14	0.99	●
3	Qatar (2010)	38.91	96.94	0.98	●
4	Fiji (2004)	32.94	92.66	0.97	●
5	Cyprus	31.78	91.73	0.96	●
6	Bahrain (2010)	24.10	84.68	0.95	●
7	Singapore (2010)	22.78	83.25	0.94	
8	Australia	21.47	81.76	0.93	
9	Austria	19.38	79.17	0.93	
10	United Kingdom	15.28	73.23	0.92	
11	Lebanon (2010)	15.04	72.85	0.91	●
12	Switzerland	14.92	72.66	0.90	
13	New Zealand (2010)	14.23	71.47	0.89	
14	France	11.47	66.19	0.88	
15	Jordan	10.37	63.77	0.87	●
16	Namibia (2008)	10.17	63.29	0.86	●
17	Angola (2010)	9.86	62.54	0.85	●
18	Belgium	7.98	57.54	0.84	
19	Norway	7.98	57.54	0.83	
20	Czech Republic	7.35	55.60	0.82	
21	Ireland	7.08	54.76	0.81	
22	Kyrgyzstan	6.87	54.07	0.80	
23	Niger (2010)	6.58	53.06	0.79	●
24	Sweden	6.40	52.42	0.79	
25	Burundi (2010)	6.19	51.68	0.78	●
26	Trinidad and Tobago (2004)	5.78	50.14	0.77	●
27	Malaysia	5.78	50.11	0.76	
28	Denmark	5.36	48.45	0.75	
29	Canada (2004)	4.90	46.45	0.74	
30	Iceland	4.63	45.21	0.73	
31	Malta	4.34	43.81	0.72	
32	Finland	4.25	43.35	0.71	
33	Serbia (2010)	4.18	43.03	0.70	
34	Botswana (2005)	4.16	42.94	0.69	
35	Brunei Darussalam (2010)	3.96	41.91	0.68	
36	Hong Kong (China) (2010)	3.90	41.56	0.67	
37	Netherlands	3.83	41.17	0.66	
38	Hungary	3.65	40.19	0.65	
39	Greece (2007)	3.51	39.38	0.64	
40	Bulgaria	3.44	38.94	0.64	
41	Japan	3.40	38.71	0.63	
42	United States of America (2010)	3.35	38.44	0.62	
43	Italy	3.27	37.97	0.61	
44	Azerbaijan (2010)	3.17	37.30	0.60	
45	Burkina Faso (2005)	3.15	37.18	0.59	●
46	Saudi Arabia (2010)	2.97	36.05	0.58	
47	Yemen (2007)	2.71	34.24	0.57	●
48	Spain	2.69	34.13	0.56	
49	Slovakia	2.69	34.07	0.55	
50	Armenia (2010)	2.59	33.37	0.54	
51	Portugal	2.45	32.32	0.53	
52	Oman (2010)	2.29	31.08	0.52	
53	Macedonia, FYR	2.19	30.31	0.51	
54	Swaziland (2006)	2.14	29.89	0.50	
55	Tajikistan (2010)	2.12	29.72	0.50	
56	Morocco	1.89	27.69	0.49	
57	Slovenia	1.78	26.62	0.48	
58	Madagascar (2010)	1.76	26.51	0.47	
59	Kazakhstan (2011)	1.62	25.15	0.46	
60	Estonia	1.59	24.80	0.45	○
61	Latvia (2010)	1.56	24.53	0.44	
62	Korea, Rep.	1.55	24.44	0.43	
63	Costa Rica (2004)	1.43	23.18	0.42	
64	Ukraine (2010)	1.43	23.13	0.41	
65	Togo (2007)	1.41	22.94	0.40	
66	Belarus (2010)	1.41	22.93	0.39	
67	Egypt (2007)	1.40	22.81	0.38	
68	Russian Federation	1.39	22.70	0.37	
69	Ghana (2007)	1.36	22.33	0.36	
70	Lithuania	1.34	22.14	0.36	
71	Moldova, Rep. (2010)	1.21	20.64	0.35	
72	Romania	0.94	17.30	0.34	
73	Zimbabwe (2010)	0.93	17.16	0.33	
74	Albania (2004)	0.91	16.85	0.32	
75	Cameroon (2010)	0.84	15.88	0.31	
76	Thailand (2011)	0.81	15.38	0.30	
77	Poland	0.79	15.13	0.29	○
78	Georgia (2010)	0.79	15.09	0.28	
79	Turkey	0.75	14.53	0.27	
80	Rwanda (2001)	0.72	14.07	0.26	
81	Honduras (2003)	0.68	13.53	0.25	
82	Tunisia	0.67	13.28	0.24	○
83	Tanzania, United Rep. (2004)	0.64	12.86	0.23	
84	Lesotho (2006)	0.62	12.59	0.22	
85	Mongolia (2010)	0.60	12.22	0.21	
86	Algeria (2010)	0.57	11.75	0.21	
87	El Salvador (2010)	0.51	10.69	0.20	
88	Guyana (2010)	0.50	10.59	0.19	
89	Croatia	0.50	10.55	0.18	○
90	Bangladesh	0.00	0.00	0.00	○
90	Brazil	0.00	0.00	0.00	○
90	Cambodia (2006)	0.00	0.00	0.00	○
90	Chile	0.00	0.00	0.00	○
90	China (2010)	0.00	0.00	0.00	○
90	Gambia (2004)	0.00	0.00	0.00	○
90	India (2006)	0.00	0.00	0.00	○
90	Indonesia (2010)	0.00	0.00	0.00	○
90	Iran, Islamic Rep. (2010)	0.00	0.00	0.00	○
90	Lao PDR (2008)	0.00	0.00	0.00	○
90	Mauritius (2006)	0.00	0.00	0.00	○
90	Mexico (2002)	0.00	0.00	0.00	○
90	Nepal	0.00	0.00	0.00	○
90	Pakistan (2003)	0.00	0.00	0.00	○
90	Philippines (2008)	0.00	0.00	0.00	○
90	Sri Lanka (2003)	0.00	0.00	0.00	○
90	Uzbekistan (2011)	0.00	0.00	0.00	○
90	Venezuela, Bolivarian Rep. (2008)	0.00	0.00	0.00	○
90	Viet Nam (2010)	0.00	0.00	0.00	○
n/a	Argentina	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Colombia	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–11)

2.2.4 Gross tertiary outbound enrolment

Gross tertiary outbound enrolment ratio (%)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Cyprus	41.27	100.00	0.98	●
1	Luxembourg	23.22	100.00	0.98	●
1	Iceland	11.48	100.00	0.98	●
1	Brunei Darussalam (2010)	8.99	100.00	0.98	●
5	Bahrain (2008)	7.99	88.81	0.97	●
6	Mauritius (2010)	7.39	82.10	0.96	●
7	Hong Kong (China) (2010)	7.38	81.95	0.96	
8	Montenegro (2010)	7.29	80.89	0.95	●
9	Albania	6.64	73.60	0.94	●
10	Slovakia	6.51	72.25	0.94	●
11	Ireland	6.10	67.65	0.93	
12	Kuwait (2008)	5.82	64.49	0.92	●
13	Greece	4.59	50.75	0.91	●
14	Bulgaria	4.57	50.48	0.91	●
15	Trinidad and Tobago (2010)	4.40	48.55	0.90	●
16	Bosnia and Herzegovina (2010)	4.22	46.52	0.89	●
17	Norway	4.14	45.67	0.88	
18	Botswana	4.01	44.22	0.88	●
19	Belarus (2010)	3.91	43.07	0.87	●
20	Malta	3.71	40.80	0.86	
21	Gabon (2010)	3.69	40.57	0.86	●
22	Moldova, Rep. (2010)	3.66	40.26	0.85	●
23	United Arab Emirates (2008)	3.62	39.79	0.84	
24	Macedonia, FYR	3.55	39.08	0.83	●
25	Estonia	3.46	38.09	0.83	
26	Namibia	3.45	37.89	0.82	●
27	Lebanon (2010)	3.40	37.37	0.81	
28	Mongolia (2010)	2.97	32.54	0.81	
29	Lithuania	2.87	31.40	0.80	
30	Nepal (2008)	2.78	30.47	0.79	●
31	Swaziland	2.78	30.42	0.78	●
32	Belize (2010)	2.57	28.06	0.78	
33	Sweden	2.45	26.77	0.77	
34	Israel	2.44	26.59	0.76	
35	Croatia	2.43	26.46	0.76	
36	Switzerland	2.41	26.24	0.75	
37	Serbia (2010)	2.35	25.66	0.74	
38	Georgia (2010)	2.29	24.96	0.73	
39	Austria	2.26	24.58	0.73	
40	Latvia (2010)	2.26	24.55	0.72	
41	Kazakhstan (2010)	2.25	24.53	0.71	
42	Fiji (2010)	2.25	24.50	0.71	●
43	Jamaica (2010)	2.19	23.80	0.70	●
44	Malaysia (2010)	2.18	23.65	0.69	
45	Finland	2.16	23.52	0.68	
46	Portugal	2.08	22.57	0.68	
47	Canada	2.04	22.09	0.67	
48	Qatar (2010)	1.92	20.75	0.66	
49	Slovenia	1.90	20.60	0.65	
50	Germany	1.83	19.77	0.65	
51	Tunisia (2010)	1.80	19.45	0.64	
52	Armenia (2010)	1.80	19.41	0.63	
53	Lesotho	1.71	18.48	0.63	●
54	Jordan (2010)	1.65	17.76	0.62	
55	Denmark	1.63	17.56	0.61	○
56	Belgium	1.62	17.44	0.60	
57	Oman (2010)	1.60	17.23	0.60	
58	Korea, Rep. (2010)	1.56	16.76	0.59	
59	Czech Republic	1.54	16.53	0.58	
60	Saudi Arabia (2010)	1.41	15.03	0.58	
61	New Zealand (2010)	1.40	15.00	0.57	
62	Romania	1.40	15.00	0.56	
63	Morocco (2010)	1.35	14.36	0.55	
64	Zimbabwe (2010)	1.32	14.09	0.55	
65	France	1.32	14.02	0.54	
66	Italy	1.31	13.93	0.53	
67	Guyana (2010)	1.18	12.51	0.53	
68	Hungary	1.16	12.34	0.52	
69	Netherlands	1.13	11.98	0.51	○
70	Azerbaijan (2010)	1.10	11.56	0.50	
71	Poland	1.08	11.42	0.50	
72	Ukraine (2010)	1.03	10.79	0.49	
73	Sudan (2008)	1.02	10.76	0.48	●
74	Cameroon (2010)	1.00	10.52	0.47	●
75	Senegal (2010)	1.00	10.44	0.47	
76	Sri Lanka (2010)	0.99	10.40	0.46	
77	Bolivia, Plurinational St. (2010)	0.99	10.39	0.45	
78	Uzbekistan	0.95	9.95	0.45	
79	Uruguay (2010)	0.94	9.79	0.44	
80	Spain	0.90	9.37	0.43	
81	Tajikistan (2010)	0.81	8.37	0.42	
82	Panama (2010)	0.79	8.11	0.42	
83	Turkey	0.74	7.63	0.41	
84	Gambia	0.72	7.34	0.40	
85	Kyrgyzstan (2010)	0.71	7.20	0.40	
86	Ecuador (2010)	0.70	7.08	0.39	
87	Syrian Arab Rep. (2010)	0.65	6.61	0.38	
88	Australia (2010)	0.64	6.43	0.37	○
89	Japan (2010)	0.64	6.41	0.37	
90	Algeria (2010)	0.62	6.21	0.36	
91	United Kingdom	0.55	5.47	0.35	○
92	Chile (2010)	0.55	5.45	0.35	
93	Lao PDR (2010)	0.54	5.38	0.34	
94	Peru (2010)	0.54	5.34	0.33	
95	Togo	0.49	4.77	0.32	
96	Viet Nam (2010)	0.48	4.71	0.32	
97	Colombia (2010)	0.48	4.69	0.31	
98	El Salvador	0.48	4.65	0.30	
99	Thailand (2010)	0.48	4.64	0.29	
100	Venezuela, Bolivarian Rep.	0.46	4.50	0.29	
101	Costa Rica	0.46	4.40	0.28	
102	China (2010)	0.43	4.11	0.27	
103	Benin	0.42	4.05	0.27	
104	Paraguay	0.42	3.97	0.26	
105	Zambia	0.41	3.94	0.25	
106	Angola (2010)	0.41	3.88	0.24	
107	Nicaragua	0.40	3.83	0.24	
108	Russian Federation	0.38	3.59	0.23	○
109	Iran, Islamic Rep. (2010)	0.35	3.27	0.22	
110	Yemen	0.35	3.18	0.22	
111	Ghana	0.34	3.08	0.21	
112	Honduras	0.33	3.04	0.20	
113	Dominican Republic	0.33	3.01	0.19	
114	Kenya	0.33	3.00	0.19	
115	Côte d'Ivoire	0.31	2.81	0.18	
116	Argentina	0.27	2.34	0.17	
117	Mexico	0.27	2.30	0.17	○
118	Cambodia (2010)	0.25	2.15	0.16	
119	United States of America	0.25	2.09	0.15	○
120	Rwanda (2010)	0.24	1.95	0.14	
121	Mali (2010)	0.23	1.92	0.14	
122	Nigeria	0.21	1.69	0.13	
123	Madagascar (2010)	0.21	1.59	0.12	
124	Guatemala	0.20	1.49	0.12	
125	Pakistan (2010)	0.17	1.23	0.11	
126	India (2010)	0.17	1.18	0.10	
127	Burkina Faso (2010)	0.16	1.11	0.09	
128	Malawi	0.16	1.06	0.09	
129	Brazil	0.15	1.03	0.08	○
130	Indonesia (2010)	0.15	0.99	0.07	○
131	Niger (2010)	0.15	0.99	0.06	
132	Burundi (2010)	0.15	0.94	0.06	
133	Tanzania, United Rep.	0.14	0.86	0.05	
134	Mozambique	0.13	0.75	0.04	○
135	Bangladesh (2010)	0.13	0.71	0.04	○
136	Egypt	0.12	0.66	0.03	○
137	South Africa	0.12	0.65	0.02	○
138	Uganda	0.12	0.62	0.01	○
139	Philippines (2010)	0.11	0.58	0.01	○
140	Ethiopia (2010)	0.06	0.00	0.00	○
n/a	Singapore	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; United Nations database *UNdata* (2008–10)

2.3.1 Researchers

Researchers, headcounts (per million population) | 2008

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	13,384.33	100.00	1.00	●
2	Finland	10,382.21	77.55	0.99	●
3	Norway	9,237.37	68.99	0.98	●
4	Denmark	8,812.03	65.81	0.97	●
5	Portugal	7,059.31	52.71	0.97	●
6	Japan	7,038.38	52.55	0.96	
7	New Zealand (2007)	7,017.19	52.39	0.95	
8	Singapore	6,991.51	52.20	0.94	
9	Korea, Rep.	6,285.88	46.93	0.93	
10	Switzerland	6,057.41	45.22	0.92	
11	Estonia	5,383.92	40.18	0.92	
12	Germany (2007)	5,305.37	39.59	0.91	
13	Sweden	5,238.68	39.10	0.90	
14	Slovenia	5,016.42	37.43	0.89	●
15	Ireland	4,842.79	36.14	0.88	
16	Spain	4,822.46	35.98	0.87	●
17	Luxembourg	4,747.57	35.42	0.87	
18	United States of America (2006)	4,663.28	34.79	0.86	
19	France	4,661.60	34.78	0.85	
20	United Kingdom	4,269.18	31.85	0.84	
21	Canada (2006)	4,260.42	31.78	0.83	
22	Australia (2006)	4,224.33	31.51	0.82	
23	Czech Republic (2009)	4,127.71	30.79	0.82	
24	Austria	4,123.30	30.76	0.81	
25	Lithuania	4,023.45	30.01	0.80	
26	Slovakia (2009)	4,004.43	29.87	0.79	
27	Belgium	3,435.42	25.61	0.78	
28	Hungary	3,366.53	25.10	0.77	
29	Hong Kong (China) (2009)	3,293.37	24.55	0.76	
30	Latvia	3,278.89	24.44	0.76	
31	Tunisia	3,239.77	24.15	0.75	●
32	Netherlands	3,088.89	23.02	0.74	
33	Croatia	2,696.69	20.09	0.73	
34	Malta	2,638.03	19.65	0.72	
35	Russian Federation (2009)	2,580.92	19.22	0.71	
36	Poland	2,550.44	19.00	0.71	
37	Italy	2,431.45	18.11	0.70	
38	Belarus (2009)	2,134.80	15.89	0.69	
39	Jordan	1,933.68	14.38	0.68	
40	Greece (2007)	1,873.46	13.93	0.67	
41	Georgia (2005)	1,811.93	13.47	0.66	
42	Armenia (2009)	1,796.45	13.36	0.66	
43	Bulgaria	1,767.28	13.14	0.65	
44	Ukraine (2009)	1,665.69	12.38	0.64	
45	Argentina	1,609.67	11.96	0.63	
46	Turkey (2009)	1,592.79	11.84	0.62	
47	Iran, Islamic Rep.	1,491.37	11.08	0.61	●
48	Cyprus	1,453.11	10.79	0.61	
49	Romania	1,429.58	10.61	0.60	
50	Serbia (2009)	1,218.71	9.04	0.59	
51	Azerbaijan (2009)	1,217.77	9.03	0.58	
52	Brazil	1,100.10	8.15	0.57	
53	China (2007)	1,070.94	7.93	0.56	
54	Montenegro (2007)	1,068.54	7.92	0.55	
55	Egypt (2009)	1,017.53	7.53	0.55	
56	Macedonia, FYR	1,001.69	7.42	0.54	
57	Moldova, Rep. (2009)	988.38	7.32	0.53	
58	Morocco	934.69	6.91	0.52	
59	Botswana (2005)	923.40	6.83	0.51	
60	South Africa (2007)	820.68	6.06	0.50	
61	Bosnia and Herzegovina (2007)	781.42	5.77	0.50	
62	Costa Rica	755.40	5.57	0.49	
63	Malaysia (2006)	715.44	5.28	0.48	
64	Brunei Darussalam (2004)	685.50	5.05	0.47	
65	Senegal	666.74	4.91	0.46	
66	Mongolia (2009)	644.62	4.75	0.45	
67	Uruguay	643.46	4.74	0.45	
68	Kazakhstan (2009)	637.27	4.69	0.44	
69	Chile	630.05	4.64	0.43	
70	Thailand (2007)	574.99	4.22	0.42	
71	Trinidad and Tobago	556.71	4.09	0.41	
72	Albania	540.96	3.97	0.40	
73	Viet Nam (2002)	510.77	3.74	0.39	
74	Kyrgyzstan (2009)	434.46	3.17	0.39	
75	Algeria (2005)	419.75	3.06	0.38	
76	Gabon (2009)	359.39	2.61	0.37	
77	Mexico (2007)	352.88	2.56	0.36	
78	Colombia	332.91	2.41	0.35	
79	Pakistan (2009)	320.77	2.32	0.34	
80	Sudan (2005)	291.80	2.11	0.34	
81	Tajikistan (2009)	253.86	1.82	0.33	
82	Cameroon	243.19	1.74	0.32	
83	Venezuela, Bolivarian Rep. (2009)	239.45	1.72	0.31	
84	Sri Lanka	197.18	1.40	0.30	
85	Ecuador	186.60	1.32	0.29	
86	Peru (2004)	182.26	1.29	0.29	
87	Indonesia (2009)	173.30	1.22	0.28	
88	Kuwait (2009)	151.91	1.06	0.27	
89	Togo (2007)	147.54	1.03	0.26	
90	India (2005)	136.94	0.95	0.25	
91	Paraguay	136.43	0.95	0.24	
92	Panama	135.92	0.94	0.24	
93	Côte d'Ivoire (2005)	133.01	0.92	0.23	
94	Philippines (2007)	129.61	0.89	0.22	
95	Benin (2007)	123.27	0.85	0.21	
96	Bolivia, Plurinational St. (2002)	120.07	0.82	0.20	
97	Nigeria (2007)	119.93	0.82	0.19	
98	Nepal (2002)	117.36	0.80	0.18	
99	Lesotho (2009)	106.55	0.72	0.18	
100	Gambia (2009)	106.44	0.72	0.17	
101	Kenya (2007)	93.61	0.63	0.16	
102	Madagascar (2009)	90.29	0.60	0.15	
103	Honduras (2003)	81.55	0.54	0.14	
104	El Salvador (2009)	73.86	0.48	0.13	
105	Burkina Faso (2010)	69.47	0.45	0.13	
106	Tanzania, United Rep. (2007)	67.08	0.43	0.12	
107	Mali (2007)	62.55	0.39	0.11	
108	Nicaragua (2004)	60.87	0.38	0.10	
109	Cambodia (2002)	57.92	0.36	0.09	
110	Rwanda (2009)	54.70	0.33	0.08	
111	Malawi (2007)	53.94	0.33	0.08	
112	Uganda (2009)	52.61	0.32	0.07	○
113	Guatemala	51.86	0.31	0.06	○
114	Zambia	49.44	0.30	0.05	○
115	Saudi Arabia (2009)	47.41	0.28	0.04	○
116	Lao PDR (2002)	38.02	0.21	0.03	○
117	Ethiopia (2007)	30.58	0.15	0.03	
118	Ghana (2007)	28.00	0.14	0.02	○
119	Mozambique (2007)	23.93	0.10	0.01	○
120	Niger (2005)	9.93	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; World Bank *World Development Indicators* database (2002–10)

2.3.2 Gross expenditure on R&D (GERD)

GERD: Gross expenditure on R&D (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Israel	4.27	100.00	1.00	●
2	Finland (2010)	3.84	89.85	0.99	●
3	Sweden	3.62	84.71	0.98	●
4	Japan (2008)	3.45	80.53	0.97	●
5	Korea, Rep. (2008)	3.36	78.54	0.96	●
6	Denmark	3.02	70.51	0.96	
7	Switzerland (2008)	3.00	69.94	0.95	
8	Germany	2.82	65.88	0.94	●
9	United States of America (2008)	2.79	65.00	0.93	
10	Austria (2010)	2.75	64.13	0.92	
11	Singapore (2008)	2.66	62.06	0.91	
12	Iceland (2008)	2.64	61.61	0.90	
13	Australia (2008)	2.35	54.71	0.89	
14	France	2.23	51.88	0.88	
15	Belgium	1.96	45.63	0.88	
16	Canada	1.95	45.47	0.87	
17	Slovenia	1.86	43.16	0.86	
18	Netherlands	1.84	42.84	0.85	
19	United Kingdom (2010)	1.82	42.40	0.84	
20	Norway	1.80	41.81	0.83	
21	Ireland	1.77	41.03	0.82	
22	Luxembourg	1.68	38.98	0.81	
23	Portugal	1.66	38.43	0.81	
24	Czech Republic	1.53	35.40	0.80	
25	China (2008)	1.47	34.07	0.79	
26	Estonia	1.44	33.30	0.78	
27	Spain	1.38	32.04	0.77	
28	Italy	1.27	29.33	0.76	
29	Russian Federation	1.25	28.96	0.75	
30	New Zealand (2007)	1.17	27.11	0.74	
31	Montenegro (2007)	1.15	26.52	0.73	
32	Hungary	1.15	26.50	0.73	
33	Tunisia	1.10	25.47	0.72	
34	Brazil (2008)	1.08	24.92	0.71	
35	South Africa (2008)	0.93	21.26	0.70	
36	Serbia	0.89	20.34	0.69	
37	Ukraine	0.86	19.64	0.68	
38	Turkey	0.85	19.46	0.67	
39	Lithuania	0.84	19.15	0.66	
40	Croatia	0.83	19.10	0.65	
41	Hong Kong (China)	0.79	18.10	0.65	
42	Iran, Islamic Rep. (2008)	0.79	18.03	0.64	●
43	India (2007)	0.76	17.31	0.63	
44	Poland	0.68	15.37	0.62	
45	Uruguay (2008)	0.66	15.05	0.61	
46	Belarus	0.64	14.60	0.60	
47	Gabon	0.64	14.51	0.59	
48	Morocco (2006)	0.64	14.45	0.58	
49	Malaysia (2006)	0.63	14.43	0.58	
50	Greece (2007)	0.58	13.08	0.57	
51	Malta	0.55	12.49	0.56	
52	Bulgaria	0.53	11.92	0.55	
53	Moldova, Rep.	0.53	11.86	0.54	
54	Argentina (2008)	0.52	11.81	0.53	
55	Botswana (2005)	0.52	11.63	0.52	
56	Slovakia	0.48	10.79	0.51	
57	Romania	0.48	10.78	0.50	
58	Pakistan	0.46	10.41	0.50	
59	Cyprus	0.46	10.31	0.49	
60	Latvia	0.46	10.26	0.48	
61	Tanzania, United Rep. (2007)	0.43	9.71	0.47	
62	Jordan (2008)	0.42	9.39	0.46	
63	Kenya (2007)	0.42	9.32	0.45	
64	Uganda	0.41	9.18	0.44	
65	Costa Rica (2008)	0.40	8.92	0.43	
66	Chile (2008)	0.39	8.77	0.42	
67	Mauritius (2005)	0.37	8.25	0.42	
68	Senegal (2008)	0.37	8.22	0.41	
69	Mexico (2007)	0.37	8.20	0.40	
70	Zambia (2008)	0.34	7.50	0.39	
71	Sudan (2005)	0.29	6.29	0.38	
72	Bolivia, Plurinational St. (2002)	0.28	6.00	0.37	
73	Armenia	0.27	5.92	0.36	
74	Ecuador (2008)	0.26	5.60	0.35	
75	Azerbaijan	0.26	5.54	0.35	
76	Mali (2007)	0.25	5.35	0.34	
77	Mongolia	0.24	5.20	0.33	
78	Ghana (2007)	0.23	4.94	0.32	
79	Kazakhstan	0.23	4.89	0.31	
80	Macedonia, FYR (2008)	0.23	4.79	0.30	
81	Nigeria (2007)	0.22	4.66	0.29	
82	Thailand (2007)	0.21	4.52	0.28	
83	Egypt	0.21	4.46	0.27	
84	Mozambique (2007)	0.21	4.33	0.27	
85	Burkina Faso	0.21	4.33	0.26	
86	Panama	0.21	4.32	0.25	
87	Viet Nam (2002)	0.19	4.03	0.24	
88	Georgia (2005)	0.18	3.65	0.23	
89	Ethiopia (2007)	0.17	3.55	0.22	
90	Colombia	0.16	3.25	0.21	
91	Kyrgyzstan	0.16	3.24	0.20	
92	Albania (2008)	0.15	3.10	0.19	
93	Peru (2004)	0.15	3.01	0.19	
94	Madagascar	0.15	2.97	0.18	
95	Sri Lanka (2008)	0.11	2.19	0.17	
96	Philippines (2007)	0.11	2.07	0.16	
97	El Salvador (2008)	0.11	2.06	0.15	
98	Kuwait	0.11	2.05	0.14	
99	Tajikistan	0.09	1.51	0.13	
100	Saudi Arabia	0.08	1.48	0.12	○
101	Indonesia	0.08	1.46	0.12	
102	Algeria (2005)	0.07	1.06	0.11	
103	Guatemala (2008)	0.06	0.95	0.10	
104	Jamaica (2002)	0.06	0.93	0.09	○
105	Paraguay (2008)	0.06	0.91	0.08	○
106	Cambodia (2002)	0.05	0.67	0.07	
107	Nicaragua (2002)	0.05	0.56	0.06	○
108	Trinidad and Tobago (2008)	0.04	0.49	0.05	○
109	Honduras (2004)	0.04	0.47	0.04	○
110	Brunei Darussalam (2004)	0.04	0.37	0.04	○
111	Lao PDR (2002)	0.04	0.33	0.03	○
112	Lesotho	0.03	0.19	0.02	○
113	Bosnia and Herzegovina	0.02	0.01	0.01	○
114	Gambia	0.02	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; World Bank *World Development Indicators* database (2002–10)

2.3.3 Quality of scientific research institutions

Average answer to the question: How would you assess the quality of scientific research institutions in your country? 1 = very poor; 7 = the best in their field internationally† | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Israel	6.32	88.64	1.00	●
2	Switzerland	6.27	87.80	0.99	●
3	United Kingdom	6.12	85.31	0.98	●
4	Sweden	5.98	83.04	0.98	
5	Belgium	5.86	80.94	0.97	●
6	Qatar	5.83	80.55	0.96	●
7	United States of America	5.83	80.45	0.95	
8	Netherlands	5.68	78.01	0.95	
9	Canada	5.61	76.81	0.94	
10	Germany	5.59	76.58	0.93	
11	Japan	5.54	75.75	0.92	
12	Singapore	5.53	75.53	0.92	
13	Australia	5.48	74.68	0.91	
14	Denmark	5.36	72.70	0.90	
15	France	5.35	72.47	0.89	
16	Ireland	5.29	71.51	0.89	
17	New Zealand	5.24	70.65	0.88	
18	Finland	5.22	70.37	0.87	
19	Hungary	5.18	69.72	0.86	
20	Austria	5.18	69.70	0.86	
21	Iceland	5.11	68.53	0.85	
22	Portugal	4.93	65.50	0.84	
23	Malaysia	4.86	64.39	0.83	
24	Korea, Rep.	4.82	63.62	0.83	
25	Czech Republic	4.82	63.61	0.82	
26	Estonia	4.80	63.28	0.81	
27	Norway	4.73	62.11	0.80	
28	Luxembourg	4.70	61.63	0.80	
29	South Africa	4.67	61.12	0.79	
30	Costa Rica	4.64	60.59	0.78	
31	Hong Kong (China)	4.62	60.27	0.77	
32	Slovenia	4.60	60.04	0.77	
33	India	4.51	58.54	0.76	
34	Saudi Arabia	4.46	57.68	0.75	
35	Lithuania	4.40	56.63	0.74	
36	China	4.31	55.20	0.73	
37	Spain	4.25	54.20	0.73	
38	United Arab Emirates	4.23	53.79	0.72	
39	Argentina	4.22	53.68	0.71	
40	Brazil	4.14	52.28	0.70	
41	Senegal	4.13	52.19	0.70	
42	Poland	4.11	51.85	0.69	
43	Montenegro	4.11	51.82	0.68	
44	Cyprus	4.11	51.76	0.67	
45	Croatia	4.05	50.90	0.67	
46	Iran, Islamic Rep.	4.05	50.78	0.66	●
47	Sri Lanka	4.04	50.70	0.65	
48	Chile	4.03	50.45	0.64	
49	Tunisia	4.02	50.31	0.64	
50	Kenya	4.01	50.13	0.63	
51	Mexico	3.95	49.20	0.62	
52	Indonesia	3.94	48.93	0.61	
53	Latvia	3.94	48.93	0.61	
54	Italy	3.91	48.42	0.60	
55	Uruguay	3.90	48.36	0.59	
56	Thailand	3.86	47.69	0.58	
57	Russian Federation	3.84	47.36	0.58	
58	Serbia	3.81	46.76	0.57	
59	Oman	3.75	45.87	0.56	
60	Jamaica	3.73	45.55	0.55	
61	Mali	3.71	45.08	0.55	●
62	Burkina Faso	3.70	44.92	0.54	●
63	Malawi	3.67	44.52	0.53	
64	Tanzania, United Rep.	3.67	44.48	0.52	
65	Ghana	3.67	44.47	0.52	
66	Colombia	3.65	44.15	0.51	
67	Panama	3.64	43.96	0.50	
68	Zambia	3.62	43.59	0.49	
69	Ukraine	3.61	43.42	0.48	
70	Malta	3.59	43.16	0.48	○
71	Viet Nam	3.55	42.47	0.47	
72	Kuwait	3.51	41.91	0.46	
73	Gambia	3.48	41.33	0.45	
74	Mauritius	3.47	41.21	0.45	
75	Bulgaria	3.41	40.21	0.44	
76	Pakistan	3.41	40.16	0.43	
77	Rwanda	3.39	39.85	0.42	
78	Botswana	3.38	39.74	0.42	
79	Benin	3.36	39.36	0.41	
80	Namibia	3.36	39.32	0.40	
81	Trinidad and Tobago	3.35	39.16	0.39	
82	Brunei Darussalam	3.35	39.15	0.39	
83	Macedonia, FYR	3.32	38.71	0.38	
84	Azerbaijan	3.31	38.55	0.37	
85	Cambodia	3.31	38.54	0.36	
86	Turkey	3.31	38.50	0.36	
87	Greece	3.29	38.20	0.35	
88	Romania	3.25	37.43	0.34	
89	Nigeria	3.24	37.31	0.33	
90	Ethiopia	3.24	37.30	0.33	
91	Uganda	3.24	37.29	0.32	
92	Cameroon	3.24	37.27	0.31	
93	Morocco	3.23	37.19	0.30	
94	Slovakia	3.23	37.19	0.30	
95	Bosnia and Herzegovina	3.22	37.02	0.29	
96	Tajikistan	3.19	36.48	0.28	
97	Guyana	3.15	35.80	0.27	
98	Mozambique	3.14	35.62	0.27	
99	Bahrain	3.12	35.39	0.26	
100	Guatemala	3.12	35.29	0.25	
101	Jordan	3.04	34.00	0.24	
102	Zimbabwe	3.02	33.60	0.23	
103	Philippines	3.01	33.53	0.23	
104	Armenia	2.97	32.83	0.22	
105	Bolivia, Plurinational St.	2.97	32.76	0.21	
106	Peru	2.88	31.30	0.20	
107	Mongolia	2.87	31.20	0.20	
108	Honduras	2.86	30.92	0.19	
109	Venezuela, Bolivarian Rep.	2.82	30.27	0.18	
110	Egypt	2.81	30.14	0.17	
111	Côte d'Ivoire	2.79	29.81	0.17	
112	Bangladesh	2.75	29.14	0.16	
113	Madagascar	2.73	28.86	0.15	
114	Georgia	2.72	28.75	0.14	○
115	Ecuador	2.71	28.44	0.14	
116	Kazakhstan	2.68	28.04	0.13	○
117	Moldova, Rep.	2.67	27.78	0.12	○
118	Dominican Republic	2.65	27.53	0.11	○
119	Syrian Arab Rep.	2.62	26.95	0.11	
120	Algeria	2.49	24.79	0.10	
121	Lebanon	2.41	23.58	0.09	○
122	Belize	2.38	23.05	0.08	○
123	Burundi	2.34	22.38	0.08	
124	Lesotho	2.31	21.84	0.07	
125	Nicaragua	2.29	21.42	0.06	○
126	El Salvador	2.18	19.62	0.05	○
127	Albania	2.18	19.59	0.05	○
128	Swaziland	2.17	19.51	0.04	○
129	Nepal	2.11	18.42	0.03	○
130	Paraguay	2.06	17.67	0.02	○
131	Kyrgyzstan	1.99	16.45	0.02	○
132	Yemen	1.68	11.29	0.01	○
133	Angola	1.57	9.43	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2010–2011*

3.1.1 ICT access

ICT access index* | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	9.06	90.60	1.00	●
2	Iceland	8.91	89.08	0.99	●
3	Luxembourg	8.80	88.05	0.99	●
4	Switzerland	8.70	86.96	0.98	
5	Sweden	8.57	85.73	0.97	
6	Germany	8.41	84.11	0.96	●
7	United Kingdom	8.36	83.62	0.96	
8	Denmark	8.33	83.32	0.95	
9	Netherlands	8.29	82.92	0.94	
10	Korea, Rep.	8.21	82.13	0.93	
11	Singapore	8.14	81.41	0.93	
12	Norway	7.88	78.84	0.92	
13	France	7.75	77.55	0.91	●
14	Austria	7.68	76.78	0.91	
15	Malta	7.64	76.38	0.90	
16	Finland	7.61	76.11	0.89	
17	Belgium	7.54	75.38	0.88	
18	New Zealand	7.53	75.34	0.88	
19	Ireland	7.45	74.46	0.87	
20	Canada	7.43	74.32	0.86	
21	Israel	7.30	73.05	0.86	
22	United States of America	7.24	72.41	0.85	
23	Australia	7.22	72.17	0.84	
24	Slovenia	7.21	72.13	0.83	
25	Portugal	7.14	71.42	0.83	
26	Japan	7.14	71.41	0.82	
27	Qatar	7.09	70.89	0.81	
28	Croatia	7.05	70.49	0.80	●
29	Spain	6.98	69.80	0.80	
30	Italy	6.93	69.29	0.79	
31	Estonia	6.91	69.11	0.78	
32	United Arab Emirates	6.76	67.57	0.78	
33	Bahrain	6.73	67.29	0.77	
34	Brunei Darussalam	6.51	65.12	0.76	
35	Poland	6.49	64.87	0.75	
36	Czech Republic	6.48	64.84	0.75	
37	Lithuania	6.48	64.77	0.74	
38	Russian Federation	6.38	63.85	0.73	
39	Greece	6.37	63.74	0.72	
40	Saudi Arabia	6.37	63.74	0.72	
41	Hungary	6.34	63.38	0.71	
42	Serbia	6.32	63.23	0.70	
43	Slovakia	6.16	61.61	0.70	
44	Cyprus	6.13	61.32	0.69	
45	Latvia	6.03	60.27	0.68	
46	Bulgaria	5.77	57.70	0.67	
47	Uruguay	5.75	57.53	0.67	
48	Belarus	5.67	56.69	0.66	
49	Macedonia, FYR	5.57	55.71	0.65	
50	Montenegro	5.55	55.47	0.64	
51	Romania	5.50	55.04	0.64	
52	Trinidad and Tobago	5.32	53.16	0.63	
53	Argentina	5.26	52.56	0.62	
54	Chile	5.17	51.70	0.62	
55	Moldova, Rep.	5.17	51.67	0.61	
56	Oman	5.00	49.99	0.60	
57	Turkey	4.97	49.74	0.59	
58	Ukraine	4.79	47.86	0.59	
59	Panama	4.75	47.46	0.58	
60	Malaysia	4.70	46.99	0.57	
61	Mauritius	4.65	46.51	0.57	
62	Brazil	4.62	46.21	0.56	
63	Kazakhstan	4.61	46.15	0.55	
64	Costa Rica	4.60	45.98	0.54	
65	Iran, Islamic Rep.	4.60	45.96	0.54	
66	Kuwait (2008)	4.50	44.99	0.53	
67	Viet Nam	4.39	43.92	0.52	
68	Bosnia and Herzegovina	4.35	43.52	0.51	
69	Jordan	4.32	43.16	0.51	
70	Azerbaijan	4.28	42.83	0.50	
71	Fiji	4.09	40.88	0.49	
72	Armenia	4.07	40.68	0.49	
73	Egypt	4.07	40.68	0.48	
74	Morocco	4.05	40.49	0.47	
75	Syrian Arab Rep.	3.96	39.62	0.46	●
76	Mexico	3.94	39.39	0.46	
77	Albania	3.93	39.32	0.45	
78	Colombia	3.91	39.12	0.44	
79	Lebanon	3.89	38.88	0.43	
80	China	3.86	38.64	0.43	
81	Venezuela, Bolivarian Rep.	3.83	38.29	0.42	
82	Ecuador	3.80	38.01	0.41	
83	Jamaica	3.80	38.00	0.41	
84	Thailand	3.62	36.25	0.40	
85	Peru	3.62	36.16	0.39	
86	Mongolia	3.60	36.03	0.38	
87	Tunisia	3.60	35.97	0.38	
88	Georgia	3.56	35.57	0.37	
89	El Salvador	3.53	35.31	0.36	
90	Honduras	3.45	34.47	0.36	
91	Guatemala	3.44	34.40	0.35	
92	Algeria	3.34	33.37	0.34	
93	Gabon	3.26	32.60	0.33	
94	South Africa	3.15	31.53	0.33	
95	Sri Lanka	3.15	31.52	0.32	
96	Philippines	3.14	31.38	0.31	
97	Indonesia	3.13	31.28	0.30	
98	Botswana	3.12	31.19	0.30	
99	Dominican Republic	3.12	31.18	0.29	
100	Guyana	3.11	31.08	0.28	
101	Paraguay	3.03	30.25	0.28	
102	Bolivia, Plurinational St.	2.84	28.40	0.27	
103	Namibia	2.69	26.94	0.26	
104	Nicaragua	2.53	25.32	0.25	
105	Cambodia	2.45	24.52	0.25	
106	Pakistan	2.40	23.97	0.24	
107	Kyrgyzstan	2.38	23.77	0.23	
108	India	2.37	23.68	0.22	
109	Côte d'Ivoire	2.36	23.62	0.22	
110	Gambia	2.33	23.33	0.21	
111	Senegal	2.28	22.83	0.20	
112	Ghana	2.23	22.27	0.20	
113	Benin	2.22	22.20	0.19	
114	Lao PDR	2.21	22.12	0.18	
115	Kenya	2.17	21.68	0.17	
116	Swaziland	2.11	21.09	0.17	
117	Uzbekistan	2.08	20.85	0.16	
118	Togo	2.00	20.03	0.15	
119	Yemen	1.93	19.29	0.14	
120	Bangladesh	1.91	19.13	0.14	
121	Tajikistan (2008)	1.90	19.00	0.13	
122	Madagascar	1.89	18.93	0.12	
123	Sudan (2008)	1.89	18.87	0.12	
124	Nigeria	1.87	18.72	0.11	
125	Zimbabwe	1.86	18.58	0.10	
126	Angola	1.86	18.56	0.09	
127	Mali	1.84	18.40	0.09	
128	Burkina Faso	1.76	17.62	0.08	
129	Nepal	1.75	17.53	0.07	
130	Mozambique	1.67	16.71	0.07	
131	Tanzania, United Rep.	1.64	16.45	0.06	
132	Cameroon	1.64	16.43	0.05	○
133	Rwanda	1.61	16.08	0.04	
134	Uganda	1.58	15.79	0.04	○
135	Niger	1.55	15.54	0.03	
136	Zambia	1.54	15.43	0.02	○
137	Ethiopia	1.53	15.25	0.01	○
138	Malawi (2008)	1.44	14.40	0.01	○
139	Lesotho (2008)	1.40	14.03	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	

SOURCE: International Telecommunication Union, *Measuring the Information Society 2011*, ICT Development Index 2011 (2008–10)

3.1.2 ICT use

ICT use index* | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	7.85	78.50	1.00	●
2	Sweden	7.55	75.49	0.99	●
3	Luxembourg	7.24	72.41	0.99	●
4	Finland	7.11	71.08	0.98	
5	Japan	7.08	70.83	0.97	
6	Denmark	6.85	68.49	0.96	
7	Norway	6.60	66.00	0.96	
8	Iceland	6.58	65.83	0.95	
9	Australia	6.57	65.71	0.94	●
10	Hong Kong (China)	6.46	64.64	0.93	
11	United Kingdom	6.44	64.36	0.93	
12	Netherlands	6.38	63.85	0.92	
13	Switzerland	6.37	63.72	0.91	
14	New Zealand	6.35	63.51	0.91	
15	Singapore	6.03	60.25	0.90	
16	Austria	5.99	59.90	0.89	
17	United States of America	5.89	58.92	0.88	
18	France	5.74	57.44	0.88	
19	Israel	5.71	57.05	0.87	
20	Germany	5.69	56.92	0.86	
21	Spain	5.35	53.46	0.86	
22	Portugal	5.19	51.94	0.85	
23	Ireland	5.17	51.68	0.84	
24	Belgium	5.16	51.56	0.83	
25	United Arab Emirates	5.12	51.22	0.83	
26	Italy	4.99	49.95	0.82	
27	Canada	4.87	48.65	0.81	
28	Cyprus	4.78	47.83	0.80	
29	Slovenia	4.78	47.76	0.80	
30	Malta	4.66	46.59	0.79	
31	Greece	4.52	45.22	0.78	
32	Slovakia	4.44	44.36	0.78	
33	Croatia	4.33	43.31	0.77	
34	Latvia	4.26	42.61	0.76	
35	Hungary	4.26	42.57	0.75	
36	Estonia	4.09	40.88	0.75	
37	Czech Republic	4.03	40.29	0.74	
38	Brunei Darussalam	4.01	40.10	0.73	
39	Lithuania	3.97	39.73	0.72	
40	Poland	3.84	38.38	0.72	
41	Qatar	3.75	37.53	0.71	
42	Saudi Arabia	3.59	35.91	0.70	
43	Montenegro	3.46	34.57	0.70	
44	Bahrain	3.22	32.17	0.69	
45	Romania	3.20	31.97	0.68	
46	Bulgaria	3.17	31.70	0.67	
47	Malaysia	3.15	31.52	0.67	
48	Macedonia, FYR	3.11	31.14	0.66	
49	Bosnia and Herzegovina	2.67	26.65	0.65	
50	Russian Federation	2.62	26.20	0.64	
51	Oman	2.55	25.47	0.64	
52	Serbia	2.47	24.68	0.63	
53	Turkey	2.46	24.60	0.62	
54	Belarus	2.41	24.07	0.62	
55	Chile	2.31	23.13	0.61	
56	Uruguay	2.26	22.64	0.60	
57	Moldova, Rep.	2.26	22.60	0.59	
58	Trinidad and Tobago	2.22	22.15	0.59	
59	Venezuela, Bolivarian Rep.	2.18	21.77	0.58	
60	Argentina	2.16	21.55	0.57	
61	Brazil	2.11	21.07	0.57	
62	Morocco	2.05	20.52	0.56	
63	Panama	1.97	19.70	0.55	
64	Mauritius	1.91	19.14	0.54	
65	Mexico	1.86	18.63	0.54	
66	Georgia	1.81	18.09	0.53	
67	Costa Rica	1.74	17.41	0.52	
68	China	1.73	17.30	0.51	
69	Colombia	1.71	17.15	0.51	
70	Albania	1.69	16.89	0.50	
71	Dominican Republic	1.59	15.93	0.49	
72	Viet Nam	1.57	15.72	0.49	
73	Peru	1.56	15.55	0.48	
74	Armenia	1.55	15.54	0.47	
75	Azerbaijan	1.53	15.31	0.46	
76	Jordan	1.52	15.23	0.46	
77	Tunisia	1.52	15.16	0.45	
78	Philippines	1.49	14.88	0.44	
79	Kazakhstan	1.44	14.35	0.43	
80	Jamaica	1.37	13.67	0.43	
81	Ukraine	1.35	13.55	0.42	
82	Lebanon	1.29	12.95	0.41	
83	Kuwait (2008)	1.29	12.85	0.41	
84	Egypt	1.20	12.03	0.40	
85	Ecuador	1.16	11.64	0.39	
86	Guyana	1.08	10.84	0.38	
87	Thailand	1.05	10.48	0.38	
88	Kenya	1.05	10.48	0.37	
89	Nigeria	1.05	10.45	0.36	
90	South Africa	1.04	10.45	0.36	
91	Paraguay	0.95	9.55	0.35	
92	Mongolia	0.86	8.61	0.34	
93	El Salvador	0.82	8.22	0.33	
94	Kyrgyzstan	0.82	8.20	0.33	
95	Uzbekistan	0.81	8.14	0.32	
96	Sri Lanka	0.77	7.75	0.31	
97	Bolivia, Plurinational St.	0.77	7.67	0.30	
98	Syrian Arab Rep.	0.75	7.49	0.30	
99	Indonesia	0.69	6.91	0.29	
100	Senegal	0.65	6.55	0.28	
101	Fiji	0.64	6.44	0.28	
102	Pakistan	0.60	5.97	0.27	
103	Guatemala	0.57	5.74	0.26	
104	Honduras	0.56	5.63	0.25	
105	Algeria	0.56	5.57	0.25	
106	Angola	0.53	5.27	0.24	
107	Namibia	0.49	4.89	0.23	
108	Nicaragua	0.48	4.79	0.22	
109	Iran, Islamic Rep.	0.47	4.70	0.22	
110	Botswana	0.44	4.44	0.21	
111	Uganda	0.44	4.40	0.20	
112	Tanzania, United Rep.	0.44	4.38	0.20	
113	Zimbabwe	0.42	4.22	0.19	
114	Yemen	0.38	3.80	0.18	
115	Sudan (2008)	0.36	3.57	0.17	
116	Cambodia	0.35	3.53	0.17	
117	India	0.33	3.28	0.16	
118	Gambia	0.32	3.24	0.15	
119	Tajikistan (2008)	0.32	3.20	0.14	
120	Ghana	0.32	3.18	0.14	
121	Rwanda	0.30	3.01	0.13	
122	Swaziland	0.27	2.75	0.12	
123	Lao PDR	0.26	2.57	0.12	
124	Gabon	0.25	2.55	0.11	
125	Nepal	0.25	2.48	0.10	
126	Zambia	0.23	2.29	0.09	
127	Mozambique	0.19	1.92	0.09	
128	Togo	0.18	1.84	0.08	
129	Cameroon	0.16	1.64	0.07	○
130	Bangladesh	0.13	1.32	0.07	○
131	Mali	0.13	1.28	0.06	
132	Benin	0.12	1.21	0.05	○
133	Lesotho (2008)	0.12	1.20	0.04	○
134	Côte d'Ivoire	0.09	0.89	0.04	○
135	Madagascar	0.09	0.86	0.03	○
136	Malawi (2008)	0.07	0.72	0.02	○
137	Burkina Faso	0.05	0.51	0.01	○
138	Ethiopia	0.03	0.34	0.01	○
139	Niger	0.03	0.29	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	

SOURCE: International Telecommunication Union, *Measuring the Information Society 2011*, ICT Development Index 2011 (2008–10)

3.1.3 Government's online service

Government's online service index* | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	1.00	100.00	0.99	●
1	Singapore	1.00	100.00	0.99	●
1	United States of America	1.00	100.00	0.99	●
4	United Kingdom	0.97	97.39	0.98	●
5	Netherlands	0.96	96.08	0.97	●
6	Canada	0.89	88.89	0.96	●
7	Finland	0.88	88.24	0.96	
8	France	0.88	87.58	0.95	●
9	Australia	0.86	86.27	0.92	
9	Bahrain	0.86	86.27	0.92	●
9	Japan	0.86	86.27	0.92	
9	United Arab Emirates	0.86	86.27	0.92	●
13	Denmark	0.86	85.62	0.91	
13	Norway	0.86	85.62	0.91	
15	Israel	0.85	84.97	0.90	
16	Colombia	0.84	84.31	0.88	●
16	Sweden	0.84	84.31	0.88	
18	Estonia	0.82	82.35	0.88	
19	Saudi Arabia	0.80	79.74	0.87	●
20	Malaysia	0.79	79.08	0.86	
21	Kazakhstan	0.78	78.43	0.85	●
21	New Zealand	0.78	78.43	0.85	
23	Spain	0.76	75.82	0.84	
24	Chile	0.75	75.16	0.83	●
24	Germany	0.75	75.16	0.83	
26	Austria	0.75	74.51	0.82	
27	Qatar	0.74	73.86	0.81	
28	Mexico	0.73	73.20	0.81	●
29	Lithuania	0.70	69.93	0.79	
29	Luxembourg	0.70	69.93	0.79	
31	Hungary	0.69	68.63	0.78	
32	Brazil	0.67	67.32	0.76	
32	El Salvador	0.67	67.32	0.76	●
32	Switzerland	0.67	67.32	0.76	
35	Oman	0.67	66.67	0.75	●
35	Slovenia	0.67	66.67	0.75	
37	Russian Federation	0.66	66.01	0.74	
38	Portugal	0.65	65.36	0.73	
39	Belgium	0.65	64.71	0.73	
40	Croatia	0.64	64.05	0.72	
41	Malta	0.61	61.44	0.71	
42	Egypt	0.60	60.13	0.70	●
42	Georgia	0.60	60.13	0.70	
44	Brunei Darussalam	0.59	59.48	0.69	
45	Latvia	0.59	58.82	0.68	
45	Mongolia	0.59	58.82	0.68	
47	Kuwait	0.58	58.17	0.67	
48	Greece	0.58	57.52	0.65	
48	Italy	0.58	57.52	0.65	
48	Serbia	0.58	57.52	0.65	
51	Cyprus	0.56	56.21	0.64	
52	Uruguay	0.55	54.90	0.63	
53	Czech Republic	0.54	54.25	0.62	
53	Iceland	0.54	54.25	0.62	
55	Dominican Republic	0.54	53.59	0.59	
55	India	0.54	53.59	0.59	
55	Ireland	0.54	53.59	0.59	
55	Poland	0.54	53.59	0.59	
59	Argentina	0.53	52.94	0.58	
59	China	0.53	52.94	0.58	
61	Moldova, Rep.	0.52	51.63	0.55	
61	Peru	0.52	51.63	0.55	
61	Romania	0.52	51.63	0.55	
64	Montenegro	0.51	50.98	0.54	
64	Thailand	0.51	50.98	0.54	
66	Slovakia	0.50	50.33	0.53	
67	Costa Rica	0.50	49.67	0.50	
67	Indonesia	0.50	49.67	0.50	
67	Philippines	0.50	49.67	0.50	
67	Uzbekistan	0.50	49.67	0.50	
71	Bulgaria	0.49	49.02	0.49	
71	Iran, Islamic Rep.	0.49	49.02	0.49	
73	Trinidad and Tobago	0.48	48.37	0.47	
73	Venezuela, Bolivarian Rep.	0.48	48.37	0.47	
75	Lebanon	0.48	47.71	0.46	
75	Tunisia	0.48	47.71	0.46	
77	Ethiopia	0.47	47.06	0.45	
78	Guatemala	0.46	46.41	0.43	
78	Panama	0.46	46.41	0.43	
78	Turkey	0.46	46.41	0.43	
81	Ecuador	0.46	45.75	0.41	
81	Paraguay	0.46	45.75	0.41	
81	South Africa	0.46	45.75	0.41	
84	Macedonia, FYR	0.45	45.10	0.40	
85	Bangladesh	0.44	44.44	0.40	
86	Kenya	0.43	43.14	0.38	
86	Mauritius	0.43	43.14	0.38	
88	Albania	0.42	42.48	0.35	
88	Kyrgyzstan	0.42	42.48	0.35	
88	Ukraine	0.42	42.48	0.35	
88	Viet Nam	0.42	42.48	0.35	
92	Belarus	0.41	41.18	0.34	
92	Bolivia, Plurinational St.	0.41	41.18	0.34	
94	Belize	0.40	39.87	0.33	
95	Jordan	0.39	39.22	0.32	
96	Honduras	0.38	37.91	0.31	
96	Sri Lanka	0.38	37.91	0.31	
98	Bosnia and Herzegovina	0.37	37.25	0.30	
99	Azerbaijan	0.37	36.60	0.28	
99	Mozambique	0.37	36.60	0.28	
99	Pakistan	0.37	36.60	0.28	
102	Botswana	0.36	35.95	0.27	
102	Fiji	0.36	35.95	0.27	
104	Tanzania, United Rep.	0.35	35.29	0.26	
105	Senegal	0.35	34.64	0.25	
106	Rwanda	0.34	33.99	0.24	
107	Angola	0.33	33.33	0.23	
107	Côte d'Ivoire	0.33	33.33	0.23	
109	Armenia	0.33	32.68	0.22	
110	Gambia	0.32	32.03	0.20	
110	Madagascar	0.32	32.03	0.20	
110	Mali	0.32	32.03	0.20	
113	Nicaragua	0.31	31.37	0.19	
113	Zambia	0.31	31.37	0.19	
115	Jamaica	0.31	30.72	0.18	
116	Cameroon	0.30	30.07	0.15	
116	Ghana	0.30	30.07	0.15	
116	Lesotho	0.30	30.07	0.15	
116	Namibia	0.30	30.07	0.15	
120	Burkina Faso	0.29	29.41	0.14	
120	Uganda	0.29	29.41	0.14	
122	Nepal	0.29	28.76	0.13	
123	Algeria	0.25	25.49	0.11	
123	Guyana	0.25	25.49	0.11	○
123	Sudan	0.25	25.49	0.11	
126	Morocco	0.25	24.84	0.10	○
127	Tajikistan	0.24	24.18	0.09	
128	Syrian Arab Rep.	0.23	22.88	0.09	
129	Nigeria	0.22	22.22	0.08	
130	Lao PDR	0.22	21.57	0.06	
130	Malawi	0.22	21.57	0.06	
132	Benin	0.20	19.61	0.05	○
132	Niger	0.20	19.61	0.05	
134	Cambodia	0.19	18.95	0.04	○
134	Gabon	0.19	18.95	0.04	○
136	Yemen	0.18	17.65	0.03	
137	Burundi	0.15	15.03	0.02	○
138	Swaziland	0.14	14.38	0.01	○
139	Togo	0.14	13.73	0.01	○
140	Zimbabwe (2010)	0.13	12.70	0.00	○
n/a	Hong Kong (China)	n/a	n/a	n/a	

SOURCE: United Nations Public Administration Network, *e-Government Survey 2012* (2010–11)

3.1.4 Online e-participation

E-participation index* | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	1.00	100.00	0.99	●
1	Netherlands	1.00	100.00	0.99	●
3	Kazakhstan	0.95	94.74	0.98	●
3	Singapore	0.95	94.74	0.98	
5	United Kingdom	0.92	92.11	0.96	
5	United States of America	0.92	92.11	0.96	●
7	Israel	0.89	89.47	0.96	●
8	Australia	0.76	76.32	0.94	●
8	Estonia	0.76	76.32	0.94	●
8	Germany	0.76	76.32	0.94	●
11	Colombia	0.74	73.68	0.91	●
11	Finland	0.74	73.68	0.91	
11	Japan	0.74	73.68	0.91	
11	United Arab Emirates	0.74	73.68	0.91	●
15	Canada	0.68	68.42	0.88	
15	Egypt	0.68	68.42	0.88	●
15	Norway	0.68	68.42	0.88	
15	Sweden	0.68	68.42	0.88	
19	Bahrain	0.66	65.79	0.86	
19	Chile	0.66	65.79	0.86	●
19	Russian Federation	0.66	65.79	0.86	●
22	Qatar	0.63	63.16	0.84	
22	Saudi Arabia	0.63	63.16	0.84	
24	Mongolia	0.61	60.53	0.83	
25	France	0.58	57.89	0.81	
25	Mexico	0.58	57.89	0.81	●
25	New Zealand	0.58	57.89	0.81	
28	Denmark	0.55	55.26	0.80	
28	El Salvador	0.55	55.26	0.80	●
30	Lithuania	0.53	52.63	0.79	
31	Brazil	0.50	50.00	0.77	●
31	Malaysia	0.50	50.00	0.77	
31	Spain	0.50	50.00	0.77	
34	Brunei Darussalam	0.47	47.37	0.76	
34	Dominican Republic	0.47	47.37	0.76	●
36	Hungary	0.45	44.74	0.74	
36	Oman	0.45	44.74	0.74	
38	Luxembourg	0.39	39.47	0.72	
38	Moldova, Rep.	0.39	39.47	0.72	
38	Peru	0.39	39.47	0.72	●
41	Austria	0.37	36.84	0.70	
41	Portugal	0.37	36.84	0.70	
41	Tunisia	0.37	36.84	0.70	
44	Ethiopia	0.34	34.21	0.68	●
44	Greece	0.34	34.21	0.68	
44	Switzerland	0.34	34.21	0.68	
47	Costa Rica	0.32	31.58	0.64	
47	Lebanon	0.32	31.58	0.64	
47	Montenegro	0.32	31.58	0.64	
47	Panama	0.32	31.58	0.64	
47	Thailand	0.32	31.58	0.64	
52	Argentina	0.29	28.95	0.62	
52	Croatia	0.29	28.95	0.62	
52	Kyrgyzstan	0.29	28.95	0.62	
55	Czech Republic	0.26	26.32	0.59	
55	Italy	0.26	26.32	0.59	
55	Malta	0.26	26.32	0.59	
55	Venezuela, Bolivarian Rep.	0.26	26.32	0.59	
59	Ecuador	0.24	23.68	0.56	
59	Guatemala	0.24	23.68	0.56	
59	Serbia	0.24	23.68	0.56	
59	Uzbekistan	0.24	23.68	0.56	●
63	Bolivia, Plurinational St.	0.21	21.05	0.50	
63	China	0.21	21.05	0.50	
63	Georgia	0.21	21.05	0.50	
63	Indonesia	0.21	21.05	0.50	
63	Latvia	0.21	21.05	0.50	
63	Philippines	0.21	21.05	0.50	
63	Senegal	0.21	21.05	0.50	
63	Slovenia	0.21	21.05	0.50	
71	Belize	0.18	18.42	0.45	
71	India	0.18	18.42	0.45	
71	Iran, Islamic Rep.	0.18	18.42	0.45	
71	Kuwait	0.18	18.42	0.45	
71	Nigeria	0.18	18.42	0.45	
71	Poland	0.18	18.42	0.45	
71	Uruguay	0.18	18.42	0.45	
78	Burkina Faso	0.16	15.79	0.42	
78	Iceland	0.16	15.79	0.42	
78	Paraguay	0.16	15.79	0.42	
78	South Africa	0.16	15.79	0.42	
78	Ukraine	0.16	15.79	0.42	
83	Azerbaijan	0.13	13.16	0.35	
83	Belgium	0.13	13.16	0.35	○
83	Côte d'Ivoire	0.13	13.16	0.35	
83	Honduras	0.13	13.16	0.35	
83	Ireland	0.13	13.16	0.35	○
83	Macedonia, FYR	0.13	13.16	0.35	
83	Mozambique	0.13	13.16	0.35	
83	Nicaragua	0.13	13.16	0.35	
83	Pakistan	0.13	13.16	0.35	
83	Slovakia	0.13	13.16	0.35	
93	Albania	0.11	10.53	0.31	
93	Gabon	0.11	10.53	0.31	
93	Ghana	0.11	10.53	0.31	
93	Jordan	0.11	10.53	0.31	
93	Viet Nam	0.11	10.53	0.31	
98	Bangladesh	0.08	7.89	0.22	
98	Belarus	0.08	7.89	0.22	
98	Benin	0.08	7.89	0.22	
98	Cyprus	0.08	7.89	0.22	○
98	Fiji	0.08	7.89	0.22	
98	Mauritius	0.08	7.89	0.22	○
98	Romania	0.08	7.89	0.22	○
98	Sri Lanka	0.08	7.89	0.22	
98	Sudan	0.08	7.89	0.22	
98	Tanzania, United Rep.	0.08	7.89	0.22	
98	Trinidad and Tobago	0.08	7.89	0.22	
98	Uganda	0.08	7.89	0.22	
110	Algeria	0.05	5.26	0.19	
110	Kenya	0.05	5.26	0.19	
110	Swaziland	0.05	5.26	0.19	
110	Togo	0.05	5.26	0.19	
110	Turkey	0.05	5.26	0.19	
115	Angola	0.03	2.63	0.10	
115	Botswana	0.03	2.63	0.10	○
115	Bulgaria	0.03	2.63	0.10	○
115	Cameroon	0.03	2.63	0.10	
115	Lesotho	0.03	2.63	0.10	
115	Madagascar	0.03	2.63	0.10	
115	Namibia	0.03	2.63	0.10	○
115	Nepal	0.03	2.63	0.10	
115	Rwanda	0.03	2.63	0.10	
115	Syrian Arab Rep.	0.03	2.63	0.10	
115	Zambia	0.03	2.63	0.10	
115	Zimbabwe	0.03	2.63	0.10	
127	Armenia	0.00	0.00	0.00	○
127	Bosnia and Herzegovina	0.00	0.00	0.00	○
127	Burundi	0.00	0.00	0.00	○
127	Cambodia	0.00	0.00	0.00	○
127	Gambia	0.00	0.00	0.00	○
127	Guyana	0.00	0.00	0.00	○
127	Jamaica	0.00	0.00	0.00	○
127	Lao PDR	0.00	0.00	0.00	○
127	Malawi	0.00	0.00	0.00	○
127	Mali	0.00	0.00	0.00	○
127	Morocco	0.00	0.00	0.00	○
127	Niger	0.00	0.00	0.00	○
127	Tajikistan	0.00	0.00	0.00	○
127	Yemen	0.00	0.00	0.00	○
n/a	Hong Kong (China)	n/a	n/a	n/a	

SOURCE: United Nations Public Administration Network, *e-Government Survey 2012*

3.2.1 Electricity output

Electricity output (kWh per capita)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland (2010)	52,814.24	100.00	0.99	●
1	Norway (2010)	25,275.88	100.00	0.99	●
3	United Arab Emirates	17,878.60	70.72	0.98	●
4	Canada (2010)	17,557.36	69.45	0.98	●
5	Sweden (2010)	16,380.94	64.79	0.97	
6	Kuwait	15,270.01	60.39	0.96	●
7	Qatar	15,128.74	59.83	0.95	●
8	Finland (2010)	14,949.58	59.12	0.94	
9	United States of America (2010)	13,990.68	55.33	0.93	
10	Bahrain	11,603.46	45.88	0.93	●
11	Australia (2010)	11,526.82	45.57	0.92	
12	New Zealand (2010)	10,258.64	40.55	0.91	
13	Korea, Rep. (2010)	9,780.67	38.66	0.90	
14	Estonia (2010)	9,696.34	38.33	0.89	
15	France (2010)	9,015.84	35.64	0.89	
16	Brunei Darussalam	8,896.55	35.16	0.88	●
17	Paraguay	8,755.62	34.61	0.87	●
18	Belgium (2010)	8,708.92	34.42	0.86	
19	Switzerland (2010)	8,544.87	33.77	0.85	
20	Japan (2010)	8,396.34	33.18	0.85	
21	Singapore	8,233.41	32.54	0.84	
22	Saudi Arabia	8,142.61	32.18	0.83	
23	Czech Republic (2010)	8,120.49	32.09	0.82	
24	Slovenia (2010)	8,051.54	31.82	0.81	
25	Austria (2010)	7,989.51	31.57	0.80	
26	Israel (2010)	7,703.36	30.44	0.80	
27	Germany (2010)	7,525.08	29.73	0.79	
28	Denmark (2010)	6,968.02	27.53	0.78	
29	Russian Federation	6,923.39	27.35	0.77	
30	Netherlands (2010)	6,905.45	27.28	0.76	
31	Cyprus	6,558.34	25.91	0.76	
32	Spain (2010)	6,417.03	25.35	0.75	
33	Luxembourg (2010)	6,376.73	25.19	0.74	
34	Ireland (2010)	6,320.29	24.97	0.73	
35	Oman	6,182.10	24.42	0.72	
36	United Kingdom (2010)	6,076.56	24.00	0.72	
37	Trinidad and Tobago	5,904.58	23.32	0.71	●
38	Bulgaria	5,603.25	22.13	0.70	
39	Hong Kong (China)	5,482.24	21.65	0.69	
40	Greece (2010)	5,433.60	21.46	0.68	
41	Malta	5,209.13	20.57	0.67	
42	Serbia	5,068.95	20.01	0.67	
43	Slovakia (2010)	5,033.33	19.87	0.66	
44	South Africa	4,989.79	19.70	0.65	
45	Portugal (2010)	4,952.53	19.55	0.64	
46	Italy (2010)	4,889.28	19.30	0.63	
47	Kazakhstan	4,859.24	19.18	0.63	
48	Lithuania	4,384.13	17.30	0.62	
49	Venezuela, Bolivarian Rep.	4,314.67	17.03	0.61	●
50	Poland (2010)	4,120.87	16.26	0.60	
51	Bosnia and Herzegovina	4,013.06	15.83	0.59	
52	Ukraine	3,774.43	14.89	0.59	
53	Malaysia	3,767.02	14.86	0.58	
54	Hungary (2010)	3,732.27	14.72	0.57	
55	Chile (2010)	3,633.10	14.33	0.56	
56	Lebanon	3,570.39	14.08	0.55	
57	Macedonia, FYR	3,327.49	13.12	0.54	
58	Belarus	3,197.47	12.60	0.54	
59	Argentina	3,036.40	11.97	0.53	
60	Turkey (2010)	2,960.54	11.67	0.52	
61	Croatia	2,865.66	11.29	0.51	
62	China	2,769.02	10.91	0.50	
63	Iran, Islamic Rep.	2,758.78	10.87	0.50	
64	Romania	2,690.38	10.60	0.49	
65	Uruguay	2,647.83	10.43	0.48	
66	Mexico (2010)	2,471.14	9.73	0.47	
67	Latvia	2,463.07	9.70	0.46	
68	Brazil	2,436.11	9.59	0.46	
69	Jordan	2,386.62	9.39	0.45	
70	Thailand	2,335.91	9.19	0.44	
71	Tajikistan	2,141.70	8.42	0.43	
72	Azerbaijan	2,101.93	8.27	0.42	
73	Syrian Arab Rep.	2,083.42	8.19	0.41	
74	Costa Rica	2,061.24	8.11	0.41	
75	Jamaica	2,050.02	8.06	0.40	
76	Kyrgyzstan	2,048.73	8.06	0.39	
77	Panama	2,004.91	7.88	0.38	
78	Georgia	1,951.65	7.67	0.37	
79	Egypt	1,809.90	7.11	0.37	
80	Uzbekistan	1,787.83	7.02	0.36	
81	Armenia	1,735.84	6.82	0.35	
82	Albania	1,651.91	6.49	0.34	
83	Dominican Republic	1,544.22	6.06	0.33	
84	Mongolia	1,542.44	6.05	0.33	
85	Tunisia	1,503.88	5.90	0.32	
86	Colombia	1,273.18	4.99	0.31	
87	Peru	1,214.91	4.76	0.30	
88	Algeria	1,201.38	4.70	0.29	
89	Ecuador	1,182.25	4.63	0.28	
90	Gabon	1,129.49	4.42	0.28	
91	Moldova, Rep.	1,008.97	3.94	0.27	
92	El Salvador	993.82	3.88	0.26	
93	Viet Nam	953.90	3.72	0.25	
94	Honduras	835.22	3.25	0.24	
95	Namibia	828.34	3.23	0.24	
96	Mozambique	801.58	3.12	0.23	
97	Zambia	796.91	3.10	0.22	
98	India	766.09	2.98	0.21	
99	Morocco	679.10	2.63	0.20	
100	Indonesia	671.95	2.61	0.20	
101	Philippines	671.40	2.60	0.19	
102	Guatemala	645.12	2.50	0.18	
103	Zimbabwe	626.48	2.43	0.17	
104	Nicaragua	601.36	2.33	0.16	
105	Bolivia, Plurinational St.	598.32	2.31	0.15	
106	Pakistan	567.25	2.19	0.15	
107	Sri Lanka	488.29	1.88	0.14	
108	Ghana	387.66	1.48	0.13	
109	Cameroon	288.12	1.09	0.12	
110	Yemen	284.71	1.07	0.11	
111	Côte d'Ivoire	275.61	1.04	0.11	
112	Botswana	245.30	0.92	0.10	○
113	Bangladesh	233.40	0.87	0.09	
114	Angola	225.54	0.84	0.08	
115	Senegal	222.93	0.83	0.07	
116	Kenya	178.11	0.65	0.07	○
117	Sudan	172.61	0.63	0.06	
118	Nigeria	130.22	0.46	0.05	
119	Tanzania, United Rep.	114.16	0.40	0.04	
120	Nepal	111.74	0.39	0.03	○
121	Cambodia	85.24	0.28	0.02	○
122	Ethiopia	49.58	0.14	0.02	
123	Togo	18.55	0.02	0.01	○
124	Benin	13.54	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: International Energy Agency, *World Energy Balances* online data service (2009–10)

3.2.2 Electricity consumption

Electricity consumption (kWh per capita)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland (2010)	51,884.00	100.00	0.98	●
1	Norway (2010)	25,181.10	100.00	0.98	●
1	United Arab Emirates	17,295.90	100.00	0.98	●
4	Luxembourg (2010)	16,879.40	97.59	0.98	●
5	Kuwait	16,673.00	96.39	0.97	●
6	Finland (2010)	16,439.20	95.03	0.96	
7	Qatar	16,352.70	94.53	0.95	●
8	Sweden (2010)	15,476.50	89.45	0.94	
9	Canada (2010)	15,449.30	89.30	0.93	
10	Bahrain	13,624.50	78.72	0.93	●
11	United States of America (2010)	13,268.10	76.65	0.92	
12	Australia (2010)	10,789.80	62.29	0.91	
13	New Zealand (2010)	9,536.70	55.02	0.90	
14	Korea, Rep. (2010)	9,509.60	54.86	0.89	
15	Belgium (2010)	8,560.80	49.36	0.89	
16	Brunei Darussalam	8,485.00	48.93	0.88	●
17	Switzerland (2010)	8,327.80	48.01	0.87	
18	Austria (2010)	8,312.00	47.92	0.86	
19	Japan (2010)	8,110.30	46.75	0.85	
20	Singapore	7,948.30	45.81	0.85	
21	France (2010)	7,893.80	45.50	0.84	
22	Saudi Arabia	7,842.00	45.20	0.83	
23	Germany (2010)	7,107.80	40.94	0.82	
24	Netherlands (2010)	6,794.70	39.13	0.81	
25	Israel	6,648.10	38.28	0.80	
26	Denmark (2010)	6,370.50	36.67	0.80	
27	Czech Republic (2010)	6,343.50	36.51	0.79	
28	Cyprus	6,250.60	35.97	0.78	
29	Russian Federation	6,133.20	35.29	0.77	
30	Slovenia	6,096.50	35.08	0.76	
31	Spain (2010)	6,053.10	34.83	0.76	
32	Estonia	5,951.50	34.24	0.75	
33	Hong Kong (China)	5,924.30	34.08	0.74	
34	Ireland (2010)	5,898.80	33.93	0.73	
35	United Kingdom (2010)	5,741.80	33.02	0.72	
36	Greece (2010)	5,703.80	32.80	0.72	
37	Trinidad and Tobago	5,650.50	32.49	0.71	●
38	Oman	5,456.60	31.37	0.70	
39	Italy (2010)	5,363.30	30.83	0.69	
40	Slovakia (2010)	5,130.00	29.48	0.68	
41	Portugal (2010)	4,888.90	28.08	0.67	
42	South Africa	4,532.00	26.01	0.67	
43	Kazakhstan	4,505.60	25.86	0.66	
44	Malta	4,404.80	25.27	0.65	
45	Bulgaria	4,400.90	25.25	0.64	
46	Serbia	4,224.90	24.23	0.63	
47	Hungary (2010)	3,900.10	22.35	0.63	
48	Poland (2010)	3,768.00	21.58	0.62	
49	Croatia	3,709.40	21.24	0.61	
50	Malaysia	3,676.90	21.05	0.60	
51	Macedonia, FYR	3,466.70	19.84	0.59	
52	Lithuania	3,430.20	19.62	0.59	
53	Chile	3,288.20	18.80	0.58	
54	Belarus	3,245.40	18.55	0.57	
55	Ukraine	3,203.60	18.31	0.56	
56	Venezuela, Bolivarian Rep.	3,151.60	18.01	0.55	
57	Lebanon	3,110.10	17.77	0.54	
58	Latvia	2,874.50	16.40	0.54	
59	Bosnia and Herzegovina	2,867.50	16.36	0.53	
60	Argentina	2,744.10	15.65	0.52	
61	Uruguay	2,670.90	15.22	0.51	
62	China	2,631.20	14.99	0.50	
63	Turkey (2010)	2,489.00	14.17	0.50	
64	Romania	2,266.50	12.88	0.49	
65	Iran, Islamic Rep.	2,244.70	12.75	0.48	
66	Brazil	2,200.60	12.50	0.47	
67	Jordan	2,099.10	11.91	0.46	
68	Mexico (2010)	2,077.40	11.78	0.46	
69	Thailand	2,073.30	11.76	0.45	
70	Tajikistan	1,937.10	10.97	0.44	
71	Jamaica	1,898.50	10.74	0.43	
72	Costa Rica	1,817.20	10.27	0.42	
73	Albania	1,768.00	9.99	0.41	
74	Panama	1,739.40	9.82	0.41	
75	Azerbaijan	1,651.20	9.31	0.40	
76	Georgia	1,641.30	9.25	0.39	
77	Uzbekistan	1,635.90	9.22	0.38	
78	Namibia	1,627.80	9.18	0.37	
79	Armenia	1,551.40	8.73	0.37	
80	Botswana	1,527.70	8.60	0.36	
81	Egypt	1,487.30	8.36	0.35	
82	Syrian Arab Rep.	1,484.70	8.35	0.34	
83	Mongolia	1,432.00	8.04	0.33	
84	Kyrgyzstan	1,402.00	7.87	0.33	
85	Dominican Republic	1,318.70	7.38	0.32	
86	Tunisia	1,312.10	7.35	0.31	
87	Ecuador	1,167.60	6.51	0.30	
88	Peru	1,120.10	6.23	0.29	
89	Paraguay	1,054.80	5.85	0.28	
90	Colombia	1,046.90	5.81	0.28	
91	Zimbabwe	1,022.20	5.67	0.27	
92	Moldova, Rep.	1,007.20	5.58	0.26	
93	Algeria	972.50	5.38	0.25	
94	Gabon	924.10	5.10	0.24	
95	Viet Nam	904.40	4.98	0.24	
96	El Salvador	844.70	4.64	0.23	
97	Morocco	747.10	4.07	0.22	
98	Honduras	676.80	3.66	0.21	
99	Zambia	624.70	3.36	0.20	
100	Indonesia	609.30	3.27	0.20	
101	India	596.80	3.20	0.19	
102	Philippines	591.70	3.17	0.18	
103	Bolivia, Plurinational St.	553.30	2.95	0.17	
104	Guatemala	548.40	2.92	0.16	
105	Nicaragua	456.90	2.39	0.15	
106	Mozambique	452.70	2.36	0.15	
107	Pakistan	451.40	2.36	0.14	
108	Sri Lanka	415.80	2.15	0.13	
109	Cameroon	266.40	1.28	0.12	
110	Ghana	265.00	1.28	0.11	
111	Bangladesh	228.10	1.06	0.11	
112	Yemen	216.50	0.99	0.10	
113	Angola	202.80	0.92	0.09	
114	Senegal	189.30	0.84	0.08	
115	Côte d'Ivoire	186.80	0.82	0.07	
116	Kenya	146.20	0.59	0.07	○
117	Cambodia	123.50	0.46	0.06	
118	Nigeria	120.30	0.44	0.05	
119	Sudan	114.80	0.41	0.04	
120	Togo	98.80	0.31	0.03	
121	Nepal	91.30	0.27	0.02	○
122	Benin	87.90	0.25	0.02	○
123	Tanzania, United Rep.	85.30	0.23	0.01	○
124	Ethiopia	44.90	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: International Energy Agency, *World Energy Balances* online data service (2009–10)

3.2.3 Trade and transport-related infrastructure

Logistics Performance Index: Quality of trade and transport-related infrastructure (1 = low to 5 = high)* | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Germany	4.34	83.50	1.00	●
2	Netherlands	4.25	81.25	0.99	●
3	Norway	4.22	80.50	0.98	
3	Singapore	4.22	80.50	0.98	
5	Japan	4.19	79.75	0.97	
6	Switzerland	4.17	79.25	0.96	
7	United States of America	4.15	78.75	0.96	
8	Finland	4.08	77.00	0.95	
9	Luxembourg	4.06	76.50	0.94	
10	Canada	4.03	75.75	0.93	
10	Sweden	4.03	75.75	0.93	
12	Belgium	4.01	75.25	0.92	
13	France	4.00	75.00	0.90	●
13	Hong Kong (China)	4.00	75.00	0.90	
15	Denmark	3.99	74.75	0.90	
16	United Kingdom	3.95	73.75	0.89	
17	United Arab Emirates	3.81	70.25	0.88	
18	Australia	3.78	69.50	0.88	
19	Ireland	3.76	69.00	0.87	
20	Italy	3.72	68.00	0.86	●
21	Austria	3.68	67.00	0.85	
22	Korea, Rep.	3.62	65.50	0.85	
23	Israel	3.60	65.00	0.84	
24	Spain	3.58	64.50	0.83	
25	China	3.54	63.50	0.82	
25	New Zealand	3.54	63.50	0.82	
27	Malaysia	3.50	62.50	0.81	
28	South Africa	3.42	60.50	0.80	●
29	Bahrain	3.36	59.00	0.79	
30	Iceland	3.33	58.25	0.78	
30	Kuwait	3.33	58.25	0.78	
32	Saudi Arabia	3.27	56.75	0.77	
33	Czech Republic	3.25	56.25	0.76	
34	Portugal	3.17	54.25	0.76	
35	Thailand	3.16	54.00	0.75	
36	Brazil	3.10	52.50	0.74	
37	Hungary	3.08	52.00	0.73	
37	Turkey	3.08	52.00	0.73	●
39	Oman	3.06	51.50	0.72	
40	Lebanon	3.05	51.25	0.71	
41	Slovakia	3.00	50.00	0.71	
42	Poland	2.98	49.50	0.70	
43	Mexico	2.95	48.75	0.69	
44	Cyprus	2.94	48.50	0.68	
44	Greece	2.94	48.50	0.68	
46	India	2.91	47.75	0.67	
47	Malta	2.89	47.25	0.66	
48	Latvia	2.88	47.00	0.65	
49	Chile	2.86	46.50	0.65	
50	Argentina	2.75	43.75	0.63	
50	Estonia	2.75	43.75	0.63	
50	Qatar	2.75	43.75	0.63	
53	Lithuania	2.72	43.00	0.62	
54	Jordan	2.69	42.25	0.61	
55	Kazakhstan	2.66	41.50	0.60	
55	Peru	2.66	41.50	0.60	
57	Slovenia	2.65	41.25	0.59	
58	Senegal	2.64	41.00	0.58	
59	Belarus (2006)	2.63	40.75	0.56	
59	Madagascar	2.63	40.75	0.56	
59	Panama	2.63	40.75	0.56	
62	Colombia	2.59	39.75	0.55	
63	Uruguay	2.58	39.50	0.54	
64	Philippines	2.57	39.25	0.54	
65	Costa Rica	2.56	39.00	0.51	
65	Tunisia	2.56	39.00	0.51	
65	Viet Nam	2.56	39.00	0.51	
68	Macedonia, FYR	2.55	38.75	0.51	
69	Indonesia	2.54	38.50	0.49	
69	Uzbekistan	2.54	38.50	0.49	
71	Ghana	2.52	38.00	0.49	
72	Burundi (2006)	2.50	37.50	0.48	●
73	Bangladesh	2.49	37.25	0.47	
74	Benin	2.48	37.00	0.46	●
75	Montenegro	2.45	36.25	0.45	
75	Syrian Arab Rep.	2.45	36.25	0.45	
77	El Salvador	2.44	36.00	0.42	
77	Paraguay	2.44	36.00	0.42	
77	Ukraine	2.44	36.00	0.42	
77	Venezuela, Bolivarian Rep.	2.44	36.00	0.42	
81	Nigeria	2.43	35.75	0.41	
82	Ecuador	2.38	34.50	0.40	
82	Russian Federation	2.38	34.50	0.40	
84	Côte d'Ivoire	2.37	34.25	0.38	
84	Guatemala	2.37	34.25	0.38	
86	Croatia	2.36	34.00	0.37	
86	Iran, Islamic Rep.	2.36	34.00	0.37	
88	Uganda	2.35	33.75	0.35	
88	Yemen	2.35	33.75	0.35	
90	Dominican Republic	2.34	33.50	0.35	
91	Morocco (2006)	2.33	33.25	0.34	
92	Armenia	2.32	33.00	0.33	
93	Honduras	2.31	32.75	0.32	
94	Bulgaria	2.30	32.50	0.31	○
94	Serbia	2.30	32.50	0.31	
96	Mauritius	2.29	32.25	0.30	
97	Niger	2.28	32.00	0.29	
98	Romania	2.25	31.25	0.29	
99	Bolivia, Plurinational St.	2.24	31.00	0.28	
100	Azerbaijan	2.23	30.75	0.26	
100	Nicaragua	2.23	30.75	0.26	
102	Bosnia and Herzegovina	2.22	30.50	0.25	
102	Egypt	2.22	30.50	0.25	
104	Gambia	2.17	29.25	0.24	
104	Georgia	2.17	29.25	0.24	
106	Albania	2.14	28.50	0.22	
106	Kenya	2.14	28.50	0.22	
108	Malawi (2006)	2.13	28.25	0.21	
109	Cambodia	2.12	28.00	0.21	
110	Cameroon	2.10	27.50	0.20	
111	Botswana	2.09	27.25	0.18	
111	Gabon	2.09	27.25	0.18	
111	Kyrgyzstan	2.09	27.25	0.18	
114	Pakistan	2.08	27.00	0.17	
115	Jamaica	2.07	26.75	0.16	○
116	Algeria	2.06	26.50	0.15	
117	Moldova, Rep.	2.05	26.25	0.15	○
118	Mozambique	2.04	26.00	0.14	
119	Lesotho (2006)	2.00	25.00	0.11	
119	Mali	2.00	25.00	0.11	
119	Tajikistan	2.00	25.00	0.11	
119	Tanzania, United Rep.	2.00	25.00	0.11	
123	Guyana	1.99	24.75	0.10	○
124	Fiji	1.98	24.50	0.10	○
125	Lao PDR	1.95	23.75	0.09	
126	Mongolia	1.94	23.50	0.08	○
127	Burkina Faso	1.89	22.25	0.07	
128	Sri Lanka	1.88	22.00	0.07	○
129	Zimbabwe (2006)	1.87	21.75	0.06	
130	Zambia	1.83	20.75	0.05	
131	Togo	1.82	20.50	0.04	
132	Nepal	1.80	20.00	0.04	○
133	Sudan	1.78	19.50	0.03	
134	Ethiopia	1.77	19.25	0.02	
135	Namibia	1.71	17.75	0.01	○
136	Angola	1.69	17.25	0.01	○
137	Rwanda	1.63	15.75	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	

SOURCE: World Bank and Turku School of Economics, *Logistics Performance Index 2010* (2006–09)

3.2.4 Gross capital formation

Gross capital formation (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China	47.78	100.00	1.00	●
2	Algeria (2009)	41.18	86.04	0.99	●
3	Mongolia	40.79	85.22	0.99	●
4	Belarus	40.63	84.87	0.98	●
5	Qatar (2009)	38.93	81.27	0.97	●
6	Viet Nam	38.88	81.17	0.96	●
7	Botswana	36.26	75.62	0.96	●
8	Morocco	35.12	73.21	0.95	●
9	India	34.77	72.47	0.94	●
10	Nepal	34.69	72.29	0.94	●
11	Lesotho	33.75	70.30	0.93	●
12	Armenia	33.37	69.50	0.92	●
13	Bahrain (2008)	33.23	69.20	0.91	
14	Iran, Islamic Rep. (2007)	33.16	69.06	0.91	●
15	Madagascar (2009)	32.96	68.63	0.90	●
16	Lebanon	32.68	68.05	0.89	●
17	Indonesia	32.49	67.64	0.88	●
18	Romania	31.35	65.24	0.88	●
19	Tanzania, United Rep.	30.59	63.61	0.87	●
20	Oman (2008)	29.59	61.49	0.86	●
21	Korea, Rep.	29.15	60.58	0.86	
22	Senegal	28.93	60.10	0.85	●
23	Kyrgyzstan	28.38	58.95	0.84	●
24	Sri Lanka	27.79	57.69	0.83	●
25	Australia (2008)	27.51	57.11	0.83	
26	Nicaragua	27.51	57.09	0.82	●
27	Guyana	26.73	55.46	0.81	
28	Panama	26.67	55.32	0.81	●
29	Uzbekistan	26.46	54.88	0.80	●
30	Tunisia	26.36	54.66	0.79	●
31	Ecuador	26.18	54.28	0.78	●
32	Lao PDR	26.06	54.03	0.78	●
33	Thailand	25.94	53.77	0.77	
34	Albania	25.93	53.75	0.76	●
35	Gabon	25.91	53.71	0.76	●
36	Gambia	25.90	53.69	0.75	●
37	Benin	25.78	53.45	0.74	●
38	Belize (2008)	25.46	52.76	0.73	
39	Macedonia, FYR	25.42	52.67	0.73	
40	United Arab Emirates	25.27	52.36	0.72	
41	Kazakhstan	25.11	52.01	0.71	
42	South Africa	25.01	51.81	0.71	
43	Mexico	24.99	51.77	0.70	
44	Bulgaria	24.92	51.63	0.69	
45	Malawi	24.48	50.69	0.68	●
46	Peru	24.43	50.58	0.68	
47	Fiji (2008)	24.42	50.56	0.67	●
48	Bangladesh	24.41	50.55	0.66	●
49	Yemen (2003)	24.36	50.43	0.65	●
50	Singapore	23.83	49.32	0.65	
51	Colombia	23.79	49.23	0.64	
52	Uganda	23.74	49.13	0.63	●
53	Hong Kong (China)	23.71	49.07	0.63	
54	Mozambique	23.70	49.04	0.62	
55	Moldova, Rep.	23.66	48.95	0.61	
56	Namibia	23.47	48.54	0.60	
57	Slovakia	23.39	48.39	0.60	
58	Croatia	23.38	48.37	0.59	
59	Sudan	23.32	48.24	0.58	●
60	Spain	22.99	47.54	0.58	
61	Honduras	22.96	47.46	0.57	
62	Russian Federation	22.84	47.22	0.56	
63	Serbia	22.83	47.20	0.55	
64	Tajikistan	22.81	47.16	0.55	●
65	Montenegro	22.79	47.12	0.54	
66	Slovenia	22.63	46.76	0.53	
67	Czech Republic	22.59	46.69	0.53	
68	Niger (2005)	22.59	46.69	0.52	●
69	Mauritius	22.47	46.44	0.51	
70	Zambia	22.41	46.30	0.50	
71	Ghana	22.40	46.30	0.50	
72	Mali (2007)	22.36	46.20	0.49	●
73	Canada	22.20	45.87	0.48	○
74	Saudi Arabia	22.00	45.45	0.47	
75	Argentina	22.00	45.44	0.47	
76	Austria	21.64	44.68	0.46	
77	Rwanda (2009)	21.56	44.52	0.45	
78	Ethiopia	21.48	44.33	0.45	
79	Chile	21.45	44.27	0.44	
80	Malaysia	21.42	44.20	0.43	
81	Norway	21.32	44.01	0.42	○
82	Kenya	21.25	43.86	0.42	
83	Poland	20.95	43.22	0.41	
84	Venezuela, Bolivarian Rep.	20.82	42.94	0.40	
85	Latvia	20.67	42.62	0.40	
86	Jamaica	20.60	42.49	0.39	
87	Philippines	20.54	42.35	0.38	
88	Japan	20.22	41.68	0.37	
89	Belgium	20.19	41.62	0.37	○
90	Italy	20.19	41.61	0.36	
91	Costa Rica	19.98	41.15	0.35	
92	Estonia	19.97	41.15	0.35	○
93	Turkey	19.93	41.06	0.34	
94	New Zealand	19.93	41.05	0.33	○
95	Georgia	19.53	40.21	0.32	
96	Bosnia and Herzegovina	19.50	40.15	0.32	
97	Paraguay	19.49	40.13	0.31	
98	France	19.35	39.84	0.30	○
99	Ukraine	19.35	39.83	0.29	
100	Brazil	19.25	39.62	0.29	
101	Switzerland	19.24	39.60	0.28	○
102	Portugal	18.99	39.07	0.27	○
103	Egypt	18.89	38.85	0.27	
104	Syrian Arab Rep.	18.82	38.70	0.26	
105	Netherlands	18.68	38.40	0.25	○
106	Luxembourg	18.67	38.40	0.24	○
107	Finland	18.59	38.22	0.24	○
108	Sweden	18.45	37.92	0.23	○
109	Cyprus	18.44	37.91	0.22	○
110	Hungary	18.40	37.83	0.22	○
111	Togo (2005)	18.33	37.67	0.21	
112	Burkina Faso (2006)	18.11	37.22	0.20	
113	Uruguay	17.86	36.68	0.19	
114	Cameroon (2007)	17.72	36.38	0.19	
115	Cambodia	17.37	35.64	0.18	
116	Germany	17.34	35.58	0.17	○
117	Azerbaijan	17.14	35.15	0.17	
118	Bolivia, Plurinational St.	17.01	34.87	0.16	
119	Malta	16.81	34.46	0.15	○
120	Lithuania	16.77	34.37	0.14	○
121	Swaziland	16.55	33.91	0.14	
122	Dominican Republic	16.47	33.75	0.13	○
123	Denmark	16.40	33.58	0.12	○
124	Burundi (2006)	16.38	33.54	0.12	
125	Greece	16.19	33.15	0.11	○
126	Israel	15.57	31.84	0.10	○
127	Pakistan	15.37	31.40	0.09	
128	Jordan	15.33	31.33	0.09	○
129	United States of America	15.05	30.74	0.08	○
130	United Kingdom	15.03	30.69	0.07	○
131	Guatemala	14.66	29.91	0.06	○
132	Angola	14.63	29.85	0.06	
133	Kuwait (2009)	13.92	28.33	0.05	○
134	Côte d'Ivoire	13.85	28.20	0.04	○
135	Brunei Darussalam (2008)	13.67	27.81	0.04	○
136	El Salvador	13.29	27.01	0.03	○
137	Iceland	12.78	25.94	0.02	○
138	Trinidad and Tobago (2008)	11.36	22.92	0.01	○
139	Ireland	10.79	21.72	0.01	○
140	Zimbabwe	0.53	0.00	0.00	○
n/a	Nigeria	n/a	n/a	n/a	

SOURCE: World Bank and OECD, World Bank *World Development Indicators* database (2003–10)

3.3.1 GDP per unit of energy use

GDP per unit of energy use (2000 PPP$ per kg of oil equivalent) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	16.03	100.00	1.00	●
2	Colombia	13.23	81.38	0.99	●
3	Dominican Republic	13.04	80.12	0.98	●
4	Peru	12.35	75.51	0.98	●
5	Morocco	11.59	70.47	0.97	●
6	Philippines	11.57	70.38	0.96	●
7	Bangladesh	11.16	67.63	0.95	●
8	Sri Lanka	11.00	66.57	0.94	●
9	Namibia	10.98	66.40	0.93	●
10	Albania	10.57	63.70	0.93	●
11	Uruguay	10.34	62.17	0.92	●
12	Switzerland (2010)	10.18	61.12	0.91	
13	Tunisia	9.82	58.73	0.90	●
14	Panama	9.80	58.60	0.89	●
15	Malta	9.67	57.72	0.89	
16	Costa Rica	9.49	56.49	0.88	●
17	Greece (2010)	9.40	55.90	0.87	●
18	Ireland (2010)	9.35	55.61	0.86	
19	Botswana	9.22	54.69	0.85	●
20	Israel	8.92	52.72	0.85	
21	Cambodia	8.79	51.83	0.84	●
22	Italy (2010)	8.78	51.78	0.83	
23	United Kingdom (2010)	8.64	50.82	0.82	
24	Argentina	8.42	49.37	0.81	●
25	Denmark (2010)	8.36	49.00	0.80	
26	Portugal (2010)	8.24	48.22	0.80	
27	Spain (2010)	8.22	48.04	0.79	
28	Turkey (2010)	8.20	47.95	0.78	●
29	Austria (2010)	8.12	47.37	0.77	
30	Singapore	7.94	46.17	0.76	
31	Senegal	7.69	44.51	0.76	●
32	Luxembourg (2010)	7.52	43.39	0.75	
33	Croatia	7.26	41.65	0.74	
34	Honduras	7.24	41.55	0.73	●
35	Japan (2010)	7.13	40.79	0.72	
36	Cyprus	7.02	40.06	0.72	
37	Germany (2010)	7.01	40.02	0.71	
38	Mexico (2010)	6.97	39.76	0.70	●
39	Brazil	6.88	39.13	0.69	
40	Chile	6.81	38.69	0.67	
40	El Salvador	6.81	38.69	0.67	
42	Ghana	6.79	38.57	0.67	●
43	India	6.76	38.32	0.66	
44	France (2010)	6.54	36.91	0.65	
45	Slovenia	6.44	36.24	0.64	
46	Netherlands (2010)	6.42	36.10	0.63	
47	Latvia	6.42	36.07	0.63	
48	Azerbaijan	6.39	35.85	0.62	
49	Nicaragua	6.34	35.56	0.61	●
50	Guatemala	6.20	34.64	0.60	
51	Norway (2010)	6.13	34.18	0.59	
52	Paraguay	6.03	33.47	0.59	
53	Armenia	6.01	33.35	0.58	
54	Sweden (2010)	5.97	33.06	0.57	○
55	Hungary (2010)	5.87	32.39	0.56	
56	Poland (2010)	5.82	32.09	0.55	
57	Romania	5.81	32.03	0.54	
58	New Zealand (2010)	5.76	31.67	0.54	
59	Sudan	5.75	31.60	0.53	●
60	Australia (2010)	5.74	31.54	0.52	
61	Belgium (2010)	5.71	31.36	0.51	○
62	Algeria	5.69	31.23	0.50	
63	Bosnia and Herzegovina	5.56	30.39	0.50	
64	Slovakia (2010)	5.49	29.86	0.49	
65	Lithuania	5.48	29.84	0.48	
66	Cameroon	5.43	29.47	0.47	●
67	China	5.40	29.31	0.46	
68	Macedonia, FYR	5.38	29.16	0.46	
69	Thailand	5.33	28.81	0.45	
70	Ecuador	5.30	28.62	0.44	
71	United States of America (2010)	5.23	28.15	0.43	
72	Georgia	5.09	27.22	0.42	
73	Egypt	5.03	26.83	0.41	
74	Czech Republic (2010)	4.98	26.50	0.41	○
75	Korea, Rep. (2010)	4.91	26.06	0.40	○
76	Gabon	4.89	25.90	0.39	
77	Jordan	4.75	24.96	0.38	
78	Viet Nam	4.67	24.43	0.37	
79	Indonesia	4.65	24.28	0.37	
80	Pakistan	4.62	24.08	0.36	
81	Angola	4.53	23.50	0.34	
81	Nepal	4.53	23.50	0.34	
83	Malaysia	4.48	23.17	0.33	○
84	Bolivia, Plurinational St.	4.46	23.04	0.33	
85	Finland (2010)	4.46	23.03	0.32	○
86	Bulgaria	4.28	21.85	0.31	○
87	Canada (2010)	4.12	20.79	0.30	○
88	Estonia	4.03	20.20	0.29	○
89	Lebanon	3.90	19.28	0.28	
90	Tajikistan	3.81	18.70	0.28	
91	South Africa	3.67	17.75	0.27	
92	Kyrgyzstan	3.65	17.66	0.26	
93	Jamaica	3.55	16.98	0.25	
94	Moldova, Rep.	3.53	16.87	0.24	
95	Belarus	3.48	16.53	0.24	
96	Syrian Arab Rep.	3.48	16.51	0.23	
97	Togo	3.41	16.04	0.22	
98	Ethiopia	3.37	15.80	0.21	
99	Mozambique	3.29	15.28	0.20	
100	Oman	3.25	15.01	0.20	
101	Benin	2.90	12.66	0.19	
102	Venezuela, Bolivarian Rep.	2.86	12.38	0.18	
103	Côte d'Ivoire	2.78	11.89	0.17	
104	Yemen	2.75	11.66	0.16	
105	Iran, Islamic Rep.	2.67	11.15	0.15	
106	Brunei Darussalam	2.60	10.69	0.15	○
107	Ukraine	2.50	9.97	0.14	○
108	Kuwait	2.40	9.33	0.13	○
109	Kenya	2.40	9.31	0.12	○
110	Russian Federation	2.37	9.10	0.11	○
111	Saudi Arabia	2.36	9.04	0.11	○
112	Serbia	2.29	8.62	0.10	○
113	Mongolia	2.29	8.61	0.09	○
114	Zimbabwe	2.08	7.20	0.08	
115	Kazakhstan	2.03	6.85	0.07	○
116	United Arab Emirates	1.96	6.39	0.07	○
117	Bahrain	1.89	5.95	0.06	○
118	Iceland (2010)	1.89	5.91	0.05	○
119	Zambia	1.71	4.77	0.04	○
120	Nigeria	1.66	4.42	0.03	
121	Tanzania, United Rep.	1.61	4.06	0.02	○
122	Qatar	1.53	3.55	0.02	○
123	Uzbekistan	1.36	2.43	0.01	○
124	Trinidad and Tobago	1.00	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: International Energy Agency, *World Energy Balances* online data service (2009–10)

3.3.2 Environmental performance

Environmental performance index* | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	76.69	76.69	1.00	●
2	Latvia	70.37	70.37	0.99	●
3	Norway	69.92	69.92	0.98	●
4	Luxembourg	69.20	69.20	0.98	●
5	Costa Rica	69.03	69.03	0.97	●
6	France	69.00	69.00	0.96	●
7	Austria	68.92	68.92	0.95	●
8	Italy	68.90	68.90	0.94	●
9	United Kingdom	68.82	68.82	0.93	
10	Sweden	68.82	68.82	0.93	
11	Germany	66.91	66.91	0.92	
12	Slovakia	66.62	66.62	0.91	●
13	Iceland	66.28	66.28	0.90	
14	New Zealand	66.05	66.05	0.89	
15	Albania	65.85	65.85	0.88	●
16	Netherlands	65.65	65.65	0.88	
17	Lithuania	65.50	65.50	0.87	●
18	Czech Republic	64.79	64.79	0.86	
19	Finland	64.44	64.44	0.85	
20	Croatia	64.16	64.16	0.84	●
21	Denmark	63.61	63.61	0.83	
22	Poland	63.47	63.47	0.83	●
23	Japan	63.36	63.36	0.82	
24	Belgium	63.02	63.02	0.81	
25	Malaysia	62.51	62.51	0.80	
26	Brunei Darussalam	62.49	62.49	0.79	
27	Colombia	62.33	62.33	0.79	
28	Slovenia	62.25	62.25	0.78	
29	Brazil	60.90	60.90	0.77	●
30	Ecuador	60.55	60.55	0.76	●
31	Spain	60.31	60.31	0.75	
32	Greece	60.04	60.04	0.74	
33	Thailand	59.98	59.98	0.74	
34	Nicaragua	59.23	59.23	0.73	●
35	Ireland	58.69	58.69	0.72	
36	Canada	58.41	58.41	0.71	
37	Nepal	57.97	57.97	0.70	●
38	Panama	57.94	57.94	0.69	
39	Gabon	57.91	57.91	0.69	●
40	Portugal	57.64	57.64	0.68	
41	Philippines	57.40	57.40	0.67	●
42	Korea, Rep.	57.20	57.20	0.66	
43	Cyprus	57.15	57.15	0.65	
44	Hungary	57.12	57.12	0.64	
45	Uruguay	57.06	57.06	0.64	
46	Georgia	56.84	56.84	0.63	
47	Australia	56.61	56.61	0.62	
48	United States of America	56.59	56.59	0.61	
49	Argentina	56.48	56.48	0.60	
50	Singapore	56.36	56.36	0.60	
51	Bulgaria	56.28	56.28	0.59	
52	Estonia	56.09	56.09	0.58	
53	Sri Lanka	55.72	55.72	0.57	
54	Venezuela, Bolivarian Rep.	55.62	55.62	0.56	
55	Zambia	55.56	55.56	0.55	
56	Chile	55.34	55.34	0.55	
57	Cambodia	55.29	55.29	0.54	
58	Egypt	55.18	55.18	0.53	
59	Israel	54.64	54.64	0.52	
60	Bolivia, Plurinational St.	54.57	54.57	0.51	
61	Jamaica	54.36	54.36	0.50	
62	Tanzania, United Rep.	54.26	54.26	0.50	
63	Belarus	53.88	53.88	0.49	
64	Botswana	53.74	53.74	0.48	
65	Côte d'Ivoire	53.55	53.55	0.47	●
66	Zimbabwe	52.76	52.76	0.46	
67	Ethiopia	52.71	52.71	0.45	
68	Honduras	52.54	52.54	0.45	
69	Dominican Republic	52.44	52.44	0.44	
70	Paraguay	52.40	52.40	0.43	
71	Indonesia	52.29	52.29	0.42	
72	El Salvador	52.08	52.08	0.41	
73	Guatemala	51.88	51.88	0.40	
74	United Arab Emirates	50.91	50.91	0.40	
75	Namibia	50.68	50.68	0.39	
76	Viet Nam	50.64	50.64	0.38	
77	Benin	50.38	50.38	0.37	
78	Peru	50.29	50.29	0.36	
79	Saudi Arabia	49.97	49.97	0.36	
80	Kenya	49.28	49.28	0.35	
81	Mexico	49.11	49.11	0.34	
82	Togo	48.66	48.66	0.33	
83	Algeria	48.56	48.56	0.32	
84	Malta	48.51	48.51	0.31	○
85	Romania	48.34	48.34	0.31	
86	Mozambique	47.82	47.82	0.30	
87	Angola	47.57	47.57	0.29	
88	Ghana	47.50	47.50	0.28	
89	Armenia	47.48	47.48	0.27	
90	Lebanon	47.35	47.35	0.26	
91	Trinidad and Tobago	47.04	47.04	0.26	
92	Macedonia, FYR	46.96	46.96	0.25	○
93	Senegal	46.73	46.73	0.24	
94	Tunisia	46.66	46.66	0.23	○
95	Qatar	46.59	46.59	0.22	
96	Kyrgyzstan	46.33	46.33	0.21	
97	Ukraine	46.31	46.31	0.21	○
98	Serbia	46.14	46.14	0.20	○
99	Sudan	46.00	46.00	0.19	
100	Morocco	45.76	45.76	0.18	○
101	Russian Federation	45.43	45.43	0.17	○
102	Mongolia	45.37	45.37	0.17	○
103	Moldova, Rep.	45.21	45.21	0.16	○
104	Turkey	44.80	44.80	0.15	○
105	Oman	44.00	44.00	0.14	○
106	Azerbaijan	43.11	43.11	0.13	
107	Cameroon	42.97	42.97	0.12	
108	Syrian Arab Rep.	42.75	42.75	0.12	
109	Iran, Islamic Rep.	42.73	42.73	0.11	
110	Bangladesh	42.55	42.55	0.10	
111	China	42.24	42.24	0.09	○
112	Jordan	42.16	42.16	0.08	○
113	Nigeria	40.14	40.14	0.07	
114	Pakistan	39.56	39.56	0.07	
115	Tajikistan	38.78	38.78	0.06	○
116	Bosnia and Herzegovina	36.76	36.76	0.05	○
117	India	36.23	36.23	0.04	○
118	Kuwait	35.54	35.54	0.03	○
119	Yemen	35.49	35.49	0.02	
120	South Africa	34.55	34.55	0.02	○
121	Kazakhstan	32.94	32.94	0.01	○
122	Uzbekistan	32.24	32.24	0.00	○
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	

SOURCE: Yale University and Columbia University *Environmental Performance Index 2012*

3.3.3 ISO 14001 environmental certificates

ISO 14001 Environmental management systems—Requirements with guidance for use: Number of certificates issued (per billion GDP in PPP$) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Romania	29.10	100.00	0.98	●
1	Czech Republic	25.29	100.00	0.98	●
1	Spain	13.37	100.00	0.98	●
1	Sweden	12.97	100.00	0.98	●
5	Estonia	12.36	95.26	0.97	●
6	Lithuania	12.09	93.18	0.96	●
7	Bulgaria	10.29	79.32	0.96	●
8	Hungary	9.66	74.42	0.95	●
9	Italy	9.59	73.92	0.94	●
10	Slovakia	9.14	70.45	0.93	●
11	Japan	8.06	62.10	0.93	
12	Switzerland	7.88	60.71	0.92	
13	Latvia	7.33	56.45	0.91	●
14	Slovenia	7.04	54.23	0.90	●
15	China	6.90	53.11	0.90	
16	Korea, Rep.	6.60	50.85	0.89	
17	United Kingdom	6.58	50.64	0.88	
18	Finland	5.98	46.02	0.87	
19	Cyprus	5.85	45.01	0.87	
20	Croatia	5.73	44.12	0.86	●
21	Denmark	5.00	38.49	0.85	
22	Serbia	4.19	32.25	0.84	●
23	Malaysia	4.02	30.88	0.84	
24	Thailand	3.67	28.17	0.83	●
25	Austria	3.54	27.23	0.82	
26	Norway	3.42	26.30	0.81	
27	Portugal	3.39	26.02	0.81	
28	Ireland	3.38	25.94	0.80	
29	Bosnia and Herzegovina	3.28	25.22	0.79	●
30	Zimbabwe	3.10	23.84	0.78	●
31	Hong Kong (China)	3.09	23.75	0.78	
32	Macedonia, FYR	3.06	23.47	0.77	
33	Singapore	2.81	21.55	0.76	
34	Chile	2.76	21.20	0.75	
35	Israel	2.68	20.55	0.75	
36	United Arab Emirates	2.66	20.40	0.74	
37	Poland	2.48	19.02	0.73	
38	France	2.46	18.87	0.72	
39	Colombia	2.38	18.25	0.72	
40	Uruguay	2.24	17.20	0.71	
41	Montenegro	2.22	17.05	0.70	
42	Netherlands	2.19	16.82	0.69	
43	Belgium	2.07	15.84	0.69	
44	Germany	2.04	15.61	0.68	
45	Jordan	1.99	15.21	0.67	
46	Costa Rica	1.85	14.17	0.66	
47	Greece	1.76	13.45	0.66	
48	Turkey	1.70	13.01	0.65	
49	Australia	1.67	12.74	0.64	
50	South Africa	1.55	11.84	0.63	
51	Malta	1.54	11.73	0.63	
52	Peru	1.45	11.07	0.62	
53	New Zealand	1.43	10.95	0.61	
54	Argentina	1.33	10.18	0.60	
55	Brazil	1.29	9.85	0.60	
56	Bahrain	1.28	9.72	0.59	
57	Ecuador	1.21	9.22	0.58	●
58	Belize	1.12	8.52	0.57	
59	Viet Nam	1.10	8.40	0.57	
60	Indonesia	1.00	7.56	0.56	
61	Brunei Darussalam	0.99	7.54	0.55	
62	Egypt	0.99	7.53	0.54	
63	India	0.96	7.26	0.54	
64	Tunisia	0.88	6.70	0.53	
65	Russian Federation	0.88	6.64	0.52	
66	Iran, Islamic Rep.	0.87	6.60	0.51	
67	Canada	0.81	6.17	0.51	○
68	Sri Lanka	0.79	5.96	0.50	
69	Ukraine	0.67	5.07	0.49	
70	Swaziland	0.66	4.95	0.49	
71	Kazakhstan	0.64	4.81	0.48	
72	Namibia	0.61	4.61	0.47	
73	Oman	0.61	4.55	0.46	
74	Philippines	0.60	4.53	0.46	
75	Zambia	0.60	4.49	0.45	
76	Qatar	0.58	4.36	0.44	
77	Pakistan	0.55	4.14	0.43	
78	Mexico	0.52	3.87	0.43	
79	Fiji	0.50	3.75	0.42	
80	Bolivia, Plurinational St.	0.48	3.58	0.41	
81	Armenia	0.48	3.55	0.40	
82	Jamaica	0.46	3.45	0.40	
83	Luxembourg	0.46	3.43	0.39	
84	Syrian Arab Rep.	0.45	3.32	0.38	
85	Iceland	0.42	3.14	0.37	
86	Morocco	0.41	3.07	0.37	
87	Kuwait	0.39	2.88	0.36	
88	Dominican Republic	0.37	2.70	0.35	
89	Algeria	0.34	2.52	0.34	
90	Burundi (2008)	0.32	2.37	0.34	
91	Panama	0.31	2.31	0.33	
92	Guatemala	0.31	2.29	0.32	
93	United States of America	0.30	2.22	0.31	○
94	Kenya (2009)	0.29	2.11	0.31	
95	Nicaragua	0.28	2.07	0.30	
96	Mauritius	0.27	2.00	0.29	
97	Moldova, Rep.	0.27	1.98	0.28	
98	Honduras	0.27	1.94	0.28	
99	El Salvador	0.26	1.85	0.27	
100	Lao PDR	0.25	1.84	0.26	
101	Nepal	0.25	1.82	0.25	
102	Trinidad and Tobago	0.23	1.66	0.25	
103	Côte d'Ivoire	0.22	1.55	0.24	
104	Saudi Arabia	0.22	1.54	0.23	
105	Senegal	0.21	1.49	0.22	
106	Belarus	0.21	1.47	0.22	○
107	Azerbaijan	0.20	1.41	0.21	
108	Mali (2009)	0.19	1.34	0.20	
109	Venezuela, Bolivarian Rep.	0.19	1.33	0.19	
110	Lebanon	0.18	1.31	0.19	
111	Guyana	0.18	1.30	0.18	
112	Niger	0.18	1.27	0.17	
113	Georgia	0.18	1.25	0.16	
114	Kyrgyzstan	0.17	1.16	0.16	
115	Ethiopia (2009)	0.16	1.15	0.15	
116	Uganda	0.14	0.98	0.14	
117	Mozambique	0.14	0.94	0.13	
118	Cameroon	0.13	0.92	0.13	
119	Gabon	0.13	0.91	0.12	
120	Cambodia	0.13	0.90	0.11	
121	Paraguay	0.12	0.81	0.10	
122	Uzbekistan	0.10	0.69	0.10	
123	Malawi (2008)	0.09	0.59	0.09	
124	Mongolia	0.09	0.58	0.08	○
125	Ghana (2009)	0.08	0.53	0.07	○
126	Botswana	0.07	0.44	0.07	○
127	Nigeria	0.06	0.33	0.06	
128	Tanzania, United Rep.	0.05	0.28	0.05	
129	Madagascar	0.05	0.27	0.04	○
130	Burkina Faso	0.05	0.26	0.04	
131	Angola	0.05	0.23	0.03	○
132	Albania (2009)	0.04	0.22	0.02	○
133	Sudan	0.04	0.20	0.01	○
134	Yemen	0.02	0.00	0.01	○
135	Bangladesh	0.02	0.00	0.00	○
n/a	Benin	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	

SOURCE: International Organization for Standardization (ISO), *The ISO Survey of Certifications 2010* CD-Rom (2008–10)

4.1.1 Ease of getting credit

Ease of getting credit, percent rank index*[r] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Malaysia	1.00	100.00	0.99	●	
1	South Africa	1.00	100.00	0.99	●	
1	United Kingdom	1.00	100.00	0.99	●	
4	Hong Kong (China)	0.98	97.06	0.96		
4	Latvia	0.98	97.06	0.96	●	
4	New Zealand	0.98	97.06	0.96		
4	United States of America	0.98	97.06	0.96		
8	Australia	0.96	87.61	0.86		
8	Bulgaria	0.96	87.61	0.86	●	
8	Guatemala	0.96	87.61	0.86	●	
8	Ireland	0.96	87.61	0.86		
8	Israel	0.96	87.61	0.86		
8	Kenya	0.96	87.61	0.86	●	
8	Korea, Rep.	0.96	87.61	0.86		
8	Kyrgyzstan	0.96	87.61	0.86	●	
8	Montenegro	0.96	87.61	0.86	●	
8	Poland	0.96	87.61	0.86	●	
8	Romania	0.96	87.61	0.86	●	
8	Singapore	0.96	87.61	0.86		
8	Zambia	0.96	87.61	0.86	●	
21	Albania	0.89	77.36	0.76	●	
21	Austria	0.89	77.36	0.76		
21	Canada	0.89	77.36	0.76		
21	Denmark	0.89	77.36	0.76		
21	Georgia	0.89	77.36	0.76		
21	Germany	0.89	77.36	0.76		
21	Japan	0.89	77.36	0.76		
21	Namibia	0.89	77.36	0.76	●	
21	Peru	0.89	77.36	0.76	●	
21	Serbia	0.89	77.36	0.76		
21	Slovakia	0.89	77.36	0.76		
21	Switzerland	0.89	77.36	0.76		
21	Ukraine	0.89	77.36	0.76		
21	Viet Nam	0.89	77.36	0.76		
35	Estonia	0.80	71.57	0.71		
35	Finland	0.80	71.57	0.71		
35	Honduras	0.80	71.57	0.71	●	
35	Hungary	0.80	71.57	0.71		
35	Iceland	0.80	71.57	0.71		
35	India	0.80	71.57	0.71		
35	Rwanda	0.80	71.57	0.71	●	
35	Trinidad and Tobago	0.80	71.57	0.71		
43	Armenia	0.76	57.66	0.57		
43	Azerbaijan	0.76	57.66	0.57		
43	Belgium	0.76	57.66	0.57		
43	Botswana	0.76	57.66	0.57		
43	Czech Republic	0.76	57.66	0.57		
43	El Salvador	0.76	57.66	0.57		
43	France	0.76	57.66	0.57		
43	Ghana	0.76	57.66	0.57		
43	Lithuania	0.76	57.66	0.57		
43	Macedonia, FYR	0.76	57.66	0.57		
43	Mexico	0.76	57.66	0.57		
43	Netherlands	0.76	57.66	0.57		
43	Norway	0.76	57.66	0.57		
43	Panama	0.76	57.66	0.57		
43	Saudi Arabia	0.76	57.66	0.57		
43	Spain	0.76	57.66	0.57		
43	Swaziland	0.76	57.66	0.57		
43	Sweden	0.76	57.66	0.57		○
43	Uganda	0.76	57.66	0.57	●	
62	Argentina	0.65	50.36	0.50		
62	Bosnia and Herzegovina	0.65	50.36	0.50		
62	China	0.65	50.36	0.50		
62	Colombia	0.65	50.36	0.50		
62	Croatia	0.65	50.36	0.50		
62	Fiji	0.65	50.36	0.50		
62	Nepal	0.65	50.36	0.50		
62	Pakistan	0.65	50.36	0.50	●	
62	Thailand	0.65	50.36	0.50		
62	Uruguay	0.65	50.36	0.50		
72	Bangladesh	0.59	38.68	0.38		
72	Chile	0.59	38.68	0.38		
72	Cyprus	0.59	38.68	0.38		
72	Dominican Republic	0.59	38.68	0.38		
72	Ecuador	0.59	38.68	0.38		
72	Egypt	0.59	38.68	0.38		
72	Greece	0.59	38.68	0.38		
72	Kazakhstan	0.59	38.68	0.38		
72	Lebanon	0.59	38.68	0.38		
72	Mauritius	0.59	38.68	0.38		
72	Mongolia	0.59	38.68	0.38		
72	Nigeria	0.59	38.68	0.38		
72	Paraguay	0.59	38.68	0.38		
72	Sri Lanka	0.59	38.68	0.38		
72	Turkey	0.59	38.68	0.38		
72	United Arab Emirates	0.59	38.68	0.38		
88	Belarus	0.48	27.01	0.27		
88	Belize	0.48	27.01	0.27		
88	Brazil	0.48	27.01	0.27		
88	Cambodia	0.48	27.01	0.27		
88	Costa Rica	0.48	27.01	0.27		
88	Iran, Islamic Rep.	0.48	27.01	0.27		
88	Italy	0.48	27.01	0.27		○
88	Jamaica	0.48	27.01	0.27		
88	Kuwait	0.48	27.01	0.27		
88	Moldova, Rep.	0.48	27.01	0.27		
88	Morocco	0.48	27.01	0.27		
88	Nicaragua	0.48	27.01	0.27		
88	Russian Federation	0.48	27.01	0.27		
88	Slovenia	0.48	27.01	0.27		○
88	Tanzania, United Rep.	0.48	27.01	0.27		
88	Tunisia	0.48	27.01	0.27		
104	Bahrain	0.37	21.12	0.21		○
104	Bolivia, Plurinational St.	0.37	21.12	0.21		
104	Brunei Darussalam	0.37	21.12	0.21		
104	Indonesia	0.37	21.12	0.21		
104	Malawi	0.37	21.12	0.21		
104	Philippines	0.37	21.12	0.21		
104	Portugal	0.37	21.12	0.21		○
104	Zimbabwe	0.37	21.12	0.21		
112	Angola	0.29	15.33	0.15		
112	Ethiopia	0.29	15.33	0.15		
112	Jordan	0.29	15.33	0.15		○
112	Lesotho	0.29	15.33	0.15		
112	Luxembourg	0.29	15.33	0.15		○
112	Mozambique	0.29	15.33	0.15		
112	Oman	0.29	15.33	0.15		○
112	Qatar	0.29	15.33	0.15		○
120	Algeria	0.24	10.86	0.11		
120	Cameroon	0.24	10.86	0.11		
120	Gabon	0.24	10.86	0.11		
120	Gambia	0.24	10.86	0.11		
120	Uzbekistan	0.24	10.86	0.11		
120	Yemen	0.24	10.86	0.11		
126	Benin	0.17	2.84	0.03		○
126	Burkina Faso	0.17	2.84	0.03		○
126	Burundi	0.17	2.84	0.03		
126	Côte d'Ivoire	0.17	2.84	0.03		○
126	Guyana	0.17	2.84	0.03		○
126	Lao PDR	0.17	2.84	0.03		○
126	Mali	0.17	2.84	0.03		○
126	Niger	0.17	2.84	0.03		
126	Senegal	0.17	2.84	0.03		○
126	Sudan	0.17	2.84	0.03		
126	Togo	0.17	2.84	0.03		○
137	Syrian Arab Rep.	0.07	1.42	0.01		○
137	Tajikistan	0.07	1.42	0.01		○
139	Madagascar	0.03	0.71	0.01		○
140	Venezuela, Bolivarian Rep.	0.01	0.00	0.00		○
n/a	Malta	n/a	n/a	n/a		

SOURCE: World Bank, Ease of Doing Business Index 2012, *Doing Business 2012*

4.1.2 Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Cyprus	283.61	100.00	1.00	●
2	Denmark	225.00	78.78	0.99	●
3	Spain	211.63	73.94	0.99	●
4	Ireland	210.19	73.42	0.98	●
5	United Kingdom	204.02	71.19	0.97	●
6	United States of America	202.21	70.53	0.96	●
7	Netherlands	199.30	69.48	0.96	
8	Portugal	190.75	66.39	0.95	●
9	Hong Kong (China)	189.04	65.76	0.94	
10	Luxembourg	185.45	64.46	0.94	
11	Switzerland	174.62	60.55	0.93	
12	Japan	169.16	58.57	0.92	
13	New Zealand	149.03	51.28	0.91	
14	South Africa	145.48	49.99	0.91	●
15	Sweden	140.02	48.02	0.90	
16	Malta	131.37	44.89	0.89	
17	China	130.02	44.40	0.88	
18	Canada (2008)	128.25	43.76	0.88	
19	Australia (2009)	127.83	43.61	0.87	
20	Viet Nam	124.97	42.57	0.86	●
21	Italy	122.54	41.69	0.86	●
22	Austria	122.39	41.64	0.85	
23	Thailand	116.65	39.56	0.84	●
24	Greece	115.95	39.31	0.83	●
25	Malaysia	114.88	38.92	0.83	
26	France	114.42	38.75	0.82	
27	Germany	107.77	36.35	0.81	
28	Iceland	107.61	36.29	0.81	
29	Latvia	103.72	34.88	0.80	
30	Singapore	102.15	34.31	0.79	
31	Korea, Rep.	100.84	33.83	0.78	
32	Estonia	97.22	32.53	0.78	
33	Israel	95.70	31.98	0.77	
34	Finland	94.94	31.70	0.76	
35	Belgium	94.87	31.68	0.76	
36	Slovenia	94.38	31.50	0.75	
37	Panama	91.45	30.44	0.74	
38	Mauritius	87.81	29.12	0.73	
39	Norway (2006)	87.04	28.84	0.73	
40	Chile	86.27	28.56	0.72	
41	Kuwait (2009)	82.41	27.16	0.71	
42	Lebanon	81.34	26.78	0.71	
43	Bahrain (2009)	79.57	26.13	0.70	
44	Bulgaria	74.60	24.34	0.69	
45	Hungary	72.60	23.61	0.68	
46	United Arab Emirates	72.46	23.56	0.68	
47	Jordan	70.30	22.78	0.67	
48	Croatia	70.09	22.70	0.66	
49	Morocco	68.79	22.24	0.65	●
50	Tunisia	68.76	22.22	0.65	
51	Montenegro	66.97	21.58	0.64	
52	Lithuania	66.41	21.37	0.63	
53	Belize	62.21	19.85	0.63	
54	Ukraine	61.73	19.68	0.62	
55	Brazil	56.99	17.96	0.61	
56	Czech Republic	56.23	17.69	0.60	
57	Nepal	55.56	17.44	0.60	●
58	Poland	54.79	17.17	0.59	
59	Bosnia and Herzegovina	54.68	17.13	0.58	
60	Fiji	52.39	16.30	0.58	
61	Serbia	51.49	15.97	0.57	
62	Qatar (2009)	51.46	15.96	0.56	
63	Honduras	50.53	15.63	0.55	
64	India	49.01	15.07	0.55	
65	Oman (2009)	48.21	14.78	0.54	
66	Saudi Arabia	47.59	14.56	0.53	
67	Bangladesh	47.05	14.36	0.53	
68	Romania	46.14	14.03	0.52	
69	Costa Rica	45.88	13.94	0.51	
70	Namibia	45.64	13.85	0.50	
71	Macedonia, FYR	45.27	13.72	0.50	
72	Russian Federation	45.14	13.67	0.49	
73	Slovakia (2008)	44.93	13.60	0.48	
74	Belarus	44.78	13.54	0.47	
75	Brunei Darussalam (2009)	44.51	13.44	0.47	
76	Zimbabwe (2006)	44.48	13.43	0.46	
77	Turkey	43.95	13.24	0.45	
78	Colombia	43.54	13.09	0.45	
79	El Salvador	41.02	12.18	0.44	
80	Bolivia, Plurinational St.	40.34	11.94	0.43	
81	Mongolia	39.60	11.67	0.42	
82	Kazakhstan	39.30	11.56	0.42	
83	Trinidad and Tobago (2009)	39.20	11.52	0.41	
84	Albania	37.96	11.07	0.40	
85	Guyana	37.81	11.02	0.40	
86	Iran, Islamic Rep. (2009)	36.66	10.60	0.39	
87	Kenya	33.83	9.58	0.38	
88	Moldova, Rep.	33.28	9.38	0.37	
89	Egypt	33.07	9.30	0.37	
90	Paraguay	32.77	9.19	0.36	
91	Nicaragua	32.52	9.10	0.35	
92	Georgia	32.40	9.06	0.35	
93	Ecuador	30.87	8.50	0.34	
94	Philippines	29.58	8.04	0.33	
95	Nigeria	29.43	7.99	0.32	
96	Indonesia	29.13	7.87	0.32	
97	Tajikistan (2007)	28.93	7.80	0.31	
98	Cambodia	27.56	7.31	0.30	
99	Sri Lanka	26.68	6.99	0.29	
100	Armenia	26.50	6.92	0.29	
101	Senegal	25.87	6.70	0.28	
102	Mozambique	25.77	6.66	0.27	
103	Burundi	25.50	6.56	0.27	
104	Jamaica	24.81	6.31	0.26	
105	Mexico	24.64	6.25	0.25	
106	Peru	24.26	6.11	0.24	
107	Guatemala	23.44	5.82	0.24	
108	Botswana	23.40	5.80	0.23	
109	Benin	23.07	5.68	0.22	
110	Togo	22.97	5.65	0.22	
111	Swaziland	22.96	5.64	0.21	
112	Dominican Republic	22.68	5.54	0.20	
113	Syrian Arab Rep.	22.51	5.48	0.19	
114	Uruguay	22.30	5.40	0.19	
115	Venezuela, Bolivarian Rep. (2008)	21.70	5.19	0.18	
116	Pakistan	21.46	5.10	0.17	
117	Lao PDR	20.44	4.73	0.17	
118	Angola	20.28	4.67	0.16	
119	Gambia	19.08	4.24	0.15	
120	Mali	18.37	3.98	0.14	
121	Azerbaijan	18.27	3.94	0.14	
122	Côte d'Ivoire	18.13	3.89	0.13	
123	Ethiopia (2008)	17.85	3.79	0.12	
124	Burkina Faso	17.61	3.71	0.12	
125	Tanzania, United Rep.	16.11	3.16	0.11	
126	Malawi	15.99	3.12	0.10	
127	Uganda	15.81	3.05	0.09	
128	Algeria	15.81	3.05	0.09	
129	Ghana	15.23	2.84	0.08	○
130	Kyrgyzstan (2007)	15.05	2.78	0.07	
131	Argentina	14.62	2.62	0.06	○
132	Lesotho	13.57	2.24	0.06	○
133	Niger	12.63	1.90	0.05	
134	Madagascar	11.71	1.57	0.04	○
135	Sudan	11.62	1.54	0.04	
136	Cameroon	11.55	1.51	0.03	○
137	Zambia	11.50	1.50	0.02	○
138	Rwanda (2005)	11.21	1.39	0.01	○
139	Gabon	8.16	0.29	0.01	○
140	Yemen (2009)	7.37	0.00	0.00	○
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2005–10)

4.1.3 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mongolia	14.77	100.00	0.97	●
1	Cambodia (2011)	12.35	100.00	0.97	●
1	Bolivia, Plurinational St. (2011)	11.45	100.00	0.97	●
1	Peru (2011)	8.28	100.00	0.97	●
5	Tajikistan	7.46	90.15	0.96	●
6	Armenia	5.30	64.07	0.95	●
7	Ghana	5.12	61.84	0.93	●
8	Nicaragua	4.65	56.21	0.92	●
9	Kyrgyzstan (2011)	4.56	55.12	0.91	●
10	Viet Nam	4.49	54.27	0.90	●
11	Paraguay (2011)	4.19	50.58	0.89	●
12	Georgia	3.94	47.61	0.88	●
13	Bosnia and Herzegovina	3.79	45.84	0.87	●
14	Kenya	3.79	45.81	0.86	●
15	Togo	3.54	42.72	0.85	●
16	Ecuador (2011)	3.45	41.70	0.84	●
17	Albania	3.08	37.27	0.82	●
18	Macedonia, FYR	2.62	31.63	0.81	●
19	Senegal	2.53	30.60	0.80	●
20	Bangladesh	2.49	30.12	0.79	●
21	Azerbaijan (2011)	2.33	28.16	0.78	●
22	Benin	1.89	22.83	0.77	●
23	El Salvador	1.83	22.14	0.76	●
24	Serbia	1.79	21.64	0.75	
25	Moldova, Rep.	1.68	20.35	0.74	
26	Honduras	1.63	19.67	0.73	●
27	Burkina Faso	1.56	18.79	0.71	●
28	Colombia (2011)	1.53	18.43	0.70	
29	Uganda	1.51	18.22	0.69	●
30	Swaziland (2009)	1.47	17.78	0.68	
31	Bulgaria	1.41	17.04	0.67	
32	Ethiopia (2011)	1.28	15.49	0.66	●
33	Malawi	1.19	14.35	0.65	●
34	Dominican Republic	1.13	13.68	0.64	●
35	Sri Lanka	1.06	12.84	0.63	
36	Cameroon	1.03	12.47	0.62	●
37	Nepal	0.98	11.82	0.60	●
38	Montenegro	0.91	11.04	0.59	
39	Mali	0.87	10.46	0.58	●
40	Belize	0.86	10.38	0.57	
41	Chile	0.78	9.47	0.56	
42	Morocco	0.63	7.56	0.55	
43	Jordan	0.62	7.49	0.54	
44	Madagascar	0.55	6.69	0.53	
45	Indonesia	0.55	6.66	0.52	
46	South Africa	0.44	5.29	0.51	
47	Guatemala	0.43	5.22	0.49	
48	Mozambique	0.42	5.04	0.48	
49	Uzbekistan	0.38	4.64	0.47	
50	India	0.34	4.07	0.46	
51	Rwanda	0.33	3.99	0.45	
52	Lao PDR	0.32	3.88	0.44	
53	Philippines	0.32	3.83	0.43	
54	Niger	0.30	3.66	0.42	
55	Gambia	0.29	3.55	0.41	
56	Tanzania, United Rep.	0.28	3.41	0.40	
57	Burundi	0.24	2.91	0.38	
58	China	0.24	2.91	0.37	
59	Costa Rica	0.20	2.40	0.36	
60	Romania	0.20	2.37	0.35	
61	Ukraine	0.19	2.24	0.34	
62	Côte d'Ivoire	0.18	2.19	0.33	
63	Pakistan	0.17	2.05	0.32	
64	Mexico (2011)	0.16	1.92	0.31	
65	Jamaica	0.16	1.91	0.30	
66	Tunisia (2011)	0.14	1.72	0.29	
67	Lebanon	0.13	1.55	0.27	
68	Malaysia	0.12	1.40	0.26	○
69	Kazakhstan	0.10	1.23	0.25	
70	Panama	0.08	0.91	0.24	
71	Egypt	0.07	0.90	0.23	
72	Brazil	0.07	0.81	0.22	○
73	Nigeria	0.04	0.50	0.21	
74	Syrian Arab Rep.	0.04	0.46	0.20	
75	Yemen	0.04	0.45	0.19	
76	Venezuela, Bolivarian Rep. (2011)	0.03	0.39	0.18	
77	Zambia	0.03	0.34	0.16	
78	Trinidad and Tobago (2008)	0.02	0.19	0.15	
79	Uruguay (2011)	0.01	0.18	0.14	○
80	Poland	0.01	0.16	0.13	○
81	Angola	0.01	0.14	0.12	
82	Croatia (2007)	0.01	0.14	0.11	○
83	Russian Federation	0.01	0.13	0.10	○
84	Gabon	0.01	0.12	0.09	○
85	Argentina	0.01	0.11	0.08	○
86	Zimbabwe (2009)	0.01	0.10	0.07	
87	Namibia (2008)	0.00	0.05	0.05	○
88	Turkey	0.00	0.02	0.04	○
89	Sudan	0.00	0.02	0.03	
90	Hungary (2007)	0.00	0.01	0.02	○
91	Thailand	0.00	0.01	0.01	○
92	Slovakia (2001)	0.00	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Australia	n/a	n/a	n/a	
n/a	Austria	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Czech Republic	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Estonia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Finland	n/a	n/a	n/a	
n/a	France	n/a	n/a	n/a	
n/a	Germany	n/a	n/a	n/a	
n/a	Greece	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Italy	n/a	n/a	n/a	
n/a	Japan	n/a	n/a	n/a	
n/a	Korea, Rep.	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Lithuania	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Portugal	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	Slovenia	n/a	n/a	n/a	
n/a	Spain	n/a	n/a	n/a	
n/a	Sweden	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United Kingdom	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	

SOURCE: Microfinance Information Exchange, *Mix Market database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2001–11)

4.2.1 Ease of protecting investors

Ease of protecting investors, percent rank index*[r] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	New Zealand	1.00	100.00	1.00	●	
2	Singapore	0.99	99.20	0.99		
3	Hong Kong (China)	0.99	98.50	0.99		
4	Malaysia	0.98	97.80	0.98	●	
5	Canada	0.98	94.20	0.94		
5	Colombia	0.98	94.20	0.94	●	
5	Ireland	0.98	94.20	0.94		
5	Israel	0.98	94.20	0.94		
5	United States of America	0.98	94.20	0.94		
10	South Africa	0.95	92.80	0.93	●	
10	United Kingdom	0.95	92.80	0.93		
12	Kyrgyzstan	0.94	90.60	0.91	●	
12	Mauritius	0.94	90.60	0.91	●	
12	Thailand	0.94	90.60	0.91	●	
15	Albania	0.92	89.90	0.90	●	
16	Belgium	0.92	87.00	0.87		
16	Japan	0.92	87.00	0.87		
16	Macedonia, FYR	0.92	87.00	0.87	●	
16	Saudi Arabia	0.92	87.00	0.87	●	
20	Azerbaijan	0.89	82.00	0.82	●	
20	Bangladesh	0.89	82.00	0.82	●	
20	Georgia	0.89	82.00	0.82	●	
20	Norway	0.89	82.00	0.82		
20	Peru	0.89	82.00	0.82	●	
20	Slovenia	0.89	82.00	0.82		
20	Trinidad and Tobago	0.89	82.00	0.82	●	
27	Chile	0.85	76.20	0.76		
27	Denmark	0.85	76.20	0.76		
27	Kuwait	0.85	76.20	0.76		
27	Mongolia	0.85	76.20	0.76		
27	Montenegro	0.85	76.20	0.76		
27	Pakistan	0.85	76.20	0.76	●	
27	Rwanda	0.85	76.20	0.76	●	
27	Sweden	0.85	76.20	0.76		
35	Botswana	0.76	66.90	0.67		
35	Bulgaria	0.76	66.90	0.67		
35	Fiji	0.76	66.90	0.67	●	
35	Ghana	0.76	66.90	0.67	●	
35	India	0.76	66.90	0.67		
35	Indonesia	0.76	66.90	0.67	●	
35	Kazakhstan	0.76	66.90	0.67		
35	Mexico	0.76	66.90	0.67		
35	Mozambique	0.76	66.90	0.67	●	
35	Poland	0.76	66.90	0.67		
35	Portugal	0.76	66.90	0.67		
35	Romania	0.76	66.90	0.67		
35	Tunisia	0.76	66.90	0.67		
48	Angola	0.68	58.20	0.58	●	
48	Australia	0.68	58.20	0.58		
48	Dominican Republic	0.68	58.20	0.58		
48	Estonia	0.68	58.20	0.58		
48	Finland	0.68	58.20	0.58		
48	Italy	0.68	58.20	0.58		
48	Latvia	0.68	58.20	0.58		
48	Madagascar	0.68	58.20	0.58		
48	Nigeria	0.68	58.20	0.58	●	
48	Paraguay	0.68	58.20	0.58		
48	Tajikistan	0.68	58.20	0.58	●	
48	Turkey	0.68	58.20	0.58		
60	Algeria	0.60	46.70	0.47		
60	Bahrain	0.60	46.70	0.47		
60	Brazil	0.60	46.70	0.47		
60	Cambodia	0.60	46.70	0.47		
60	Egypt	0.60	46.70	0.47		
60	France	0.60	46.70	0.47		○
60	Guyana	0.60	46.70	0.47		
60	Iceland	0.60	46.70	0.47		
60	Jamaica	0.60	46.70	0.47		
60	Korea, Rep.	0.60	46.70	0.47		
60	Malawi	0.60	46.70	0.47		
60	Namibia	0.60	46.70	0.47		
60	Nepal	0.60	46.70	0.47		
60	Serbia	0.60	46.70	0.47		
60	Sri Lanka	0.60	46.70	0.47		
60	Zambia	0.60	46.70	0.47		
76	Armenia	0.49	35.90	0.36		
76	Bosnia and Herzegovina	0.49	35.90	0.36		
76	China	0.49	35.90	0.36		
76	Cyprus	0.49	35.90	0.36		○
76	Czech Republic	0.49	35.90	0.36		○
76	Germany	0.49	35.90	0.36		○
76	Kenya	0.49	35.90	0.36		
76	Lebanon	0.49	35.90	0.36		
76	Lithuania	0.49	35.90	0.36		
76	Nicaragua	0.49	35.90	0.36		
76	Oman	0.49	35.90	0.36		
76	Qatar	0.49	35.90	0.36		
76	Spain	0.49	35.90	0.36		○
76	Tanzania, United Rep.	0.49	35.90	0.36		
76	Uruguay	0.49	35.90	0.36		
91	Argentina	0.41	29.40	0.29		
91	Belarus	0.41	29.40	0.29		
91	Moldova, Rep.	0.41	29.40	0.29		
91	Netherlands	0.41	29.40	0.29		○
91	Panama	0.41	29.40	0.29		
91	Russian Federation	0.41	29.40	0.29		
91	Slovakia	0.41	29.40	0.29		
91	Syrian Arab Rep.	0.41	29.40	0.29		
91	Ukraine	0.41	29.40	0.29		
100	Belize	0.35	22.30	0.22		
100	Brunei Darussalam	0.35	22.30	0.22		
100	Cameroon	0.35	22.30	0.22		
100	Ethiopia	0.35	22.30	0.22		
100	Hungary	0.35	22.30	0.22		○
100	Jordan	0.35	22.30	0.22		
100	Luxembourg	0.35	22.30	0.22		○
100	Swaziland	0.35	22.30	0.22		
100	United Arab Emirates	0.35	22.30	0.22		○
100	Zimbabwe	0.35	22.30	0.22		
110	Austria	0.29	15.80	0.16		○
110	Bolivia, Plurinational St.	0.29	15.80	0.16		
110	Croatia	0.29	15.80	0.16		○
110	Ecuador	0.29	15.80	0.16		
110	Guatemala	0.29	15.80	0.16		
110	Philippines	0.29	15.80	0.16		
110	Uganda	0.29	15.80	0.16		
110	Uzbekistan	0.29	15.80	0.16		
110	Yemen	0.29	15.80	0.16		
119	Burkina Faso	0.21	12.90	0.13		
119	Lesotho	0.21	12.90	0.13		
119	Mali	0.21	12.90	0.13		
119	Togo	0.21	12.90	0.13		
123	Benin	0.16	7.10	0.07		
123	Burundi	0.16	7.10	0.07		
123	Côte d'Ivoire	0.16	7.10	0.07		
123	Gabon	0.16	7.10	0.07		○
123	Greece	0.16	7.10	0.07		○
123	Morocco	0.16	7.10	0.07		○
123	Niger	0.16	7.10	0.07		
123	Sudan	0.16	7.10	0.07		
131	Costa Rica	0.09	3.50	0.04		○
131	Honduras	0.09	3.50	0.04		○
131	Iran, Islamic Rep.	0.09	3.50	0.04		○
131	Senegal	0.09	3.50	0.04		○
131	Switzerland	0.09	3.50	0.04		○
136	El Salvador	0.06	1.40	0.01		○
136	Gambia	0.06	1.40	0.01		○
136	Viet Nam	0.06	1.40	0.01		○
139	Venezuela, Bolivarian Rep.	0.02	0.70	0.01		○
140	Lao PDR	0.01	0.00	0.00		○
n/a	Malta	n/a	n/a	n/a		

SOURCE: World Bank, Ease of Doing Business Index 2012, *Doing Business 2012*

4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Hong Kong (China)	1,207.95	100.00	0.99	●	
1	South Africa	278.40	100.00	0.99	●	
3	Switzerland	234.71	84.30	0.98		
4	Luxembourg	183.55	65.90	0.97		
5	Malaysia	172.64	61.98	0.96	●	
6	Chile	167.90	60.28	0.95	●	
7	Singapore	166.18	59.66	0.94		
8	Zimbabwe	153.55	55.12	0.93	●	
9	United Kingdom	138.33	49.65	0.92		
10	Canada	137.24	49.26	0.92		
11	Australia (2009)	136.07	48.84	0.91		
12	Sweden	126.89	45.54	0.90		
13	United States of America	117.53	42.17	0.89		
14	Jordan	111.93	40.16	0.88	●	
15	Korea, Rep.	107.37	38.52	0.87		
16	Israel	100.33	35.99	0.86		
17	India	93.46	33.52	0.85	●	
18	Montenegro	90.02	32.28	0.84	●	
19	Qatar (2009)	89.36	32.04	0.83		
20	Kuwait (2009)	87.64	31.43	0.82		
21	Thailand	87.11	31.23	0.81		
22	Netherlands	84.40	30.26	0.80		
23	Spain	83.25	29.84	0.79		
24	Bahrain (2009)	82.22	29.48	0.78		
25	Saudi Arabia	81.31	29.15	0.77		
26	China	81.02	29.04	0.76		
27	Philippines	78.82	28.25	0.75	●	
28	Morocco	75.83	27.18	0.75	●	
29	France	75.25	26.97	0.74		
30	Denmark	74.66	26.76	0.73		
31	Japan	74.57	26.72	0.72		
32	Brazil	74.03	26.53	0.71		
33	Colombia	72.35	25.93	0.70		
34	Russian Federation	67.88	24.32	0.69		
35	Mauritius	66.87	23.96	0.68		
36	Peru	64.89	23.25	0.67		
37	Norway	60.54	21.68	0.66		
38	Trinidad and Tobago	59.60	21.35	0.65		
39	Belgium	57.62	20.63	0.64		
40	New Zealand (2009)	52.94	18.95	0.63		
41	Indonesia	51.01	18.25	0.62		
42	Finland	49.48	17.71	0.61		
43	United Arab Emirates (2009)	47.61	17.03	0.60		
44	Jamaica	47.35	16.94	0.59		
45	Bangladesh	46.96	16.80	0.58	●	
46	Fiji	46.66	16.69	0.58		
47	Kenya	46.04	16.47	0.57		
48	Mexico	43.70	15.63	0.56		
49	Germany	43.20	15.45	0.55		
50	Kazakhstan	42.48	15.19	0.54		
51	Turkey	41.71	14.91	0.53		
52	Croatia	40.94	14.64	0.52		
53	Panama	40.77	14.57	0.51		
54	Poland	40.60	14.51	0.50		
55	Sri Lanka	40.21	14.37	0.49		
56	Egypt	37.68	13.47	0.48		
57	Oman (2009)	36.92	13.19	0.47		
58	Portugal	35.88	12.82	0.46		
59	Lebanon	32.14	11.47	0.45		
60	Côte d'Ivoire	31.16	11.12	0.44	●	
61	Nepal	30.85	11.01	0.43		
62	Macedonia, FYR	29.03	10.35	0.42		
63	Ukraine	28.61	10.20	0.42		
64	Botswana	27.43	9.78	0.41		
65	Malawi	26.69	9.51	0.40		
66	Nigeria	26.27	9.36	0.39		
67	Malta (2009)	24.82	8.84	0.38		○
68	Serbia	24.76	8.82	0.37		
69	Tunisia	24.12	8.59	0.36		
70	Greece	23.83	8.48	0.35		
71	Czech Republic	22.41	7.97	0.34		○
72	Pakistan	21.84	7.77	0.33		
73	Hungary	21.25	7.56	0.32		
74	Romania	20.04	7.12	0.31		
75	Cyprus (2009)	19.94	7.09	0.30		○
76	Slovenia	19.74	7.01	0.29		○
77	Viet Nam	19.68	6.99	0.28		
78	El Salvador	19.39	6.89	0.27		
79	Iran, Islamic Rep. (2009)	19.12	6.79	0.26		
80	Austria	17.99	6.39	0.25		○
81	Mongolia	17.97	6.38	0.25		
82	Zambia	17.39	6.17	0.24		
83	Argentina	17.33	6.15	0.23		
84	Bolivia, Plurinational St.	17.12	6.07	0.22		
85	Ireland	16.54	5.86	0.21		○
86	Iceland	15.85	5.62	0.20		○
87	Lithuania	15.59	5.52	0.19		○
88	Italy	15.51	5.49	0.18		○
89	Guyana	15.29	5.42	0.17		
90	Bulgaria	15.25	5.40	0.16		○
91	Estonia	12.10	4.27	0.15		○
92	Ghana	11.28	3.97	0.14		
93	Namibia	9.67	3.39	0.13		○
94	Georgia	9.08	3.18	0.12		○
95	Ecuador	8.93	3.13	0.11		
96	Swaziland (2007)	6.88	2.39	0.10		
97	Tanzania, United Rep.	5.48	1.89	0.09		
98	Latvia	5.21	1.79	0.08		○
99	Slovakia	4.66	1.59	0.08		○
100	Uzbekistan (2006)	4.20	1.43	0.07		
101	Costa Rica	4.18	1.42	0.06		○
102	Kyrgyzstan	1.71	0.53	0.05		○
103	Uganda (2006)	1.17	0.34	0.04		○
104	Venezuela, Bolivarian Rep.	1.03	0.29	0.03		
105	Uruguay	0.39	0.06	0.02		○
106	Armenia	0.30	0.03	0.01		○
107	Paraguay	0.23	0.00	0.00		○
n/a	Albania	n/a	n/a	n/a		
n/a	Algeria	n/a	n/a	n/a		
n/a	Angola	n/a	n/a	n/a		
n/a	Azerbaijan	n/a	n/a	n/a		
n/a	Belarus	n/a	n/a	n/a		
n/a	Belize	n/a	n/a	n/a		
n/a	Benin	n/a	n/a	n/a		
n/a	Bosnia and Herzegovina	n/a	n/a	n/a		
n/a	Brunei Darussalam	n/a	n/a	n/a		
n/a	Burkina Faso	n/a	n/a	n/a		
n/a	Burundi	n/a	n/a	n/a		
n/a	Cambodia	n/a	n/a	n/a		
n/a	Cameroon	n/a	n/a	n/a		
n/a	Dominican Republic	n/a	n/a	n/a		
n/a	Ethiopia	n/a	n/a	n/a		
n/a	Gabon	n/a	n/a	n/a		
n/a	Gambia	n/a	n/a	n/a		
n/a	Guatemala	n/a	n/a	n/a		
n/a	Honduras	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Lesotho	n/a	n/a	n/a		
n/a	Madagascar	n/a	n/a	n/a		
n/a	Mali	n/a	n/a	n/a		
n/a	Moldova, Rep.	n/a	n/a	n/a		
n/a	Mozambique	n/a	n/a	n/a		
n/a	Nicaragua	n/a	n/a	n/a		
n/a	Niger	n/a	n/a	n/a		
n/a	Rwanda	n/a	n/a	n/a		
n/a	Senegal	n/a	n/a	n/a		
n/a	Sudan	n/a	n/a	n/a		
n/a	Syrian Arab Rep.	n/a	n/a	n/a		
n/a	Tajikistan	n/a	n/a	n/a		
n/a	Togo	n/a	n/a	n/a		
n/a	Yemen	n/a	n/a	n/a		

SOURCE: Standard and Poor's and World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2006–10)

4.2.3 Total value of stocks traded

Stocks traded, total value (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Hong Kong (China)	711.73	100.00	0.97	●	
1	United States of America	208.85	100.00	0.97	●	
1	Switzerland	166.00	100.00	0.97	●	
1	Korea, Rep.	160.34	100.00	0.97	●	
5	China	136.60	85.19	0.96	●	
6	United Kingdom	133.86	83.49	0.95		
7	Singapore	126.69	79.02	0.94		
8	Sweden	95.98	59.86	0.93		
9	South Africa	93.49	58.31	0.93	●	
10	Canada	86.76	54.11	0.92		
11	Australia (2009)	82.37	51.37	0.91		
12	Japan	77.86	48.56	0.90		
13	Netherlands	75.58	47.13	0.89		
14	Thailand	68.36	42.63	0.88	●	
15	Spain	66.63	41.56	0.87	●	
16	Kuwait (2009)	63.89	39.84	0.86		
17	Israel	61.37	38.27	0.85		
18	India	61.12	38.12	0.84	●	
19	Turkey	57.34	35.76	0.83	●	
20	Russian Federation	54.04	33.70	0.82		
21	Norway	52.39	32.67	0.81		
22	Saudi Arabia	46.75	29.16	0.80		
23	Denmark	46.58	29.05	0.79		
24	Brazil	43.16	26.92	0.79	●	
25	Finland	42.66	26.60	0.78		
26	Germany	42.45	26.48	0.77		
27	Malaysia	37.93	23.65	0.76		
28	Jordan	34.26	21.37	0.75		
29	France	32.34	20.17	0.74		
30	New Zealand (2009)	29.37	18.32	0.73		
31	United Arab Emirates (2009)	28.54	17.80	0.72		
32	Viet Nam	28.38	17.70	0.71		
33	Chile	26.70	16.65	0.70		
34	Italy	26.29	16.40	0.69		
35	Qatar (2009)	25.95	16.18	0.68		
36	Belgium	23.84	14.87	0.67		
37	Hungary	20.29	12.66	0.66		
38	Indonesia	18.33	11.43	0.65	●	
39	Egypt	16.95	10.57	0.64	●	
40	Poland	16.53	10.31	0.64		
41	Zimbabwe	15.31	9.55	0.63	●	
42	Bangladesh	14.68	9.16	0.62	●	
43	Greece	14.14	8.82	0.61		
44	Portugal	13.66	8.52	0.60		
45	Philippines	13.42	8.37	0.59		
46	Austria	12.79	7.98	0.58		
47	Oman (2009)	12.44	7.76	0.57		
48	Morocco	11.79	7.35	0.56		
49	Mexico	10.44	6.51	0.55		
50	Ireland	8.25	5.14	0.54	○	
51	Colombia	7.97	4.97	0.53		
52	Pakistan	7.39	4.61	0.52	●	
53	Czech Republic	7.33	4.57	0.51		
54	Sri Lanka	6.67	4.16	0.50		
55	Iran, Islamic Rep. (2009)	5.15	3.21	0.50		
56	Lebanon	4.78	2.98	0.49		
57	Bahrain (2009)	4.16	2.59	0.48		
58	Tunisia	3.84	2.39	0.47		
59	Cyprus (2009)	3.78	2.36	0.46		
60	Mauritius	3.67	2.29	0.45		
61	Kenya	3.45	2.15	0.44		
62	Nigeria	2.73	1.70	0.43		
63	Peru	2.58	1.61	0.42		
64	Estonia	1.72	1.07	0.41	○	
65	Croatia	1.70	1.06	0.40		
66	Kazakhstan	1.60	0.99	0.39		
67	Ukraine	1.52	0.95	0.38		
68	Jamaica	1.51	0.94	0.37		
69	Iceland	1.19	0.74	0.36		
70	Romania	1.05	0.66	0.36		
71	Botswana	0.94	0.59	0.35		
72	El Salvador (2006)	0.90	0.56	0.34		
73	Lithuania	0.82	0.51	0.33		
74	Mongolia	0.81	0.50	0.32		
75	Zambia	0.78	0.49	0.31		
76	Montenegro	0.77	0.48	0.30		○
77	Panama	0.71	0.44	0.29		
78	Argentina	0.70	0.44	0.28		
79	Trinidad and Tobago	0.67	0.42	0.27		
80	Nepal	0.63	0.39	0.26		
81	Serbia	0.61	0.38	0.25		
82	Côte d'Ivoire	0.58	0.36	0.24		
83	Slovenia	0.57	0.35	0.23		○
84	Bulgaria	0.41	0.26	0.22		○
85	Macedonia, FYR	0.39	0.24	0.21		○
86	Malawi	0.39	0.24	0.21		
87	Ghana	0.33	0.20	0.20		
88	Luxembourg	0.32	0.20	0.19		○
89	Ecuador	0.30	0.19	0.18		
90	Moldova, Rep. (2009)	0.24	0.15	0.17		
91	Malta (2009)	0.23	0.14	0.16		○
92	Slovakia	0.20	0.12	0.15		○
93	Kyrgyzstan	0.19	0.12	0.14		
94	Fiji	0.17	0.10	0.13		○
95	Namibia	0.15	0.09	0.12		○
96	Costa Rica	0.12	0.07	0.11		○
97	Latvia	0.11	0.07	0.10		○
98	Tanzania, United Rep.	0.11	0.07	0.09		
99	Paraguay	0.11	0.07	0.08		
100	Uzbekistan	0.10	0.06	0.07		
101	Uganda (2006)	0.06	0.03	0.07		○
102	Bolivia, Plurinational St.	0.06	0.03	0.06		○
103	Guyana (2008)	0.04	0.02	0.05		○
104	Georgia	0.02	0.01	0.04		○
105	Venezuela, Bolivarian Rep.	0.01	0.01	0.03		
106	Uruguay	0.01	0.00	0.02		○
107	Armenia (2009)	0.00	0.00	0.01		○
108	Swaziland (2006)	0.00	0.00	0.00		○
n/a	Albania	n/a	n/a	n/a		
n/a	Algeria	n/a	n/a	n/a		
n/a	Angola	n/a	n/a	n/a		
n/a	Azerbaijan	n/a	n/a	n/a		
n/a	Belarus	n/a	n/a	n/a		
n/a	Belize	n/a	n/a	n/a		
n/a	Benin	n/a	n/a	n/a		
n/a	Bosnia and Herzegovina	n/a	n/a	n/a		
n/a	Brunei Darussalam	n/a	n/a	n/a		
n/a	Burkina Faso	n/a	n/a	n/a		
n/a	Burundi	n/a	n/a	n/a		
n/a	Cambodia	n/a	n/a	n/a		
n/a	Cameroon	n/a	n/a	n/a		
n/a	Dominican Republic	n/a	n/a	n/a		
n/a	Ethiopia	n/a	n/a	n/a		
n/a	Gabon	n/a	n/a	n/a		
n/a	Gambia	n/a	n/a	n/a		
n/a	Guatemala	n/a	n/a	n/a		
n/a	Honduras	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Lesotho	n/a	n/a	n/a		
n/a	Madagascar	n/a	n/a	n/a		
n/a	Mali	n/a	n/a	n/a		
n/a	Mozambique	n/a	n/a	n/a		
n/a	Nicaragua	n/a	n/a	n/a		
n/a	Niger	n/a	n/a	n/a		
n/a	Rwanda	n/a	n/a	n/a		
n/a	Senegal	n/a	n/a	n/a		
n/a	Sudan	n/a	n/a	n/a		
n/a	Syrian Arab Rep.	n/a	n/a	n/a		
n/a	Tajikistan	n/a	n/a	n/a		
n/a	Togo	n/a	n/a	n/a		
n/a	Yemen	n/a	n/a	n/a		

SOURCE: Standard and Poor's and World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2006–10)

4.2.4 Venture capital deals

Venture capital per investment location: Number of deals (per trillion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Sweden	315.84	100.00	1.00	●
2	Togo	313.77	99.89	0.99	●
3	Israel	288.81	98.45	0.99	●
4	Ireland	281.77	98.02	0.98	●
5	United States of America	243.35	95.49	0.97	●
6	Canada	225.72	94.18	0.96	●
7	Norway	188.78	91.09	0.96	
8	United Kingdom	146.88	86.76	0.95	
9	Denmark	143.44	86.35	0.94	
10	Cyprus	126.32	84.16	0.94	●
11	Switzerland	120.26	83.31	0.93	
12	France	102.40	80.54	0.92	●
13	Finland	95.79	79.40	0.91	
14	Luxembourg	91.61	78.63	0.91	
15	Germany	90.63	78.44	0.90	
16	Lithuania	81.39	76.60	0.89	●
17	Mongolia	79.31	76.15	0.89	●
18	Spain	76.43	75.52	0.88	●
19	Kenya	69.81	73.96	0.87	●
20	Namibia	64.28	72.55	0.86	●
21	Australia	59.85	71.33	0.86	
22	Latvia	57.76	70.72	0.85	
23	Lao PDR	57.36	70.60	0.84	●
24	Austria	56.84	70.45	0.84	
25	Singapore	53.97	69.57	0.83	
26	India	51.01	68.60	0.82	●
27	Brunei Darussalam	47.28	67.31	0.81	●
28	Korea, Rep.	45.63	66.71	0.81	
29	Hong Kong (China)	42.34	65.44	0.80	
30	Georgia	41.20	64.97	0.79	
31	Uruguay	38.38	63.77	0.79	
32	Estonia	37.11	63.20	0.78	
33	Netherlands	33.96	61.70	0.77	
34	Bahrain	32.37	60.90	0.76	
35	China	32.34	60.88	0.76	
36	Belgium	28.96	59.02	0.75	
37	Jordan	27.10	57.91	0.74	
38	Portugal	20.22	53.03	0.74	
39	South Africa	16.21	49.39	0.73	
40	New Zealand	16.19	49.37	0.72	
41	Croatia	12.35	44.98	0.71	
42	Morocco	12.26	44.86	0.71	●
43	Nigeria	12.04	44.58	0.70	●
44	United Arab Emirates	11.49	43.82	0.69	
45	Viet Nam	10.01	41.63	0.69	
46	Peru	10.00	41.61	0.68	
47	Brazil	9.96	41.55	0.67	
48	Argentina	9.85	41.38	0.66	
49	Poland	9.13	40.18	0.66	
50	Turkey	7.59	37.31	0.65	
51	Russian Federation	7.15	36.41	0.64	
52	Malaysia	6.70	35.42	0.64	
53	Japan	6.37	34.66	0.63	
54	Ukraine	6.10	34.01	0.62	
55	Hungary	5.10	31.37	0.61	
56	Italy	4.37	29.18	0.61	
57	Colombia	4.28	28.86	0.60	
58	Egypt	3.87	27.48	0.59	●
59	Romania	3.78	27.15	0.59	
60	Czech Republic	3.66	26.71	0.58	
61	Thailand	3.21	24.94	0.57	
62	Indonesia	2.67	22.56	0.56	
63	Philippines	2.54	21.92	0.56	
64	Mexico	1.81	17.91	0.55	
65	Albania	0.00	0.00	0.00	○
65	Algeria	0.00	0.00	0.00	○
65	Angola	0.00	0.00	0.00	○
65	Armenia	0.00	0.00	0.00	○
65	Azerbaijan	0.00	0.00	0.00	○
65	Bangladesh	0.00	0.00	0.00	○
65	Belarus	0.00	0.00	0.00	○
65	Belize	0.00	0.00	0.00	○
65	Benin	0.00	0.00	0.00	○
65	Bolivia, Plurinational St.	0.00	0.00	0.00	○
65	Bosnia and Herzegovina	0.00	0.00	0.00	○
65	Botswana	0.00	0.00	0.00	○
65	Bulgaria	0.00	0.00	0.00	○
65	Burkina Faso	0.00	0.00	0.00	○
65	Burundi	0.00	0.00	0.00	○
65	Cambodia	0.00	0.00	0.00	○
65	Cameroon	0.00	0.00	0.00	○
65	Chile	0.00	0.00	0.00	○
65	Costa Rica	0.00	0.00	0.00	○
65	Côte d'Ivoire	0.00	0.00	0.00	○
65	Dominican Republic	0.00	0.00	0.00	○
65	Ecuador	0.00	0.00	0.00	○
65	El Salvador	0.00	0.00	0.00	○
65	Ethiopia	0.00	0.00	0.00	○
65	Fiji	0.00	0.00	0.00	○
65	Gabon	0.00	0.00	0.00	○
65	Gambia	0.00	0.00	0.00	○
65	Ghana	0.00	0.00	0.00	○
65	Greece	0.00	0.00	0.00	○
65	Guatemala	0.00	0.00	0.00	○
65	Guyana	0.00	0.00	0.00	○
65	Honduras	0.00	0.00	0.00	○
65	Iceland	0.00	0.00	0.00	○
65	Iran, Islamic Rep.	0.00	0.00	0.00	○
65	Jamaica	0.00	0.00	0.00	○
65	Kazakhstan	0.00	0.00	0.00	○
65	Kuwait	0.00	0.00	0.00	○
65	Kyrgyzstan	0.00	0.00	0.00	○
65	Lebanon	0.00	0.00	0.00	○
65	Lesotho	0.00	0.00	0.00	○
65	Macedonia, FYR	0.00	0.00	0.00	○
65	Madagascar	0.00	0.00	0.00	○
65	Malawi	0.00	0.00	0.00	○
65	Mali	0.00	0.00	0.00	○
65	Malta	0.00	0.00	0.00	○
65	Mauritius	0.00	0.00	0.00	○
65	Moldova, Rep.	0.00	0.00	0.00	○
65	Montenegro	0.00	0.00	0.00	○
65	Mozambique	0.00	0.00	0.00	○
65	Nepal	0.00	0.00	0.00	○
65	Nicaragua	0.00	0.00	0.00	○
65	Niger	0.00	0.00	0.00	○
65	Oman	0.00	0.00	0.00	○
65	Pakistan	0.00	0.00	0.00	○
65	Panama	0.00	0.00	0.00	○
65	Paraguay	0.00	0.00	0.00	○
65	Qatar	0.00	0.00	0.00	○
65	Rwanda	0.00	0.00	0.00	○
65	Saudi Arabia	0.00	0.00	0.00	○
65	Senegal	0.00	0.00	0.00	○
65	Serbia	0.00	0.00	0.00	○
65	Slovakia	0.00	0.00	0.00	○
65	Slovenia	0.00	0.00	0.00	○
65	Sri Lanka	0.00	0.00	0.00	○
65	Sudan	0.00	0.00	0.00	○
65	Swaziland	0.00	0.00	0.00	○
65	Syrian Arab Rep.	0.00	0.00	0.00	○
65	Tajikistan	0.00	0.00	0.00	○
65	Tanzania, United Rep.	0.00	0.00	0.00	○
65	Trinidad and Tobago	0.00	0.00	0.00	○
65	Tunisia	0.00	0.00	0.00	○
65	Uganda	0.00	0.00	0.00	○
65	Uzbekistan	0.00	0.00	0.00	○
65	Venezuela, Bolivarian Rep.	0.00	0.00	0.00	○
65	Yemen	0.00	0.00	0.00	○
65	Zambia	0.00	0.00	0.00	○
65	Zimbabwe	0.00	0.00	0.00	○

SOURCE: Thomson Reuters, *Thomson One Banker Private Equity* database; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database

4.3.1 Applied tariff rate, weighted mean

Tariff rate, applied, weighted mean, all products (%) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	0.00	100.00	0.99	●
1	Singapore	0.00	100.00	0.99	●
1	Switzerland	0.00	100.00	0.99	●
4	Georgia	0.39	98.01	0.98	●
5	Norway	0.44	97.76	0.97	
6	Canada	1.04	94.70	0.96	●
7	Mauritius	1.05	94.65	0.96	●
8	Iceland	1.07	94.55	0.95	
9	Croatia	1.24	93.69	0.94	●
10	Japan	1.60	91.85	0.94	
11	Austria	1.61	91.80	0.74	
11	Belgium	1.61	91.80	0.74	
11	Bulgaria	1.61	91.80	0.74	
11	Cyprus	1.61	91.80	0.74	
11	Czech Republic	1.61	91.80	0.74	
11	Denmark	1.61	91.80	0.74	
11	Estonia	1.61	91.80	0.74	
11	Finland	1.61	91.80	0.74	
11	France	1.61	91.80	0.74	
11	Germany	1.61	91.80	0.74	
11	Greece	1.61	91.80	0.74	
11	Hungary	1.61	91.80	0.74	
11	Ireland	1.61	91.80	0.74	
11	Italy	1.61	91.80	0.74	
11	Latvia	1.61	91.80	0.74	
11	Lithuania	1.61	91.80	0.74	
11	Luxembourg	1.61	91.80	0.74	
11	Malta	1.61	91.80	0.74	
11	Netherlands	1.61	91.80	0.74	
11	Poland	1.61	91.80	0.74	
11	Portugal	1.61	91.80	0.74	
11	Romania	1.61	91.80	0.74	
11	Slovakia	1.61	91.80	0.74	
11	Slovenia	1.61	91.80	0.74	
11	Spain	1.61	91.80	0.74	
11	Sweden	1.61	91.80	0.74	
11	United Kingdom	1.61	91.80	0.74	
38	New Zealand	1.62	91.75	0.74	
39	Namibia	1.75	91.09	0.73	
40	Bosnia and Herzegovina	1.77	90.99	0.72	
41	United States of America	1.78	90.94	0.71	
42	Australia	1.90	90.33	0.71	
43	Belarus	2.13	89.15	0.70	
44	Armenia (2008)	2.27	88.44	0.69	
45	Nicaragua	2.30	88.29	0.69	●
46	Kyrgyzstan	2.33	88.14	0.68	
47	Guatemala	2.41	87.73	0.67	●
48	Turkey	2.42	87.68	0.66	
49	Costa Rica (2009)	2.43	87.63	0.66	
50	Moldova, Rep.	2.46	87.47	0.65	
51	Indonesia	2.49	87.32	0.64	
52	Peru	2.52	87.17	0.64	
53	Macedonia, FYR	2.65	86.51	0.63	
54	Ukraine	2.78	85.85	0.62	
55	Oman (2009)	3.17	83.86	0.61	
56	Kazakhstan	3.38	82.79	0.61	
57	Montenegro	3.52	82.08	0.60	
58	Israel (2009)	3.54	81.98	0.59	
59	Uruguay	3.57	81.82	0.59	
60	Bahrain (2009)	3.60	81.67	0.58	
61	Paraguay	3.66	81.36	0.57	
62	United Arab Emirates (2009)	3.73	81.01	0.56	
63	Qatar (2009)	3.76	80.86	0.56	
64	Russian Federation	3.81	80.60	0.55	
65	Zambia (2009)	3.83	80.50	0.54	
66	Saudi Arabia (2009)	3.87	80.30	0.54	
67	Azerbaijan (2009)	3.93	79.99	0.53	
68	Malaysia (2009)	3.95	79.89	0.52	
69	Chile	4.02	79.53	0.51	
70	Brunei Darussalam	4.12	79.02	0.51	
71	Kuwait (2009)	4.13	78.97	0.50	
72	Yemen (2009)	4.24	78.41	0.49	
73	China	4.29	78.16	0.49	
74	South Africa	4.36	77.80	0.48	
75	Mozambique	4.75	75.81	0.47	
76	Philippines	4.77	75.71	0.46	
77	Lebanon (2007)	4.81	75.51	0.46	
78	Thailand (2009)	4.92	74.95	0.45	
79	Albania (2009)	5.08	74.13	0.44	
80	Mongolia (2009)	5.10	74.03	0.44	
81	Botswana	5.15	73.78	0.43	
82	Jordan (2009)	5.18	73.63	0.42	
83	Bolivia, Plurinational St.	5.36	72.71	0.41	
84	El Salvador	5.49	72.05	0.41	
85	Burundi	5.53	71.84	0.40	
86	Viet Nam	5.66	71.18	0.39	
87	Tajikistan	5.86	70.16	0.39	
88	Ecuador	5.95	69.70	0.38	
89	Rwanda	5.99	69.50	0.37	
90	Serbia (2005)	6.03	69.30	0.36	
91	Mexico	6.07	69.09	0.36	
92	Dominican Republic	6.09	68.99	0.35	
93	Syrian Arab Rep.	6.12	68.84	0.34	
94	Argentina	6.22	68.33	0.34	
95	Belize	6.38	67.52	0.33	
96	Honduras (2009)	6.46	67.11	0.32	
97	Malawi	6.59	66.45	0.31	
98	Guyana	6.87	65.02	0.31	
99	Sri Lanka	6.92	64.77	0.30	
100	Uzbekistan (2009)	6.93	64.71	0.29	
101	Morocco (2009)	7.13	63.70	0.29	
102	Côte d'Ivoire	7.34	62.63	0.28	
103	Angola (2009)	7.44	62.12	0.27	
104	Jamaica	7.49	61.86	0.26	
105	Panama (2009)	7.61	61.25	0.26	
106	Brazil	7.64	61.10	0.25	
107	Madagascar	7.65	61.05	0.24	
108	Egypt (2009)	8.05	59.01	0.24	
109	India (2009)	8.22	58.15	0.22	
109	Uganda	8.22	58.15	0.22	
111	Tanzania, United Rep.	8.23	58.10	0.21	
112	Mali	8.40	57.23	0.21	
113	Ghana (2009)	8.58	56.31	0.20	
114	Algeria (2009)	8.61	56.16	0.19	
115	Korea, Rep.	8.71	55.65	0.19	○
116	Burkina Faso	8.77	55.35	0.18	
117	Colombia	8.90	54.68	0.17	○
118	Senegal	8.91	54.63	0.16	
119	Niger	9.13	53.51	0.16	
120	Kenya	9.15	53.41	0.15	
121	Pakistan (2009)	9.53	51.48	0.14	
122	Cambodia (2008)	9.91	49.54	0.14	
123	Trinidad and Tobago (2008)	10.03	48.93	0.13	○
124	Swaziland	10.15	48.32	0.12	
125	Ethiopia	10.46	46.74	0.11	
126	Lesotho	10.47	46.69	0.11	
127	Nigeria	10.55	46.28	0.10	
128	Venezuela, Bolivarian Rep.	10.60	46.03	0.09	
129	Fiji	11.03	43.84	0.09	○
130	Nepal	12.06	38.59	0.08	
131	Bangladesh (2008)	13.00	33.81	0.07	
132	Lao PDR (2008)	13.15	33.04	0.06	
133	Togo	14.17	27.85	0.06	
134	Gabon (2009)	14.45	26.43	0.05	○
135	Gambia (2009)	14.75	24.90	0.04	○
135	Sudan	14.75	24.90	0.04	
137	Cameroon (2009)	15.04	23.42	0.03	○
138	Benin	15.37	21.74	0.02	○
139	Tunisia (2008)	15.95	18.79	0.01	○
140	Zimbabwe (2003)	17.33	11.76	0.01	○
141	Iran, Islamic Rep. (2008)	19.64	0.00	0.00	○

SOURCE: World Bank, based on WITS, UNCTAD TRAINS, and UN COMTRADE, World Bank *World Development Indicators* database (2003–10)

4.3.2 Market access for non-agricultural exports

Non-agricultural market access: Five major export markets weighted actual applied tariff (%) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Lebanon	0.00	100.00	0.99	●	
1	Macedonia, FYR	0.00	100.00	0.99	●	
3	Guatemala	0.00	99.99	0.99	●	
4	Bosnia and Herzegovina	0.00	99.99	0.98	●	
5	Montenegro	0.00	99.98	0.97	●	
6	Jamaica	0.00	99.97	0.96	●	
7	Guyana	0.00	99.94	0.96	●	
8	Angola	0.01	99.92	0.95	●	
9	Mauritius	0.01	99.91	0.94	●	
10	Azerbaijan	0.01	99.82	0.94	●	
11	Bolivia, Plurinational St.	0.01	99.80	0.93	●	
12	Syrian Arab Rep.	0.02	99.76	0.92	●	
13	Nigeria	0.02	99.72	0.91	●	
14	Sudan	0.02	99.70	0.91	●	
15	Lesotho	0.02	99.65	0.90	●	
16	Costa Rica	0.03	99.52	0.89	●	
17	Algeria	0.03	99.52	0.89	●	
18	Colombia	0.04	99.37	0.88	●	
19	El Salvador	0.05	99.26	0.87	●	
20	Armenia	0.07	98.98	0.86	●	
21	Malawi	0.08	98.81	0.86	●	
22	Cameroon	0.10	98.60	0.85	●	
23	Mexico	0.11	98.37	0.84	●	
24	Georgia	0.12	98.28	0.84	●	
25	Trinidad and Tobago	0.13	98.06	0.83	●	
26	Madagascar	0.13	98.05	0.82	●	
27	Yemen	0.14	97.93	0.81	●	
28	Zimbabwe	0.17	97.54	0.81	●	
29	Canada	0.18	97.36	0.80		
30	Albania	0.19	97.23	0.79	●	
31	Tunisia	0.20	97.08	0.79	●	
32	Gambia	0.22	96.84	0.78	●	
33	Rwanda	0.23	96.60	0.77	●	
34	Venezuela, Bolivarian Rep.	0.24	96.52	0.76	●	
35	Uzbekistan	0.26	96.18	0.76	●	
36	Peru	0.27	96.12	0.75	●	
37	Argentina	0.27	96.08	0.74		
38	Nicaragua	0.28	95.98	0.74	●	
39	Chile	0.28	95.93	0.73		
40	Kazakhstan	0.28	95.85	0.72		
41	Croatia	0.29	95.70	0.71		
42	Russian Federation	0.30	95.60	0.71		
43	Brunei Darussalam	0.32	95.36	0.70		
44	Nepal	0.33	95.18	0.69	●	
45	Ecuador	0.36	94.79	0.69	●	
46	Moldova, Rep.	0.37	94.54	0.68		
47	Lao PDR (2008)	0.38	94.41	0.67	●	
48	Honduras	0.39	94.24	0.66	●	
49	Burkina Faso	0.39	94.24	0.66	●	
50	Mongolia	0.40	94.18	0.65		
51	Norway	0.44	93.58	0.64		
52	Kyrgyzstan	0.44	93.57	0.64		
53	Dominican Republic	0.45	93.49	0.63	●	
54	Malaysia	0.46	93.33	0.62		
55	Brazil	0.47	93.07	0.61		
56	Gabon	0.53	92.27	0.61		
57	Israel	0.57	91.70	0.60		
58	Namibia	0.57	91.70	0.59		
59	Singapore	0.59	91.36	0.59		○
60	Fiji	0.61	91.11	0.58		
61	Zambia	0.66	90.37	0.57		
62	Niger	0.68	90.13	0.56	●	
63	New Zealand	0.68	90.11	0.56		
64	Belarus	0.72	89.52	0.55		
65	Paraguay	0.75	89.01	0.54		
66	Kuwait	0.76	88.83	0.54		
67	Kenya	0.78	88.67	0.53		
68	Serbia	0.80	88.33	0.52		
69	Saudi Arabia	0.87	87.24	0.51		
70	Oman	0.96	85.97	0.51		
71	Morocco	0.96	85.96	0.50		
72	Qatar	0.96	85.94	0.49		
73	Australia	0.98	85.72	0.49		
74	Bahrain	1.00	85.44	0.48		
75	Iran, Islamic Rep. (2008)	1.05	84.67	0.47		
76	United States of America	1.10	83.87	0.46		
77	Mozambique	1.12	83.64	0.46		
78	Burundi	1.15	83.25	0.45		●
79	Ukraine	1.30	80.99	0.44		
80	South Africa	1.32	80.75	0.44		
81	Philippines	1.32	80.66	0.43		
82	Turkey	1.40	79.55	0.42		
83	Tajikistan	1.43	79.11	0.41		
84	Switzerland	1.44	78.92	0.41		○
85	Egypt	1.46	78.70	0.40		
86	Iceland	1.49	78.17	0.39		
87	Thailand	1.52	77.76	0.39		
88	Uruguay	1.52	77.73	0.38		
89	Côte d'Ivoire	1.67	75.65	0.37		
90	Uganda	1.70	75.11	0.36		
91	Ethiopia	1.94	71.71	0.36		
92	Austria	1.99	70.94	0.16		○
92	Belgium	1.99	70.94	0.16		○
92	Bulgaria	1.99	70.94	0.16		○
92	Cyprus	1.99	70.94	0.16		○
92	Czech Republic	1.99	70.94	0.16		○
92	Denmark	1.99	70.94	0.16		○
92	Estonia	1.99	70.94	0.16		○
92	Finland	1.99	70.94	0.16		○
92	France	1.99	70.94	0.16		○
92	Germany	1.99	70.94	0.16		○
92	Greece	1.99	70.94	0.16		
92	Hungary	1.99	70.94	0.16		○
92	Ireland	1.99	70.94	0.16		○
92	Italy	1.99	70.94	0.16		○
92	Latvia	1.99	70.94	0.16		○
92	Lithuania	1.99	70.94	0.16		○
92	Luxembourg	1.99	70.94	0.16		○
92	Malta	1.99	70.94	0.16		○
92	Netherlands	1.99	70.94	0.16		○
92	Poland	1.99	70.94	0.16		○
92	Portugal	1.99	70.94	0.16		○
92	Romania	1.99	70.94	0.16		○
92	Slovakia	1.99	70.94	0.16		○
92	Slovenia	1.99	70.94	0.16		○
92	Spain	1.99	70.94	0.16		○
92	Sweden	1.99	70.94	0.16		○
92	United Kingdom	1.99	70.94	0.16		○
119	Ghana	2.05	70.10	0.16		
120	Indonesia	2.06	69.91	0.15		
121	United Arab Emirates	2.35	65.64	0.14		○
122	India	2.49	63.65	0.14		
123	Belize	2.57	62.44	0.13		○
124	Botswana	2.62	61.66	0.12		○
125	China	2.63	61.55	0.11		○
126	Korea, Rep.	2.80	59.05	0.11		○
127	Hong Kong (China)	2.83	58.69	0.10		○
128	Mali	3.38	50.63	0.09		
129	Tanzania, United Rep.	3.55	48.10	0.09		
130	Japan	3.70	45.96	0.08		○
131	Bangladesh	4.26	37.77	0.07		
132	Jordan	4.61	32.63	0.06		○
133	Senegal	4.63	32.36	0.06		○
134	Swaziland	4.67	31.73	0.05		○
135	Sri Lanka	4.85	29.10	0.04		○
136	Viet Nam	5.30	22.58	0.04		○
137	Togo	6.81	0.49	0.03		○
138	Benin	8.84	0.00	0.00		○
138	Cambodia	8.48	0.00	0.00		○
138	Pakistan	6.84	0.00	0.00		○
138	Panama	7.60	0.00	0.00		○

SOURCE: World Trade Organization (WTO), International Trade Centre (ITC), and United Nations Conference on Trade and Development (UNCTAD), *World Tariff Profiles 2011* and *2008* (2008–09)

4.3.3 Imports of goods and services

Imports of goods and services (% of GDP)[a] | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	217.35	100.00	0.99	●
1	Singapore	183.01	100.00	0.99	●
1	Luxembourg	133.80	100.00	0.99	●
4	Guyana (2005)	119.21	88.00	0.98	●
5	Lesotho	113.80	83.56	0.97	●
6	Kyrgyzstan	89.16	63.31	0.96	●
7	Viet Nam	87.81	62.19	0.96	●
8	Malta	83.41	58.58	0.95	
9	Slovakia	82.37	57.73	0.94	●
10	Ireland	80.14	55.89	0.94	
11	Hungary	80.04	55.81	0.93	
12	Malaysia	79.49	55.36	0.92	
13	Moldova, Rep.	78.23	54.32	0.91	●
14	Belgium	77.31	53.56	0.91	
15	Swaziland	76.86	53.20	0.90	●
16	Czech Republic	74.55	51.29	0.89	
17	Bahrain (2008)	74.31	51.10	0.89	
18	Estonia	71.59	48.86	0.88	
19	Netherlands	70.58	48.03	0.87	
20	Belize (2008)	70.04	47.59	0.86	●
21	Nicaragua	69.63	47.26	0.86	●
22	Lithuania	69.61	47.24	0.85	
23	Panama	69.16	46.87	0.84	●
24	United Arab Emirates	68.76	46.54	0.84	
25	Belarus	68.33	46.18	0.83	
26	Macedonia, FYR	65.95	44.23	0.82	●
27	Jordan	65.91	44.20	0.81	●
28	Slovenia	64.86	43.33	0.81	
29	Honduras	64.61	43.12	0.80	●
30	Fiji	64.44	42.98	0.79	●
31	Thailand	63.89	42.53	0.79	
32	Montenegro	63.62	42.31	0.78	●
33	Mongolia	62.35	41.27	0.77	
34	Togo (2007)	61.84	40.85	0.76	●
35	Tajikistan	61.05	40.20	0.76	●
36	Bulgaria	59.70	39.09	0.75	
37	Cambodia	59.52	38.94	0.74	●
38	Mauritius	57.57	37.34	0.74	
39	Bosnia and Herzegovina	56.75	36.66	0.73	
40	Zimbabwe	56.37	36.36	0.72	●
41	Paraguay	54.96	35.19	0.71	●
42	Latvia	54.20	34.57	0.71	
43	Tunisia	54.02	34.42	0.70	
44	Ukraine	52.98	33.56	0.69	
45	Madagascar (2009)	52.82	33.44	0.69	●
46	Georgia	52.29	33.00	0.68	
47	Albania	51.75	32.56	0.67	
48	Serbia	51.39	32.26	0.66	
49	Austria	49.66	30.84	0.66	
50	Korea, Rep.	49.60	30.79	0.65	
51	Gambia	48.70	30.05	0.64	●
52	Burundi (2006)	46.98	28.63	0.64	●
53	Cyprus	46.56	28.29	0.63	
54	Iceland	46.00	27.83	0.62	
55	Denmark	44.96	26.98	0.61	
56	Armenia	44.78	26.83	0.61	
57	Senegal	44.05	26.22	0.60	
58	Sweden	43.92	26.12	0.59	
59	Angola	43.81	26.03	0.59	●
60	Lebanon	43.78	26.01	0.58	
61	El Salvador	43.64	25.89	0.57	
62	Poland	43.48	25.76	0.56	
63	Jamaica	43.26	25.58	0.56	
64	Mozambique	43.23	25.55	0.55	
65	Morocco	42.92	25.29	0.54	
66	Switzerland	42.21	24.71	0.54	○
67	Oman (2009)	41.49	24.12	0.53	
68	Yemen (2003)	41.44	24.08	0.52	●
69	Germany	41.36	24.01	0.51	○
70	Costa Rica	41.16	23.85	0.51	
71	Lao PDR	40.89	23.63	0.50	●
72	Finland	39.00	22.07	0.49	○
73	Kenya	38.94	22.02	0.49	
74	Croatia	38.83	21.94	0.48	
75	Ecuador	38.62	21.76	0.47	
76	Ghana	38.40	21.58	0.46	
77	Portugal	38.10	21.33	0.46	
78	Namibia	37.82	21.10	0.45	
79	Tanzania, United Rep.	37.72	21.02	0.44	
80	Trinidad and Tobago (2008)	37.63	20.95	0.44	
81	Nepal	37.05	20.47	0.43	
82	Philippines	36.62	20.11	0.42	
83	Côte d'Ivoire	36.30	19.86	0.41	
84	Algeria (2009)	36.12	19.70	0.41	
85	Malawi	36.08	19.68	0.40	
86	Guatemala	35.98	19.59	0.39	
87	Syrian Arab Rep.	35.76	19.41	0.39	
88	Mali (2007)	35.58	19.26	0.38	
89	Saudi Arabia	35.44	19.14	0.37	
90	Zambia	35.03	18.81	0.36	
91	Israel	34.92	18.72	0.36	○
92	Bolivia, Plurinational St.	34.32	18.23	0.35	
93	Uganda	34.29	18.20	0.34	
94	Dominican Republic	34.01	17.97	0.34	
95	United Kingdom	32.84	17.01	0.33	○
96	Cameroon	32.55	16.77	0.32	
97	Ethiopia	32.48	16.72	0.31	
98	Botswana	31.94	16.27	0.31	
99	Chile	31.85	16.19	0.30	○
100	Mexico	31.77	16.13	0.29	
101	Canada	31.31	15.75	0.29	○
102	Gabon	31.27	15.72	0.28	
103	Qatar (2009)	31.22	15.68	0.27	
104	Uzbekistan	30.93	15.44	0.26	
105	Sri Lanka	30.82	15.35	0.26	
106	Greece	30.38	14.99	0.25	
107	Romania	29.76	14.48	0.24	○
108	Kazakhstan	29.21	14.03	0.24	
109	Rwanda (2009)	28.97	13.83	0.23	
110	Norway	28.63	13.55	0.22	○
111	Italy	28.55	13.48	0.21	○
112	Spain	28.42	13.38	0.21	○
113	Kuwait (2009)	28.03	13.06	0.20	
114	France	27.81	12.87	0.19	○
115	Benin	27.73	12.81	0.19	
116	Brunei Darussalam (2008)	27.61	12.71	0.18	○
117	New Zealand	27.19	12.36	0.17	○
118	South Africa	27.12	12.31	0.16	○
119	Burkina Faso (2006)	26.81	12.05	0.16	
120	Turkey	26.64	11.91	0.15	○
121	Nigeria	26.63	11.91	0.14	
122	Egypt	26.13	11.50	0.14	○
123	China	25.66	11.10	0.13	○
124	Uruguay	25.04	10.60	0.12	○
125	Bangladesh	25.02	10.58	0.11	
126	India	24.78	10.39	0.11	
127	Niger (2005)	24.22	9.92	0.10	
128	Indonesia	22.98	8.90	0.09	
129	Peru	22.25	8.30	0.09	○
130	Russian Federation	21.70	7.86	0.08	○
131	Australia (2008)	21.61	7.78	0.07	○
132	Iran, Islamic Rep. (2007)	21.54	7.72	0.06	○
133	Azerbaijan	20.36	6.75	0.06	○
134	Sudan	18.90	5.55	0.05	
135	Pakistan	18.76	5.44	0.04	○
136	Argentina	18.40	5.14	0.04	○
137	Colombia	17.97	4.79	0.03	○
138	Venezuela, Bolivarian Rep.	17.17	4.13	0.02	○
139	United States of America	16.16	3.30	0.01	○
140	Japan	14.07	1.58	0.01	○
141	Brazil	12.15	0.00	0.00	○

SOURCE: World Bank and OECD, World Bank *World Development Indicators* database (2003–10)

4.3.4 Exports of goods and services

Exports of goods and services (% of GDP)[a] | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	222.96	100.00	0.98	●
1	Singapore	211.06	100.00	0.98	●
1	Luxembourg	164.99	100.00	0.98	●
1	Ireland	98.79	100.00	0.98	●
5	Malaysia	97.30	98.33	0.97	●
6	Bahrain (2008)	96.85	97.82	0.96	●
7	Hungary	86.55	86.24	0.96	●
8	Malta	85.16	84.69	0.95	
9	Guyana (2005)	84.62	84.09	0.94	●
10	Slovakia	81.07	80.10	0.94	●
11	Belgium	80.01	78.90	0.93	●
12	Czech Republic	79.31	78.12	0.92	●
13	Brunei Darussalam (2008)	78.30	76.98	0.91	●
14	Estonia	78.27	76.95	0.91	
15	Netherlands	78.05	76.70	0.90	
16	United Arab Emirates	77.94	76.58	0.89	
17	Viet Nam	77.53	76.12	0.89	●
18	Thailand	71.25	69.07	0.88	●
19	Lithuania	68.22	65.66	0.87	●
20	Slovenia	65.42	62.52	0.86	●
21	Trinidad and Tobago (2008)	65.34	62.43	0.86	●
22	Panama	65.23	62.30	0.85	●
23	Belize (2008)	62.09	58.77	0.84	●
24	Swaziland	58.10	54.30	0.84	●
25	Angola	57.95	54.13	0.83	●
26	Bulgaria	57.80	53.96	0.82	
27	Kyrgyzstan	57.74	53.90	0.81	
28	Paraguay	57.10	53.17	0.81	●
29	Saudi Arabia	56.79	52.83	0.80	
30	Kuwait (2009)	56.37	52.35	0.79	
31	Iceland	56.03	51.98	0.79	
32	Azerbaijan	55.13	50.96	0.78	●
33	Mongolia	54.70	50.48	0.77	
34	Belarus	54.62	50.39	0.76	
35	Cambodia	54.08	49.79	0.76	●
36	Austria	53.97	49.66	0.75	
37	Switzerland	53.55	49.19	0.74	
38	Latvia	53.37	48.99	0.74	
39	Oman (2009)	52.64	48.17	0.73	
40	Fiji	52.54	48.05	0.72	●
41	Korea, Rep.	52.39	47.89	0.71	
42	Gabon	52.31	47.79	0.71	●
43	Denmark	50.56	45.83	0.70	
44	Ukraine	50.19	45.41	0.69	
45	Sweden	49.96	45.16	0.69	
46	Lesotho	49.17	44.26	0.68	●
47	Tunisia	48.71	43.76	0.67	
48	Macedonia, FYR	47.31	42.18	0.66	
49	Germany	46.83	41.64	0.66	
50	Qatar (2009)	46.75	41.55	0.65	
51	Mauritius	45.19	39.80	0.64	
52	Jordan	44.53	39.06	0.64	
53	Zambia	44.10	38.58	0.63	●
54	Kazakhstan	43.95	38.41	0.62	
55	Honduras	43.87	38.32	0.61	●
56	Poland	42.28	36.53	0.61	
57	Norway	41.94	36.15	0.60	
58	Togo (2007)	41.54	35.69	0.59	●
59	Nicaragua	41.34	35.48	0.59	
60	Bolivia, Plurinational St.	41.19	35.30	0.58	
61	Côte d'Ivoire	40.90	34.98	0.57	●
62	Algeria (2009)	40.40	34.42	0.56	
63	Finland	40.30	34.31	0.56	
64	Cyprus	40.11	34.10	0.55	
65	Moldova, Rep.	39.59	33.51	0.54	
66	Nigeria	39.37	33.26	0.54	●
67	Namibia	38.93	32.77	0.53	
68	Chile	38.72	32.53	0.52	
69	Croatia	38.32	32.09	0.51	
70	Costa Rica	38.07	31.80	0.51	
71	Yemen (2003)	38.00	31.73	0.50	
72	Zimbabwe	37.33	30.97	0.49	
73	Israel	36.96	30.56	0.49	
74	Lao PDR	36.33	29.85	0.48	
75	Bosnia and Herzegovina	35.92	29.39	0.47	
76	Montenegro	35.56	28.98	0.46	
77	Syrian Arab Rep.	35.33	28.72	0.46	●
78	Serbia	34.89	28.23	0.45	
79	Philippines	34.80	28.13	0.44	
80	Georgia	34.80	28.13	0.44	
81	Morocco	33.00	26.11	0.43	
82	Ecuador	32.95	26.05	0.42	
83	Iran, Islamic Rep. (2007)	32.18	25.19	0.41	
84	Uzbekistan	31.47	24.39	0.41	
85	Portugal	30.94	23.79	0.40	
86	Mexico	30.32	23.10	0.39	
87	Russian Federation	30.04	22.79	0.39	
88	Albania	29.77	22.48	0.38	
89	China	29.57	22.26	0.37	
90	United Kingdom	29.45	22.12	0.36	○
91	Canada	29.43	22.10	0.36	○
92	Gambia	29.30	21.95	0.35	
93	Madagascar (2009)	28.83	21.42	0.34	
94	New Zealand	28.71	21.29	0.34	○
95	Venezuela, Bolivarian Rep.	28.69	21.27	0.33	
96	Botswana	28.56	21.12	0.32	
97	Cameroon	27.92	20.41	0.31	
98	Italy	26.78	19.12	0.31	
99	Malawi	26.32	18.61	0.30	
100	Spain	26.26	18.53	0.29	○
101	Mali (2007)	26.18	18.44	0.29	
102	El Salvador	26.17	18.44	0.28	
103	Kenya	25.96	18.20	0.27	
104	Uruguay	25.86	18.09	0.26	
105	Jamaica	25.55	17.74	0.26	
106	South Africa	25.54	17.73	0.25	
107	France	25.46	17.64	0.24	○
108	Ghana	25.28	17.44	0.24	
109	Mozambique	25.25	17.41	0.23	
110	Peru	25.11	17.24	0.22	
111	Guatemala	25.10	17.23	0.21	
112	Indonesia	24.61	16.69	0.21	
113	Senegal	24.51	16.57	0.20	
114	Uganda	24.02	16.03	0.19	
115	Tanzania, United Rep.	23.98	15.98	0.19	
116	Romania	23.49	15.42	0.18	○
117	Dominican Republic	22.26	14.05	0.17	
118	Argentina	21.71	13.42	0.16	○
119	Sri Lanka	21.69	13.40	0.16	
120	India	21.54	13.24	0.15	
121	Greece	21.50	13.20	0.14	
122	Egypt	21.35	13.02	0.14	○
123	Turkey	21.12	12.76	0.13	○
124	Lebanon	20.95	12.57	0.12	○
125	Armenia	20.58	12.16	0.11	
126	Australia (2008)	19.79	11.27	0.11	○
127	Sudan	19.77	11.24	0.10	
128	Bangladesh	18.41	9.72	0.09	
129	Colombia	15.75	6.74	0.09	○
130	Japan	15.22	6.14	0.08	○
131	Tajikistan	15.20	6.12	0.07	
132	Niger (2005)	15.04	5.94	0.06	
133	Benin	14.12	4.91	0.06	○
134	Pakistan	13.55	4.27	0.05	
135	United States of America	12.61	3.21	0.04	○
136	Rwanda (2009)	11.60	2.07	0.04	
137	Burkina Faso (2006)	11.53	1.99	0.03	○
138	Ethiopia	11.41	1.87	0.02	
139	Brazil	11.15	1.57	0.01	○
140	Burundi (2006)	10.73	1.10	0.01	○
141	Nepal	9.75	0.00	0.00	○

SOURCE: World Bank and OECD, World Bank *World Development Indicators* database (2003–10)

4.3.5 Intensity of local competition

Average answer to the question: How would you assess the intensity of competition in the local markets in your country? 1 = limited in most industries; 7 = intense in most industries† | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Belgium	5.96	82.74	1.00	●
2	United Kingdom	5.93	82.09	0.99	●
3	Japan	5.92	81.99	0.98	●
4	Qatar	5.88	81.41	0.98	●
5	Netherlands	5.87	81.23	0.97	
6	Australia	5.87	81.16	0.96	●
7	Austria	5.80	80.00	0.95	●
8	Germany	5.80	79.92	0.95	●
9	Sweden	5.78	79.71	0.94	
10	Malta	5.78	79.65	0.93	
11	France	5.71	78.54	0.92	●
12	Turkey	5.70	78.31	0.92	●
13	Hong Kong (China)	5.68	77.98	0.91	
14	Korea, Rep.	5.65	77.44	0.90	
15	Czech Republic	5.64	77.35	0.89	●
16	Saudi Arabia	5.63	77.16	0.89	●
17	United States of America	5.61	76.82	0.88	
18	United Arab Emirates	5.60	76.75	0.87	
19	Canada	5.58	76.26	0.86	
20	China	5.55	75.81	0.86	
21	Spain	5.49	74.84	0.85	
22	Switzerland	5.46	74.29	0.84	
23	Bahrain	5.45	74.23	0.83	
24	Malaysia	5.45	74.10	0.83	
25	Israel	5.44	73.99	0.82	
26	Lebanon	5.43	73.89	0.81	
27	Estonia	5.40	73.28	0.80	
28	Cyprus	5.39	73.17	0.80	
29	India	5.39	73.10	0.79	●
30	Norway	5.38	72.97	0.78	
31	Singapore	5.38	72.96	0.77	
32	Jordan	5.36	72.73	0.77	
33	Sri Lanka	5.36	72.71	0.76	●
34	Chile	5.36	72.68	0.75	
35	Slovakia	5.35	72.58	0.74	
36	Poland	5.34	72.30	0.73	
37	Hungary	5.33	72.12	0.73	
38	El Salvador	5.30	71.74	0.72	●
39	Luxembourg	5.25	70.75	0.71	
40	Tunisia	5.23	70.47	0.70	
41	Panama	5.20	69.98	0.70	
42	Syrian Arab Rep.	5.17	69.50	0.69	●
43	New Zealand	5.17	69.46	0.68	
44	Denmark	5.17	69.42	0.67	
45	Philippines	5.16	69.40	0.67	●
46	Brazil	5.16	69.35	0.66	
47	South Africa	5.15	69.18	0.65	
48	Guatemala	5.14	68.95	0.64	●
49	Slovenia	5.12	68.70	0.64	
50	Thailand	5.12	68.63	0.63	
51	Morocco	5.10	68.30	0.62	
52	Oman	5.10	68.29	0.61	
53	Peru	5.09	68.21	0.61	
54	Portugal	5.06	67.71	0.60	
55	Mauritius	5.04	67.30	0.59	
56	Italy	5.04	67.28	0.58	
57	Ireland	5.03	67.11	0.58	
58	Dominican Republic	5.01	66.85	0.57	
59	Senegal	5.01	66.82	0.56	
60	Viet Nam	4.97	66.15	0.55	
61	Brunei Darussalam	4.95	65.88	0.55	
62	Lithuania	4.95	65.84	0.54	
63	Costa Rica	4.95	65.81	0.53	
64	Kenya	4.92	65.36	0.52	
65	Ghana	4.90	64.97	0.52	
66	Trinidad and Tobago	4.87	64.43	0.51	
67	Finland	4.80	63.30	0.50	○
68	Jamaica	4.77	62.78	0.49	
69	Nigeria	4.76	62.74	0.48	
70	Zambia	4.76	62.73	0.48	
71	Botswana	4.75	62.56	0.47	
72	Iceland	4.74	62.36	0.46	
73	Yemen	4.74	62.31	0.45	
74	Uganda	4.71	61.78	0.45	
75	Guyana	4.70	61.73	0.44	
76	Kuwait	4.70	61.59	0.43	
77	Latvia	4.69	61.54	0.42	
78	Greece	4.64	60.67	0.42	
79	Côte d'Ivoire	4.63	60.49	0.41	
80	Mexico	4.62	60.27	0.40	
81	Colombia	4.61	60.15	0.39	
82	Gambia	4.59	59.81	0.39	
83	Namibia	4.58	59.64	0.38	
84	Cambodia	4.58	59.63	0.37	
85	Indonesia	4.58	59.60	0.36	
86	Cameroon	4.56	59.35	0.36	
87	Pakistan	4.54	59.01	0.35	
88	Bangladesh	4.54	59.01	0.34	
89	Benin	4.54	58.98	0.33	
90	Zimbabwe	4.51	58.51	0.33	
91	Mali	4.48	58.01	0.32	
92	Mongolia	4.48	58.00	0.31	
93	Romania	4.46	57.63	0.30	
94	Honduras	4.45	57.53	0.30	
95	Bulgaria	4.44	57.32	0.29	○
96	Paraguay	4.42	57.01	0.28	
97	Malawi	4.38	56.32	0.27	
98	Rwanda	4.37	56.15	0.27	
99	Uruguay	4.37	56.11	0.26	
100	Moldova, Rep.	4.35	55.92	0.25	
101	Argentina	4.26	54.29	0.24	
102	Iran, Islamic Rep.	4.24	54.06	0.23	
103	Belize	4.22	53.73	0.23	
104	Lesotho	4.20	53.40	0.22	
105	Ecuador	4.20	53.32	0.21	
106	Macedonia, FYR	4.17	52.90	0.20	○
107	Tanzania, United Rep.	4.16	52.70	0.20	
108	Madagascar	4.15	52.57	0.19	
109	Burundi	4.15	52.55	0.18	
110	Egypt	4.14	52.32	0.17	
111	Croatia	4.09	51.48	0.17	○
112	Tajikistan	4.08	51.42	0.16	
113	Kazakhstan	4.06	50.92	0.15	
114	Nicaragua	4.05	50.85	0.14	
115	Swaziland	4.04	50.67	0.14	
116	Ukraine	4.04	50.59	0.13	○
117	Montenegro	4.03	50.54	0.12	○
118	Albania	4.03	50.52	0.11	
119	Nepal	4.03	50.48	0.11	
120	Russian Federation	3.99	49.78	0.10	○
121	Ethiopia	3.97	49.53	0.09	
122	Kyrgyzstan	3.92	48.61	0.08	
123	Georgia	3.90	48.34	0.08	○
124	Mozambique	3.90	48.31	0.07	
125	Burkina Faso	3.89	48.09	0.06	
126	Algeria	3.88	47.98	0.05	
127	Bosnia and Herzegovina	3.82	46.98	0.05	○
128	Azerbaijan	3.79	46.53	0.04	○
129	Bolivia, Plurinational St.	3.76	45.97	0.03	○
130	Serbia	3.61	43.42	0.02	○
131	Armenia	3.36	39.34	0.02	○
132	Venezuela, Bolivarian Rep.	3.34	38.96	0.01	○
133	Angola	3.17	36.09	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2010–2011*

5.1.1 Employment in knowledge-intensive services

Employment in knowledge-intensive services (% of workforce) | 2008

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Singapore	51.02	100.00	1.00	●
2	Netherlands	47.20	92.16	0.99	●
3	Switzerland	47.13	92.00	0.98	
4	Iceland	46.02	89.73	0.97	
5	Denmark	45.15	87.93	0.96	
6	Sweden	44.46	86.52	0.95	
7	Finland	43.82	85.19	0.94	
8	Norway	43.46	84.47	0.93	
9	Belgium	43.42	84.39	0.92	
10	New Zealand	42.92	83.36	0.91	
11	Australia	42.87	83.25	0.90	
12	United Kingdom	42.53	82.56	0.89	
13	Canada	42.39	82.26	0.88	
14	Germany	41.91	81.29	0.88	
15	Israel	41.26	79.95	0.87	
16	France	40.77	78.93	0.86	
17	Russian Federation	40.69	78.77	0.85	●
18	Czech Republic	40.48	78.34	0.84	
19	Latvia	40.19	77.74	0.83	
20	Lithuania	39.65	76.63	0.82	
21	Italy	39.65	76.63	0.81	
22	Ireland	38.82	74.93	0.80	
23	Estonia	38.80	74.88	0.79	
24	Slovenia	37.98	73.20	0.78	
25	Japan	37.81	72.85	0.77	
26	Austria	36.74	70.65	0.76	
27	Hungary	36.67	70.50	0.75	
28	United States of America	36.30	69.74	0.74	
29	United Arab Emirates	36.09	69.32	0.73	
30	Hong Kong (China)	35.95	69.04	0.72	
31	Montenegro (2005)	35.94	69.00	0.71	
32	Malta	35.93	68.99	0.70	
33	Slovakia	34.56	66.17	0.69	
34	Greece	33.49	63.98	0.68	
35	Poland	32.79	62.54	0.67	
36	Spain	32.44	61.83	0.66	
37	Ukraine	32.07	61.07	0.65	
38	Lebanon (2007)	31.85	60.61	0.64	
39	Cyprus	31.43	59.75	0.63	
40	Chile	30.63	58.10	0.63	
41	Egypt (2007)	30.26	57.35	0.62	●
42	Croatia	30.09	56.98	0.61	
43	Serbia	28.72	54.18	0.60	
44	Bulgaria	28.59	53.91	0.59	
45	Brunei Darussalam (2003)	28.35	53.42	0.58	
46	Kazakhstan	28.33	53.38	0.57	
47	Moldova, Rep.	28.18	53.06	0.56	
48	Costa Rica	27.43	51.52	0.55	
49	Malaysia	26.82	50.27	0.54	
50	Macedonia, FYR	25.52	47.60	0.53	
51	Portugal	24.37	45.24	0.52	
52	Qatar (2007)	24.20	44.89	0.51	
53	Armenia (2001)	24.14	44.77	0.50	
54	Venezuela, Bolivarian Rep.	23.87	44.22	0.49	
55	South Africa	23.67	43.80	0.48	
56	Saudi Arabia	22.88	42.18	0.47	
57	Trinidad and Tobago (2005)	22.75	41.91	0.46	
58	Korea, Rep.	22.44	41.26	0.45	
59	Georgia (2007)	22.25	40.88	0.44	
60	Turkey	22.12	40.61	0.43	
61	Romania	21.80	39.96	0.42	
62	Colombia	21.58	39.50	0.41	
63	Uruguay (2007)	21.40	39.12	0.40	
64	Bahrain	20.73	37.76	0.39	
65	Belize (2005)	20.41	37.09	0.38	
66	Azerbaijan	20.26	36.80	0.38	
67	Mongolia	20.21	36.68	0.37	
68	Jamaica	20.11	36.49	0.36	
69	Philippines	19.74	35.72	0.35	
70	Sri Lanka	19.69	35.63	0.34	
71	Pakistan	19.48	35.19	0.33	
72	Brazil (2007)	19.31	34.84	0.32	
73	Algeria (2004)	19.10	34.41	0.31	
74	Kuwait (2005)	18.70	33.58	0.30	
75	Peru	18.55	33.27	0.29	
76	Mexico	18.44	33.05	0.28	
77	Kyrgyzstan (2006)	18.31	32.78	0.27	
78	Ecuador (2006)	18.08	32.32	0.26	
79	Argentina (2006)	17.71	31.56	0.25	
80	Panama	17.66	31.46	0.24	
81	Botswana (2006)	17.10	30.31	0.23	
82	Yemen (2005)	16.97	30.03	0.22	
83	Namibia (2004)	16.91	29.91	0.21	
84	Dominican Republic (2007)	15.82	27.66	0.20	
85	Mauritius	15.80	27.63	0.19	○
86	Syrian Arab Rep. (2007)	15.52	27.05	0.18	
87	Iran, Islamic Rep.	15.04	26.06	0.17	
88	Nicaragua (2006)	14.82	25.62	0.16	
89	Bolivia, Plurinational St. (2007)	14.32	24.59	0.15	
90	Paraguay	14.01	23.94	0.14	
91	Honduras (2005)	12.83	21.53	0.13	○
92	Guyana (2002)	12.68	21.21	0.13	○
93	El Salvador (2007)	12.49	20.83	0.12	
94	Ethiopia (2006)	12.38	20.60	0.11	
95	Thailand	10.77	17.28	0.10	○
96	Indonesia	7.41	10.38	0.09	○
97	Viet Nam (2004)	7.41	10.38	0.08	○
98	China (2005)	7.37	10.31	0.07	○
99	Bangladesh (2005)	7.33	10.21	0.06	○
100	Morocco	6.79	9.10	0.05	○
101	Nepal (2001)	4.75	4.92	0.04	
102	Uganda (2003)	4.30	3.99	0.03	○
103	Tanzania, United Rep. (2006)	2.57	0.44	0.02	○
104	Cambodia (2004)	2.52	0.33	0.01	○
105	Madagascar (2005)	2.36	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Labour Organization, *LABORSTA Database of Labor Statistics* (2001–08)

5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China (2003)	84.78	100.00	1.00	●
2	Thailand (2006)	75.34	88.21	0.99	●
3	Ireland (2005)	73.16	85.48	0.98	●
4	Czech Republic	70.72	82.44	0.97	●
5	Estonia	69.26	80.61	0.96	●
6	Bosnia and Herzegovina	66.45	77.10	0.95	●
7	Ecuador (2010)	65.89	76.40	0.94	●
8	Colombia (2010)	65.15	75.48	0.93	●
9	Argentina (2010)	63.60	73.54	0.92	●
10	Guyana (2010)	63.01	72.80	0.91	●
11	Mongolia	61.22	70.57	0.90	●
12	Fiji	61.00	70.29	0.90	●
13	El Salvador (2010)	60.97	70.26	0.89	●
14	Poland	60.92	70.19	0.88	●
15	Peru (2010)	60.08	69.14	0.87	●
16	Chile (2010)	57.53	65.96	0.86	●
17	Bolivia, Plurinational St. (2010)	57.10	65.42	0.85	●
18	Venezuela, Bolivarian Rep. (2010)	55.95	63.99	0.84	●
19	Paraguay (2010)	54.94	62.72	0.83	●
20	Costa Rica (2010)	54.68	62.40	0.82	
21	Dominican Republic (2005)	53.33	60.71	0.81	●
22	Brazil	52.94	60.22	0.80	●
23	Lebanon	52.36	59.50	0.79	
24	Russian Federation	52.17	59.26	0.78	
25	Guatemala (2010)	51.94	58.98	0.77	●
26	Botswana (2010)	51.92	58.95	0.76	●
27	Spain (2005)	51.26	58.13	0.75	
28	Swaziland (2006)	50.95	57.74	0.74	
29	Mexico (2010)	50.75	57.49	0.73	●
30	Malaysia (2007)	50.14	56.73	0.72	
31	Uruguay (2010)	48.60	54.80	0.71	
32	Kenya (2003)	48.45	54.62	0.70	
33	Malawi	48.42	54.58	0.70	●
34	Cambodia (2007)	48.35	54.49	0.69	●
35	Slovenia	47.46	53.38	0.68	
36	Nicaragua (2010)	47.21	53.07	0.67	●
37	Lithuania	45.98	51.53	0.66	
38	Namibia (2006)	44.51	49.69	0.65	
39	Belarus (2008)	44.42	49.58	0.64	
40	Viet Nam	43.55	48.49	0.63	
41	Latvia	43.44	48.36	0.62	
42	Lesotho	42.47	47.15	0.61	
43	Kazakhstan	40.87	45.15	0.60	
44	Korea, Rep. (2005)	39.45	43.37	0.59	
45	Syrian Arab Rep.	38.29	41.92	0.58	●
46	Ethiopia (2006)	38.20	41.81	0.57	●
47	South Africa (2007)	36.76	40.01	0.56	
48	Serbia	36.53	39.73	0.55	
49	Tanzania, United Rep. (2006)	36.48	39.66	0.54	●
50	Honduras (2010)	35.79	38.80	0.53	
51	Germany (2005)	35.38	38.29	0.52	
52	Uganda (2006)	34.95	37.75	0.51	
53	Moldova, Rep.	33.11	35.45	0.50	
54	Slovakia	33.05	35.38	0.50	
55	Ghana (2007)	32.99	35.30	0.49	
56	Sri Lanka (2004)	32.55	34.75	0.48	
57	Benin	32.41	34.58	0.47	●
58	Mali (2010)	32.09	34.18	0.45	
58	Niger	32.09	34.18	0.45	●
60	Portugal (2005)	31.89	33.93	0.44	
61	Philippines	31.11	32.95	0.43	
62	Togo	30.96	32.77	0.42	
63	Gabon	30.89	32.68	0.41	
64	Bulgaria	30.65	32.38	0.40	
65	Armenia	30.35	32.00	0.39	
66	Kyrgyzstan	29.67	31.16	0.38	
67	Turkey (2008)	28.75	30.01	0.37	
68	Croatia (2007)	28.02	29.09	0.36	○
69	Rwanda (2006)	27.58	28.54	0.35	
70	Bangladesh (2002)	27.15	28.01	0.34	
71	Madagascar	27.03	27.86	0.33	
72	Zambia (2007)	26.02	26.60	0.32	
73	Jamaica (2010)	25.94	26.50	0.31	
74	Nigeria (2007)	25.73	26.23	0.30	
75	Mauritius	25.58	26.05	0.30	
76	Gambia (2006)	25.57	26.03	0.29	
77	Cameroon	25.51	25.96	0.28	
78	Montenegro	25.21	25.58	0.27	○
79	Romania	24.91	25.21	0.26	
80	Burkina Faso	24.83	25.11	0.25	
81	Ukraine (2008)	24.82	25.10	0.24	
82	Morocco (2007)	24.68	24.92	0.23	
83	Jordan (2006)	23.93	23.99	0.22	
84	Angola (2010)	23.53	23.49	0.21	
85	Burundi (2006)	22.10	21.70	0.20	
86	Mozambique (2007)	22.08	21.67	0.19	
87	Egypt (2008)	21.70	21.20	0.18	
88	Tajikistan (2008)	21.11	20.46	0.17	
89	Oman (2003)	20.92	20.22	0.16	○
90	Greece (2005)	19.96	19.03	0.15	
91	Albania (2007)	19.94	19.00	0.14	
92	Côte d'Ivoire	19.11	17.96	0.13	
93	Macedonia, FYR	18.95	17.76	0.12	○
94	Algeria (2007)	17.30	15.70	0.11	
95	Senegal (2007)	16.30	14.45	0.10	
96	India (2006)	15.93	13.99	0.10	○
97	Hungary	14.80	12.58	0.09	○
98	Georgia (2008)	14.53	12.24	0.08	○
99	Yemen (2010)	12.92	10.23	0.07	
100	Lao PDR	11.13	8.00	0.06	
101	Panama (2010)	10.98	7.81	0.05	○
102	Azerbaijan	10.54	7.26	0.04	○
103	Uzbekistan (2008)	9.63	6.12	0.03	○
104	Nepal	8.79	5.07	0.02	○
105	Pakistan (2007)	6.70	2.46	0.01	○
106	Indonesia	4.73	0.00	0.00	○
n/a	Australia	n/a	n/a	n/a	
n/a	Austria	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Finland	n/a	n/a	n/a	
n/a	France	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Italy	n/a	n/a	n/a	
n/a	Japan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Sweden	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United Kingdom	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Finance Corporation and World Bank, *Enterprise Surveys*, World Bank *World Development Indicators* database (2002–10)

5.1.3 GERD performed by business enterprise

GERD: Performed by business enterprise (% of total)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malaysia (2006)	84.91	100.00	1.00	●
2	Israel	79.40	93.51	0.99	●
3	Japan (2008)	78.46	92.41	0.98	●
4	Korea, Rep. (2008)	75.37	88.76	0.97	●
5	Luxembourg	73.70	86.80	0.95	
6	Switzerland (2008)	73.50	86.56	0.94	
7	China (2008)	73.26	86.28	0.93	
8	United States of America (2008)	72.60	85.51	0.92	
9	Singapore (2008)	71.83	84.59	0.91	
10	Finland (2010)	71.03	83.65	0.90	
11	Austria	70.56	83.10	0.89	
12	Sweden	70.49	83.01	0.88	
13	Germany	68.16	80.28	0.86	
14	Belgium	67.29	79.25	0.85	
15	Denmark	66.82	78.70	0.84	
16	Ireland	66.27	78.05	0.83	
17	Slovenia	64.61	76.09	0.82	
18	Malta	62.39	73.47	0.81	
19	Russian Federation	62.38	73.46	0.80	
20	United Kingdom (2010)	61.99	73.01	0.78	
21	France	61.91	72.91	0.77	
22	Australia (2008)	60.77	71.57	0.76	
23	Czech Republic	60.01	70.68	0.75	
24	South Africa (2007)	57.66	67.91	0.74	
25	Hungary	57.24	67.41	0.73	
26	Philippines (2007)	56.95	67.07	0.72	●
27	Ukraine	54.77	64.51	0.70	
28	Iceland (2008)	54.56	64.26	0.69	
29	Canada	54.08	63.70	0.68	
30	Norway	52.61	61.96	0.67	
31	Belarus	51.99	61.23	0.66	
32	Spain	51.90	61.12	0.65	
33	Italy	51.49	60.64	0.64	
34	Netherlands	47.88	56.38	0.63	
35	Mexico (2007)	47.37	55.79	0.61	
36	Portugal	46.70	55.00	0.60	
37	Thailand (2007)	45.05	53.06	0.59	
38	Estonia	44.66	52.60	0.58	
39	New Zealand (2007)	42.66	50.25	0.57	
40	Hong Kong (China)	42.65	50.23	0.56	
41	Slovakia	41.05	48.34	0.55	
42	Chile (2008)	40.42	47.60	0.53	
43	Croatia	40.42	47.60	0.52	
44	Brazil (2004)	40.20	47.35	0.51	
45	Romania	40.18	47.32	0.50	
46	Turkey	40.00	47.11	0.49	
47	Lao PDR (2002)	36.89	43.45	0.48	
48	Latvia	36.39	42.86	0.47	
49	India (2007)	33.92	39.95	0.45	
50	Sudan (2005)	33.71	39.70	0.44	
51	Kazakhstan	32.75	38.57	0.43	
52	Costa Rica (2008)	30.21	35.58	0.42	
53	Bulgaria	29.96	35.28	0.41	
54	Peru (2004)	29.17	34.36	0.40	
55	Macedonia, FYR (2008)	28.53	33.61	0.39	
56	Poland	28.50	33.56	0.38	
57	Argentina (2008)	27.44	32.32	0.36	
58	Greece (2007)	26.94	31.73	0.35	
59	Bolivia, Plurinational St. (2002)	25.00	29.44	0.34	
60	Lithuania	23.74	27.96	0.33	
61	Kyrgyzstan	23.31	27.46	0.32	
62	Cyprus	22.08	26.00	0.31	○
63	Morocco (2006)	22.05	25.97	0.30	
64	Azerbaijan	22.00	25.91	0.28	
65	Tunisia	20.03	23.59	0.27	
66	Colombia	19.68	23.18	0.26	
67	Sri Lanka (2008)	18.32	21.57	0.25	
68	Uruguay (2008)	18.15	21.38	0.24	
69	Botswana (2005)	15.57	18.33	0.23	
70	Viet Nam (2002)	14.55	17.13	0.22	
71	Serbia	14.32	16.86	0.20	○
72	Cambodia (2002)	12.08	14.23	0.19	
73	Kenya (2007)	11.68	13.75	0.18	
74	Moldova, Rep.	11.30	13.31	0.17	
75	Iran, Islamic Rep. (2008)	10.61	12.50	0.16	
76	Ecuador (2008)	8.53	10.05	0.15	
77	Uganda	8.23	9.70	0.14	
78	Mongolia	6.94	8.17	0.13	○
79	Montenegro (2007)	5.15	6.07	0.11	○
80	Ghana (2007)	4.94	5.82	0.10	
81	Indonesia (2005)	3.74	4.40	0.09	○
82	Mali (2007)	2.97	3.50	0.08	
83	Brunei Darussalam (2003)	2.34	2.75	0.07	○
84	Zambia (2008)	2.02	2.38	0.06	
85	Trinidad and Tobago (2008)	1.93	2.28	0.05	○
86	Guatemala (2007)	0.86	1.01	0.03	○
87	Senegal (2008)	0.86	1.01	0.02	○
88	Panama	0.22	0.26	0.01	○
89	Albania (2008)	0.00	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2002–10)

5.1.4 GERD financed by business enterprise

GERD: Financed by business enterprise (% of total)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malaysia (2006)	84.49	100.00	1.00	●
2	Israel (2007)	79.48	94.07	0.99	●
3	Japan (2008)	78.17	92.52	0.98	●
4	Luxembourg (2007)	76.01	89.97	0.97	
5	Korea, Rep. (2008)	72.88	86.26	0.96	
6	China (2008)	71.74	84.91	0.94	
7	Switzerland (2008)	68.19	80.71	0.93	
8	Finland	68.10	80.60	0.92	
9	Germany (2008)	67.27	79.62	0.91	
10	United States of America (2008)	67.27	79.61	0.90	
11	Singapore (2008)	63.48	75.13	0.89	
12	Philippines (2007)	61.96	73.33	0.88	●
13	Australia (2008)	61.43	72.70	0.87	
14	Belgium (2007)	61.38	72.65	0.85	
15	Denmark	60.18	71.22	0.84	
16	Sweden	58.93	69.75	0.83	
17	Slovenia	57.98	68.63	0.82	
18	Malta	51.41	60.84	0.81	
19	Ghana (2007)	50.86	60.19	0.80	●
20	Ireland	50.84	60.17	0.79	
21	France (2008)	50.74	60.06	0.78	
22	Iceland (2008)	50.35	59.59	0.76	
23	Netherlands (2007)	48.79	57.75	0.75	
24	Thailand (2005)	48.65	57.58	0.74	
25	Portugal (2008)	48.08	56.90	0.73	
26	Canada	47.47	56.19	0.72	
27	Hungary	46.43	54.95	0.71	
28	Czech Republic	45.83	54.24	0.70	
29	Hong Kong (China)	45.83	54.24	0.69	
30	United Kingdom (2010)	45.42	53.76	0.67	
31	Norway (2007)	45.25	53.56	0.66	
32	Italy (2008)	45.17	53.47	0.65	
33	Mexico (2007)	45.13	53.41	0.64	
34	Spain (2008)	44.95	53.20	0.63	
35	Brazil (2008)	43.88	51.94	0.62	
36	Chile (2008)	43.73	51.76	0.61	
37	Austria (2010)	43.32	51.27	0.60	
38	South Africa (2007)	42.66	50.50	0.58	
39	Turkey	40.97	48.49	0.57	
40	New Zealand (2007)	40.14	47.51	0.56	
41	Croatia	39.79	47.09	0.55	
42	Estonia	38.42	45.47	0.54	
43	Latvia	36.89	43.67	0.53	
44	Kyrgyzstan (2005)	36.38	43.06	0.52	
45	Lao PDR (2002)	36.01	42.62	0.51	●
46	Slovakia	35.11	41.55	0.49	
47	Romania	34.75	41.13	0.48	
48	India (2007)	33.92	40.15	0.47	
49	Greece (2005)	31.06	36.77	0.46	
50	Iran, Islamic Rep. (2008)	30.92	36.59	0.45	
51	Bulgaria (2008)	30.62	36.25	0.44	
52	Gabon	29.26	34.64	0.43	
53	Belarus	28.81	34.10	0.42	
54	Poland	27.10	32.07	0.40	
55	Russian Federation	26.59	31.47	0.39	
56	Argentina (2008)	26.52	31.39	0.38	
57	Ukraine	25.90	30.66	0.37	
58	Azerbaijan	24.76	29.31	0.36	
59	Uruguay (2008)	24.65	29.17	0.35	
60	Morocco (2006)	22.70	26.87	0.34	
61	Lithuania	21.05	24.91	0.33	
62	Tunisia	20.03	23.71	0.31	
63	Sri Lanka (2008)	19.89	23.54	0.30	
64	Viet Nam (2002)	18.06	21.38	0.29	
65	Cyprus (2008)	17.82	21.09	0.28	○
66	Kenya (2007)	16.83	19.92	0.27	
67	Colombia	16.12	19.08	0.26	
68	Bolivia, Plurinational St. (2002)	16.00	18.94	0.25	
69	Indonesia (2001)	14.69	17.39	0.24	
70	Kazakhstan	13.55	16.03	0.22	
71	Burkina Faso	11.93	14.12	0.21	
72	Mali (2007)	10.10	11.95	0.20	
73	Ecuador (2008)	8.53	10.10	0.19	
74	Serbia	8.33	9.86	0.18	○
75	Uganda	8.23	9.74	0.17	
76	Macedonia, FYR (2002)	7.79	9.22	0.16	○
77	Senegal (2008)	4.04	4.78	0.15	
78	Mongolia	3.64	4.31	0.13	○
79	Lesotho	3.38	4.00	0.12	
80	Costa Rica (2008)	3.33	3.94	0.11	○
81	Albania (2008)	3.26	3.86	0.10	
82	Zambia (2008)	3.23	3.82	0.09	
83	Kuwait	2.33	2.76	0.08	○
84	Panama	2.23	2.64	0.07	○
85	Brunei Darussalam (2004)	1.58	1.87	0.06	○
86	Tajikistan	1.08	1.28	0.04	○
87	El Salvador (2008)	0.68	0.81	0.03	○
88	Paraguay (2008)	0.25	0.30	0.02	○
89	Nigeria (2007)	0.16	0.19	0.01	○
90	Moldova, Rep.	0.00	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–10)

5.1.5 GMAT mean score

Weighted mean score at the Graduate Management Admission Test (GMAT) by residency and by citizenship (weighted by the total numbers of test takers)[a] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Argentina	603.57	100.00	1.00	●
2	New Zealand	600.87	98.96	0.99	●
3	Singapore	596.31	97.20	0.99	
4	Uruguay	595.16	96.76	0.98	●
5	China	595.01	96.70	0.97	●
6	Australia	590.50	94.96	0.96	●
7	United Kingdom	586.10	93.27	0.96	
8	Bulgaria	585.55	93.05	0.95	●
9	Hungary	583.80	92.38	0.94	●
10	Korea, Rep.	583.10	92.11	0.94	
11	Latvia	581.36	91.44	0.93	●
12	India	580.58	91.14	0.92	●
13	Spain	578.77	90.45	0.91	●
14	Czech Republic	578.13	90.20	0.91	●
15	Malta	578.00	90.15	0.90	
16	Romania	576.16	89.44	0.89	●
17	Slovakia	575.86	89.32	0.88	●
18	Belgium	574.95	88.97	0.88	
19	Hong Kong (China)	574.00	88.61	0.87	
20	Austria	573.00	88.22	0.86	
21	Slovenia	567.00	85.91	0.86	
22	Mauritius	566.79	85.83	0.85	
23	Germany	565.49	85.33	0.84	
24	Brazil	563.85	84.70	0.83	●
25	France	562.50	84.18	0.83	
26	Russian Federation	562.21	84.06	0.82	
27	Italy	561.11	83.64	0.81	
28	Switzerland	560.99	83.59	0.81	
29	Estonia	560.88	83.55	0.80	
30	Lithuania	560.00	83.21	0.79	
31	Luxembourg	559.30	82.94	0.78	
32	Belarus	558.83	82.76	0.78	
33	Canada	557.62	82.30	0.77	
34	Chile	556.61	81.91	0.76	
35	Ireland	554.60	81.13	0.76	
36	Peru	550.48	79.54	0.75	●
37	Poland	549.61	79.21	0.74	
38	Denmark	549.46	79.15	0.73	
39	Turkey	547.45	78.38	0.73	●
40	Japan	546.34	77.95	0.72	
41	Malaysia	545.93	77.79	0.71	
42	Iceland	545.91	77.78	0.71	
43	Tunisia	544.60	77.28	0.70	
44	Azerbaijan	543.54	76.87	0.69	●
45	Ukraine	543.52	76.87	0.68	
46	Moldova, Rep.	542.94	76.64	0.68	
47	Netherlands	542.13	76.33	0.67	
48	Portugal	536.61	74.20	0.66	
49	Madagascar	533.00	72.81	0.65	●
50	Kyrgyzstan	532.35	72.56	0.65	
51	Cyprus	532.21	72.51	0.64	
52	Philippines	531.61	72.28	0.63	
53	United States of America	529.36	71.41	0.63	
54	Greece	527.53	70.70	0.62	
55	Brunei Darussalam	526.00	70.11	0.61	
56	Georgia	525.72	70.01	0.60	
57	Costa Rica	524.00	69.34	0.60	
58	Viet Nam	521.32	68.31	0.59	
59	Paraguay	519.00	67.42	0.58	
60	Iran, Islamic Rep.	518.70	67.30	0.58	
61	Morocco	517.27	66.75	0.57	
62	Serbia	515.82	66.19	0.56	
63	Algeria	514.41	65.65	0.55	
64	Uzbekistan	513.86	65.44	0.55	
65	Indonesia	513.47	65.29	0.54	
66	Sweden	513.01	65.11	0.53	○
67	Norway	512.39	64.87	0.53	○
68	Colombia	508.98	63.56	0.52	
69	Guatemala	507.98	63.17	0.51	
70	Finland	507.78	63.09	0.50	○
71	Pakistan	507.64	63.04	0.50	●
72	Mexico	505.09	62.06	0.49	
73	El Salvador	504.96	62.01	0.48	
74	Thailand	503.81	61.57	0.47	
75	United Arab Emirates	502.10	60.91	0.47	
76	Venezuela, Bolivarian Rep.	499.85	60.04	0.46	
77	Bangladesh	499.61	59.95	0.45	
78	Sri Lanka	495.12	58.22	0.45	
79	Albania	492.57	57.24	0.44	
80	Zimbabwe	489.90	56.21	0.43	
81	Qatar	485.23	54.41	0.42	
82	Bosnia and Herzegovina	484.90	54.28	0.42	
83	Lebanon	484.73	54.22	0.41	
84	Israel	484.51	54.13	0.40	○
85	Croatia	484.30	54.05	0.40	
86	Lesotho	483.00	53.55	0.39	
87	Trinidad and Tobago	481.04	52.80	0.38	
88	Kazakhstan	476.76	51.14	0.37	
89	Bolivia, Plurinational St.	475.92	50.82	0.37	
90	Honduras	473.61	49.93	0.36	
91	Macedonia, FYR	473.59	49.92	0.35	
92	South Africa	472.02	49.32	0.35	
93	Mongolia	471.94	49.29	0.34	
94	Armenia	471.81	49.24	0.33	
95	Nepal	471.73	49.21	0.32	
96	Egypt	470.54	48.75	0.32	
97	Ecuador	470.31	48.66	0.31	
98	Nicaragua	467.52	47.58	0.30	
99	Senegal	467.15	47.44	0.29	
100	Panama	465.25	46.71	0.29	
101	Guyana	465.23	46.70	0.28	
102	Benin	464.00	46.23	0.27	
103	Syrian Arab Rep.	457.28	43.64	0.27	
104	Côte d'Ivoire	457.25	43.63	0.26	
105	Jamaica	454.91	42.73	0.25	
106	Botswana	452.55	41.82	0.24	
107	Fiji	448.00	40.07	0.24	
108	Cameroon	445.12	38.95	0.23	
109	Ghana	437.88	36.17	0.22	
110	Burkina Faso	435.87	35.39	0.22	
111	Jordan	435.02	35.06	0.21	
112	Nigeria	434.82	34.99	0.20	
113	Ethiopia	431.78	33.82	0.19	
114	Dominican Republic	431.09	33.55	0.19	
115	Kenya	427.32	32.10	0.18	
116	Togo	424.00	30.82	0.17	
117	Sudan	423.50	30.63	0.17	
118	Belize	420.27	29.38	0.16	
119	Malawi	420.00	29.28	0.15	
120	Swaziland	416.87	28.07	0.14	
121	Namibia	416.24	27.83	0.14	○
122	Bahrain	415.80	27.66	0.13	○
123	Burundi	410.57	25.64	0.12	
124	Zambia	409.91	25.39	0.12	
125	Oman	406.59	24.11	0.11	○
126	Mali	405.00	23.50	0.10	
127	Cambodia	404.09	23.15	0.09	
128	Lao PDR	404.00	23.11	0.09	
129	Angola	403.93	23.09	0.08	
130	Mozambique	398.20	20.88	0.07	
131	Gambia	397.00	20.42	0.06	
132	Gabon	395.00	19.65	0.06	○
133	Tanzania, United Rep.	392.60	18.72	0.05	
134	Kuwait	391.44	18.28	0.04	○
135	Tajikistan	383.90	15.37	0.04	○
136	Rwanda	382.65	14.89	0.03	○
137	Uganda	381.17	14.32	0.02	○
138	Yemen	367.00	8.86	0.01	○
139	Saudi Arabia	349.46	2.10	0.01	○
140	Niger	344.00	0.00	0.00	○
n/a	Montenegro	n/a	n/a	n/a	

SOURCE: Graduate Management Admission Council (GMAC)

5.1.6 GMAT test takers

Number of test takers of the Graduate Management Admission Test (GMAT) by citizenship (scaled by million population 20–34 years old)[a] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	United States of America	1,832.03	100.00	1.00	●
2	Israel	1,498.23	97.32	0.99	●
3	Hong Kong (China)	1,458.35	96.96	0.99	
4	Lebanon	1,178.62	94.13	0.98	●
5	Singapore	1,150.07	93.80	0.97	
6	Canada	1,053.23	92.63	0.96	●
7	Greece	700.66	87.20	0.96	●
8	Iceland	584.26	84.78	0.95	
9	Kuwait	547.72	83.92	0.94	●
10	Korea, Rep.	505.56	82.86	0.94	
11	Trinidad and Tobago	431.68	80.75	0.93	●
12	Switzerland	400.45	79.75	0.92	
13	France	356.16	78.19	0.91	●
14	Bulgaria	334.13	77.34	0.91	●
15	Jamaica	319.70	76.75	0.90	●
16	Netherlands	310.94	76.38	0.89	
17	Ireland	307.07	76.22	0.88	
18	Cyprus	300.49	75.93	0.88	
19	Norway	292.03	75.55	0.87	
20	Luxembourg	290.10	75.46	0.86	
21	Portugal	287.24	75.33	0.86	●
22	Sweden	273.87	74.69	0.85	
23	Armenia	265.76	74.29	0.84	●
24	Germany	260.45	74.02	0.83	
25	Saudi Arabia	260.43	74.02	0.83	
26	Finland	225.05	72.07	0.82	
27	New Zealand	202.59	70.67	0.81	
28	Belgium	201.99	70.63	0.81	
29	Belize	200.77	70.55	0.80	●
30	Guyana	192.85	70.02	0.79	
31	Austria	177.66	68.92	0.78	
32	Mauritius	175.25	68.74	0.78	
33	Australia	171.83	68.48	0.77	
34	Italy	170.89	68.41	0.76	
35	Jordan	170.40	68.37	0.76	
36	Estonia	162.03	67.69	0.75	
37	Georgia	160.43	67.56	0.74	
38	Albania	156.65	67.24	0.73	●
39	Latvia	153.02	66.93	0.73	
40	Lithuania	143.86	66.11	0.72	
41	Mongolia	139.92	65.74	0.71	
42	United Kingdom	131.96	64.96	0.71	
43	China	128.10	64.56	0.70	
44	Bahrain	122.71	63.99	0.69	
45	Thailand	116.09	63.25	0.68	
46	Croatia	113.75	62.98	0.68	
47	Denmark	112.28	62.80	0.67	
48	Japan	111.94	62.76	0.66	
49	Spain	110.84	62.63	0.65	
50	Chile	105.78	62.01	0.65	
51	Moldova, Rep.	101.95	61.51	0.64	
52	Turkey	94.40	60.49	0.63	
53	Romania	92.05	60.15	0.63	
54	Panama	84.06	58.94	0.62	
55	Serbia	80.99	58.44	0.61	
56	India	80.95	58.43	0.60	
57	Venezuela, Bolivarian Rep.	77.79	57.90	0.60	●
58	Uruguay	77.58	57.87	0.59	
59	Kazakhstan	73.17	57.08	0.58	
60	Hungary	72.61	56.98	0.58	
61	Peru	72.29	56.92	0.57	
62	Costa Rica	72.09	56.88	0.56	
63	Slovakia	69.38	56.37	0.55	
64	Colombia	69.25	56.35	0.55	
65	Mexico	68.57	56.22	0.54	
66	Nepal	67.96	56.09	0.53	●
67	Macedonia, FYR	67.69	56.04	0.53	
68	Slovenia	65.31	55.56	0.52	
69	Malaysia	65.11	55.52	0.51	
70	Malta	63.83	55.26	0.50	
71	Kenya	61.77	54.82	0.50	
72	Ghana	58.57	54.11	0.49	
73	South Africa	57.55	53.87	0.48	
74	Azerbaijan	57.55	53.87	0.47	
75	Russian Federation	55.24	53.32	0.47	
76	United Arab Emirates	54.12	53.05	0.46	
77	Oman	52.55	52.65	0.45	
78	Belarus	50.38	52.09	0.45	
79	Viet Nam	50.05	52.00	0.44	
80	Ecuador	49.69	51.91	0.43	
81	Bosnia and Herzegovina	48.10	51.47	0.42	
82	Egypt	45.36	50.69	0.42	
83	Gabon	44.84	50.53	0.41	
84	Brunei Darussalam	44.79	50.51	0.40	
85	Honduras	44.78	50.51	0.40	
86	Czech Republic	44.35	50.38	0.39	○
87	Cameroon	43.81	50.22	0.38	
88	Qatar	43.36	50.08	0.37	
89	Dominican Republic	42.50	49.81	0.37	
90	Ukraine	41.55	49.51	0.36	
91	Kyrgyzstan	41.45	49.48	0.35	
92	Zimbabwe	41.19	49.39	0.35	
93	Botswana	40.70	49.23	0.34	
94	Morocco	40.57	49.19	0.33	
95	Nigeria	37.54	48.15	0.32	
96	Poland	37.29	48.06	0.32	○
97	Fiji	36.47	47.76	0.31	
98	Brazil	33.54	46.63	0.30	
99	El Salvador	32.84	46.35	0.29	
100	Guatemala	32.65	46.27	0.29	
101	Sri Lanka	32.20	46.09	0.28	
102	Argentina	31.72	45.88	0.27	
103	Nicaragua	30.98	45.57	0.27	
104	Gambia	27.93	44.17	0.26	
105	Côte d'Ivoire	27.07	43.75	0.25	
106	Iran, Islamic Rep.	26.45	43.44	0.24	
107	Namibia	25.55	42.98	0.24	
108	Bolivia, Plurinational St.	25.17	42.77	0.23	
109	Tunisia	24.76	42.55	0.22	○
110	Pakistan	22.78	41.43	0.22	
111	Swaziland	21.85	40.87	0.21	
112	Senegal	21.19	40.45	0.20	
113	Syrian Arab Rep.	18.80	38.84	0.19	
114	Benin	18.62	38.71	0.19	
115	Togo	17.73	38.04	0.18	
116	Uzbekistan	17.21	37.64	0.17	
117	Rwanda	16.50	37.07	0.17	
118	Zambia	16.25	36.86	0.16	
119	Philippines	15.89	36.55	0.15	
120	Indonesia	13.36	34.20	0.14	
121	Uganda	12.78	33.59	0.14	
122	Burundi	12.12	32.87	0.13	
123	Burkina Faso	10.81	31.30	0.12	
124	Bangladesh	10.24	30.57	0.12	
125	Lesotho	9.72	29.84	0.11	
126	Tajikistan	9.18	29.06	0.10	
127	Tanzania, United Rep.	7.32	25.92	0.09	
128	Mali	7.05	25.41	0.09	
129	Malawi	7.02	25.34	0.08	
130	Cambodia	6.56	24.41	0.07	
131	Ethiopia	5.40	21.67	0.06	
132	Angola	4.46	18.95	0.06	
133	Algeria	4.30	18.43	0.05	○
134	Paraguay	4.22	18.18	0.04	○
135	Yemen	4.04	17.52	0.04	
136	Sudan	3.35	14.84	0.03	
137	Lao PDR	3.09	13.61	0.02	○
138	Niger	2.60	11.08	0.01	
139	Madagascar	2.58	10.94	0.01	○
140	Mozambique	1.31	0.00	0.00	○
n/a	Montenegro	n/a	n/a	n/a	

SOURCE: Graduate Management Admission Council (GMAC)

5.2.1 University/industry research collaboration

Average answer to the survey question: To what extent do business and universities collaborate on research and development (R&D) in your country? 1 = do not collaborate at all; 7 = collaborate extensively[†] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	5.78	79.61	1.00	●
2	United Kingdom	5.75	79.21	0.99	●
3	United States of America	5.71	78.51	0.98	●
4	Finland	5.58	76.27	0.98	
5	Sweden	5.52	75.30	0.97	
6	Singapore	5.47	74.48	0.96	
7	Israel	5.40	73.42	0.95	
8	Netherlands	5.32	72.08	0.95	
9	Belgium	5.32	71.92	0.94	●
10	Qatar	5.27	71.17	0.93	
11	Canada	5.20	70.05	0.92	
12	Germany	5.16	69.29	0.92	
13	Australia	5.15	69.21	0.91	
14	Denmark	5.15	69.19	0.90	
15	Japan	5.06	67.61	0.89	
16	Iceland	5.03	67.21	0.89	
17	Luxembourg	5.02	67.08	0.88	
18	Austria	4.99	66.55	0.87	
19	Ireland	4.96	65.94	0.86	
20	Malaysia	4.91	65.12	0.86	
21	Norway	4.79	63.09	0.85	
22	Hong Kong (China)	4.74	62.27	0.84	
23	New Zealand	4.73	62.18	0.83	
24	Korea, Rep.	4.66	60.99	0.83	
25	South Africa	4.62	60.30	0.82	●
26	Portugal	4.60	60.00	0.81	
27	Saudi Arabia	4.56	59.27	0.80	
28	China	4.53	58.82	0.80	
29	Czech Republic	4.47	57.78	0.79	
30	Lithuania	4.44	57.31	0.78	
31	Hungary	4.35	55.86	0.77	
32	Estonia	4.34	55.61	0.77	
33	Costa Rica	4.31	55.24	0.76	
34	France	4.24	53.98	0.75	
35	United Arab Emirates	4.21	53.43	0.74	
36	Brazil	4.20	53.41	0.73	
37	Thailand	4.15	52.57	0.73	
38	Indonesia	4.13	52.15	0.72	●
39	Spain	4.11	51.86	0.71	
40	Colombia	4.09	51.58	0.70	
41	Chile	4.09	51.47	0.70	
42	Mexico	4.04	50.67	0.69	
43	Slovenia	3.95	49.19	0.68	
44	Cyprus	3.92	48.71	0.67	
45	Argentina	3.88	48.03	0.67	
46	Kenya	3.87	47.86	0.66	
47	India	3.82	46.97	0.65	
48	Brunei Darussalam	3.80	46.70	0.64	
49	Mozambique	3.79	46.50	0.64	
50	Uruguay	3.79	46.47	0.63	
51	Malta	3.79	46.45	0.62	
52	Guatemala	3.78	46.40	0.61	●
53	Oman	3.78	46.29	0.61	
54	Latvia	3.77	46.18	0.60	
55	Tunisia	3.75	45.79	0.59	
56	Zambia	3.75	45.78	0.58	●
57	Rwanda	3.71	45.22	0.58	
58	Senegal	3.71	45.15	0.57	
59	Tanzania, United Rep.	3.71	45.14	0.56	●
60	Montenegro	3.68	44.71	0.55	
61	Malawi	3.64	43.94	0.55	
62	Poland	3.64	43.94	0.54	
63	Panama	3.64	43.93	0.53	
64	Botswana	3.59	43.24	0.52	
65	Trinidad and Tobago	3.57	42.82	0.52	
66	Pakistan	3.56	42.71	0.51	●
67	Ukraine	3.56	42.64	0.50	
68	Gambia	3.54	42.38	0.49	●
69	Uganda	3.50	41.69	0.48	
70	Sri Lanka	3.49	41.55	0.48	
71	Turkey	3.49	41.48	0.47	
72	Russian Federation	3.49	41.44	0.46	
73	Jamaica	3.48	41.41	0.45	
74	Croatia	3.48	41.38	0.45	
75	Namibia	3.48	41.35	0.44	
76	Italy	3.48	41.30	0.43	
77	Venezuela, Bolivarian Rep.	3.47	41.09	0.42	
78	Serbia	3.43	40.54	0.42	
79	Viet Nam	3.40	40.05	0.41	
80	Philippines	3.39	39.86	0.40	
81	Bosnia and Herzegovina	3.39	39.78	0.39	
82	Honduras	3.36	39.39	0.39	
83	Cameroon	3.34	39.06	0.38	
84	Bahrain	3.33	38.91	0.37	
85	Cambodia	3.32	38.73	0.36	
86	Benin	3.31	38.45	0.36	
87	Dominican Republic	3.28	38.05	0.35	
88	Mali	3.28	38.03	0.34	
89	Macedonia, FYR	3.28	38.00	0.33	
90	Iran, Islamic Rep.	3.25	37.50	0.33	
91	Ecuador	3.24	37.37	0.32	
92	Ghana	3.23	37.21	0.31	
93	Burkina Faso	3.22	36.94	0.30	
94	Mongolia	3.21	36.82	0.30	
95	Mauritius	3.21	36.81	0.29	
96	Tajikistan	3.21	36.80	0.28	
97	Madagascar	3.20	36.68	0.27	
98	Zimbabwe	3.19	36.55	0.27	
99	Morocco	3.19	36.49	0.26	
100	Peru	3.19	36.47	0.25	
101	Slovakia	3.18	36.29	0.24	○
102	Kuwait	3.16	36.03	0.23	
103	Azerbaijan	3.15	35.91	0.23	
104	Bolivia, Plurinational St.	3.14	35.74	0.22	
105	Nigeria	3.14	35.68	0.21	
106	Ethiopia	3.13	35.46	0.20	
107	Lebanon	3.12	35.27	0.20	
108	El Salvador	3.11	35.14	0.19	
109	Guyana	3.07	34.50	0.18	
110	Jordan	3.07	34.48	0.17	○
111	Romania	3.00	33.27	0.17	○
112	Bulgaria	2.96	32.74	0.16	○
113	Kazakhstan	2.94	32.27	0.15	
114	Greece	2.87	31.17	0.14	
115	Nicaragua	2.85	30.77	0.14	
116	Lesotho	2.80	29.99	0.13	
117	Paraguay	2.78	29.64	0.12	
118	Moldova, Rep.	2.70	28.34	0.11	○
119	Armenia	2.69	28.14	0.11	○
120	Georgia	2.64	27.30	0.10	○
121	Bangladesh	2.63	27.20	0.09	
122	Egypt	2.60	26.60	0.08	○
123	Nepal	2.58	26.35	0.08	
124	Swaziland	2.49	24.84	0.07	○
125	Belize	2.45	24.23	0.06	○
126	Syrian Arab Rep.	2.40	23.36	0.05	○
127	Côte d'Ivoire	2.37	22.84	0.05	○
128	Algeria	2.33	22.19	0.04	○
129	Burundi	2.31	21.85	0.03	
130	Angola	2.07	17.82	0.02	○
131	Albania	2.06	17.68	0.02	○
132	Kyrgyzstan	1.97	16.15	0.01	○
133	Yemen	1.51	8.44	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2010–2011*

5.2.2 State of cluster development

Mean of the average responses to three survey questions on the role of clusters in the economy. 'Clusters' are defined as geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field (e.g., financial services in New York, leather and footwear in Italy, consumer electronics in Japan). The questions are: (1) In your country's economy, how prevalent are well-developed and deep clusters? 1 = nonexistent; 7 = widespread in many fields. (2) In your country, how extensive is collaboration among firms, suppliers, partners, and associated institutions within clusters? 1 = collaboration is nonexistent; 7 = collaboration is extensive. (3) In your country, what is the state of formal policies supporting cluster development? 1 = nonexistent; 7 = extensive and covers many clusters and regions.† | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	5.34	72.39	1.00	●
2	Singapore	5.14	69.08	0.99	
3	Japan	5.01	66.79	0.98	●
4	Malaysia	4.93	65.44	0.98	●
5	Sweden	4.87	64.54	0.97	
6	China	4.86	64.37	0.96	●
7	Luxembourg	4.84	63.93	0.95	
8	Qatar	4.83	63.86	0.95	
9	United States of America	4.79	63.21	0.94	
10	Italy	4.78	63.03	0.93	●
11	Saudi Arabia	4.76	62.68	0.92	●
12	United Kingdom	4.75	62.42	0.92	
13	Germany	4.72	62.03	0.91	
14	Switzerland	4.72	61.94	0.90	
15	Hong Kong (China)	4.69	61.53	0.89	
16	Denmark	4.69	61.47	0.89	
17	Netherlands	4.67	61.21	0.88	
18	Viet Nam	4.57	59.42	0.87	●
19	United Arab Emirates	4.53	58.89	0.86	
20	Canada	4.53	58.78	0.86	
21	Bahrain	4.52	58.74	0.85	
22	Norway	4.52	58.63	0.84	
23	Austria	4.50	58.32	0.83	
24	Indonesia	4.33	55.43	0.83	●
25	France	4.29	54.91	0.82	
26	Korea, Rep.	4.29	54.76	0.81	
27	Thailand	4.26	54.34	0.80	
28	Belgium	4.25	54.25	0.80	
29	Ireland	4.16	52.69	0.79	
30	Brazil	4.12	52.06	0.78	●
31	India	4.11	51.86	0.77	●
32	Oman	4.11	51.83	0.77	●
33	Chile	4.10	51.65	0.76	
34	Cyprus	4.01	50.12	0.75	
35	Sri Lanka	3.99	49.88	0.74	●
36	Australia	3.96	49.36	0.73	
37	Cambodia	3.93	48.86	0.73	●
38	Colombia	3.92	48.74	0.72	
39	Mauritius	3.91	48.45	0.71	
40	Spain	3.90	48.34	0.70	
41	Nigeria	3.90	48.31	0.70	●
42	Mexico	3.89	48.12	0.69	
43	Panama	3.85	47.46	0.68	
44	Morocco	3.83	47.09	0.67	●
45	Czech Republic	3.82	47.06	0.67	
46	Iceland	3.81	46.87	0.66	
47	Costa Rica	3.79	46.44	0.65	
48	South Africa	3.79	46.42	0.64	
49	Pakistan	3.77	46.19	0.64	●
50	Rwanda	3.75	45.89	0.63	●
51	Kenya	3.74	45.62	0.62	
52	Brunei Darussalam	3.73	45.57	0.61	
53	Guatemala	3.71	45.18	0.61	●
54	Philippines	3.69	44.76	0.60	
55	Dominican Republic	3.67	44.50	0.59	●
56	Bangladesh	3.65	44.21	0.58	●
57	New Zealand	3.62	43.70	0.58	
58	Slovenia	3.61	43.53	0.57	
59	Zambia	3.61	43.43	0.56	
60	Uruguay	3.57	42.87	0.55	
61	Israel	3.56	42.65	0.55	
62	Portugal	3.53	42.23	0.54	
63	Malta	3.52	42.04	0.53	
64	Peru	3.51	41.91	0.52	
65	Estonia	3.50	41.72	0.52	○
66	Gambia	3.50	41.65	0.51	●
67	Kazakhstan	3.49	41.50	0.50	
68	Malawi	3.49	41.46	0.49	
69	Honduras	3.48	41.33	0.48	
70	Tunisia	3.42	40.30	0.48	
71	Jordan	3.42	40.26	0.47	
72	Azerbaijan	3.41	40.25	0.46	
73	Turkey	3.40	40.06	0.45	
74	Tanzania, United Rep.	3.39	39.88	0.45	
75	Bosnia and Herzegovina	3.38	39.63	0.44	
76	Croatia	3.36	39.38	0.43	
77	Egypt	3.35	39.24	0.42	
78	Slovakia	3.35	39.23	0.42	
79	Hungary	3.34	39.06	0.41	
80	Kuwait	3.34	38.94	0.40	
81	Argentina	3.30	38.31	0.39	
82	Trinidad and Tobago	3.30	38.28	0.39	
83	Namibia	3.27	37.81	0.38	
84	Guyana	3.26	37.60	0.37	
85	Botswana	3.23	37.21	0.36	
86	Jamaica	3.23	37.14	0.36	
87	El Salvador	3.22	37.05	0.35	
88	Bolivia, Plurinational St.	3.20	36.68	0.34	
89	Latvia	3.20	36.67	0.33	○
90	Bulgaria	3.20	36.64	0.33	
91	Nepal	3.19	36.48	0.32	
92	Iran, Islamic Rep.	3.15	35.85	0.31	
93	Russian Federation	3.15	35.83	0.30	
94	Ecuador	3.13	35.46	0.30	
95	Ghana	3.11	35.15	0.29	
96	Macedonia, FYR	3.09	34.88	0.28	
97	Georgia	3.08	34.72	0.27	
98	Mozambique	3.07	34.46	0.27	
99	Lesotho	3.06	34.31	0.26	
100	Syrian Arab Rep.	3.05	34.10	0.25	
101	Senegal	3.04	33.95	0.24	
102	Armenia	3.03	33.86	0.23	
103	Uganda	3.02	33.63	0.23	
104	Montenegro	3.00	33.26	0.22	○
105	Nicaragua	2.97	32.82	0.21	
106	Ethiopia	2.96	32.66	0.20	
107	Poland	2.96	32.60	0.20	○
108	Lebanon	2.94	32.39	0.19	
109	Mali	2.94	32.35	0.18	
110	Greece	2.90	31.67	0.17	
111	Paraguay	2.88	31.35	0.17	
112	Lithuania	2.87	31.21	0.16	○
113	Romania	2.87	31.18	0.15	○
114	Swaziland	2.78	29.70	0.14	
115	Ukraine	2.72	28.64	0.14	○
116	Cameroon	2.70	28.30	0.13	
117	Tajikistan	2.64	27.33	0.12	
118	Zimbabwe	2.64	27.29	0.11	
119	Benin	2.63	27.16	0.11	
120	Serbia	2.62	27.08	0.10	○
121	Albania	2.61	26.91	0.09	
122	Mongolia	2.58	26.28	0.08	○
123	Belize	2.56	26.07	0.08	○
124	Venezuela, Bolivarian Rep.	2.48	24.66	0.07	
125	Moldova, Rep.	2.46	24.36	0.06	○
126	Madagascar	2.45	24.22	0.05	
127	Angola	2.40	23.31	0.05	
128	Yemen	2.32	21.97	0.04	
129	Kyrgyzstan	2.29	21.43	0.03	○
130	Burkina Faso	2.27	21.11	0.02	○
131	Algeria	2.22	20.25	0.02	○
132	Côte d'Ivoire	2.21	20.20	0.01	○
133	Burundi	2.01	16.75	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2010–2011*

5.2.3 GERD financed by abroad

GERD: Financed by abroad (% of total) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mozambique (2007)	64.32	100.00	0.97	●
1	Burkina Faso	59.61	100.00	0.97	●
1	Lao PDR (2002)	53.99	100.00	0.97	●
1	Mali (2007)	49.04	100.00	0.97	●
5	Guatemala (2008)	48.44	98.78	0.96	●
6	Panama	46.64	95.09	0.95	●
7	Tanzania, United Rep. (2007)	38.36	78.19	0.93	●
8	Senegal (2008)	38.27	78.00	0.92	●
9	Cambodia (2002)	28.44	57.94	0.91	●
10	Ethiopia (2007)	27.00	54.98	0.90	●
11	Uganda	26.06	53.06	0.89	●
12	Ukraine	22.29	45.37	0.88	●
13	Greece (2005)	18.99	38.62	0.87	●
14	United Kingdom (2010)	17.75	36.09	0.86	
15	Kenya (2007)	17.62	35.83	0.85	●
16	Malta	17.22	35.03	0.84	
17	Ireland	15.59	31.69	0.82	
18	Latvia	15.36	31.21	0.81	
19	Austria (2010)	15.05	30.57	0.80	
20	Tunisia	14.95	30.37	0.79	●
21	Cyprus (2008)	14.65	29.77	0.78	
22	Bolivia, Plurinational St. (2002)	14.00	28.44	0.77	●
23	Lithuania	13.12	26.65	0.76	
24	Belgium (2007)	13.00	26.41	0.75	
25	Slovakia	12.78	25.94	0.74	
26	Paraguay (2008)	12.25	24.87	0.73	●
27	Ghana (2007)	11.95	24.25	0.71	●
28	Estonia	11.37	23.06	0.70	
29	Hungary	10.90	22.12	0.69	
30	South Africa (2007)	10.67	21.64	0.68	
31	Netherlands (2007)	10.65	21.59	0.67	
32	Sweden	10.49	21.28	0.66	
33	Iceland (2008)	10.04	20.36	0.65	
34	Canada	9.32	18.89	0.64	
35	Czech Republic	9.16	18.56	0.63	
36	Denmark	8.71	17.63	0.62	
37	Macedonia, FYR (2002)	8.55	17.32	0.60	
38	Belarus	8.50	17.20	0.59	
39	Madagascar (2007)	8.36	16.92	0.58	
40	Romania	8.34	16.88	0.57	
41	Norway (2007)	8.31	16.82	0.56	○
42	France (2008)	8.05	16.29	0.55	
43	Italy (2008)	7.82	15.82	0.54	
44	Albania (2008)	7.37	14.89	0.53	
45	Serbia	7.18	14.52	0.52	
46	Croatia	6.96	14.06	0.51	
47	Bulgaria (2008)	6.84	13.82	0.49	
48	Costa Rica (2008)	6.62	13.37	0.48	
49	Finland	6.61	13.34	0.47	○
50	Brunei Darussalam (2003)	6.56	13.25	0.46	
51	Moldova, Rep.	6.49	13.10	0.45	
52	Russian Federation	6.46	13.05	0.44	
53	Viet Nam (2002)	6.33	12.78	0.43	
54	Hong Kong (China)	6.09	12.29	0.42	○
55	Slovenia	6.04	12.18	0.41	
56	Switzerland (2008)	5.95	12.00	0.40	○
57	Spain (2008)	5.70	11.49	0.38	○
58	Luxembourg (2007)	5.66	11.41	0.37	
59	Poland	5.50	11.08	0.36	
60	Singapore (2008)	5.30	10.67	0.35	○
61	New Zealand (2007)	4.81	9.68	0.34	○
62	El Salvador (2008)	4.51	9.07	0.33	
63	Colombia	4.33	8.70	0.32	
64	Sri Lanka (2008)	4.27	8.57	0.31	
65	Armenia	4.22	8.47	0.30	
66	Philippines (2007)	4.12	8.27	0.29	
67	Germany (2008)	4.01	8.04	0.27	○
68	Chile (2008)	3.34	6.67	0.26	○
69	Gabon	3.09	6.16	0.25	
70	Portugal (2008)	2.99	5.95	0.24	○
71	Israel (2007)	2.77	5.51	0.23	○
72	Morocco (2006)	2.61	5.19	0.22	
73	Uruguay (2008)	2.28	4.50	0.21	
74	Thailand (2005)	1.84	3.60	0.20	○
75	Mongolia	1.81	3.55	0.19	
76	Australia (2008)	1.69	3.31	0.18	○
77	Zambia (2008)	1.62	3.16	0.16	
78	Mexico (2007)	1.38	2.66	0.15	○
79	China (2008)	1.24	2.38	0.14	
80	Kuwait	1.18	2.25	0.13	○
81	Turkey	1.13	2.15	0.12	○
82	Nigeria (2007)	1.04	1.96	0.11	
83	Kazakhstan (2008)	0.96	1.80	0.10	○
84	Pakistan	0.92	1.73	0.09	
85	Kyrgyzstan (2004)	0.74	1.37	0.08	
86	Tajikistan (2006)	0.65	1.17	0.07	
87	Argentina (2008)	0.60	1.07	0.05	○
88	Ecuador (2008)	0.50	0.87	0.04	○
89	Japan (2008)	0.38	0.62	0.03	○
90	Korea, Rep. (2008)	0.31	0.48	0.02	○
91	Malaysia (2006)	0.19	0.25	0.01	○
92	Azerbaijan	0.07	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brazil	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2002–10)

5.2.4 Joint venture / strategic alliance deals

Joint ventures / strategic alliances: Number of deals, fractional counting (per trillion PPP$ GDP)[a] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Guyana	371.69	100.00	0.97	●
1	Bahrain	339.46	100.00	0.97	●
1	Mongolia	224.33	100.00	0.97	●
1	Oman	190.99	100.00	0.97	●
1	Zimbabwe	168.58	100.00	0.97	●
6	Australia	154.49	91.65	0.96	●
7	United Arab Emirates	147.82	87.69	0.96	●
8	Cyprus	146.57	86.95	0.95	●
9	Canada	125.91	74.69	0.94	
10	Qatar	116.09	68.86	0.94	
11	Iceland	112.77	66.89	0.93	
12	Hong Kong (China)	104.15	61.78	0.92	
13	Switzerland	84.68	50.23	0.91	
14	Singapore	84.18	49.93	0.91	
15	Luxembourg	80.81	47.94	0.90	
16	New Zealand	79.36	47.08	0.89	
17	Saudi Arabia	78.98	46.85	0.89	●
18	Malaysia	78.41	46.51	0.88	
19	Sri Lanka	76.50	45.38	0.87	●
20	Mozambique	75.29	44.66	0.86	●
21	Finland	66.85	39.66	0.86	
22	Sweden	63.69	37.78	0.85	
23	Israel	59.95	35.56	0.84	
24	Tanzania, United Rep.	56.69	33.63	0.84	●
25	Denmark	54.24	32.18	0.83	
26	Ireland	51.30	30.43	0.82	
27	Norway	48.96	29.04	0.81	
28	Philippines	46.70	27.70	0.81	●
29	United States of America	46.06	27.32	0.80	
30	Kyrgyzstan	45.55	27.02	0.79	
31	Viet Nam	43.07	25.55	0.79	●
32	United Kingdom	42.67	25.31	0.78	
33	Chile	40.52	24.03	0.77	
34	Japan	40.29	23.90	0.76	
35	Netherlands	39.87	23.65	0.76	
36	Bolivia, Plurinational St.	39.41	23.38	0.75	●
37	Uzbekistan	38.24	22.68	0.74	●
38	Korea, Rep.	36.85	21.86	0.74	
39	Kuwait	36.76	21.81	0.73	
40	Thailand	36.54	21.68	0.72	
41	India	36.00	21.35	0.71	
42	Latvia	34.65	20.56	0.71	
43	China	34.39	20.40	0.70	
44	Mali	32.73	19.42	0.69	●
45	Jordan	32.52	19.29	0.69	
46	Cambodia	32.51	19.29	0.68	●
47	France	32.47	19.26	0.67	
48	Azerbaijan	31.12	18.46	0.66	
49	Kenya	30.71	18.22	0.66	
50	Russian Federation	29.62	17.57	0.65	
51	Zambia	27.38	16.24	0.64	●
52	Uruguay	26.87	15.94	0.64	
53	Lebanon	26.73	15.85	0.63	
54	Kazakhstan	26.60	15.78	0.62	
55	Malta	26.20	15.54	0.61	
56	Namibia	25.71	15.25	0.61	
57	Turkey	24.64	14.62	0.60	
58	Spain	24.07	14.28	0.59	
59	Slovenia	23.74	14.08	0.59	
60	Brunei Darussalam	23.21	13.77	0.58	
61	Belgium	22.85	13.55	0.57	
62	Côte d'Ivoire	22.43	13.31	0.56	●
63	Indonesia	21.52	12.76	0.56	
64	Germany	21.34	12.66	0.55	
65	Greece	20.70	12.28	0.54	
66	South Africa	20.17	11.96	0.54	
67	Croatia	19.76	11.72	0.53	
68	Egypt	19.47	11.55	0.52	
69	Peru	17.66	10.48	0.51	
70	Brazil	16.65	9.88	0.51	
71	Sudan	16.43	9.75	0.50	●
72	Ghana	16.02	9.50	0.49	
73	Italy	15.76	9.35	0.49	
74	Colombia	14.97	8.88	0.48	
75	Trinidad and Tobago	14.89	8.83	0.47	
76	Morocco	14.88	8.83	0.46	
77	Belarus	14.18	8.41	0.46	
78	Austria	14.01	8.31	0.45	
79	Venezuela, Bolivarian Rep.	13.85	8.21	0.44	
80	Estonia	12.72	7.55	0.44	○
81	Panama	12.29	7.29	0.43	
82	Hungary	12.23	7.26	0.42	
83	Czech Republic	11.72	6.95	0.41	
84	Lao PDR	11.47	6.80	0.41	
85	Ukraine	10.88	6.45	0.40	
86	Malawi	10.36	6.15	0.39	
87	Mauritius	10.33	6.13	0.39	
88	Bulgaria	9.84	5.84	0.38	
89	Madagascar	9.70	5.76	0.37	
90	Portugal	9.47	5.62	0.36	○
91	El Salvador	8.92	5.29	0.36	
92	Nigeria	8.76	5.20	0.35	
93	Bangladesh	7.67	4.55	0.34	
94	Serbia	7.59	4.50	0.34	
95	Poland	7.56	4.48	0.33	
96	Mexico	6.83	4.05	0.32	
97	Argentina	6.77	4.02	0.31	
98	Botswana	6.63	3.93	0.31	
99	Lithuania	6.51	3.86	0.30	
100	Dominican Republic	6.42	3.81	0.29	
101	Ecuador	6.40	3.79	0.29	
102	Paraguay	5.52	3.27	0.28	
103	Tunisia	5.33	3.16	0.27	
104	Angola	4.68	2.78	0.26	
105	Nepal	4.41	2.62	0.26	
106	Uganda	4.35	2.58	0.25	
107	Romania	4.27	2.53	0.24	○
108	Iran, Islamic Rep.	3.95	2.34	0.24	
109	Pakistan	3.81	2.26	0.23	
110	Yemen	3.16	1.87	0.22	
111	Slovakia	3.15	1.87	0.21	○
112	Guatemala	2.70	1.60	0.21	
113	Algeria	1.62	0.96	0.20	
114	Albania	0.00	0.00	0.00	○
114	Armenia	0.00	0.00	0.00	○
114	Belize	0.00	0.00	0.00	○
114	Benin	0.00	0.00	0.00	○
114	Bosnia and Herzegovina	0.00	0.00	0.00	○
114	Burkina Faso	0.00	0.00	0.00	○
114	Burundi	0.00	0.00	0.00	○
114	Cameroon	0.00	0.00	0.00	○
114	Costa Rica	0.00	0.00	0.00	○
114	Ethiopia	0.00	0.00	0.00	○
114	Fiji	0.00	0.00	0.00	○
114	Gabon	0.00	0.00	0.00	○
114	Gambia	0.00	0.00	0.00	○
114	Georgia	0.00	0.00	0.00	○
114	Honduras	0.00	0.00	0.00	○
114	Jamaica	0.00	0.00	0.00	○
114	Lesotho	0.00	0.00	0.00	○
114	Macedonia, FYR	0.00	0.00	0.00	○
114	Moldova, Rep.	0.00	0.00	0.00	○
114	Montenegro	0.00	0.00	0.00	○
114	Nicaragua	0.00	0.00	0.00	○
114	Niger	0.00	0.00	0.00	○
114	Rwanda	0.00	0.00	0.00	○
114	Senegal	0.00	0.00	0.00	○
114	Swaziland	0.00	0.00	0.00	○
114	Syrian Arab Rep.	0.00	0.00	0.00	○
114	Tajikistan	0.00	0.00	0.00	○
114	Togo	0.00	0.00	0.00	○

SOURCE: Thomson Reuters, *Thomson One Banker Private Equity, SDC Platinum* database; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database

5.2.5 Share of patents with foreign inventor

Percentage of published Patent Cooperation Treaty (PCT) applications with at least one foreign inventor[a] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Algeria (2010)	100.00	100.00	0.65	●
1	Armenia (2001)	100.00	100.00	0.65	●
1	Bahrain (2004)	100.00	100.00	0.65	●
1	Bangladesh (2004)	100.00	100.00	0.65	●
1	Belize (2010)	100.00	100.00	0.65	●
1	Bosnia and Herzegovina (2010)	100.00	100.00	0.65	●
1	Botswana	100.00	100.00	0.65	●
1	Brunei Darussalam (2007)	100.00	100.00	0.65	●
1	Costa Rica (2010)	100.00	100.00	0.65	●
1	Ecuador	100.00	100.00	0.65	●
1	El Salvador (2001)	100.00	100.00	0.65	●
1	Gabon	100.00	100.00	0.65	●
1	Georgia (2010)	100.00	100.00	0.65	●
1	Hong Kong (China) (2009)	100.00	100.00	0.65	●
1	Iran, Islamic Rep. (2009)	100.00	100.00	0.65	●
1	Jamaica	100.00	100.00	0.65	●
1	Kazakhstan	100.00	100.00	0.65	●
1	Kenya	100.00	100.00	0.65	●
1	Kuwait (2002)	100.00	100.00	0.65	●
1	Lao PDR	100.00	100.00	0.65	●
1	Lebanon	100.00	100.00	0.65	●
1	Mauritius	100.00	100.00	0.65	●
1	Moldova, Rep.	100.00	100.00	0.65	●
1	Mongolia (2008)	100.00	100.00	0.65	●
1	Namibia	100.00	100.00	0.65	●
1	Nicaragua	100.00	100.00	0.65	●
1	Niger (2010)	100.00	100.00	0.65	●
1	Oman (2010)	100.00	100.00	0.65	●
1	Panama	100.00	100.00	0.65	●
1	Senegal (2005)	100.00	100.00	0.65	●
1	Sudan (2009)	100.00	100.00	0.65	●
1	Swaziland	100.00	100.00	0.65	●
1	Tunisia (2010)	100.00	100.00	0.65	●
1	United Arab Emirates	100.00	100.00	0.65	●
1	Venezuela, Bolivarian Rep. (2010)	100.00	100.00	0.65	●
1	Viet Nam	100.00	100.00	0.65	●
37	Luxembourg	93.75	93.54	0.64	
38	Malta	92.31	92.05	0.63	
39	Cyprus	84.38	83.85	0.62	
40	Switzerland	79.22	78.52	0.61	
41	Saudi Arabia	78.38	77.66	0.60	
42	Singapore	77.46	76.71	0.59	
43	Philippines	66.67	65.56	0.57	
43	Uruguay (2010)	66.67	65.56	0.57	
45	Ireland	65.08	63.92	0.56	
46	Netherlands	56.97	55.53	0.55	○
47	Belgium	53.89	52.35	0.54	○
48	Azerbaijan	50.00	48.33	0.50	
48	Indonesia	50.00	48.33	0.50	
48	Peru (2010)	50.00	48.33	0.50	
48	Serbia	50.00	48.33	0.50	
48	Zimbabwe (2003)	50.00	48.33	0.50	
53	Finland	46.25	44.46	0.49	○
54	Iceland	45.65	43.84	0.48	
55	Canada	43.21	41.32	0.47	○
56	United States of America	42.32	40.40	0.46	
57	Sweden	42.17	40.25	0.45	○
58	Pakistan (2007)	40.00	38.00	0.44	
59	Denmark	37.55	35.46	0.43	○
60	Slovakia	34.78	32.61	0.42	
61	Morocco	33.33	31.11	0.41	
62	Malaysia	33.20	30.97	0.40	○
63	Austria	32.94	30.70	0.39	○
64	United Kingdom	32.38	30.13	0.38	○
65	New Zealand	29.09	26.73	0.37	○
66	Australia	28.98	26.61	0.36	○
67	Argentina	28.57	26.19	0.35	
68	Ukraine	27.27	24.85	0.34	
69	Croatia	26.67	24.22	0.33	○
70	France	26.06	23.59	0.32	○
71	Belarus	25.00	22.50	0.29	
71	Romania	25.00	22.50	0.29	
71	Sri Lanka	25.00	22.50	0.29	
74	Germany	24.50	21.98	0.28	○
75	Norway	21.07	18.44	0.27	○
76	Portugal	20.54	17.89	0.26	○
77	Bulgaria	20.00	17.33	0.22	○
77	Egypt	20.00	17.33	0.22	
77	Latvia	20.00	17.33	0.22	○
77	Lithuania	20.00	17.33	0.22	○
81	South Africa	19.88	17.21	0.21	○
82	Mexico	19.70	17.02	0.20	○
83	Estonia	19.51	16.83	0.19	○
84	Thailand	18.18	15.45	0.18	○
85	Spain	18.15	15.42	0.17	○
86	Czech Republic	17.53	14.78	0.16	○
87	Jordan (2007)	14.29	11.43	0.15	○
88	Greece	12.82	9.91	0.14	○
89	Poland	11.97	9.04	0.13	○
90	Russian Federation	11.20	8.24	0.12	○
91	Hungary	10.81	7.84	0.11	○
92	Israel	10.30	7.31	0.10	○
93	Brazil	10.07	7.07	0.09	○
94	Italy	10.01	7.01	0.08	○
95	Slovenia	9.38	6.35	0.07	○
96	India	8.59	5.55	0.06	○
97	Chile	8.00	4.93	0.05	○
98	China	6.74	3.63	0.04	○
99	Korea, Rep.	6.51	3.40	0.03	○
100	Turkey	4.50	1.31	0.02	○
101	Japan	4.08	0.88	0.01	○
102	Colombia	3.23	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Kyrgyzstan	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Macedonia, FYR	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database* (2001–11)

5.3.1 Royalty and license fees payments

Royalty and license fees, payments (per thousand GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Ireland	182.73	100.00	0.97	●
1	Singapore	71.20	100.00	0.97	●
1	Malta	20.85	100.00	0.97	●
1	Guyana	12.41	100.00	0.97	●
5	Hungary	10.62	85.62	0.97	●
6	Thailand	9.67	77.94	0.96	●
7	Korea, Rep.	8.84	71.21	0.95	
8	Hong Kong (China) (2009)	8.12	65.45	0.94	
9	Slovenia	7.73	62.27	0.93	●
10	Luxembourg	7.36	59.27	0.92	
11	Malaysia (2009)	5.87	47.30	0.91	
12	Canada	5.49	44.27	0.91	
13	Ukraine	5.39	43.46	0.90	●
14	South Africa	5.34	43.01	0.89	●
15	Finland	5.17	41.62	0.88	
16	Poland	4.79	38.58	0.87	●
17	New Zealand	4.76	38.35	0.86	
18	Netherlands	4.75	38.26	0.85	
19	Swaziland	4.41	35.53	0.84	●
20	United Kingdom	4.30	34.64	0.84	
21	Argentina	4.16	33.48	0.83	●
22	Serbia	4.10	33.06	0.82	
23	Belgium	4.07	32.78	0.81	
24	Czech Republic	4.01	32.33	0.80	
25	Germany	3.97	31.99	0.79	
26	Israel	3.95	31.84	0.78	
27	Austria	3.72	29.94	0.78	
28	Croatia	3.70	29.82	0.77	
29	Japan	3.44	27.69	0.76	
30	Russian Federation	3.42	27.57	0.75	
31	Italy	3.40	27.38	0.74	
32	Estonia	3.12	25.09	0.73	
33	Sweden	3.01	24.27	0.72	
34	Australia (2008)	2.85	22.97	0.72	
35	Jamaica	2.72	21.87	0.71	●
36	Romania	2.65	21.32	0.70	
37	Chile	2.44	19.66	0.69	
38	Bulgaria	2.40	19.33	0.68	
39	Portugal	2.39	19.24	0.67	
40	United States of America	2.30	18.54	0.66	
41	Indonesia	2.29	18.41	0.66	●
42	Guatemala	2.24	18.02	0.65	●
43	Philippines	2.23	17.95	0.64	
44	China	2.22	17.86	0.63	
45	Moldova, Rep.	2.18	17.58	0.62	
46	France	2.17	17.46	0.61	
47	Greece	2.05	16.53	0.60	
48	Honduras	1.98	15.93	0.59	●
49	Macedonia, FYR	1.93	15.51	0.59	
50	Spain	1.88	15.12	0.58	
51	Belarus	1.84	14.78	0.57	
52	Madagascar (2005)	1.80	14.52	0.56	
53	Costa Rica	1.78	14.30	0.55	
54	Panama	1.73	13.90	0.54	
55	Slovakia	1.68	13.53	0.53	
56	India	1.49	12.01	0.53	
57	El Salvador	1.48	11.94	0.52	
58	Togo (2009)	1.48	11.92	0.51	
59	Lesotho	1.47	11.82	0.50	
60	Brazil	1.36	10.96	0.49	
61	Latvia	1.36	10.92	0.48	
62	Cyprus	1.33	10.71	0.47	
63	Norway	1.30	10.43	0.47	○
64	Peru	1.28	10.29	0.46	
65	Colombia	1.25	10.07	0.45	
66	Mauritius	1.24	9.98	0.44	
67	Dominican Republic	1.22	9.78	0.43	
68	Venezuela, Bolivarian Rep.	1.16	9.32	0.42	
69	Turkey	1.11	8.92	0.41	
70	Nigeria	1.11	8.89	0.41	
71	Egypt	1.03	8.31	0.40	
72	Albania	1.03	8.27	0.39	
73	Bolivia, Plurinational St.	1.00	8.03	0.38	
74	Belize	0.99	7.93	0.37	
75	Lithuania	0.96	7.69	0.36	
76	Senegal (2009)	0.95	7.61	0.35	
77	Ecuador	0.93	7.49	0.34	
78	Côte d'Ivoire (2008)	0.90	7.23	0.34	
79	Botswana	0.77	6.16	0.33	
80	Brunei Darussalam (2009)	0.71	5.66	0.32	
81	Pakistan	0.70	5.62	0.31	
82	Namibia	0.65	5.22	0.30	
83	Georgia	0.63	5.09	0.29	
84	Syrian Arab Rep.	0.62	4.94	0.28	
85	Kazakhstan	0.58	4.63	0.28	
86	Kyrgyzstan	0.56	4.49	0.27	
87	Kenya	0.55	4.44	0.26	
88	Cambodia	0.54	4.33	0.25	
89	Mexico (2006)	0.53	4.23	0.24	○
90	Cameroon	0.51	4.12	0.23	
91	Benin (2009)	0.45	3.61	0.22	
92	Mozambique	0.45	3.57	0.22	
93	Mongolia	0.41	3.32	0.21	
94	Uruguay	0.41	3.30	0.20	
95	Niger (2009)	0.38	3.02	0.19	
96	Tunisia	0.34	2.73	0.18	○
97	Morocco	0.33	2.66	0.17	○
98	Bosnia and Herzegovina	0.33	2.64	0.16	○
99	Lebanon	0.32	2.52	0.16	○
100	Azerbaijan	0.30	2.42	0.15	
101	Mali (2009)	0.29	2.32	0.14	
102	Fiji	0.29	2.27	0.13	○
103	Iceland (2008)	0.26	2.09	0.12	○
104	Uganda	0.26	2.04	0.11	
105	Bangladesh	0.23	1.83	0.10	
106	Sudan	0.17	1.37	0.09	
107	Yemen	0.15	1.21	0.09	
108	Paraguay	0.14	1.07	0.08	○
109	Algeria (2009)	0.12	0.95	0.07	
110	Malawi (2009)	0.09	0.66	0.06	○
111	Angola	0.08	0.60	0.05	
112	Burkina Faso (2009)	0.06	0.47	0.04	
113	Ethiopia	0.03	0.24	0.03	
114	Zambia	0.03	0.22	0.03	○
115	Tanzania, United Rep.	0.01	0.07	0.02	○
116	Tajikistan	0.01	0.03	0.01	○
117	Rwanda	0.00	0.00	0.00	○
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2005–10)

5.3.2 High-tech imports

High-tech net imports (% of total net imports) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Hong Kong (China)	43.49	100.00	0.99	●
1	Malaysia	32.66	100.00	0.99	●
3	Singapore	32.60	99.82	0.98	
4	China	25.57	76.57	0.98	●
5	Malta	23.53	69.84	0.97	●
6	Panama	20.63	60.24	0.96	●
7	Costa Rica	20.45	59.64	0.95	●
8	Ireland	20.44	59.60	0.94	
9	Mexico	19.42	56.23	0.93	●
10	Paraguay (2011)	19.00	54.86	0.93	●
11	Czech Republic	18.94	54.66	0.92	●
12	Hungary (2011)	18.28	52.47	0.91	
13	Colombia (2011)	17.47	49.78	0.90	●
14	Thailand	17.46	49.74	0.89	●
15	United States of America	17.35	49.38	0.88	
16	Netherlands	16.51	46.62	0.88	
17	Switzerland	15.85	44.43	0.87	
18	Korea, Rep. (2011)	15.63	43.70	0.86	
19	Germany	15.10	41.96	0.85	
20	Argentina	15.01	41.66	0.84	●
21	Sweden	14.85	41.13	0.83	
22	France	14.77	40.86	0.83	
23	Brazil (2011)	14.33	39.40	0.82	●
24	Estonia (2011)	14.33	39.40	0.81	
25	Australia	13.94	38.13	0.80	
26	Japan (2011)	13.87	37.88	0.79	
27	Kenya	13.78	37.58	0.78	●
28	South Africa	13.39	36.29	0.78	
29	United Kingdom (2011)	13.09	35.31	0.77	
30	New Zealand	12.69	34.00	0.76	
31	Canada (2011)	12.60	33.67	0.75	
32	Norway	12.01	31.76	0.74	
33	Israel	11.90	31.38	0.73	
34	Poland	11.69	30.68	0.73	
35	Denmark	11.65	30.57	0.72	
36	Rwanda (2011)	11.64	30.52	0.71	●
37	Indonesia	11.54	30.18	0.70	●
38	Ghana	11.48	29.99	0.69	●
39	Saudi Arabia	11.44	29.84	0.68	
40	Finland	11.37	29.62	0.68	
41	Viet Nam (2009)	11.20	29.05	0.67	
42	Italy	11.02	28.47	0.66	
43	Luxembourg (2011)	10.95	28.24	0.65	
44	Austria	10.79	27.71	0.64	
45	Romania (2011)	10.79	27.69	0.63	
46	Russian Federation	10.68	27.34	0.63	
47	Slovakia	10.64	27.20	0.62	
48	Cyprus	10.42	26.50	0.61	
49	Uganda	10.34	26.21	0.60	●
50	Bolivia, Plurinational St.	10.22	25.82	0.59	●
51	Uruguay (2009)	10.21	25.80	0.58	
52	Malawi	9.94	24.89	0.58	●
53	Turkey	9.90	24.77	0.57	
54	Peru	9.69	24.08	0.56	
55	Algeria	9.60	23.79	0.55	
56	Ecuador (2011)	9.46	23.30	0.54	
57	Spain	9.43	23.20	0.53	
58	Tunisia	8.96	21.64	0.53	
59	Chile	8.92	21.52	0.52	
60	Guatemala	8.91	21.48	0.51	
61	Greece	8.85	21.29	0.50	
62	Honduras (2009)	8.81	21.18	0.49	
63	Burundi	8.54	20.27	0.48	●
64	Belgium	8.32	19.53	0.48	○
65	India	8.31	19.50	0.47	
66	El Salvador	8.28	19.40	0.46	
67	Sudan (2009)	8.25	19.32	0.45	●
68	Kazakhstan (2009)	8.16	19.00	0.44	
69	Tanzania, United Rep. (2011)	8.15	18.99	0.43	
70	Azerbaijan	8.08	18.76	0.43	
71	Nicaragua	8.04	18.61	0.42	
72	Iceland	7.94	18.27	0.41	
73	Portugal	7.93	18.26	0.40	
74	Nepal	7.79	17.80	0.39	
75	Bahrain (2011)	7.67	17.40	0.38	
76	Croatia (2011)	7.51	16.85	0.38	
77	Bulgaria	7.48	16.75	0.37	
78	Nigeria	7.41	16.55	0.36	
79	Moldova, Rep.	7.33	16.27	0.35	
80	United Arab Emirates (2008)	7.26	16.05	0.34	
81	Latvia (2011)	7.24	15.98	0.33	○
82	Trinidad and Tobago	7.21	15.89	0.33	
83	Madagascar	7.00	15.19	0.32	
84	Serbia	6.92	14.93	0.31	
85	Slovenia (2011)	6.70	14.19	0.30	
86	Armenia (2011)	6.63	13.94	0.29	
87	Georgia	6.58	13.80	0.28	
88	Pakistan	6.27	12.77	0.28	
89	Dominican Republic	6.24	12.65	0.27	
90	Macedonia, FYR (2011)	6.10	12.21	0.26	
91	Mauritius	6.04	11.99	0.25	○
92	Mongolia (2007)	5.83	11.31	0.24	
93	Belize	5.74	11.01	0.23	
94	Côte d'Ivoire	5.74	11.00	0.23	
95	Egypt	5.38	9.84	0.22	
96	Bosnia and Herzegovina	5.31	9.60	0.21	
97	Ethiopia (2011)	5.25	9.39	0.20	
98	Montenegro	5.22	9.28	0.19	○
99	Togo (2011)	5.18	9.17	0.18	
100	Fiji	5.14	9.02	0.18	○
101	Jordan (2011)	5.07	8.79	0.17	○
102	Sri Lanka	4.98	8.51	0.16	
103	Lithuania	4.96	8.44	0.15	○
104	Namibia (2008)	4.95	8.41	0.14	○
105	Oman	4.88	8.18	0.13	○
106	Burkina Faso	4.83	8.00	0.13	
107	Jamaica	4.75	7.74	0.12	○
108	Albania	4.71	7.59	0.11	
109	Belarus	4.70	7.59	0.10	○
110	Kyrgyzstan	4.67	7.47	0.09	
111	Zambia	4.50	6.92	0.08	
112	Zimbabwe	4.48	6.86	0.08	
113	Guyana	4.48	6.84	0.07	○
114	Senegal (2011)	4.47	6.83	0.06	○
115	Mali	4.22	6.00	0.05	○
116	Cambodia	4.05	5.41	0.04	○
117	Lebanon	4.02	5.34	0.03	○
118	Yemen (2009)	3.76	4.46	0.03	
119	Niger	3.70	4.27	0.02	
120	Gambia	2.60	0.63	0.01	○
121	Syrian Arab Rep. (2008)	2.41	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Ukraine	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: United Nations, *COMTRADE* database; Eurostat *'High-technology' aggregations based on SITC Rev. 4*, April 2009 (2007–11)

5.3.3 Computer and communications service imports

Computer, communications, and other services (% of commercial service imports) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Ireland	75.55	100.00	1.00	●
2	Angola	72.20	95.47	0.99	●
3	Algeria	67.40	88.98	0.98	●
4	Finland	65.17	85.97	0.98	
5	Malta	64.93	85.63	0.97	●
6	Kazakhstan	63.42	83.60	0.96	●
7	Hungary (2010)	61.26	80.68	0.95	●
8	Azerbaijan	61.07	80.42	0.95	●
9	Sweden	56.45	74.18	0.94	
10	Lebanon	55.93	73.47	0.93	●
11	Croatia	52.37	68.66	0.92	●
12	Netherlands	51.44	67.40	0.92	
13	Spain	51.09	66.94	0.91	●
14	Romania	50.99	66.79	0.90	●
15	Korea, Rep.	49.77	65.14	0.89	
16	Japan	49.68	65.03	0.89	
17	Brazil	49.42	64.68	0.88	●
18	Czech Republic (2010)	48.83	63.88	0.87	
19	Israel	48.12	62.92	0.86	
20	Swaziland	47.69	62.33	0.86	●
21	Belgium	46.93	61.31	0.85	
22	Slovenia (2010)	46.37	60.55	0.84	
23	Poland (2010)	45.91	59.93	0.83	●
24	Macedonia, FYR	45.04	58.74	0.83	●
25	Russian Federation	44.65	58.22	0.82	
26	Italy	44.01	57.36	0.81	
27	Singapore	43.98	57.32	0.80	
28	United Kingdom	43.78	57.05	0.80	
29	Germany	43.55	56.74	0.79	
30	Switzerland	43.55	56.73	0.78	
31	Guyana	42.14	54.83	0.77	
32	France	41.98	54.61	0.77	
33	Mozambique	41.10	53.42	0.76	●
34	Namibia	40.87	53.11	0.75	
35	Serbia	40.43	52.52	0.74	
36	Estonia (2010)	40.35	52.40	0.74	
37	Indonesia	40.09	52.06	0.73	●
38	Portugal	40.03	51.98	0.72	
39	Iceland	39.97	51.90	0.71	
40	Mauritius	39.91	51.81	0.71	
41	Malaysia	38.31	49.65	0.70	
42	Tajikistan	38.15	49.44	0.69	●
43	Thailand	37.90	49.10	0.68	
44	Austria	37.59	48.68	0.68	
45	Jamaica (2010)	36.75	47.54	0.67	●
46	Norway	36.63	47.39	0.66	
47	Cameroon	36.45	47.14	0.65	●
48	New Zealand	36.04	46.58	0.65	
49	Gambia	36.00	46.53	0.64	●
50	Slovakia (2010)	35.34	45.64	0.63	
51	China	35.29	45.57	0.62	
52	Canada	35.27	45.55	0.62	
53	Gabon (2005)	35.23	45.49	0.61	
54	Bulgaria	34.91	45.06	0.60	
55	Denmark (2004)	34.84	44.97	0.59	○
56	Argentina	34.83	44.94	0.59	
57	United States of America	34.68	44.75	0.58	
58	Madagascar (2005)	34.66	44.72	0.57	
59	Yemen	34.65	44.71	0.56	●
60	India	34.59	44.63	0.56	
61	Latvia	34.34	44.29	0.55	
62	Oman	33.98	43.80	0.54	
63	Venezuela, Bolivarian Rep.	33.43	43.05	0.53	
64	Colombia	33.34	42.94	0.53	
65	Luxembourg	30.93	39.68	0.52	
66	Morocco	30.36	38.90	0.51	
67	Nigeria	29.98	38.39	0.50	
68	Ghana	29.58	37.85	0.50	
69	Pakistan	29.34	37.53	0.49	
70	Costa Rica	28.57	36.48	0.48	
71	Peru	27.99	35.70	0.47	
72	Côte d'Ivoire	27.21	34.65	0.47	●
73	Hong Kong (China)	27.18	34.61	0.46	○
74	Belarus	26.93	34.27	0.45	
75	Australia (2008)	26.70	33.96	0.44	
76	Cambodia	26.64	33.87	0.44	
77	Saudi Arabia	26.63	33.87	0.43	
78	Kenya	26.39	33.54	0.42	
79	South Africa	26.32	33.44	0.41	
80	Zambia	26.04	33.07	0.41	
81	Botswana	26.03	33.05	0.40	
82	Mali	25.04	31.71	0.39	
83	Ukraine	25.02	31.69	0.38	
84	Benin	24.99	31.64	0.38	
85	Honduras	24.98	31.64	0.37	
86	Bosnia and Herzegovina	24.85	31.46	0.36	
87	Egypt	24.13	30.49	0.35	
88	Greece	23.82	30.06	0.35	
89	Moldova, Rep.	23.74	29.96	0.34	
90	Tunisia	22.62	28.45	0.33	
91	Philippines	22.58	28.39	0.32	
92	Brunei Darussalam	22.39	28.13	0.32	
93	Trinidad and Tobago	22.36	28.09	0.31	
94	Ethiopia	21.79	27.33	0.30	
95	Rwanda	21.71	27.21	0.29	
96	Uruguay	21.36	26.74	0.29	
97	Senegal	20.87	26.08	0.28	
98	Mongolia	20.76	25.93	0.27	
99	Belize	20.70	25.85	0.26	
100	Lithuania	19.67	24.45	0.26	○
101	Chile	19.40	24.09	0.25	○
102	Bolivia, Plurinational St.	19.27	23.92	0.24	
103	Kyrgyzstan	19.16	23.77	0.23	
104	Ecuador	19.04	23.61	0.23	
105	Turkey	18.52	22.90	0.22	
106	Burkina Faso	18.13	22.38	0.21	
107	Lao PDR	17.68	21.77	0.20	
108	El Salvador	17.54	21.58	0.20	
109	Fiji	17.37	21.34	0.19	
110	Cyprus	16.93	20.76	0.18	○
111	Niger	16.62	20.33	0.17	
112	Togo	15.93	19.39	0.17	
113	Uganda	15.83	19.26	0.16	
114	Sri Lanka	15.22	18.45	0.15	
115	Malawi	14.89	17.99	0.14	
116	Tanzania, United Rep.	14.79	17.86	0.14	
117	Dominican Republic	13.00	15.44	0.13	○
118	Georgia	12.33	14.53	0.12	○
119	Nepal	11.58	13.51	0.11	
120	Bahrain	11.53	13.46	0.11	○
121	Panama	11.29	13.13	0.10	
122	Kuwait	11.24	13.06	0.09	○
123	Nicaragua	11.07	12.84	0.08	○
124	Lesotho	10.91	12.62	0.08	
125	Jordan	10.30	11.79	0.07	○
126	Guatemala	9.05	10.10	0.06	○
127	Albania	8.88	9.87	0.05	○
128	Armenia	8.34	9.14	0.05	○
129	Bangladesh	7.35	7.81	0.04	○
130	Syrian Arab Rep.	6.10	6.11	0.03	○
131	Burundi	5.76	5.65	0.02	○
132	Mexico	3.51	2.61	0.02	○
133	Paraguay	2.81	1.67	0.01	○
134	Sudan	1.58	0.00	0.00	○
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database; (2004–10)

5.3.4 Foreign direct investment net inflows

Foreign direct investment (FDI), net inflows (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Luxembourg	288.37	100.00	0.99	●
1	Hong Kong (China)	30.70	100.00	0.99	●
3	Mongolia	23.46	88.57	0.99	●
4	Iceland	23.46	88.56	0.98	
5	Cyprus	20.93	84.57	0.97	●
6	Singapore	18.51	80.75	0.96	
7	Montenegro	18.50	80.73	0.96	●
8	Niger	17.06	78.47	0.95	●
9	Belgium	13.38	72.66	0.94	●
10	Ireland	12.81	71.76	0.94	
11	Lebanon	12.70	71.58	0.93	●
12	Malta	12.10	70.63	0.92	
13	Madagascar	9.87	67.11	0.91	●
14	Kyrgyzstan	9.48	66.50	0.91	●
15	Albania	9.41	66.39	0.90	●
16	Panama	8.85	65.51	0.89	●
17	Guyana	8.43	64.83	0.89	●
18	Qatar (2009)	8.26	64.58	0.88	
19	Mozambique	8.23	64.52	0.87	●
20	Ghana	8.07	64.28	0.86	●
21	Estonia	8.01	64.18	0.86	
22	Nicaragua	7.75	63.77	0.85	●
23	Viet Nam	7.52	63.40	0.84	●
24	Chile	7.10	62.73	0.84	●
25	Namibia	7.05	62.66	0.83	●
26	Georgia	6.98	62.55	0.82	●
27	Cambodia	6.96	62.52	0.81	●
28	Belize	6.88	62.40	0.81	●
29	Kazakhstan	6.68	62.08	0.80	●
30	Zambia	6.43	61.68	0.79	●
31	Jordan	6.17	61.27	0.79	●
32	Armenia	6.08	61.13	0.78	●
33	Lesotho	5.49	60.20	0.77	●
34	Honduras	5.18	59.71	0.76	●
35	Saudi Arabia	4.96	59.36	0.76	
36	Uganda	4.80	59.12	0.75	●
37	Lao PDR	4.80	59.10	0.74	●
38	Ukraine	4.71	58.97	0.74	
39	Peru	4.67	58.90	0.73	●
40	Sudan	4.66	58.90	0.72	●
41	Gambia	4.63	58.85	0.71	●
42	Bulgaria	4.54	58.70	0.71	
43	Mauritius	4.43	58.53	0.70	
44	Costa Rica	4.09	57.99	0.69	
45	Fiji	4.04	57.91	0.69	●
46	Uruguay	4.04	57.91	0.68	
47	Malaysia	4.00	57.84	0.67	
48	Botswana	3.56	57.16	0.66	
49	Czech Republic	3.50	57.06	0.66	
50	Serbia	3.49	57.04	0.65	
51	Moldova, Rep.	3.35	56.81	0.64	
52	Oman (2009)	3.22	56.62	0.64	
53	Macedonia, FYR	3.22	56.61	0.63	
54	Bolivia, Plurinational St.	3.17	56.53	0.62	●
55	Tunisia	3.16	56.52	0.61	
56	Dominican Republic	3.14	56.49	0.61	●
57	Nigeria	3.12	56.46	0.60	●
58	China	3.12	56.46	0.59	
59	Brunei Darussalam (2009)	3.03	56.32	0.59	
60	Australia (2009)	2.95	56.18	0.58	
61	Egypt	2.92	56.14	0.57	
62	Russian Federation	2.90	56.10	0.56	
63	Norway	2.84	56.02	0.56	○
64	Malawi	2.74	55.86	0.55	
65	Trinidad and Tobago	2.67	55.74	0.54	
66	Belarus	2.56	55.58	0.54	
67	Swaziland	2.54	55.55	0.53	
68	Israel	2.37	55.27	0.52	
69	Colombia	2.35	55.24	0.51	
70	Syrian Arab Rep.	2.33	55.22	0.51	●
71	Paraguay	2.33	55.21	0.50	
72	Brazil	2.32	55.19	0.49	
73	Romania	2.14	54.90	0.49	
74	Uzbekistan	2.11	54.86	0.48	
75	United Kingdom	2.09	54.83	0.47	○
76	Thailand	1.98	54.66	0.46	
77	Poland	1.93	54.58	0.46	
78	Indonesia	1.88	54.50	0.45	
79	Tanzania, United Rep.	1.88	54.50	0.44	
80	Finland	1.84	54.44	0.44	○
81	Côte d'Ivoire	1.83	54.43	0.43	
82	Senegal	1.83	54.42	0.42	
83	Mexico	1.81	54.38	0.41	
84	Spain	1.75	54.30	0.41	
85	Argentina	1.72	54.24	0.40	
86	Lithuania	1.71	54.24	0.39	
87	Benin	1.67	54.17	0.39	
88	Guatemala	1.67	54.16	0.38	
89	United States of America	1.62	54.09	0.37	○
90	Jamaica	1.60	54.05	0.36	
91	Mali	1.60	54.05	0.36	
92	Latvia	1.54	53.96	0.35	○
93	Canada	1.50	53.89	0.34	○
94	Algeria	1.44	53.80	0.34	
95	Zimbabwe	1.41	53.76	0.33	
96	Germany	1.41	53.75	0.32	○
97	India	1.40	53.74	0.31	
98	Bosnia and Herzegovina	1.40	53.74	0.31	
99	Morocco	1.37	53.69	0.30	
100	United Arab Emirates	1.33	53.63	0.29	
101	France	1.32	53.61	0.29	○
102	Gabon	1.31	53.60	0.28	
103	Togo	1.30	53.59	0.27	
104	Turkey	1.26	53.53	0.26	
105	Bahrain (2009)	1.25	53.50	0.26	
106	Sweden	1.15	53.35	0.25	○
107	Pakistan	1.14	53.33	0.24	
108	Azerbaijan	1.09	53.25	0.24	
109	Kuwait (2009)	1.02	53.14	0.23	
110	Sri Lanka	0.97	53.06	0.22	
111	Bangladesh	0.96	53.05	0.21	
112	Iran, Islamic Rep. (2009)	0.91	52.97	0.21	
113	Philippines	0.86	52.89	0.20	
114	Slovenia	0.78	52.76	0.19	○
115	Rwanda	0.75	52.72	0.19	
116	Greece	0.75	52.71	0.18	
117	Portugal	0.65	52.55	0.17	○
118	Slovakia	0.63	52.53	0.16	○
119	Ethiopia	0.62	52.51	0.16	
120	Kenya	0.59	52.47	0.15	
121	Croatia	0.55	52.40	0.14	○
122	Yemen (2009)	0.49	52.31	0.14	
123	Italy	0.47	52.27	0.13	○
124	South Africa	0.43	52.21	0.12	○
125	Burkina Faso	0.42	52.20	0.11	
126	Nepal (2009)	0.30	52.00	0.11	
127	Ecuador	0.29	51.99	0.10	○
128	Tajikistan	0.28	51.97	0.09	
129	Burundi	0.05	51.61	0.09	
130	Cameroon	−0.00	51.53	0.08	
131	Korea, Rep.	−0.01	51.51	0.07	○
132	Japan	−0.02	51.49	0.06	○
133	El Salvador	−0.03	51.49	0.06	○
134	Denmark	−0.22	51.18	0.05	○
135	Venezuela, Bolivarian Rep.	−0.36	50.97	0.04	
136	New Zealand (2009)	−0.99	49.96	0.04	○
137	Switzerland	−1.18	49.67	0.03	○
138	Netherlands	−2.27	47.95	0.02	○
139	Angola	−3.82	45.49	0.01	○
140	Austria	−7.02	40.45	0.01	○
141	Hungary	−32.64	0.00	0.00	○

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2009–10)

6.1.1 National office patent applications

Number of resident patent applications at the national patent office (per billion PPP$ GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Korea, Rep.	89.90	100.00	0.97	●
1	Japan	67.09	100.00	0.97	●
1	China	28.96	100.00	0.97	●
1	Switzerland	25.60	100.00	0.97	●
5	Germany	25.27	98.71	0.96	●
6	Finland	17.95	70.10	0.95	
7	Denmark	17.20	67.14	0.94	
8	United States of America	16.66	65.03	0.94	
9	Sweden	16.15	63.06	0.93	
10	Belarus	14.22	55.51	0.92	●
11	New Zealand	13.37	52.18	0.91	
12	Russian Federation	13.01	50.75	0.90	●
13	Austria	12.45	48.58	0.89	
14	Luxembourg	12.16	47.45	0.88	
15	Moldova, Rep.	11.80	46.02	0.87	●
16	Kyrgyzstan	11.53	44.98	0.86	●
17	France	11.37	44.35	0.85	
18	Slovenia	10.18	39.70	0.84	
19	Mongolia	9.93	38.72	0.83	
20	United Kingdom	9.58	37.33	0.83	
21	Iceland	9.20	35.84	0.82	
22	Netherlands	8.75	34.09	0.81	
23	Iran, Islamic Rep. (2006)	8.61	33.55	0.80	●
24	Armenia	8.38	32.65	0.79	●
25	Ukraine	8.34	32.47	0.78	●
26	Georgia	7.95	30.97	0.77	
27	Ireland	7.07	27.52	0.76	
28	Belgium	6.72	26.14	0.75	
29	Israel	6.59	25.65	0.74	
30	Latvia	6.47	25.18	0.73	
31	Norway	6.40	24.91	0.72	
32	Romania	5.48	21.29	0.72	
33	Poland	4.71	18.30	0.71	
34	Estonia	4.48	17.40	0.70	
35	Uzbekistan	4.30	16.67	0.69	●
36	Malta	4.13	16.00	0.68	
37	Hungary	3.99	15.46	0.67	
38	Czech Republic	3.94	15.28	0.66	
39	Serbia	3.82	14.83	0.65	
40	Spain	3.64	14.12	0.64	
41	Croatia	3.49	13.54	0.63	
42	Canada	3.41	13.21	0.62	
43	Montenegro	3.41	13.20	0.61	
44	Singapore	3.06	11.82	0.61	
45	Malaysia	2.96	11.44	0.60	
46	Australia	2.73	10.53	0.59	
47	Bulgaria	2.60	10.02	0.58	
48	Greece	2.55	9.84	0.57	
49	Portugal	2.34	9.03	0.56	
50	Italy	2.30	8.85	0.55	
51	Slovakia	2.14	8.24	0.54	
52	Sri Lanka	2.13	8.21	0.53	
53	Lithuania	2.06	7.93	0.52	
54	Thailand	2.06	7.93	0.51	
55	India (2009)	1.99	7.66	0.50	
56	Bosnia and Herzegovina	1.84	7.06	0.50	
57	Macedonia, FYR (2008)	1.73	6.63	0.49	
58	Argentina	1.72	6.59	0.48	
59	Cyprus	1.68	6.42	0.47	
60	South Africa	1.56	5.97	0.46	
61	Syrian Arab Rep. (2006)	1.50	5.71	0.45	
62	Jordan	1.28	4.86	0.44	
63	Chile	1.27	4.83	0.43	
64	Brazil	1.24	4.72	0.42	
65	Egypt	1.21	4.61	0.41	
66	Kenya	1.16	4.39	0.40	
67	Viet Nam	1.10	4.18	0.39	
68	Mozambique (2007)	1.05	3.95	0.39	
69	Morocco	1.00	3.76	0.38	
70	Jamaica (2006)	0.91	3.44	0.37	
71	Tunisia (2005)	0.78	2.91	0.36	
72	Niger (2005)	0.77	2.86	0.35	
73	Benin (2005)	0.67	2.48	0.34	
74	Tajikistan	0.61	2.25	0.33	
75	Mexico	0.61	2.24	0.32	
76	Zambia (2001)	0.59	2.16	0.31	
77	Cameroon (2005)	0.57	2.11	0.30	
78	Paraguay	0.54	1.98	0.29	
79	Uruguay	0.48	1.73	0.28	
80	Saudi Arabia	0.46	1.67	0.28	
81	Madagascar	0.45	1.63	0.27	
82	Philippines	0.45	1.63	0.26	
83	Belize (2006)	0.43	1.56	0.25	
84	Togo (2005)	0.43	1.55	0.24	
85	Hong Kong (China)	0.41	1.45	0.23	○
86	Senegal (2005)	0.38	1.37	0.22	
87	Indonesia (2006)	0.38	1.33	0.21	
88	Dominican Republic	0.35	1.25	0.20	
89	Honduras (2002)	0.33	1.16	0.19	
90	Yemen	0.31	1.10	0.18	
91	Colombia	0.30	1.06	0.17	○
92	Algeria	0.30	1.05	0.17	
93	Turkey	0.29	1.01	0.16	○
94	Bangladesh	0.25	0.86	0.15	
95	Mali (2005)	0.25	0.84	0.14	
96	Côte d'Ivoire (2005)	0.23	0.78	0.13	
97	Azerbaijan	0.23	0.77	0.12	
98	Gabon (2005)	0.22	0.74	0.11	
99	Ethiopia (2007)	0.19	0.62	0.10	
100	Uganda (2007)	0.18	0.58	0.09	
101	Pakistan (2009)	0.17	0.53	0.08	
102	Costa Rica	0.16	0.47	0.07	○
103	Peru	0.14	0.42	0.06	○
104	Mauritius	0.11	0.30	0.06	○
105	Kazakhstan	0.10	0.26	0.05	○
106	Guatemala	0.10	0.25	0.04	○
107	Burkina Faso	0.10	0.25	0.03	○
108	Sudan (2007)	0.04	0.01	0.02	○
109	Trinidad and Tobago (2008)	0.04	0.01	0.01	○
110	Ecuador	0.03	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2001–10)

6.1.2 Patent Cooperation Treaty applications

Number of resident international patent applications at the Patent Cooperation Treaty (per billion PPP$ GDP) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	11.73	100.00	1.00	●
2	Finland	10.49	98.80	0.99	●
3	Sweden	9.12	97.31	0.98	●
4	Japan	8.85	96.99	0.97	●
5	Korea, Rep.	6.71	94.04	0.96	●
6	Denmark	6.28	93.32	0.95	
7	Israel	6.17	93.13	0.94	
8	Germany	6.01	92.86	0.94	●
9	Luxembourg	5.63	92.17	0.93	
10	Netherlands	4.94	90.77	0.92	
11	Austria	3.82	88.01	0.91	
12	Iceland	3.54	87.21	0.90	
13	France	3.46	86.94	0.89	
14	United States of America	3.23	86.20	0.88	
15	Belgium	2.87	84.97	0.87	
16	Norway	2.67	84.16	0.86	
17	New Zealand	2.62	83.96	0.85	
18	Ireland	2.33	82.70	0.84	
19	United Kingdom	2.15	81.86	0.83	
20	Slovenia	2.14	81.79	0.83	
21	Singapore	2.13	81.76	0.82	
22	Canada	2.10	81.61	0.81	
23	Australia	1.89	80.50	0.80	
24	Belize	1.78	79.85	0.79	
25	Malta	1.65	79.02	0.78	
26	Italy	1.46	77.71	0.77	
27	China	1.45	77.63	0.76	
28	Estonia	1.30	76.45	0.75	
29	Spain	1.22	75.79	0.74	
30	Namibia	1.16	75.21	0.73	
31	Cyprus	1.09	74.62	0.72	
32	Hungary	0.72	70.16	0.72	
33	Croatia	0.59	68.00	0.71	
34	Malaysia	0.59	67.99	0.70	
35	South Africa	0.55	67.28	0.69	
36	Czech Republic	0.55	67.18	0.68	
37	Turkey	0.51	66.44	0.67	
38	Togo (2003)	0.50	66.17	0.66	●
39	Latvia	0.49	65.96	0.65	
40	Slovakia	0.47	65.53	0.64	
41	Ukraine	0.42	64.28	0.63	
42	Chile	0.42	64.25	0.62	
43	Lithuania	0.41	63.92	0.61	
44	Russian Federation	0.41	63.88	0.61	
45	Portugal	0.39	63.40	0.60	
46	Zimbabwe	0.34	61.87	0.59	
47	Armenia	0.33	61.76	0.58	
48	Swaziland	0.33	61.58	0.57	
49	India	0.32	61.29	0.56	
50	Poland	0.31	60.96	0.55	
51	Greece	0.30	60.73	0.54	
52	Lao PDR	0.29	60.09	0.53	●
53	Montenegro	0.28	60.01	0.52	
54	Bulgaria	0.28	59.65	0.51	
55	Brazil	0.25	58.48	0.50	
56	Georgia	0.25	58.46	0.50	
57	Serbia	0.24	58.15	0.49	
58	Ecuador	0.22	56.96	0.48	
59	Bosnia and Herzegovina	0.19	55.46	0.47	
60	United Arab Emirates	0.15	52.84	0.46	
61	Mexico	0.14	51.85	0.45	
62	Kenya	0.13	50.88	0.44	
63	Gabon	0.12	50.67	0.43	
64	Colombia	0.12	50.53	0.42	
65	Thailand	0.11	48.92	0.41	
66	Morocco	0.10	48.73	0.40	
67	Sri Lanka	0.10	48.72	0.39	
68	Belarus	0.10	48.17	0.39	
69	Macedonia, FYR (2010)	0.10	48.09	0.38	
70	Niger (2009)	0.10	48.03	0.37	
71	Madagascar	0.10	47.90	0.36	
72	Mali (2004)	0.09	47.24	0.35	
73	Moldova, Rep. (2010)	0.09	47.12	0.34	
74	Kazakhstan	0.09	46.82	0.33	
75	Mongolia	0.08	45.53	0.32	
76	Senegal	0.08	45.42	0.31	
77	Tunisia	0.08	45.41	0.30	
78	Benin (2008)	0.08	45.20	0.29	
79	Kyrgyzstan	0.08	45.01	0.28	
80	Romania	0.08	44.97	0.28	
81	Dominican Republic	0.06	42.99	0.27	
82	Egypt	0.06	42.93	0.26	
83	Cameroon	0.06	42.85	0.25	
84	Viet Nam	0.06	42.16	0.24	
85	Côte d'Ivoire	0.06	41.31	0.23	
86	Burkina Faso (2008)	0.06	41.22	0.22	
87	Costa Rica	0.06	41.08	0.21	
88	Nicaragua	0.05	40.68	0.20	
89	Oman (2010)	0.05	40.52	0.19	○
90	Zambia (2010)	0.05	39.80	0.18	
91	Syrian Arab Rep.	0.05	38.90	0.17	
92	Philippines	0.05	38.70	0.17	
93	Uganda	0.04	38.07	0.16	
94	Azerbaijan	0.04	37.89	0.15	
95	Albania (2010)	0.04	37.54	0.14	
96	Trinidad and Tobago (2010)	0.04	36.42	0.13	○
97	Botswana (2010)	0.04	35.51	0.12	○
98	Bahrain (2010)	0.03	34.54	0.11	○
99	Honduras (2009)	0.03	33.33	0.10	○
100	Guatemala (2010)	0.03	32.11	0.09	
101	Ghana	0.03	31.19	0.08	○
102	El Salvador	0.02	28.30	0.07	○
103	Sudan	0.02	26.89	0.06	
104	Peru	0.02	26.40	0.06	○
105	Tanzania, United Rep. (2008)	0.02	26.24	0.05	
106	Algeria	0.02	20.77	0.04	○
107	Nigeria	0.01	14.57	0.03	○
108	Indonesia	0.01	13.22	0.02	○
109	Uzbekistan	0.01	9.75	0.01	○
110	Angola (2010)	0.01	0.00	0.00	○
n/a	Argentina	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2003–11)

6.1.3 National office utility model applications

Number of resident utility model applications at the national patent office (per billion PPP$ GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	China	40.24	100.00	0.95	●
1	Ukraine	34.35	100.00	0.95	●
1	Moldova, Rep.	19.06	100.00	0.95	●
1	Mongolia	11.47	100.00	0.95	●
5	Tajikistan	9.94	86.63	0.93	●
6	Korea, Rep.	9.00	78.39	0.92	
7	Belarus	7.84	68.23	0.90	●
8	Estonia	6.38	55.47	0.89	
9	Czech Republic	5.88	51.11	0.87	
10	Russian Federation	5.27	45.75	0.85	●
11	Germany	4.65	40.33	0.84	
12	Turkey (2009)	3.23	27.91	0.82	●
13	Finland (2006)	2.86	24.63	0.80	
14	Georgia	2.75	23.73	0.79	
15	Slovakia	2.54	21.84	0.77	
16	Armenia	2.44	20.95	0.75	
17	Thailand	2.20	18.83	0.74	
18	Austria	2.03	17.41	0.72	
19	Uzbekistan	1.90	16.29	0.70	●
20	Spain	1.83	15.66	0.69	
21	Bulgaria	1.70	14.50	0.67	
22	Philippines	1.60	13.61	0.66	
23	Japan	1.59	13.57	0.64	
24	Hungary	1.33	11.26	0.62	
25	Serbia	1.28	10.81	0.61	
26	Australia	1.27	10.77	0.59	
27	Croatia	1.23	10.41	0.57	
28	Poland	1.22	10.26	0.56	
29	Italy (2009)	1.21	10.25	0.54	
30	Hong Kong (China)	1.18	9.92	0.52	○
31	Ethiopia (2007)	1.15	9.69	0.51	●
32	Kyrgyzstan	1.00	8.33	0.49	
33	Denmark	0.98	8.21	0.48	○
34	Uruguay	0.89	7.44	0.46	
35	Brazil	0.88	7.36	0.44	
36	Viet Nam	0.78	6.40	0.43	
37	Kazakhstan	0.45	3.56	0.41	
38	Zimbabwe (2008)	0.43	3.39	0.39	
39	Colombia	0.38	2.95	0.38	
40	Portugal	0.38	2.94	0.36	○
41	Bosnia and Herzegovina (2003)	0.35	2.69	0.34	
42	Mexico	0.34	2.58	0.33	
43	Indonesia (2006)	0.32	2.38	0.31	
44	Argentina	0.29	2.18	0.30	
45	Kenya (2003)	0.28	2.06	0.28	
46	Peru	0.27	1.99	0.26	
47	Romania	0.24	1.71	0.25	
48	Chile	0.21	1.48	0.23	○
49	Panama (2008)	0.20	1.40	0.21	
50	Honduras (2003)	0.18	1.17	0.20	
51	Slovenia	0.16	1.01	0.18	○
52	Ecuador	0.16	0.98	0.16	
53	Burkina Faso	0.15	0.90	0.15	
54	Guatemala	0.14	0.86	0.13	
55	Costa Rica	0.14	0.81	0.11	○
56	Mozambique (2007)	0.12	0.63	0.10	
57	Azerbaijan (2008)	0.12	0.63	0.08	○
58	Trinidad and Tobago (2003)	0.11	0.60	0.07	○
59	France (2009)	0.09	0.44	0.05	○
60	Malaysia (2008)	0.09	0.36	0.03	○
61	Greece	0.08	0.28	0.02	○
62	Albania (2009)	0.04	0.00	0.00	○
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Ireland	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Lithuania	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Macedonia, FYR	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Norway	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Singapore	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Sweden	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	United Kingdom	n/a	n/a	n/a	
n/a	United States of America	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2003–10)

6.1.4 Scientific and technical journal articles

Number of scientific and technical journal articles (per billion PPP$ GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Israel	30.40	100.00	1.00	●
2	Switzerland	30.11	99.06	0.99	●
3	Sweden	28.44	93.54	0.99	●
4	New Zealand	27.66	90.97	0.98	●
5	Finland	27.64	90.92	0.97	
6	Denmark	27.07	89.05	0.96	●
7	Canada	22.71	74.65	0.96	
8	Netherlands	22.45	73.80	0.95	
9	Slovenia	22.30	73.31	0.94	●
10	Australia	22.24	73.11	0.94	●
11	Estonia	21.82	71.73	0.93	●
12	United Kingdom	21.45	70.52	0.92	
13	Iceland	21.34	70.16	0.91	
14	Belgium	18.82	61.85	0.91	
15	Norway	17.67	58.06	0.90	
16	Portugal	17.22	56.55	0.89	●
17	Singapore	16.56	54.38	0.88	
18	Korea, Rep.	16.31	53.57	0.88	
19	Germany	16.01	52.58	0.87	
20	Ireland	15.96	52.43	0.86	
21	Spain	15.85	52.05	0.86	
22	Serbia	15.79	51.86	0.85	●
23	Czech Republic	15.58	51.17	0.84	
24	Italy	15.41	50.60	0.83	
25	France	15.25	50.07	0.83	
26	Austria	14.97	49.14	0.82	
27	United States of America	14.97	49.13	0.81	
28	Greece	14.82	48.65	0.81	
29	Croatia	14.79	48.54	0.80	
30	Hungary	13.01	42.68	0.79	
31	Japan	12.07	39.59	0.78	
32	Zimbabwe	11.29	37.03	0.78	●
33	Jordan	11.23	36.83	0.77	
34	Tunisia	10.69	35.05	0.76	●
35	Poland	10.68	35.01	0.76	
36	Armenia	10.08	33.02	0.75	
37	Turkey	9.44	30.94	0.74	●
38	Slovakia	8.73	28.59	0.73	
39	Cyprus	8.58	28.08	0.73	
40	China	8.16	26.71	0.72	
41	Fiji	7.86	25.72	0.71	●
42	Moldova, Rep.	7.83	25.62	0.71	
43	Chile	7.69	25.14	0.70	
44	Bulgaria	7.67	25.10	0.69	
45	Iran, Islamic Rep.	7.42	24.27	0.68	●
46	Lithuania	7.00	22.88	0.68	
47	Russian Federation	6.61	21.59	0.67	
48	Argentina	6.26	20.45	0.66	
49	Georgia	6.15	20.07	0.65	
50	Brazil	6.14	20.05	0.65	
51	Gambia	5.95	19.42	0.64	●
52	South Africa	5.67	18.48	0.63	
53	Ukraine	5.63	18.37	0.63	
54	Uruguay	5.61	18.31	0.62	
55	India	5.47	17.82	0.61	
56	Romania	5.35	17.45	0.60	
57	Latvia	5.00	16.27	0.60	
58	Egypt	4.79	15.59	0.59	●
59	Lebanon	4.68	15.23	0.58	
60	Kenya	4.66	15.15	0.58	
61	Malawi	4.38	14.26	0.57	●
62	Mongolia	4.06	13.19	0.56	
63	Malta	3.82	12.41	0.55	
64	Thailand	3.76	12.21	0.55	
65	Uganda	3.60	11.68	0.54	
66	Benin	3.55	11.50	0.53	●
67	Malaysia	3.52	11.40	0.53	
68	Luxembourg	3.47	11.25	0.52	
69	Cameroon	3.40	11.01	0.51	●
70	Belarus	3.14	10.17	0.50	
71	Macedonia, FYR	2.90	9.38	0.50	
72	Mexico	2.81	9.08	0.49	
73	Tanzania, United Rep.	2.79	9.01	0.48	
74	Morocco	2.68	8.65	0.47	
75	Burkina Faso	2.67	8.59	0.47	
76	Algeria	2.52	8.10	0.46	
77	Senegal	2.48	7.97	0.45	
78	Pakistan	2.34	7.53	0.45	
79	Ethiopia	2.22	7.11	0.44	
80	Jamaica	2.14	6.85	0.43	
81	Bosnia and Herzegovina	2.13	6.84	0.42	
82	Costa Rica	2.02	6.46	0.42	
83	Zambia	1.89	6.03	0.41	
84	Trinidad and Tobago	1.84	5.88	0.40	
85	Madagascar	1.78	5.66	0.40	
86	Panama	1.77	5.65	0.39	
87	Uzbekistan	1.77	5.65	0.38	
88	Azerbaijan	1.76	5.61	0.37	
89	Botswana	1.75	5.58	0.37	
90	Ghana	1.71	5.45	0.36	
91	Nepal	1.65	5.25	0.35	
92	Kuwait	1.61	5.13	0.35	
93	Montenegro	1.61	5.10	0.34	
94	Oman	1.58	5.02	0.33	
95	Mali	1.57	4.98	0.32	
96	Côte d'Ivoire	1.56	4.96	0.32	
97	Niger	1.54	4.88	0.31	
98	Colombia	1.47	4.65	0.30	
99	Mozambique	1.42	4.47	0.29	
100	Sri Lanka	1.40	4.41	0.29	
101	Nigeria	1.34	4.21	0.28	
102	Kyrgyzstan	1.28	4.01	0.27	
103	Swaziland	1.27	4.00	0.27	
104	Viet Nam	1.27	3.99	0.26	
105	Bahrain	1.26	3.97	0.25	
106	Mauritius	1.25	3.91	0.24	○
107	Saudi Arabia	1.20	3.76	0.24	
108	Togo	1.17	3.66	0.23	
109	United Arab Emirates	1.12	3.49	0.22	○
110	Bangladesh	1.07	3.34	0.22	
111	Lesotho	1.07	3.33	0.21	
112	Rwanda	1.03	3.21	0.20	
113	Venezuela, Bolivarian Rep.	1.00	3.11	0.19	
114	Bolivia, Plurinational St.	0.99	3.07	0.19	
115	Namibia	0.98	3.04	0.18	
116	Cambodia	0.95	2.95	0.17	
117	Tajikistan	0.87	2.69	0.17	
118	Gabon	0.85	2.62	0.16	
119	Lao PDR	0.84	2.59	0.15	
120	Burundi	0.80	2.45	0.14	
121	Belize	0.78	2.36	0.14	
122	Nicaragua	0.71	2.15	0.13	
123	Sudan	0.71	2.15	0.12	
124	Syrian Arab Rep.	0.69	2.09	0.12	
125	Philippines	0.66	1.98	0.11	
126	Peru	0.63	1.89	0.10	○
127	Ecuador	0.61	1.82	0.09	○
128	Brunei Darussalam	0.55	1.60	0.09	○
129	Guyana	0.54	1.60	0.08	○
130	Kazakhstan	0.54	1.59	0.07	○
131	Qatar	0.51	1.47	0.06	○
132	Yemen	0.44	1.24	0.06	
133	Paraguay	0.39	1.08	0.05	○
134	Albania	0.35	0.96	0.04	○
135	Guatemala	0.33	0.88	0.04	○
136	Indonesia	0.27	0.70	0.03	○
137	Honduras	0.19	0.43	0.02	○
138	El Salvador	0.13	0.24	0.01	○
139	Dominican Republic	0.08	0.06	0.01	○
140	Angola	0.06	0.00	0.00	○
n/a	Hong Kong (China)	n/a	n/a	n/a	

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent BoardTM, special tabulations (2011) from Thomson Reuters, SCI and SSCI; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database

6.2.1 Growth rate of GDP per person engaged

Growth rate of GDP per person engaged (constant 1990 US$ at PPP, 2009 to 2010) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Qatar	14.83	100.00	1.00	●
2	Singapore	13.57	93.78	0.99	
3	China	9.12	71.97	0.98	●
4	Estonia	8.62	69.48	0.97	●
5	Uruguay	7.60	64.47	0.97	●
6	Lithuania	7.33	63.18	0.96	●
7	Belarus	7.02	61.64	0.95	●
8	Montenegro	6.57	59.41	0.93	●
8	Serbia	6.57	59.41	0.93	●
10	Peru	6.09	57.09	0.92	●
11	Sri Lanka	5.91	56.20	0.91	●
12	Slovakia	5.77	55.49	0.91	●
13	Thailand	5.72	55.26	0.90	●
14	India	5.55	54.44	0.89	●
15	Zimbabwe	5.55	54.42	0.88	●
16	Bulgaria	5.43	53.82	0.87	●
17	Uzbekistan	5.36	53.51	0.86	●
18	Hong Kong (China)	5.13	52.37	0.85	
19	Georgia	5.09	52.15	0.84	●
20	Korea, Rep.	4.92	51.31	0.84	
21	Latvia	4.88	51.12	0.83	
22	Nigeria	4.86	51.05	0.82	●
23	Ethiopia	4.85	50.98	0.81	●
24	Malaysia	4.65	49.99	0.80	
25	Philippines	4.61	49.80	0.79	●
26	Argentina	4.37	48.61	0.78	
27	Viet Nam	4.32	48.36	0.78	
28	Mozambique	4.23	47.92	0.77	●
29	Yemen	4.21	47.86	0.76	●
30	Kazakhstan	4.13	47.43	0.75	
31	Brazil	4.10	47.28	0.74	
32	Denmark	3.98	46.72	0.73	
33	Chile	3.96	46.60	0.72	
34	Ukraine	3.96	46.60	0.72	
35	Japan	3.88	46.20	0.71	
36	Indonesia	3.87	46.15	0.70	●
37	Zambia	3.72	45.44	0.69	●
38	Czech Republic	3.71	45.38	0.68	
39	Ireland	3.57	44.68	0.67	
40	Slovenia	3.50	44.34	0.66	
41	Tanzania, United Rep.	3.48	44.25	0.66	●
42	United States of America	3.46	44.16	0.65	
43	Dominican Republic	3.44	44.08	0.64	●
44	Bangladesh	3.43	44.03	0.63	●
45	Angola	3.43	44.01	0.62	●
46	Sweden	3.24	43.08	0.61	
47	Russian Federation	3.19	42.85	0.60	
48	Mexico	3.19	42.84	0.59	
49	Germany	3.09	42.34	0.59	
50	Finland	2.99	41.87	0.58	
51	Croatia	2.97	41.77	0.57	
52	Egypt	2.93	41.55	0.56	
53	Malawi	2.89	41.38	0.55	●
54	Armenia	2.89	41.36	0.54	
55	Colombia	2.77	40.75	0.53	
56	Moldova, Rep.	2.70	40.41	0.53	
57	Tajikistan	2.69	40.35	0.52	
58	Portugal	2.67	40.28	0.51	
59	Poland	2.54	39.62	0.50	
60	Uganda	2.38	38.87	0.49	
61	Netherlands	2.35	38.73	0.48	○
62	Azerbaijan	2.32	38.58	0.47	
63	Morocco	2.27	38.34	0.47	
64	Ghana	2.26	38.27	0.46	
65	Sudan	2.24	38.16	0.45	
66	Mali	2.20	37.98	0.44	
67	Turkey	2.19	37.91	0.43	
68	Bahrain	2.11	37.54	0.42	
69	Cambodia	2.10	37.48	0.41	
70	Tunisia	2.09	37.43	0.41	
71	Switzerland	2.07	37.33	0.40	○
72	South Africa	2.03	37.14	0.39	
73	Syrian Arab Rep.	1.99	36.93	0.38	
74	Luxembourg	1.97	36.83	0.37	○
75	Oman	1.96	36.77	0.36	
76	Pakistan	1.94	36.68	0.35	
77	Spain	1.81	36.08	0.34	○
78	Costa Rica	1.79	35.97	0.34	
79	United Kingdom	1.75	35.75	0.33	○
80	New Zealand	1.64	35.22	0.32	○
81	Albania	1.64	35.20	0.31	
82	Belgium	1.59	34.99	0.30	○
83	France	1.59	34.98	0.29	○
84	Bolivia, Plurinational St.	1.56	34.81	0.28	
85	Algeria	1.46	34.34	0.28	
86	Kenya	1.45	34.29	0.27	
87	Trinidad and Tobago	1.43	34.19	0.26	
88	Hungary	1.42	34.13	0.25	○
89	Italy	1.41	34.09	0.24	○
90	Austria	1.30	33.57	0.23	○
91	Canada	1.27	33.41	0.22	○
92	Cyprus	1.26	33.36	0.22	○
93	Australia	0.96	31.88	0.21	○
94	Burkina Faso	0.86	31.39	0.20	
95	Senegal	0.84	31.29	0.19	
96	Ecuador	0.77	30.94	0.18	
97	Saudi Arabia	0.69	30.56	0.17	○
98	Jordan	0.68	30.50	0.16	○
99	Malta	0.54	29.84	0.16	○
100	Norway	0.44	29.34	0.15	○
101	Israel	0.34	28.83	0.14	○
102	Côte d'Ivoire	0.27	28.50	0.13	
103	Macedonia, FYR	0.15	27.93	0.12	○
104	Cameroon	0.03	27.34	0.11	
105	Bosnia and Herzegovina	–0.18	26.29	0.10	○
106	Niger	–0.20	26.21	0.09	
107	Iran, Islamic Rep.	–0.64	24.01	0.09	
108	Guatemala	–0.82	23.16	0.08	
109	Romania	–1.13	21.62	0.07	○
110	United Arab Emirates	–1.43	20.17	0.06	○
111	Kuwait	–1.45	20.03	0.05	○
112	Greece	–1.54	19.61	0.04	○
113	Jamaica	–1.72	18.74	0.03	○
114	Iceland	–2.87	13.05	0.03	○
115	Venezuela, Bolivarian Rep.	–3.44	10.26	0.02	○
116	Madagascar	–5.29	1.20	0.01	○
117	Kyrgyzstan	–5.53	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	

SOURCE: International Labour Organization, *LABORSTA Database of Labor Statistics*

6.2.2 New business density

New business density (new registrations per thousand population 15–64 years old)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Cyprus	20.30	100.00	0.97	●	
1	Hong Kong (China)	19.19	100.00	0.97	●	
1	New Zealand	17.08	100.00	0.97	●	
1	Iceland	12.84	100.00	0.97	●	
5	Malta	9.52	74.14	0.96	●	
6	Costa Rica	8.78	68.34	0.95	●	
7	Estonia (2007)	8.10	63.09	0.94	●	
8	United Kingdom	8.05	62.66	0.93		
9	Canada	7.56	58.86	0.92		
10	Singapore	7.40	57.59	0.91		
11	Luxembourg (2007)	7.38	57.45	0.90		
12	Mauritius	7.33	57.05	0.89	●	
13	Bulgaria	7.20	56.08	0.88	●	
14	Australia (2007)	6.38	49.70	0.87		
15	Hungary	6.26	48.74	0.86		
16	Macedonia, FYR	5.63	43.84	0.85	●	
17	Switzerland	4.88	37.97	0.84		
18	Ireland	4.67	36.39	0.83		
19	Latvia	4.62	35.94	0.82		
20	Denmark	4.57	35.55	0.81		
21	Norway (2008)	4.49	34.93	0.80		
22	Israel (2008)	4.46	34.74	0.79		
23	Belgium	4.28	33.33	0.78		
24	Gabon	4.27	33.24	0.77	●	
25	Slovenia	4.16	32.38	0.76		
26	Sweden	4.09	31.80	0.75		
27	Slovakia	4.04	31.43	0.74		
28	Portugal	3.92	30.51	0.73		
29	Romania	3.66	28.48	0.72		
30	Finland	3.37	26.23	0.71		
31	Netherlands	3.10	24.12	0.70		
32	France	3.08	23.94	0.69		
33	Belize	3.01	23.45	0.68		
34	Czech Republic	3.00	23.32	0.67		
35	Spain	2.92	22.73	0.66		
36	Peru	2.65	20.65	0.65		
37	Russian Federation	2.61	20.32	0.64		
38	Kazakhstan	2.59	20.13	0.63		
39	Croatia	2.57	20.03	0.62		
40	Malaysia	2.55	19.81	0.61		
41	Brazil	2.38	18.48	0.60		
42	Georgia	2.32	18.02	0.59		
43	Lithuania	2.18	16.96	0.58		
44	Dominican Republic	2.13	16.57	0.57		
45	Chile (2008)	2.12	16.46	0.56		
46	Uruguay	2.08	16.15	0.55		
47	Serbia	1.94	15.09	0.54		
48	Italy	1.78	13.83	0.53		
49	Korea, Rep. (2008)	1.72	13.39	0.52		
50	Oman	1.67	13.02	0.51		
51	Moldova, Rep.	1.32	10.26	0.50		
52	Japan (2008)	1.28	9.97	0.49		
53	Morocco	1.28	9.94	0.48		
54	Armenia	1.28	9.93	0.47		
55	Kyrgyzstan	1.26	9.78	0.46		
56	Tunisia	1.23	9.59	0.45		
57	Germany (2008)	1.19	9.24	0.44		○
58	El Salvador	1.19	9.22	0.43		
59	Greece (2007)	1.18	9.17	0.42		
60	Jamaica	1.16	9.01	0.41		
61	Colombia	1.07	8.33	0.40		
62	Azerbaijan	0.93	7.22	0.39		
63	Montenegro	0.92	7.16	0.38		
64	Zambia	0.88	6.85	0.37		
65	Turkey	0.87	6.74	0.36		
66	Kenya (2008)	0.85	6.63	0.35		
67	Albania	0.84	6.50	0.34		
68	Belarus	0.80	6.21	0.33		
69	Nigeria	0.79	6.10	0.32		
70	Uzbekistan	0.78	6.05	0.31		
71	South Africa	0.77	5.94	0.30		
72	Jordan	0.74	5.70	0.29		
73	Uganda	0.72	5.58	0.28		
74	Ghana (2007)	0.72	5.55	0.27		
75	Guatemala	0.68	5.28	0.26		
76	Mexico	0.61	4.75	0.25		○
77	Ukraine	0.60	4.65	0.24		
78	Thailand	0.59	4.58	0.23		○
79	Austria	0.58	4.51	0.22		○
80	Bosnia and Herzegovina	0.58	4.50	0.21		
81	Poland	0.52	4.05	0.20		○
82	Rwanda	0.51	3.98	0.19		
83	Tajikistan	0.48	3.68	0.18		
84	Argentina	0.46	3.55	0.17		
85	Algeria	0.44	3.43	0.16		
86	Bolivia, Plurinational St.	0.43	3.30	0.15		
87	Sri Lanka	0.29	2.24	0.14		
88	Panama	0.26	1.96	0.13		
89	Senegal	0.22	1.67	0.12		
90	Cambodia	0.22	1.66	0.11		
91	Philippines	0.19	1.47	0.10		○
92	Indonesia	0.18	1.40	0.09		○
93	Egypt (2008)	0.13	0.99	0.08		○
94	India (2008)	0.12	0.88	0.07		○
95	Malawi	0.08	0.59	0.06		○
96	Burkina Faso	0.08	0.56	0.05		
97	Madagascar	0.07	0.49	0.04		○
98	Togo (2008)	0.04	0.27	0.03		○
99	Ethiopia	0.03	0.21	0.02		
100	Pakistan	0.03	0.18	0.01		○
101	Niger	0.00	0.00	0.00		○
n/a	Angola	n/a	n/a	n/a		
n/a	Bahrain	n/a	n/a	n/a		
n/a	Bangladesh	n/a	n/a	n/a		
n/a	Benin	n/a	n/a	n/a		
n/a	Botswana	n/a	n/a	n/a		
n/a	Brunei Darussalam	n/a	n/a	n/a		
n/a	Burundi	n/a	n/a	n/a		
n/a	Cameroon	n/a	n/a	n/a		
n/a	China	n/a	n/a	n/a		
n/a	Côte d'Ivoire	n/a	n/a	n/a		
n/a	Ecuador	n/a	n/a	n/a		
n/a	Fiji	n/a	n/a	n/a		
n/a	Gambia	n/a	n/a	n/a		
n/a	Guyana	n/a	n/a	n/a		
n/a	Honduras	n/a	n/a	n/a		
n/a	Iran, Islamic Rep.	n/a	n/a	n/a		
n/a	Kuwait	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Lebanon	n/a	n/a	n/a		
n/a	Lesotho	n/a	n/a	n/a		
n/a	Mali	n/a	n/a	n/a		
n/a	Mongolia	n/a	n/a	n/a		
n/a	Mozambique	n/a	n/a	n/a		
n/a	Namibia	n/a	n/a	n/a		
n/a	Nepal	n/a	n/a	n/a		
n/a	Nicaragua	n/a	n/a	n/a		
n/a	Paraguay	n/a	n/a	n/a		
n/a	Qatar	n/a	n/a	n/a		
n/a	Saudi Arabia	n/a	n/a	n/a		
n/a	Sudan	n/a	n/a	n/a		
n/a	Swaziland	n/a	n/a	n/a		
n/a	Syrian Arab Rep.	n/a	n/a	n/a		
n/a	Tanzania, United Rep.	n/a	n/a	n/a		
n/a	Trinidad and Tobago	n/a	n/a	n/a		
n/a	United Arab Emirates	n/a	n/a	n/a		
n/a	United States of America	n/a	n/a	n/a		
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a		
n/a	Viet Nam	n/a	n/a	n/a		
n/a	Yemen	n/a	n/a	n/a		
n/a	Zimbabwe	n/a	n/a	n/a		

SOURCE: International Finance Corporation, World Bank *World Development Indicators* database (2007–09)

6.2.3 Total computer software spending

Total computer software spending (% of GDP)[a] | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Czech Republic	1.34	100.00	1.00	●
2	Switzerland	1.20	90.15	0.99	
3	Netherlands	1.13	84.35	0.97	●
4	Ireland	0.97	72.76	0.96	
5	United Kingdom	0.97	72.44	0.95	
6	Hungary	0.96	71.85	0.93	●
7	United States of America	0.92	68.73	0.92	
8	Finland	0.87	64.99	0.90	
9	Sweden	0.84	62.80	0.89	
10	Denmark	0.82	61.35	0.88	
11	Austria	0.79	59.00	0.86	
12	Belgium	0.78	58.33	0.85	
13	Spain	0.68	50.98	0.84	
14	South Africa	0.67	50.29	0.82	●
15	Germany	0.67	49.81	0.81	
16	France	0.62	46.31	0.79	
17	Canada	0.60	45.00	0.78	
18	Norway	0.58	43.58	0.77	
19	Thailand	0.58	43.14	0.75	
20	Portugal	0.57	42.74	0.74	
21	Italy	0.51	37.67	0.73	
22	Slovenia	0.51	37.64	0.71	
23	Singapore	0.45	33.50	0.70	
24	Slovakia	0.43	31.98	0.68	
25	Poland	0.41	30.73	0.67	
26	Israel	0.38	28.20	0.66	
27	Greece	0.35	25.94	0.64	
28	Kenya	0.31	22.75	0.63	
29	Malaysia	0.31	22.61	0.62	
30	Australia	0.28	20.97	0.60	
31	Ukraine	0.27	20.24	0.59	
32	China	0.27	19.76	0.58	
33	Japan	0.25	18.64	0.56	
34	Bulgaria	0.25	18.27	0.55	
35	Korea, Rep.	0.25	18.18	0.53	
36	Russian Federation	0.22	16.58	0.52	
37	New Zealand	0.22	16.54	0.51	
38	Romania	0.22	16.39	0.49	
39	Hong Kong (China)	0.22	16.13	0.48	○
40	Saudi Arabia	0.20	14.54	0.47	
41	Tunisia	0.20	14.48	0.45	
42	Senegal	0.19	14.11	0.44	
43	Viet Nam	0.19	13.92	0.42	
44	Honduras	0.16	11.42	0.41	
45	Morocco	0.16	11.41	0.40	
46	Turkey	0.15	11.09	0.38	
47	Chile	0.15	10.86	0.37	
48	Indonesia	0.14	10.38	0.36	
49	Jordan	0.13	9.75	0.34	
50	Pakistan	0.13	9.70	0.33	
51	Mexico	0.13	9.29	0.32	
52	India	0.12	8.95	0.30	
53	Brazil	0.12	8.86	0.29	
54	Jamaica	0.12	8.56	0.27	
55	Kuwait	0.12	8.55	0.26	
56	Egypt	0.11	8.20	0.25	
57	Costa Rica	0.11	8.04	0.23	
58	Venezuela, Bolivarian Rep.	0.11	8.02	0.22	
59	Argentina	0.11	8.01	0.21	
60	Iran, Islamic Rep.	0.11	7.93	0.19	
61	Peru	0.11	7.68	0.18	
62	United Arab Emirates	0.10	7.55	0.16	○
63	Colombia	0.09	6.36	0.15	○
64	Ecuador	0.09	6.33	0.14	
65	Algeria	0.08	5.60	0.12	
66	Cameroon	0.08	5.45	0.11	
67	Uruguay	0.07	4.69	0.10	○
68	Bolivia, Plurinational St.	0.06	4.56	0.08	○
69	Bangladesh	0.06	4.49	0.07	
70	Philippines	0.06	4.06	0.05	○
71	Panama	0.05	3.17	0.04	○
72	Nigeria	0.03	1.76	0.03	○
73	Sri Lanka	0.01	0.10	0.01	○
74	Zimbabwe	0.00	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Armenia	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belarus	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bosnia and Herzegovina	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Croatia	n/a	n/a	n/a	
n/a	Cyprus	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Estonia	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Georgia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Iceland	n/a	n/a	n/a	
n/a	Kazakhstan	n/a	n/a	n/a	
n/a	Kyrgyzstan	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Latvia	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Lithuania	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Macedonia, FYR	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Moldova, Rep.	n/a	n/a	n/a	
n/a	Mongolia	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Serbia	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	

SOURCE: World Information Technology and Services Alliance (WITSA); World Bank and OECD GDP estimates, World Bank *World Development Indicators* database

6.2.4 ISO 9001 quality certificates

ISO 9001 Quality management systems—Requirements: Number of certificates issued (per billion PPP$ GDP)[a] | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Italy	78.08	100.00	1.00	●
2	Bulgaria	64.37	95.63	0.99	●
3	Romania	63.55	95.34	0.99	●
4	Czech Republic	61.96	94.77	0.98	●
5	Iceland	59.82	93.97	0.97	
6	Malta	45.67	87.89	0.96	●
7	Spain	43.60	86.85	0.96	●
8	Hungary	42.84	86.45	0.95	●
9	Israel	37.15	83.26	0.94	
10	Switzerland	37.06	83.21	0.94	
11	Slovakia	32.32	80.15	0.93	●
12	Estonia	31.22	79.38	0.92	●
13	Bosnia and Herzegovina	30.99	79.22	0.91	●
14	Slovenia	30.02	78.51	0.91	●
15	China	29.35	78.01	0.90	
16	Russian Federation	27.91	76.89	0.89	●
17	Cyprus	27.73	76.75	0.89	
18	Croatia	26.71	75.92	0.88	●
19	Uruguay (2009)	25.28	74.70	0.87	●
20	Latvia	24.81	74.28	0.86	●
21	Serbia	23.61	73.18	0.86	●
22	Portugal	22.58	72.21	0.85	
23	Lithuania	21.27	70.89	0.84	
24	Malaysia	20.68	70.27	0.84	
25	United Kingdom	20.56	70.15	0.83	
26	Colombia (2009)	18.87	68.27	0.82	●
27	Chile (2009)	18.11	67.37	0.81	
28	Jordan	17.64	66.80	0.81	●
29	Germany	17.18	66.23	0.80	
30	Zimbabwe	16.98	65.97	0.79	●
31	Korea, Rep.	16.90	65.87	0.79	
32	Poland	16.87	65.83	0.78	
33	Netherlands	16.47	65.31	0.77	
34	Sweden	15.96	64.63	0.76	
35	Austria	15.47	63.96	0.76	
36	United Arab Emirates	14.79	62.99	0.75	
37	France	13.92	61.68	0.74	
38	Japan	13.61	61.19	0.74	
39	Greece	13.56	61.12	0.73	
40	Singapore	13.43	60.92	0.72	
41	Ireland	13.36	60.80	0.71	
42	Montenegro	12.60	59.55	0.71	
43	Hong Kong (China)	12.14	58.75	0.70	
44	Thailand	11.54	57.69	0.69	
45	Finland	11.44	57.49	0.69	
46	Turkey	11.03	56.72	0.68	●
47	Australia	9.94	54.54	0.67	
48	Belgium	9.38	53.33	0.66	
49	Denmark	9.20	52.93	0.66	
50	Brazil (2009)	9.01	52.50	0.65	
51	Argentina (2009)	8.73	51.83	0.64	
52	Ukraine	8.45	51.17	0.64	
53	New Zealand	8.44	51.13	0.63	
54	India	8.19	50.53	0.62	
55	Moldova, Rep.	7.44	48.56	0.61	
56	Norway	7.38	48.40	0.61	
57	Viet Nam	7.34	48.28	0.60	
58	Ecuador (2009)	7.32	48.24	0.59	●
59	Paraguay (2009)	6.95	47.17	0.59	
60	Lebanon	6.38	45.47	0.58	
61	South Africa	6.33	45.29	0.57	
62	Indonesia	6.32	45.26	0.56	
63	Bahrain	5.91	43.93	0.56	
64	Tunisia	5.79	43.54	0.55	
65	Canada (2009)	5.69	43.20	0.54	○
66	Mauritius	5.33	41.94	0.54	
67	Oman	5.20	41.44	0.53	
68	Peru (2009)	4.68	39.44	0.52	
69	Macedonia, FYR (2002)	4.62	39.16	0.51	
70	Pakistan	4.50	38.68	0.51	●
71	Egypt	4.39	38.20	0.50	
72	Costa Rica (2009)	4.25	37.60	0.49	
73	Sri Lanka	3.79	35.49	0.49	
74	Iran, Islamic Rep.	3.78	35.45	0.48	
75	Armenia	3.63	34.67	0.47	
76	Bolivia, Plurinational St. (2009)	3.49	33.98	0.46	
77	Kazakhstan	3.37	33.37	0.46	
78	El Salvador (2009)	3.29	32.92	0.45	
79	Georgia	3.20	32.43	0.44	
80	Burundi (2002)	3.15	32.14	0.44	●
81	Brunei Darussalam	3.03	31.47	0.43	
82	Mexico (2009)	2.90	30.73	0.42	
83	Honduras (2009)	2.84	30.33	0.41	
84	Swaziland	2.79	30.08	0.41	
85	Morocco	2.71	29.57	0.40	
86	Luxembourg	2.59	28.82	0.39	
87	Trinidad and Tobago (2009)	2.59	28.80	0.39	
88	Philippines	2.56	28.61	0.38	
89	Fiji	2.51	28.26	0.37	
90	Guatemala (2009)	2.35	27.16	0.36	
91	Panama (2009)	2.30	26.83	0.36	
92	Albania	2.17	25.95	0.35	
93	Saudi Arabia	2.15	25.76	0.34	
94	Kuwait	2.07	25.14	0.34	
95	Nicaragua (2009)	2.03	24.90	0.33	
96	United States of America (2009)	1.80	23.03	0.32	○
97	Qatar	1.76	22.69	0.31	
98	Senegal	1.75	22.63	0.31	
99	Venezuela, Bolivarian Rep. (2009)	1.68	21.99	0.30	
100	Namibia	1.63	21.59	0.29	
101	Belize (2009)	1.55	20.87	0.29	
102	Nepal	1.51	20.48	0.28	
103	Uzbekistan	1.50	20.37	0.27	
104	Dominican Republic (2009)	1.44	19.87	0.26	
105	Algeria	1.44	19.80	0.26	
106	Zambia	1.39	19.37	0.25	
107	Madagascar	1.30	18.46	0.24	
108	Uganda	1.28	18.21	0.24	
109	Syrian Arab Rep.	1.22	17.57	0.23	
110	Côte d'Ivoire	1.19	17.26	0.22	
111	Belarus	1.15	16.84	0.21	○
112	Benin	1.15	16.83	0.21	
113	Azerbaijan	1.13	16.66	0.20	
114	Togo	1.00	15.16	0.19	
115	Guyana (2009)	0.97	14.84	0.19	
116	Bangladesh	0.93	14.33	0.18	
117	Gabon	0.84	13.25	0.17	
118	Sudan	0.74	11.95	0.16	
119	Jamaica (2009)	0.71	11.57	0.16	○
120	Burkina Faso	0.68	11.16	0.15	
121	Mozambique	0.64	10.54	0.14	
122	Niger	0.63	10.36	0.14	
123	Kyrgyzstan	0.58	9.66	0.13	
124	Lao PDR	0.57	9.51	0.12	
125	Gambia	0.57	9.47	0.11	
126	Botswana	0.50	8.48	0.11	○
127	Cameroon	0.49	8.32	0.10	
128	Malawi	0.39	6.58	0.09	
129	Yemen	0.31	5.31	0.09	
130	Lesotho	0.29	4.88	0.08	
131	Ethiopia	0.29	4.85	0.07	
132	Cambodia	0.20	3.11	0.06	
133	Mongolia	0.18	2.76	0.06	○
134	Kenya	0.18	2.75	0.05	○
135	Mali	0.18	2.67	0.04	○
136	Angola	0.16	2.43	0.04	
137	Ghana	0.12	1.59	0.03	○
138	Rwanda (2009)	0.09	0.83	0.02	○
139	Nigeria	0.07	0.44	0.01	○
140	Tajikistan	0.07	0.37	0.01	○
141	Tanzania, United Rep.	0.05	0.00	0.00	○

SOURCE: International Organization for Standardization (ISO), *The ISO Survey of Certifications 2010* CD-Rom (2002–10)

6.3.1 Royalty and license fees receipts

Royalty and license fees, receipts (per thousand GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Guyana	20.78	100.00	0.96	●
1	Paraguay	13.79	100.00	0.96	●
1	Sweden	13.37	100.00	0.96	●
1	Ireland	10.88	100.00	0.96	●
1	Finland	9.79	100.00	0.96	●
6	Luxembourg	8.57	87.56	0.95	
7	Singapore	8.38	85.66	0.94	
8	Hungary	8.06	82.34	0.93	●
9	United States of America	7.27	74.28	0.92	
10	Netherlands	7.03	71.88	0.91	
11	United Kingdom	6.35	64.88	0.90	
12	Japan	4.89	49.95	0.90	
13	Belgium	4.57	46.72	0.89	
14	Germany	4.38	44.73	0.88	
15	Malta	4.17	42.58	0.87	
16	France	4.06	41.50	0.86	
17	Israel	3.91	39.92	0.85	
18	Korea, Rep.	3.10	31.69	0.84	
19	Romania	2.88	29.46	0.83	
20	Canada	2.42	24.71	0.82	
21	Hong Kong (China) (2009)	1.83	18.72	0.81	
22	Italy	1.75	17.92	0.80	
23	Austria	1.71	17.50	0.79	
24	Kenya	1.68	17.13	0.78	●
25	Slovenia	1.44	14.72	0.77	
26	Malaysia (2009)	1.38	14.07	0.76	
27	Yemen (2009)	1.33	13.59	0.75	●
28	New Zealand	1.30	13.28	0.74	
29	Norway	1.21	12.32	0.73	
30	Estonia	1.06	10.83	0.72	
31	Serbia	1.03	10.50	0.71	
32	Ukraine	0.96	9.78	0.70	
33	Egypt (2007)	0.94	9.56	0.70	●
34	Bosnia and Herzegovina	0.91	9.35	0.69	
35	Moldova, Rep.	0.84	8.55	0.68	
36	Macedonia, FYR	0.75	7.69	0.67	
37	Bulgaria	0.71	7.22	0.66	
38	Australia (2008)	0.66	6.77	0.65	
39	Spain	0.62	6.36	0.64	
40	Tunisia	0.56	5.72	0.63	
41	Czech Republic	0.55	5.60	0.62	
42	Croatia	0.52	5.34	0.61	
43	Slovakia	0.51	5.26	0.60	
44	Poland	0.50	5.16	0.59	
45	Latvia	0.50	5.15	0.58	
46	Thailand	0.48	4.91	0.57	
47	Madagascar (2005)	0.46	4.71	0.56	
48	Russian Federation	0.42	4.32	0.55	
49	Georgia	0.41	4.14	0.54	
50	Argentina	0.36	3.73	0.53	
51	Cyprus	0.36	3.73	0.52	
52	Jamaica	0.36	3.72	0.51	
53	Guatemala	0.33	3.33	0.50	
54	Chile	0.32	3.22	0.50	
55	Kyrgyzstan	0.24	2.42	0.49	
56	Uganda	0.23	2.32	0.48	
57	Greece	0.22	2.30	0.47	
58	Costa Rica	0.21	2.14	0.46	
59	Colombia	0.20	1.99	0.45	
60	Brazil	0.19	1.94	0.44	
61	Lebanon	0.18	1.85	0.43	
62	Portugal	0.18	1.83	0.42	
63	Fiji	0.17	1.74	0.41	
64	South Africa	0.16	1.66	0.40	
65	Belarus	0.16	1.59	0.39	
66	Angola (2008)	0.14	1.46	0.38	
67	Bolivia, Plurinational St.	0.14	1.45	0.37	
68	China	0.14	1.44	0.36	
69	Tajikistan	0.11	1.16	0.35	
70	Honduras (2003)	0.10	1.01	0.34	
71	Senegal (2009)	0.10	0.98	0.33	
72	Indonesia	0.08	0.86	0.32	
73	India	0.08	0.81	0.31	
74	Mongolia	0.08	0.80	0.30	
75	Swaziland	0.07	0.72	0.30	
76	Mexico (2004)	0.07	0.69	0.29	
77	Albania	0.06	0.64	0.28	
78	Mauritius	0.06	0.58	0.27	
79	Sudan	0.04	0.45	0.26	
80	Morocco	0.04	0.43	0.25	
81	Cambodia	0.03	0.30	0.24	
82	Mali (2008)	0.03	0.26	0.23	
83	Lithuania	0.02	0.25	0.22	○
84	Syrian Arab Rep.	0.02	0.24	0.21	
85	Philippines	0.02	0.20	0.20	
86	Peru	0.02	0.20	0.19	
87	El Salvador	0.02	0.18	0.18	
88	Pakistan	0.02	0.17	0.17	
89	Algeria (2009)	0.01	0.15	0.16	
90	Cameroon	0.01	0.14	0.15	
91	Côte d'Ivoire (2008)	0.01	0.13	0.14	
92	Botswana	0.01	0.09	0.13	○
93	Ethiopia	0.01	0.09	0.12	
94	Rwanda	0.01	0.07	0.11	
95	Bangladesh	0.01	0.05	0.10	
96	Benin (2008)	0.00	0.03	0.10	
97	Azerbaijan	0.00	0.03	0.09	○
98	Togo (2006)	0.00	0.03	0.08	
99	Uruguay	0.00	0.02	0.07	○
100	Mozambique	0.00	0.02	0.06	
101	Iceland (2008)	0.00	0.01	0.05	○
102	Burkina Faso (2009)	0.00	0.01	0.04	
103	Niger (2007)	0.00	0.00	0.03	
104	Kazakhstan (2005)	0.00	0.00	0.02	○
105	Namibia (2009)	0.00	0.00	0.01	○
106	Tanzania, United Rep. (2007)	0.00	0.00	0.00	○
n/a	Armenia	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Denmark	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Switzerland	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Turkey	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2003–10)

6.3.2 High-tech exports

High-tech net exports (% of total net exports) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Malta	50.39	100.00	0.99	●
1	Singapore	38.10	100.00	0.99	●
3	Malaysia	33.03	86.70	0.98	●
4	China	30.06	78.90	0.98	●
5	Costa Rica	24.36	63.93	0.97	●
6	Korea, Rep. (2011)	24.04	63.08	0.96	
7	Switzerland	22.51	59.07	0.95	
8	France	20.57	53.98	0.94	●
9	Hungary (2011)	20.47	53.73	0.93	●
10	Ireland	19.64	51.55	0.93	
11	Cyprus	19.16	50.28	0.92	●
12	Thailand	19.04	49.96	0.91	●
13	Israel	18.12	47.55	0.90	
14	Hong Kong (China)	17.08	44.83	0.89	
15	Mexico	16.50	43.30	0.88	●
16	Japan (2011)	16.17	42.43	0.88	
17	United Kingdom (2011)	15.89	41.69	0.87	
18	Netherlands	15.73	41.28	0.86	
19	Czech Republic	15.43	40.50	0.85	
20	United States of America	14.76	38.74	0.84	
21	Sweden	14.48	37.99	0.83	
22	Lebanon	14.23	37.33	0.83	
23	Estonia (2011)	13.98	36.68	0.82	
24	Germany	13.72	36.02	0.81	
25	Austria	10.91	28.62	0.80	
26	Finland	10.06	26.39	0.79	
27	Denmark	9.46	24.82	0.78	
28	Romania (2011)	9.05	23.75	0.78	
29	Belgium	8.34	21.88	0.77	
30	Luxembourg (2011)	7.66	20.10	0.76	
31	Italy	6.55	17.18	0.75	
32	Canada (2011)	6.53	17.13	0.74	
33	Slovakia	6.23	16.34	0.73	
34	Viet Nam (2009)	6.19	16.24	0.73	
35	Poland	6.10	16.01	0.72	
36	Tunisia	6.08	15.96	0.71	
37	Lithuania	6.07	15.92	0.70	
38	Croatia (2011)	5.78	15.16	0.69	
39	Greece	5.77	15.15	0.68	
40	El Salvador	5.27	13.81	0.68	
41	Latvia (2011)	5.22	13.70	0.67	
42	Spain	4.89	12.82	0.66	
43	India	4.84	12.69	0.65	
44	Slovenia (2011)	4.75	12.46	0.64	
45	Indonesia	4.47	11.73	0.63	
46	Kazakhstan (2009)	4.20	11.01	0.63	
47	Bulgaria	4.14	10.85	0.62	
48	Norway	3.76	9.86	0.61	
49	Brazil (2011)	3.57	9.37	0.60	
50	Serbia	3.16	8.29	0.59	
51	Iceland	3.08	8.07	0.58	
52	Portugal	2.95	7.73	0.58	
53	Macedonia, FYR (2011)	2.92	7.65	0.57	
54	Guatemala	2.70	7.09	0.56	
55	Argentina	2.48	6.52	0.55	
56	Kenya	2.28	5.98	0.54	
57	Moldova, Rep.	2.19	5.74	0.53	
58	South Africa	2.16	5.66	0.53	
59	Australia	2.15	5.64	0.52	
60	Montenegro	2.11	5.53	0.51	
61	Dominican Republic	2.05	5.38	0.50	
62	New Zealand	2.04	5.35	0.49	
63	Jordan (2011)	1.74	4.57	0.48	
64	Turkey	1.71	4.47	0.48	
65	Belarus	1.62	4.24	0.47	
66	Bosnia and Herzegovina	1.55	4.06	0.46	
67	Uruguay (2009)	1.53	4.00	0.45	
68	Russian Federation	1.35	3.53	0.44	
69	Pakistan	1.28	3.35	0.43	
70	Paraguay (2011)	1.07	2.81	0.43	
71	Niger	0.96	2.50	0.42	
72	Fiji	0.92	2.41	0.41	
73	Tanzania, United Rep. (2011)	0.91	2.38	0.40	
74	Albania	0.91	2.38	0.39	
75	Rwanda (2011)	0.91	2.38	0.38	
76	Georgia	0.89	2.32	0.38	
77	Colombia (2011)	0.77	2.02	0.37	
78	Peru	0.76	1.98	0.36	
79	Sri Lanka	0.75	1.97	0.35	
80	Chile	0.75	1.95	0.34	
81	Côte d'Ivoire	0.69	1.79	0.33	
82	Armenia (2011)	0.67	1.76	0.33	
83	Syrian Arab Rep. (2008)	0.60	1.58	0.32	
84	Uganda	0.59	1.54	0.31	
85	Madagascar	0.59	1.53	0.30	
86	Bolivia, Plurinational St.	0.54	1.41	0.29	
87	Nepal	0.51	1.32	0.28	
88	Namibia (2008)	0.50	1.32	0.28	
89	Burundi	0.47	1.24	0.27	
90	Honduras (2009)	0.44	1.16	0.26	
91	Mauritius	0.42	1.09	0.25	○
92	Egypt	0.40	1.04	0.24	
93	Mongolia (2007)	0.38	0.98	0.23	
94	Senegal (2011)	0.36	0.93	0.23	
95	Nicaragua	0.34	0.88	0.22	
96	Zimbabwe	0.30	0.78	0.21	
97	Ecuador (2011)	0.27	0.70	0.20	
98	Jamaica	0.24	0.61	0.19	
99	Kyrgyzstan	0.23	0.60	0.18	
100	Gambia	0.23	0.59	0.18	
101	Burkina Faso	0.23	0.59	0.17	
102	Ethiopia (2011)	0.22	0.57	0.16	
103	Malawi	0.20	0.51	0.15	
104	Ghana	0.17	0.45	0.14	
105	Mali	0.17	0.43	0.13	
106	Togo (2011)	0.16	0.41	0.13	
107	Cambodia	0.15	0.38	0.12	
108	United Arab Emirates (2008)	0.13	0.33	0.11	○
109	Sudan (2009)	0.12	0.31	0.10	
110	Panama	0.10	0.25	0.09	○
111	Saudi Arabia	0.08	0.21	0.08	○
112	Nigeria	0.07	0.19	0.08	
113	Zambia	0.07	0.17	0.07	
114	Oman	0.06	0.14	0.06	○
115	Azerbaijan	0.03	0.08	0.05	○
116	Trinidad and Tobago	0.03	0.07	0.04	○
117	Bahrain (2011)	0.03	0.06	0.03	○
118	Guyana	0.02	0.05	0.03	○
119	Algeria	0.01	0.02	0.02	○
120	Yemen (2009)	0.01	0.01	0.01	○
121	Qatar (2009)	0.00	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Morocco	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Ukraine	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	

SOURCE: United Nations, *COMTRADE* database; Eurostat *'High-technology' aggregations based on SITC Rev. 4*, April 2009 (2007–11)

6.3.3 Computer and communications service exports

Computer, communications, and other services (% of commercial service exports) | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Finland	77.33	100.00	1.00	●
2	Bangladesh	72.09	93.05	0.99	●
3	Ireland	70.77	91.31	0.98	●
4	India	70.52	90.98	0.98	●
5	Paraguay	68.99	88.94	0.97	●
6	Israel	67.60	87.10	0.96	●
7	Philippines	67.21	86.58	0.95	●
8	Swaziland	64.17	82.56	0.95	●
9	Kuwait	64.05	82.39	0.94	●
10	Sweden	62.68	80.57	0.93	
11	Guyana	62.56	80.41	0.92	●
12	Japan	62.19	79.93	0.92	
13	Malta	59.61	76.49	0.91	
14	Côte d'Ivoire	57.40	73.56	0.90	●
15	Netherlands	57.18	73.27	0.89	
16	Brazil	56.99	73.02	0.89	●
17	Romania	55.56	71.13	0.88	●
18	Lebanon	55.47	71.01	0.87	●
19	Belgium	54.81	70.14	0.86	
20	Germany	54.18	69.30	0.86	
21	Algeria	53.90	68.93	0.85	●
22	Serbia	52.55	67.13	0.84	●
23	Hungary (2010)	51.74	66.07	0.83	
24	Canada	49.47	63.04	0.83	
25	China	49.24	62.74	0.82	
26	Argentina	49.18	62.66	0.81	
27	Singapore	46.83	59.55	0.80	
28	Gabon (2005)	46.18	58.69	0.80	●
29	United Kingdom	46.17	58.67	0.79	
30	United States of America	45.44	57.70	0.78	
31	Switzerland	44.25	56.12	0.77	
32	Norway	44.12	55.94	0.77	
33	Tajikistan	43.80	55.52	0.76	●
34	Russian Federation	43.60	55.26	0.75	
35	Korea, Rep.	43.22	54.75	0.74	
36	Macedonia, FYR	42.90	54.34	0.74	
37	Senegal	41.95	53.07	0.73	●
38	Poland (2010)	41.76	52.82	0.72	
39	France	40.80	51.54	0.71	
40	Costa Rica	40.55	51.21	0.71	
41	Czech Republic (2010)	39.97	50.45	0.70	
42	Hong Kong (China)	39.92	50.38	0.69	
43	Azerbaijan	38.42	48.39	0.68	●
44	Pakistan	38.27	48.18	0.68	●
45	Austria	38.04	47.88	0.67	
46	Italy	37.50	47.18	0.66	
47	Denmark (2004)	37.36	46.98	0.65	
48	Spain	35.62	44.67	0.65	
49	Mali	34.85	43.66	0.64	●
50	Togo	34.82	43.61	0.63	●
51	Indonesia	34.73	43.50	0.62	
52	Mozambique	34.65	43.39	0.62	
53	Estonia (2010)	34.28	42.89	0.61	
54	Botswana	33.99	42.51	0.60	
55	Moldova, Rep.	33.79	42.25	0.59	
56	Sri Lanka	31.16	38.75	0.59	
57	Iceland	31.08	38.65	0.58	
58	Bosnia and Herzegovina	30.45	37.82	0.57	
59	Mauritius	30.01	37.24	0.56	
60	Portugal	29.91	37.10	0.56	
61	Slovenia (2010)	29.71	36.84	0.55	
62	Slovakia (2010)	29.51	36.57	0.54	
63	Cyprus	28.68	35.46	0.53	
64	Kyrgyzstan	28.40	35.10	0.53	
65	Madagascar (2005)	28.12	34.73	0.52	
66	Cameroon	28.06	34.65	0.51	●
67	Malaysia	28.03	34.61	0.50	
68	Ghana	27.39	33.76	0.50	
69	Honduras	27.27	33.60	0.49	
70	Thailand	27.09	33.37	0.48	
71	Malawi	26.08	32.01	0.47	
72	Burkina Faso	25.61	31.39	0.47	
73	Bahrain	25.41	31.13	0.46	
74	Morocco	24.84	30.38	0.45	
75	Nepal	24.59	30.04	0.44	
76	Benin	24.23	29.56	0.44	
77	Luxembourg	24.01	29.27	0.43	
78	New Zealand	23.65	28.79	0.42	○
79	Niger	23.14	28.12	0.41	
80	Belarus	23.14	28.12	0.41	
81	Ukraine	23.10	28.07	0.40	
82	Latvia	22.86	27.75	0.39	
83	Colombia	22.65	27.47	0.38	
84	Australia (2008)	22.47	27.23	0.38	○
85	Bulgaria	22.21	26.89	0.37	
86	El Salvador	22.08	26.71	0.36	
87	Chile	22.01	26.61	0.35	
88	Brunei Darussalam	21.39	25.80	0.35	
89	Oman	21.35	25.74	0.34	
90	Gambia	21.14	25.46	0.33	
91	Armenia	20.98	25.26	0.32	
92	Ethiopia	19.83	23.73	0.32	
93	Guatemala	19.50	23.30	0.31	
94	Tunisia	18.46	21.92	0.30	
95	Kenya	18.35	21.76	0.29	
96	Ecuador	18.02	21.33	0.29	
97	Lesotho	17.69	20.88	0.28	
98	Venezuela, Bolivarian Rep.	17.67	20.87	0.27	
99	Bolivia, Plurinational St.	17.26	20.32	0.26	
100	Egypt	16.79	19.70	0.26	
101	Uruguay	16.66	19.53	0.25	
102	Lao PDR	16.10	18.79	0.24	
103	Tanzania, United Rep.	15.56	18.07	0.23	
104	Nicaragua	15.53	18.03	0.23	
105	Croatia	14.75	16.99	0.22	○
106	South Africa	14.71	16.94	0.21	○
107	Lithuania	13.97	15.96	0.20	○
108	Kazakhstan	13.70	15.60	0.20	
109	Uganda	13.60	15.46	0.19	
110	Cambodia	13.15	14.87	0.18	
111	Yemen	12.93	14.58	0.17	
112	Albania	12.62	14.16	0.17	
113	Belize	12.31	13.75	0.16	
114	Peru	11.92	13.23	0.15	○
115	Jordan	11.69	12.94	0.14	○
116	Jamaica (2010)	10.18	10.93	0.14	○
117	Greece	9.35	9.82	0.13	○
118	Zambia	9.17	9.59	0.12	
119	Angola	9.16	9.57	0.11	
120	Panama	9.14	9.54	0.11	
121	Trinidad and Tobago	9.05	9.42	0.10	○
122	Sudan	8.98	9.34	0.09	
123	Turkey	8.98	9.33	0.08	○
124	Mongolia	8.94	9.29	0.08	○
125	Georgia	8.05	8.10	0.07	○
126	Rwanda	7.73	7.68	0.06	
127	Dominican Republic	6.47	6.01	0.05	○
128	Syrian Arab Rep.	5.67	4.94	0.05	○
129	Fiji	4.32	3.15	0.04	○
130	Namibia	3.85	2.53	0.03	○
131	Nigeria	2.89	1.25	0.02	○
132	Saudi Arabia	2.78	1.11	0.02	○
133	Burundi	2.01	0.09	0.01	○
134	Mexico	1.94	0.00	0.00	○
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Viet Nam	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2004–10)

6.3.4 Foreign direct investment net outflows

Foreign direct investment, net outflows (% of GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Luxembourg	347.12	100.00	0.99	●	
1	Hong Kong (China)	33.90	100.00	0.99	●	
3	Belgium	10.20	65.88	0.98	●	
4	Singapore	9.46	64.81	0.97		
5	Ireland	8.57	63.53	0.97		
6	Kuwait (2009)	7.89	62.55	0.96	●	
7	Switzerland	7.38	61.81	0.95		
8	Sweden	7.00	61.27	0.94		
9	Netherlands	6.32	60.30	0.93		
10	Malaysia	5.68	59.38	0.92		
11	Kazakhstan	5.25	58.75	0.92	●	
12	Finland	4.46	57.61	0.91		
13	Cyprus	4.34	57.44	0.90		
14	Chile	4.11	57.11	0.89	●	
15	Israel	3.66	56.47	0.88		
16	Russian Federation	3.55	56.30	0.87	●	
17	Germany	3.30	55.95	0.86		
18	France	3.30	55.94	0.86		
19	Norway	2.97	55.47	0.85		
20	Trinidad and Tobago (2008)	2.58	54.91	0.84	●	
21	Canada	2.48	54.77	0.83		
22	United States of America	2.41	54.66	0.82		
23	Colombia	2.27	54.46	0.81	●	
24	Korea, Rep.	1.90	53.92	0.81		
25	Zambia	1.78	53.76	0.80	●	
26	Niger (2009)	1.70	53.64	0.79	●	
27	Australia (2009)	1.70	53.64	0.78		
28	Thailand	1.66	53.58	0.77		
29	Italy	1.59	53.48	0.76		
30	Angola	1.59	53.48	0.75	●	
31	Lebanon	1.47	53.31	0.75		
32	Spain	1.46	53.30	0.74		
33	Mauritius	1.33	53.11	0.73		
34	Mexico	1.31	53.08	0.72	●	
35	Togo (2009)	1.19	52.90	0.71	●	
36	Poland	1.18	52.89	0.70		
37	Denmark	1.07	52.73	0.69		
38	Malta	1.06	52.72	0.69		
39	Japan	1.05	52.70	0.68		
40	China	1.01	52.66	0.67		
41	Czech Republic	0.92	52.51	0.66		
42	Saudi Arabia	0.90	52.49	0.65		
43	Gabon (2005)	0.87	52.45	0.64	●	
44	Viet Nam	0.85	52.41	0.64		
45	India	0.76	52.29	0.63		
46	Mongolia	0.75	52.28	0.62		
47	Estonia	0.66	52.15	0.61		
48	Morocco	0.64	52.11	0.60		
49	Venezuela, Bolivarian Rep.	0.61	52.07	0.59		
50	Senegal (2009)	0.60	52.06	0.58		
51	Brazil	0.55	51.99	0.58		
52	Egypt	0.54	51.97	0.57		
53	Ukraine	0.53	51.96	0.56		
54	Bulgaria	0.53	51.96	0.55		
55	Serbia	0.49	51.90	0.54		
56	United Kingdom	0.47	51.88	0.53		
57	Nigeria	0.47	51.87	0.53	●	
58	Benin (2009)	0.47	51.87	0.52	●	
59	Azerbaijan	0.45	51.84	0.51		
60	Burkina Faso (2009)	0.42	51.80	0.50		
61	Jamaica	0.41	51.78	0.49		
62	Indonesia	0.38	51.74	0.48		
63	Slovakia	0.37	51.72	0.47		
64	Greece	0.32	51.66	0.47		
65	El Salvador	0.29	51.61	0.46		
66	Bosnia and Herzegovina	0.26	51.57	0.45		
67	Argentina	0.26	51.57	0.44		
68	Philippines	0.24	51.55	0.43		
69	Lithuania	0.23	51.52	0.42		
70	Turkey	0.20	51.48	0.42		
71	Cambodia	0.18	51.46	0.41		
72	Fiji	0.18	51.46	0.40		
73	Oman (2009)	0.16	51.42	0.39		
74	Sudan (2008)	0.15	51.42	0.38		
75	Algeria (2009)	0.15	51.41	0.37		
76	Brunei Darussalam (2006)	0.15	51.41	0.36		
77	Tunisia	0.15	51.41	0.36		
78	Peru	0.14	51.39	0.35		
79	Romania	0.12	51.36	0.34		
80	Swaziland	0.11	51.35	0.33		
81	South Africa	0.10	51.35	0.32		
82	Jordan	0.10	51.34	0.31		
83	Belarus	0.09	51.33	0.31		
84	Armenia	0.09	51.32	0.30		
85	Sri Lanka	0.09	51.32	0.29		
86	Latvia	0.08	51.31	0.28		○
87	Belize	0.08	51.31	0.27		
88	Costa Rica	0.07	51.29	0.26		
89	Moldova, Rep.	0.06	51.28	0.25		
90	Guatemala	0.06	51.28	0.25		
91	Georgia	0.05	51.27	0.24		
92	Burundi (2008)	0.05	51.27	0.23		
93	Paraguay	0.04	51.25	0.22		
94	Namibia	0.04	51.25	0.21		
95	Ghana (2009)	0.03	51.23	0.20		
96	Pakistan	0.03	51.23	0.19		
97	Macedonia, FYR	0.02	51.23	0.19		○
98	Kenya	0.01	51.20	0.18		
99	Botswana	0.00	51.20	0.17		
100	Albania	0.00	51.20	0.16		
101	Bangladesh	0.00	51.19	0.15		
102	Kyrgyzstan	−0.00	51.19	0.14		
103	Mozambique	−0.01	51.18	0.14		
104	Honduras	−0.01	51.18	0.13		○
105	Uruguay	−0.02	51.17	0.12		○
106	Lesotho	−0.11	51.04	0.11		
107	Bolivia, Plurinational St.	−0.15	50.98	0.10		○
108	Slovenia	−0.16	50.97	0.09		○
109	Cameroon	−0.16	50.96	0.08		
110	Croatia	−0.22	50.88	0.08		○
111	Mali (2009)	−0.34	50.70	0.07		
112	Rwanda (2007)	−0.35	50.70	0.06		
113	Malawi (2009)	−0.41	50.61	0.05		○
114	New Zealand (2009)	−1.10	49.60	0.04		○
115	Portugal	−3.57	46.06	0.03		○
116	Austria	−5.38	43.46	0.03		○
117	Bahrain (2009)	−8.70	38.67	0.02		○
118	Iceland	−20.91	21.09	0.01		○
119	Hungary	−35.56	0.00	0.00		○
n/a	Côte d'Ivoire	n/a	n/a	n/a		
n/a	Dominican Republic	n/a	n/a	n/a		
n/a	Ecuador	n/a	n/a	n/a		
n/a	Ethiopia	n/a	n/a	n/a		
n/a	Gambia	n/a	n/a	n/a		
n/a	Guyana	n/a	n/a	n/a		
n/a	Iran, Islamic Rep.	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Madagascar	n/a	n/a	n/a		
n/a	Montenegro	n/a	n/a	n/a		
n/a	Nepal	n/a	n/a	n/a		
n/a	Nicaragua	n/a	n/a	n/a		
n/a	Panama	n/a	n/a	n/a		
n/a	Qatar	n/a	n/a	n/a		
n/a	Syrian Arab Rep.	n/a	n/a	n/a		
n/a	Tajikistan	n/a	n/a	n/a		
n/a	Tanzania, United Rep.	n/a	n/a	n/a		
n/a	Uganda	n/a	n/a	n/a		
n/a	United Arab Emirates	n/a	n/a	n/a		
n/a	Uzbekistan	n/a	n/a	n/a		
n/a	Yemen	n/a	n/a	n/a		
n/a	Zimbabwe	n/a	n/a	n/a		

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2005–10)

7.1.1 National office trademark registrations

Number of trademark registrations issued to residents by the national office (per billion PPP$ GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Mongolia	316.93	100.00	0.99	●
1	Jordan	211.74	100.00	0.99	●
3	Chile	207.20	97.86	0.98	●
4	Moldova, Rep.	180.78	85.38	0.97	●
5	China	119.71	56.53	0.95	
6	Bulgaria	106.93	50.50	0.94	●
7	Iceland	103.60	48.93	0.93	
8	Portugal	99.85	47.16	0.92	●
9	Madagascar	97.50	46.05	0.91	●
10	Turkey (2009)	96.62	45.63	0.90	●
11	Morocco	95.74	45.22	0.88	●
12	Switzerland	95.20	44.96	0.87	
13	Slovenia	93.22	44.02	0.86	
14	Ecuador	92.89	43.87	0.85	●
15	Costa Rica	91.97	43.44	0.84	●
16	Armenia	87.60	41.37	0.83	●
17	Czech Republic	86.82	41.00	0.81	
18	Ukraine	81.49	38.49	0.80	●
19	Estonia	77.50	36.60	0.79	
20	Panama	69.54	32.84	0.78	
21	Belarus (2004)	69.48	32.81	0.77	
22	Germany	69.39	32.77	0.76	
23	Viet Nam	67.61	31.93	0.74	
24	Luxembourg	66.95	31.62	0.73	
25	South Africa	65.53	30.95	0.72	
26	Latvia	64.95	30.67	0.71	
27	Malta	62.94	29.72	0.70	
28	Spain	57.66	27.23	0.69	
29	Romania	56.03	26.46	0.67	
30	New Zealand	55.91	26.41	0.66	
31	Slovakia	55.28	26.11	0.65	
32	Finland	53.53	25.28	0.64	
33	Cyprus	49.79	23.51	0.63	
34	Sweden	49.36	23.31	0.62	
35	Norway (2009)	47.96	22.65	0.60	
36	Australia	47.01	22.20	0.59	
37	Poland	46.68	22.04	0.58	
38	Hong Kong (China)	45.78	21.62	0.57	
39	Lithuania	44.83	21.17	0.56	
40	Croatia	43.43	20.51	0.55	
41	United Kingdom	41.57	19.63	0.53	
42	Ireland	38.14	18.01	0.52	○
43	Honduras (2007)	36.30	17.14	0.51	
44	Korea, Rep.	32.95	15.56	0.50	
45	Uruguay	32.72	15.45	0.49	
46	Hungary	32.11	15.16	0.48	
47	Kazakhstan (2008)	31.02	14.65	0.47	
48	Georgia	30.34	14.33	0.45	
49	Canada	30.24	14.28	0.44	○
50	Mozambique (2007)	29.15	13.77	0.43	
51	Russian Federation	28.81	13.61	0.42	
52	Colombia	28.66	13.54	0.41	
53	Mexico	28.64	13.53	0.40	
54	Yemen	28.26	13.35	0.38	
55	Kenya (2006)	27.45	12.96	0.37	
56	Kyrgyzstan (2008)	26.26	12.40	0.36	
57	Austria	24.52	11.58	0.35	○
58	Serbia	22.74	10.74	0.34	
59	Thailand	22.53	10.64	0.33	
60	Uzbekistan	22.28	10.52	0.31	
61	Brazil (2008)	21.93	10.36	0.30	
62	Philippines	20.79	9.82	0.29	
63	Nepal (2007)	20.71	9.78	0.28	
64	Bosnia and Herzegovina	18.81	8.88	0.27	
65	Denmark	17.47	8.25	0.26	○
66	Singapore	16.90	7.98	0.24	○
67	Cambodia (2007)	16.73	7.90	0.23	
68	Netherlands	15.87	7.49	0.22	○
69	Gambia (2007)	15.01	7.09	0.21	
70	Italy	13.73	6.48	0.20	○
71	Malaysia	13.55	6.40	0.19	○
72	Tajikistan	13.19	6.23	0.17	
73	Belgium	12.78	6.03	0.16	○
74	Sudan (2007)	11.51	5.44	0.15	
75	United States of America	11.25	5.31	0.14	○
76	France	11.15	5.27	0.13	○
77	Malawi (2006)	11.02	5.20	0.12	
78	Israel	10.86	5.13	0.10	○
79	Sri Lanka	5.40	2.55	0.09	○
80	Pakistan (2009)	5.12	2.42	0.08	
81	Greece	4.95	2.34	0.07	○
82	Algeria (2005)	3.38	1.60	0.06	
83	Bahrain (2009)	2.05	0.97	0.05	○
84	Bangladesh	1.18	0.56	0.03	○
85	Tanzania, United Rep. (2007)	0.76	0.36	0.02	○
86	Iran, Islamic Rep. (2008)	0.00	0.00	0.01	○
87	Japan (2009)	0.00	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Azerbaijan	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Egypt	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Macedonia, FYR	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2004–10)

7.1.2 Madrid Agreement trademark registrations

Number of international trademark registrations issued to residents through the Madrid system (per billion PPP$ GDP) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Switzerland	9.47	100.00	0.98	●
1	Slovenia	4.71	100.00	0.98	●
3	Latvia	3.99	84.58	0.97	●
4	Moldova, Rep.	3.90	82.78	0.95	●
5	Serbia	3.75	79.45	0.93	●
6	Austria	2.71	57.44	0.92	
7	Bosnia and Herzegovina	2.36	50.07	0.90	●
8	Iceland	2.11	44.66	0.89	
9	Denmark	1.92	40.61	0.87	
10	France	1.75	37.00	0.85	
11	Bulgaria	1.72	36.40	0.84	
12	Croatia	1.58	33.32	0.82	●
13	Estonia	1.57	33.30	0.80	
14	Germany	1.54	32.66	0.79	
15	Italy	1.31	27.63	0.77	
16	Norway	1.25	26.50	0.75	
17	Czech Republic	1.19	25.20	0.74	
18	Lithuania	1.11	23.42	0.72	
19	Finland	1.10	23.15	0.70	
20	Australia	1.09	22.94	0.69	
21	Slovakia	1.05	22.04	0.67	
22	Hungary	0.89	18.75	0.66	
23	Cyprus	0.86	18.10	0.64	
24	Ukraine	0.82	17.15	0.62	
25	Turkey	0.81	17.09	0.61	
26	Belarus	0.79	16.63	0.59	
27	Sweden	0.75	15.81	0.57	○
28	Montenegro	0.74	15.58	0.56	
29	Armenia	0.71	14.98	0.54	
30	Macedonia, FYR	0.64	13.44	0.52	
31	Singapore	0.61	12.89	0.51	○
32	Portugal	0.59	12.28	0.49	
33	Morocco	0.52	10.96	0.48	
34	Russian Federation	0.52	10.87	0.46	
35	United Kingdom	0.49	10.17	0.44	○
36	Poland	0.43	8.96	0.43	
37	Spain	0.42	8.77	0.41	
38	Georgia	0.40	8.32	0.39	
39	Mozambique	0.37	7.61	0.38	
40	Japan	0.33	6.81	0.36	○
41	United States of America	0.27	5.52	0.34	○
42	Romania	0.26	5.41	0.33	
43	Ireland	0.24	5.00	0.31	○
44	Korea, Rep.	0.21	4.24	0.30	○
45	Viet Nam	0.19	3.88	0.28	
46	Kazakhstan	0.19	3.80	0.26	
47	Mongolia	0.18	3.66	0.25	
48	China	0.18	3.64	0.23	
49	Greece	0.18	3.62	0.21	
50	Kenya	0.14	2.69	0.20	
51	Tajikistan (2003)	0.13	2.56	0.18	
52	Madagascar	0.10	1.95	0.16	
53	Kyrgyzstan (2007)	0.09	1.83	0.15	
54	Azerbaijan	0.09	1.69	0.13	
55	Egypt	0.08	1.48	0.11	○
56	Syrian Arab Rep.	0.07	1.40	0.10	
57	Albania (2008)	0.05	0.79	0.08	
58	Iran, Islamic Rep.	0.04	0.66	0.07	
59	Botswana	0.04	0.58	0.05	○
60	Uzbekistan	0.01	0.06	0.03	○
61	Sudan (2009)	0.01	0.06	0.02	○
62	Algeria (2008)	0.01	0.00	0.00	○
n/a	Angola	n/a	n/a	n/a	
n/a	Argentina	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belgium	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Bolivia, Plurinational St.	n/a	n/a	n/a	
n/a	Brazil	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Cameroon	n/a	n/a	n/a	
n/a	Canada	n/a	n/a	n/a	
n/a	Chile	n/a	n/a	n/a	
n/a	Colombia	n/a	n/a	n/a	
n/a	Costa Rica	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Dominican Republic	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Guatemala	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Honduras	n/a	n/a	n/a	
n/a	Hong Kong (China)	n/a	n/a	n/a	
n/a	India	n/a	n/a	n/a	
n/a	Indonesia	n/a	n/a	n/a	
n/a	Israel	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Luxembourg	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Malaysia	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Malta	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mexico	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Netherlands	n/a	n/a	n/a	
n/a	New Zealand	n/a	n/a	n/a	
n/a	Nicaragua	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Nigeria	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Pakistan	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Philippines	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	South Africa	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Thailand	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Tunisia	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uruguay	n/a	n/a	n/a	
n/a	Venezuela, Bolivarian Rep.	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2003–10)

7.1.3 ICT and business model creation

Average answer to the question: To what extent are information and communication technologies creating new business models, services and products in your country? 1 = not at all; 7 = significantly† | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Sweden	5.80	79.92	1.00	●
2	United States of America	5.62	76.99	0.99	●
3	United Kingdom	5.59	76.49	0.98	●
4	Singapore	5.52	75.34	0.98	
5	Norway	5.45	74.15	0.97	
6	Qatar	5.43	73.76	0.96	●
7	Denmark	5.35	72.58	0.95	
8	Malaysia	5.35	72.48	0.95	
9	Estonia	5.28	71.39	0.94	●
10	Netherlands	5.26	71.00	0.93	
11	Canada	5.25	70.86	0.92	
12	Finland	5.25	70.77	0.92	
13	Iceland	5.23	70.56	0.91	
14	France	5.21	70.18	0.90	●
15	Israel	5.19	69.77	0.89	
16	Switzerland	5.16	69.41	0.89	
17	Saudi Arabia	5.16	69.31	0.88	●
18	Hong Kong (China)	5.16	69.30	0.87	
19	Korea, Rep.	5.13	68.85	0.86	
20	United Arab Emirates	5.12	68.73	0.86	
21	Malta	4.95	65.76	0.85	
22	Lithuania	4.93	65.47	0.84	
23	Australia	4.92	65.37	0.83	
24	Germany	4.92	65.32	0.83	
25	Uruguay	4.91	65.08	0.82	●
26	Belgium	4.90	65.05	0.81	
27	Luxembourg	4.90	64.95	0.80	
28	New Zealand	4.90	64.95	0.80	
29	Portugal	4.89	64.82	0.79	
30	Ireland	4.84	64.00	0.78	
31	India	4.84	63.92	0.77	●
32	China	4.77	62.86	0.77	
33	Brazil	4.76	62.68	0.76	
34	Chile	4.75	62.58	0.75	
35	Senegal	4.70	61.59	0.74	●
36	Austria	4.68	61.29	0.73	
37	Guatemala	4.65	60.85	0.73	●
38	Colombia	4.60	59.95	0.72	
39	Tunisia	4.58	59.71	0.71	
40	Bahrain	4.57	59.56	0.70	
41	Panama	4.54	59.05	0.70	
42	Oman	4.52	58.73	0.69	
43	Costa Rica	4.50	58.36	0.68	
44	Montenegro	4.50	58.34	0.67	
45	Kenya	4.49	58.20	0.67	
46	Rwanda	4.49	58.17	0.66	●
47	Sri Lanka	4.48	58.08	0.65	
48	Spain	4.47	57.83	0.64	
49	Mexico	4.44	57.28	0.64	
50	Honduras	4.42	57.06	0.63	●
51	Dominican Republic	4.40	56.70	0.62	●
52	Japan	4.40	56.68	0.61	
53	Indonesia	4.35	55.91	0.61	
54	Peru	4.35	55.90	0.60	
55	El Salvador	4.29	54.83	0.59	
56	South Africa	4.28	54.67	0.58	
57	Azerbaijan	4.27	54.57	0.58	
58	Philippines	4.25	54.09	0.57	
59	Nigeria	4.24	53.99	0.56	●
60	Thailand	4.24	53.95	0.55	
61	Argentina	4.21	53.43	0.55	
62	Albania	4.18	53.00	0.54	
63	Turkey	4.18	52.93	0.53	
64	Jordan	4.17	52.75	0.52	
65	Mauritius	4.15	52.42	0.52	
66	Cyprus	4.14	52.28	0.51	
67	Brunei Darussalam	4.11	51.80	0.50	
68	Jamaica	4.10	51.70	0.49	
69	Slovenia	4.07	51.24	0.48	
70	Egypt	4.07	51.11	0.48	
71	Gambia	4.05	50.86	0.47	
72	Latvia	4.04	50.72	0.46	
73	Slovakia	4.01	50.09	0.45	
74	Czech Republic	3.96	49.42	0.45	
75	Croatia	3.95	49.15	0.44	
76	Viet Nam	3.94	49.08	0.43	
77	Pakistan	3.94	48.95	0.42	
78	Bulgaria	3.91	48.55	0.42	
79	Ecuador	3.89	48.24	0.41	
80	Poland	3.87	47.89	0.40	
81	Trinidad and Tobago	3.86	47.66	0.39	
82	Mali	3.85	47.54	0.39	
83	Kazakhstan	3.83	47.10	0.38	
84	Uganda	3.81	46.81	0.37	
85	Zambia	3.77	46.16	0.36	
86	Malawi	3.77	46.10	0.36	
87	Ukraine	3.75	45.88	0.35	
88	Italy	3.74	45.64	0.34	
89	Cambodia	3.72	45.38	0.33	
90	Paraguay	3.70	44.99	0.33	
91	Mongolia	3.69	44.91	0.32	
92	Armenia	3.68	44.64	0.31	
93	Guyana	3.67	44.51	0.30	
94	Bolivia, Plurinational St.	3.67	44.46	0.30	
95	Russian Federation	3.67	44.44	0.29	
96	Iran, Islamic Rep.	3.66	44.36	0.28	
97	Ghana	3.66	44.31	0.27	
98	Morocco	3.64	44.06	0.27	
99	Hungary	3.64	43.96	0.26	○
100	Macedonia, FYR	3.58	42.99	0.25	○
101	Bangladesh	3.57	42.80	0.24	
102	Mozambique	3.57	42.76	0.23	
103	Bosnia and Herzegovina	3.56	42.67	0.23	
104	Venezuela, Bolivarian Rep.	3.55	42.55	0.22	
105	Nicaragua	3.53	42.17	0.21	
106	Namibia	3.53	42.15	0.20	
107	Moldova, Rep.	3.52	42.05	0.20	
108	Georgia	3.51	41.91	0.19	
109	Romania	3.51	41.81	0.18	○
110	Kuwait	3.50	41.71	0.17	
111	Tanzania, United Rep.	3.50	41.70	0.17	
112	Nepal	3.45	40.77	0.16	
113	Benin	3.44	40.68	0.15	
114	Madagascar	3.41	40.25	0.14	
115	Botswana	3.41	40.10	0.14	○
116	Cameroon	3.40	39.97	0.13	
117	Tajikistan	3.32	38.59	0.12	
118	Greece	3.26	37.72	0.11	○
119	Côte d'Ivoire	3.26	37.65	0.11	
120	Kyrgyzstan	3.23	37.14	0.10	
121	Ethiopia	3.18	36.31	0.09	
122	Zimbabwe	3.17	36.13	0.08	
123	Burkina Faso	3.14	35.75	0.08	
124	Lebanon	3.08	34.64	0.07	○
125	Belize	2.97	32.82	0.06	○
126	Lesotho	2.95	32.50	0.05	○
127	Serbia	2.93	32.23	0.05	○
128	Syrian Arab Rep.	2.72	28.75	0.04	○
129	Angola	2.64	27.28	0.03	
130	Yemen	2.55	25.89	0.02	
131	Burundi	2.45	24.17	0.02	○
132	Swaziland	2.44	24.02	0.01	○
133	Algeria	2.12	18.68	0.00	○
n/a	Belarus	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	

SOURCE: World Economic Forum, *Executive Opinion Survey 2010–2011*

7.1.4 ICT and organizational models creation

Average answer to the question: To what extent are information and communication technologies creating new organizational models (virtual teams, remote working, tele-commuting, etc.) within businesses in your country? 1 = not at all; 7 = significantly† | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Singapore	5.88	81.40	1.00	●	
2	Qatar	5.72	78.62	0.99	●	
3	Rwanda	5.69	78.13	0.98	●	
4	Malta	5.58	76.36	0.98	●	
5	Saudi Arabia	5.53	75.49	0.97	●	
6	Bahrain	5.39	73.12	0.96	●	
7	United Arab Emirates	5.37	72.90	0.95	●	
8	Sweden	5.36	72.75	0.95		
9	Malaysia	5.35	72.56	0.94		
10	Oman	5.20	70.05	0.93	●	
11	Luxembourg	5.17	69.46	0.92		
12	Portugal	5.09	68.11	0.92	●	
13	Azerbaijan	5.01	66.89	0.91	●	
14	Korea, Rep.	4.99	66.57	0.90		
15	China	4.97	66.24	0.89		
16	Denmark	4.91	65.23	0.89		
17	Estonia	4.91	65.12	0.88		
18	New Zealand	4.88	64.71	0.87		
19	Finland	4.88	64.65	0.86		
20	Sri Lanka	4.87	64.56	0.86	●	
21	Australia	4.78	62.97	0.85		
22	Montenegro	4.64	60.73	0.84	●	
23	Tunisia	4.62	60.32	0.83	●	
24	Gambia	4.61	60.18	0.83	●	
25	United States of America	4.61	60.10	0.82		
26	Hong Kong (China)	4.60	60.00	0.81		
27	United Kingdom	4.59	59.78	0.80		
28	Chile	4.56	59.31	0.80		
29	Kenya	4.53	58.87	0.79	●	
30	Norway	4.50	58.35	0.78		
31	Iceland	4.47	57.79	0.77		
32	Panama	4.47	57.76	0.77		
33	India	4.45	57.58	0.76		
34	Switzerland	4.43	57.14	0.75		
35	Brunei Darussalam	4.41	56.82	0.74		
36	Senegal	4.40	56.58	0.73	●	
37	Israel	4.38	56.29	0.73		
38	Uruguay	4.37	56.19	0.72		
39	France	4.35	55.81	0.71		
40	Japan	4.34	55.60	0.70		
41	Netherlands	4.33	55.58	0.70		
42	Viet Nam	4.27	54.51	0.69		
43	Uganda	4.25	54.15	0.68	●	
44	Germany	4.25	54.11	0.67		
45	Austria	4.25	54.09	0.67		
46	Colombia	4.23	53.90	0.66		
47	Mauritius	4.22	53.68	0.65		
48	Jordan	4.21	53.53	0.64		
49	Morocco	4.20	53.37	0.64		
50	Canada	4.20	53.26	0.63		
51	Botswana	4.18	52.98	0.62		
52	Ethiopia	4.15	52.50	0.61	●	
53	Indonesia	4.15	52.43	0.61		
54	Cyprus	4.12	52.07	0.60		
55	Cambodia	4.11	51.82	0.59		
56	Albania	4.08	51.34	0.58		
57	Kazakhstan	4.08	51.29	0.58		
58	Zambia	4.07	51.21	0.57		
59	Bangladesh	4.07	51.19	0.56		
60	Guyana	4.07	51.19	0.55		
61	Ireland	4.04	50.68	0.55		○
62	Brazil	4.03	50.42	0.54		
63	Belgium	4.00	49.93	0.53		○
64	Tajikistan	3.97	49.54	0.52		
65	Mali	3.90	48.28	0.52	●	
66	Macedonia, FYR	3.88	48.08	0.51		
67	Costa Rica	3.88	48.07	0.50		
68	Lithuania	3.87	47.84	0.49		
69	Nigeria	3.87	47.82	0.48		
70	Dominican Republic	3.86	47.68	0.48		
71	Armenia	3.84	47.30	0.47		
72	Mozambique	3.82	46.96	0.46		
73	Burkina Faso	3.82	46.96	0.45		
74	Jamaica	3.79	46.50	0.45		
75	Turkey	3.77	46.13	0.44		
76	Malawi	3.76	46.08	0.43		
77	Mexico	3.74	45.65	0.42		
78	Namibia	3.72	45.40	0.42		
79	Mongolia	3.72	45.39	0.41		
80	Iran, Islamic Rep.	3.71	45.23	0.40		
81	Ghana	3.67	44.42	0.39		
82	Ecuador	3.60	43.38	0.39		
83	Trinidad and Tobago	3.60	43.26	0.38		
84	Georgia	3.58	43.00	0.37		
85	Thailand	3.58	42.97	0.36		
86	Tanzania, United Rep.	3.57	42.88	0.36		
87	Benin	3.57	42.82	0.35		
88	Pakistan	3.54	42.41	0.34		
89	Peru	3.54	42.31	0.33		
90	Russian Federation	3.53	42.15	0.33		
91	Hungary	3.48	41.40	0.32		
92	Egypt	3.48	41.40	0.31		
93	Syrian Arab Rep.	3.48	41.32	0.30		
94	South Africa	3.47	41.14	0.30		
95	Spain	3.46	40.97	0.29		○
96	Philippines	3.44	40.71	0.28		
97	Bulgaria	3.42	40.28	0.27		○
98	Slovenia	3.41	40.18	0.27		○
99	Latvia	3.41	40.12	0.26		○
100	Honduras	3.38	39.58	0.25		
101	Cameroon	3.32	38.67	0.24		
102	Czech Republic	3.28	37.93	0.23		○
103	Slovakia	3.26	37.75	0.23		○
104	Moldova, Rep.	3.24	37.41	0.22		
105	Kuwait	3.24	37.33	0.21		
106	Zimbabwe	3.22	36.98	0.20		
107	Italy	3.20	36.75	0.20		○
108	Croatia	3.19	36.51	0.19		○
109	Nepal	3.19	36.50	0.18		
110	Poland	3.12	35.39	0.17		○
111	Romania	3.05	34.10	0.17		○
112	Côte d'Ivoire	3.00	33.40	0.16		
113	Greece	3.00	33.36	0.15		
114	Serbia	3.00	33.34	0.14		○
115	Angola	3.00	33.33	0.14		
116	Ukraine	2.95	32.57	0.13		○
117	Bolivia, Plurinational St.	2.95	32.43	0.12		○
118	El Salvador	2.93	32.22	0.11		
119	Guatemala	2.85	30.89	0.11		
120	Bosnia and Herzegovina	2.83	30.49	0.10		○
121	Venezuela, Bolivarian Rep.	2.81	30.11	0.09		
122	Lesotho	2.80	29.96	0.08		
123	Madagascar	2.75	29.20	0.08		
124	Paraguay	2.71	28.49	0.07		○
125	Algeria	2.66	27.62	0.06		
126	Swaziland	2.65	27.56	0.05		○
127	Argentina	2.59	26.55	0.05		○
128	Kyrgyzstan	2.47	24.57	0.04		○
129	Nicaragua	2.47	24.44	0.03		○
130	Burundi	2.45	24.14	0.02		○
131	Belize	2.40	23.29	0.02		○
132	Lebanon	2.16	19.27	0.01		○
133	Yemen	1.98	16.35	0.00		○
n/a	Belarus	n/a	n/a	n/a		
n/a	Fiji	n/a	n/a	n/a		
n/a	Gabon	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Niger	n/a	n/a	n/a		
n/a	Sudan	n/a	n/a	n/a		
n/a	Togo	n/a	n/a	n/a		
n/a	Uzbekistan	n/a	n/a	n/a		

SOURCE: World Economic Forum, *Executive Opinion Survey 2010–2011*

7.2.1 Recreation and culture consumption

Recreation and culture (% total individual consumption) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Norway	13.63	100.00	1.00	●
2	New Zealand	11.58	84.64	0.99	●
3	United Kingdom	11.40	83.32	0.98	●
4	Austria	11.37	83.10	0.97	●
5	Sweden	11.30	82.59	0.96	
6	Australia	11.29	82.51	0.95	●
7	Denmark	11.21	81.92	0.94	
8	Finland	11.10	81.10	0.93	
9	Malta (2010)	10.93	79.78	0.92	
10	Japan	10.82	78.96	0.91	
11	Czech Republic	10.79	78.72	0.90	●
12	Slovenia	10.27	74.81	0.89	●
13	Netherlands	10.25	74.67	0.88	
14	Spain	9.87	71.87	0.87	
15	Germany	9.52	69.19	0.86	
16	Belgium	9.44	68.63	0.85	
17	Canada	9.32	67.73	0.84	
18	United States of America	9.28	67.42	0.83	
19	France	9.23	67.02	0.82	
20	Singapore	8.68	62.90	0.81	
21	Slovakia	8.58	62.20	0.80	
22	Lithuania	8.40	60.82	0.79	
23	Latvia	8.09	58.48	0.78	
24	Cyprus (2009)	7.85	56.71	0.77	
25	Korea, Rep.	7.79	56.25	0.76	
26	Estonia	7.68	55.46	0.75	
27	Switzerland	7.68	55.41	0.74	
28	Croatia	7.63	55.06	0.73	
29	Portugal	7.54	54.39	0.72	
30	Greece	7.53	54.30	0.71	
31	Iceland (2010)	7.34	52.86	0.70	
32	Hungary	7.30	52.61	0.69	
33	Luxembourg (2009)	7.22	52.02	0.68	
34	Poland	6.98	50.22	0.67	
35	Qatar	6.86	49.32	0.66	
36	Italy	6.85	49.20	0.65	
37	Costa Rica	6.82	49.03	0.64	
38	Israel	6.82	49.02	0.63	
39	Hong Kong (China)	6.76	48.57	0.62	
40	Ireland	6.73	48.31	0.61	
41	Bahrain	6.73	48.29	0.60	
42	Serbia	6.68	47.94	0.59	
43	Venezuela, Bolivarian Rep.	6.30	45.10	0.58	
44	Ecuador	5.98	42.73	0.57	
45	Chile	5.95	42.49	0.56	
46	Georgia	5.69	40.53	0.55	
47	China	5.30	37.57	0.54	
48	Bulgaria	5.29	37.49	0.53	
49	Russian Federation	5.24	37.12	0.52	
50	Uruguay	5.19	36.77	0.51	
51	Thailand	5.14	36.37	0.49	
52	Brazil	5.11	36.21	0.48	
53	Malaysia	5.06	35.82	0.47	
54	Argentina	4.95	34.99	0.46	
55	Mexico	4.91	34.70	0.45	
56	Colombia	4.88	34.47	0.44	
57	Bosnia and Herzegovina	4.75	33.45	0.43	
58	Romania	4.53	31.86	0.42	
59	Kenya	4.21	29.41	0.41	
60	Ukraine	4.10	28.64	0.40	
61	Turkey	4.08	28.42	0.39	
62	Kuwait	3.79	26.26	0.38	
63	Honduras (2006)	3.73	25.86	0.37	
64	Belarus	3.63	25.10	0.36	
65	South Africa	3.63	25.10	0.35	
66	Azerbaijan	3.57	24.65	0.34	
67	Guatemala	3.33	22.83	0.33	
68	Montenegro	3.28	22.49	0.32	
69	Ghana (2005)	3.10	21.13	0.31	
70	Tunisia	3.07	20.93	0.30	
71	Macedonia, FYR	3.02	20.54	0.29	
72	Sri Lanka (2009)	2.90	19.61	0.28	
73	Nicaragua (2007)	2.64	17.67	0.27	
74	Niger (2010)	2.60	17.34	0.26	
75	Bolivia, Plurinational St.	2.45	16.25	0.25	
76	Kazakhstan	2.43	16.11	0.24	
77	Jordan	2.39	15.77	0.23	
78	Uzbekistan	2.39	15.77	0.22	
79	United Arab Emirates	2.22	14.55	0.21	○
80	Dominican Republic	2.22	14.51	0.20	
81	Nigeria	2.06	13.30	0.19	
82	Mongolia (2009)	1.98	12.74	0.18	
83	Egypt	1.96	12.58	0.17	
84	Pakistan	1.80	11.39	0.16	
85	Cameroon	1.74	10.90	0.15	
86	Algeria	1.73	10.82	0.14	
87	Peru	1.70	10.61	0.13	○
88	Viet Nam	1.66	10.32	0.12	○
89	Malawi (2008)	1.49	9.06	0.11	
90	Saudi Arabia	1.48	8.99	0.10	○
91	Indonesia	1.38	8.26	0.09	○
92	India	1.28	7.48	0.08	○
93	Morocco	1.24	7.17	0.07	○
94	Iran, Islamic Rep.	0.85	4.28	0.06	○
95	Kyrgyzstan (2010)	0.84	4.19	0.05	○
96	Moldova, Rep. (2010)	0.51	1.73	0.04	○
97	Philippines	0.51	1.69	0.03	○
98	Senegal (2009)	0.45	1.24	0.02	○
99	Armenia (2009)	0.43	1.10	0.01	○
100	Yemen (2008)	0.28	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bangladesh	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Cambodia	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	El Salvador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Fiji	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Lao PDR	n/a	n/a	n/a	
n/a	Lebanon	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Mauritius	n/a	n/a	n/a	
n/a	Mozambique	n/a	n/a	n/a	
n/a	Namibia	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Oman	n/a	n/a	n/a	
n/a	Panama	n/a	n/a	n/a	
n/a	Paraguay	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: United Nations Statistics Division, National Accounts Official Country Data, United Nations database *UNdata* (2005–11); Euromonitor *Passport GMID* (Global Market Information Database) (2005–11)

7.2.2 National feature films produced

Number of national feature films produced (per million population 15–69 years old)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland (2011)	35.35	100.00	0.97	●
1	Mauritius	20.06	100.00	0.97	●
1	Switzerland (2011)	18.99	100.00	0.97	●
1	Guyana	16.88	100.00	0.97	●
5	Malta	16.10	95.35	0.96	●
6	Luxembourg (2011)	13.63	80.76	0.95	
7	Hong Kong (China)	12.75	75.54	0.94	
8	Nigeria	11.57	68.55	0.93	●
9	Estonia (2011)	10.34	61.27	0.92	
10	Ireland (2011)	9.16	54.24	0.91	
11	Denmark (2011)	8.37	49.57	0.90	
12	Mongolia	7.94	47.01	0.89	●
13	Latvia (2011)	7.24	42.87	0.88	●
14	Norway (2011)	6.93	41.07	0.87	
15	Gabon	6.64	39.33	0.86	●
16	Sweden (2011)	6.31	37.39	0.85	
17	Finland (2011)	6.28	37.17	0.84	
18	Uruguay	6.18	36.62	0.83	●
19	Spain (2011)	5.93	35.11	0.82	
20	Austria (2011)	5.87	34.79	0.81	
21	France (2011)	4.83	28.59	0.80	
22	Czech Republic (2011)	4.77	28.25	0.79	
23	Japan (2011)	4.64	27.49	0.78	
24	New Zealand	4.60	27.24	0.77	
25	Belgium (2011)	4.53	26.82	0.76	
26	Portugal (2011)	4.43	26.25	0.75	
27	Georgia	4.42	26.16	0.74	
28	Korea, Rep.	4.34	25.69	0.73	
29	Bolivia, Plurinational St.	4.22	24.98	0.72	●
30	Israel	4.01	23.78	0.71	
31	Netherlands (2011)	3.95	23.37	0.70	
32	Hungary (2011)	3.79	22.48	0.69	
33	Serbia	3.68	21.80	0.68	
34	United States of America (2011)	3.49	20.64	0.67	
35	Canada	3.26	19.34	0.66	
36	Cambodia	3.07	18.17	0.65	
37	Italy (2011)	3.06	18.10	0.64	
38	Australia	2.87	17.00	0.63	
39	Lebanon	2.73	16.16	0.62	
40	Germany (2011)	2.68	15.90	0.61	
41	Slovenia (2011)	2.66	15.74	0.60	
42	Croatia (2011)	2.51	14.88	0.59	
43	Lithuania (2011)	2.45	14.52	0.58	
44	Azerbaijan	2.40	14.19	0.57	
45	Armenia	2.29	13.56	0.56	
46	Argentina	2.25	13.33	0.55	
47	United Kingdom (2011)	2.16	12.81	0.54	
48	Bulgaria (2011)	2.16	12.81	0.53	
49	Bosnia and Herzegovina	2.13	12.62	0.52	
50	Greece (2011)	2.10	12.41	0.51	
51	Tajikistan	1.97	11.65	0.49	
52	Cameroon	1.83	10.81	0.48	●
53	Fiji	1.72	10.21	0.47	
54	Slovakia (2011)	1.67	9.89	0.46	
55	India	1.61	9.56	0.45	
56	Singapore	1.59	9.40	0.44	○
57	Poland (2011)	1.53	9.06	0.43	
58	Malaysia	1.45	8.61	0.42	
59	Philippines	1.40	8.32	0.41	
60	Turkey (2011)	1.32	7.82	0.40	
61	Romania (2011)	1.26	7.45	0.39	
62	Paraguay	1.25	7.43	0.38	
63	Cyprus (2011)	1.22	7.21	0.37	
64	Chile	1.16	6.84	0.36	
65	Belarus	1.11	6.58	0.35	
66	Kazakhstan	1.07	6.34	0.34	
67	Dominican Republic	0.95	5.63	0.33	
68	Mexico	0.89	5.25	0.32	
69	Egypt	0.89	5.25	0.31	
70	Namibia (2005)	0.81	4.83	0.30	
71	Thailand	0.73	4.35	0.29	
72	Russian Federation (2011)	0.68	4.03	0.28	
73	Bangladesh	0.67	3.95	0.27	
74	Macedonia, FYR (2011)	0.65	3.86	0.26	
75	Morocco	0.65	3.85	0.25	
76	Brazil	0.62	3.70	0.24	
77	Indonesia	0.62	3.67	0.23	
78	Costa Rica	0.62	3.67	0.22	
79	Colombia	0.62	3.66	0.21	
80	South Africa	0.54	3.20	0.20	○
81	Iran, Islamic Rep. (2005)	0.53	3.13	0.19	
82	Lao PDR	0.53	3.12	0.18	
83	China	0.47	2.81	0.17	
84	Venezuela, Bolivarian Rep.	0.47	2.80	0.16	
85	Burkina Faso	0.47	2.78	0.15	
86	Panama (2005)	0.47	2.78	0.14	
87	Peru	0.42	2.50	0.13	○
88	Niger	0.40	2.38	0.12	
89	Moldova, Rep.	0.37	2.18	0.11	○
90	Kyrgyzstan	0.29	1.69	0.10	
91	Nicaragua	0.28	1.67	0.09	○
92	El Salvador (2008)	0.26	1.56	0.08	○
93	Pakistan	0.26	1.52	0.07	
94	Honduras	0.22	1.33	0.06	○
95	Viet Nam	0.19	1.14	0.05	○
96	Ukraine	0.15	0.87	0.04	○
97	Tunisia	0.13	0.80	0.03	○
98	Guatemala	0.13	0.76	0.02	○
99	Mozambique (2006)	0.09	0.52	0.01	○
100	Oman	0.00	0.00	0.00	○
n/a	Albania	n/a	n/a	n/a	
n/a	Algeria	n/a	n/a	n/a	
n/a	Angola	n/a	n/a	n/a	
n/a	Bahrain	n/a	n/a	n/a	
n/a	Belize	n/a	n/a	n/a	
n/a	Benin	n/a	n/a	n/a	
n/a	Botswana	n/a	n/a	n/a	
n/a	Brunei Darussalam	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Côte d'Ivoire	n/a	n/a	n/a	
n/a	Ecuador	n/a	n/a	n/a	
n/a	Ethiopia	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Ghana	n/a	n/a	n/a	
n/a	Jamaica	n/a	n/a	n/a	
n/a	Jordan	n/a	n/a	n/a	
n/a	Kenya	n/a	n/a	n/a	
n/a	Kuwait	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Madagascar	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Mali	n/a	n/a	n/a	
n/a	Montenegro	n/a	n/a	n/a	
n/a	Nepal	n/a	n/a	n/a	
n/a	Qatar	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Saudi Arabia	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Sri Lanka	n/a	n/a	n/a	
n/a	Sudan	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tanzania, United Rep.	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	
n/a	Trinidad and Tobago	n/a	n/a	n/a	
n/a	Uganda	n/a	n/a	n/a	
n/a	United Arab Emirates	n/a	n/a	n/a	
n/a	Uzbekistan	n/a	n/a	n/a	
n/a	Yemen	n/a	n/a	n/a	
n/a	Zambia	n/a	n/a	n/a	
n/a	Zimbabwe	n/a	n/a	n/a	

SOURCE: UNESCO Institute for Statistics, *UIS online database*; complemented by United Nations database *UNdata* and Euromonitor *Passport GMID* (Global Market Information Database); World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2005–11)

7.2.3 Daily newspapers circulation

Paid-for dailies average circulation (per thousand population 15–69 years old)[a] | 2009

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Norway	604.20	100.00	1.00	●
2	Japan	562.80	93.14	0.99	●
3	Finland	537.94	89.02	0.99	
4	Kuwait	505.74	83.69	0.98	●
5	Sweden	485.53	80.34	0.97	
6	Hong Kong (China)	400.84	66.31	0.96	
7	Switzerland	383.49	63.44	0.96	
8	Austria	377.33	62.42	0.95	●
9	Korea, Rep.	351.43	58.13	0.94	
10	Germany	333.65	55.18	0.93	●
11	Malta	321.98	53.25	0.93	
12	United Kingdom	321.02	53.09	0.92	
13	Luxembourg	315.13	52.12	0.91	
14	Netherlands	297.35	49.17	0.90	
15	Singapore	269.83	44.61	0.90	
16	Denmark	269.77	44.60	0.89	
17	Belarus	249.44	41.23	0.88	●
18	Ireland	244.68	40.44	0.87	
19	Estonia	233.63	38.61	0.87	
20	Lithuania	233.55	38.60	0.86	●
21	Iceland	224.85	37.16	0.85	
22	United States of America	212.39	35.09	0.84	
23	New Zealand	207.58	34.30	0.84	
24	Bahrain	207.12	34.22	0.83	
25	Slovenia	197.31	32.60	0.82	
26	Belgium	184.79	30.52	0.81	
27	United Arab Emirates	180.02	29.73	0.81	
28	Czech Republic	172.44	28.48	0.80	
29	France	170.88	28.22	0.79	
30	Croatia	167.78	27.71	0.79	
31	Hungary	167.70	27.69	0.78	
32	Canada	165.92	27.40	0.77	
33	Australia	158.34	26.14	0.76	
34	Bulgaria	155.66	25.70	0.76	
35	Serbia	148.89	24.58	0.75	
36	Thailand	148.85	24.57	0.74	
37	Israel	147.89	24.41	0.73	
38	Moldova, Rep.	147.40	24.33	0.73	
39	Brunei Darussalam	147.00	24.26	0.72	
40	Oman	143.38	23.66	0.71	
41	Trinidad and Tobago	139.70	23.05	0.70	
42	Malaysia	139.66	23.05	0.70	
43	India	137.68	22.72	0.69	
44	Montenegro	137.11	22.62	0.68	
45	Greece	135.65	22.38	0.67	
46	Latvia	131.71	21.73	0.67	
47	Cyprus	123.69	20.40	0.66	
48	Spain	118.11	19.48	0.65	
49	Italy	113.22	18.67	0.64	
50	Mauritius	110.84	18.27	0.64	
51	Poland	110.43	18.20	0.63	
52	China	108.98	17.97	0.62	
53	Algeria	106.85	17.61	0.61	●
54	Macedonia, FYR	104.79	17.27	0.61	
55	Slovakia	104.08	17.15	0.60	
56	Saudi Arabia	103.85	17.11	0.59	
57	Panama	99.69	16.43	0.59	
58	Venezuela, Bolivarian Rep.	94.99	15.65	0.58	
59	Turkey	94.64	15.59	0.57	
60	Lebanon	88.33	14.54	0.56	
61	Qatar	88.05	14.50	0.56	
62	Jordan	86.30	14.21	0.55	
63	Costa Rica	84.27	13.87	0.54	
64	Ukraine	84.07	13.84	0.53	
65	Romania	77.79	12.80	0.53	
66	Egypt	77.36	12.73	0.52	
67	Ecuador	75.75	12.46	0.51	
68	El Salvador	72.52	11.92	0.50	
69	Portugal	69.53	11.43	0.50	
70	Fiji	68.96	11.34	0.49	
71	Bosnia and Herzegovina	67.48	11.09	0.48	
72	Philippines	66.71	10.96	0.47	
73	Jamaica	64.84	10.65	0.47	
74	Mexico	64.52	10.60	0.46	
75	Viet Nam	64.18	10.54	0.45	
76	Uruguay	64.04	10.52	0.44	
77	Guyana	63.31	10.40	0.44	
78	Guatemala	63.06	10.36	0.43	
79	Brazil	60.89	10.00	0.42	
80	Pakistan	58.16	9.55	0.41	
81	Tunisia	53.82	8.83	0.41	
82	Nicaragua	48.01	7.86	0.40	
83	Chile	47.95	7.85	0.39	
84	South Africa	47.90	7.85	0.39	
85	Honduras	42.63	6.97	0.38	
86	Argentina	41.67	6.81	0.37	
87	Sri Lanka	40.72	6.66	0.36	
88	Namibia	40.28	6.58	0.36	
89	Nepal	39.13	6.39	0.35	
90	Colombia	39.02	6.38	0.34	
91	Dominican Republic	38.84	6.35	0.33	
92	Swaziland	36.25	5.92	0.33	
93	Indonesia	34.80	5.68	0.32	
94	Syrian Arab Rep.	31.48	5.13	0.31	
95	Albania	30.98	5.04	0.30	
96	Iran, Islamic Rep.	29.90	4.86	0.30	
97	Senegal	29.80	4.85	0.29	
98	Paraguay	28.85	4.69	0.28	
99	Kazakhstan	28.55	4.64	0.27	
100	Bolivia, Plurinational St.	26.15	4.24	0.27	
101	Mongolia	25.93	4.21	0.26	
102	Gabon	22.13	3.58	0.25	
103	Armenia	19.22	3.10	0.24	
104	Kyrgyzstan	18.59	2.99	0.24	
105	Côte d'Ivoire	18.21	2.93	0.23	
106	Azerbaijan	17.96	2.89	0.22	
107	Morocco	15.78	2.53	0.21	
108	Bangladesh	15.62	2.50	0.21	
109	Ghana	14.23	2.27	0.20	
110	Kenya	14.07	2.24	0.19	
111	Georgia	13.56	2.16	0.19	
112	Yemen	13.50	2.15	0.18	
113	Zambia	12.11	1.92	0.17	
114	Benin	10.70	1.68	0.16	
115	Madagascar	10.47	1.65	0.16	
116	Botswana	8.57	1.33	0.15	
117	Tanzania, United Rep.	7.17	1.10	0.14	
118	Cameroon	6.85	1.05	0.13	
119	Cambodia	6.35	0.96	0.13	
120	Uganda	6.18	0.94	0.12	
121	Nigeria	5.63	0.84	0.11	
122	Zimbabwe	5.49	0.82	0.10	
123	Mali	5.20	0.77	0.10	
124	Angola	4.38	0.64	0.09	
125	Gambia	4.36	0.63	0.08	
126	Burkina Faso	4.22	0.61	0.07	
127	Burundi	4.09	0.59	0.07	
128	Sudan	3.93	0.56	0.06	
129	Malawi	2.91	0.39	0.05	○
130	Lao PDR	2.63	0.35	0.04	
131	Ethiopia	2.03	0.25	0.04	
132	Rwanda	1.74	0.20	0.03	○
133	Uzbekistan	1.66	0.19	0.02	○
134	Mozambique	1.46	0.15	0.01	○
135	Togo	1.46	0.15	0.01	○
136	Niger	0.54	0.00	0.00	○
n/a	Belize	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Peru	n/a	n/a	n/a	
n/a	Russian Federation	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	

SOURCE: World Association of Newspapers and News Publishers, *World Press Trends 2010*

7.2.4 Creative goods exports

Creative goods exports (% of total exports) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Panama	89.54	100.00	0.98	●	
1	Nepal	12.87	100.00	0.98	●	
1	Hong Kong (China)	7.11	100.00	0.98	●	
4	Viet Nam (2009)	6.53	91.86	0.98	●	
5	Pakistan	6.48	91.17	0.97	●	
6	Malta	6.47	91.05	0.96	●	
7	India	6.23	87.62	0.95	●	
8	China	6.19	87.09	0.95		
9	Madagascar	5.58	78.41	0.94	●	
10	Lebanon	5.35	75.28	0.93	●	
11	Italy	5.22	73.38	0.92	●	
12	Switzerland	4.92	69.22	0.92		
13	Mauritius	4.72	66.39	0.91	●	
14	Turkey	4.62	64.89	0.90	●	
15	Moldova, Rep.	4.58	64.44	0.89	●	
16	United Kingdom	4.53	63.67	0.89		
17	Egypt	4.26	59.91	0.88	●	
18	Dominican Republic	3.99	56.05	0.87	●	
19	Denmark	3.86	54.27	0.86		
20	Lithuania	3.80	53.44	0.86	●	
21	Greece	3.62	50.88	0.85	●	
22	Austria	3.54	49.78	0.84		
23	Czech Republic	3.45	48.45	0.83		
24	Estonia	3.26	45.86	0.83		
25	Poland	3.11	43.70	0.82		
26	France	3.00	42.14	0.81		
27	Croatia	2.82	39.62	0.80	●	
28	Thailand	2.78	39.09	0.80		
29	Jordan	2.75	38.65	0.79	●	
30	Portugal	2.72	38.16	0.78		
31	Latvia	2.70	37.88	0.77		
32	Sweden	2.62	36.81	0.77		
33	El Salvador	2.62	36.76	0.76	●	
34	United States of America	2.51	35.25	0.75		
35	Romania	2.35	33.04	0.74		
36	Bosnia and Herzegovina	2.34	32.89	0.73	●	
37	Slovenia	2.30	32.32	0.73		
38	Germany	2.24	31.44	0.72		
39	Tanzania, United Rep.	2.21	31.03	0.71	●	
40	Cyprus	2.12	29.75	0.70		
41	Spain	2.10	29.45	0.70		
42	Sri Lanka	2.04	28.71	0.69	●	
43	Malaysia	2.02	28.33	0.68		
44	United Arab Emirates (2008)	1.99	27.96	0.67		
45	Singapore	1.98	27.78	0.67		
46	Albania	1.98	27.76	0.66		
47	Belgium	1.83	25.77	0.65		
48	Serbia	1.83	25.74	0.64		
49	Canada	1.82	25.51	0.64		
50	Slovakia	1.74	24.42	0.63		
51	Tunisia	1.69	23.71	0.62		
52	Syrian Arab Rep. (2008)	1.61	22.64	0.61	●	
53	Armenia	1.58	22.26	0.61		
54	Togo	1.56	21.98	0.60	●	
55	Belarus	1.50	21.05	0.59		
56	Guatemala	1.45	20.42	0.58		
57	Bangladesh (2007)	1.44	20.25	0.58		
58	Netherlands	1.44	20.17	0.57		
59	Bulgaria	1.38	19.45	0.56		
60	Mexico	1.35	18.93	0.55		
61	Ireland	1.32	18.50	0.55		○
62	Uruguay (2009)	1.26	17.68	0.54		
63	Bolivia, Plurinational St.	1.26	17.66	0.53		
64	Iran, Islamic Rep.	1.23	17.21	0.52		
65	Ukraine	1.18	16.56	0.52		
66	Colombia	1.11	15.60	0.51		
67	Namibia (2008)	1.11	15.55	0.50		
68	Morocco	1.09	15.27	0.49		
69	Hungary	1.04	14.57	0.48		
70	Philippines	1.03	14.41	0.48		
71	Kenya	1.03	14.40	0.47		
72	Finland	0.99	13.85	0.46		○
73	Jamaica	0.95	13.39	0.45		
74	Zimbabwe	0.94	13.14	0.45		
75	Costa Rica	0.93	13.09	0.44		
76	Fiji (2009)	0.89	12.52	0.43		
77	Macedonia, FYR (2009)	0.88	12.40	0.42		
78	New Zealand	0.88	12.29	0.42		○
79	Israel	0.86	12.02	0.41		○
80	Korea, Rep.	0.86	12.00	0.40		○
81	Montenegro	0.80	11.22	0.39		
82	Cambodia	0.78	11.00	0.39		
83	Japan	0.76	10.61	0.38		
84	Luxembourg	0.57	8.05	0.37		○
85	Peru	0.56	7.91	0.36		
86	Guyana	0.51	7.19	0.36		
87	Chile	0.49	6.92	0.35		
88	Brazil	0.46	6.44	0.34		
89	Australia	0.45	6.31	0.33		○
90	Paraguay	0.44	6.19	0.33		
91	Georgia	0.44	6.14	0.32		
92	South Africa	0.41	5.73	0.31		
93	Argentina	0.35	4.92	0.30		
94	Bahrain	0.33	4.62	0.30		
95	Rwanda	0.33	4.55	0.29		
96	Russian Federation	0.32	4.44	0.28		
97	Ethiopia	0.32	4.40	0.27		
98	Senegal	0.31	4.27	0.27		
99	Burundi	0.30	4.21	0.26		
100	Mongolia (2007)	0.27	3.78	0.25		
101	Uganda	0.26	3.66	0.24		
102	Saudi Arabia	0.25	3.45	0.23		
103	Kuwait (2009)	0.24	3.34	0.23		
104	Norway	0.24	3.28	0.22		○
105	Malawi	0.22	3.04	0.21		
106	Oman	0.22	3.01	0.20		
107	Trinidad and Tobago (2009)	0.18	2.55	0.20		
108	Burkina Faso	0.18	2.50	0.19		
109	Ecuador	0.18	2.49	0.18		
110	Honduras (2009)	0.17	2.41	0.17		
111	Kyrgyzstan	0.17	2.36	0.17		
112	Nicaragua	0.15	2.02	0.16		
113	Botswana	0.14	1.95	0.15		
114	Brunei Darussalam (2004)	0.11	1.51	0.14		○
115	Côte d'Ivoire	0.11	1.46	0.14		
116	Ghana	0.10	1.37	0.13		
117	Iceland	0.10	1.33	0.12		○
118	Yemen (2009)	0.06	0.87	0.11		
119	Benin (2006)	0.06	0.80	0.11		
120	Qatar (2009)	0.06	0.78	0.10		○
121	Mali	0.06	0.77	0.09		
122	Belize	0.04	0.54	0.08		○
123	Niger	0.04	0.48	0.08		
124	Zambia	0.04	0.46	0.07		
125	Kazakhstan (2009)	0.03	0.40	0.06		○
126	Cameroon	0.03	0.39	0.05		○
127	Nigeria	0.02	0.30	0.05		
128	Azerbaijan	0.02	0.28	0.04		○
129	Venezuela, Bolivarian Rep.	0.01	0.17	0.03		
130	Mozambique	0.01	0.17	0.02		○
131	Algeria	0.00	0.01	0.02		○
132	Sudan (2009)	0.00	0.00	0.01		○
133	Gabon (2009)	0.00	0.00	0.00		○
n/a	Angola	n/a	n/a	n/a		
n/a	Gambia	n/a	n/a	n/a		
n/a	Indonesia	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Lesotho	n/a	n/a	n/a		
n/a	Swaziland	n/a	n/a	n/a		
n/a	Tajikistan	n/a	n/a	n/a		
n/a	Uzbekistan	n/a	n/a	n/a		

SOURCE: UNCTAD, Creative Economy Report, *UNCTADStat* (2004–10)

7.2.5 Creative services exports

Creative services: Exports (% of total services exports) | 2010

Rank	Country/Economy	Value	Score (0–100)	Percent rank		
1	Malta	70.33	100.00	0.99	●	
1	Netherlands	29.46	100.00	0.99	●	
3	Kyrgyzstan	21.66	73.51	0.98	●	
4	Brazil	20.45	69.41	0.97	●	
5	Hungary	19.55	66.37	0.96	●	
6	Canada	19.35	65.69	0.95		
7	Serbia	18.86	64.01	0.95	●	
8	Russian Federation	15.89	53.92	0.94	●	
9	Germany	13.84	46.99	0.93		
10	Mozambique	13.81	46.86	0.92	●	
11	Swaziland	12.40	42.09	0.91	●	
12	Argentina	12.27	41.65	0.90	●	
13	Romania	12.07	40.97	0.89	●	
14	Macedonia, FYR	12.04	40.87	0.88	●	
15	Belgium	11.59	39.34	0.87		
16	Norway	11.45	38.84	0.86		
17	Austria	10.90	36.97	0.86		
18	Poland	10.78	36.57	0.85	●	
19	Ecuador	9.72	32.98	0.84	●	
20	Colombia	9.68	32.86	0.83	●	
21	Czech Republic	9.29	31.52	0.82		
22	Algeria (2009)	8.27	28.08	0.81	●	
23	Ukraine	7.73	26.23	0.80	●	
24	Spain	7.66	26.01	0.79		
25	Portugal	7.65	25.97	0.78		
26	Slovenia	7.56	25.64	0.77		
27	Latvia	7.28	24.71	0.77		
28	Lebanon	7.23	24.55	0.76		
29	Australia (2008)	7.14	24.24	0.75		
30	Croatia	6.90	23.41	0.74		
31	Italy	6.68	22.65	0.73		
32	Bulgaria	6.51	22.09	0.72		
33	Albania	5.92	20.07	0.71		
34	New Zealand	5.49	18.63	0.70		
35	Slovakia	5.46	18.52	0.69		
36	United States of America	5.35	18.15	0.68		
37	Turkey	5.31	18.01	0.68		
38	Armenia	5.26	17.85	0.67		
39	Estonia	5.11	17.34	0.66		
40	Angola	4.65	15.79	0.65	●	
41	Venezuela, Bolivarian Rep.	4.64	15.74	0.64	●	
42	Montenegro	4.55	15.44	0.63		
43	Malaysia (2009)	4.49	15.23	0.62		
44	Belarus	4.08	13.83	0.61		
45	Finland	3.57	12.10	0.60		
46	Moldova, Rep.	3.55	12.03	0.59		
47	Guyana (2008)	3.51	11.91	0.59		
48	Kazakhstan	3.45	11.71	0.58		
49	India	3.44	11.67	0.57		
50	Paraguay	3.21	10.87	0.56		
51	Lithuania	3.20	10.85	0.55		
52	Luxembourg	2.94	9.96	0.54		
53	Azerbaijan	2.82	9.56	0.53		
54	Korea, Rep.	2.68	9.08	0.52		
55	Jamaica	2.50	8.48	0.51		
56	United Kingdom	2.42	8.20	0.50		○
57	Ireland	2.28	7.72	0.50		○
58	Georgia	2.23	7.55	0.49		
59	France	2.08	7.04	0.48		
60	Bangladesh	2.04	6.91	0.47		
61	Syrian Arab Rep.	2.00	6.77	0.46	●	
62	China	1.83	6.20	0.45		
63	Greece	1.64	5.54	0.44		
64	Cameroon	1.51	5.10	0.43		
65	Pakistan	1.48	5.02	0.42		
66	Sudan	1.31	4.42	0.41		
67	Botswana	1.23	4.17	0.41		
68	Honduras	1.15	3.88	0.40		
69	Cyprus	1.13	3.81	0.39		
70	Mexico	1.04	3.51	0.38		
71	Egypt	1.01	3.42	0.37		
72	Morocco	0.92	3.10	0.36		
73	Niger (2008)	0.87	2.93	0.35		
74	Philippines	0.83	2.81	0.34		
75	Mali (2009)	0.82	2.76	0.33		
76	Chile	0.80	2.72	0.32		○
77	Burkina Faso (2009)	0.79	2.68	0.32		
78	Denmark	0.72	2.43	0.31		○
79	Malawi (2009)	0.65	2.19	0.30		
80	Côte d'Ivoire (2008)	0.63	2.13	0.29		
81	Sweden	0.62	2.10	0.28		○
82	Indonesia	0.62	2.10	0.27		
83	Bolivia, Plurinational St.	0.62	2.09	0.26		
84	Mauritius	0.59	1.99	0.25		○
85	Namibia	0.57	1.93	0.24		
86	South Africa	0.48	1.61	0.23		
87	Madagascar (2005)	0.37	1.25	0.23		
88	Bosnia and Herzegovina	0.36	1.20	0.22		
89	Fiji (2009)	0.35	1.18	0.21		
90	Tunisia	0.33	1.12	0.20		○
91	Benin (2009)	0.33	1.12	0.19		
92	Senegal (2009)	0.32	1.07	0.18		
93	Iceland (2009)	0.28	0.93	0.17		○
94	Tajikistan	0.23	0.78	0.16		
95	Peru	0.20	0.65	0.15		
96	Singapore	0.19	0.65	0.14		○
97	Guatemala	0.18	0.62	0.14		
98	Costa Rica	0.18	0.60	0.13		○
99	Japan	0.17	0.56	0.12		○
100	Hong Kong (China) (2009)	0.16	0.52	0.11		○
101	Mongolia	0.12	0.39	0.10		○
102	Tanzania, United Rep.	0.12	0.39	0.09		
103	El Salvador	0.09	0.28	0.08		○
104	Kenya	0.06	0.18	0.07		○
105	Cambodia	0.05	0.17	0.06		
106	Ethiopia	0.04	0.14	0.05		
107	Togo (2009)	0.04	0.14	0.05		
108	Lesotho	0.03	0.10	0.04		○
109	Rwanda	0.03	0.09	0.03		○
110	Uruguay	0.03	0.09	0.02		○
111	Panama (2006)	0.02	0.05	0.01		○
112	Switzerland	0.00	0.00	0.00		○
n/a	Bahrain	n/a	n/a	n/a		
n/a	Belize	n/a	n/a	n/a		
n/a	Brunei Darussalam	n/a	n/a	n/a		
n/a	Burundi	n/a	n/a	n/a		
n/a	Dominican Republic	n/a	n/a	n/a		
n/a	Gabon	n/a	n/a	n/a		
n/a	Gambia	n/a	n/a	n/a		
n/a	Ghana	n/a	n/a	n/a		
n/a	Iran, Islamic Rep.	n/a	n/a	n/a		
n/a	Israel	n/a	n/a	n/a		
n/a	Jordan	n/a	n/a	n/a		
n/a	Kuwait	n/a	n/a	n/a		
n/a	Lao PDR	n/a	n/a	n/a		
n/a	Nepal	n/a	n/a	n/a		
n/a	Nicaragua	n/a	n/a	n/a		
n/a	Nigeria	n/a	n/a	n/a		
n/a	Oman	n/a	n/a	n/a		
n/a	Qatar	n/a	n/a	n/a		
n/a	Saudi Arabia	n/a	n/a	n/a		
n/a	Sri Lanka	n/a	n/a	n/a		
n/a	Thailand	n/a	n/a	n/a		
n/a	Trinidad and Tobago	n/a	n/a	n/a		
n/a	Uganda	n/a	n/a	n/a		
n/a	United Arab Emirates	n/a	n/a	n/a		
n/a	Uzbekistan	n/a	n/a	n/a		
n/a	Viet Nam	n/a	n/a	n/a		
n/a	Yemen	n/a	n/a	n/a		
n/a	Zambia	n/a	n/a	n/a		
n/a	Zimbabwe	n/a	n/a	n/a		

SOURCE: UNCTAD, Creative Economy Report, *UNCTADStat* (2005–10)

7.3.1 Generic top-level domains (gTLDs)

Generic top-level domains gTLDs (per thousand population 15–69 years old) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Belize	100.00	100.00	0.97	●
1	Montenegro	100.00	100.00	0.97	●
1	Netherlands	100.00	100.00	0.97	●
1	Switzerland	100.00	100.00	0.97	●
1	United Kingdom	100.00	100.00	0.97	●
6	Denmark	99.65	99.65	0.96	●
7	Germany	98.94	98.94	0.96	●
8	United States of America	91.19	91.19	0.95	
9	Luxembourg	85.17	85.17	0.94	
10	Norway	74.46	74.46	0.94	
11	Australia	73.86	73.86	0.93	
12	Sweden	73.51	73.51	0.92	
13	Austria	72.85	72.85	0.91	
14	Canada	66.56	66.56	0.91	
15	Iceland	63.93	63.93	0.90	
16	New Zealand	59.96	59.96	0.89	
17	Belgium	58.19	58.19	0.89	
18	Ireland	51.49	51.49	0.88	
19	Hong Kong (China)	51.36	51.36	0.87	
20	France	39.88	39.88	0.86	
21	Czech Republic	37.52	37.52	0.86	
22	Malta	37.10	37.10	0.85	
23	Cyprus	35.20	35.20	0.84	
24	Spain	32.17	32.17	0.84	
25	Finland	31.61	31.61	0.83	
26	Slovenia	30.24	30.24	0.82	
27	Israel	28.68	28.68	0.81	
28	Italy	27.07	27.07	0.81	
29	Hungary	26.95	26.95	0.80	
30	Portugal	26.61	26.61	0.79	
31	Estonia	26.49	26.49	0.79	
32	Poland	25.92	25.92	0.78	
33	Argentina	25.85	25.85	0.77	
34	Singapore	23.37	23.37	0.76	
35	Latvia	20.30	20.30	0.76	
36	Slovakia	19.31	19.31	0.75	
37	Lithuania	18.77	18.77	0.74	
38	Panama	17.93	17.93	0.74	
39	Greece	17.38	17.38	0.73	
40	Croatia	14.48	14.48	0.72	
41	Japan	12.97	12.97	0.71	
42	Korea, Rep.	12.96	12.96	0.71	
43	Bulgaria	12.49	12.49	0.70	
44	Colombia	12.09	12.09	0.69	
45	Romania	11.77	11.77	0.69	
46	Russian Federation	11.04	11.04	0.68	
47	United Arab Emirates	11.02	11.02	0.67	
48	Chile	9.34	9.34	0.66	
49	Turkey	9.22	9.22	0.66	
50	Namibia	7.53	7.53	0.65	
51	South Africa	7.36	7.36	0.64	
52	Ukraine	6.83	6.83	0.64	
53	Brazil	6.57	6.57	0.63	
54	Lebanon	6.55	6.55	0.62	
55	Costa Rica	6.51	6.51	0.61	
56	Uruguay	6.32	6.32	0.61	
57	Kuwait	6.06	6.06	0.60	
58	Mauritius	5.98	5.98	0.59	
59	Fiji	5.50	5.50	0.59	
60	Malaysia	5.45	5.45	0.58	
61	Qatar	4.59	4.59	0.57	
62	Macedonia, FYR	4.37	4.37	0.56	
63	Brunei Darussalam	4.24	4.24	0.56	
64	Viet Nam	4.03	4.03	0.55	
65	Guatemala	3.96	3.96	0.54	
66	Bosnia and Herzegovina	3.92	3.92	0.54	
67	Venezuela, Bolivarian Rep.	3.83	3.83	0.53	
68	Armenia	3.52	3.52	0.52	
69	Jordan	3.52	3.52	0.51	
70	Mexico	3.51	3.51	0.51	
71	Thailand	3.47	3.47	0.50	
72	Jamaica	3.42	3.42	0.49	
73	Bahrain	3.04	3.04	0.49	
74	Serbia	2.97	2.97	0.48	
75	Trinidad and Tobago	2.86	2.86	0.47	
76	Peru	2.79	2.79	0.46	
77	Saudi Arabia	2.45	2.45	0.46	
78	Dominican Republic	2.33	2.33	0.45	
79	Iran, Islamic Rep.	2.25	2.25	0.44	
80	Ecuador	2.25	2.25	0.44	
81	Paraguay	2.24	2.24	0.43	
82	Gabon	2.13	2.13	0.42	
83	Albania	2.12	2.12	0.41	
84	Bolivia, Plurinational St.	2.02	2.02	0.41	
85	Moldova, Rep.	1.98	1.98	0.40	
86	Georgia	1.93	1.93	0.39	
87	China	1.91	1.91	0.39	
88	Mongolia	1.85	1.85	0.38	
89	Belarus	1.81	1.81	0.37	
90	Tunisia	1.79	1.79	0.36	
91	Tajikistan	1.40	1.40	0.36	
92	Guyana	1.28	1.28	0.35	
93	Kazakhstan	1.23	1.23	0.34	
94	Philippines	1.21	1.21	0.34	
95	Oman	1.16	1.16	0.33	
96	Sri Lanka	1.10	1.10	0.32	
97	El Salvador	1.04	1.04	0.31	
98	Morocco	1.03	1.03	0.31	
99	India	1.02	1.02	0.30	
100	Nicaragua	0.97	0.97	0.29	
101	Gambia	0.94	0.94	0.29	
102	Kenya	0.87	0.87	0.28	
103	Azerbaijan	0.82	0.82	0.27	
104	Lao PDR	0.73	0.73	0.26	
105	Indonesia	0.71	0.71	0.26	
106	Nepal	0.66	0.66	0.25	
107	Syrian Arab Rep.	0.63	0.63	0.24	
108	Egypt	0.63	0.63	0.24	
109	Swaziland	0.63	0.63	0.23	
110	Honduras	0.60	0.60	0.22	
111	Kyrgyzstan	0.44	0.44	0.21	
112	Ghana	0.42	0.42	0.21	
113	Pakistan	0.36	0.36	0.20	
114	Niger	0.32	0.32	0.19	
115	Senegal	0.32	0.32	0.19	
116	Malawi	0.31	0.31	0.18	
117	Benin	0.30	0.30	0.17	
118	Botswana	0.29	0.29	0.16	
119	Nigeria	0.29	0.29	0.16	
120	Rwanda	0.28	0.28	0.15	
121	Bangladesh	0.27	0.27	0.14	
122	Uzbekistan	0.26	0.26	0.14	
123	Cambodia	0.26	0.26	0.13	
124	Yemen	0.23	0.23	0.12	
125	Uganda	0.21	0.21	0.11	
126	Lesotho	0.20	0.20	0.11	
127	Burundi	0.19	0.19	0.10	
128	Zimbabwe	0.18	0.18	0.09	
129	Algeria	0.17	0.17	0.09	
130	Côte d'Ivoire	0.16	0.16	0.08	
131	Angola	0.14	0.14	0.07	
132	Cameroon	0.14	0.14	0.06	○
133	Tanzania, United Rep.	0.11	0.11	0.06	
134	Sudan	0.08	0.08	0.05	
135	Mozambique	0.05	0.05	0.04	○
136	Togo	0.04	0.04	0.04	
137	Zambia	0.03	0.03	0.03	○
138	Madagascar	0.03	0.03	0.02	○
139	Mali	0.01	0.01	0.01	○
140	Burkina Faso	0.01	0.01	0.01	○
141	Ethiopia	0.00	0.00	0.00	○

SOURCE: ZookNIC

7.3.2 Country-code top-level domains (ccTLDs)

Country-code top-level domains ccTLDs (per thousand population 15–69 years old) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Montenegro	100.00	100.00	1.00	●
2	Netherlands	84.15	84.15	0.99	●
3	Denmark	79.68	79.68	0.99	●
4	Switzerland	79.59	79.59	0.98	
5	Germany	77.48	77.48	0.97	●
6	Belize	77.05	77.05	0.96	●
7	United Kingdom	75.93	75.93	0.96	
8	Sweden	73.14	73.14	0.95	
9	Luxembourg	72.87	72.87	0.94	
10	Austria	72.80	72.80	0.94	●
11	Belgium	71.44	71.44	0.93	●
12	Iceland	71.25	71.25	0.92	
13	Norway	70.91	70.91	0.91	
14	New Zealand	70.40	70.40	0.91	
15	Australia	69.69	69.69	0.90	
16	Czech Republic	66.09	66.09	0.89	
17	Argentina	63.05	63.05	0.88	●
18	Hungary	61.86	61.86	0.88	
19	Poland	61.62	61.62	0.87	●
20	Finland	60.37	60.37	0.86	
21	Canada	60.32	60.32	0.86	
22	Estonia	59.29	59.29	0.85	
23	Slovenia	58.92	58.92	0.84	
24	Slovakia	58.18	58.18	0.83	●
25	Latvia	56.83	56.83	0.83	
26	Lithuania	56.80	56.80	0.82	
27	Ireland	56.34	56.34	0.81	
28	Italy	56.17	56.17	0.81	
29	Portugal	55.81	55.81	0.80	
30	France	55.30	55.30	0.79	
31	Israel	54.27	54.27	0.78	
32	Greece	53.80	53.80	0.78	
33	Spain	53.25	53.25	0.77	
34	Russian Federation	52.39	52.39	0.76	
35	Hong Kong (China)	50.86	50.86	0.76	
36	Romania	50.71	50.71	0.75	
37	Colombia	50.67	50.67	0.74	
38	Singapore	50.15	50.15	0.73	
39	Chile	48.00	48.00	0.73	
40	Korea, Rep.	47.98	47.98	0.72	
41	Croatia	46.59	46.59	0.71	
42	South Africa	43.22	43.22	0.71	
43	Brazil	42.74	42.74	0.70	
44	Malta	42.21	42.21	0.69	
45	Ukraine	41.33	41.33	0.68	
46	United Arab Emirates (2008)	40.62	40.62	0.68	
47	Uruguay	39.11	39.11	0.67	
48	Japan	38.09	38.09	0.66	
49	Viet Nam	35.61	35.61	0.65	
50	Cyprus	35.08	35.08	0.65	
51	Venezuela, Bolivarian Rep.	33.91	33.91	0.64	●
52	Serbia	33.30	33.30	0.63	
53	Mauritius (2009)	30.60	30.60	0.63	
54	United States of America	30.42	30.42	0.62	
55	Malaysia	30.31	30.31	0.61	
56	Armenia	30.25	30.25	0.60	
57	Mexico	29.17	29.17	0.60	
58	Fiji (2009)	28.65	28.65	0.59	
59	Georgia	27.79	27.79	0.58	
60	Turkey	26.24	26.24	0.58	
61	Mongolia (2010)	25.56	25.56	0.57	
62	Macedonia, FYR (2005)	24.68	24.68	0.56	
63	Bosnia and Herzegovina	24.24	24.24	0.55	
64	Tajikistan (2010)	23.94	23.94	0.55	●
65	Bulgaria (2010)	23.62	23.62	0.54	
66	Iran, Islamic Rep.	23.13	23.13	0.53	
67	Costa Rica	23.05	23.05	0.53	
68	Moldova, Rep. (2003)	23.02	23.02	0.52	
69	Brunei Darussalam	22.70	22.70	0.51	
70	Kazakhstan (2010)	21.74	21.74	0.50	
71	Guyana	21.73	21.73	0.50	
72	Jamaica	21.25	21.25	0.49	
73	China	21.06	21.06	0.48	
74	Paraguay	20.14	20.14	0.47	
75	Albania	19.52	19.52	0.47	
76	Ecuador	19.51	19.51	0.46	
77	Peru	19.32	19.32	0.45	
78	Panama	18.65	18.65	0.45	
79	Dominican Republic	18.61	18.61	0.44	
80	Trinidad and Tobago	16.97	16.97	0.43	
81	Lao PDR (2005)	16.00	16.00	0.42	
82	Azerbaijan	15.02	15.02	0.42	
83	Morocco	14.96	14.96	0.41	
84	Nicaragua	14.37	14.37	0.40	
85	Swaziland	13.51	13.51	0.40	
86	Kuwait	13.20	13.20	0.39	
87	Nepal	12.92	12.92	0.38	
88	Kyrgyzstan	12.85	12.85	0.37	
89	Saudi Arabia	12.47	12.47	0.37	
90	India	11.98	11.98	0.36	
91	El Salvador	11.97	11.97	0.35	
92	Philippines (2005)	11.93	11.93	0.35	
93	Honduras	11.60	11.60	0.34	
94	Thailand	11.51	11.51	0.33	
95	Bolivia, Plurinational St.	11.38	11.38	0.32	
96	Guatemala	11.07	11.07	0.32	
97	Jordan	10.57	10.57	0.31	
98	Gambia (2009)	10.27	10.27	0.30	
99	Lebanon (2010)	9.73	9.73	0.29	
100	Kenya	8.59	8.59	0.29	
101	Bahrain (2003)	8.41	8.41	0.28	
102	Uzbekistan	7.62	7.62	0.27	
103	Tunisia	6.62	6.62	0.27	
104	Sri Lanka	6.42	6.42	0.26	
105	Senegal	5.86	5.86	0.25	
106	Lesotho (2007)	5.27	5.27	0.24	
107	Gabon	4.47	4.47	0.24	
108	Botswana (2003)	3.85	3.85	0.23	
109	Malawi	2.81	2.81	0.22	
110	Burundi	2.70	2.70	0.22	
111	Uganda (2009)	2.56	2.56	0.21	
112	Tanzania, United Rep.	2.34	2.34	0.20	
113	Côte d'Ivoire	2.21	2.21	0.19	
114	Cambodia	2.19	2.19	0.19	
115	Mozambique (2008)	2.03	2.03	0.18	
116	Belarus (2003)	2.02	2.02	0.17	○
117	Namibia	2.01	2.01	0.17	
118	Rwanda (2003)	1.99	1.99	0.16	
119	Indonesia (2005)	1.82	1.82	0.15	
120	Egypt (2009)	1.51	1.51	0.14	○
121	Qatar (2003)	1.45	1.45	0.14	○
122	Zimbabwe	1.33	1.33	0.13	
123	Pakistan (2003)	1.24	1.24	0.12	
124	Madagascar (2010)	1.17	1.17	0.12	
125	Benin	1.00	1.00	0.11	
126	Algeria (2009)	0.99	0.99	0.10	
127	Yemen	0.82	0.82	0.09	
128	Cameroon (2009)	0.76	0.76	0.09	
129	Bangladesh (2010)	0.68	0.68	0.08	
130	Angola	0.37	0.37	0.07	
131	Ethiopia	0.29	0.29	0.06	
132	Oman (2009)	0.27	0.27	0.06	○
133	Sudan (2008)	0.24	0.24	0.05	
134	Niger	0.24	0.24	0.04	
135	Nigeria (2009)	0.21	0.21	0.04	
136	Burkina Faso (2003)	0.15	0.15	0.03	○
137	Zambia (2008)	0.05	0.05	0.02	○
138	Ghana (2003)	0.04	0.04	0.01	○
139	Mali (2003)	0.02	0.02	0.01	○
140	Syrian Arab Rep. (2003)	0.00	0.00	0.00	○
n/a	Togo	n/a	n/a	n/a	

SOURCE: ZookNIC (2003–11)

7.3.3 Wikipedia monthly edits

Wikipedia monthly page edits per adult (per population 15–69) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Estonia	19,654.88	100.00	1.00	●
2	Iceland	17,673.07	89.92	0.99	●
3	Norway	17,624.87	89.67	0.98	●
4	Finland	15,167.58	77.17	0.98	
5	Israel	15,077.65	76.71	0.97	●
6	Luxembourg	13,634.08	69.36	0.96	
7	Sweden	13,527.54	68.82	0.95	
8	Netherlands	11,586.53	58.95	0.94	
9	Belgium	9,721.68	49.46	0.94	●
10	United Kingdom	9,311.92	47.37	0.93	
11	France	8,893.05	45.24	0.92	●
12	New Zealand	8,446.11	42.97	0.91	
13	Hong Kong (China)	8,435.77	42.91	0.90	
14	Germany	8,222.97	41.83	0.90	
15	Italy	8,162.90	41.53	0.89	●
16	Denmark	8,116.00	41.29	0.88	
17	Switzerland	8,060.57	41.01	0.87	
18	Ireland	7,894.48	40.16	0.86	
19	Canada	7,570.42	38.51	0.86	
20	Slovenia	7,306.69	37.17	0.85	
21	Latvia	7,238.19	36.82	0.84	
22	Hungary	7,047.41	35.85	0.83	
23	Czech Republic	7,029.04	35.76	0.82	
24	Australia	6,958.95	35.40	0.82	
25	Spain	6,915.55	35.18	0.81	
26	Lithuania	6,535.73	33.25	0.80	
27	Austria	6,526.75	33.20	0.79	
28	Croatia	5,650.90	28.74	0.78	
29	Bulgaria	5,226.93	26.59	0.78	
30	United States of America	5,004.93	25.46	0.77	
31	Poland	4,623.98	23.52	0.76	
32	Portugal	4,431.19	22.54	0.75	
33	Montenegro	4,413.79	22.45	0.74	
34	Uruguay	3,948.12	20.08	0.74	
35	Macedonia, FYR	3,906.92	19.87	0.73	
36	Slovakia	3,818.29	19.42	0.72	
37	Serbia	3,670.25	18.67	0.71	
38	Chile	3,336.99	16.97	0.70	
39	Greece	3,205.20	16.30	0.70	
40	Malta	3,201.08	16.28	0.69	
41	Georgia	3,169.23	16.12	0.68	
42	Ukraine	3,076.36	15.64	0.67	
43	Japan	2,955.92	15.03	0.66	
44	Belarus	2,788.78	14.18	0.66	
45	Russian Federation	2,616.09	13.30	0.65	
46	Cyprus	2,433.39	12.37	0.64	
47	Argentina	2,296.90	11.68	0.63	
48	Bosnia and Herzegovina	2,132.58	10.84	0.62	
49	Kuwait	2,049.24	10.42	0.62	
50	Qatar	1,986.74	10.10	0.61	
51	Romania	1,886.90	9.59	0.60	
52	Korea, Rep.	1,826.03	9.28	0.59	
53	Armenia	1,825.95	9.28	0.58	
54	Azerbaijan	1,615.20	8.21	0.58	
55	Moldova, Rep.	1,481.97	7.53	0.57	
56	Singapore	1,280.46	6.51	0.56	○
57	Costa Rica	1,213.28	6.16	0.55	
58	Kazakhstan	1,060.59	5.39	0.54	
59	Malaysia	1,053.96	5.35	0.54	
60	Brazil	1,048.81	5.33	0.53	
61	Mauritius	1,042.69	5.30	0.52	
62	Turkey	1,024.52	5.20	0.51	
63	Bahrain	1,006.74	5.11	0.50	
64	Colombia	989.21	5.02	0.50	
65	Peru	988.38	5.02	0.49	
66	Mexico	911.88	4.63	0.48	
67	Albania	878.16	4.46	0.47	
68	Brunei Darussalam	876.59	4.45	0.46	
69	Saudi Arabia	857.91	4.36	0.46	
70	Trinidad and Tobago	827.24	4.20	0.45	
71	Jordan	805.77	4.09	0.44	
72	United Arab Emirates	804.73	4.09	0.43	
73	Dominican Republic	778.97	3.95	0.42	
74	Ecuador	738.20	3.75	0.42	
75	Paraguay	735.07	3.73	0.41	
76	Venezuela, Bolivarian Rep.	720.14	3.66	0.40	
77	Philippines	601.01	3.05	0.39	
78	Guatemala	499.19	2.53	0.38	
79	Thailand	491.72	2.49	0.38	
80	Belize	428.12	2.17	0.37	
81	Fiji	424.88	2.15	0.36	
82	Mongolia	389.65	1.97	0.35	
83	Viet Nam	378.17	1.92	0.34	
84	Iran, Islamic Rep.	367.91	1.86	0.34	
85	Panama	354.24	1.79	0.33	
86	Sri Lanka	342.51	1.73	0.32	
87	Lebanon	335.91	1.70	0.31	
88	Bolivia, Plurinational St.	329.86	1.67	0.30	
89	Oman	294.62	1.49	0.30	
90	Jamaica	278.62	1.41	0.29	
91	Nicaragua	276.33	1.40	0.28	
92	Tunisia	265.73	1.34	0.27	
93	El Salvador	255.09	1.29	0.26	
94	Egypt	245.12	1.24	0.26	
95	Namibia	237.54	1.20	0.25	
96	Indonesia	233.67	1.18	0.24	
97	Morocco	228.65	1.15	0.23	
98	Botswana	191.30	0.96	0.22	
99	South Africa	178.02	0.90	0.22	○
100	Algeria	161.22	0.81	0.21	
101	Pakistan	139.25	0.70	0.20	
102	India	131.49	0.66	0.19	
103	Kyrgyzstan	117.03	0.59	0.18	
104	Honduras	108.94	0.55	0.18	
105	Nepal	108.71	0.54	0.17	
106	Cambodia	107.13	0.54	0.16	
107	Yemen	44.62	0.22	0.15	
108	Lao PDR	42.42	0.21	0.14	
109	Bangladesh	40.84	0.20	0.14	
110	Cameroon	37.01	0.18	0.13	
111	China	35.66	0.17	0.12	○
112	Uzbekistan	31.50	0.15	0.11	
113	Côte d'Ivoire	29.65	0.14	0.10	
114	Kenya	25.75	0.12	0.10	○
115	Zambia	24.46	0.12	0.09	
116	Ghana	23.07	0.11	0.08	○
117	Madagascar	21.96	0.10	0.07	
118	Tanzania, United Rep.	20.86	0.10	0.06	
119	Mozambique	19.80	0.09	0.06	
120	Angola	16.72	0.08	0.05	
121	Sudan	16.51	0.08	0.04	
122	Uganda	14.93	0.07	0.03	○
123	Zimbabwe	11.28	0.05	0.02	
124	Mali	10.44	0.04	0.02	○
125	Nigeria	8.57	0.03	0.01	○
126	Ethiopia	1.77	0.00	0.00	○
n/a	Benin	n/a	n/a	n/a	
n/a	Burkina Faso	n/a	n/a	n/a	
n/a	Burundi	n/a	n/a	n/a	
n/a	Gabon	n/a	n/a	n/a	
n/a	Gambia	n/a	n/a	n/a	
n/a	Guyana	n/a	n/a	n/a	
n/a	Lesotho	n/a	n/a	n/a	
n/a	Malawi	n/a	n/a	n/a	
n/a	Niger	n/a	n/a	n/a	
n/a	Rwanda	n/a	n/a	n/a	
n/a	Senegal	n/a	n/a	n/a	
n/a	Swaziland	n/a	n/a	n/a	
n/a	Syrian Arab Rep.	n/a	n/a	n/a	
n/a	Tajikistan	n/a	n/a	n/a	
n/a	Togo	n/a	n/a	n/a	

SOURCE: Wikimedia Foundation

7.3.4 Video uploads on YouTube

Number of video uploads on YouTube (scaled by population 15–69 years old) | 2011

Rank	Country/Economy	Value	Score (0–100)	Percent rank	
1	Iceland	100.00	100.00	1.00	●
2	United States of America	83.17	83.17	0.99	●
3	Finland	82.39	82.39	0.99	
4	Netherlands	79.74	79.74	0.98	●
5	United Kingdom	78.93	78.93	0.97	●
6	Canada	78.56	78.56	0.96	●
7	Latvia	78.34	78.34	0.96	●
8	Ireland	78.24	78.24	0.95	
9	Israel	78.14	78.14	0.94	
10	Sweden	77.65	77.65	0.93	
11	Norway	77.15	77.15	0.93	
12	Estonia	76.91	76.91	0.92	
13	Denmark	75.93	75.93	0.91	
14	Malta	75.50	75.50	0.91	
15	Australia	74.48	74.48	0.90	
16	Hong Kong (China)	73.52	73.52	0.89	
17	Singapore	73.07	73.07	0.88	
18	New Zealand	72.76	72.76	0.88	
19	Luxembourg	72.64	72.64	0.87	
20	Belgium	72.14	72.14	0.86	
21	Spain	71.42	71.42	0.86	
22	France	70.57	70.57	0.85	
23	Switzerland	70.52	70.52	0.84	
24	Germany	70.46	70.46	0.83	
25	Slovenia	70.44	70.44	0.83	
26	Portugal	70.04	70.04	0.82	
27	Greece	69.78	69.78	0.81	●
28	Hungary	69.41	69.41	0.80	
29	Czech Republic	68.53	68.53	0.80	
30	Lithuania	68.22	68.22	0.79	
31	Austria	68.07	68.07	0.78	
32	Italy	66.77	66.77	0.78	
33	Cyprus	65.86	65.86	0.77	
34	Romania	65.51	65.51	0.76	
35	Chile	65.50	65.50	0.75	
36	Kuwait	65.32	65.32	0.75	
37	Brunei Darussalam	65.08	65.08	0.74	
38	Croatia	64.97	64.97	0.73	
39	Poland	64.95	64.95	0.72	
40	Argentina	64.65	64.65	0.72	
41	Brazil	64.26	64.26	0.71	
42	Belize	63.58	63.58	0.70	
43	Albania	63.31	63.31	0.70	
44	Bosnia and Herzegovina	63.27	63.27	0.69	
45	Slovakia	62.93	62.93	0.68	
46	Japan	62.83	62.83	0.67	
47	Montenegro	62.76	62.76	0.67	
48	Serbia	62.45	62.45	0.66	
49	Uruguay	62.35	62.35	0.65	
50	Saudi Arabia	61.99	61.99	0.64	
51	Macedonia, FYR	61.95	61.95	0.64	
52	Bulgaria	61.94	61.94	0.63	
53	Bahrain	61.73	61.73	0.62	
54	Moldova, Rep.	61.53	61.53	0.62	
55	Trinidad and Tobago	61.30	61.30	0.61	
56	United Arab Emirates	61.23	61.23	0.60	
57	Qatar	60.54	60.54	0.59	
58	Peru	59.67	59.67	0.59	
59	Mexico	59.08	59.08	0.58	
60	Armenia	58.96	58.96	0.57	
61	Jamaica	58.30	58.30	0.57	
62	Georgia	57.71	57.71	0.56	
63	Ukraine	56.17	56.17	0.55	
64	Malaysia	56.06	56.06	0.54	
65	Costa Rica	55.88	55.88	0.54	
66	Thailand	55.68	55.68	0.53	
67	Russian Federation	55.43	55.43	0.52	
68	Philippines	55.19	55.19	0.51	
69	Panama	55.10	55.10	0.51	
70	Colombia	54.93	54.93	0.50	
71	Jordan	54.33	54.33	0.49	
72	Dominican Republic	53.00	53.00	0.49	
73	Ecuador	52.22	52.22	0.48	
74	Turkey	51.80	51.80	0.47	
75	Viet Nam	51.05	51.05	0.46	
76	Lebanon	50.24	50.24	0.46	
77	El Salvador	50.23	50.23	0.45	
78	Botswana	50.21	50.21	0.44	
79	Fiji	49.94	49.94	0.43	
80	Korea, Rep.	49.15	49.15	0.43	
81	Oman	48.79	48.79	0.42	
82	Belarus	48.79	48.79	0.41	
83	Venezuela, Bolivarian Rep.	48.34	48.34	0.41	
84	Syrian Arab Rep.	47.39	47.39	0.40	
85	Mauritius	47.26	47.26	0.39	
86	Mongolia	46.53	46.53	0.38	
87	Paraguay	46.11	46.11	0.38	
88	Egypt	45.59	45.59	0.37	
89	Morocco	45.49	45.49	0.36	
90	Azerbaijan	44.10	44.10	0.36	
91	Guyana	43.61	43.61	0.35	
92	Pakistan	43.44	43.44	0.34	
93	Bolivia, Plurinational St.	43.17	43.17	0.33	
94	Tunisia	42.64	42.64	0.33	
95	Guatemala	41.44	41.44	0.32	
96	Kazakhstan	40.83	40.83	0.31	
97	Nicaragua	40.70	40.70	0.30	
98	Honduras	40.55	40.55	0.30	
99	Swaziland	40.06	40.06	0.29	
100	Namibia	38.24	38.24	0.28	
101	Sri Lanka	36.12	36.12	0.28	
102	Algeria	34.73	34.73	0.27	
103	Gabon	34.10	34.10	0.26	
104	Indonesia	33.12	33.12	0.25	
105	Gambia	32.90	32.90	0.25	
106	Togo	32.74	32.74	0.24	
107	Zimbabwe	32.69	32.69	0.23	
108	South Africa	32.59	32.59	0.22	○
109	Yemen	31.43	31.43	0.22	
110	Cambodia	29.99	29.99	0.21	
111	India	28.24	28.24	0.20	
112	Lesotho	27.16	27.16	0.20	
113	Lao PDR	26.72	26.72	0.19	
114	Nepal	25.44	25.44	0.18	
115	Tajikistan	24.29	24.29	0.17	
116	Kyrgyzstan	23.78	23.78	0.17	
117	Senegal	23.25	23.25	0.16	
118	Kenya	23.09	23.09	0.15	
119	Bangladesh	20.12	20.12	0.14	
120	Zambia	19.33	19.33	0.14	
121	Angola	18.94	18.94	0.13	
122	Madagascar	18.72	18.72	0.12	
123	Benin	18.57	18.57	0.12	
124	Côte d'Ivoire	18.47	18.47	0.11	
125	Ghana	18.00	18.00	0.10	○
126	Uganda	16.54	16.54	0.09	
127	Rwanda	16.15	16.15	0.09	
128	Niger	14.84	14.84	0.08	
129	Cameroon	13.20	13.20	0.07	○
130	Burundi	13.03	13.03	0.07	
131	Uzbekistan	12.68	12.68	0.06	
132	Mozambique	10.89	10.89	0.05	
133	Burkina Faso	10.50	10.50	0.04	
134	Mali	10.36	10.36	0.04	○
135	Malawi	9.20	9.20	0.03	○
136	Sudan	8.58	8.58	0.02	○
137	Tanzania, United Rep.	8.53	8.53	0.01	○
138	Nigeria	3.32	3.32	0.01	○
139	Ethiopia	0.00	0.00	0.00	○
n/a	China	n/a	n/a	n/a	
n/a	Iran, Islamic Rep.	n/a	n/a	n/a	

SOURCE: Google, parent company of YouTube

Appendix III

Sources and Definitions

Sources and Definitions

This appendix complements the data tables by providing, for each of the 84 indicators included in the Global Innovation Index (GII), a title, a description, a definition, and the source. For each indicator for each country/economy, the most recent value within the period 2001–11 was used. The single year given next to the description corresponds to the most frequent year for which data were available; when more than one year is considered, the period is indicated at the end of the indicator's source in parenthesis.

Some indicators received special treatment in the computation. A few variables required scaling by some other indicator to be comparable across countries, through division by gross domestic product (GDP) in current US dollars, purchasing power parity GDP in international dollars (PPP$ GDP), population, total exports, etc. Details are provided in this appendix. The scaling factor was in each case the value corresponding to the same year of the particular indicator, or, if not available, the most recent available value. In addition, 22 indicators that were assigned half weight are singled out with an 'a'. Finally, indicators for which higher scores indicate worse outcomes, commonly known as 'bads', are differentiated with a 'b' (details on the computation can be found in Appendix IV Technical Notes).

A total of 59 variables are hard data; 16 are composite indicators from international agencies, distinguished with an asterisk (*), including five indices based on percent ranks for which an 'r' was added; and 6 are survey questions from the World Economic Forum's Executive Opinion Survey (EOS), singled out with a dagger (†). The EOS has been conducted for over 30 years. The 2011 edition of the EOS included 126 questions; 13,395 surveys were retained for tabulation, completed by business executives from 142 economies between January and June 2011.

1 Institutions

1.1 Political environment

1.1.1 Political stability and absence of violence/terrorism

Political stability and absence of violence/terrorism index* | 2010

Index that captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Scores are standardized.

Source: World Bank, World Governance Indicators 2010. (http://info.worldbank.org/governance/wgi/index.asp)

1.1.2 Government effectiveness

Government effectiveness index* | 2010

Index that captures perceptions of the quality of public and civil services and the degree of their independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Scores are standardized.

Source: World Bank, World Governance Indicators 2010. (http://info.worldbank.org/governance/wgi/index.asp)

1.1.3 Press freedom

Press freedom index* | 2011

Index that captures perceptions on violations of press freedom in the world. It reflects the degree of freedom that journalists and news organisations enjoy in each country, and the efforts made by the authorities to respect and ensure respect for this freedom. It is based on events between 1 December 2010 and 30 November 2011.

Source: Reporters Without Borders, Press Freedom Index 2011–2012. (http://en.rsf.org/press-freedom-index-2011-2012,1043.html)

1.2 Regulatory environment

1.2.1 Regulatory quality

Regulatory quality index*[a] | 2010

Index that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private-sector development. Scores are standardized.

Source: World Bank, World Governance Indicators 2010. (http://info.worldbank.org/governance/wgi/index.asp)

1.2.2 Rule of law

Rule of law index*[a] | 2010

Index that captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Scores are standardized.

Source: World Bank, World Governance Indicators 2010. (http://info.worldbank.org/governance/wgi/index.asp)

1.2.3 Cost of redundancy dismissal

Sum of notice period and severance pay for redundancy dismissal (in salary weeks, averages for workers with 1, 5, and 10 years of tenure, with a minimum threshold of 8 weeks) | 2011

Doing Business, in its indicators on employing workers, measures flexibility in the regulation on redundancy in a manner consistent with relevant ILO conventions to strike a better balance between labour market flexibility and social protection (including unemployment protection). The redundancy cost indicator is the sum of the cost of advance notice requirements added to severance payments due when terminating a redundant worker, expressed in weeks of salary. The average value of notice requirements and severance payments applicable to a worker with 1 year of tenure, a worker with 5 years of tenure, and a worker with 10 years of tenure is used to assign the score. If the redundancy cost adds up to 8 or fewer weeks of salary, a value of 8 is assigned but the actual number of weeks is published. If the cost adds up to more than 8 weeks of salary, the score is the number of weeks. One month is recorded as 4 and 1/3 weeks. Assumptions about the worker: the worker is a full-time, male, nonexecutive employee; he earns a salary plus benefits equal to the economy's average wage during the entire period of his employment; he has a pay period that is the most common for workers in the economy; he is a lawful citizen who belongs to the same race and religion as the majority of the economy's population; he resides in the economy's largest business city; he is not a member of a labour union, unless membership is mandatory. Assumptions about the business: the business is a limited liability company; it operates in the economy's largest business city; it is 100% domestically owned; it operates in the manufacturing sector; it has 60 employees; it is subject to collective bargaining agreements in economies where such agreements cover more than half the manufacturing sector and apply even to firms not party to them; and it abides by every law and regulation but does not grant workers more benefits than mandated by law, regulation, or (if applicable) collective bargaining agreement.

Source: World Bank, Doing Business 2012, Employing Workers. (http://www.doingbusiness.org/data/exploretopics/employing-workers)

1.3 Business environment

1.3.1 Ease of starting a business

Ease of starting a business, percent rank index*r | 2011

The ranking is the simple average of the percentile rankings on the component indicators for starting a business: procedures (number); time (days); and cost (% of income per capita). *Doing Business* records all procedures that are officially required for an entrepreneur to start up and formally operate an industrial or commercial business. These include obtaining all necessary licenses and permits and completing any required notifications, verifications, or inscriptions for the company and employees with relevant authorities. To make the data comparable across economies, several assumptions about the business and the procedures are used.

Source: World Bank, Ease of Doing Business Index 2012, Doing Business 2012. (http://www.doingbusiness.org/)

1.3.2 Ease of resolving insolvency

Ease of resolving insolvency, percent rank index*r | 2011

The ranking on the ease of resolving insolvency is based on the recovery rate (cents on the dollar). To make the data comparable across economies, several assumptions about the business and the case are used: the recovery rate is recorded as cents on the dollar recouped by creditors through reorganization, liquidation, or debt enforcement (foreclosure) proceedings. The calculation takes into account the outcome: whether the business emerges from the proceedings as a going concern or the assets are sold piecemeal. Then the costs of the proceedings are deducted (1 cent for each percentage point of the value of the debtor's estate). Finally, the value lost as a result of the time the money remains tied up in insolvency proceedings is taken into account, including the loss of value due to depreciation of the hotel furniture. Consistent with international accounting practice, the annual depreciation rate for furniture is taken to be 20%. The furniture is assumed to account for a quarter of the total value of assets. The recovery rate is the present value of the remaining proceeds, based on end-2010 lending rates from the International Monetary Fund's *International Financial Statistics,* supplemented with data from central banks and the Economist Intelligence Unit. Indicators resolving insolvency—time (in years) and cost (% of estate), while also computed by *Doing Business,* are not taken into account for the ranking on the ease of resolving insolvency.

Source: World Bank, Ease of Doing Business Index 2012, Doing Business 2012. (http://www.doingbusiness.org/)

1.3.3 Ease of paying taxes

Ease of paying taxes, percent rank index*r | 2011

The ranking on the ease of paying taxes is the simple average of the percentile rankings on the component indicators for paying taxes: payments (number per year); time (hours per year); profit tax (%); labour tax and contributions (%); other taxes (%); and total tax rate (% profit). As of the 2012 edition of *Doing Business*, a threshold—equivalent to the highest total tax rate among the top 30% of economies in the ranking on the total tax rate—is applied to the total tax rate. It will be calculated and adjusted on a yearly basis. The threshold in 2011 is 32.5%. For all economies with a total tax rate below this threshold, the total tax rate is set at 32.5% this year. The threshold is not based on any underlying theory, but is intended to mitigate the effect of very low tax rates on the ranking of the ease of paying taxes. To make the data comparable across economies, several assumptions about the business and the taxes and contributions are used. The methodology benefited from discussion with members of the International Tax Dialogue and other stakeholders, which led to a refinement of the survey questions on the time to pay taxes, the collection of additional data on the labour tax wedge for further research, and the introduction of a threshold applied to the total tax rate for the purpose of calculating the rankings on the ease of paying taxes.

Source: World Bank, Ease of Doing Business Index 2012, Doing Business 2012. (http://www.doingbusiness.org/)

2.1 Education

2.1.1 Expenditure on education

Current expenditure on education (% of GNI) | 2009

Current operating expenditures in education, including wages and salaries and excluding capital investments in buildings and equipment, as a percentage of gross national income (GNI). UNESCO series supplemented by World Bank estimates based on UN and UNESCO data (same year).

Source: UNESCO Institute for Statistics, UIS online database; United Nations database UNdata; World Bank World Development Indicators database (2008–11). (http://stats.uis.unesco.org; http://data.un.org/; http://data.worldbank.org/)

2 Human capital and research

2.1.2 Public expenditure on education per pupil

Public expenditure per pupil, all levels (% of GDP per capita) | 2008

Public current spending on education divided by the total number of students by level, as a percentage of GDP per capita. Public expenditure (current and capital) includes government spending on educational institutions (both public and private), education administration, and subsidies for private entities (students/households and other private entities).

Source: UNESCO Institute for Statistics, UIS online database (2001–10). (http://stats.uis.unesco.org)

2.1.3 School life expectancy

School life expectancy, primary to tertiary education (years) | 2009

Total number of years of schooling that a child of a certain age can expect to receive in the future, assuming that the probability of his or her being enrolled in school at any particular age is equal to the current enrolment ratio for that age.

Source: UNESCO Institute for Statistics, UIS online database (2002–11). (http://stats.uis.unesco.org)

2.1.4 Assessment in reading, mathematics, and science

PISA average scales in reading, mathematics, and science[a] | 2009

The OECD Programme for International Student Assessment (PISA) develops three-yearly surveys that examine 15-year-old students' performance in reading, mathematics, and science. The scores are calculated in each year so that the mean is 500 and the standard deviation 100. The scores for China come from Shanghai; those for India from Himachal Pradesh and Tamil Nadu (average); those for the United Arab Emirates from Dubai; and those for Venezuela from Miranda.

Source: OECD Programme for International Student Assessment (PISA) 2009 and 2010 (2009–10). (www.pisa.oecd.org/)

2.1.5 Pupil-teacher ratio, secondary

Pupil-teacher ratio, secondary | 2009

The number of pupils enrolled in secondary school divided by the number of secondary school teachers (regardless of their teaching assignment). Where the data are missing for some countries, the ratios for upper-secondary are reported; if these are also missing, the ratios for lower-secondary are reported instead. UNESCO data supplemented by World Bank data.

Source: UNESCO Institute for Statistics, UIS online database, and World Bank World Development Indicators database (2001–11). (http://stats.uis.unesco.org; http://data.worldbank.org/)

2.2 Tertiary education

2.2.1 Tertiary enrolment

School enrolment, tertiary (% gross)[a] | 2009

The ratio of total tertiary enrolment, regardless of age, to the population of the age group that officially corresponds to the tertiary level of education. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level. UNESCO data supplemented by World Bank data.

Source: UNESCO Institute for Statistics, UIS online database; World Bank World Development Indicators database (2003–11). (http://stats.uis.unesco.org; http://data.worldbank.org/)

2.2.2 Graduates in science and engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2009

The share of all tertiary graduates in manufacturing, engineering, and construction over all tertiary graduates.

Source: UNESCO Institute for Statistics, UIS online database (2001–11). (http://stats.uis.unesco.org)

2.2.3 Tertiary inbound mobility

Tertiary inbound mobility ratio (%)[a] | 2009

The number of students from abroad studying in a given country, as a percentage of the total tertiary enrolment in that country.

Source: UNESCO Institute for Statistics, UIS online database (2001–11). (http://stats.uis.unesco.org)

2.2.4 Gross tertiary outbound enrolment

Gross tertiary outbound enrolment ratio (%)[a] | 2009

Mobile students coming from a country/region as a percentage of the population of tertiary student age in their home country. UNESCO data supplemented by United Nations data.

Source: UNESCO Institute for Statistics, UIS online database; United Nations database UNdata (2008–10). (http://stats.uis.unesco.org; http://data.un.org/)

2.3 Research and development (R&D)

2.3.1 Researchers

Researchers, headcounts (per million population) | 2008

Researchers per million population, head counts. Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. Postgraduate PhD students (ISCED97 level 6) engaged in R&D are included. The series with full-time equivalents (FTE) also exists, but has a lower country coverage. UNESCO series supplemented by World Bank data.

Source: UNESCO Institute for Statistics, UIS online database; World Bank World Development Indicators database (2002–10). (http://stats.uis.unesco.org; http://data.worldbank.org/)

2.3.2 Gross expenditure on R&D (GERD)

GERD: Gross expenditure on R&D (% of GDP) | 2009

Total domestic intramural expenditure on R&D during a given period as a percentage of GDP. Intramural R&D expenditure is all expenditure for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds. UNESCO data supplemented with World Bank data.

Source: UNESCO Institute for Statistics, UIS online database; World Bank World Development Indicators database (2002–10). (http://stats.uis.unesco.org; http://data.worldbank.org/)

2.3.3 Quality of scientific research institutions

Average answer to the question: How would you assess the quality of scientific research institutions in your country? 1 = very poor; 7 = the best in their field internationally† | 2011

Source: World Economic Forum, Executive Opinion Survey 2010–2011. (https://wefsurvey.org)

3.1 Information and communication technologies (ICT)

3.1.1 ICT access

ICT access index* | 2010

The ICT access index is a composite index that weights five ICT indicators (20% each): (1) Fixed telephone lines per 100 inhabitants; (2) Mobile cellular telephone subscriptions per 100 inhabitants; (3) International Internet bandwidth (bit/s) per Internet user; (4) Proportion of households with a computer; and (5) Proportion of households with Internet access at home. It is the first subindex in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, Measuring the Information Society 2011, ICT Development Index 2011 (2008–10). (http://www.itu.int/ITU-D/ict/publications/idi/)

3.1.2 ICT use

ICT use index* | 2010

The ICT use index is a composite index that weights three ICT indicators (33% each): (1) Internet users per 100 inhabitants; (2) Fixed broadband Internet subscribers per 100 inhabitants; (3) Mobile broadband subscriptions per 100 inhabitants. It is the second subindex in ITU's ICT Development Index (IDI).

Source: International Telecommunication Union, Measuring the Information Society 2011, ICT Development Index 2011 (2008–10). (http://www.itu.int/ITU-D/ict/publications/idi/)

3.1.3 Government's online service

Government's online service index* | 2011

Research teams assessed each country's national website as well as the websites of the ministries of education, labour, social services, health, and finance, as well as associated portals and subsidiary websites. Websites were tested for a minimal level of content accessibility. The survey covers four stages of government's online service development with points assigned for (1) emerging information services; (2) enhanced information services; (3) transaction services; and (4) a connected approach. A citizen-centric approach was followed. It is the first of three components of the E-Government Development Index (EGDI) of the United Nations Public Administration Network (UNPAN), together with components on telecommunications infrastructure and human capital.

Source: United Nations Public Administration Network, e-Government Survey 2012 (2010–11). (http://www2.unpan.org/egovkb/)

3.1.4 Online e-participation

E-participation index* | 2011

The United Nations E-Participation Index is based on the survey used for the UN Online Service Index. The survey was expanded with questions emphasizing quality in the connected presence stage of e-government. These questions focus on the use of the Internet to facilitate the provision of information by governments to citizens ('e-information sharing'), interaction with stakeholders ('e-consultation'), and engagement in decision-making processes ('e-decision making'). A country's E-Participation Index value reflects how useful these features are and the extent to which they have been deployed by the government compared with all other countries. The purpose of this measure is to offer insight into how different countries are using online tools to promote interaction between citizen and government, as well as among citizens, for the benefit of all. The index ranges from 0 to 1, with 1 showing greater e-participation.

Source: United Nations Public Administration Network, e-Government Survey 2012. (http://www2.unpan.org/egovkb/)

3.2 General infrastructure

3.2.1 Electricity output

Electricity output (kWh per capita)[a] | 2009

Electricity production, measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, this indicator covers generation by geothermal, solar, wind, and tide and wave energy, as well as that from combustible renewables and waste. Production includes the output of electricity plants that are designed to produce electricity only as well as that of combined heat and power plants. Electricity output in KWh is scaled by population.

Source: International Energy Agency, World Energy Balances online data service (2009–10). (http://www.iea.org/stats/)

3.2.2 Electricity consumption

Electricity consumption (kWh per capita)[a] | 2009

Electric power consumption, measured by the production of power plants and combined heat and power plants less transmission, distribution, and transformation losses and own use by heat and power plants. The total value in kWh is scaled by population.

Source: International Energy Agency, World Energy Balances online data service (2009–10). (http://www.iea.org/stats/)

3.2.3 Trade and transport-related infrastructure

Logistics Performance Index: Quality of trade and transport-related infrastructure (1 = low to 5 = high)* | 2009

Logistics Performance Index surveys conducted by the World Bank in partnership with academic and international institutions and private companies and individuals engaged in international logistics. The 2009 round of surveys covered more than 5,000 country assessments by nearly 1,000 international freight forwarders. Respondents evaluate eight markets on six core dimensions on a scale from 1 (worst) to 5 (best). The markets are chosen based on the most important export and import markets of the respondent's country, random selection, and, for landlocked countries, neighbouring countries that connect them with international markets. Details of the survey methodology are in Arvis et al.'s *Connecting to Compete 2010: Trade Logistics in the Global Economy* (2010). Respondents evaluated the quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology), on a rating ranging from 1 (very low) to 5 (very high). Scores are averaged across all respondents.

Source: World Bank and Turku School of Economics, Logistics Performance Index 2010 (2006–09). (http://go.worldbank.org/88X6PU5GV0)

3.2.4 Gross capital formation

Gross capital formation (% of GDP) | 2010

Gross capital formation (formerly 'gross domestic investment') consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and 'work in progress'. Net acquisitions of valuables are also considered capital formation.

Source: World Bank and OECD, World Bank World Development Indicators database (2003–10). (http://data.worldbank.org/)

3.3 Ecological sustainability

3.3.1 GDP per unit of energy use

GDP per unit of energy use (2000 PPP$ per kg of oil equivalent) | 2009

Purchasing power parity gross domestic product (PPP$ GDP) per kilogram of oil equivalent of energy use. Energy use or total primary energy supply (TPES) is calculated as production of fuels + inputs from other sources + imports – exports – international marine bunkers +/– stock changes. It includes coal, crude oil, natural gas liquids, refinery feedstocks, additives, petroleum products, gases, combustible renewables and waste, electricity, and heat. Domestic supply (also called 'energy apparent consumption') differs from final consumption in that it does not take account of distribution losses. The supply (or use) of energy commodities is converted to kilograms or tons of oil equivalent (koe, toe) using standard coefficients for each energy source.

Source: International Energy Agency, World Energy Balances online data service (2009–10). (http://www.iea.org/stats/)

3.3.2 Environmental performance

Environmental Performance Index* | 2010

This index ranks countries on 22 performance indicators tracked across policy categories that cover both environmental public health and ecosystem vitality. These indicators gauge how close countries are to established environmental policy goals. The index ranges from 0 to 100, 100 indicating best performance.

Source: Yale University and Columbia University Environmental Performance Index 2012. (http://epi.yale.edu/)

3.3.3 ISO 14001 environmental certificates

ISO 14001 Environmental management systems—Requirements with guidance for use: Number of certificates issued (per billion GDP in PPP$) | 2010

Number of certificates of conformity to 'ISO 14001:2004 Environmental management systems: Requirements with guidance for use' issued, based on the ISO survey. Single-site and multiple-site certificates are not distinguished. The ISO survey is published on an annual basis by the International Organization for Standardization (ISO). The 2010 edition of the ISO survey was carried out by the market research firm the Nielsen Company. Only certification bodies accredited by national members of the International Accreditation Forum (www.iaf.nu) were used as sources (except for certificates in the Russian Federation, which were accredited locally). Certification of conformity with standards is not a requirement and the standards can be implemented without certification, but certification is perceived as adding value and trust. ISO is a network of the national standards institutes of 163 countries, and it is the world's largest developer of voluntary International Standards for business, government, and society, with a portfolio of more than 18,800 standards in almost every sector of economic activity and technology. ISO itself does not perform certification to its standards, does not issue certificates, and does not control certification performed independently of ISO by other organizations. The data are reported per billion PPP$ GDP.

Source: International Organization for Standardization (ISO), The ISO Survey of Certifications 2010 CD-Rom (2008–10). (www.iso.org)

4 Market sophistication

4.1 Credit

4.1.1 Ease of getting credit

Ease of getting credit, percent rank index*[r] | 2011

The ranking is based on the percentile rankings on the component indicators for the getting credit index: strength of legal rights index (range 0–10, weighted at 62.5%); and depth of credit information index (range 0–6, weighted at 37.5%). *Doing Business* measures the legal rights of borrowers and lenders with respect to secured transactions through one set of indicators and the sharing of credit information through another. The first set of indicators describes how well collateral and bankruptcy laws facilitate lending. The second set measures the coverage, scope and accessibility of credit information available through public credit registries and private credit bureaus. Although *Doing Business* compiles data on getting credit for public registry coverage (% of adults) and for private bureau coverage (% of adults), these indicators are not included in the ranking.

Source: World Bank, Ease of Doing Business Index 2012, Doing Business 2012. (http://www.doingbusiness.org/)

4.1.2 Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2010

Financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2005–10). (http://data.worldbank.org/)

4.1.3 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP) | 2010

Combined gross loan balances per microfinance institution (current US$), divided by GDP (current US$) and multiplied by 100.

Source: Microfinance Information Exchange, Mix Market database; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2001–11). (http://www.mixmarket.org/crossmarket-analysis-report/download; http://data.worldbank.org/)

4.2 Investment

4.2.1 Ease of protecting investors

Ease of protecting investors, percent rank index*[r] | 2011

The ranking is the simple average of the percentile rankings on the component indicators for protecting investors: the extent of disclosure index (0–10); the extent of director liability index (0–10); the ease of shareholder suits index (0–10); and the strength of investor protection index (0–10). *Doing Business* measures the strength of minority shareholder protections against directors' misuse of corporate assets for personal gain. The indicators distinguish three dimensions of investor protections: transparency of related-party transactions (extent of disclosure index), liability for self-dealing (extent of director liability index), and shareholders' ability to sue officers and directors for misconduct (ease of shareholder suits index). The data come from a survey of corporate and securities lawyers and are based on securities regulations, company laws, civil procedure codes, and court rules of evidence.

Source: World Bank, Ease of Doing Business Index 2012, Doing Business 2012. (http://www.doingbusiness.org/)

4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP) | 2010

Market capitalization (also known as 'market value') is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles.

Source: Standard and Poor's and World Bank and OECD GDP estimates, World Bank World Development Indicators database (2006–10). (http://data.worldbank.org/)

4.2.3 Total value of stocks traded

Stocks traded, total value (% of GDP) | 2010

Total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.

Source: Standard and Poor's and World Bank and OECD GDP estimates, World Bank World Development Indicators database (2006–10). (http://data.worldbank.org/)

4.2.4 Venture capital deals

Venture capital per investment location: Number of deals (per trillion PPP$ GDP) | 2011

Thomson Reuters data on private equity deals, per deal, with details on, among others, the location of investment, investment company, investor firms, and funds. The series corresponds to a query on venture capital deals from 1 January 2011 to 31 December 2011, with the data collected by investment location, for a total of 6,306 deals in 71 countries in 2011. The data are reported per trillion PPP$ GDP.

Source: Thomson Reuters, Thomson One Banker Private Equity database; World Bank and OECD GDP estimates, World Bank World Development Indicators database. (http://banker.thomsonib.com; http://data.worldbank.org/)

4.3 Trade and competition

4.3.1 Applied tariff rate, weighted mean

Tariff rate, applied, weighted mean, all products (%) | 2010

The average of effectively applied rates weighted by the product import shares corresponding to each partner country. Data are classified using the Harmonized System of trade at the six- or eight-digit level. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes to define commodity groups and import weights. To the extent possible, specific rates have been converted to their ad valorem equivalent rates and have been included in the calculation of weighted mean tariffs. Effectively applied tariff rates at the six- and eight-digit product level are averaged for products in each commodity group. When the effectively applied rate is unavailable, the most favoured nation rate is used instead. World Bank estimates using the World Integrated Trade Solution (WITS) system, based on tariff data from the UNCTAD Trade Analysis and Information System (TRAINS) database and import weights calculated using the UN Comtrade database.

Source: World Bank, based on WITS, UNCTAD TRAINS, and UN COMTRADE, World Bank World Development Indicators database (2003–10). (http://data.worldbank.org/)

4 Market sophistication

4.3.2 Market access for non-agricultural exports

Non-agricultural market access: Five major export markets weighted actual applied tariff (%) | 2009

Part B of Section II Country Tables of the World Tariff Profiles (WTP) covers, among others, the market access conditions in the five major export markets for each country, broken down into agricultural (AG) and non-agricultural products (NAMA), following the classification included in Annex 1 of the WTO Agreement on Agriculture (by Harmonized System codes). The weighted actual applied tariff in each export market (c) is calculated as the difference between (a) the trade-weighted average most-favoured nation (MFN) duty and (b) the preference margin, defined as the trade-weighted average difference between the MFN duty and the lowest preferential duty. Statistics (a) and (b) for AG and NAMA are published in the World Tariff Profiles and are used to calculate (c). To get a single value by country, the actual applied tariffs for each of the five export markets were weighted by total imports for non-agricultural exports. For EU countries, the extra-EU data are included for the entire bloc. These statistics are calculated from the imports data reported by the importing country (mirror exports data) and the tariff applied when these imports come into the country; that is, MFN, preferential or general (for non-WTO members). In each WTP issue, the list of major markets depends on the availability of imports data; to increase data coverage, the latest available data for two reference years are used. The reference years for each partner can be consulted in the WTP (if the same year is used in different WTP editions, data will differ if revisions were made). Applied tariffs and imports are sourced from submissions made to the WTO Integrated Data Base (IDB). Preferences are sourced from the IDB and supplemented by ITC data. The ITC also calculates all non-available ad-valorem equivalents (AVEs) for MFN and non-MFN non–ad valorem duties (base years for imports change every issue). When information on preferential tariff regimes is missing, MFN treatment is assumed (it is also assumed that a country avails itself of preferential tariffs, even if the exporter chooses not to for whatever reason—such as the more onerous prerequisites attached to the preferential tariff).

Source: World Trade Organization (WTO), International Trade Centre (ITC), and United Nations Conference on Trade and Development (UNCTAD), World Tariff Profiles 2011 and 2008 (2008–09). (http://stat.wto.org/TariffProfile/WSDBTariffPFHome.aspx?Language=E)

4.3.3 Imports of goods and services

Imports of goods and services (% of GDP)[a] | 2010

The value of all goods and other market services imported from the rest of the world. Imports includes the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. It excludes exclude compensation of employees and investment income (formerly called 'factor services') and transfer payments.

Source: World Bank and OECD, World Bank World Development Indicators database (2003–10). (http://data.worldbank.org/)

4.3.4 Exports of goods and services

Exports of goods and services (% of GDP)[a] | 2010

The value of all goods and other market services provided to the rest of the world. Exports include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called 'factor services') and transfer payments.

Source: World Bank and OECD, World Bank World Development Indicators database (2003–10). (http://data.worldbank.org/)

4.3.5 Intensity of local competition

Average answer to the question: How would you assess the intensity of competition in the local markets in your country? 1 = limited in most industries; 7 = intense in most industries† | 2011

Source: World Economic Forum, Executive Opinion Survey 2010–2011. (https://wefsurvey.org)

5.1 Knowledge workers

5.1.1 Employment in knowledge-intensive services

Employment in knowledge-intensive services (% of workforce) | 2008

Sum of people in categories 0 to 3 as a percentage of total people employed, according to ISCO-1968, ISCO-88, and NSCO (excluding 0 Armed forces in ISCO-88). Categories included: ISCO-1968: 0/1 Professional, technical and related workers, 2 Administrative and managerial workers, 3 Clerical and related workers. ISCO-88: 1 Legislators, senior officials and managers, 2 Professionals, 3 Technicians and associate professionals.

Source: International Labour Organization, LABORSTA Database of Labour Statistics (2001–08). (http://laborsta.ilo.org/)

5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2009

The percentage of firms offering formal training programmes for their permanent, full-time employees.

Source: International Finance Corporation and World Bank, Enterprise Surveys, World Bank World Development Indicators database (2002–10). (http://www.enterprisesurveys.org/; http://data.worldbank.org/)

5.1.3 GERD performed by business enterprise

GERD: Performed by business enterprise (% of total) [a] | 2009

Percentage of gross expenditure on R&D performed by business enterprise.

Source: UNESCO Institute for Statistics, UIS online database (2002–10). (http://stats.uis.unesco.org)

5.1.4 GERD financed by business enterprise

GERD: Financed by business enterprise (% of total) [a] | 2009

Percentage of gross expenditure on R&D financed by business enterprise.

Source: UNESCO Institute for Statistics, UIS online database (2001–10). (http://stats.uis.unesco.org)

5.1.5 GMAT mean score

Weighted mean score at the Graduate Management Admission Test (GMAT) by residency and by citizenship (weighted by the total numbers of test takers)[a] | 2011

Mean scores at the Graduate Management Admission Test (GMAT) by residency and by citizenship, weighted by total number of residents and citizens taking the test, respectively. The GMAT is a standardized test aimed at measuring aptitude to succeed academically in graduate business studies. It is an important part of the admissions process for nearly 5,300 graduate management programs in approximately 2,000 business schools worldwide. The GMAT exam consists of three sections: Verbal, Quantitative, and Analytical Writing. GMAT total scores are calculated based on performance in the Verbal and Quantitative sections of the exam only. Scores are reported in increments of 10, on a scale ranging from 200 to 800. Mean score data for groups with fewer than 5 GMAT exams taken are not released and therefore not considered.

Source: Graduate Management Admission Council (GMAC). (www.gmac.com/research)

5.1.6 GMAT test takers

Number of test takers of the Graduate Management Admission Test (GMAT) by citizenship (scaled by million population 20–34 years old)[a] | 2011

Total number of test takers of the Graduate Management Admission Test (GMAT) by citizenship, scaled by population 20–34 years old (if for a given country/economy the data for citizens do not exist, the data for residents are given instead). Refer to indicator 5.1.5 for details.

Source: Graduate Management Admission Council (GMAC). (www.gmac.com/research)

5.2 Innovation linkages

5.2.1 University/industry research collaboration

Average answer to the survey question: To what extent do business and universities collaborate on research and development (R&D) in your country? 1 = do not collaborate at all; 7 = collaborate extensively† | 2011

Source: World Economic Forum, Executive Opinion Survey 2010–2011. (https://wefsurvey.org)

5.2.2 State of cluster development

Mean of the average responses to three survey questions on the role of clusters in the economy. 'Clusters' are defined as geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field (e.g., financial services in New York, leather and footwear in Italy, consumer electronics in Japan). The questions are: (1) In your country's economy, how prevalent are well-developed and deep clusters? 1 = nonexistent; 7 = widespread in many fields. (2) In your country, how extensive is collaboration among firms, suppliers, partners, and associated institutions within clusters? 1 = collaboration is nonexistent; 7 = collaboration is extensive. (3) In your country, what is the state of formal policies supporting cluster development? 1 = nonexistent; 7 = extensive and covers many clusters and regions† | 2011

Source: World Economic Forum, Executive Opinion Survey 2010–2011. (https://wefsurvey.org)

5.2.3 GERD financed by abroad

GERD: Financed by abroad (% of total) | 2009

Percentage of gross expenditure on R&D financed by abroad, i.e., with foreign financing.

Source: UNESCO Institute for Statistics, UIS online database (2002–10). (http://stats.uis.unesco.org)

5.2.4 Joint venture / strategic alliance deals

Joint ventures / strategic alliances: Number of deals, fractional counting (per trillion PPP$ GDP)[a] | 2011

Thomson Reuters data on joint ventures / strategic alliances deals, per deal, with details on, among others, the country of origin of partner firms. The series corresponds to a query on joint ventures/strategic alliances deals from 1 January 2011 to 31 December 2011, for a total of 3,007 deals announced. Each participating nation of each company in a deal (*n* countries per deal) gets, per deal, a score equivalent to 1/*n* (with the effect that all country scores add up to 3,007). The data are reported per trillion PPP$ GDP.

Source: Thomson Reuters, Thomson One Banker Private Equity, SDC Platinum database; World Bank and OECD GDP estimates, World Bank World Development Indicators database. (http://banker.thomsonib.com; http://data.worldbank.org/)

5.2.5 Share of patents with foreign inventor

Percentage of published Patent Cooperation Treaty (PCT) applications with at least one foreign inventor[a] | 2011

Percentage of PCT applications having at least one foreign inventor (i.e., one inventor's country of residence is different from the first-named applicant's country of residence). The statistic is given for PCT Contracting Parties only. Where there were no published PCT applications, a zero is assigned. Counts are based on the year of publication. A patent confers a set of exclusive rights to applicants by law for inventions that meet standards of novelty, non-obviousness, and industrial applicability. It is valid for a limited period of time (generally 20 years), during which patent holders can commercially exploit their inventions on an exclusive basis. In return, applicants are obliged to disclose their inventions to the public so that others, skilled in the art, may replicate the invention. The patent system is designed to encourage innovation by providing innovators with time-limited exclusive legal rights, thus enabling innovators to appropriate the returns of their innovative activities.

Source: World Intellectual Property Organization, WIPO Statistics Database (2001–11). (http://www.wipo.int//ipstats/)

5.3 Knowledge absorption

5.3.1 Royalty and license fees payments

Royalty and license fees, payments (per thousand GDP) | 2010

Payments between residents and nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts). The data in current US$ were divided by GDP in current US$.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2005–10). (http://data.worldbank.org/)

5.3.2 High-tech imports

High-tech net imports (% of total net imports) | 2010

High-technology imports minus re-imports over total imports minus re-imports. The list of commodities contains technical products with a high intensity of R&D, based on the Eurostat classification, itself based on SITC Rev.4 and the OECD definition. Commodities belong to the following sectors: aerospace; computers & office machines; electronics, telecommunications; pharmacy; scientific instruments; electrical machinery; chemistry; non-electrical machinery; and armament.

Source: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4, April 2009 (2007–11). (http://comtrade.un.org/; http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)

5.3.3 Computer and communications service imports

Computer, communications, and other services (% of commercial service imports) | 2009

Computer, communications, and other services (% of commercial service imports) include such activities as international telecommunications, and postal and courier services; computer data; news-related service transactions between residents and nonresidents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2004–10). (http://data.worldbank.org/)

5.3.4 Foreign direct investment net inflows

Foreign direct investment (FDI), net inflows (% of GDP) | 2010

Net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2009–10). (http://data.worldbank.org/)

6 Knowledge and technology outputs

6.1 Knowledge creation

6.1.1 National office patent applications

Number of resident patent applications at the national patent office (per billion PPP$ GDP) | 2010

Number of patent applications filed by residents at the national patent office. *Patent* is defined in the description of indicator 5.2.5. Patent applications by resident data are based on 'equivalent count', by which applications at regional offices are multiplied by the corresponding number of member states. This concerns the Eurasian Patent Organization (EAPO) and the African Intellectual Property Organization (OAPI). For the European Patent Office (EPO) and the African Regional Intellectual Property Organization (ARIPO), each application is counted as one application abroad if the applicant does not reside in a member state; or as one resident and one application abroad if the applicant resides in a member state. Data reported per billion PPP$ GDP.

Source: World Intellectual Property Organization, WIPO Statistics Database; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2001–10). (http://www.wipo.int//ipstats/; http://data.worldbank.org/)

6.1.2 Patent Cooperation Treaty applications

Number of resident international patent applications at the Patent Cooperation Treaty (per billion PPP$ GDP) | 2011

Number of patent applications filed by residents under the WIPO-administered Patent Cooperation Treaty (PCT). The statistic is given for PCT Contracting Parties only. PCT applications are assigned to a particular country of origin according to the country of residence of the first-named applicant. The PCT system simplifies the process of multiple national patent filings by reducing the requirement to file a separate application in each jurisdiction. *Patent* is defined in the description of indicator 5.2.5. Data reported per billion PPP$ GDP.

Source: World Intellectual Property Organization, WIPO Statistics Database; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2003–11). (http://www.wipo.int//ipstats/; http://data.worldbank.org/)

6.1.3 National office utility model applications

Number of resident utility model applications at the national patent office (per billion PPP$ GDP) | 2010

Number of utility model applications filed by residents at their national patent office. Like a patent, a utility model (UM) confers a set of rights for an invention for a limited period of time, during which UM holders can commercially exploit their inventions on an exclusive basis. The terms and conditions for granting UMs are different from those for 'traditional' patents. For example, UMs are issued for a shorter duration (7 to 10 years) and, at most offices, UM applications are granted without substantive examination. Data reported per billion PPP$ GDP.

Source: World Intellectual Property Organization, WIPO Statistics Database; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2003–10). (http://www.wipo.int//ipstats/; http://data.worldbank.org/)

6.1.4 Scientific and technical journal articles

Number of scientific and technical journal articles (per billion PPP$ GDP) | 2009

The number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. The NSF considers article counts from a set of journals covered by Science Citation Index (SCI) and Social Sciences Citation Index (SSCI). Articles are classified by year of publication and assigned to region/country/economy on basis of institutional address(es) listed on the article. Articles are counted on a fractional-count basis–that is, for articles with collaborating institutions from multiple countries/economies, each country/economy receives fractional credit on basis of proportion of its participating institutions. Details may not add to total because of rounding. The data are reported per billion PPP$ GDP.

Source: National Science Foundation, National Center for Science and Engineering Statistics, and The Patent BoardTM, special tabulations (2011) from Thomson Reuters, SCI and SSCI; World Bank and OECD GDP estimates, World Bank World Development Indicators database. (http://www.nsf.gov/statistics/seind12/append/c5/at05-27.xls; http://thomsonreuters.com/products_services/science/; http://data.worldbank.org/)

6.2 Knowledge impact

6.2.1 Growth rate of GDP per person engaged

Growth rate of GDP per person engaged (constant 1990 US$ at PPP, 2009 to 2010) | 2010

Growth of GDP per person engaged provides a measure of labour productivity (defined as output per unit of labour input). GDP per person employed is gross domestic product (GDP) divided by total employment in the economy. PPP$ GDP is converted to 1990 constant international dollars using PPP rates. An international dollar has the same purchasing power over GDP that a US dollar has in the United States of America.

Source: International Labour Organization, LABORSTA Database of Labour Statistics. (http://laborsta.ilo.org/)

6.2.2 New business density

New business density (new registrations per thousand population 15–64 years old)[a] | 2009

Number of new firms, defined as firms registered in the current year of reporting, per thousand population aged 15–64 years old.

Source: International Finance Corporation, World Bank World Development Indicators database (2007–09). (http://econ.worldbank.org/research/entrepreneurship; http://data.worldbank.org/)

6.2.3 Total computer software spending

Total computer software spending (% of GDP)[a] | 2011

Computer software spending includes the total value of purchased or leased packaged software such as operating systems, database systems, programming tools, utilities, and applications. It excludes expenditures for internal software development and outsourced custom software development. WITSA figures for 2011 are estimates calculated in 2010 (http://www.witsa.org/v2/media_center/pdf/DP2010_ExecSumm_Final_LoRes.pdf). Data reported as a percentage of GDP.

Source: World Information Technology and Services Alliance (WITSA); World Bank and OECD GDP estimates, World Bank World Development Indicators database. (www.witsa.org/; http://data.worldbank.org/)

6.2.4 ISO 9001 quality certificates

ISO 9001 Quality management systems—Requirements: Number of certificates issued (per billion PPP$ GDP)[a] | 2010

Number of certificates of conformity with standard 'ISO 9001:2008 Quality management systems – Requirements' issued, based on the ISO Survey. Single-site and multiple-site certificates are not distinguished. The data are reported per billion PPP$ GDP. Refer to indicator 3.3.5 for details.

Source: International Organization for Standardization (ISO), The ISO Survey of Certifications 2010 CD-Rom (2002–10). (www.iso.org)

6.3 Knowledge diffusion

6.3.1 Royalty and license fees receipts

Royalty and license fees, receipts (per thousand GDP) | 2010

Receipts between residents and non-residents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, copyrights, trademarks, industrial processes, and franchises) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts).

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2003–10). (http://data.worldbank.org/)

6.3.2 High-tech exports

High-tech net exports (% of total net exports) | 2010

High-technology exports minus re-exports over total exports minus re-exports. See indicator 5.3.2 for details.

Source: United Nations, COMTRADE database; Eurostat 'High-technology' aggregations based on SITC Rev. 4, April 2009 (2007–11). (http://comtrade.un.org/; http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)

6.3.3 Computer and communications service exports

Computer, communications, and other services (% of commercial service exports) | 2009

Computer, communications, and other services (% of commercial service exports) include such activities as international telecommunications, and postal and courier services; computer data; news-related service transactions between residents and nonresidents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2004–10). (http://data.worldbank.org/)

6.3.4 Foreign direct investment net outflows

Foreign direct investment, net outflows (% of GDP) | 2010

Net outflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net outflows of investment from the reporting economy to the rest of the world and is divided by GDP.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2005–10). (http://data.worldbank.org/)

7.1 Creative intangibles

7.1.1 National office trademark registrations

Number of trademark registrations issued to residents by the national office (per billion PPP$ GDP) | 2010

A trademark is a distinctive sign that distinguishes certain goods or services of one undertaking from those produced or provided by other undertakings. The holder of a registered trademark has the legal right to the exclusive use of the mark in relation to the products or services for which it is registered. Trademark registration can potentially be maintained indefinitely as long as the trademark holder pays the renewal fees and actually uses the trademark. Trademark registrations by resident data are based on 'equivalent class counts'. For each trademark application, one or more classes may be specified, depending on whether the national office has a single- or multi-class filing system. For example, the offices of Japan, the Republic of Korea, and the United States, as well as many European offices, have multi-class filing systems. The offices of Brazil, China, and Mexico follow a single-class filing system, requiring a separate application for each class in which applicants seek trademark protection. This can result in much higher numbers of applications at the latter. To improve international comparability between offices, WIPO has analysed the number of classes specified in trademark applications and registrations with time series going back to 2004, while taking into account whether an office has a single- or multi-class fling system. Statistics concerning "Class" refer to the 45 classes of the International Classification of Goods and Services for the Purposes of the Registration of Marks, under the Nice Agreement (www.wipo.int/classifications/en/). The first 34 of the 45 classes indicate goods and the remaining 11 refer to services. Data reported per billion PPP$ GDP.

Source: World Intellectual Property Organization, WIPO Statistics Database; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2004–10). (http://www.wipo.int//ipstats/; http://data.worldbank.org/)

7.1.2 Madrid Agreement trademark registrations

Number of international trademark registrations issued to residents through the Madrid system (per billion PPP$ GDP) | 2010

The statistics are for Contracting Parties to the Madrid system only. The Madrid system makes it possible for an applicant to apply for a trademark registration in a large number of contracting parties by filing a single application at a national or regional intellectual property (IP) office party to the system. The Madrid system simplifies the process of multinational trademark registration by reducing the requirement to file a separate application with each IP office. An international registration under the Madrid system produces the same effect as an application for registration of the mark in each of the contracting parties designated by the applicant. If protection is not refused by the office of a designated contracting party, the status of the mark is the same as if it had been registered by that office. The definition of *trademark* is under the description for indicator 7.1.1. Data reported per billion PPP$ GDP.

Source: World Intellectual Property Organization, WIPO Statistics Database; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2003–10). (http://www.wipo.int//ipstats/; http://data.worldbank.org/)

7.1.3 ICT and business model creation

Average answer to the question: To what extent are information and communication technologies creating new business models, services and products in your country? 1 = not at all; 7 = significantly† | 2011

Source: World Economic Forum, Executive Opinion Survey 2010–2011. (https://wefsurvey.org)

7.1.4 ICT and organisational models creation

Average answer to the question: To what extent are information and communication technologies creating new organizational models (virtual teams, remote working, tele-commuting, etc.) within businesses in your country? 1 = not at all; 7 = significantly† | 2011

Source: World Economic Forum, Executive Opinion Survey 2010–2011. (https://wefsurvey.org)

7.2 Creative goods and services

7.2.1 Recreation and culture consumption

Recreation and culture (% total individual consumption) | 2011

Expenditure on category (9) recreation and culture as a percentage of individual consumption expenditure of households, nonprofit institutions serving households, and general government (current prices, national currency). Individual consumption categories are defined according to the System of National Accounts' classifications of 1993 (SNA 93) and 1968 (SNA 68). Categories under SNA 93 are: (1) Food and non-alcoholic beverages; (2) Alcoholic beverages, tobacco and narcotics; (3) Clothing and footwear; (4) Housing, water, electricity, gas and other fuels; (5) Furnishings, household equipment and routine maintenance of the house; (6) Health; (7) Transport; (8) Communication; (9) Recreation and culture; (10) Education; (11) Restaurants and hotels; and (12) Miscellaneous goods and services. UN data are complemented by Euromonitor (expenditure on leisure and recreation).

Source: United Nations Statistics Division, National Accounts Official Country Data, United Nations database UNdata; Euromonitor Passport GMID (Global Market Information Database) (2005–11). (http://data.un.org/)

7.2.2 National feature films produced

Number of national feature films produced (per million population 15–69 years old)[a] | 2009

Films produced for commercial exhibition in cinemas (films produced solely for television broadcasting are as a general rule excluded). The minimum length of films classified as long (or feature) films ranges from less than 1,000 metres to more than 3,000 metres depending on the country; with a mode of around 1,600 metres. UNESCO data are supplemented by Euromonitor. Data reported per million population 15–69 years old.

Source: UNESCO Institute for Statistics, UIS online database; complemented by United Nations database UNdata and Euromonitor Passport GMID (Global Market Information Database); World Bank and OECD GDP estimates, World Bank World Development Indicators database (2005–11). (http://stats.uis.unesco.org; http://data.un.org/; www.euromonitor.com/passport-gmid; http://data.worldbank.org/)

7.2.3 Daily newspapers circulation

Paid-for dailies average circulation (per thousand population 15–69 years old)[a] | 2009

Paid-for dailies total average circulation. Daily newspapers are periodic publications mainly reporting events that have occurred in the 24-hour period before going to press (issued at least four times a week). Periodic publications are intended for the general public and mainly designed to be a primary source of written information on current events connected with public affairs, international questions, politics, etc. They may also include articles on literary or other subjects as well as illustrations and advertising. The average daily circulation includes the number of copies distributed both inside the country and abroad and either: (a) sold directly; (b) sold by subscription; or (c) mainly distributed free of charge'. Data reported per thousand population 15–69 years old.

Source: World Association of Newspapers and News Publishers, World Press Trends 2010. (www.wan-ifra.org)

7.2.4 Creative goods exports

Creative goods exports (% of total exports) | 2010

Total export values of creative goods (current US$) over total goods exports (current US$).

Source: UNCTAD, Creative Economy Report, UNCTADStat (2004–10). (http://unctadstat.unctad.org/)

7.2.5 Creative services exports

Creative services: Exports (% of total services exports) | 2010

Total exports of creative services (current US$) over total services exports (current US$). UNCTAD reports that 'the value of total exports . . . of creative services is inevitably underestimated, as all the statistical detail necessary is rarely systematically reported'. Creative services includes the following categories of services: (1) advertising, market research, and public opinion polling services; (2) architectural, engineering, and other technical; (3) research and development services; (4) personal, cultural, and recreational services (including 4.a. audiovisual and related services); and (5) other personal, cultural, and recreational services. UNCTAD does not report totals for services; the series 1 to 5 were added up to get the total.

Source: UNCTAD, Creative Economy Report, UNCTADStat, (2005–10). (http://unctadstat.unctad.org/)

7.3 Online creativity

7.3.1 Generic top-level domains (gTLDs)

Generic top-level domains gTLDs (per thousand population 15–69 years old) | 2011

A generic top-level domain (gTLD) is one of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Generic TLDs can be unrestricted (com, info, net, and org) or restricted—that is, used on the basis of fulfilling eligibility criteria (biz, name, and pro). Of these, the statistic covers the five generic domains biz, info, org, net, and com. Generic domains .name and .pro, and sponsored domains (arpa, aero, asia, cat, coop, edu, gov, int, jobs, mil, museum, tel, travel, and xxx) are not included. Neither are country-code top-level domains (refer to indicator 7.3.2). The statistic represents the total number of registered domains (i.e., net totals by December 2011, existing domains + new registrations – expired domains). Data are collected on the basis of a 4% random sample of the total population of domains drawn from the root zone files (a complete listing of active domains) for each TLD. The geographic location of a domain is determined by the registration address for the domain name registrant that is returned from a whois query. These registration data are parsed by country and postal code and then aggregated to any number of geographic levels such as county, city, MSA, or country/economy. The original hard data were scaled by thousand population 15–69 years old. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: ZookNIC. (http://www.zooknic.com)

7.3.2 Country-code top-level domains (ccTLDs)

Country-code top-level domains ccTLDs (per thousand population 15–69 years old) | 2011

A country-code top-level domain (ccTLD) is one of the categories of top-level domains (TLDs) maintained by the Internet Assigned Numbers Authority (IANA) for use in the Internet. Country-code TLDs are two-letter domains especially designated for a particular economy, country, or autonomous territory (there are 324 ccTLDs, in various alphabets/characters). The statistic represents the total number of registered domains (i.e., net totals by December 2011, existing domains + new registrations – expired domains). Data are collected from the registry responsible for each ccTLD and represent the total number of domain registrations in the ccTLD. Each ccTLD is assigned to the country with which it is associated rather than based on the registration address of the registrant. ZookNIC reports that for the ccTLDs it covers, 85–100% of domains are registered in the same country; the only exceptions are the ccTLDs that have been licensed for commercial worldwide use. Of this year's GII sample of countries, this is the case for the ccTLDs of the following economies: Armenia am, Austria at, Belgium be, Belarus by, Canada ca, Switzerland ch, Colombia co, Denmark dk, Spain es, Finland fi, India in, Iran, Islamic Rep. ir, Iceland is, Italy it, Lao PDR la, Latvia lv, Moldova md, Montenegro me, Mongolia mn , Mauritius mu , Nicaragua ni , Serbia rs , Slovenia si (list based on from www.wikipedia.org). Data reported by thousand population 15–69 years old. For confidentiality reasons, only normalized values are reported; while relative positions are preserved, magnitudes are not.

Source: ZookNIC (2003–11). (http://www.zooknic.com)

7.3.3 Wikipedia monthly edits

Wikipedia monthly page edits per adult (per population 15–69) | 2011

Data extracted from Wikimedia Traffic Analysis Report, Wikipedia Page Edits per Country, Overview on the portal www.wikipedia.org. The count of monthly page edits data is based on a 1:1,000 sampled server log (squids), for the period January to December 2011. Wikimedia Foundation (WMF) traffic logging service suffered from server capacity problems in Aug/Sep/Oct 2011. Data loss occurred only during peak hours. It therefore may have had a somewhat different impact for traffic from different parts of the world. Countries are included only if the number of page edits in the period exceeds 100,000 (100 matching records in 1:1,000 sampled log). Page edits by bots are not included. Also all IP addresses that occur more than once on a given day are discarded for that day. A few false negatives are taken for granted. Generated on Friday, 20 January 2012 at 16:25. Data reported per million population 15–69 years old.

Source: Wikimedia Foundation. (http://stats.wikimedia.org/archive/squid_reports/2011-12/SquidReportPageEditsPerCountryOverview.htm)

7.3.4 Video uploads on YouTube

Number of video uploads on YouTube (scaled by population 15–69 years old) | 2011

Total number of video uploads on YouTube, per country, scaled by population 15–69 years old. The raw data are survey based: the country of affiliation is chosen by each user on the basis of a multi-choice selection. This metric counts all video upload events by users. For confidentiality reasons, only normalized values are reported, while relative positions are preserved, magnitudes are not.

Source: Google, parent company of YouTube. (www.youtube.com)

Appendix IV

Technical Notes

Technical Notes

Audit by the Joint Research Centre of the European Commission

The Joint Research Centre (JRC) of the European Commission has researched extensively on the complexity of composite indicators ranking economies' performances along policy lines. First in 2011, and again this year, the JRC agreed to perform a thorough robustness and sensitivity analysis of the Global Innovation Index (GII).

A previous version of the GII model was submitted to the JRC in March 2012. The recommendations and flexibilities allowed by the JRC preliminary audit were taken into account in the final version of the GII model and are explained below as appropriate.

A final audit was performed in May on that last model, the results of which are included in the Annex 3 of Chapter 1.

Composite indicators

The GII relies on seven pillars. Each pillar is divided into three sub-pillars. Each sub-pillar is composed of three to six individual indicators. Each sub-pillar score is calculated as the weighted average of its individual indicators. Each pillar score is the weighted average of its sub-pillar scores.

This year the notion of weights as 'importance coefficients' was discarded to ensure a greater statistical coherence of the model, following the recommendations of the JRC.[1]

The GII includes four index measures:

1. The Innovation Input Sub-Index is the simple average of the first five pillar scores.
2. The Innovation Output Sub-Index is the simple average of the last two pillar scores.
3. The Global Innovation Index is the simple average of the Input and Output Sub-Indices.
4. The Innovation Efficiency Index is the ratio of the Output Sub-Index over the Input Sub-Index.

Economy rankings are provided for indicator, sub-pillar, pillar, and index scores.

The Innovation Efficiency Index serves to highlight those economies that have 'achieved more with less' and those that lag behind in terms of fulfilling their innovation potential. In theory, assuming that innovation results go hand in hand with innovation enablers, efficiency ratios should evolve around the number one. This measure thus allows us to complement the GII by providing an insight that should be neutral to the development stages of economies.[2]

Individual indicators

The model includes 84 indicators, which fall within the following three categories:

1. quantitative/objective/hard data (62 indicators),
2. composite indicators/index data (16 indicators), and
3. survey/qualitative/subjective/soft data (6 indicators).

Hard data

Hard data series (62 indicators) are drawn from a variety of public and private sources such as United Nations agencies (the United Nations Educational, Scientific and Cultural Organization, the World Intellectual Property Organization), the World Bank, Thomson Reuters, and Standard & Poor's.

Indicators are often correlated with population, gross domestic product (GDP), or some other size-related factor; they require scaling by some relevant size indicator for economy comparisons to be valid. Most indicators are scaled at the source or do not need to be scaled; for the rest, the scaling factor was chosen to represent a fair picture of economy differences. This affected 27 indicators, which can be broadly divided into five groups:

1. Indicators 4.1.3, 5.3.1, 6.2.3, and 6.3.1, which come in current US

dollars, were scaled by GDP in current US dollars.[3]

2. The count variables 3.3.3, 4.2.4, 5.2.4, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 6.2.4, 7.1.1, and 7.1.2 were scaled by GDP in PPP terms, in current international dollars. This choice of denominator was dictated by a willingness to appropriately account for differences in development stages; in addition, scaling these variables by population would improperly bias results to the detriment of economies with large young or large ageing populations.[4]

3. Variables 5.1.6, 7.2.2, 7.2.3, 7.3.1, 7.3.2, 7.3.3, and 7.3.4 were scaled by population (20–34 years old for 5.1.6, and 15–69 years old for the rest).

4. Variable 3.2.1, Electricity output in kWh per capita, was scaled by population to be consistent with 3.2.2, Electricity consumption in kWh per capita, which is scaled at the source by the International Energy Agency.

5. Sectoral indicators 5.3.2, 6.3.2, 7.2.1, 7.2.4, and 7.2.5 were scaled by the total corresponding to the particular statistic.[5]

Indices

Composite indicators come from a series of specialized agencies, such as the World Bank, the International Telecommunication Union (ITU), and the UN Public Administration Network (UNPAN). Statisticians discourage the use of an 'index within an index' on two main grounds: the distorting effect of the use of different computing methodologies and the risk of duplicating variables. The normalization procedure partially solves for the former (more on this below). To avoid incurring the mistake of including a particular indicator more than once (directly and indirectly through a composite indicator), only indices with a narrow focus were selected (15 in total).

Any remaining downside is outweighed by the gains in terms of model parsimony, acknowledgement of expert opinion, and focus on multi-dimensional phenomena that can hardly be captured by a single indicator.

To give an example, GII sub-pillar 3.1 Information and communication technologies (ICT) is composed of four indices: ITU's ICT Access and Use sub-indices and UNPAN's Government Online Service and E-Participation Indices. The first two are components of ITU's ICT Development Index together with an ICT skills sub-index that was not considered, as it duplicates GII pillar 2. Similarly, the Online Service Index is a component of UNPAN's E-Government Development Index together with two indices on Telecommunication Infrastructure and Human Capital that were not considered, as they duplicate GII pillars 3 and 2, respectively. The e-Participation Index was developed separately by UNPAN in 2010.

Survey data

Survey data are drawn from the World Economic Forum's Executive Opinion Survey (EOS). Survey questions are drafted to capture subjective perceptions on specific topics. Nonetheless, the six EOS questions included in 2011 were retained to capture phenomena strongly linked to innovative activities for which hard data either do not exist or have low economy coverage.

Country/economy coverage and missing data

This year's GII covers 141 economies, which were selected on the basis of the availability of data. Economies with a minimum indicator coverage of 54 indicators (63%) and with scores for at least two sub-pillars per pillar were retained. These criteria were determined jointly with the JRC in 2011. The last record available for each economy was considered, with a cut-off at year 2001. For the sake of transparency and replicability of results, no additional effort was made to fill missing values. Missing values are indicated with 'n/a' and are not considered in the sub-pillar score. However, the JRC audit assessed the robustness of the GII's modelling choices (i.e., no imputation of missing data, fixed predefined weights, and arithmetic averages) by imputing missing data, applying random weights, and using geometric averages. This year, on the basis of this assessment, a confidence interval is provided for each ranking in the GII as well as the Input and Output Sub-Indices (see Annex 2 to Chapter 1).

Treatment of series with outliers

Potentially problematic indicators with outliers that could polarize results and unduly bias the rankings were treated with the rules listed below, following the recommendations of the JRC. This affected 35 hard data indicators.

First rule: Selection

The 35 problematic indicators were identified by a combination of skewness and kurtosis statistics:

- absolute value of skewness greater than 2, *and*
- kurtosis greater than 3.5.[6]

Second rule: Treatment

Series with one to four outliers (28 cases) were winsorised: The values distorting the indicator distribution were assigned the next highest value, up to the level where skewness and/or kurtosis entered within the ranges specified above.[7]

For series with five or more outliers (7 cases), skewness and/or kurtosis entered within the ranges specified above with transformation by natural logs.[8] Since only 'goods' were affected (i.e., indicators for which higher values indicate better outcomes, as opposed to 'bads'), the formula used was:

$$\ln\left[\frac{(\max - 1) \times (\text{country value} - \min)}{(\max - \min)} + 1\right]^{9}$$

where 'min' and 'max' are the minimum and maximum indicator sample values.

Normalization

The 84 indicators were then normalized into the [0, 100] range, with higher scores representing better outcomes. Normalization was made according to the min-max method, where the min and max values were given by the minimum and maximum indicator sample values respectively, except for index and survey data, for which the original series' range of values was kept as min and max values (for example, [1, 7] for the World Economic Forum Executive Opinion Survey questions; [0, 100] for World Bank's World Governance Indicators; [0, 10] for ITU indices, etc.). In addition, for indices based on percent ranks, the percent ranks were recalculated for the sample of 141 economies.[10] The following formula was applied:

- Goods:

$$100 \times \frac{(\text{country value} - \min)}{(\max - \min)}$$

- Bads:

$$-100 \times \frac{(\text{country value} - \min)}{(\max - \min)} + 100$$

Notes

1 Paruolo et al. (2012) show that a theoretical inconsistency exists between the real theoretical meaning of weights and the meaning generally attributed to them by the standard practice in constructing composite indicators that use them as importance coefficients in combination with linear aggregation rules. The approach followed in the GII this year is to assign weights of 0.5 or 1.0 to each component in a composite to ensure the highest correlations between them (i.e., indicator/sub-pillar, sub-pillar/pillar, etc.). Only two sub-pillars are weighted 0.5: 7.2 Creative goods and services, and 7.3 Online creativity; while 22 indicators are weighted 0.5. Five indicators with Pearson correlation coefficients with their respective sub-pillar scores below 0.5 were kept in the model to ensure a conceptual coherence (as opposed to a statistical coherence) in the belief that some cyclical (as opposed to structural) dimension might be at the source of their behaviour as "noise": 3.2.4 Gross capital formation; 4.3.2 Market access for non-agricultural exports; 4.3.5 Intensity of local competition; 5.3.4 Foreign Direct Investment (FDI) net inflows; and 6.3.4 FDI net outflows. These criteria might need to be revised next year.

2 To account for differences in development, other composite indicators use weighting schemes differentiated by income level.

3 These indicators measure the gross loan portfolio of microfinance institutions; royalty and license fees' payments and receipts, and total computer software spending, respectively.

4 These count variables are mainly indicators that increase disproportionately with economic growth, and include: ISO 14001 environmental and ISO 9001 quality certificates issued; venture capital, joint venture, and strategic alliance deals; and resident patent, utility model, and trademark applications.

5 Creative exports of goods (services) are scaled by total exports of goods (services); high-tech exports minus re-exports (imports minus re-imports) by total exports minus re-exports (imports minus re-imports); and individual expenditure on recreation and culture by total individual consumption.

6 Based on Groeneveld and Meeden, 1984, which sets the criteria of absolute skewness above 1 and kurtosis above 3.5. The skewness criterion was relaxed to account for the small sample at hand (141 economies).

7 This distributional issue affects the following variables: 1.2.3, 3.2.1, 4.2.2, 5.3.2, 5.3.4, 6.3.2, 6.3.4, 7.1.1, 7.1.2, 7.2.5 (1 outlier); 3.2.2, 4.3.3, 7.2.4 (2 outliers); 2.2.4, 3.3.3, 4.1.3, 4.2.3, 4.3.2, 4.3.4, 5.2.3, 5.3.1, 6.1.1, 6.1.3, 6.2.2, 7.2.2 (3 outliers); and 5.2.4, 6.3.1, 7.3.1 (4 outliers).

8 This distributional issue affects variables 2.2.3, 4.2.4, 5.1.6, 6.1.2, 6.2.4, 7.3.2 and 7.3.4.

9 The corresponding formula for 'bads' is:

$$\ln\left[-\frac{(\max - 1) \times (\text{country value} - \min)}{(\max - \min)} + \max\right]$$

These formulas achieve two things: converting all series into goods and scaling the series to the range [1, max] so that natural logs are positive starting at 0.

10 This concerns indicators 1.3.1, 1.3.2, 1.3.3, 4.1.1, and 4.2.1.

References

Groeneveld, R. A. and G. Meeden. 1984, 'Measuring Skewness and Kurtosis'. *The Statistician* 33: 391–99.

Paruolo, P., M. Saisana, and A. Saltelli. 2012. 'Ratings and Rankings: Voodoo or Science?' *Journal of the Royal Statistical Society* (in print). A draft version is available at http://arxiv.org/abs/1104.3009.

Appendix V

About the Authors

About the Authors

Khaled S. Al-Sultan has been Rector of King Fahd University of Petroleum & Minerals (KFUPM), Dhahran, Saudi Arabia since May 2003. He is a Professor of Systems Engineering, holds a BS and an MS in Systems Engineering from King Fahd University of Petroleum & Minerals, another MS in Applied Maths, and a PhD in Industrial and Operations Engineering (Operation Research) from the University of Michigan, Ann Arbor, USA. Prior to his appointment as Rector of KFUPM, Dr Al-Sultan worked as Deputy Minister for Educational Affairs, Ministry of Higher Education, Saudi Arabia and as Dean, College of Computer Science & Engineering and Chairman of Systems Engineering Department at KFUPM. Dr Al-Sultan has served on the editorial boards of several international journals, published 39 papers in refereed journals (has more than 225 citations to his credit), and has co-authored one book and four book chapters. He is also a member of several national and international professional organizations/institutions and a consultant for several government and private industrial institutions. He is the recipient of several international honours and awards.

Iyad Alzaharnah completed his Bachelor's and Master's degrees in Mechanical Engineering Sciences from King Fahd University of Petroleum and Minerals (KFUPM). He obtained his Doctor of Philosophy from the School of Manufacturing and Mechanical Engineering at Dublin City University. Dr Alzaharnah has published more than 40 journal and conference papers in different fields of engineering and physical sciences. Since 2006 he has been involved with a KFUPM team in establishing Dhahran Techno-Valley (DTV) at KFUPM's campus. In 2008, he became the Director of KFUPM's Innovation Center; since then, he has been working on building the university innovation and technology transfer capacities. His activities include developing plans for creating efficient mechanisms for joint R&D interactions between KFUPM and the DTV multinational corporations. He has published two papers in international conferences on modelling innovation of universities and the aspects of efficient university-industry R&D interactions and the associated implications and requirements for strategy development.

Daniela Benavente joined INSEAD eLab in November 2010. She has been Lead Researcher and Project Manager of *The Global Innovation Index* since its fourth edition (2011 and 2012). Her previous professional experience includes working as an Economic Advisor at the cabinet office of the President of Chile and as a trade and intellectual property specialist and negotiator at the Ministries of Foreign Affairs and of Economy of Chile. She also held teaching assistant positions at the Graduate Institute of International and Development Studies in Geneva in Econometrics with Professor Jaya Krishnakumar, among others. She holds a PhD in International Economics from the Graduate Institute (obtained with highest honours), Master's degrees from Columbia University (Fulbright and Dean's Scholar) and Sciences-Po Paris, and a BA in Economics from Universidad Católica in Chile.

Irina Bokova is a Bulgarian diplomat and politician. She has been the Director-General of UNESCO since November 2009 and is the first woman to have been elected head of the Organization. She was also Minister of Foreign Affairs and Ambassador of Bulgaria. She graduated from the Moscow State Institute of International Relations, the University of Maryland (Washington), and the John F. Kennedy School of Government (Harvard University), and in 1977 joined the Ministry of Foreign Affairs of Bulgaria, where she was responsible for human rights issues. In charge of political and legal affairs at the Permanent Mission of Bulgaria to the United Nations (UN), she was also a member of the Bulgarian Delegation at the UN conferences on the equality of women in Copenhagen (1980), Nairobi (1985), and Beijing (1995). Elected as a deputy of the Bulgarian Socialist Party (1990–91 and 2001–05), she participated in the drafting of Bulgaria's new Constitution, which contributed significantly to the country's accession to the European Union (EU). She launched the first seminar of the Parliamentary Assembly of the Council of Europe on the European Convention on Human Rights. As a polyglot (Bulgarian, English, French, and Spanish), she was Minister for Foreign Affairs and Coordinator of Bulgaria-EU relations (1995–97) and subsequently Ambassador of Bulgaria (2005–09) to France, Monaco, and UNESCO. She has also represented Bulgaria at the UN. While serving as State Secretary on European Integration and Minister for Foreign Affairs, Ms Bokova always promoted European integration. As an active member of many international expert networks and of civil society and, in particular, as Chairperson and founding member of the European Policy Forum, she has worked to overcome European divisions and to foster the values of dialogue, diversity, human dignity, and human rights.

Soumitra Dutta is the Roland Berger Chaired Professor of Business and Technology and the founder and academic director of elab@INSEAD, INSEAD's initiative in building a centre of excellence in teaching and research in the digital economy (http://elab.insead.edu). In July 2012, he joined the Samuel Curtis Graduate School of Management at Cornell University as its 11th Dean. Professor Dutta obtained his PhD in Computer Science and his MSc in Business Administration from the University of California at Berkeley. His current research is on technology strategy and innovation at both corporate and national policy levels. He is the creator of the Networked Readiness Framework, which provides the intellectual basis for the last 10 editions of the *Global Information Technology Report*s (published by the World Economic Forum), which have become a global reference in national technology policy deployment. He also researches the impact of social media on organizations and societies; his extensive writings on this topic include his recent book, *Throwing Sheep in the Boardroom* (Wiley, 2009). Among his other books is *Innovating at the Top* (Palgrave, 2009). His research has been showcased in the international media and he has taught in and consulted with international corporations across the world. He is a Fellow of the World Economic Forum and is on the boards of several business schools and corporations.

Rasheed Eltayeb is a Principal at Booz & Company. He focuses on policy and strategy formulation relating to economic development, education, and innovation. He has worked with numerous economic and education policy entities in the GCC to define strategies and institutional models supporting sustainable economic and human capital development. His current work focuses on assisting universities and state-owned enterprises in the GCC to establish entities to serve as catalysts for innovation. Mr Eltayeb has authored Booz & Company publications relating to socioeconomic development. He holds a Master of Engineering in Civil & Structural Engineering from the University of Manchester Institute of Science & Technology (UMIST).

Leonid Gokhberg is the First Vice-Rector of the Higher School of Economics (HSE)—one of the most prominent research universities in Russia (http://www.hse.ru/lingua/en)—and Director of HSE Institute for Statistical Studies and Economics of Knowledge (http://issek.hse.ru). He holds a Doctor degree and Professor diploma in Economics. From 1988 to 1991 he was Head of Laboratory for S&T statistics at the Research Institute for Statistics, and Deputy Director at the Centre for Science Research and Statistics (CSRS) in Moscow from 1991 to 2002. Prof. Gokhberg coordinated more than 300 national and international projects—for example, projects sponsored by various national authorities, regional agencies, and industrial companies as well as by the European Commission, the World Bank, UNIDO, the US National Science Foundation, IIASA, and so on in the areas of S&T and innovation indicators, analyses, and policies. Leonid Gokhberg has served as a consultant to the OECD, Eurostat, UNESCO, the UN Economic Commission for Europe, and other international and national agencies. He is also Editor-in-Chief of the Moscow-based scientific journal *Foresight* (http://foresight-journal.hse.ru), ranking 1st in science studies, 2nd in management, and 8th in economics according to the Russian National Science Citation Index. Prof. Gokhberg is a member of the OECD and Eurostat expert groups on indicators for S&T, information society, and education; and the International Advisory Board of the Global Innovation Index (WIPO/INSEAD). In 2011, he was appointed Chairman of the Expert Group on Innovation Policy established by the Government of the Russian Federation to provide recommendations for a Socio-Economic Development Strategy for the Russian Federation until 2020 (Strategy-2020). Prof. Gokhberg is the author of over 350 papers published in the Russian Federation and internationally, including several monographs and textbooks for universities.

Barry Jaruzelski is a Senior Partner who leads Booz & Company's Global Engineered Products & Services Practice and is a member of the North American Management Team. He specializes in corporate and product strategy and the transformation of core innovation processes for high technology and industrial clients. Mr Jaruzelski's key areas of expertise are R&D portfolio and product growth strategy; product development efficiency and effectiveness; innovation metrics; and acquisition due diligence of technology intensive firms. Mr Jaruzelski has co-authored numerous Booz & Company publications, including the firm's award winning annual Global Innovation 1000 study; several *strategy+business* articles, such as 'Money Isn't Everything,' 'What Will Be Made in China,' 'The Customer Connection' and 'The Stealth Software Challenge;' and the book *Mastering the Innovation Challenge.* Mr Jaruzelski holds an MBA with concentrations in Finance and Management of organizations from Columbia University's Graduate School of Business, and a BS in Economics with a concentration in Marketing from the University of Pennsylvania's Wharton School of Business.

Bruno Lanvin is the Executive Director of INSEAD's eLab, managing INSEAD's teams in Paris, Singapore, and Abu Dhabi since September 2007. eLab's current areas of focus are leadership in knowledge economies, skills/e-skills, innovation, economic impact of social networks, and new roles of government. Since 2009, he has been Chair of the Global Advisory Council on the Future of Government (World Economic Forum). He has been a Commissioner on the Broadband Commission since its creation in 2010. From 2000 to 2007, he worked for the World Bank, where he was inter alia Senior Advisor for E-strategies, Regional Coordinator (Europe and Central Asia) for ICT and e-government issues, and Chairman of the Bank's e-Thematic Group. From June 2001 to December 2003, he was the Manager of the Information for Development Program (infoDev). In 2000, he was appointed Executive Secretary of the G-8 DOT Force. Before that, he worked for some 20 years in senior positions in the United Nations. The author of numerous books and articles on international economics, information technology, and development, he holds a BA in Mathematics and Physics, an MBA from Ecole des Hautes Etudes Commerciales (HEC) in Paris, and a PhD in Economics from the University of Paris I – La Sorbonne. He has worked in some 70 countries, and speaks French, English, and Spanish, and has a practical knowledge of Italian, Portuguese, Russian, and basic Chinese.

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Lynn St. Amour is President and CEO of the Internet Society, a nonprofit organization founded in 1992 to provide leadership in Internet-related standards, education, and policy. She joined the Internet Society in 1998 as Executive Director of its Europe, Middle East, and Africa (EMEA) division, and has been responsible for the Internet Society's international expansion. She became Global Executive Director and COO in 1999 and held that position until her appointment as President and CEO in March of 2001. St. Amour has extensive experience in global IT and international business. Her background includes positions at the highest levels in international sales and marketing, strategic planning, partner management, and manufacturing. She also has considerable experience in corporate restructuring and start-up management. St. Amour has spent most of her career working in the United Kingdom, France, and Switzerland, with significant long-term assignments in other European countries. Prior to joining the Internet Society, she was director of Business Development and Joint Venture Operations for AT&T's Europe, Middle East, and Africa division. A graduate of the University of Vermont, St. Amour began her career in information technology with the General Electric Corporation.

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A new dynamic of innovation is emerging around the world in spite of persistent innovation divides between countries and regions. Although innovation cannot cure the most immediate financial difficulties, it is a crucial element of sustainable growth.

To guide polices and to help overcome divides, metrics are required. *The Global Innovation Index 2012: Stronger Innovation Linkages for Global Growth* is primarily concerned with improving the 'journey' to better understanding innovation and with identifying targeted policies, good practices, and other levers to foster innovation.

This year the Global Innovation Index (GII) innovates in two ways:

- First, it includes an analysis of the underlying factors influencing year-on-year changes in country rankings.
- Second, the strengths and weaknesses of each economy are clearly identified in country profiles.

The GII project was launched by INSEAD in 2007 to determine how to find metrics and approaches that go beyond traditional measures of innovation. The World Intellectual Property Organization (WIPO), a specialized agency of the United Nations, joined the exercise in 2011 as Knowledge Partner and in 2012 as a co-publisher. The GII draws on the support and expertise of its Knowledge Partners: Alcatel-Lucent, Booz & Company, and the Confederation of Indian Industry, as well as an Advisory Board of 11 eminent international experts.

The full report can be downloaded at **www.globalinnovationindex.org**.

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