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# The Global Innovation Index 2011

## Accelerating Growth and Development

**Soumitra Dutta**, INSEAD  
Editor



Alcatel-Lucent

**booz&co.**



Confederation of  
Indian Industry





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*The Global Innovation Index 2011: Accelerating Growth and Development* is the result of a collaboration among INSEAD and Knowledge Partners.

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#### ACKNOWLEDGEMENTS

The Global Innovation Index, like any innovation project, is a collaborative effort. The valuable contributions of the individuals listed below are gratefully acknowledged. We look forward to the continued input of the broader community of innovation professionals and experts to further improve the GII and to make it more useful for policy making and decision makers in the public/private sectors.

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The index's methodology and the rankings do not necessarily present the views of WIPO or its Member States. Any remaining errors are the responsibility of the authors and not WIPO.

We are also grateful to the following persons for their help with specific data requests:

**Susan Teltscher**, Head, and **Esperanza Magpantay**, Statistician, Market Information and Statistics Division, Telecommunication Development Bureau, International Telecommunication Union (ITU)

**Karen Treanton**, Head of Energy Balances, Prices and Emissions Section, Energy Statistics Division, International Energy Agency

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The terms 'country' 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.

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ISBN: 978-2-9522210-1-6

Printed and bound in France by INSEAD, Fontainebleau.

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## The World Needs Open Innovation



Innovation has always been an important element in the relative success of societies—economically, intellectually, and socially. And as we move from a world of independent, lightly linked societies to one of inclusion with a larger, more deeply interconnected global community, innovation is more critical than ever.

What is the role of innovation in transforming a society? How does this transformation happen? It is one thing to have a great idea—it is another to bring it to life. For innovation to thrive you need an ecosystem that can transform an idea into something truly meaningful.

This important work that you have in your hands, the *Global Innovation Index*, explores the transformative power of innovation. Significantly, it identifies the conditions and qualities that allow innovation to thrive, and highlights the role innovation can play in a nation's economic and social development.

But there is another, even deeper question we need to ask ourselves: What is the role of innovation in addressing the great challenges that confront humanity?

We are at a very exciting time in history, a pivotal time, and the global community faces some daunting challenges. The planet is getting hotter. Cities are expanding at an astounding rate, creating a difficult environment for the delivery of basic services such as health care, public safety, and education. At the same time, while the world becomes more connected—there are more cell phones today than there are people—large segments of the global community remain completely cut off from the world of commerce, communication, and information that has become so critical to the establishment of healthy economies and prosperous people.

As importantly, these changes cannot be incremental—the solutions to our most daunting challenges will require bold, creative leaps. These challenges require new thinking, new technology, and new ways of collaborating—an open innovation approach to solving problems that is based on partnerships among industries, companies, national and regional governments, and research organizations and academia.

There are initiatives underway that are applying this model of open innovation to specific global challenges. One example I like to highlight is the GreenTouch™ Consortium, a group that is drawing on the expertise of companies and organizations from all sectors of the information and communication technologies (ICT) industry and academia to dramatically reduce energy consumption in ICT networks, a significant contributor to global climate change. Together, these varied and often competing organizations are working together to pioneer the new technologies on which energy efficient networks of the future will depend. These are not merely incremental improvements, but disruptive technologies that will change the nature of networks forever.

I am convinced that this same model, where commercial concerns and self-interest are set aside for the greater good, can and must be applied to the great challenges of our time, from the management of rapid urbanization (which we address in this report) to connecting the underserved populations of the world and to the establishment of a more sustainable way of life across the board.

*The Global Innovation Index* is laying the foundation for a global conversation of the role of innovation in addressing these challenges. By bringing together diverse parties to explore how innovation is being applied around the world, and what conditions make for successful innovation, it is making an essential contribution to the promotion of open innovation as a basic operating principal for the global community.

**BEN VERWAAYEN**  
Chief Executive Officer  
Alcatel-Lucent





## Innovation: Increasingly Global, Increasingly Vital



Booz & Company is honoured to contribute to *The Global Innovation Index 2011* and to continue to support businesses and governments throughout the world in their pursuit of innovation. In the six years that our firm has published the annual Global Innovation 1000 study, which tracks the companies that spend the most on research and development worldwide, we have gained significant insight into the nature of innovation in terms of the relationship between innovation and performance, the effect of the recession on innovation spending, and ways that innovative companies are consistently able to outperform their peers.

We have also seen that innovation will be one of the most crucial elements in the continuing advancement of businesses and governments worldwide. The world has reached an inflection point in the evolution of innovation: Whereas economic advantage during the Industrial Revolution relied largely on natural resources, national development in the Digital Age depends on smart, ambitious individuals—who can be found anywhere. No single person, society, company, or nation has a monopoly on innovation, information, and knowledge.

That fact is reflected in the increasingly global nature of innovation. Multinational corporations are making large investments in research and development (R&D) outside of their headquarter countries, setting up R&D sites in low-cost emerging countries such as China and India to access global talent and take advantage of their proximity to target markets. As a result, developing countries are benefiting from new products and services that better fit their needs, more job opportunities, new management practices, and access to technology.

Governments and companies alike must continue to push forward in building their capabilities in innovation if they are to capture and sustain competitive advantage in the coming years. Developed economies—many still reeling from the impact of the world's financial crisis that began in 2008—must push forward with innovation strategies in order to stay ahead in critical industries. At the same time, developing economies—many of which managed to weather the storm of the financial crisis—must actively develop an innovation environment

by developing their talent base, introducing or enforcing laws that protect intellectual property, and improving corporate governance.

At Booz & Company, we believe in the transformative nature of innovation. We believe that new ideas can be a catalyst for change at all levels of society. And we believe that institutions—public and private—have a mandate to create environments in which innovation will flourish. In doing so, they are incubating the next stage of the world's economic advancement.

**SHUMEET BANERJI**  
Chief Executive Officer  
Booz & Company



## Innovation, Developing Markets, and the Role of the Global Innovation Index



It gives me great pleasure to see the flourishing partnership between the Confederation of Indian Industry (CII) and INSEAD on the Global Innovation Index (GII). This is the third consecutive year of the report, and the inclusion of three other partners—Alcatel-Lucent, Booz & Company, and the World Intellectual Property Organization (WIPO)—has strengthened and diversified the team. I welcome all the partners to this initiative and hope that together we will be able to enhance our contributions to the GII.

### Innovation and developing markets

People have always attempted to fathom the unknown and discover new paths to knowledge. This perpetual journey has recently gained unprecedented momentum. In the last two or three decades the world has seen rapid changes in operational efficiency, thanks to the advent of the computer, the Internet, and mobile devices. To use a cliché, the world has become a global village where distances have ceased to affect human interaction and information exchange.

From big metropolitan areas to remote ones, people are well connected to the global market. This rapid connectivity and information flow has had a great influence on developing regions, where it is reshaping the mindset of people in remote villages and towns. People are not only more educated today than they were a short time ago, but also more informed and increasingly connected to the mainstream market. This phenomenon creates huge challenges and as well as opportunities for existing businesses if they are to survive this massive change. It is here that the importance of ‘innovation’ becomes evident, and it is why innovation is becoming more and more widely discussed as a way to counter this rapid change in the global order.

As we look around and observe the whole world embracing innovation in a time of economic downturns, shrinking markets, and shortening product lifecycles, we see a clear shift towards the developing regions, which are the new hotbeds of innovation and future markets. Some

good efforts have been made to capture these evolving economic conditions by various studies at a global level.

### The GII and its importance

The Global Innovation Index (GII) is one such study, conducted by experts from INSEAD and its Knowledge Partners to put into perspective the new trends and practices in innovation across the world. The indexing of countries on innovation parameters will not only showcase the excellence of lead countries but also help in finding the gaps for the laggards.

The outreach of this study, which attempts to include developing regions such as India—a country that is fast transforming itself into an innovation-driven economy—has made it comprehensive. Because CII is the premier industry body of India, it is associated with various innovation activities within industry and society at large; its knowledge of this region complements the GII well. The GII provides insight into the innovation gaps that need to be filled, which makes it a readily available guide for national policy makers.

On behalf of CII, I express my satisfaction at being associated with the GII, congratulate its wonderful team, and wish it all success.

**CHANDRAJIT BANERJEE**  
Director General  
Confederation of Indian Industry



## Why Innovation Is Important

Innovation is a central driver of economic growth, development, and better jobs. It is the key that enables firms to successfully compete in the global marketplace, and the process by which solutions are found to social and economic challenges, from climate change to the fight against deadly diseases. It is the source of improvements to the quality of our everyday life.

The innovation landscape has evolved significantly in recent years. First, shifts are occurring in the geography of innovation. Trends in economic growth and patterns of investment in education and research and development foster a multi-polar innovation landscape. Firms in lower-income countries are no longer only passive adopters of technologies, as enterprises from middle-income economies have emerged on the international innovation scene. The technological gap between middle- and high-income countries has narrowed.

Second, there has been increased recognition of the complexity of the journey from idea to commercial reality, leading to a broadening of our understanding of innovation. Non-technological innovations—such as new organizational forms, new marketing approaches, successful design, and other innovations—are now acknowledged as vital. Innovation capability is also the ability to exploit new and incremental technological combinations. Third, the innovation process today is more open, collaborative, and internationalized than ever.

Importantly, in this setting, innovation-driven growth is no longer the prerogative of high-income countries alone. Opportunities to innovate can be tapped by all.

### Why an innovation index?

Innovation is still a blurry concept, despite the policy interest it now garners. It evades clear measurement by national statistical offices, especially as our understanding has broadened and as a wider spectrum of actors—the service sector, public entities, and philanthropies—is recognized. Even less is known about how new products and processes come about in developing countries, how innovation diffuses, and what its impacts are.



Dhillon Photographics

To enable countries to benchmark their policies, the Global Innovation Index (GII) provides an integrated metric based on carefully selected and weighted variables. It is the result of several years of improvement, a willingness to use official data where possible, and a desire to weight sub-variables in order not to penalize smaller or lower-income economies.

This undertaking is not without challenges. Developing an innovation index is constrained by data limitations, and there is no clear understanding of which factors interact in specific country settings and how to influence innovation. Many factors—say, the number of science PhDs—may not operate in an identical manner across different countries.

Nonetheless, I believe that having the GII makes an important difference in several ways: It seeks to sharpen the eye of policy makers about the importance of innovation and related policies and puts a spotlight on a topic that is otherwise hard to grasp. It helps to create an environment where innovation factors are under constant re-evaluation, thus becoming a tool to assess relative positions and to refine national innovation policies. And the demands created by the GII are meant to foster the availability of statistical data.

WIPO, through developing a balanced and effective international intellectual property system, contributes to stimulating innovation and economic development. Better understanding the innovation process is thus closely linked to our mission. We are therefore glad to have supported the development of the 2011 GII and I thank INSEAD, GII's Knowledge Partners, and its eminent Advisory Board Members for a fruitful partnership.

I hope readers find the present publication enlightening. Measuring innovation, identifying its main drivers, and fostering adequate policies is a multi-year journey. We at WIPO look forward to taking part in this journey.

**FRANCIS GURRY**  
 Director General  
 World Intellectual Property Organization (WIPO)



# The Global Innovation Index Is a Collaborative Effort

Soumitra Dutta, INSEAD

As this fourth edition of *The Global Innovation Index (GII) 2011* goes to the press in the second quarter of 2011, the global economic recovery is strengthening in most parts of the world. With the global economy forecasted to grow at a rate of more than 4% in 2011, innovation is coming into its own as an essential element of resilience as economies aim to sustain their growth while creating new jobs for their citizens.

Since 2007, INSEAD eLab has been producing the GII, recognizing the key role of innovation as a driver of economic growth and prosperity and acknowledging the need for a broad horizontal vision of innovation that is applicable to both developed and emerging economies. A key goal of the GII has been to find metrics and approaches to better capture the richness of innovation in society and go beyond the traditional measures of innovation such as the number of PhDs, research articles produced, research centers created, patents issued, and R&D expenditures.

In 2011, the GII Report underwent major developments. It gathered key players around the project and strengthened the GII as a valuable benchmarking tool to facilitate public-private dialogue, whereby policy makers, business leaders, and other stakeholders can evaluate progress on a continual basis.

As part of this evolution, Alcatel-Lucent, Booz & Company, the Confederation of Indian Industry (CII), and the World Intellectual Property Organization (WIPO, a specialized agency of the United Nations) joined INSEAD as Knowledge Partners in the elaboration of the GII. These Knowledge Partners share a common belief in the growing importance of innovation for enabling economic growth in both developed and emerging nations. They have provided valuable input to the research underlying the GII, contributed analytical chapters to the GII Report, and will participate actively in the dissemination of results.

In addition, for the 2011 edition, the Joint Research Centre (JRC) of the European Commission performed

a thorough robustness and sensitivity analysis of the GII. The JRC has researched extensively on the complexity of composite indicators ranking countries' performances along policy lines. The recommendations from the JRC auditing report are presented in the Report and were taken into account in the computation of the rankings.

Last but certainly not least, an Advisory Board was set up, comprising a select group of international practitioners and experts in the realm of innovation (details on the following page). We are grateful for the time and support provided by the Advisory Board members.

The GII, like any innovation project, is a collaborative effort. There are many others who have made valuable contributions to the success of the project this year—in particular, the support of Sacha Wunsch-Vincent of WIPO; Bruno Lanvin of INSEAD eLab; Anjan Das, Jibak Dasgupta, and Seema Gupta of CII; Chadi Moujaes and Hatem Samman of Booz and Company; and Revital Marom and Kurt Steinert of Alcatel-Lucent is gratefully acknowledged. The excellent research and overall project management of Daniela Benavente for this fourth edition of the GII is also gratefully acknowledged. We look forward to the continued input of the broader community of innovation professionals and experts to further improve the GII and to make it more useful for policy making and decision makers in the public and private sectors.





## Advisory Board to the Global Innovation Index

In 2011, an Advisory Board was set up to advise on the research underlying the Global Innovation Index (GII), generate synergies at its development stages, 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.

### ADVISORY BOARD MEMBERS

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# Rankings

## Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	GII PAST YEARS		
							2010	2009	
Switzerland	63.82	1	HI	1	ECS	1	4	7	
Sweden	62.12	2	HI	2	ECS	2	2	3	
Singapore	59.64	3	HI	3	EAS	1	7	5	
Hong Kong (SAR), China	58.80	4	HI	4	EAS	2	3	12	
Finland	57.50	5	HI	5	ECS	3	6	13	
Denmark	56.96	6	HI	6	ECS	4	5	8	
United States of America	56.57	7	HI	7	NAC	1	11	1	
Canada	56.33	8	HI	8	NAC	2	12	11	
Netherlands	56.31	9	HI	9	ECS	5	8	10	
United Kingdom	55.96	10	HI	10	ECS	6	14	4	
Iceland	55.10	11	HI	11	ECS	7	1	20	
Germany	54.89	12	HI	12	ECS	8	16	2	
Ireland	54.10	13	HI	13	ECS	9	19	21	
Israel	54.03	14	HI	14	MEA	1	23	23	
New Zealand	53.79	15	HI	15	EAS	3	9	27	
Korea, Rep.	53.68	16	HI	16	EAS	4	20	6	
Luxembourg	52.65	17	HI	17	ECS	10	15	17	
Norway	52.60	18	HI	18	ECS	11	10	14	
Austria	50.75	19	HI	19	ECS	12	21	15	
Japan	50.32	20	HI	20	EAS	5	13	9	
Australia	49.85	21	HI	21	EAS	6	18	22	
France	49.25	22	HI	22	ECS	13	22	19	
Estonia	49.18	23	HI	23	ECS	14	29	29	
Belgium	49.05	24	HI	24	ECS	15	17	18	
Hungary	48.12	25	HI	25	ECS	16	36	47	
Qatar	47.74	26	HI	26	MEA	2	35	24	
Czech Republic	47.30	27	HI	27	ECS	17	27	33	
Cyprus	46.45	28	HI	28	ECS	18	32	45	
China	46.43	29	LM	1	EAS	7	43	37	
Slovenia	45.07	30	HI	29	ECS	19	26	36	
Malaysia	44.05	31	UM	1	EAS	8	28	25	
Spain	43.81	32	HI	30	ECS	20	30	28	
Portugal	42.40	33	HI	31	ECS	21	34	40	
United Arab Emirates	41.99	34	HI	32	MEA	3	24	26	
Italy	40.69	35	HI	33	ECS	22	38	31	
Latvia	39.80	36	HI	34	ECS	23	44	60	
Slovak Republic	39.05	37	HI	35	ECS	24	37	35	
Chile	38.84	38	UM	2	LCN	1	42	39	
Moldova, Rep.	38.66	39	LM	2	ECS	25	n/a	116	
Lithuania	38.49	40	UM	3	ECS	26	39	42	
Jordan	38.43	41	LM	3	MEA	4	58	55	
Bulgaria	38.42	42	UM	4	ECS	27	49	74	
Poland	38.02	43	HI	36	ECS	28	47	56	
Croatia	37.98	44	HI	37	ECS	29	45	62	
Costa Rica	37.91	45	UM	5	LCN	2	41	48	
Bahrain	37.80	46	HI	38	MEA	5	40	34	
Brazil	37.75	47	UM	6	LCN	3	68	50	
Thailand	37.63	48	LM	4	EAS	9	60	44	
Lebanon	37.11	49	UM	7	MEA	6	n/a	n/a	
Romania	36.83	50	UM	8	ECS	30	52	69	
Viet Nam	36.71	51	LM	5	EAS	10	71	64	
Kuwait	36.64	52	HI	39	MEA	7	33	30	
Mauritius	36.47	53	UM	9	SSF	1	73	66	
Saudi Arabia	36.44	54	HI	40	MEA	8	54	32	
Serbia	36.31	55	UM	10	ECS	31	101	92	
Russian Federation	35.85	56	UM	11	ECS	32	64	68	
Oman	35.51	57	HI	41	MEA	9	65	52	
Argentina	35.36	58	UM	12	LCN	4	75	84	
South Africa	35.22	59	UM	13	SSF	2	51	43	
Ukraine	35.01	60	LM	6	ECS	33	61	79	
Guyana	34.83	61	LM	7	LCN	5	113	103	
India	34.52	62	LM	8	SAS	1	56	41	
Greece	34.18	63	HI	42	ECS	34	46	54	

## Global Innovation Index rankings (continued)

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	GII PAST YEARS		
							2010	2009	
Uruguay	34.18	64	UM	14	LCN	6	53	80	
Turkey	34.11	65	UM	15	ECS	35	67	51	
Tunisia	33.89	66	LM	9	MEA	10	62	46	
Macedonia	33.47	67	UM	16	ECS	36	77	89	
Mongolia	33.40	68	LM	10	EAS	11	87	105	
Armenia	33.00	69	LM	11	ECS	37	82	104	
Ghana	32.48	70	LI	1	SSF	3	105	n/a	
Colombia	32.32	71	UM	17	LCN	7	90	75	
Trinidad and Tobago	32.17	72	HI	43	LCN	8	55	65	
Georgia	31.87	73	LM	12	ECS	38	84	98	
Paraguay	31.17	74	LM	13	LCN	9	127	118	
Brunei Darussalam	30.93	75	HI	44	EAS	12	48	n/a	
Bosnia & Herzegovina	30.84	76	UM	18	ECS	39	116	n/a	
Panama	30.77	77	UM	19	LCN	10	66	67	
Namibia	30.74	78	UM	20	SSF	4	92	95	
Botswana	30.51	79	UM	21	SSF	5	86	77	
Albania	30.45	80	UM	22	ECS	40	81	121	
Mexico	30.45	81	UM	23	LCN	11	69	61	
Sri Lanka	30.36	82	LM	14	SAS	2	79	58	
Peru	30.34	83	UM	24	LCN	12	88	85	
Kazakhstan	30.32	84	UM	25	ECS	41	63	72	
Kyrgyzstan	29.79	85	LI	2	ECS	42	104	122	
Guatemala	29.33	86	LM	15	LCN	13	95	81	
Egypt	29.21	87	LM	16	MEA	11	74	76	
Azerbaijan	29.17	88	UM	26	ECS	43	57	57	
Kenya	29.15	89	LI	3	SSF	6	83	78	
El Salvador	29.14	90	LM	17	LCN	14	91	88	
Philippines	28.98	91	LM	18	EAS	13	76	63	
Jamaica	28.88	92	UM	27	LCN	15	70	73	
Ecuador	28.75	93	LM	19	LCN	16	126	109	
Morocco	28.73	94	LM	20	MEA	12	94	82	
Iran	28.41	95	UM	28	MEA	13	n/a	n/a	
Nigeria	28.15	96	LM	21	SSF	7	96	70	
Bangladesh	28.05	97	LI	4	SAS	3	120	111	
Honduras	27.81	98	LM	22	LCN	17	112	83	
Indonesia	27.78	99	LM	23	EAS	14	72	49	
Senegal	27.56	100	LM	24	SSF	8	106	90	
Swaziland	27.52	101	LM	25	SSF	9	n/a	n/a	
Venezuela	27.41	102	UM	29	LCN	18	124	101	
Cameroon	26.95	103	LM	26	SSF	10	119	106	
Tanzania	26.88	104	LI	5	SSF	11	98	86	
Pakistan	26.75	105	LM	27	SAS	4	103	93	
Uganda	26.37	106	LI	6	SSF	12	108	100	
Mali	26.35	107	LI	7	SSF	13	107	97	
Malawi	25.96	108	LI	8	SSF	14	97	n/a	
Rwanda	25.86	109	LI	9	SSF	15	n/a	n/a	
Nicaragua	25.78	110	LM	28	LCN	19	117	114	
Cambodia	25.46	111	LI	10	EAS	15	102	117	
Bolivia	25.44	112	LM	29	LCN	20	129	123	
Madagascar	25.41	113	LI	11	SSF	16	125	113	
Zambia	25.27	114	LI	12	SSF	17	111	96	
Syrian Arab Republic	24.82	115	LM	30	MEA	14	132	94	
Tajikistan	24.50	116	LI	13	ECS	44	115	112	
Côte d'Ivoire	24.08	117	LM	31	SSF	18	89	n/a	
Benin	23.81	118	LI	14	SSF	19	118	99	
Zimbabwe	23.54	119	LI	15	SSF	20	131	126	
Burkina Faso	23.14	120	LI	16	SSF	21	122	115	
Ethiopia	22.88	121	LI	17	SSF	22	123	120	
Niger	21.41	122	LI	18	SSF	23	n/a	n/a	
Yemen	20.72	123	LM	32	MEA	15	n/a	n/a	
Sudan	20.36	124	LM	33	SSF	24	n/a	n/a	
Algeria	19.79	125	UM	30	MEA	16	121	108	

Note: World Bank Income Group Classification (January 2011): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income; World Bank Regional Classification (January 2011): ECS = Europe & Central Asia; MEA = Middle East & North Africa; SSF = Sub-Saharan Africa; EAS = East Asia & Pacific; SAS = South Asia; NAC = North America; and LCN = Latin America & Caribbean.



# Chapters





# Measuring Innovation Potential and Results: The Best Performing Economies

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The Global Innovation Index (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 PhDs, the number of research articles produced, the research centres created, the patents issued, and research and development (R&D) expenditures.

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.

However, reaching this goal has not been simple. A serious body of literature (see the next section) has attempted to outline metrics

for innovation over the last several years. The GII builds on these prior approaches and attempts to incorporate new perspectives on both traditional and emerging views of innovation. Many aspects of innovation, such as those in the informal economy, remain hard to identify and harder to measure with objective metrics. The GII innovation model, described in further detail in this chapter, takes several important steps in this direction, but feedback from experts and practitioners allows the model to continue to evolve.

An ambition of the GII has been to maximize the number of economies evaluated in the study. This continues to be a challenge because obtaining timely and relevant metrics on a global basis is often not possible. All available official data from international organizations such as the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the International Telecommunications Union (ITU) were considered, although many critical measures of innovation are not covered in the efforts of these organizations. Finally, combining various metrics into a simple measure of innovation for an economy is fraught with statistical and other complexities,<sup>1</sup> especially when considering economies that are often vastly different

in size, population, and stage of economic development.

As a sign of the increasing validation and importance of the GII project, four key Knowledge Partners have contributed to the project this year: Alcatel-Lucent, Booz & Company, the Confederation of Indian Industry (CII),<sup>2</sup> and the World Intellectual Property Organization (WIPO, a specialized agency of the United Nations). Each of these partners shares a common vision of the importance of a broader notion of innovation in our world today. The GII project has benefited from the knowledge and input of these partners, and contributions from other public- and private-sector leaders who are interested in understanding and improving innovation in their economies will continue to provide valuable input.

This chapter presents selected findings from a review of innovation literature that has allowed us to refine the theoretical underpinnings of the GII model and guide the revision of pillars and sub-pillars and the selection of indicators. The chapter also includes details on the innovation rankings emerging from the GII project in 2011.

### Box 1: Low-tech innovations

Although innovations with low technological content have always existed, the fact that innovations do not necessarily entail a technological component emerges as an important theme in the recent literature on innovation, in sharp contrast with the past (OECD/EC, 2005, p. 17).

According to the OECD classification of innovativeness based on R&D intensity, low-tech industries are those that have an R&D intensity that ranges between 0 and 0.9% (this intensity is greater than 5% for high-tech industries). Since this classification applies exclusively to manufactures (textiles, wood, pulp, etc.), a different taxonomy was proposed by Pavitt in 1984, which included four groups: (1) supplier-dominated firms, (2) scale-intensive firms, (3) specialized suppliers, and (4) science-based firms. Low-tech sectors mainly fall into the first group.

This distinction is crucial, as high-tech industries represent a small proportion of total manufacturing industries, including in developed economies. High-tech industries have represented around 6% and 10% of the value-added of the manufacturing

sector in the European Union at 15 countries (1979–2003) and the United States of America, respectively (1979–2004).

Innovation in low-tech industries has particular characteristics:

1. It is more 'market pulled' than 'technology pushed'; demand factors, niche markets, product differentiation, and mature brands are crucial to innovation in low-tech industries.
2. Product innovations are not intensive in research and development (R&D), although process innovations have more technological content (cf. investment in equipment and machinery).
3. New technologies often spill over (through acquisition) from other industries, so that low-tech firms provide a demand pull for high-tech firms.
4. For this absorption of innovation to be effective, a skilled workforce and learning capabilities are required.

#### Source

Based on Joint Research Centre of the European Commission, 2009.

### Prior research in innovation: Selected perspectives

Different definitions of innovation have been proposed in the literature. In this report, we embrace a broad definition that has the advantage of being both short and well suited to capture global innovation:

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.<sup>3</sup>

The modern evolution of the concept of innovation can be sketched by referring to the different versions of the *Oslo Manual*, which guides statisticians in their recent attempts to measure innovation.<sup>4</sup> In its first editions in 1992 and 1997, the *Manual* focused exclusively on technological innovations

and covered only products and processes. The breakthrough made after 1997 was to expand the sectoral coverage from manufacturing industries to services. The 2005 edition incorporated three crucial developments. First, the 'technological' qualifier was eliminated (see Box 1). Second, innovations in methods were added to the list. Third, for the first time, innovation in the public sector was mentioned as an area deserving further attention.<sup>5</sup> In 2010, the Ministerial Report on the Organisation for Economic Co-operation and Development (OECD) Innovation Strategy added that 'consideration [was] being given to extending the methodology to public sector innovation and social innovation so as to correspond to the reality of innovation today'.<sup>6</sup>

An innovation can be new to the world, or new to a sector or market, or new to an agent. It can also be a disruptive innovation, where the focus is on impact, rather than on novelty.<sup>7</sup> Most studies agree that the commercial introduction of innovations developed elsewhere constitutes an innovation:

Innovation also occurs when a firm introduces a product or process to a country for the first time. It occurs when other firms imitate this pioneering firm. Moreover, it occurs when the initial or follower firms make minor improvements and adaptations to improve a product or production process, leading to productivity improvements. In short, innovation occurs through 'creative imitation'.<sup>8</sup>

Innovations are not restricted to the firm, they originate in all agents of society: at the level of the firm, or of an industry; in governmental services or in the public sector; in academia; and in society in general.<sup>9</sup> Innovation activities by these agents are usually complementary: Prototypes might be developed in a university research lab and the final product introduced in the market by a firm, for instance.

A distinction made by Gibbons et al. (1994) has been highly influential in the literature on innovation. These authors label traditional 19th and early 20th century research as ‘mode 1’: Characterized by a cleavage between academia and society, this type of research is academic, autonomous, self-sustained, investigator-initiated, peer-reviewed, and discipline-based in nature. By contrast, ‘mode 2’ refers to more recent forms of knowledge production, which is centred mostly around the firm where research is increasingly context-driven, problem-focused, application-oriented, and interdisciplinary—task-force teams and tailored processes are created to work on specific projects.<sup>10</sup> Other theorists, such as those of the ‘Triple Helix of Innovation’, have stressed the historical continuities and linkages in the relationship among academia, industry, and government.<sup>11</sup>

The different legal, institutional, organizational, and governance regimes surrounding innovative activities are of special relevance to their success. These include the political environment, openness to credit, the treatment of investment and trade, the presence of competition laws, the protection of intellectual property rights, tax laws, and the transportation and telecommunications infrastructure.

## Box 2: Innovation in emerging markets

Terms such as ‘reverse innovation’,<sup>1</sup> ‘Gandhian innovation’,<sup>2</sup> ‘frugal innovation’, ‘inclusive innovation’,<sup>3</sup> ‘constraint-based innovation’, or even ‘poor people’s knowledge’<sup>4</sup> have all been recently coined to describe the type of innovation by which technological products are customized at low prices and high volumes in and for emerging markets. Examples abound: Tata’s Nano car, solar-powered cellular phones, micro-spinning in the textiles industry, and the hand-held electrocardiogram Mac 400 are just a few.

Chapter 3, ‘Innovation in India: Affordable Innovations’ analyses this and other phenomena in India today. Big multinational corporations such as Microsoft, PepsiCo, IBM, Cisco, Nokia, GE, and Xerox as well as Indian major players such as Tata, Godrej, and Mahindras are shifting their focus towards the rapidly expanding middle-income group of customers by coming up with frugal innovations, keeping in mind the price sensitivity of Indian consumers. A trend of ‘reverse innovation’ has set in, where an innovation is developed and/or adopted first in the developing world and then deployed in mature markets.

In a recent publication, the World Bank notes the technological divide in developing countries: ‘Slow diffusion within countries reflects a nonlinear process. . . .The surprisingly low level of overall technological achievement in countries such as China and India contrasts with popular perceptions, which are based on the relative technological sophistication of some of the two countries’ major cities and trading centers. . . . [t]he same kind of technological diversity observed across countries is visible within countries as well.’<sup>5</sup>

How to account ‘fairly’ for these islands of progress is a real conundrum. The same report gives one clue: ‘The rise in China’s index of diffusion of new technologies is almost double that of India, in part because the more technologically backward regions in China have made progress in closing the gap with the more technologically advanced regions on the coast’.<sup>6</sup>

### Notes

- 1 [http://www.vijaygovindarajan.com/2009/10/what\\_is\\_reverse\\_innovation.htm](http://www.vijaygovindarajan.com/2009/10/what_is_reverse_innovation.htm).
- 2 Mashelkar and Prahalad, 2010.
- 3 Mashelkar and Prahalad, 2010.
- 4 Finger, 2004.
- 5 World Bank, 2008, p. 90.
- 6 World Bank, 2008, p. 91.

With technological catch-up and market and business sophistication, innovation acquires a strong regional or sectoral component. Sub-national systems of innovation might develop, for example, around local public research institutions, large dynamic firms, or industry clusters. In addition, good infrastructure, venture capital, and a strong entrepreneurial environment

can influence the innovative performance of regions.<sup>12</sup>

International market linkages foster the development of technological capabilities in developing and least-developed countries because they integrate global value chains through exports, the import of machinery and equipment, transfers of technology, the spill-over effects of foreign direct investment (FDI), and licensing. A recent study

### Box 3: Innovation surveys

The Organisation for Economic Co-operation and Development (OECD) and the European Commission have been guiding the collection and interpretation of data on innovation since the first edition of the *Oslo Manual* in 1992, which is now in its third edition (2005).

Innovation surveys started with the European Community Innovation Survey in the early 1990s and are now being conducted in about 50–60 countries worldwide (mostly the European countries but also a number of Latin American, Asian, African, and other countries).

Firm-level innovation surveys seek to identify the characteristics of innovative enterprise activities. After asking firms to answer certain basic questions (industry affiliation, turnover, R&D spending), firms are asked to identify whether they are an ‘innovator’ and, if yes, they are asked to respond to a number of questions

regarding their innovation characteristics. Firms are also being asked about factors that hamper their ability to innovate. Finally, these surveys aim to assess the effect of innovation on sales, productivity, employment, and other factors.

These innovation surveys are a rich data source for analytical work on innovation. However, a number of problems exist: (1) the questionnaires are given only to firms, so that innovation outside the business sector is not captured; (2) the quality of responses varies greatly, as one cannot control who is replying to the questionnaire and as respondents have a tendency to overrate their innovative activity; (3) the country coverage is still very limited, because most developing countries—but also some large developed countries—do not conduct these surveys; and (4) survey results across studies are not always comparable.

on the readiness, by 2020, of a set of countries to apply recently developed technologies in bio- and nano-technology, materials, information, and so on shows that a limited technological adaptive capacity may reduce the diffusion of future technologies.<sup>13</sup>

The type of innovation taking place in emerging markets presents its own peculiarities, which are difficult to capture with traditional metrics (see Box 2). The challenge for the research team behind the Global Innovation Index was to find statistics that would gauge the developments and trends of innovation in low-tech industries, in emerging markets, and in business models, while at the same time covering the

traditional sectors of innovation and enabling environments.

### Composite indicators for innovation

The previous section surveyed important developments in the conceptualization of innovation and a series of recent issues and trends in the realm of innovation. The literature review allowed us to refine the theoretical underpinnings of the GII and guided the revision of pillars, sub-pillars, and indicators. One general preliminary conclusion in light of this survey was that the GII conceptual framework developed in previous versions was well suited to uncover innovation as it occurs today—it did not require a major

overhaul. Some aspects, however, needed to be strengthened.

A key inspiration behind the GII comes from the literature on total quality management (TQM), which has a long history in benchmarking and data analysis. The first TQM award, the Deming Award, was given in Japan in 1951—this award initially focused on product and process quality. Subsequent versions have evolved into a broader notion of business excellence that looks at the whole business, including enablers and results.

The focus in TQM expanded from a narrow technical on to a much broader concept. Innovation today is expanding its focus in a similar way. The same distinction between enablers and results has been incorporated into the GII, providing the theoretical underpinnings of the conceptual framework. The GII also draws on other composite indicators in its design, although it differs in many respects from a host of other indices on innovation. Some key pieces from prior research are mentioned below.

### The Boston Consulting Group/National Association of Manufacturers Index

The BCG/NAM International Innovation Index was built in 2009 to establish a ranking among US states and among countries. The BCG/NAM Index is built on a model comprising two major blocks: Innovation Inputs and Innovation Performance. Innovation Inputs are measured by three aspects: fiscal policies, other policies, and innovation environment. Innovation Performance is measured by R&D results, business performance, and public impact of innovation. The focus of the BCG/NAM Index is on business performance specifically in

the manufacturing sector, and most of the data used were generated through surveys and interviews. Only one edition (2009) of the BCG/NAM Innovation Index has been published thus far.<sup>14</sup>

### **The European Innovation Scoreboard/ Innovation Union Scoreboard**

The European Innovation Scoreboard, renamed the Innovation Union Scoreboard in 2010, has been in existence for nearly a decade. Until 2007, it lacked an underlying model of innovation and focused primarily on the technological sector. Since 2008, it has been modified to include an underlying model comprising three blocks: Enablers (human resources, research systems, and finance/support); Firm Activities (firm investments, linkages/entrepreneurship, and intellectual assets); and Outputs (innovators and economic effects) and has included a broader set of 25 indicators to measure the above blocks. The focus of the Innovation Union Scoreboard is on the European Union (EU) member states with selective comparisons to a few international reference countries such as the United States of America (US), China, and India.<sup>15</sup>

### **The Global Innovation Index of the Economist Intelligence Unit**

The Economist Intelligence Unit index ranks 41 countries along a model consisting of Innovation Inputs and Innovation Outputs. Innovation Inputs are measured by direct innovation inputs (six measures, such as education of the workforce) and innovation environment (nine indicators, such as foreign trade and exchange controls). Innovation Outputs are

measured by a single indicator: the sum of patents granted by the European, Japanese, and US Patent Offices (EPO, JPO, and USPTO, respectively).<sup>16</sup>

### **The Global Competitiveness Index (GCI) of the World Economic Forum**

The Global Competitiveness Index (GCI) of the World Economic Forum (WEF), while dealing with the theme of competitiveness, includes 12 pillars that overlap on some enabling factors for innovation in the GII. Innovation is a separate pillar within the GCI that includes metrics traditionally attributed to innovation related to R&D, intellectual property protection, and patenting.<sup>17</sup>

### **Statistics on innovation**

All efforts at capturing innovation confront the same challenge: Direct official measures that would quantify innovation outputs are frequently not available across many countries. This is particularly true if one considers our broadening notion of innovation, which encapsulates non-technological, softer or local types of innovation (including those in developing countries). Most existing measures also struggle to appropriately capture innovation outputs of a wider spectrum of innovation actors, as mentioned above (e.g., the services sector, public entities, etc.).

In recent years, the generation of data from firm-level innovation surveys (see Box 3) has improved the data situation somewhat. However, there are several unresolved issues with these data. They are generally not available and comparable for more than about 50 countries,

and they still do not provide a good count on innovation outputs per country. Moreover, they target only innovations at the firm level—broader public-sector and social innovations are not included.

Science and technology indicators are not all available internationally, so they provide, at best, information on innovation inputs / throughputs (such as R&D expenditures and the number of scientists in a country), intermediate innovation outputs (such as numbers of scientific publications or patents), or certain forms of technology-related commercial activity (such as data on high-technology exports). Rarely do they provide data on the aforementioned innovation itself, and they are often specific to technological and product innovations of research organizations and firms.

A trade-off between precision and country coverage was often made in selecting the indicators to be included in the GII model. The balance was struck in favour of selecting a combination of three to six indicators that would capture the latent dimension within each sub-pillar in the best possible way, with an overall coherence within pillars. The Joint Research Centre, which assisted in the assessment of the conceptual and statistical coherence of the overall structure of the GII, confirmed the soundness of this approach (details in the appendix to this chapter).

A development particularly relevant to the fine-tuning of this year's GII was the release of the OECD Innovation Strategy Report in 2010 along with its accompanying compendium of close to 100 indicators on innovation (see Box 4).

The OECD Innovation Strategy metrics confirmed the continued relevance of traditional

#### Box 4: OECD Innovation Strategy (2010)

The Organisation for Economic Co-operation and Development (OECD) issued its *Innovation Strategy* report in 2010. This report includes the findings of a three-year multi-disciplinary effort aimed at proposing new perspectives and prospective metrics on innovation, broadly defined as 'the introduction of a new or significantly improved product, process or method'.<sup>1</sup>

The report is accompanied by a measurement compendium, entitled *Measuring Innovation: A New Perspective*, which is comprised of 100 innovation indicators grouped by six different topics. Indicators traditionally used to monitor innovation are complemented by indicators from other domains that describe the broader context in which innovation occurs. It includes some experimental indicators that provide insight into new areas of policy interest. An important objective of the report is to highlight measurement

gaps and propose ways to advance the measurement agenda. Although these metrics represent state-of-the-art innovation statistics, most are developed on a prospective basis and/or are provided for only a handful of countries.<sup>2</sup> For example, the data on investment in fixed and intangible assets as a share of GDP is available only for 16 countries for 2006.<sup>3</sup>

#### Source

OECD, 2010a.

#### Notes

- 1 OECD, 2010a, p. 9.
- 2 Online measurement guide available at [http://www.oecd.org/document/22/0,3746,en\\_41462537\\_41454856\\_44979734\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/22/0,3746,en_41462537_41454856_44979734_1_1_1_1,00.html).
- 3 Includes Machinery and equipment, Software and databases, R&D and other intellectual property products, and Brand equity, firm-specific human capital, and organizational capital.

variables included in earlier editions of the GII. Examples are in the areas of education and R&D, patents, scientific and technical journal publications, and labour productivity.

The OECD compendium was also an inspiration for the inclusion of new variables. The statistics that were incorporated only this year to the GII and that were inspired, to a large extent, by the OECD measurement exercise and other expert publications include: graduate inbound and outbound mobility and gross enrolment ratios, the OECD PISA scores on performance in reading, mathematics and science in elementary education, school life expectancy, percentages of graduates in science and engineering, venture capital, joint venture and

strategic alliance deals, total tax rate, software spending, R&D performed and financed by business, and the share of renewables in energy use, to name a few.

In an effort to capture a broader vision of innovation that goes beyond science and technology indicators to accommodate, whenever possible, the type of innovation found in emerging markets, and in view of its holistic approach to innovation, the GII also includes statistics on the enabling environment for innovation (pillars 1, 3, and 4 on institutions, infrastructure, and market conditions for credit, investment, and trade); knowledge absorption and technological catch-up (sub-pillar 5.3); and creative outputs (pillar 7). Chapter 6 describes

in detail the particular challenges involved in the measurement of creative industries and copyright-related industries.

#### The Global Innovation Index

The GII is an evolving project, which builds upon previous editions of the Index while incorporating the latest research on the measurement of innovation. This section looks at the GII 2011 framework and considers the indicators that comprise each pillar and sub-pillar.

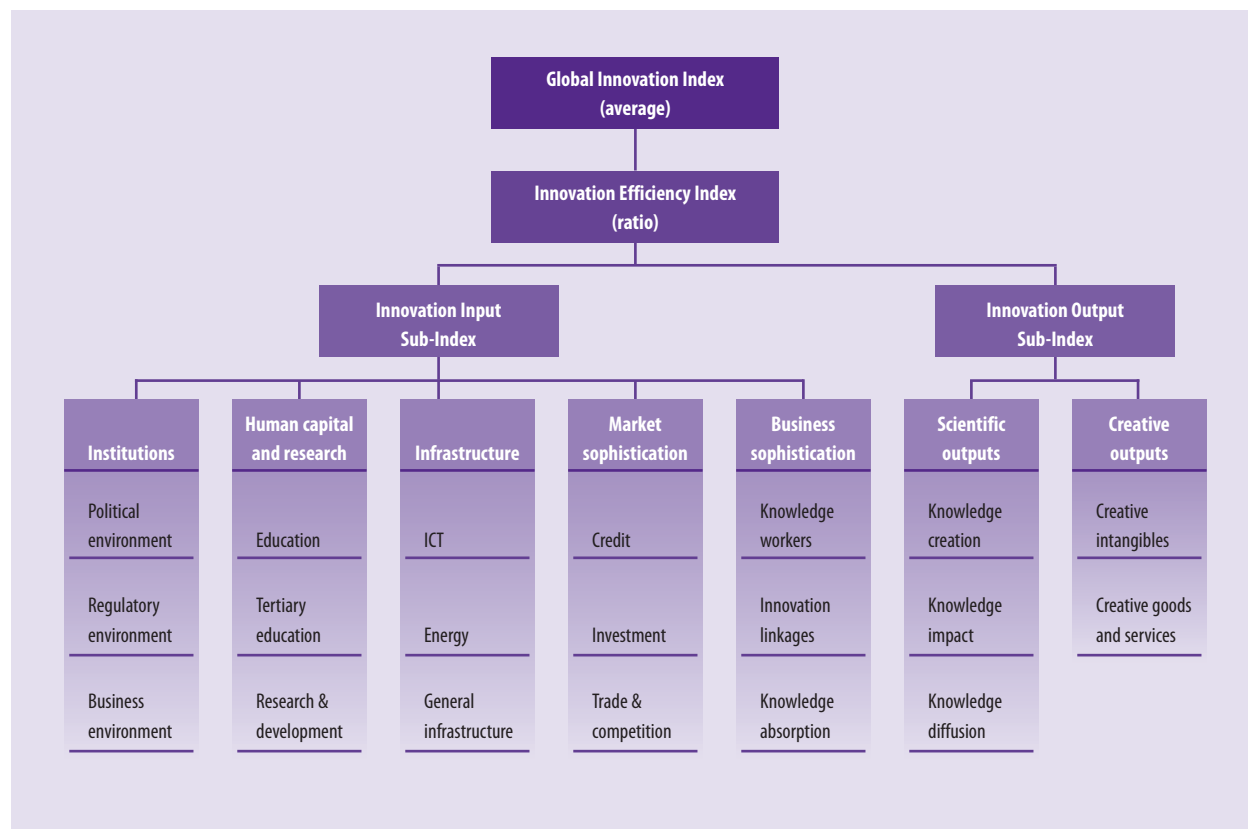
#### Conceptual framework

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. 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. Two output pillars capture actual evidence of innovation outputs: (6) Scientific outputs and (7) Creative outputs. Each pillar is divided into sub-pillars and each sub-pillar is composed of individual indicators.

Sub-pillar scores are calculated as the weighted average of individual indicators; pillar scores are calculated as the simple average of the sub-pillar scores (refer to Appendix IV Technical Notes). Four measures are then calculated (see Figure 1):

1. The Innovation Input Sub-Index is the simple average of the first five pillar scores.

Figure 1: Framework of the Global Innovation Index 2011



2. The Innovation Output Sub-Index is the simple average of the last two pillar scores.
3. The overall GII 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.

**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. What follows is a description of each pillar (refer to Appendix III, Sources and Definitions, for further details).

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 ‘†’, 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 125 economies retained in the final computation.

**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 through three sub-pillars (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

**Table 1a: Institutions pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>1 Institutions</b>					
<b>1.1 Political environment</b>					
1.1.1 Political stability*	72.0	42.3	25.8	29.5	46.5
1.1.2 Government effectiveness*	84.0	53.9	36.8	30.1	56.5
1.1.3 Press freedom* <sup>b</sup>	13.7	29.2	44.9	31.5	28.2
<b>1.2 Regulatory environment</b>					
1.2.1 Regulatory quality*	84.6	54.1	39.7	34.6	58.2
1.2.2 Rule of law*	83.0	46.6	32.7	29.5	53.3
1.2.3 Rigidity of employment* <sup>b</sup>	23.6	28.8	31.7	30.8	28.0
<b>1.3 Business environment</b>					
1.3.1 Time to start a business, days <sup>b</sup>	15.9	30.1	26.9	26.4	23.7
1.3.2 Cost to start a business, % income/cap <sup>b</sup>	5.2	12.8	37.2	63.4	23.9
1.3.3 Total tax rate, % profits <sup>b</sup>	37.3	42.2	43.4	42.0	40.8

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

**Table 1b: Human capital and research pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>2 Human capital &amp; research</b>					
<b>2.1 Education</b>					
2.1.1 Education expenditure, % GNI <sup>a</sup>	4.8	4.2	3.7	3.6	4.2
2.1.2 Public expenditure/pupil, % GDP/cap <sup>a</sup>	21.6	16.5	19.9	19.3	19.7
2.1.3 School life expectancy, years	15.6	13.5	11.1	9.4	13.0
2.1.4 PISA scales in reading, maths, & science <sup>a</sup>	496.5	415.4	435.6	324.9	465.3
2.1.5 Pupil-teacher ratio, secondary <sup>b</sup>	11.4	15.0	19.4	25.5	16.5
<b>2.2 Tertiary education</b>					
2.2.1 Tertiary enrolment, % gross	57.6	41.7	24.8	7.9	37.8
2.2.2 Graduates in science, %	9.5	7.2	8.1	8.9	8.6
2.2.3 Graduates in engineering, %	12.3	12.6	11.0	8.4	11.7
2.2.4 Tertiary inbound mobility, % <sup>a</sup>	9.4	3.2	1.9	3.5	6.0
2.2.5 Tertiary outbound mobility, % <sup>a</sup>	14.8	8.0	5.7	9.2	10.0
2.2.6 Gross tertiary outbound enrolment, % <sup>a</sup>	4.0	2.0	1.0	0.4	2.1
<b>2.3 Research &amp; development (R&amp;D)</b>					
2.3.1 Researchers headcount/million pop.	4,754.0	1,071.5	667.9	99.8	2,192.6
2.3.2 Gross expenditure on R&D, % GDP	1.7	0.5	0.3	0.1	0.9
2.3.3 Quality research institutions <sup>†</sup>	4.8	3.6	3.2	3.2	3.9

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

implementation; and perceptions on violations to press freedom.<sup>18</sup>

The regulatory environment sub-pillar draws on three World Bank 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; at evaluating the extent to which the rule of law prevails (in aspects such as contract

enforcement, property rights, the police, and the courts); and at measuring the level of rigidity of employment regulations.

The business environment sub-pillar expands on three aspects that directly affect private entrepreneurial endeavours: time and cost constraints to starting a business and the total amount of taxes and mandatory contributions borne by businesses (profit or corporate income

tax, social contributions and labour taxes paid by the employer, property taxes, etc.).<sup>19</sup>

### 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 through three sub-pillars (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 education by the state. The quality of education is measured through the results to the OECD Programme for International Student Assessment (PISA), which examines 15-year-old students' performances in reading, mathematics, and science, and the pupil-teacher ratio.

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 (science and engineering); and the inbound and outbound mobility of tertiary students, which plays 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 expenditure, researchers (headcounts), and perceptions of the



quality of scientific and research institutions (a survey question).

### Infrastructure

Information and communication technologies (ICT), energy supply, and infrastructure are respectively the nervous system, the circulatory system, and the backbone of any economy (Table 1c). They facilitate the production and exchange of ideas, services, and goods and feed into the innovation system through increased productivity and efficiency, lower transaction costs, and better access to markets.

In the past 50 years, ICT has revolutionized the way people interact, businesses transact, and governments serve. 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 (see Box 5).<sup>20</sup>

The sub-pillar on energy regroups three indicators related to energy supply, efficiency in energy use, and sustainability.<sup>21</sup> Energy supply is essential to the proper functioning of any economy; however, energy policy is an area that typically goes beyond energy supply to address a series of elements such as the risk of supply-and-demand mismatch, environmental issues, alternative sources of energy, cost-efficiency, and so on.

The sub-pillar on infrastructure includes a composite indicator on the quality of trade- and transport-related infrastructure (e.g., ports, railroads, roads, and information technology).<sup>22</sup> The second variable of this sub-pillar, gross capital formation, consists of outlays on additions to the fixed assets and net inventories of the economy, including land improvements (fences,

**Table 1c: Infrastructure pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>3 Infrastructure</b>					
<b>3.1 Info &amp; comm. technologies (ICT)</b>					
3.1.1 ICT access*	7.1	4.1	2.9	1.6	4.5
3.1.2 ICT use*	4.2	1.4	0.6	0.2	2.0
3.1.3 Government's Online Service* <sup>a</sup>	0.5	0.4	0.3	0.2	0.4
3.1.4 E-Participation* <sup>a</sup>	0.4	0.2	0.2	0.1	0.3
<b>3.2 Energy</b>					
3.2.1 Electricity output, kWh/cap <sup>a</sup>	9,995.2	3,033.9	1,374.9	640.5	5,021.2
3.2.2 Electricity consumption, kWh/capita <sup>a</sup>	9,581.7	2,736.2	995.8	553.7	4,677.4
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.	6.2	6.4	5.7	4.3	6.0
3.2.4 Share of renewables in energy use, %	11.6	14.8	36.0	68.2	24.4
<b>3.3 General infrastructure</b>					
3.3.1 Quality of trade & transport infrastructure*	3.6	2.6	2.4	2.1	2.8
3.3.2 Gross capital formation, % GDP	21.0	23.7	24.4	22.0	22.7
3.3.3 Ecological footprint & biocapacity, ha/cap	(2.1)	(0.0)	0.7	(0.1)	(0.5)

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

**Table 1d: Market sophistication pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>4 Market sophistication</b>					
<b>4.1 Credit</b>					
4.1.1 Strength of legal rights for credit* <sup>a</sup>	6.8	5.7	4.7	6.1	5.9
4.1.2 Depth of credit information* <sup>a</sup>	4.4	4.7	3.7	1.7	3.9
4.1.3 Domestic credit to private sector, % GDP	107.3	49.7	43.5	19.4	59.8
4.1.4 Microfinance gross loans, % GDP <sup>a</sup>	0.0	1.0	2.0	2.0	1.5
<b>4.2 Investment</b>					
4.2.1 Strength of investor protection*	6.0	5.7	4.7	5.0	5.4
4.2.2 Market capitalization, % GDP	78.7	47.4	34.5	22.3	55.3
4.2.3 Total value of stocks traded, % GDP	74.1	13.8	20.0	3.5	39.6
4.2.4 Venture capital deals/tr GDP PPP\$ <sup>a</sup>	104.7	6.1	22.8	30.6	48.8
<b>4.3 Trade &amp; competition</b>					
4.3.1 Applied tariff rate weighted mean, % <sup>b</sup>	1.8	4.9	6.4	9.2	4.8
4.3.2 Market access trade restrictiveness*, % <sup>a,b</sup>	7.2	8.5	13.1	16.6	11.1
4.3.3 Imports of goods & services, % GDP	52.4	39.8	45.0	39.9	45.6
4.3.4 Exports of goods & services, % GDP	59.6	36.9	36.0	25.8	43.1
4.3.5 Intensity of local competition <sup>†</sup>	5.4	4.6	4.7	4.4	4.9

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

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. Ecological concerns are also addressed through the inclusion of a measure on the ecological

biocapacity and footprint reserve or deficit of countries.

### Market sophistication

The recent global financial crisis has underscored how crucial the availability of credit, investment funds, and access to international markets are for businesses to prosper. This

### Box 5: Composition of sub-pillar 3.1 on information and communication technologies (ICT)

#### ICT access indicator 3.1.1

Indicator 3.1.1 is a composite indicator developed by the International Telecommunication Union (ITU). The 'ICT access sub-index', is one component in ITU's *ICT Development Index* (IDI), together with the 'ICT use sub-index' and the 'ICT skills sub-index' (*Measuring the Information Society*, ITU, 2010). It is composed of 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

#### ICT use indicator 3.1.2

Indicator 3.1.2 is the second component in ITU's IDI. The 'ICT use sub-index' is composed of three ICT indicators (33% each):

1. Internet users per 100 inhabitants,
2. fixed broadband Internet subscribers per 100 inhabitants, and
3. mobile broadband subscriptions per 100 inhabitants.

#### Government's online service indicator 3.1.3

Indicator 3.1.3 is a composite indicator developed by the United Nations Public Administration Network (UNPAN). The 'Government's online service index' is a component in UNPAN's *E-Government*

*Development Index* together with two indices on telecommunication infrastructure and human capital.

It is constructed on the basis of the United Nations (UN) e-Government Survey (*United Nations E-Government Survey 2010 Leveraging e-Government at a Time of Financial and Economic Crisis*, UN Department of Economic and Social Affairs, 2010). The survey covers four stages of government's online service development with points assigned for emerging information services, enhanced information services, transaction services, and a connected approach. In addition, research teams assess each country's national website as well as the websites of the ministries of education, labour, social services, health, and finance for a minimal level of content accessibility (with a citizen-centric approach).

#### E-participation indicator 3.1.4

Indicator 3.1.4 is a composite indicator, the 'E-participation index', developed by UNPAN on the basis of the UN e-Government Survey. 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 provision of information by governments to citizens ('e-information sharing'), the interaction with stakeholders ('e-consultation'), and the engagement in decision-making processes ('e-decision making').

pillar has three sub-pillars structured around market conditions and the total level of transactions (Table 1d).

The credit sub-pillar includes two indices 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, a measure on the level of development of microfinance institutions.<sup>23</sup>

The investment sub-pillar includes an index measuring the extent of disclosure and of director liability and the ease of shareholder suits. To show whether market size is matched by market dynamism, stock market capitalization is complemented by the value of shares traded. This year, for the first time, hard data on venture capital deals have been included, taking into account a total of 7,937 deals in 81 countries for this variable.<sup>24</sup>

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. 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 the 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: 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.

Innovation linkages and public/private/academic partnerships are essential to innovation. In emerging markets, pockets of wealth have developed around industrial or technological clusters and networks in sharp contrast with 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, and the level of gross R&D expenditure financed by abroad. For the first time this year, a measure on the number of deals on joint ventures and strategic alliances is included. It covers a total of 920 joint ventures and 327 strategic alliances announced

**Table 1e: Business sophistication pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>5 Business sophistication</b>					
<b>5.1 Knowledge workers</b>					
5.1.1 Knowledge-intensive employment, %	36.4	23.5	16.8	7.0	26.1
5.1.2 Firms offering formal training, % firms	42.6	39.3	34.4	31.7	36.8
5.1.3 R&D performed by business, % <sup>a</sup>	55.7	30.8	26.9	15.5	41.1
5.1.4 R&D financed by business, % <sup>a</sup>	49.3	31.1	24.9	15.4	38.5
<b>5.2 Innovation linkages</b>					
5.2.1 University/industry collaboration <sup>†</sup>	4.5	3.5	3.2	3.2	3.8
5.2.2 State of cluster development <sup>†</sup>	4.1	3.3	3.3	3.1	3.6
5.2.3 R&D financed by abroad, % <sup>a</sup>	8.2	8.1	9.3	19.9	9.4
5.2.4 JV/strategic alliance deals/tr GDP PPP\$ <sup>a</sup>	26.8	6.2	6.8	9.9	14.1
5.2.5 PCT patent filings with foreign inventor, %	37.6	22.0	13.2	19.0	25.2
<b>5.3 Knowledge absorption</b>					
5.3.1 Royalty & license fees payments, % GDP	1.0	0.2	0.4	0.0	0.5
5.3.2 High-tech imports less re-imports, %	13.2	11.0	8.9	7.6	10.9
5.3.3 Computer & comm. service imports, %	39.3	32.5	25.4	21.4	31.4
5.3.4 FDI net inflows, % GDP	12.0	3.9	3.6	3.3	6.5

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

**Table 1f: Scientific outputs pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>6 Scientific outputs</b>					
<b>6.1 Knowledge creation</b>					
6.1.1 Domestic resident patent ap/bn GDP PPP\$	9.8	2.9	4.3	1.6	5.9
6.1.2 PCT resident patent ap/bn GDP PPP\$	3.6	0.3	0.2	0.0	1.5
6.1.3 Domestic res utility model ap/bn GDP PPP\$ <sup>a</sup>	2.5	1.1	10.6	2.5	4.0
6.1.4 Scientific & technical articles/bn GDP PPP\$	15.3	4.4	3.3	3.7	7.8
<b>6.2 Knowledge impact</b>					
6.2.1 Growth rate of GDP PPP\$/worker, %	0.6	2.1	3.1	3.5	2.0
6.2.2 New businesses/1,000 pop. 15–64 yrs	5.5	2.5	0.7	0.5	3.0
6.2.3 Computer software spending, % GDP <sup>a</sup>	0.6	0.2	0.2	0.1	0.4
<b>6.3 Knowledge diffusion</b>					
6.3.1 Royalty & license fees receipts, % GDP	0.3	0.0	0.3	0.0	0.2
6.3.2 High-tech exports less re-exports, %	10.7	4.9	3.3	0.9	6.2
6.3.3 Computer & comm service exports, %	38.3	26.5	30.2	22.9	31.1
6.3.4 FDI net outflows, % GDP	13.5	0.8	0.3	0.1	5.1

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

in 2010, with firms headquartered in 95 participating economies.<sup>25</sup> In addition, the share of published patent applications filed by residents through the Patent Cooperation Treaty 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

**Table 1g: Creative outputs pillar**

Indicator	Average value by income group				Mean
	High income	Upper-middle income	Lower-middle income	Low income	
<b>7 Creative outputs</b>					
<b>7.1 Creative intangibles</b>					
7.1.1 Domestic res trademark ap/bn GDP PPP\$	31.5	47.3	63.2	15.7	40.6
7.1.2 Madrid resident trademark ap/bn GDP PPP\$ <sup>a</sup>	13.9	6.3	4.2	0.1	9.2
7.1.3 ICT & business models <sup>†</sup>	5.1	4.4	4.3	4.1	4.6
7.1.4 ICT & organizational models <sup>†</sup>	4.7	4.1	3.9	3.5	4.2
<b>7.2 Creative goods &amp; services</b>					
7.2.1 Recreation & culture consumption, % <sup>a</sup>	7.8	4.1	2.4	2.0	5.7
7.2.2 National feature films/mn pop. <sup>a</sup>	4.0	0.6	0.9	1.4	2.3
7.2.3 Daily newspapers/1,000 literate pop. <sup>a</sup>	304.3	89.1	79.1	6.8	164.6
7.2.4 Creative goods exports, %	2.1	1.5	1.8	0.9	1.7
7.2.5 Creative services exports, %	6.2	4.7	1.8	1.9	4.1

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

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 FDI as a percentage of GDP.

### 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 is averaged with the Input Sub-Index in the overall GII. This asymmetry, which is only apparent, serves two purposes: to give innovation results the same weight as innovation enablers, and to redress an unbalance at the level of available statistics.

There are two output pillars: Scientific outputs and Creative outputs.

### Scientific outputs

This pillar covers all those variables that are traditionally thought to be the fruits of innovation (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 Patent Cooperation Treaty (see Box 6); utility model applications filed by residents at the national office; and scientific and technical published articles in peer-reviewed journals.

The second sub-pillar, on knowledge impact, includes three statistics representing the impact of innovation activities at the micro

and macroeconomic level: increases in labour productivity, the entry density of new firms, and spending on software.

The third sub-pillar, on knowledge diffusion, is the mirror image of the Knowledge absorption sub-pillar 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 last pillar, on creative outputs, has only two sub-pillars (Table 1g). This is essentially the result of the lack of reliable indicators across many countries on all copyrighted-related industries and creativity in general (see Chapter 6, 'Accounting for Creativity in Innovation'). As new and better statistics become available in the coming years, this pillar will be strengthened.

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 innovation in the literature.

The last sub-pillar, on creative goods and services, includes the share of household expenditure in recreation and culture as a proxy for creative activities in a given country. Two UNESCO series for which

### Box 6: Capturing innovation: The patent system

This edition of the Global Innovation Index (GII) relies on two patent-based measures drawn from the WIPO Statistics Database ([www.wipo.int/ipstats/en](http://www.wipo.int/ipstats/en)) described below. In addition, statistics on utility models and trademarks are used in different pillars.

The first measure is concerned with the number of patent applications filed by residents at their national patent office (resident applications).

When an inventor decides to protect an invention through the patent system, the first step is to file an application with a patent office. In most cases, applicants tend to file at their national patent office. Data on resident patent applications (2009 or latest available year) capture this patenting activity of residents in a given country. An application is filed with a patent office by an applicant residing in the country in which that office has jurisdiction. For example, a patent application filed with the Japan Patent Office (JPO) by a resident of Japan is considered a resident application for the JPO.

In contrast, patent indicators based on a specific office will introduce a home bias between resident (domestic) and non-resident (foreign) applications because the propensity to patent at the national patent office is considerably higher than the propensity to patent abroad. For example, only

4.4% of total Chinese patent applications in 2008 were filed abroad. Patents submitted to one single patent office are also likely to reflect the trade patterns of that particular country. Moreover, data of one single office will capture only a fraction of world innovation.

In addition, the use of statistics on patent applications—rather than data on patents granted—ensures that innovative performance is captured in a more timely and comprehensive manner. In contrast, data on patent grants reflect inventions that obtain patent protection and that are most likely several years old. This is the result of the lengthy (and increasing) processing and examination periods that are part of the patenting process.

The second patent-based measure presented in this report is the number of patents filed under the WIPO-administered Patent Cooperation Treaty (PCT). To complement national data, the second metric provides the number of PCT international applications by residents of a given country in 2010.

National patent office data are frequently criticized on the grounds that there is a lack of international comparability. The use of PCT data to some extent alleviates this criticism.

An inventor of a promising technology with international market potential will wish to protect his or her invention in more than one country. In addition to filing patents directly in other jurisdictions, inventors can file an ‘international application’ through the PCT, which facilitates the acquisition of patent rights in a large number of jurisdictions (142 contracting states) by reducing the requirement to file a separate application in each jurisdiction.

The use of PCT data sheds light on patents that might be most economically valuable, as these are the ones that inventors are likely to patent abroad and for which inventors are willing to incur the extra costs that the process of patenting abroad requires.

This combination of data on national IP filings and filings under the PCT system makes for a strong and timely indicator of inventive activity and innovation with very good country coverage. It better achieves the goal of capturing worldwide innovative activity, with a particular emphasis on inventions in medium- or lower-income economies and inventions that may have a strong international appeal.

#### Source

Khan and Wunsch-Vincent, 2011; WIPO, 2010.

data are available were included: national feature films produced in a given country, and daily newspapers. Other data series, notably on the publication of books, have been discontinued. Since statistics on creative and copyright-related industries’ national output values are not available for a sufficient number of countries, trade figures were incorporated. These are based on the

classifications used by UNCTAD in its *Creative Economy Report*, which includes data on creative goods and services exports.

#### Discussion of results: The world’s top innovators

This year the GII model includes 125 countries that represent 93.2%

of the world’s population and 98.0% of the world’s GDP (in current US dollars). This section provides a general discussion of the GII and the rankings of the related sub-indices. The emphasis, for each index, is on general trends and includes details of the results for the global leaders and the best performers within each income category (high, upper-middle, lower-middle, and low-income

groups).<sup>26</sup> A short discussion of the rankings at the regional level follows, along with some additional information on regional leaders by income group.

Tables 2 through 4 report on the overall GII and the Input and Output Sub-Indices, with regional and income group rankings. Tables 5a through 5g provide the rankings per pillar, with details on sub-pillar scores. Table 6 shows the top 10 Efficiency Index rankings, and Tables 7a through 7d report on the Efficiency Index by income group. These tables should be read in conjunction with the country/economy profiles (Appendix I) and the data tables (Appendix II). The profiles provide only normalized scores in the [0, 100] range, to facilitate the replicability of results and provide a sense of the scores with greater leverage for each country. The data tables provide both the raw indicator and the normalized score.<sup>27</sup>

This section includes a brief discussion of some general results, with detailed discussions provided for index and income group leaders (in bold). Each economy has its own strengths and weaknesses, the full details of which are available in the country/economy profiles (Appendix I).

### The Global Innovation Index

The overall GII scores provide a composite picture of the state of each country's innovation performance.

#### Top 10

The top 10 countries in the GII 2011 edition are dominated by Europe, with six countries, and includes two Asian economies and two North American countries: Switzerland,

Sweden, Singapore, Hong Kong (SAR, China), Finland, Denmark, the United States of America (US), Canada, the Netherlands, and the United Kingdom (UK). Leaders in their respective regions are Switzerland (1st), Singapore (3rd), the US (7th), Israel (14th), Chile (38th), Mauritius (53rd), and India (62nd).

**Switzerland** comes in at top place in the overall GII 2011 rankings (up from position 4th last year) on the basis of its strong position in both the Input and Output Sub-Indices (3rd and 2nd). Although the country does not top any individual pillar, it places within the top 5 in three Input pillars (Institutions at 5th, Market sophistication at 5th, and Business sophistication at 4th) and both Output pillars (Scientific outputs at 2nd and Creative outputs at 3rd). Its many strengths include its top 10 positions on 30 indicators as well as on the following sub-pillars: political (2nd) and regulatory environment (7th), R&D (9th), energy (7th), credit (10th), investment (6th), knowledge workers (2nd), innovation linkages (6th), knowledge creation (4th), knowledge diffusion (10th), and creative intangibles (9th). A high degree of Innovation Efficiency (3rd among the high-income countries) allows Switzerland to translate these strengths into visible innovation outputs, with high marks on key output indicators: resident patent filings at the Patent Cooperation Treaty applications (1st), scientific and technical journal articles (2nd), computer software spending (1st), high-tech exports (6th), FDI net outflows (9th), and resident international trademark applications under the Madrid system (1st). It also exhibits high marks on creativity, at positions 7th, 4th, and 8th on

national feature films, daily newspapers, and creative goods exports, respectively.

The runner-up, **Sweden**, is the only country in the top 10 on all four indices, and the only country in the top 10 in the GII to be among the 10 most efficient innovators (ranked 6th on the Efficiency Index). A knowledge-based economy, this outstanding performance is driven by 1st place on Scientific outputs, with positions in the top 10 on patent filings through the Patent Cooperation Treaty (3rd), scientific and technical journal articles (3rd), computer software spending (4th), royalty and license fees' receipts (3rd), and FDI net outflows (7th). Sweden is ranked 2nd on Creative outputs, placing among the top 10 on four indicators. Its position 5 on the Input side is also one of the best, with positions among the top 10 again on six of the 15 sub-pillars: Political environment (4th), Education (8th), R&D (4th), ICT (10th), Energy (5th), and Knowledge workers (10th).

**Singapore** is at 3rd position overall, moving up significantly from position 7 last year. Singapore shows its strongest performance in the Input Sub-Index, coming in at 1st place on the basis of its strengths in the Institutions (9th), Human capital and research (1st), Infrastructure (9th), Market sophistication (2nd), and Business sophistication (1st) pillars. However, Singapore's Innovation Efficiency Index ranking is low (37th among high-income countries, 94th in the general rankings); this shows up in its relative weak performance in the Output Sub-Index, where it is ranked 17th overall (Scientific outputs at 17th place and Creative outputs at 33rd). Singapore is ranked 41st in patent applications at the

national office, 82nd in national office trademark applications, and 82nd in creative services exports.

### Top performers by income group

By income group, from high- to low-income countries, the leaders are Switzerland (1st), Malaysia (31st), China (29th), and Ghana (70th). China, at position 29, is the only developing country to be among the top 30; Malaysia (31st), Chile (38th), Moldova (39th), and Lithuania (49th) make it to the top 40. Among high-income countries, three countries lag behind: Greece reached the median score (63rd), followed by Trinidad and Tobago (72nd) and Brunei Darussalam (75th).

**Malaysia** tops the overall ranking within the upper-middle-income group at 31st position overall, placing 27th on the Input Sub-Index (1st within its income group) and 35th on the Output one. On the Input side, Malaysia's strengths come from the Market and Business sophistication pillars, where it is ranked 1st on R&D performed and financed by business at 84.9% and 84.7%, respectively, and on the strength of legal rights for credit and the depth of credit information indicators—positions matched with the country's level of domestic credit to the private sector (20th, at 100.8% of GDP). Malaysia also ranks within the top 10 worldwide on the strength of investor protection and market capitalization, as well as on imports and exports of goods and services. Its performances on the other three input pillars are generally weak, except in two particular indicators where it does very well: graduates in science (8th) and engineering (2nd). On the Output side, Malaysia's leverage is provided

by its 19th placement on sub-pillar 6.3, Knowledge diffusion, where it ranks 2nd—after Singapore—on high-tech exports (which represent an impressive 35.4% of total exports), 13th on FDI net outflows, and 23rd on royalty and license fees' receipts.

From the same region, at position 29, **China** tops the GII rankings among lower-middle-income countries, and is the only country from this income group in the top 30. China exhibits many strengths. It is 1st within its income group on all three main Indices (GII, Input, and Output). On the Input side, it ranks among the top 30 in Market (26th) and Business sophistication (29th). The country places among the top 10 on the Investment sub-pillar, with the 5th most dynamic stock market (with the total value of stocks traded reaching 179.7% of GDP) and among the top 20 on market capitalization (placing 16th with 100.5% of GDP). China ranks 1st on the percentage of firms offering formal training (at 84.8%), 4th on high-tech imports (at 26.8% of total imports), 6th and 10th on R&D financed and performed by business (at 70.4% and 72.3%, respectively), 7th on the state of cluster development (a survey question), 13th on domestic credit to private sector (127.3% of GDP), and 17th on the intensity of local competition (survey question). On a less positive note, however, China presents important weaknesses on Institutions (98th) and Human capital and research (56th), where the 1st position on the PISA assessment on reading, mathematics and science corresponds to Shanghai only. It achieves, however, relatively good rankings on R&D, placing 24th on gross expenditure on R&D and 36th on the quality of research

institutions (a survey question). On the Output Sub-Index, its 14th position overall is well deserved: China gets its leverage from placing within the top 10 on a third of the indicators in pillars 6 and 7 for which data were available, including resident utility model (1st), patent (3rd), and trademark (9th) applications at the national office, growth in labour productivity (3rd position, with an impressive 8.4%), high-tech exports (3rd, with 29.9% of total exports), and creative goods exports (4th, with 5.9% of total exports).

Among low-income countries, **Ghana** prevails with an overall rank of 70. Ghana's relative strengths lie in its Institutions, Human capital and research, Scientific outputs, and Business sophistication, with scores in the top 40 on freedom of the press (25th), public expenditure per pupil (34th), and percentage of graduates in science (31st); its commendable share of renewables in energy use (with 72.5%, it is ranked 10th globally), and its strength of legal rights for credit (19th) and investor protection (34th). These strong points translate into relatively high scores on venture capital deals (41st), joint venture and strategic alliance deals (41st), and FDI net inflows (20th); they also provide a strong growth in labour productivity (with 4.4%, it is ranked 23rd on this indicator).

### The Innovation Output Sub-Index

The Innovation Output Sub-Index variables provide information on elements that are the result of innovation within an economy.

#### Top 10

The top 10 countries in the Innovation Output Sub-Index

Table 2: Global Innovation Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	GII PAST YEARS		
							2010	2009	
Switzerland	63.82	1	HI	1	ECS	1	4	7	
Sweden	62.12	2	HI	2	ECS	2	2	3	
Singapore	59.64	3	HI	3	EAS	1	7	5	
Hong Kong (SAR), China	58.80	4	HI	4	EAS	2	3	12	
Finland	57.50	5	HI	5	ECS	3	6	13	
Denmark	56.96	6	HI	6	ECS	4	5	8	
United States of America	56.57	7	HI	7	NAC	1	11	1	
Canada	56.33	8	HI	8	NAC	2	12	11	
Netherlands	56.31	9	HI	9	ECS	5	8	10	
United Kingdom	55.96	10	HI	10	ECS	6	14	4	
Iceland	55.10	11	HI	11	ECS	7	1	20	
Germany	54.89	12	HI	12	ECS	8	16	2	
Ireland	54.10	13	HI	13	ECS	9	19	21	
Israel	54.03	14	HI	14	MEA	1	23	23	
New Zealand	53.79	15	HI	15	EAS	3	9	27	
Korea, Rep.	53.68	16	HI	16	EAS	4	20	6	
Luxembourg	52.65	17	HI	17	ECS	10	15	17	
Norway	52.60	18	HI	18	ECS	11	10	14	
Austria	50.75	19	HI	19	ECS	12	21	15	
Japan	50.32	20	HI	20	EAS	5	13	9	
Australia	49.85	21	HI	21	EAS	6	18	22	
France	49.25	22	HI	22	ECS	13	22	19	
Estonia	49.18	23	HI	23	ECS	14	29	29	
Belgium	49.05	24	HI	24	ECS	15	17	18	
Hungary	48.12	25	HI	25	ECS	16	36	47	
Qatar	47.74	26	HI	26	MEA	2	35	24	
Czech Republic	47.30	27	HI	27	ECS	17	27	33	
Cyprus	46.45	28	HI	28	ECS	18	32	45	
China	46.43	29	LM	1	EAS	7	43	37	
Slovenia	45.07	30	HI	29	ECS	19	26	36	
Malaysia	44.05	31	UM	1	EAS	8	28	25	
Spain	43.81	32	HI	30	ECS	20	30	28	
Portugal	42.40	33	HI	31	ECS	21	34	40	
United Arab Emirates	41.99	34	HI	32	MEA	3	24	26	
Italy	40.69	35	HI	33	ECS	22	38	31	
Latvia	39.80	36	HI	34	ECS	23	44	60	
Slovak Republic	39.05	37	HI	35	ECS	24	37	35	
Chile	38.84	38	UM	2	LCN	1	42	39	
Moldova, Rep.	38.66	39	LM	2	ECS	25	n/a	116	
Lithuania	38.49	40	UM	3	ECS	26	39	42	
Jordan	38.43	41	LM	3	MEA	4	58	55	
Bulgaria	38.42	42	UM	4	ECS	27	49	74	
Poland	38.02	43	HI	36	ECS	28	47	56	
Croatia	37.98	44	HI	37	ECS	29	45	62	
Costa Rica	37.91	45	UM	5	LCN	2	41	48	
Bahrain	37.80	46	HI	38	MEA	5	40	34	
Brazil	37.75	47	UM	6	LCN	3	68	50	
Thailand	37.63	48	LM	4	EAS	9	60	44	
Lebanon	37.11	49	UM	7	MEA	6	n/a	n/a	
Romania	36.83	50	UM	8	ECS	30	52	69	
Viet Nam	36.71	51	LM	5	EAS	10	71	64	
Kuwait	36.64	52	HI	39	MEA	7	33	30	
Mauritius	36.47	53	UM	9	SSF	1	73	66	
Saudi Arabia	36.44	54	HI	40	MEA	8	54	32	
Serbia	36.31	55	UM	10	ECS	31	101	92	
Russian Federation	35.85	56	UM	11	ECS	32	64	68	
Oman	35.51	57	HI	41	MEA	9	65	52	
Argentina	35.36	58	UM	12	LCN	4	75	84	
South Africa	35.22	59	UM	13	SSF	2	51	43	
Ukraine	35.01	60	LM	6	ECS	33	61	79	
Guyana	34.83	61	LM	7	LCN	5	113	103	
India	34.52	62	LM	8	SAS	1	56	41	
Greece	34.18	63	HI	42	ECS	34	46	54	



Table 2: Global Innovation Index rankings (continued)

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	GII PAST YEARS		
							2010	2009	
Uruguay	34.18	64	UM	14	LCN	6	53	80	
Turkey	34.11	65	UM	15	ECS	35	67	51	
Tunisia	33.89	66	LM	9	MEA	10	62	46	
Macedonia	33.47	67	UM	16	ECS	36	77	89	
Mongolia	33.40	68	LM	10	EAS	11	87	105	
Armenia	33.00	69	LM	11	ECS	37	82	104	
Ghana	32.48	70	LI	1	SSF	3	105	n/a	
Colombia	32.32	71	UM	17	LCN	7	90	75	
Trinidad and Tobago	32.17	72	HI	43	LCN	8	55	65	
Georgia	31.87	73	LM	12	ECS	38	84	98	
Paraguay	31.17	74	LM	13	LCN	9	127	118	
Brunei Darussalam	30.93	75	HI	44	EAS	12	48	n/a	
Bosnia & Herzegovina	30.84	76	UM	18	ECS	39	116	n/a	
Panama	30.77	77	UM	19	LCN	10	66	67	
Namibia	30.74	78	UM	20	SSF	4	92	95	
Botswana	30.51	79	UM	21	SSF	5	86	77	
Albania	30.45	80	UM	22	ECS	40	81	121	
Mexico	30.45	81	UM	23	LCN	11	69	61	
Sri Lanka	30.36	82	LM	14	SAS	2	79	58	
Peru	30.34	83	UM	24	LCN	12	88	85	
Kazakhstan	30.32	84	UM	25	ECS	41	63	72	
Kyrgyzstan	29.79	85	LI	2	ECS	42	104	122	
Guatemala	29.33	86	LM	15	LCN	13	95	81	
Egypt	29.21	87	LM	16	MEA	11	74	76	
Azerbaijan	29.17	88	UM	26	ECS	43	57	57	
Kenya	29.15	89	LI	3	SSF	6	83	78	
El Salvador	29.14	90	LM	17	LCN	14	91	88	
Philippines	28.98	91	LM	18	EAS	13	76	63	
Jamaica	28.88	92	UM	27	LCN	15	70	73	
Ecuador	28.75	93	LM	19	LCN	16	126	109	
Morocco	28.73	94	LM	20	MEA	12	94	82	
Iran	28.41	95	UM	28	MEA	13	n/a	n/a	
Nigeria	28.15	96	LM	21	SSF	7	96	70	
Bangladesh	28.05	97	LI	4	SAS	3	120	111	
Honduras	27.81	98	LM	22	LCN	17	112	83	
Indonesia	27.78	99	LM	23	EAS	14	72	49	
Senegal	27.56	100	LM	24	SSF	8	106	90	
Swaziland	27.52	101	LM	25	SSF	9	n/a	n/a	
Venezuela	27.41	102	UM	29	LCN	18	124	101	
Cameroon	26.95	103	LM	26	SSF	10	119	106	
Tanzania	26.88	104	LI	5	SSF	11	98	86	
Pakistan	26.75	105	LM	27	SAS	4	103	93	
Uganda	26.37	106	LI	6	SSF	12	108	100	
Mali	26.35	107	LI	7	SSF	13	107	97	
Malawi	25.96	108	LI	8	SSF	14	97	n/a	
Rwanda	25.86	109	LI	9	SSF	15	n/a	n/a	
Nicaragua	25.78	110	LM	28	LCN	19	117	114	
Cambodia	25.46	111	LI	10	EAS	15	102	117	
Bolivia	25.44	112	LM	29	LCN	20	129	123	
Madagascar	25.41	113	LI	11	SSF	16	125	113	
Zambia	25.27	114	LI	12	SSF	17	111	96	
Syrian Arab Republic	24.82	115	LM	30	MEA	14	132	94	
Tajikistan	24.50	116	LI	13	ECS	44	115	112	
Côte d'Ivoire	24.08	117	LM	31	SSF	18	89	n/a	
Benin	23.81	118	LI	14	SSF	19	118	99	
Zimbabwe	23.54	119	LI	15	SSF	20	131	126	
Burkina Faso	23.14	120	LI	16	SSF	21	122	115	
Ethiopia	22.88	121	LI	17	SSF	22	123	120	
Niger	21.41	122	LI	18	SSF	23	n/a	n/a	
Yemen	20.72	123	LM	32	MEA	15	n/a	n/a	
Sudan	20.36	124	LM	33	SSF	24	n/a	n/a	
Algeria	19.79	125	UM	30	MEA	16	121	108	

Note: World Bank Income Group Classification (January 2011): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income; World Bank Regional Classification (January 2011): ECS = Europe & Central Asia; MEA = Middle East & North Africa; SSF = Sub-Saharan Africa; EAS = East Asia & Pacific; SAS = South Asia; NAC = North America; and LCN = Latin America & Caribbean.

Table 3: Innovation Input Sub-Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	
Singapore	74.11	1	HI	1	EAS	1	
Hong Kong (SAR), China	69.77	2	HI	2	EAS	2	
Switzerland	66.07	3	HI	3	ECS	1	
Ireland	65.53	4	HI	4	ECS	2	
Sweden	64.85	5	HI	5	ECS	3	
Finland	64.71	6	HI	6	ECS	4	
Denmark	64.57	7	HI	7	ECS	5	
Canada	64.41	8	HI	8	NAC	1	
Luxembourg	63.93	9	HI	9	ECS	6	
United Kingdom	63.66	10	HI	10	ECS	7	
United States of America	62.84	11	HI	11	NAC	2	
Australia	62.81	12	HI	12	EAS	3	
Iceland	62.48	13	HI	13	ECS	8	
Norway	61.15	14	HI	14	ECS	9	
New Zealand	60.97	15	HI	15	EAS	4	
Netherlands	60.42	16	HI	16	ECS	10	
Korea, Rep.	59.43	17	HI	17	EAS	5	
Japan	59.34	18	HI	18	EAS	6	
Austria	59.28	19	HI	19	ECS	11	
Israel	59.12	20	HI	20	MEA	1	
Germany	59.04	21	HI	21	ECS	12	
Belgium	58.44	22	HI	22	ECS	13	
France	55.61	23	HI	23	ECS	14	
Estonia	54.86	24	HI	24	ECS	15	
United Arab Emirates	54.38	25	HI	25	MEA	2	
Czech Republic	53.11	26	HI	26	ECS	16	
Malaysia	52.94	27	UM	1	EAS	7	
Bahrain	52.73	28	HI	27	MEA	3	
Spain	52.43	29	HI	28	ECS	17	
Cyprus	52.38	30	HI	29	ECS	18	
Qatar	51.71	31	HI	30	MEA	4	
Slovenia	51.29	32	HI	31	ECS	19	
Hungary	51.04	33	HI	32	ECS	20	
Portugal	50.32	34	HI	33	ECS	21	
Slovak Republic	48.27	35	HI	34	ECS	22	
Chile	48.09	36	UM	2	LCN	1	
Italy	47.88	37	HI	35	ECS	23	
Latvia	47.46	38	HI	36	ECS	24	
Lithuania	47.46	39	UM	3	ECS	25	
South Africa	46.37	40	UM	4	SSF	1	
Poland	46.29	41	HI	37	ECS	26	
Oman	46.23	42	HI	38	MEA	5	
China	46.08	43	LM	1	EAS	8	
Saudi Arabia	45.94	44	HI	39	MEA	6	
Croatia	45.00	45	HI	40	ECS	27	
Mauritius	44.79	46	UM	5	SSF	2	
Bulgaria	44.20	47	UM	6	ECS	28	
Thailand	43.33	48	LM	2	EAS	9	
Namibia	43.01	49	UM	7	SSF	3	
Greece	42.48	50	HI	41	ECS	29	
Kuwait	42.44	51	HI	42	MEA	7	
Mongolia	42.31	52	LM	3	EAS	10	
Costa Rica	42.22	53	UM	8	LCN	2	
Bosnia & Herzegovina	42.10	54	UM	9	ECS	30	
Romania	41.80	55	UM	10	ECS	31	
Jordan	41.34	56	LM	4	MEA	8	
Lebanon	40.88	57	UM	11	MEA	9	
Trinidad and Tobago	40.86	58	HI	43	LCN	3	
Russian Federation	40.79	59	UM	12	ECS	32	
Panama	40.73	60	UM	13	LCN	4	
Macedonia	40.37	61	UM	14	ECS	33	
Botswana	40.37	62	UM	15	SSF	4	
Viet Nam	40.09	63	LM	5	EAS	11	

Table 3: Innovation Input Sub-Index rankings (continued)

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Kazakhstan	39.86	64	UM	16	ECS	34
Ghana	39.84	65	LI	1	SSF	5
Uruguay	39.69	66	UM	17	LCN	5
Ukraine	39.59	67	LM	6	ECS	35
Brazil	39.47	68	UM	18	LCN	6
Kenya	39.24	69	LI	2	SSF	6
Brunei Darussalam	39.19	70	HI	44	EAS	12
Serbia	39.09	71	UM	19	ECS	36
Peru	39.06	72	UM	20	LCN	7
Jamaica	38.89	73	UM	21	LCN	8
Colombia	38.72	74	UM	22	LCN	9
Guyana	38.70	75	LM	7	LCN	10
Georgia	38.54	76	LM	8	ECS	37
Moldova, Rep.	38.40	77	LM	9	ECS	38
Albania	38.29	78	UM	23	ECS	39
Tunisia	38.21	79	LM	10	MEA	10
Turkey	37.96	80	UM	24	ECS	40
Mexico	37.47	81	UM	25	LCN	11
Argentina	37.29	82	UM	26	LCN	12
Azerbaijan	37.21	83	UM	27	ECS	41
Armenia	37.10	84	LM	11	ECS	42
Swaziland	36.93	85	LM	12	SSF	7
Morocco	36.65	86	LM	13	MEA	11
India	36.47	87	LM	14	SAS	1
Egypt	35.08	88	LM	15	MEA	12
Kyrgyzstan	34.93	89	LI	3	ECS	43
Rwanda	34.73	90	LI	4	SSF	8
El Salvador	34.60	91	LM	16	LCN	13
Paraguay	34.45	92	LM	17	LCN	14
Philippines	34.00	93	LM	18	EAS	13
Zambia	33.81	94	LI	5	SSF	9
Indonesia	33.57	95	LM	19	EAS	14
Sri Lanka	33.20	96	LM	20	SAS	2
Guatemala	33.18	97	LM	21	LCN	15
Honduras	33.08	98	LM	22	LCN	16
Malawi	32.82	99	LI	6	SSF	10
Ecuador	32.57	100	LM	23	LCN	17
Algeria	32.07	101	UM	28	MEA	13
Niger	31.44	102	LI	7	SSF	11
Cambodia	31.24	103	LI	8	EAS	15
Madagascar	31.20	104	LI	9	SSF	12
Nicaragua	31.13	105	LM	24	LCN	18
Iran	30.91	106	UM	29	MEA	14
Senegal	30.73	107	LM	25	SSF	13
Tanzania	30.45	108	LI	10	SSF	14
Bolivia	30.37	109	LM	26	LCN	19
Cameroon	30.12	110	LM	27	SSF	15
Syrian Arab Republic	30.03	111	LM	28	MEA	15
Uganda	29.86	112	LI	11	SSF	16
Mali	29.85	113	LI	12	SSF	17
Bangladesh	29.64	114	LI	13	SAS	3
Venezuela	29.48	115	UM	30	LCN	20
Ethiopia	29.29	116	LI	14	SSF	18
Burkina Faso	29.24	117	LI	15	SSF	19
Benin	28.26	118	LI	16	SSF	20
Nigeria	27.72	119	LM	29	SSF	21
Tajikistan	27.64	120	LI	17	ECS	44
Yemen	27.00	121	LM	30	MEA	16
Zimbabwe	26.82	122	LI	18	SSF	22
Pakistan	26.57	123	LM	31	SAS	4
Sudan	26.06	124	LM	32	SSF	23
Côte d'Ivoire	23.40	125	LM	33	SSF	24

Note: World Bank Income Group Classification (January 2011): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income; World Bank Regional Classification (January 2011): ECS = Europe & Central Asia; MEA = Middle East & North Africa; SSF = Sub-Saharan Africa; EAS = East Asia & Pacific; SAS = South Asia; NAC = North America; and LCN = Latin America & Caribbean.

Table 4: Innovation Output Sub-Index rankings

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank	
Sweden	59.40	1	HI	1	ECS	1	
Switzerland	58.20	2	HI	2	ECS	2	
Netherlands	52.20	3	HI	3	ECS	3	
Germany	50.74	4	HI	4	ECS	4	
United States of America	50.30	5	HI	5	NAC	1	
Finland	50.29	6	HI	6	ECS	5	
Denmark	49.34	7	HI	7	ECS	6	
Israel	48.94	8	HI	8	MEA	1	
United Kingdom	48.27	9	HI	9	ECS	7	
Canada	48.26	10	HI	10	NAC	2	
Korea, Rep.	47.93	11	HI	11	EAS	1	
Hong Kong (SAR), China	47.83	12	HI	12	EAS	2	
Iceland	47.72	13	HI	13	ECS	8	
China	46.77	14	LM	1	EAS	3	
New Zealand	46.61	15	HI	14	EAS	4	
Hungary	45.20	16	HI	15	ECS	9	
Singapore	45.18	17	HI	16	EAS	5	
Norway	44.04	18	HI	17	ECS	10	
Qatar	43.77	19	HI	18	MEA	2	
Estonia	43.50	20	HI	19	ECS	11	
France	42.90	21	HI	20	ECS	12	
Ireland	42.67	22	HI	21	ECS	13	
Austria	42.21	23	HI	22	ECS	14	
Czech Republic	41.49	24	HI	23	ECS	15	
Luxembourg	41.37	25	HI	24	ECS	16	
Japan	41.30	26	HI	25	EAS	6	
Cyprus	40.52	27	HI	26	ECS	17	
Belgium	39.66	28	HI	27	ECS	18	
Moldova, Rep.	38.92	29	LM	2	ECS	19	
Slovenia	38.86	30	HI	28	ECS	20	
Australia	36.89	31	HI	29	EAS	7	
Brazil	36.03	32	UM	1	LCN	1	
Jordan	35.52	33	LM	3	MEA	3	
Spain	35.19	34	HI	30	ECS	21	
Malaysia	35.17	35	UM	2	EAS	8	
Portugal	34.47	36	HI	31	ECS	22	
Costa Rica	33.60	37	UM	3	LCN	2	
Serbia	33.53	38	UM	4	ECS	23	
Italy	33.49	39	HI	32	ECS	24	
Argentina	33.44	40	UM	5	LCN	3	
Lebanon	33.34	41	UM	6	MEA	4	
Viet Nam	33.34	42	LM	4	EAS	9	
Bulgaria	32.64	43	UM	7	ECS	25	
India	32.56	44	LM	5	SAS	1	
Latvia	32.14	45	HI	33	ECS	26	
Thailand	31.93	46	LM	6	EAS	10	
Romania	31.86	47	UM	8	ECS	27	
Croatia	30.96	48	HI	34	ECS	28	
Guyana	30.95	49	LM	7	LCN	4	
Russian Federation	30.91	50	UM	9	ECS	29	
Kuwait	30.85	51	HI	35	MEA	5	
Ukraine	30.42	52	LM	8	ECS	30	
Turkey	30.25	53	UM	10	ECS	31	
Slovak Republic	29.83	54	HI	36	ECS	32	
Poland	29.74	55	HI	37	ECS	33	
United Arab Emirates	29.61	56	HI	38	MEA	6	
Chile	29.60	57	UM	11	LCN	5	
Tunisia	29.57	58	LM	9	MEA	7	
Lithuania	29.52	59	UM	12	ECS	34	
Armenia	28.90	60	LM	10	ECS	35	
Uruguay	28.67	61	UM	13	LCN	6	
Nigeria	28.58	62	LM	11	SSF	1	
Mauritius	28.15	63	UM	14	SSF	2	

Table 4: Innovation Output Sub-Index rankings (continued)

Country/Economy	Score (0–100)	Rank	Income	Rank	Region	Rank
Paraguay	27.90	64	LM	12	LCN	7
Sri Lanka	27.53	65	LM	13	SAS	2
Saudi Arabia	26.94	66	HI	39	MEA	8
Pakistan	26.94	67	LM	14	SAS	3
Macedonia	26.57	68	UM	15	ECS	36
Bangladesh	26.47	69	LI	1	SAS	4
Colombia	25.92	70	UM	16	LCN	8
Iran	25.91	71	UM	17	MEA	9
Greece	25.89	72	HI	40	ECS	37
Guatemala	25.49	73	LM	15	LCN	9
Venezuela	25.35	74	UM	18	LCN	10
Georgia	25.20	75	LM	16	ECS	38
Ghana	25.12	76	LI	2	SSF	3
Ecuador	24.94	77	LM	17	LCN	11
Oman	24.79	78	HI	41	MEA	10
Côte d'Ivoire	24.77	79	LM	18	SSF	4
Kyrgyzstan	24.65	80	LI	3	ECS	39
Mongolia	24.49	81	LM	19	EAS	11
Senegal	24.38	82	LM	20	SSF	5
South Africa	24.07	83	UM	19	SSF	6
Philippines	23.96	84	LM	21	EAS	12
Cameroon	23.79	85	LM	22	SSF	7
El Salvador	23.67	86	LM	23	LCN	12
Trinidad and Tobago	23.47	87	HI	42	LCN	13
Mexico	23.42	88	UM	20	LCN	14
Egypt	23.34	89	LM	24	MEA	11
Tanzania	23.30	90	LI	4	SSF	8
Uganda	22.87	91	LI	5	SSF	9
Bahrain	22.87	92	HI	43	MEA	12
Mali	22.85	93	LI	6	SSF	10
Brunei Darussalam	22.68	94	HI	44	EAS	13
Albania	22.62	95	UM	21	ECS	40
Honduras	22.53	96	LM	25	LCN	15
Indonesia	21.99	97	LM	26	EAS	14
Peru	21.63	98	UM	22	LCN	16
Tajikistan	21.36	99	LI	7	ECS	41
Azerbaijan	21.13	100	UM	23	ECS	42
Panama	20.82	101	UM	24	LCN	17
Morocco	20.81	102	LM	27	MEA	13
Kazakhstan	20.77	103	UM	25	ECS	43
Botswana	20.65	104	UM	26	SSF	11
Bolivia	20.51	105	LM	28	LCN	18
Nicaragua	20.44	106	LM	29	LCN	19
Zimbabwe	20.26	107	LI	8	SSF	12
Cambodia	19.68	108	LI	9	EAS	15
Madagascar	19.63	109	LI	10	SSF	13
Syrian Arab Republic	19.61	110	LM	30	MEA	14
Bosnia & Herzegovina	19.58	111	UM	27	ECS	44
Benin	19.35	112	LI	11	SSF	14
Malawi	19.11	113	LI	12	SSF	15
Kenya	19.05	114	LI	13	SSF	16
Jamaica	18.87	115	UM	28	LCN	20
Namibia	18.46	116	UM	29	SSF	17
Swaziland	18.11	117	LM	31	SSF	18
Burkina Faso	17.04	118	LI	14	SSF	19
Rwanda	17.00	119	LI	15	SSF	20
Zambia	16.73	120	LI	16	SSF	21
Ethiopia	16.47	121	LI	17	SSF	22
Sudan	14.65	122	LM	32	SSF	23
Yemen	14.44	123	LM	33	MEA	15
Niger	11.38	124	LI	18	SSF	24
Algeria	7.52	125	UM	30	MEA	16

Note: World Bank Income Group Classification (January 2011): LI = low income; LM = lower-middle income; UM = upper-middle income; and HI = high income; World Bank Regional Classification (January 2011): ECS = Europe & Central Asia; MEA = Middle East & North Africa; SSF = Sub-Saharan Africa; EAS = East Asia & Pacific; SAS = South Asia; NAC = North America; and LCN = Latin America & Caribbean.

Table 5a: Institutions pillar

Country/Economy	INSTITUTIONS		Political environment		Regulatory environment		Business environment	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Denmark	94.2	1	94.2	7	96.7	4	91.8	12
New Zealand	94.0	2	93.6	9	96.9	3	91.5	14
Canada	93.3	3	91.5	11	96.3	6	92.0	11
Hong Kong (SAR), China	92.8	4	88.6	15	96.7	5	93.0	7
Switzerland	92.6	5	96.8	2	94.5	7	86.4	30
Ireland	91.2	6	90.1	12	93.2	9	90.3	16
Australia	91.0	7	88.7	14	97.8	1	86.5	28
Iceland	90.6	8	95.1	6	84.3	19	92.3	10
Singapore	90.4	9	80.0	28	97.5	2	93.8	5
Finland	89.2	10	98.3	1	85.5	15	83.7	48
Luxembourg	88.3	11	96.1	3	79.1	27	89.8	18
Norway	88.1	12	95.4	5	82.0	22	86.8	25
Netherlands	87.5	13	92.4	10	84.1	20	85.8	34
Sweden	87.3	14	95.6	4	86.1	14	80.1	63
United States of America	86.5	15	80.3	27	93.7	8	85.5	35
United Kingdom	86.4	16	79.8	29	92.7	10	86.6	27
Austria	85.7	17	94.1	8	88.4	11	74.5	82
Chile	85.2	18	81.3	22	87.8	12	86.3	32
Belgium	84.8	19	86.8	17	86.1	13	81.6	56
Japan	83.8	20	89.2	13	84.4	18	77.8	69
Germany	83.5	21	88.1	16	81.1	23	81.2	59
Cyprus	83.5	22	77.3	34	83.2	21	89.9	17
Qatar	83.5	23	77.4	33	79.5	25	93.4	6
Czech Republic	82.6	24	84.1	18	85.4	16	78.2	68
Mauritius	82.0	25	74.1	38	79.3	26	92.5	8
United Arab Emirates	81.8	26	77.6	32	75.4	32	92.3	9
Estonia	80.8	27	83.2	19	75.3	33	84.1	46
Portugal	80.4	28	82.2	21	73.7	39	85.3	36
Slovenia	80.4	29	82.5	20	69.0	47	89.7	20
Slovak Republic	79.6	30	81.1	23	76.1	31	81.5	58
Hungary	79.3	31	77.9	31	77.8	28	82.1	54
Oman	78.7	32	68.1	44	76.6	29	91.6	13
Lithuania	78.0	33	80.5	25	70.9	44	82.7	52
France	77.9	34	80.5	26	74.3	35	78.8	66
Korea, Rep.	77.4	35	73.9	40	73.3	40	85.2	39
Latvia	76.4	36	74.0	39	70.4	46	85.0	42
Poland	76.4	37	80.6	24	74.1	36	74.5	83
Botswana	76.1	38	77.1	35	74.3	34	76.9	75
Kuwait	75.3	39	65.2	50	73.9	37	86.8	26
Bulgaria	74.5	40	67.2	46	68.7	48	87.6	22
Bahrain	74.4	41	51.8	71	76.1	30	95.4	3
Croatia	73.6	42	73.1	41	59.5	65	88.1	21
Macedonia	73.0	43	56.1	62	64.4	55	98.4	1
Namibia	72.6	44	76.2	36	67.4	51	74.4	84
Georgia	72.4	45	50.1	75	71.0	43	96.1	2
Israel	72.1	46	55.7	63	79.7	24	80.8	61
Trinidad and Tobago	71.9	47	66.7	47	70.5	45	78.4	67
Brunei Darussalam	71.2	48	72.2	43	85.0	17	56.3	113
Italy	71.1	49	72.3	42	67.5	49	73.6	85
South Africa	71.0	50	66.4	48	61.8	60	84.6	43
Malaysia	70.5	51	57.5	60	71.7	42	82.2	53
Romania	69.8	52	64.2	52	60.7	62	84.5	44
Ghana	69.8	53	66.1	49	59.9	64	83.4	49
Uruguay	69.5	54	79.3	30	71.7	41	57.6	112
Jamaica	69.3	55	61.2	55	63.9	56	82.7	51
Spain	68.9	56	67.6	45	73.7	38	65.5	102
Armenia	67.9	57	58.7	58	60.8	61	84.2	45
Costa Rica	67.9	58	75.8	37	64.7	54	63.0	106
Greece	67.8	59	63.5	53	63.8	57	76.1	76
Saudi Arabia	67.5	60	39.8	92	67.4	50	95.2	4
Mongolia	66.3	61	52.5	67	55.6	73	90.8	15
Jordan	65.8	62	53.5	66	66.6	53	77.3	73
Albania	65.2	63	55.5	64	56.3	72	83.9	47

Table 5a: Institutions pillar (continued)

Country/Economy	INSTITUTIONS		Political environment		Regulatory environment		Business environment	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Panama	64.8	64	62.9	54	50.4	89	81.1	60
Zambia	64.3	65	57.0	61	50.8	87	85.1	40
Serbia	63.2	66	51.2	72	52.5	81	85.9	33
El Salvador	63.1	67	60.8	56	54.0	75	74.6	80
Kazakhstan	62.6	68	48.5	76	52.2	82	87.2	23
Turkey	62.1	69	43.5	83	60.5	63	82.1	55
Egypt	61.7	70	41.0	88	58.8	67	85.3	37
Thailand	61.5	71	38.0	97	67.3	52	79.2	65
Moldova, Rep.	61.2	72	47.8	78	48.7	91	87.1	24
Tunisia	61.1	73	47.3	79	58.4	68	77.5	71
Burkina Faso	60.4	74	51.9	70	58.2	69	71.0	90
Rwanda	59.6	75	32.1	111	56.9	70	89.7	19
Mexico	58.6	76	44.1	81	51.3	86	80.4	62
Bosnia & Herzegovina	58.6	77	48.0	77	54.1	74	73.6	86
Guyana	58.5	78	52.1	69	47.4	94	75.9	77
Azerbaijan	57.9	79	35.3	106	52.0	83	86.4	31
Morocco	57.6	80	43.8	82	47.5	93	81.5	57
Peru	57.5	81	43.2	84	51.7	85	77.8	70
Tanzania	56.7	82	57.6	59	41.4	105	71.0	89
Colombia	55.7	83	36.3	101	62.3	59	68.7	96
Viet Nam	54.9	84	39.2	96	50.5	88	75.1	78
Senegal	54.7	85	51.1	73	44.0	98	69.1	94
Lebanon	54.3	86	39.3	94	52.5	80	71.0	88
Brazil	54.1	87	64.8	51	52.9	78	44.7	118
Uganda	54.0	88	40.6	89	62.4	58	59.0	110
Mali	54.0	89	50.2	74	49.1	90	62.6	107
Indonesia	53.4	90	44.3	80	45.8	95	70.1	92
Madagascar	53.3	91	39.9	91	34.9	114	85.2	38
Malawi	53.3	92	52.3	68	53.2	77	54.4	116
Sri Lanka	53.2	93	31.6	112	58.9	66	69.1	93
India	52.3	94	42.2	86	56.6	71	58.2	111
Kenya	51.9	95	41.0	87	48.4	92	66.2	100
Ethiopia	51.8	96	31.5	113	37.6	110	86.5	29
Russian Federation	51.8	97	37.9	98	40.3	107	77.3	72
China	51.7	98	32.8	108	53.5	76	68.8	95
Swaziland	51.4	99	37.7	100	51.8	84	64.6	105
Guatemala	51.2	100	43.0	85	45.5	96	65.1	104
Philippines	51.2	101	32.5	110	52.9	79	68.2	97
Argentina	51.1	102	55.2	65	43.2	100	55.0	115
Ukraine	51.0	103	36.2	103	42.3	104	74.6	81
Kyrgyzstan	49.5	104	25.6	118	42.9	103	80.1	64
Bangladesh	48.2	105	26.4	117	41.1	106	77.0	74
Honduras	47.7	106	36.0	104	36.5	112	70.5	91
Benin	46.9	107	59.9	57	42.9	102	38.0	122
Pakistan	46.7	108	20.0	121	36.6	111	83.4	50
Syrian Arab Republic	46.3	109	20.1	120	43.8	99	75.0	79
Paraguay	46.2	110	39.9	90	32.4	117	66.2	101
Cameroon	45.9	111	35.9	105	34.3	115	67.6	99
Algeria	45.4	112	32.5	109	35.5	113	68.2	98
Ecuador	42.8	113	37.9	99	25.2	121	65.2	103
Iran	42.7	114	11.6	123	31.4	118	85.1	41
Nigeria	41.6	115	19.5	122	43.0	101	62.2	108
Nicaragua	40.8	116	39.3	93	44.1	97	39.1	121
Niger	40.1	117	36.3	102	32.5	116	51.6	117
Tajikistan	37.3	118	30.6	114	25.1	122	56.3	114
Yemen	36.9	119	9.0	124	39.6	109	62.2	109
Cambodia	36.6	120	34.8	107	39.7	108	35.4	123
Sudan	34.4	121	6.1	125	25.9	120	71.1	87
Côte d'Ivoire	33.3	122	26.5	116	30.9	119	42.4	120
Bolivia	30.2	123	39.2	95	17.0	124	34.3	124
Venezuela	27.8	124	26.6	115	12.5	125	44.3	119
Zimbabwe	24.8	125	23.5	119	23.1	123	27.8	125

Table 5b: Human capital and research pillar

Country/Economy	HUMAN CAPITAL AND RESEARCH		Education		Tertiary education		Research and Development	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Singapore	74.7	1	69.5	23	94.4	1	60.2	10
Israel	69.8	2	68.0	30	47.7	16	93.7	1
Finland	66.5	3	76.9	5	49.0	13	73.5	3
Iceland	65.7	4	78.8	4	44.9	18	73.5	2
Sweden	63.3	5	74.3	8	42.3	25	73.2	4
Denmark	60.2	6	79.4	1	37.6	40	63.6	8
Korea, Rep.	59.9	7	64.9	39	56.4	4	58.4	12
Austria	58.7	8	69.9	19	48.9	14	57.4	15
Australia	57.8	9	71.3	14	43.2	20	59.0	11
Ireland	57.8	10	79.3	2	49.3	10	44.7	26
Germany	57.5	11	72.5	12	42.4	24	57.8	14
Norway	57.5	12	76.7	7	40.2	31	55.5	17
United States of America	57.4	13	66.2	36	35.7	46	70.2	5
Luxembourg	56.6	14	61.1	48	63.9	3	44.7	25
New Zealand	56.4	15	76.8	6	42.4	22	50.1	20
United Kingdom	56.1	16	68.8	27	42.8	21	56.6	16
Switzerland	55.1	17	62.2	45	39.7	34	63.5	9
Bahrain	54.0	18	67.9	31	64.4	2	29.7	46
Canada	53.9	19	65.5	38	38.1	38	58.0	13
Japan	53.7	20	64.8	40	31.2	60	65.1	7
France	53.0	21	69.3	25	41.5	26	48.2	22
Belgium	52.9	22	73.9	10	33.2	52	51.7	19
Portugal	52.5	23	73.7	11	40.8	30	43.0	29
United Arab Emirates	52.5	24	56.8	65	48.3	15	52.3	18
Qatar	52.5	25	52.2	82	37.2	41	68.1	6
Slovenia	51.3	26	74.3	9	36.8	43	42.9	30
Estonia	50.5	27	69.8	20	39.1	36	42.6	31
Czech Republic	49.9	28	66.2	37	40.0	32	43.5	28
Cyprus	48.6	29	69.6	22	50.5	9	25.8	55
Hong Kong (SAR), China	48.4	30	59.4	55	53.6	5	32.1	42
Spain	48.2	31	67.3	33	38.9	37	38.4	36
Netherlands	47.6	32	70.6	16	28.4	73	43.9	27
Greece	47.4	33	66.3	35	51.7	7	24.1	62
Lithuania	47.0	34	67.7	32	39.9	33	33.4	40
Oman	45.9	35	52.9	80	36.6	44	48.0	23
Hungary	45.7	36	70.0	18	28.9	68	38.2	38
Venezuela	45.6	37	70.1	17	49.1	12	17.6	90
Russian Federation	45.1	38	62.0	46	43.3	19	30.0	44
Italy	44.5	39	69.4	24	35.1	49	29.1	47
Ukraine	44.3	40	70.7	15	37.8	39	24.5	59
Moldova, Rep.	43.6	41	78.9	3	35.5	47	16.3	94
Malaysia	43.5	42	55.0	69	49.2	11	26.4	54
Croatia	43.5	43	64.5	41	36.8	42	29.1	48
Kenya	43.3	44	46.7	96	34.3	50	48.9	21
Mauritius	43.2	45	53.5	76	53.3	6	22.8	68
Slovak Republic	42.8	46	61.3	47	42.4	23	24.8	56
Latvia	42.8	47	69.7	21	30.5	65	28.3	50
Poland	42.4	48	68.8	26	30.7	63	27.6	52
Bosnia & Herzegovina	42.0	49	71.6	13	41.4	27	12.9	108
Jordan	41.4	50	63.2	43	39.6	35	21.3	71
Lebanon	41.0	51	52.6	81	46.8	17	23.6	64
Zimbabwe	40.8	52	68.7	28	21.7	92	32.1	43
Saudi Arabia	40.4	53	68.6	29	33.9	51	18.9	79
Serbia	40.3	54	63.9	42	35.2	48	21.9	69
Syrian Arab Republic	40.2	55	55.9	67	n/a	n/a	24.5	58
China	39.9	56	59.9	51	17.3	102	42.3	32
Tunisia	39.8	57	62.4	44	24.6	82	32.4	41
Iran	39.5	58	44.1	104	51.0	8	23.2	66
Bulgaria	39.2	59	59.8	52	36.3	45	21.5	70
Ghana	39.0	60	51.8	83	19.2	97	46.1	24
Morocco	38.0	61	54.8	72	40.9	28	18.3	85
Namibia	37.9	62	53.9	74	19.4	96	40.2	34
Argentina	37.2	63	59.3	56	28.0	74	24.4	61



Table 5b: Human capital and research pillar (continued)

Country/Economy	HUMAN CAPITAL AND RESEARCH		Education		Tertiary education		Research and Development	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Botswana	37.0	64	66.6	34	25.7	79	18.6	82
Romania	36.8	65	58.6	58	31.3	58	20.4	75
Trinidad and Tobago	36.7	66	53.5	75	40.9	29	15.6	97
Kuwait	35.8	67	61.1	49	31.8	56	14.5	101
Jamaica	35.5	68	58.0	61	25.7	80	23.0	67
Guyana	35.1	69	53.5	77	24.9	81	27.1	53
Uruguay	35.0	70	54.9	71	29.0	67	21.2	73
Chile	34.9	71	50.1	89	30.8	62	23.6	63
Macedonia	34.7	72	54.9	70	31.1	61	18.0	87
Mexico	34.7	73	53.4	78	31.5	57	19.0	78
Kazakhstan	34.6	74	58.2	59	32.3	53	13.2	106
Mongolia	34.1	75	57.0	63	31.9	55	13.4	105
Brazil	33.9	76	54.3	73	19.4	95	27.9	51
Brunei Darussalam	33.8	77	59.6	54	27.8	76	14.0	102
Swaziland	33.1	78	59.7	53	16.2	104	23.3	65
Costa Rica	33.1	79	58.2	60	16.5	103	24.5	57
Turkey	32.9	80	49.9	90	27.9	75	20.9	74
Algeria	32.8	81	57.0	64	28.5	72	12.9	107
Albania	32.7	82	49.8	91	23.8	86	24.4	60
Georgia	32.6	83	58.8	57	24.0	84	15.0	98
Panama	32.0	84	49.1	92	29.9	66	16.9	92
Viet Nam	31.7	85	45.1	100	32.1	54	17.8	89
Bolivia	31.2	86	56.7	66	26.2	78	10.8	116
Thailand	31.0	87	48.2	94	26.2	77	18.5	83
Armenia	30.7	88	55.1	68	21.3	94	15.7	96
Yemen	30.7	89	50.3	88	11.2	115	n/a	n/a
Azerbaijan	30.4	90	50.9	87	22.4	90	17.9	88
Colombia	30.0	91	44.9	101	30.5	64	14.6	100
South Africa	30.0	92	57.8	62	3.3	124	28.8	49
Rwanda	29.9	93	46.3	98	8.2	122	35.3	39
Malawi	29.7	94	30.4	118	18.1	101	40.8	33
Kyrgyzstan	29.7	95	51.6	85	28.5	71	8.9	118
Indonesia	29.6	96	46.1	99	24.6	83	18.1	86
Tanzania	29.4	97	28.2	122	21.7	93	38.3	37
Tajikistan	29.4	98	47.6	95	28.6	70	12.0	111
Cameroon	29.2	99	46.3	97	24.0	85	17.5	91
Niger	29.0	100	34.6	114	23.4	88	n/a	n/a
Honduras	28.4	101	60.5	50	14.2	110	10.3	117
Sri Lanka	27.2	102	52.9	79	10.1	118	18.6	80
Ecuador	27.0	103	48.6	93	23.7	87	8.8	120
India	26.9	104	32.3	115	9.5	119	38.8	35
El Salvador	26.8	105	41.2	108	31.3	59	8.0	121
Senegal	26.7	106	42.0	107	18.7	99	19.4	77
Egypt	26.4	107	51.7	84	12.6	113	14.8	99
Peru	25.7	108	43.3	106	21.9	91	11.8	112
Guatemala	25.2	109	44.6	102	18.8	98	12.1	110
Paraguay	24.9	110	51.2	86	18.3	100	5.3	122
Mali	24.9	111	39.3	110	14.0	112	21.3	72
Zambia	24.7	112	44.3	103	15.8	106	13.9	104
Benin	24.5	113	39.5	109	14.2	109	19.7	76
Bangladesh	24.1	114	30.2	120	12.3	114	29.9	45
Madagascar	24.1	115	38.7	111	22.5	89	11.1	114
Philippines	23.7	116	30.8	116	28.7	69	11.5	113
Uganda	22.6	117	43.9	105	10.2	117	13.9	103
Côte d'Ivoire	21.1	118	30.6	117	14.3	108	18.4	84
Burkina Faso	20.6	119	34.7	113	10.6	116	16.4	93
Nicaragua	19.4	120	35.2	112	14.1	111	8.8	119
Cambodia	18.5	121	28.6	121	15.9	105	11.0	115
Nigeria	18.3	122	30.2	119	8.8	121	15.9	95
Ethiopia	16.8	123	22.8	124	15.2	107	12.2	109
Pakistan	14.0	124	14.5	125	8.9	120	18.6	81
Sudan	11.9	125	25.3	123	6.6	123	3.8	123

Table 5c: Infrastructure pillar

Country/Economy	INFRASTRUCTURE		Info & comm. technologies (ICT)		Energy		General infrastructure	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Norway	55.5	1	64.6	13	55.2	1	46.8	17
Hong Kong (SAR), China	53.9	2	70.2	4	42.2	4	49.2	8
Canada	53.1	3	66.2	11	36.9	6	56.2	5
Australia	52.3	4	70.3	3	26.9	26	59.7	3
Sweden	51.7	5	67.4	10	40.3	5	47.3	15
Korea, Rep.	48.2	6	81.0	1	22.4	54	41.2	30
Finland	48.0	7	57.1	23	34.5	8	52.3	6
New Zealand	47.8	8	64.7	12	31.6	12	47.1	16
Singapore	47.6	9	69.0	5	26.0	31	47.9	13
Bahrain	46.9	10	58.8	18	24.3	43	57.7	4
Denmark	45.9	11	68.9	6	30.7	16	38.1	49
Iceland	45.4	12	51.8	26	52.1	3	32.4	84
Japan	45.4	13	68.8	7	25.6	36	41.7	27
United States of America	44.6	14	67.4	9	30.5	18	36.0	63
Switzerland	44.5	15	57.1	22	35.0	7	41.4	29
Austria	44.0	16	58.4	21	32.6	9	41.0	32
United Kingdom	43.6	17	70.6	2	25.7	34	34.6	70
Netherlands	43.6	18	68.3	8	23.3	48	39.2	40
Spain	43.5	19	64.0	14	26.1	30	40.5	36
Luxembourg	43.3	20	62.1	16	29.8	19	37.9	52
Germany	43.2	21	63.7	15	25.2	40	40.9	33
France	43.1	22	61.9	17	25.7	32	41.6	28
Ireland	39.5	23	55.5	24	28.9	22	34.1	72
Belgium	39.5	24	58.6	19	23.1	49	36.8	56
Israel	38.4	25	54.4	25	27.7	24	32.9	83
Estonia	38.0	26	58.5	20	19.9	65	35.5	68
Slovenia	36.6	27	51.8	27	24.6	42	33.3	78
Cyprus	36.5	28	46.0	30	22.3	55	41.0	31
Paraguay	36.3	29	17.2	93	53.3	2	38.5	44
Italy	35.9	30	44.7	34	26.1	29	36.9	55
United Arab Emirates	35.8	31	45.6	32	30.5	17	31.3	90
Colombia	35.7	32	37.6	43	31.3	14	38.2	46
China	35.4	33	28.4	59	14.5	92	63.3	2
Slovak Republic	35.2	34	38.1	42	17.5	77	50.1	7
Lithuania	35.0	35	47.7	28	17.4	79	40.0	38
Portugal	34.7	36	45.1	33	25.2	39	33.9	75
Croatia	34.1	37	47.2	29	19.5	67	35.5	66
Qatar	33.9	38	34.8	46	26.3	28	40.6	35
Hungary	33.9	39	45.8	31	17.7	74	38.1	48
Latvia	33.4	40	40.5	38	23.1	50	36.7	57
Uruguay	33.4	41	34.1	47	28.5	23	37.6	54
Greece	32.6	42	44.1	36	25.4	38	28.1	107
Mongolia	32.4	43	25.5	66	5.7	114	66.0	1
Czech Republic	32.4	44	41.1	37	19.8	66	36.2	59
Brazil	32.2	45	30.4	53	23.9	45	42.3	23
Argentina	31.5	46	32.6	50	20.2	63	41.7	26
Peru	31.4	47	24.4	69	30.9	15	39.0	42
Kuwait	31.2	48	30.8	52	31.8	11	31.0	95
Guyana	31.1	49	13.3	104	n/a	n/a	48.9	9
Chile	31.1	50	37.4	44	20.4	62	35.5	67
Panama	30.7	51	28.3	60	25.7	33	38.1	50
Poland	30.4	52	39.8	39	17.5	76	33.8	76
Malaysia	30.1	53	44.2	35	12.8	98	33.3	79
Romania	30.0	54	35.5	45	16.2	81	38.5	43
Costa Rica	29.6	55	25.5	67	31.5	13	31.8	87
Viet Nam	29.3	56	22.1	79	18.0	73	47.9	12
Morocco	29.2	57	21.4	81	22.1	56	44.0	19
Tunisia	29.0	58	27.2	61	22.0	58	37.7	53
Bulgaria	28.9	59	38.5	40	14.9	89	33.2	80
Kazakhstan	28.5	60	33.8	48	9.5	108	42.1	24
Madagascar	28.2	61	8.8	118	n/a	n/a	47.5	14
Saudi Arabia	27.8	62	30.2	54	15.0	88	38.2	47
India	27.7	63	16.3	94	18.5	72	48.3	11

Table 5c: Infrastructure pillar (continued)

Country/Economy	INFRASTRUCTURE		Info & comm. technologies (ICT)		Energy		General infrastructure	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Turkey	27.5	64	30.1	55	21.1	61	31.3	91
Mexico	27.0	65	29.0	57	15.7	85	36.4	58
Oman	26.7	66	26.3	64	11.9	101	41.9	25
Sri Lanka	26.6	67	17.3	92	32.2	10	30.3	100
Philippines	26.5	68	22.3	78	29.4	21	27.7	112
Ecuador	26.4	69	22.4	77	14.4	94	42.6	21
Albania	26.4	70	21.3	83	22.0	59	36.0	64
Bolivia	26.3	71	18.6	89	11.9	102	48.6	10
Macedonia	26.2	72	32.8	49	14.5	93	31.2	92
Russian Federation	25.8	73	31.1	51	14.1	95	32.2	85
Mauritius	25.7	74	24.0	70	n/a	n/a	27.3	114
Lebanon	25.6	75	23.1	74	11.1	104	42.7	20
Bangladesh	25.5	76	13.6	103	27.0	25	35.9	65
Nicaragua	25.3	77	18.2	91	22.6	52	34.9	69
Thailand	25.0	78	21.3	82	15.6	86	38.1	51
South Africa	24.8	79	20.3	86	15.8	84	38.2	45
Senegal	24.6	80	11.1	110	22.1	57	40.6	34
Indonesia	24.5	81	16.2	95	14.9	90	42.4	22
Guatemala	24.5	82	23.0	75	25.6	35	24.7	120
Serbia	24.5	83	26.7	63	13.7	97	33.0	82
Venezuela	24.4	84	24.8	68	12.4	100	36.0	62
Namibia	24.4	85	9.3	114	24.8	41	39.0	41
Honduras	23.9	86	18.7	88	22.6	53	30.6	96
El Salvador	23.9	87	20.6	84	26.7	27	24.4	121
Botswana	23.9	88	14.8	98	22.7	51	34.1	73
Cambodia	23.8	89	11.2	108	29.8	20	30.4	99
Algeria	23.7	90	13.6	102	11.6	103	45.7	18
Bosnia & Herzegovina	23.4	91	23.5	73	16.0	82	30.6	98
Iran	22.9	92	20.4	85	8.0	112	40.3	37
Ghana	22.9	93	11.5	107	25.5	37	31.6	88
Armenia	22.9	94	15.3	96	13.8	96	39.4	39
Zambia	22.6	95	18.3	90	21.2	60	28.4	103
Jordan	22.6	96	29.4	56	11.1	105	27.4	113
Kyrgyzstan	22.5	97	21.8	80	14.9	91	31.0	94
Sudan	22.4	98	11.7	106	23.5	46	31.9	86
Azerbaijan	22.0	99	22.8	76	12.6	99	30.6	97
Egypt	21.7	100	25.9	65	10.8	106	28.3	105
Ukraine	21.5	101	27.1	62	9.2	109	28.2	106
Kenya	21.4	102	14.3	100	20.1	64	29.7	101
Moldova, Rep.	21.3	103	24.0	71	6.0	113	34.0	74
Mali	21.2	104	11.2	109	n/a	n/a	31.1	93
Cameroon	21.0	105	10.5	111	24.3	44	28.3	104
Nigeria	21.0	106	9.2	115	17.7	75	36.1	60
Benin	20.8	107	9.7	112	16.8	80	36.1	61
Uganda	20.8	108	8.0	121	n/a	n/a	33.7	77
Jamaica	20.6	109	23.8	72	9.9	107	28.1	108
Niger	20.3	110	7.6	124	n/a	n/a	33.0	81
Georgia	20.2	111	19.5	87	18.9	71	22.3	123
Ethiopia	20.0	112	8.5	119	23.4	47	28.0	109
Côte d'Ivoire	19.7	113	15.2	97	19.0	70	24.8	119
Pakistan	19.5	114	14.7	99	15.9	83	27.7	111
Brunei Darussalam	19.4	115	38.3	41	15.5	87	4.4	125
Tajikistan	19.3	116	9.4	113	19.3	69	29.2	102
Malawi	18.9	117	6.4	125	n/a	n/a	31.4	89
Swaziland	18.5	118	11.8	105	n/a	n/a	25.2	118
Trinidad and Tobago	18.1	119	28.5	58	9.1	110	16.8	124
Tanzania	17.8	120	8.9	116	19.4	68	25.2	117
Rwanda	17.6	121	8.3	120	n/a	n/a	26.9	115
Burkina Faso	17.4	122	8.9	117	n/a	n/a	25.8	116
Syrian Arab Republic	16.9	123	14.3	101	8.4	111	27.9	110
Zimbabwe	16.4	124	7.7	123	17.4	78	23.9	122
Yemen	15.4	125	7.9	122	3.8	115	34.6	71

Table 5d: Market sophistication pillar

Country/Economy	MARKET SOPHISTICATION		Credit		Investment		Trade and Competition	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Hong Kong (SAR), China	87.0	1	78.0	11	91.4	1	91.7	2
Singapore	78.7	2	65.1	20	78.5	2	92.5	1
United Kingdom	74.4	3	96.4	1	74.4	5	52.6	57
United States of America	70.9	4	88.3	4	77.8	3	46.6	83
Switzerland	70.1	5	78.3	10	67.8	6	64.1	15
Ireland	65.3	6	81.7	7	39.2	32	75.1	8
Denmark	64.5	7	89.2	2	44.4	26	59.8	27
South Africa	63.9	8	64.8	21	77.3	4	49.6	68
Canada	63.4	9	68.7	16	67.0	7	54.4	45
Malaysia	62.1	10	58.0	26	52.0	13	76.3	6
Netherlands	61.8	11	71.7	14	43.4	28	70.3	11
Korea, Rep.	61.8	12	66.3	19	62.8	9	56.4	39
Belgium	60.6	13	68.3	17	40.0	31	73.5	10
Germany	59.3	14	85.0	5	34.5	44	58.5	30
Sweden	58.9	15	57.6	27	58.4	10	60.8	24
Australia	58.8	16	71.9	13	54.8	12	49.8	66
Israel	58.6	17	61.7	24	56.0	11	58.0	35
New Zealand	57.9	18	79.3	9	48.3	19	46.3	87
Japan	57.9	19	79.7	8	45.6	23	48.5	75
Iceland	57.9	20	88.3	3	26.8	68	58.4	32
Spain	57.5	21	71.7	14	51.8	14	49.2	71
Luxembourg	57.5	22	35.0	79	46.4	22	91.0	3
Austria	56.5	23	85.0	5	22.2	89	62.2	20
Bahrain	56.1	24	53.2	32	37.9	37	77.1	5
Finland	56.1	25	76.7	12	38.3	34	53.2	53
China	54.1	26	49.1	36	63.6	8	49.7	67
Norway	53.8	27	53.3	31	48.6	18	59.7	28
France	53.8	28	68.3	17	43.5	27	49.5	69
Estonia	53.4	29	59.7	25	30.8	56	69.9	13
Saudi Arabia	52.7	30	48.3	41	47.9	20	61.8	22
United Arab Emirates	52.4	31	51.1	34	31.8	52	74.3	9
Cyprus	49.5	32	56.1	30	29.7	60	62.8	18
Thailand	49.0	33	44.7	48	38.6	33	63.6	17
Czech Republic	47.7	34	46.6	46	26.1	72	70.3	12
Albania	47.5	35	44.6	49	48.7	17	49.2	70
Hungary	47.4	36	42.5	54	24.5	80	75.2	7
Chile	47.4	37	43.7	52	42.5	29	56.0	40
Latvia	47.3	38	62.9	23	25.0	75	54.1	48
Viet Nam	47.0	39	64.3	22	19.2	101	57.5	37
Kuwait	46.9	40	40.7	59	44.5	25	55.4	43
Mongolia	46.6	41	48.9	37	32.3	51	58.5	31
Portugal	46.3	42	56.7	28	31.3	54	51.1	62
Slovak Republic	45.9	43	38.4	66	14.0	116	85.4	4
Jordan	44.7	44	29.5	94	47.4	21	57.1	38
India	44.6	45	38.2	67	49.7	15	46.1	88
Brunei Darussalam	44.1	46	24.6	103	49.7	16	58.1	34
Azerbaijan	44.1	47	35.5	75	44.7	24	52.2	59
Lithuania	43.9	48	50.7	35	15.7	112	65.4	14
Nicaragua	43.5	49	48.4	40	33.3	47	48.7	73
Bulgaria	43.0	50	52.1	33	19.0	102	57.9	36
Bosnia & Herzegovina	42.9	51	48.8	38	33.3	47	46.7	81
Peru	42.7	52	48.2	42	31.0	55	49.0	72
Italy	42.7	53	56.7	28	25.9	74	45.6	89
Panama	42.5	54	47.7	43	17.2	108	62.6	19
Trinidad and Tobago	42.4	55	33.1	86	33.2	49	60.8	25
Mauritius	42.1	56	44.1	51	28.9	61	53.2	52
Cambodia	41.6	57	39.1	64	35.3	42	50.4	64
Georgia	41.1	58	48.7	39	19.9	99	54.8	44
Poland	40.9	59	39.4	62	27.7	65	55.5	42
Slovenia	40.3	60	34.7	80	22.2	90	64.0	16
Kyrgyzstan	40.2	61	45.5	47	22.3	88	52.8	56
Macedonia	40.2	62	41.4	56	20.3	95	58.8	29
Kenya	40.1	63	47.5	44	30.2	58	42.7	97

Table 5d: Market sophistication pillar (continued)

Country/Economy	MARKET SOPHISTICATION		Credit		Investment		Trade and Competition	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Ukraine	39.6	64	41.2	57	23.1	84	54.3	47
Namibia	39.4	65	39.9	61	16.1	111	62.0	21
Qatar	39.2	66	25.1	99	36.5	39	55.9	41
Lebanon	39.0	67	35.4	77	28.3	64	53.4	51
Honduras	38.9	68	44.4	50	20.0	97	52.4	58
Romania	38.9	69	39.1	63	26.0	73	51.6	61
Moldova, Rep.	38.6	70	24.0	104	33.6	46	58.3	33
Guatemala	38.4	71	40.6	60	26.7	70	48.0	76
Turkey	38.0	72	29.5	95	32.5	50	52.0	60
Mexico	37.2	73	33.4	85	27.4	66	50.8	63
Colombia	36.8	74	36.1	74	35.4	41	38.8	109
Kazakhstan	36.6	75	33.0	88	23.8	82	53.1	54
Russian Federation	36.4	76	29.1	98	36.2	40	43.8	94
Paraguay	36.2	77	38.4	65	16.7	109	53.6	50
Botswana	35.7	78	37.4	70	21.2	94	48.5	74
Croatia	35.7	79	36.3	72	16.4	110	54.4	46
Brazil	35.7	80	31.6	90	37.0	38	38.4	112
Rwanda	35.3	81	31.3	91	42.0	30	32.5	120
Oman	35.1	82	25.0	100	19.3	100	61.1	23
Egypt	35.0	83	33.0	87	29.7	59	42.3	99
Morocco	34.4	84	38.1	68	22.5	86	42.6	98
Tunisia	34.3	85	34.5	81	24.1	81	44.2	93
El Salvador	34.2	86	41.0	58	14.7	113	46.9	80
Serbia	34.2	87	43.4	53	18.4	103	40.8	103
Swaziland	33.8	88	35.4	78	13.0	119	52.9	55
Zambia	33.7	89	36.2	73	17.5	107	47.4	78
Armenia	33.7	90	42.2	55	14.4	114	44.3	92
Guyana	33.5	91	21.8	106	18.0	104	60.7	26
Algeria	33.4	92	17.2	111	35.3	42	47.7	77
Bolivia	33.4	93	47.2	45	13.2	118	39.8	106
Costa Rica	32.7	94	35.4	76	9.1	124	53.7	49
Tajikistan	32.3	95	15.8	115	38.0	35	43.1	95
Greece	32.3	96	37.7	69	13.8	117	45.4	91
Indonesia	32.2	97	23.0	105	27.0	67	46.7	82
Philippines	32.0	98	21.0	108	24.9	76	50.1	65
Ghana	31.8	99	29.3	96	26.7	69	39.3	108
Nigeria	31.1	100	21.1	107	24.8	77	47.3	79
Zimbabwe	30.5	101	15.7	117	34.0	45	41.8	101
Bangladesh	30.5	102	33.5	84	22.6	85	35.3	114
Uruguay	30.4	103	33.8	82	14.3	115	43.1	96
Ecuador	30.4	104	32.0	89	12.6	120	46.5	84
Jamaica	30.2	105	25.0	101	20.1	96	45.4	90
Sri Lanka	29.7	106	30.4	92	17.7	106	41.1	102
Malawi	28.7	107	17.1	112	30.2	57	38.7	111
Argentina	28.3	108	29.2	97	17.7	105	38.1	113
Senegal	28.3	109	18.5	110	20.0	97	46.4	85
Cameroon	28.1	110	16.0	114	28.7	62	39.5	107
Pakistan	28.1	111	29.9	93	22.5	87	31.8	121
Madagascar	28.0	112	5.9	125	38.0	35	40.0	105
Uganda	28.0	113	33.7	83	11.5	123	38.7	110
Mali	26.9	114	13.8	118	24.7	78	42.3	100
Tanzania	26.9	115	24.8	102	23.2	83	32.8	118
Ethiopia	26.8	116	20.4	109	28.7	62	31.2	123
Iran	26.1	117	36.9	71	11.5	122	29.8	125
Yemen	26.0	118	10.7	121	26.7	70	40.6	104
Syrian Arab Republic	25.1	119	10.4	123	31.3	53	33.5	116
Burkina Faso	24.4	120	15.7	116	24.7	78	32.8	117
Côte d'Ivoire	23.6	121	11.9	119	12.5	121	46.4	86
Benin	23.3	122	16.8	113	22.0	91	31.3	122
Niger	22.4	123	10.8	120	22.0	91	34.5	115
Sudan	21.0	124	10.6	122	22.0	91	30.3	124
Venezuela	15.5	125	6.8	124	7.1	125	32.5	119

Table 5e: Business sophistication pillar

Country/Economy	BUSINESS SOPHISTICATION		Knowledge workers		Innovation linkages		Knowledge absorption	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Singapore	79.1	1	87.3	3	68.3	1	81.7	2
Luxembourg	74.0	2	92.8	1	67.6	2	61.7	6
Ireland	73.8	3	75.9	15	55.6	11	90.0	1
Switzerland	68.0	4	88.3	2	61.5	6	54.3	11
Hong Kong (SAR), China	66.9	5	65.6	29	59.2	8	75.8	3
Finland	63.9	6	84.0	5	57.7	9	49.9	14
Sweden	63.1	7	83.9	6	54.1	14	51.4	13
Netherlands	61.6	8	77.3	10	53.5	16	54.1	12
Malaysia	58.5	9	69.0	23	44.9	29	61.6	7
Canada	58.4	10	71.0	20	59.8	7	44.3	26
Denmark	58.1	11	82.6	7	53.3	17	38.2	46
United Kingdom	57.8	12	74.1	17	53.1	18	46.1	23
Israel	56.8	13	86.6	4	37.2	41	46.7	21
Japan	55.9	14	82.3	8	41.2	35	44.3	27
United States of America	54.8	15	76.1	12	50.5	22	37.8	47
Belgium	54.4	16	80.6	9	50.9	20	31.6	73
Australia	54.1	17	76.0	14	49.6	23	36.7	50
Czech Republic	53.0	18	76.0	13	33.5	60	49.6	16
Iceland	52.8	19	75.8	16	55.6	10	27.0	94
Germany	51.6	20	66.9	25	43.3	30	44.5	25
Estonia	51.6	21	66.9	26	41.8	32	46.0	24
Austria	51.6	22	69.3	21	46.2	25	39.1	41
Norway	50.8	23	71.4	19	45.5	28	35.6	55
France	50.3	24	72.9	18	38.3	39	39.8	40
Thailand	50.2	25	52.7	39	41.8	33	56.1	10
Korea, Rep.	49.8	26	57.7	35	33.5	61	58.4	8
Qatar	49.5	27	44.9	54	54.2	13	n/a	n/a
United Arab Emirates	49.5	28	69.3	22	63.4	5	15.6	124
China	49.3	29	64.8	30	35.8	46	47.3	19
Hungary	48.9	30	46.2	49	31.8	66	68.7	5
New Zealand	48.7	31	66.0	27	43.2	31	36.8	49
Swaziland	48.0	32	57.7	34	16.9	117	69.3	4
Costa Rica	47.9	33	49.2	42	53.8	15	40.7	37
Slovenia	47.8	34	67.2	24	35.3	50	41.0	36
Niger	45.4	35	34.2	80	66.7	3	35.2	58
Italy	45.2	36	65.6	28	34.4	55	35.4	57
Russian Federation	44.9	37	64.0	31	27.6	83	43.0	31
Oman	44.7	38	32.6	82	63.8	4	37.6	48
Lebanon	44.5	39	60.1	32	26.8	87	46.6	22
Spain	43.9	40	59.7	33	33.6	59	38.5	45
Cyprus	43.9	41	41.3	60	51.2	19	39.0	42
Bosnia & Herzegovina	43.7	42	77.1	11	31.8	67	22.2	112
South Africa	42.3	43	48.0	46	36.4	44	42.4	32
Chile	41.9	44	55.0	37	35.3	49	35.5	56
Ukraine	41.5	45	45.5	51	31.8	69	47.3	20
Brazil	41.5	46	48.3	45	34.4	56	41.8	34
Poland	41.4	47	56.3	36	25.7	92	42.3	33
Saudi Arabia	41.3	48	42.2	57	46.8	24	35.0	60
Namibia	40.8	49	39.8	62	50.6	21	32.0	71
Sudan	40.7	50	39.7	63	n/a	n/a	41.7	35
Kenya	39.5	51	44.9	55	45.8	27	27.8	88
Jamaica	38.9	52	48.7	44	31.8	68	36.2	53
Argentina	38.3	53	41.9	58	29.7	75	43.1	30
Croatia	38.2	54	45.4	53	25.2	93	43.9	28
Peru	37.9	55	46.6	48	35.4	48	31.7	72
Slovak Republic	37.8	56	49.1	43	32.4	64	32.0	70
Portugal	37.6	57	45.4	52	34.1	57	33.3	63
Viet Nam	37.5	58	26.0	98	37.7	40	48.8	18
Latvia	37.3	59	52.2	40	32.7	62	27.1	93
Kazakhstan	37.0	60	38.1	69	23.9	98	49.0	17
Philippines	36.7	61	46.7	47	30.9	70	32.4	68
Ecuador	36.3	62	42.9	56	41.7	34	24.2	108
Ghana	35.7	63	35.3	77	22.3	104	49.7	15

Table 5e: Business sophistication pillar (continued)

Country/Economy	BUSINESS SOPHISTICATION		Knowledge workers		Innovation linkages		Knowledge absorption	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Cambodia	35.6	64	24.8	103	54.8	12	27.3	92
Bulgaria	35.4	65	41.5	59	24.1	97	40.6	38
Colombia	35.4	66	37.4	73	30.2	73	38.5	44
Guyana	35.3	67	23.5	106	25.7	91	56.7	9
Trinidad and Tobago	35.3	68	37.8	70	36.4	43	31.6	74
Venezuela	34.0	69	45.6	50	27.6	84	29.0	81
Panama	33.7	70	26.8	95	46.2	26	28.1	84
Romania	33.5	71	35.6	76	21.7	107	43.2	29
Malawi	33.5	72	54.6	38	24.3	96	21.6	114
Serbia	33.3	73	38.2	68	22.9	102	39.0	43
Lithuania	33.3	74	51.6	41	28.1	82	20.2	116
Kyrgyzstan	32.7	75	34.0	81	36.1	45	28.0	86
Greece	32.3	76	39.0	66	30.4	72	27.7	89
Jordan	32.3	77	24.0	105	38.4	38	34.4	61
Bahrain	32.2	78	37.8	71	34.6	53	24.2	107
Mongolia	32.2	79	36.9	74	24.5	95	35.2	59
Azerbaijan	31.7	80	22.7	108	32.2	65	40.1	39
Rwanda	31.2	81	28.5	91	34.8	51	30.4	77
Ethiopia	31.1	82	31.2	84	38.5	37	23.7	109
Mauritius	31.0	83	26.8	94	33.9	58	32.4	69
India	30.8	84	24.4	104	34.8	52	33.2	65
Bolivia	30.7	85	36.7	75	28.2	81	27.4	91
Egypt	30.7	86	39.3	64	25.8	90	26.9	95
Armenia	30.3	87	38.4	67	19.9	111	32.7	67
Uruguay	30.1	88	29.7	89	32.6	63	28.0	85
Mexico	29.9	89	37.4	72	26.1	88	26.1	96
Turkey	29.4	90	41.1	61	21.8	106	25.1	103
Sri Lanka	29.3	91	30.9	86	34.6	54	22.4	111
Botswana	29.2	92	32.2	83	22.0	105	33.3	64
Paraguay	28.6	93	30.6	87	27.2	86	28.0	87
Indonesia	28.2	94	7.0	124	40.8	36	36.7	51
Macedonia	27.9	95	25.7	100	22.3	103	35.7	54
Brunei Darussalam	27.4	96	27.8	93	29.2	78	25.4	102
Moldova, Rep.	27.3	97	39.0	65	14.6	121	28.1	83
Tunisia	26.9	98	16.7	119	36.6	42	27.4	90
Nicaragua	26.7	99	27.9	92	19.4	113	32.8	66
Guatemala	26.6	100	19.9	113	35.6	47	24.5	105
Nigeria	26.6	101	26.2	97	23.3	100	30.3	78
Honduras	26.5	102	28.6	90	21.7	108	29.3	80
Georgia	26.4	103	26.6	96	23.7	99	28.9	82
Cameroon	26.4	104	26.0	99	16.5	118	36.6	52
Yemen	25.9	105	30.0	88	n/a	n/a	21.8	113
Benin	25.7	106	34.6	78	18.2	115	24.4	106
Algeria	25.1	107	25.1	102	18.8	114	31.5	75
El Salvador	24.9	108	31.1	85	20.9	110	22.8	110
Pakistan	24.7	109	18.8	115	29.7	76	25.5	100
Morocco	24.1	110	20.1	111	21.7	109	30.4	76
Uganda	23.9	111	16.8	118	29.9	74	24.9	104
Zambia	23.8	112	16.9	117	28.9	79	25.4	101
Burkina Faso	23.5	113	25.1	101	28.8	80	16.6	122
Iran	23.5	114	21.3	110	29.2	77	19.8	117
Kuwait	23.1	115	23.2	107	27.5	85	18.5	120
Madagascar	22.4	116	13.9	122	19.7	112	33.7	62
Mali	22.4	117	22.2	109	26.1	89	18.8	119
Syrian Arab Republic	21.7	118	34.5	79	14.8	120	15.8	123
Zimbabwe	21.6	119	n/a	n/a	17.7	116	25.6	98
Tanzania	21.4	120	20.0	112	24.9	94	19.4	118
Bangladesh	19.9	121	12.3	123	30.6	71	16.9	121
Tajikistan	19.9	122	14.4	121	15.6	119	29.6	79
Albania	19.6	123	19.0	114	14.5	122	25.5	99
Senegal	19.4	124	14.5	120	23.1	101	20.6	115
Côte d'Ivoire	19.3	125	18.0	116	14.0	123	25.9	97

Table 5f: Scientific outputs pillar

Country/Economy	SCIENTIFIC OUTPUTS		Knowledge creation		Knowledge impact		Knowledge diffusion	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Sweden	62.1	1	75.1	3	39.3	29	71.9	4
Switzerland	62.0	2	73.4	4	50.8	12	61.9	10
Finland	58.5	3	70.9	5	35.6	40	69.1	5
Israel	57.5	4	77.4	2	33.1	58	62.0	8
United States of America	57.4	5	60.4	9	52.5	11	59.4	12
Netherlands	53.8	6	55.4	11	39.7	28	66.4	6
Korea, Rep.	53.7	7	80.8	1	26.5	78	53.6	17
Iceland	53.2	8	49.8	13	72.5	2	37.2	38
China	52.7	9	54.2	12	55.1	9	48.6	21
United Kingdom	52.3	10	45.0	14	55.3	8	56.6	15
Ireland	51.2	11	33.7	25	37.7	33	82.2	1
Qatar	50.6	12	1.2	114	100.0	1	n/a	n/a
Japan	49.8	13	69.4	6	21.5	95	58.5	14
Germany	49.8	14	69.2	7	26.6	77	53.6	18
Singapore	48.9	15	32.0	31	36.8	35	78.0	2
New Zealand	47.6	16	64.6	8	54.7	10	23.5	77
Denmark	46.3	17	58.3	10	35.7	38	44.8	25
Hungary	45.5	18	22.4	37	50.3	13	63.9	7
Cyprus	43.7	19	14.9	51	69.7	3	46.3	24
Luxembourg	43.2	20	33.7	24	34.1	52	61.9	9
Canada	42.5	21	38.2	19	46.2	14	43.0	28
France	41.1	22	36.8	21	32.1	63	54.5	16
Kuwait	38.1	23	5.1	76	34.3	50	75.0	3
Hong Kong (SAR), China	38.1	24	5.1	77	57.5	4	51.7	20
Estonia	38.1	25	33.5	26	40.9	22	39.9	32
Norway	37.4	26	38.1	20	35.1	45	39.1	35
Belgium	37.0	27	33.4	28	37.2	34	40.5	30
Moldova, Rep.	36.8	28	43.4	15	40.0	25	27.0	62
Czech Republic	36.2	29	25.5	33	46.1	16	37.0	39
Austria	35.4	30	40.8	16	26.6	76	39.0	36
Guyana	34.3	31	7.9	65	n/a	n/a	60.7	11
Slovenia	33.9	32	38.9	17	34.9	47	27.9	60
Australia	33.1	33	34.3	23	39.8	27	25.3	70
Russian Federation	32.9	34	33.4	27	34.5	49	30.7	49
Lebanon	31.0	35	15.1	49	n/a	n/a	46.9	22
Romania	30.7	36	11.7	56	40.1	24	40.4	31
Georgia	30.6	37	32.9	29	36.5	36	22.3	84
Malaysia	30.4	38	8.8	63	30.4	65	52.1	19
Paraguay	30.0	39	1.0	118	n/a	n/a	59.0	13
Ukraine	29.9	40	34.9	22	24.5	84	30.2	52
Armenia	29.7	41	24.7	34	38.6	30	25.8	67
Spain	29.4	42	24.0	35	34.6	48	29.6	55
Costa Rica	28.4	43	3.2	95	40.0	26	42.1	29
Bangladesh	28.2	44	2.3	105	35.8	37	46.6	23
Iran	28.2	45	32.1	30	26.9	74	25.5	68
Italy	27.8	46	27.7	32	23.8	87	31.9	47
Tajikistan	27.7	47	13.8	53	34.2	51	35.1	43
Mongolia	27.4	48	38.7	18	n/a	n/a	16.0	119
Mauritius	27.2	49	2.0	108	57.1	5	22.7	82
Bulgaria	27.2	50	14.9	52	44.4	17	22.4	83
Slovak Republic	26.5	51	13.6	54	38.2	31	27.9	61
Macedonia	26.3	52	7.4	66	42.6	20	29.1	57
Kyrgyzstan	26.1	53	21.7	39	32.6	60	23.8	76
Bahrain	25.6	54	2.9	98	55.3	7	18.5	109
Tanzania	25.5	55	3.5	88	55.8	6	17.3	114
Viet Nam	25.3	56	2.9	97	40.2	23	32.9	46
Croatia	25.2	57	20.9	40	30.3	66	24.4	74
Brazil	25.2	58	11.4	58	30.5	64	33.6	45
Portugal	24.8	59	16.0	47	32.7	59	25.9	66
India	24.8	60	10.4	62	24.2	85	39.9	33
Ghana	24.6	61	4.9	80	29.6	68	39.3	34
Azerbaijan	24.4	62	6.2	71	41.9	21	25.1	72
Sudan	24.2	63	0.4	124	46.2	15	26.1	64



Table 5f: Scientific outputs pillar (continued)

Country/Economy	SCIENTIFIC OUTPUTS		Knowledge creation		Knowledge impact		Knowledge diffusion	
	Score (0–100)	Rank	Score	Rank	Score	Rank	Score	Rank
Thailand	23.9	64	8.6	64	27.0	73	36.2	40
Serbia	23.7	65	20.1	41	15.1	109	35.9	41
Poland	23.7	66	18.6	43	23.3	91	29.1	56
Argentina	23.5	67	18.3	44	21.6	93	30.7	50
Latvia	23.3	68	22.3	38	24.1	86	23.4	79
Côte d'Ivoire	22.9	69	1.7	113	35.5	41	31.6	48
Trinidad and Tobago	22.7	70	1.9	110	44.2	18	22.0	87
Cameroon	22.5	71	5.8	74	28.1	71	33.6	44
Mali	22.5	72	1.9	109	43.8	19	21.6	89
Venezuela	22.4	73	2.4	102	29.1	69	35.8	42
Oman	22.3	74	3.3	93	35.1	46	28.7	58
Swaziland	22.3	75	1.0	119	n/a	n/a	43.6	27
Philippines	22.3	76	3.3	92	19.6	102	43.8	26
Jordan	22.1	77	22.4	36	21.1	98	22.9	81
Lithuania	21.8	78	11.3	60	33.5	54	20.7	95
South Africa	21.5	79	13.2	55	32.5	62	18.9	105
Uruguay	21.5	80	10.7	61	35.2	44	18.7	107
Kazakhstan	21.4	81	15.5	48	27.7	72	20.9	93
Sri Lanka	20.9	82	6.1	72	26.8	75	29.8	54
Greece	20.6	83	17.6	46	24.5	83	19.6	100
Syrian Arab Republic	20.5	84	4.2	83	37.9	32	19.5	102
Chile	20.4	85	11.6	57	25.6	81	23.9	75
Tunisia	19.5	86	11.3	59	23.7	89	23.5	78
Morocco	19.5	87	5.8	73	25.6	82	27.0	63
Brunei Darussalam	19.3	88	1.0	117	n/a	n/a	37.6	37
Ethiopia	19.1	89	4.8	81	33.8	53	18.7	106
Turkey	18.9	90	17.9	45	17.7	106	21.0	92
Ecuador	18.5	91	1.8	112	33.3	57	20.4	96
Uganda	18.5	92	5.1	79	33.3	56	17.1	116
Saudi Arabia	18.3	93	2.1	106	35.2	43	17.5	113
Indonesia	18.3	94	1.0	116	23.2	92	30.5	51
Yemen	18.2	95	1.0	120	33.4	55	20.2	97
Albania	18.0	96	0.9	121	35.3	42	17.8	112
Niger	17.6	97	3.4	90	30.0	67	19.4	103
Pakistan	17.5	98	3.7	85	23.4	90	25.5	69
Zambia	17.4	99	3.3	91	29.0	70	19.7	99
Egypt	17.2	100	7.1	67	23.7	88	20.8	94
Botswana	16.9	101	3.6	86	n/a	n/a	30.1	53
Mexico	16.7	102	3.9	84	18.0	105	28.2	59
Bosnia & Herzegovina	16.7	103	6.7	69	18.4	104	24.9	73
Senegal	16.0	104	4.6	82	17.3	107	26.0	65
Kenya	15.8	105	5.3	75	20.1	100	22.1	86
Madagascar	15.7	106	2.5	100	21.5	94	23.1	80
El Salvador	15.6	107	n/a	n/a	9.2	112	21.9	88
Benin	15.1	108	5.1	78	n/a	n/a	25.2	71
Cambodia	15.1	109	2.5	101	26.5	79	16.2	118
Peru	14.5	110	1.1	115	26.0	80	16.3	117
Burkina Faso	14.3	111	2.5	99	21.4	96	19.1	104
Guatemala	14.2	112	0.7	123	19.9	101	22.1	85
Namibia	14.1	113	14.9	50	n/a	n/a	13.4	120
Colombia	14.1	114	2.3	104	18.6	103	21.4	90
Bolivia	14.1	115	3.5	87	20.8	99	18.1	111
Nigeria	13.4	116	2.0	107	21.1	97	17.1	115
Malawi	13.2	117	6.7	68	32.5	61	0.3	123
Jamaica	12.8	118	6.3	70	13.6	110	18.4	110
United Arab Emirates	12.6	119	1.8	111	35.7	39	0.3	122
Nicaragua	11.4	120	3.3	94	n/a	n/a	19.6	101
Honduras	11.2	121	0.8	122	11.5	111	21.4	91
Rwanda	8.7	122	3.4	89	4.0	113	18.6	108
Panama	8.4	123	3.1	96	2.4	114	19.8	98
Zimbabwe	6.6	124	19.0	42	0.0	115	0.9	121
Algeria	6.1	125	2.3	103	15.9	108	0.0	124

Table 5g: Creative outputs pillar

Country/Economy	CREATIVE OUTPUTS		Creative intangibles		Creative goods and services	
	Score (0–100)	Rank	Score	Rank	Score	Rank
Hong Kong (SAR), China	57.6	1	54.8	27	60.4	1
Sweden	56.7	2	59.3	14	54.1	4
Switzerland	54.4	3	63.5	9	45.3	11
Canada	54.0	4	54.2	29	53.9	5
Denmark	52.4	5	50.7	43	54.1	3
Germany	51.7	6	56.1	23	47.2	8
Norway	50.6	7	50.9	40	50.4	6
Netherlands	50.6	8	46.7	55	54.5	2
Austria	49.0	9	58.0	16	40.0	15
Jordan	48.9	10	70.1	4	27.7	47
Estonia	48.9	11	55.2	25	42.6	13
Brazil	46.9	12	56.2	22	37.5	20
Czech Republic	46.8	13	47.1	54	46.5	10
United Arab Emirates	46.6	14	71.5	3	21.7	58
New Zealand	45.6	15	60.1	13	31.1	35
Hungary	44.9	16	43.2	71	46.5	9
France	44.7	17	58.0	17	31.4	34
United Kingdom	44.3	18	49.2	48	39.4	16
Portugal	44.1	19	54.5	28	33.7	25
Slovenia	43.8	20	51.4	36	36.2	23
Nigeria	43.8	21	57.2	19	30.3	37
Argentina	43.4	22	57.8	18	29.0	42
Serbia	43.4	23	36.5	96	50.2	7
United States of America	43.2	24	48.0	51	38.3	18
Iceland	42.3	25	56.9	21	27.7	48
Belgium	42.3	26	40.6	83	44.0	12
Korea, Rep.	42.2	27	58.7	15	25.6	51
Finland	42.1	28	50.7	44	33.4	26
Turkey	41.6	29	50.7	42	32.5	29
Singapore	41.4	30	50.4	45	32.4	30
Viet Nam	41.3	31	46.0	59	36.7	21
Moldova, Rep.	41.1	32	55.4	24	26.7	49
Latvia	41.0	33	49.1	49	32.9	27
Spain	41.0	34	44.3	67	37.7	19
China	40.9	35	53.7	30	28.1	45
Australia	40.6	36	51.1	37	30.2	38
Israel	40.4	37	51.8	34	28.9	43
India	40.3	38	51.0	38	29.6	39
Thailand	39.9	39	50.7	41	29.1	41
Malaysia	39.9	40	55.2	26	24.7	54
Tunisia	39.6	41	71.7	2	7.6	93
Luxembourg	39.5	42	42.8	72	36.2	22
Italy	39.2	43	39.6	86	38.8	17
Chile	38.8	44	65.9	8	11.8	80
Costa Rica	38.8	45	69.5	5	8.0	92
Bulgaria	38.1	46	51.8	35	24.3	55
Colombia	37.7	47	49.8	47	25.6	52
Cyprus	37.4	48	42.7	73	32.1	31
Lithuania	37.2	49	48.0	52	26.4	50
Qatar	36.9	50	73.6	1	0.3	123
Croatia	36.7	51	40.9	79	32.6	28
Guatemala	36.7	52	63.3	10	10.2	87
Pakistan	36.3	53	41.0	78	31.7	33
Poland	35.8	54	36.3	97	35.3	24
Uruguay	35.8	55	66.6	7	5.0	105
Lebanon	35.7	56	42.1	76	29.2	40
Saudi Arabia	35.6	57	68.8	6	2.4	115
Ireland	34.2	58	40.1	84	28.2	44
Sri Lanka	34.1	59	47.7	53	20.5	60
Zimbabwe	33.9	60	25.7	117	42.1	14
Honduras	33.8	61	57.1	20	10.5	84
Panama	33.2	62	61.4	12	5.1	104
Slovak Republic	33.1	63	38.2	91	28.0	46

Table 5g: Creative outputs pillar (continued)

Country/Economy	CREATIVE OUTPUTS		Creative intangibles		Creative goods and services	
	Score (0–100)	Rank	Score	Rank	Score	Rank
Romania	33.0	64	35.4	102	30.6	36
Japan	32.8	65	42.3	74	23.3	57
Senegal	32.8	66	61.6	11	4.0	109
El Salvador	31.8	67	52.0	33	11.6	81
Ecuador	31.4	68	44.3	66	18.4	63
Greece	31.2	69	30.5	111	31.9	32
Ukraine	31.0	70	40.6	82	21.4	59
Mexico	30.1	71	44.2	68	16.0	66
Egypt	29.5	72	43.9	69	15.1	69
Nicaragua	29.4	73	46.3	56	12.6	79
Mauritius	29.1	74	39.1	89	19.0	62
Russian Federation	28.9	75	33.0	107	24.9	53
Peru	28.8	76	53.2	31	4.4	106
Venezuela	28.3	77	40.7	80	15.8	68
Armenia	28.1	78	39.5	87	16.7	65
Guyana	27.6	79	45.5	60	9.6	88
Uganda	27.3	80	50.2	46	4.3	108
Albania	27.3	81	34.6	105	19.9	61
Oman	27.2	82	52.2	32	2.2	117
Bolivia	26.9	83	40.7	81	13.1	77
Macedonia	26.8	84	39.7	85	13.9	72
South Africa	26.6	85	45.1	62	8.2	91
Côte d'Ivoire	26.6	86	50.9	39	2.3	116
Brunei Darussalam	26.0	87	36.0	98	16.0	67
Paraguay	25.8	88	44.4	65	7.2	94
Indonesia	25.7	89	48.6	50	2.8	111
Philippines	25.7	90	41.1	77	10.2	86
Ghana	25.6	91	42.2	75	9.0	89
Rwanda	25.3	92	44.7	63	5.9	98
Cameroon	25.1	93	44.7	64	5.5	100
Malawi	25.0	94	39.5	88	10.6	82
Jamaica	24.9	95	43.3	70	6.6	96
Bangladesh	24.7	96	35.8	99	13.6	73
Botswana	24.4	97	35.7	100	13.2	76
Cambodia	24.3	98	34.9	104	13.6	74
Trinidad and Tobago	24.3	99	38.1	93	10.4	85
Iran	23.6	100	32.6	109	14.7	71
Benin	23.6	101	46.3	57	0.9	121
Madagascar	23.6	102	29.9	113	17.2	64
Kuwait	23.5	103	46.2	58	0.9	120
Kyrgyzstan	23.3	104	22.4	121	24.1	56
Mali	23.2	105	45.1	61	1.4	118
Namibia	22.8	106	38.4	90	7.2	95
Bosnia & Herzegovina	22.5	107	30.3	112	14.7	70
Kenya	22.3	108	38.1	92	6.5	97
Morocco	22.1	109	35.7	101	8.6	90
Mongolia	21.6	110	38.0	94	5.2	101
Tanzania	21.1	111	29.3	115	12.8	78
Bahrain	20.2	112	37.8	95	2.6	113
Kazakhstan	20.2	113	29.8	114	10.5	83
Georgia	19.8	114	34.0	106	5.7	99
Burkina Faso	19.7	115	35.2	103	4.3	107
Syrian Arab Republic	18.7	116	24.2	119	13.2	75
Azerbaijan	17.9	117	33.0	108	2.7	112
Zambia	16.1	118	31.2	110	0.9	119
Tajikistan	15.0	119	27.0	116	3.0	110
Swaziland	13.9	120	22.7	120	5.2	102
Ethiopia	13.8	121	25.2	118	2.4	114
Yemen	10.7	122	20.8	122	0.6	122
Algeria	9.0	123	18.0	123	0.0	125
Niger	5.2	124	n/a	n/a	5.2	103
Sudan	5.1	125	9.9	124	0.2	124

are Sweden, Switzerland, the Netherlands, Germany, the US, Finland, Denmark, Israel, the UK, and Canada. The Output Sub-Index, like the overall GII, is dominated by Europe (seven countries), and includes two North American countries and Israel, which has a remarkable showing (8th on Output, 14th on the GII, and 1st at the regional level). The best-ranked economies within each region are Sweden (1st), the US (5th), Israel (8th), the Republic of Korea (11th), Brazil (32nd), India (44th), and Nigeria (62nd).

The **Netherlands** comes in 3rd on the Output Sub-Index, a performance driven by marks within the top 10 in international Patent Cooperation Treaty applications by residents, scientific and technical journal articles, total computer software spending, royalty and license fees' receipts, daily newspapers' circulation, and creative services exports. This excellent result allows it to be ranked 9th in the overall GII, despite its 16th place on the Input side.

**Germany's** position is interesting because it has an excellent performance on the Output Sub-Index (4th), but this does not compensate for its relative weaknesses on the Input side (21st). For the second consecutive year, Germany is not among the top 10 on the GII (12th). While its biggest strengths are in resident patent applications both at the national patent office and at the Patent Cooperation Treaty (ranked 4th and 9th, respectively), its score is due to a good balance, as it is well-positioned in practically all indicators included in pillars 6 (14th) and 7 (6th).

The **United States of America (US)** comes in at position 7 in the GII 2011, moving up from 11th position

last year. The US's high position is very commendable when one considers that it is the only large country (in both size and population) in the top 10. The US has a high ranking among all Input pillars (11th) and an even higher ranking among all Output pillars (5th), benefiting from a high level of Innovation Efficiency (9th among high-income countries). The strongest pillars for the US include those of Market sophistication (4th) and Scientific outputs (5th). However, its performance across most of the other pillars is uniformly high (Institutions at position 15, Human capital and research at 13, Infrastructure at 14, Business sophistication at 15, and Creative outputs at 24). The US does have several weaknesses—such as a low number of graduates in engineering (ranking 73rd), a poor share of renewables in energy use (78th), and a deficit of 4.1 ha per capita on ecological footprint and biocapacity (108th). But it also has several key strengths, such as a very low rigidity of employment (1st, or least rigid worldwide), high tertiary enrolment (5th at 82.9%), a share of 2.8% of GDP spent on R&D (7th), the good quality of its scientific research institutions (4th), well-developed government online services (2nd), and positive credit and investment environments (ranked 3rd and 4th, respectively). Although measured through qualitative surveys, the US also is very robust in new innovation metrics such as ICT and new business model creation (ranking 9th) and ICT and organizational models creation (2nd).

#### Top performers by income group

By income group, the top-ranked countries in the Innovation Output Sub-Index are Sweden (1st), Brazil

(32nd), China (14th), and Bangladesh (69th). In position 14, China again is the only non-high-income country in the top 30. Moldova, Brazil, Jordan, Malaysia, Costa Rica, Serbia, and Argentina all achieve rankings among the top 40. High-income countries with weak performances on the Output dimension are Saudi Arabia (66th), Greece (72nd), Oman (78th), Trinidad and Tobago (87th), Bahrain (92nd), and Brunei Darussalam (94th), all of them in the lower half of the rankings.

**Brazil** achieves a remarkable 32nd position on the Output Sub-Index, topping the Output rankings among middle-income countries. With a poor 68th position on the Input side bringing it down, it still achieves 47th place on the overall GII. Brazil's strengths on the Output side come from a good overall balance. The country attains positions within the top 30 on utility model and trademark applications by residents at the national office (24th and 23rd, respectively), growth rate of labour productivity (26th at 3.9%), computer and communications service exports (15th at 57% of total commercial service exports), and creative service exports (2nd at 20.9%), as well as on the use of ICT on business and organizational models (two survey questions, ranked 23rd and 25th). These results are commendable in the face of Brazil's weaknesses on the Input side (68th), where several indicators are nevertheless within the top 30: gross expenditure on R&D (30th at 1.1% of GDP); share of renewables in energy use (24th with 44.5%); ecological footprint and biocapacity (7th with a reserve of 6.1 ha per capita), depth of credit information (25th), market capitalization (23rd), total value of stock

traded (27th), firms offering formal training (13th, with 52.9%), and the state of cluster development (30th, a survey question). Brazil is also taking important steps towards technological catch-up and knowledge absorption, particularly in the areas of high-tech imports (15th at 15.7% of total imports) and computer and communications service imports (16th, at 49.4% of total commercial service imports).

**Bangladesh**, a low-income country with a GDP per capita of 1,416 in purchasing power parity (PPP) dollars, tops the Output rankings among low-income countries, reaching position 69. The country's stronger points on the Output side are its growth rate of labour productivity (29th at 3.8%) and the 71.8% share of computer and communications service exports of total commercial service exports (2nd globally). Bangladesh is yet another case of a country achieving more with less. In effect, its positions on the Input pillars are rather weak, particularly on Business sophistication (121st), Human capital and research (114th), Institutions (105th), and Market sophistication (102nd). Its relatively better ranking on Infrastructure (76th) is leveraged by its positions within the top 40 on efficiency in energy use (where it ranks 4th, at 31.6% of GDP), its share of renewables in energy use (34th), its gross capital formation (38th at 24.4% of GDP), and its ecological footprint and biocapacity (39th, although with a deficit of 0.2 ha per capita).

### The Innovation Input Sub-Index

The Innovation Input Sub-Index variables provide information on indicators that measure elements

that must be in place to foster innovation in an economy.

### Top 10

The top 10 economies on the Innovation Input Sub-Index are Singapore, Hong Kong (SAR, China), Switzerland, Ireland, Sweden, Finland, Denmark, Canada, Luxembourg, and the UK. Regional leaders are Singapore (1st), Switzerland (3rd), Canada (8th), Israel (20th), Chile (36th), South Africa (40th), and India (87th).

**Hong Kong (SAR, China)** is ranked 4th overall and is the runner-up after another Asian economy, Singapore (discussed above), on the Input Sub-Index. Hong Kong (SAR, China) has an interesting profile, as it has positions within the top 5 in all pillars except the two that are traditionally linked to innovation: Human capital and research (30th) and Scientific outputs (24th). These two relatively low rankings mean that it reaches only 27th place on Efficiency among high-income countries (66th overall).

The result for **Ireland** is driven by its excellent marks in Institutions and Market and Business sophistication (ranked 6th, 6th, and 3rd, respectively). Although Ireland presents a good environment and potential for innovation, it lags behind on the Output Sub-Index where it ranks 22nd, attaining positions 13 on the overall GII, and 32 on the Efficiency Index.

**Finland** comes next, placing 6th on Input, 6th on Output, 5th on the GII, and 35th on Efficiency (12th on the latter among high-income countries). Finland comes in 1st on three indicators: freedom of the press, rule of law; and exports of computer and communications services. Finland is also

ranked among the top 10 on five pillars: Institutions, Human capital and research, Infrastructure, Business sophistication, and Scientific outputs; the country's relative weaknesses are on the Market sophistication and Creative outputs pillars.

### Top performers by income group

By income group, in descending order of income, the best performers present no surprises. With the exception of Singapore (1st), they are the same countries leading in the overall GII rankings by income group: Malaysia (27th), China (43rd), and Ghana (65th). Among non-high-income countries, Malaysia is the only country in the top 30, followed by Chile, Lithuania, and South Africa in the top 40. Brunei Darussalam, ranked 70th, is the only high-income country in the lower half of the rankings.

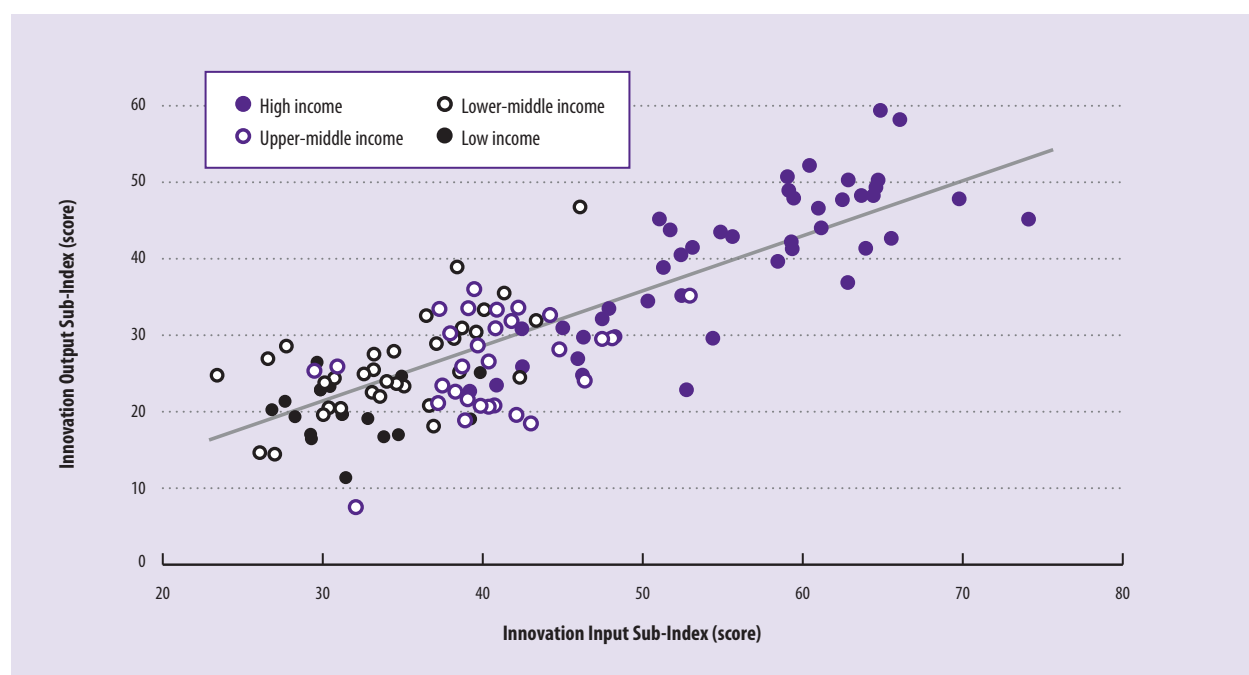
Although scores on the Input and Output Sub-Indices might differ by substantial amounts leading to important shifts in rankings from one Sub-Index to the other for particular countries, there is a positive relationship between the two, as shown by Figure 2. The data seem to confirm that efforts made on enabling environments are rewarded with increased innovation outputs.

### 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-Indices. Although this index is designed to be neutral to the countries' stages of development, as

**Table 6: Innovation Efficiency Index rankings: Top 10**

Rank	Country/Economy	Efficiency Rank	Input Rank	Output Rank	Income	Income Rank	Region	Regional Rank	Population (US\$ millions)	GDP per capita (current PPP\$)
1	Côte d'Ivoire	1.06	125	79	LM	1	SSF	1	21.6	1,701.2
2	Nigeria	1.03	119	62	LM	2	SSF	2	158.3	2,203.3
3	China	1.02	43	14	LM	3	EAS	1	1,354.1	6,828.0
4	Pakistan	1.01	123	67	LM	4	SAS	1	184.8	2,608.6
5	Moldova, Rep.	1.01	77	29	LM	5	ECS	1	3.6	2,854.3
6	Sweden	0.92	5	1	HI	1	ECS	2	9.3	37,904.6
7	Brazil	0.91	68	32	UM	1	LCN	1	195.4	10,412.1
8	Argentina	0.90	82	40	UM	2	LCN	2	40.7	14,538.3
9	India	0.89	87	44	LM	6	SAS	2	1,214.5	3,270.1
10	Bangladesh	0.89	114	69	LI	1	SAS	3	164.4	1,416.3

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

Note: Countries/economies are classified according to the World Bank Income Group Classification (January 2011).

shown by the discussion of the top performers below, valuable insights can be obtained from an analysis among countries with similar levels of development. Table 6 provides Innovation Efficiency Index rankings for the top 10; Tables 7a through 7d give the scores per income group,

together with the Input, Output, and Efficiency rankings. To facilitate comparisons, these tables also include the difference between the Input and Output rankings, as well as the population and GDP per capita of each country/economy.

### Top 10

The top 10 countries in the Innovation Efficiency Index are Côte d'Ivoire, Nigeria, China, Pakistan, Moldova, Sweden, Brazil, Argentina, India, and Bangladesh. This list includes some of the most

Table 7a: Innovation Efficiency Index rankings (high-income countries/economies)

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Population (US\$ millions)	GDP per capita (current PPP\$)	
1	Sweden	0.92	6	5	1	4	9.3	37,904.6	██████████
2	Hungary	0.89	11	33	16	17	10.0	19,764.3	██████████
3	Switzerland	0.88	12	3	2	1	7.6	45,116.9	██████████
4	Netherlands	0.86	13	16	3	13	16.7	40,714.7	██████████
5	Germany	0.86	15	21	4	17	82.1	36,267.4	██████████
6	Qatar	0.85	18	31	19	12	1.5	91,378.7	██████████
7	Israel	0.83	22	20	8	12	7.3	27,759.2	██████████
8	Korea, Rep.	0.81	25	17	11	6	48.5	27,168.5	██████████
9	United States of America	0.80	26	11	5	6	317.6	45,989.2	██████████
10	Estonia	0.79	31	24	20	4	1.3	19,451.4	██████████
11	Czech Republic	0.78	33	26	24	2	10.4	25,232.0	██████████
12	Finland	0.78	35	6	6	0	5.3	34,719.7	██████████
13	Cyprus	0.77	37	30	27	3	0.9	30,223.4	██████████
14	France	0.77	39	23	21	2	62.6	33,655.5	██████████
15	New Zealand	0.76	46	15	15	0	4.3	29,072.2	██████████
16	Denmark	0.76	47	7	7	0	5.5	36,761.7	██████████
17	Iceland	0.76	48	13	13	0	0.3	37,595.1	██████████
18	United Kingdom	0.76	50	10	9	1	61.9	36,495.8	██████████
19	Slovenia	0.76	51	32	30	2	2.0	27,004.4	██████████
20	Canada	0.75	54	8	10	-2	33.9	37,945.6	██████████
21	Kuwait	0.73	57	51	51	0	3.1	48,631.3	██████████
22	Norway	0.72	59	14	18	-4	4.9	55,672.1	██████████
23	Austria	0.71	60	19	23	-4	8.4	38,363.1	██████████
24	Italy	0.70	63	37	39	-2	60.1	31,908.6	██████████
25	Japan	0.70	64	18	26	-8	127.0	32,452.8	██████████
26	Croatia	0.69	65	45	48	-3	4.4	19,805.4	██████████
27	Hong Kong (SAR), China	0.69	66	2	12	-10	7.1	44,303.8	██████████
28	Portugal	0.69	67	34	36	-2	10.7	24,569.4	██████████
29	Belgium	0.68	71	22	28	-6	10.7	36,249.0	██████████
30	Latvia	0.68	72	38	45	-7	2.2	15,412.8	██████████
31	Spain	0.67	74	29	34	-5	45.3	32,544.8	██████████
32	Ireland	0.65	83	4	22	-18	4.6	41,278.2	██████████
33	Luxembourg	0.65	84	9	25	-16	0.5	83,758.8	██████████
34	Poland	0.64	85	41	55	-14	38.0	19,058.7	██████████
35	Slovak Republic	0.62	92	35	54	-19	5.4	22,356.3	██████████
36	Singapore	0.61	94	1	17	-16	4.8	50,632.8	██████████
37	Greece	0.61	95	50	72	-22	11.2	29,663.4	██████████
38	Australia	0.59	97	12	31	-19	21.5	39,230.7	██████████
39	Saudi Arabia	0.59	98	44	66	-22	26.2	23,395.4	██████████
40	Brunei Darussalam	0.58	101	70	94	-24	0.4	51,204.6	██████████
41	Trinidad and Tobago	0.57	103	58	87	-29	1.3	25,571.7	██████████
42	United Arab Emirates	0.54	109	25	56	-31	4.7	57,743.7	██████████
43	Oman	0.54	110	42	78	-36	2.9	25,462.1	██████████
44	Bahrain	0.43	122	28	92	-64	0.8	35,174.1	██████████

densely inhabited countries in the world: China, India, Brazil, Bangladesh, and Nigeria are all among the 10 most populous countries in this year's sample, and place 1st on Efficiency in their regions (except for Bangladesh).

Three BRIC countries (Brazil, India, and China) are in this select

list, with the fourth, the Russian Federation, coming in only at 52nd place. By region, the best performers are Côte d'Ivoire (1st), China (3rd), Pakistan (4th), Moldova (5th), Brazil (7th), Jordan (16th), and the US (26th). By income group, in descending order of income, leaders are Sweden (6th), Brazil (7th),

Côte d'Ivoire (1st), and Bangladesh (10th).

Although **Côte d'Ivoire** tops the Efficiency rankings, its overall performance is poor. The country is ranked a low 117th on the overall GII and last on the Input Sub-Index, coming in among the bottom 25 on all five Input pillars.

**Table 7b: Innovation Efficiency Index rankings (upper-middle-income countries/economies)**

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Population (US\$ millions)	GDP per capita (current PPP\$)	
1	Brazil	0.91	7	68	32	36	195.4	10,412.1	
2	Argentina	0.90	8	82	40	42	40.7	14,538.3	
3	Venezuela	0.86	14	115	74	41	29.0	12,322.9	
4	Serbia	0.86	17	71	38	33	9.9	11,719.2	
5	Iran	0.84	19	106	71	35	75.1	11,558.4	
6	Lebanon	0.82	23	57	41	16	4.3	13,069.7	
7	Turkey	0.80	28	80	53	27	75.7	13,885.0	
8	Costa Rica	0.80	29	53	37	16	4.6	11,105.7	
9	Romania	0.76	49	55	47	8	21.2	14,278.0	
10	Russian Federation	0.76	52	59	50	9	140.4	18,962.6	
11	Bulgaria	0.74	55	47	43	4	7.5	13,332.7	
12	Uruguay	0.72	58	66	61	5	3.4	13,189.1	
13	Colombia	0.67	75	74	70	4	46.3	8,959.2	
14	Malaysia	0.66	77	27	35	-8	27.9	14,012.0	
15	Macedonia	0.66	78	61	68	-7	2.0	10,822.7	
16	Mauritius	0.63	89	46	63	-17	1.3	12,838.4	
17	Mexico	0.62	90	81	88	-7	110.6	14,335.1	
18	Lithuania	0.62	91	39	59	-20	3.3	16,747.1	
19	Chile	0.62	93	36	57	-21	17.1	14,330.7	
20	Albania	0.59	96	78	95	-17	3.2	8,373.0	
21	Azerbaijan	0.57	104	83	100	-17	8.9	9,638.2	
22	Peru	0.55	108	72	98	-26	29.5	8,629.5	
23	Kazakhstan	0.52	112	64	103	-39	15.8	11,509.9	
24	South Africa	0.52	113	40	83	-43	50.5	10,277.8	
25	Botswana	0.51	114	62	104	-42	2.0	13,384.5	
26	Panama	0.51	115	60	101	-41	3.5	13,057.1	
27	Jamaica	0.49	120	73	115	-42	2.7	7,632.6	
28	Bosnia & Herzegovina	0.47	121	54	111	-57	3.8	8,490.6	
29	Namibia	0.43	123	49	116	-67	2.2	6,410.1	
30	Algeria	0.23	125	101	125	-24	35.4	8,172.5	

With such feeble and fragile conditions, its top rank on Efficiency and its 79th position on the Output Sub-Index are praiseworthy indeed. On closer inspection, Côte d'Ivoire presents rather mixed results on the Output side. The main leverage on the Output score comes from some progress on two indicators marked by a year of global crisis: with a small growth in labour productivity of 0.1%, it achieves position 77; and with zero FDI net outflows, it is ranked 91st—a result that is possible because it is compared with countries with high levels of divestment, such as Belgium (-16.7%) and Bahrain (-8.7%), at the bottom of this indicator. The real strength of Côte d'Ivoire comes from the share

of 57.4% of its commercial service exports in computer, communications, and other services (ranked 13th globally). This is coherent with the relatively good scores assigned by the World Economic Forum survey on the use of ICT on business and organizational models, where it ranks 64th and 91th, respectively.

#### Top performers by income group

Among high-income economies, the Europe and Central Asia region dominates the top 5, while Middle Eastern and North African countries present mixed results: Qatar and Israel are ranked 6th and 7th, respectively, and Oman and Bahrain are at the bottom. Apart from the

Republic of Korea, ranked 8th, East Asian and Pacific countries have rather weak performances (New Zealand comes next at position 15). Twenty-four out of 44 high-income countries have lower rankings on Outputs than on Inputs.

Among upper-middle-income countries, some show a capacity to achieve more innovation outputs from less favourable conditions: Brazil, Argentina, Serbia, and Costa Rica make it to the top 40 on the Output Sub-Index, surmounting lower positions on the Input side. While other countries with excellent Input scores lag behind—Malaysia (position 27 on Input, and 35 on Output), Chile (36 and 57), Lithuania (39 and 59), and South



**Table 7c: Innovation Efficiency Index rankings (lower-middle-income countries/economies)**

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Population (US\$ millions)	GDP per capita (current PPP\$)	
1	Côte d'Ivoire	1.06	1	125	79	46	21.6	1,701.2	■
2	Nigeria	1.03	2	119	62	57	158.3	2,203.3	■
3	China	1.02	3	43	14	29	1,354.1	6,828.0	■
4	Pakistan	1.01	4	123	67	56	184.8	2,608.6	■
5	Moldova, Rep.	1.01	5	77	29	48	3.6	2,854.3	■
6	India	0.89	9	87	44	43	1,214.5	3,270.1	■
7	Jordan	0.86	16	56	33	23	6.5	5,597.0	■
8	Viet Nam	0.83	20	63	42	21	89.0	2,953.1	■
9	Sri Lanka	0.83	21	96	65	31	20.4	4,771.6	■
10	Paraguay	0.81	24	92	64	28	6.5	4,522.5	■
11	Guyana	0.80	27	75	49	26	0.8	3,088.2	■
12	Senegal	0.79	30	107	82	25	12.9	1,816.6	■
13	Cameroon	0.79	32	110	85	25	20.0	2,204.9	■
14	Armenia	0.78	34	84	60	24	3.1	5,278.9	■
15	Tunisia	0.77	36	79	58	21	10.4	8,272.5	■
16	Ukraine	0.77	40	67	52	15	45.4	6,317.8	■
17	Guatemala	0.77	41	97	73	24	14.4	4,719.5	■
18	Ecuador	0.77	44	100	77	23	13.8	8,267.7	■
19	Thailand	0.74	56	48	46	2	68.1	7,995.1	■
20	Philippines	0.70	62	93	84	9	93.6	3,541.7	■
21	El Salvador	0.68	69	91	86	5	6.2	6,629.3	■
22	Honduras	0.68	70	98	96	2	7.6	3,841.6	■
23	Bolivia	0.68	73	109	105	4	10.0	4,419.3	■
24	Egypt	0.67	76	88	89	-1	84.5	5,672.6	■
25	Nicaragua	0.66	79	105	106	-1	5.8	2,641.3	■
26	Indonesia	0.65	80	95	97	-2	232.5	4,198.8	■
27	Georgia	0.65	81	76	75	1	4.2	4,774.1	■
28	Syrian Arab Republic	0.65	82	111	110	1	22.5	4,730.0	■
29	Mongolia	0.58	102	52	81	-29	2.7	3,522.3	■
30	Morocco	0.57	105	86	102	-16	32.4	4,494.4	■
31	Sudan	0.56	107	124	122	2	43.2	2,209.7	■
32	Yemen	0.53	111	121	123	-2	24.3	2,469.6	■
33	Swaziland	0.49	117	85	117	-32	1.2	4,998.4	■

Africa (40 and 83)—all four countries in the top 40 on the Input Sub-Index have lower (worse) ranks on Output. In this income group, 17 countries out of 30 have lower rankings on Output than on Input.

The same analysis among lower-middle-income countries leads to encouraging results. Six of the top 10 countries in the Efficiency Index come from this income group: Côte d'Ivoire, Nigeria, China, Pakistan, and Moldova take the first five spots, and India comes in 9th. China, Moldova, and Jordan are among the top 40 on the Output Sub-Index (at positions 14, 29, and 33, respectively). Within this income group,

only 7 out of 33 countries have lower Output rankings than Input rankings, with the major differences found in Swaziland (which shows a drop of 32 positions from Input to Output scores), Mongolia (a difference of 29 positions), and Morocco (16 positions). The other four countries have their Input and Output ranks less than two positions apart.

Among low-income countries, Bangladesh takes the lead (and makes it to the top 10 on Efficiency for all countries combined), at positions 114 and 69 on the Input and Output Sub-Indices, respectively. Ten out of 18 countries within this income group have Output

scores lower than their Input scores, all of them Sub-Saharan African countries except for Cambodia (-5 positions). The bigger negative differences are found in Kenya (-45), Rwanda (-29), Zambia (-26), Niger (-22), Malawi (-14), and Ghana (-11).

Figure 3 plots the GII scores against the Innovation Efficiency Index scores. The relationship is positive, as expected, implying that more efficient countries achieve better GII scores. The figure also shows that efficiency is not related to the level of economic development of nations, and illustrates the relatively better performance

**Table 7d: Innovation Efficiency Index rankings (low-income countries/economies)**

Rank	Country/Economy	Efficiency Score	Efficiency Rank	Input Rank	Output Rank	Difference	Population (US\$ millions)	GDP per capita (current PPPS)	
1	Bangladesh	0.89	10	114	69	45	164.4	1,416.3	
2	Tajikistan	0.77	38	120	99	21	7.1	1,972.1	
3	Uganda	0.77	42	112	91	21	33.8	1,217.2	
4	Mali	0.77	43	113	93	20	13.3	1,185.5	
5	Tanzania	0.77	45	108	90	18	45.0	1,355.7	
6	Zimbabwe	0.76	53	122	107	15	12.6	500.0	
7	Kyrgyzstan	0.71	61	89	80	9	5.6	2,283.3	
8	Benin	0.68	68	118	112	6	9.2	1,507.9	
9	Ghana	0.63	86	65	76	-11	24.3	1,552.4	
10	Cambodia	0.63	87	103	108	-5	15.1	1,915.0	
11	Madagascar	0.63	88	104	109	-5	20.1	1,048.6	
12	Burkina Faso	0.58	99	117	118	-1	16.3	1,186.9	
13	Malawi	0.58	100	99	113	-14	15.7	858.2	
14	Ethiopia	0.56	106	116	121	-5	85.0	934.4	
15	Zambia	0.49	116	94	120	-26	13.3	1,428.6	
16	Rwanda	0.49	118	90	119	-29	10.3	1,069.7	
17	Kenya	0.49	119	69	114	-45	40.9	1,572.6	
18	Niger	0.36	124	102	124	-22	15.9	674.6	

of lower-middle-income countries, which are for the most part located in the bottom quadrant to the right.

### Regional rankings

The next section considers the rankings of countries by region. For reasons of space each country profile and region cannot be discussed in detail, but snapshots are provided for the main countries that lead in the rankings.

To put the discussion of rankings in perspective, Figure 4 presents in a bar graph average pillar scores by region. Regions are discussed following the sum of average scores, in descendent order. Regional trends are further discussed in the concluding remarks to this chapter.

#### North America

Only two North American countries are represented. The US, in

7th position, is discussed among the leaders of the Output Sub-Index.

**Canada** is in a commendable 8th position in the GII, 10th in Output and 8th in Input. It places among the top 10 on the Institutions, Infrastructure, Market and Business sophistication, and Creative outputs pillars. Canada also has lower, but still performing, positions on the sectors traditionally linked to innovation—Human capital and research (19th) and Scientific outputs (21st).

#### Europe and Central Asia

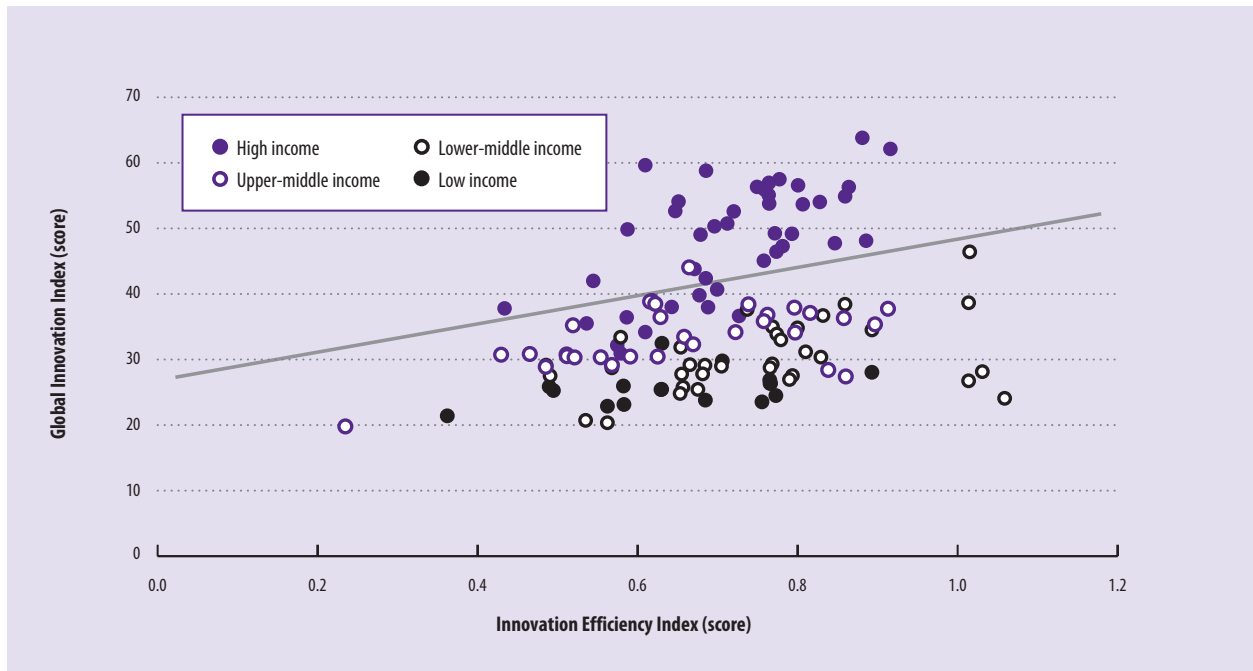
A total of 44 economies from Europe and Central Asia are represented in this year's GII report, 19 of which are within the top 30 and only one—Tajikistan—among the bottom 25. The top positions, not surprisingly, correspond to high-income countries (down to regional position 24). Among high-income countries, Poland (43rd), Croatia (44th), and Greece (63rd) lag behind.

The five **Nordic countries** Sweden (2nd), Finland (5th), Denmark (6th), Iceland (11th), and Norway (18th) have very strong performances globally as well as regionally, where they are within regional top 10 positions on the overall GII, Output, and Input Indices (except Norway, which is ranked 11th on the GII regional rankings).

Within the European Union (EU), among the **15 original EU countries (EU15)**,<sup>28</sup> the Netherlands and the UK are in the top 10, followed by Germany (12th), Ireland (13th), Luxembourg (17th), Austria (19th), and France (22nd). The rest of the EU15 countries—Belgium (24th) and the four Mediterranean countries, Spain (32nd), Portugal (33rd), Italy (35th), and Greece (63rd)—have lost key positions to some of the 12 countries that recently acceded to the EU (the EU12 group).<sup>29</sup>

The **EU12 group** is led by high-income countries Estonia (23rd), Hungary (25th), the Czech

Figure 3: Global Innovation Index vs. Innovation Efficiency Index



Note: Countries/economies are classified according to the World Bank Income Group Classification (January 2011).

Republic (27th), Cyprus (28th), and Slovenia (30th); in the same high-income group, Latvia (36th), the Slovak Republic (37th), and Poland (43rd) have relatively low scores. Upper-middle-income countries are all in the second quintile: Lithuania (40th), Bulgaria (42nd), and Romania (50th).

Among **non-EU countries** in the region, lower-middle-income Moldova (39th) leads, ahead of high-income Croatia (44th) and upper-middle-income countries Serbia (55th), Russian Federation (56th), Turkey (65th), and Macedonia (67th) in the third quintile; and Bosnia and Herzegovina (76th), Albania (80th), Kazakhstan (84th), and Azerbaijan (88th) in the fourth quintile. The remaining lower-middle-income countries show relatively good performances as well, and all are ranked in the third

quintile: Ukraine (60th), Armenia (69th), and Georgia (73rd).

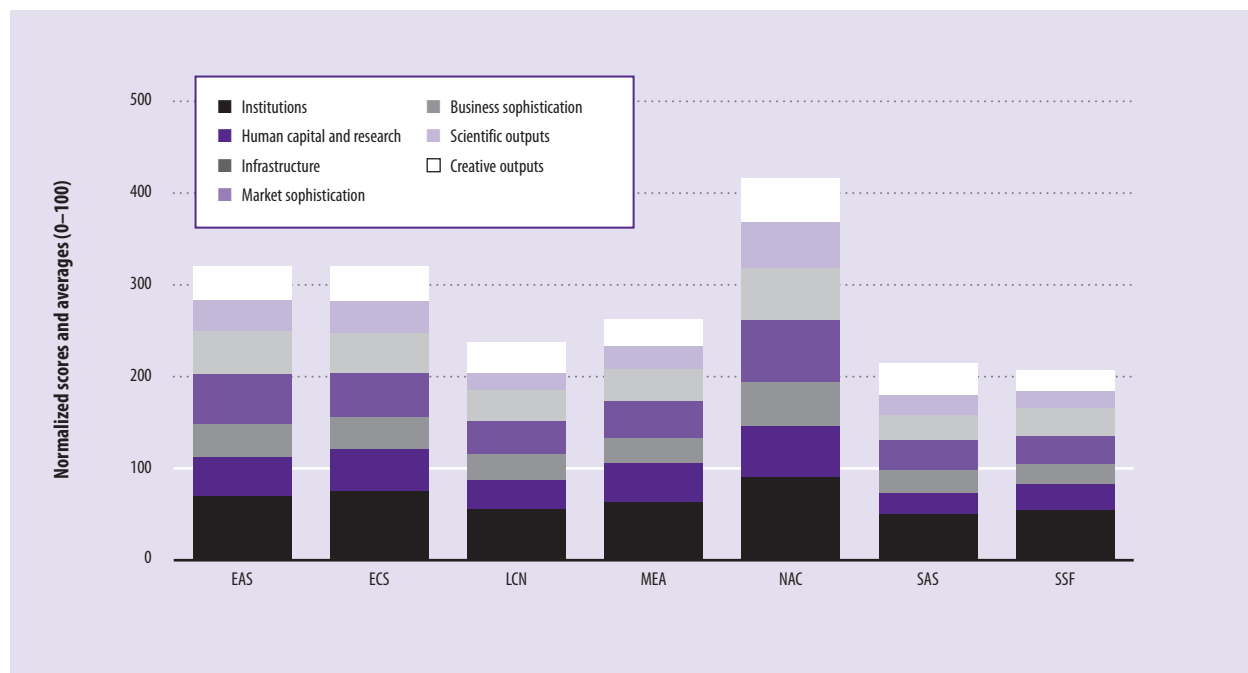
The score of lower-middle-income **Moldova** is admirable. The country places 25th in the regional rankings and 39th in the overall GII, surpassing 14 wealthier countries in its region. Moldova's main assets are on the Output side: it has a dynamic intellectual property system (placing among the top 10 positions on indicators for resident patent, utility model, and trademark applications at the national office, and on trademark applications through the Madrid System); it also exhibits strong growth in labour productivity (4th at 8.1%) and creative goods exports (5th at 5.8%). With Sweden, it is the only European country ranked in the top 10 on Efficiency (5th).

### East Asia and the Pacific

Fifteen economies are represented from East Asia and the Pacific, seven of which are within the top 30 and only one of which—Cambodia—is in the bottom 25. In addition, the top ranked countries among upper- and lower-middle-income countries—Malaysia and China, respectively—come from this region. Figure 4 shows that this region is almost tied with Europe and Central Asia in its innovation performance, even though in terms of economic development it is much closer to the Middle East and North Africa.<sup>30</sup>

In East Asia and the Pacific, the first two economies are in the global top 10: Singapore (3rd) and Hong Kong (SAR, China, 4th). Five more are in the top 30: New Zealand (15th), the Republic of Korea (16th), Japan (20th), and Australia (21st)—all high-income countries—and

Figure 4: Average scores for selected country groups



Note: Countries/economies are classified according to the World Bank Regional Classification (January 2011): EAS = East Asia & Pacific; ECS = Europe & Central Asia; LCN = Latin America & Caribbean; MEA = Middle East & North Africa; NAC = North America; SAS = South Asia; and SSF = Sub-Saharan Africa.

China (29th). Among the regional high-income countries, only Brunei Darussalam lags behind at position 75.

The **Republic of Korea** tops the regional rankings on the Output Sub-Index, where it places 11th worldwide. Like the Netherlands, Germany, and the US, the Republic of Korea is among the most efficient innovators among high-income countries. The country has important strengths across the board, with commendable 1st place positions on two sub-pillars, ICT and knowledge creation, and on five indicators—gross tertiary enrolment (with an impressive 98.1%), the government's online service index, e-participation, the depth of credit information, and resident patent applications at the national office. It also places among the top 10 positions on three other sub-pillars: tertiary education, investment,

and knowledge absorption, achieving positions among the top 10 on an impressive further 14 indicators (refer to the country profile for details). Four of these are Output indicators: resident patent applications through the Patent Cooperation Treaty (6th), resident utility model applications at the national office (5th), high-tech exports (4th with 28.43% of total exports), and the survey question on the use of ICT on business models.

Malaysia, the only upper-middle-income country in the region, tops the income group globally on both the GII and the Input Sub-Index (it is overtaken by Brazil on the Output Sub-Index). Further details about Malaysia can be found in the discussion of the country under the GII section. Among the lower-middle-income group are some of the world's most efficient global innovators: China (1st on

all three main indices within its income group, and in the general rankings it is 29th on the GII and 14th on Output), Thailand (48th and 46th), and Viet Nam (51st and 42nd). Mongolia (68th) the Philippines (91st), and Indonesia (99th) lag behind. Within their income groups, middle-income countries Malaysia and China reach the regional top 10 on all four indices.

#### The Middle East & North Africa

The GII includes 16 countries from the Middle East and North Africa, of which only two—Israel (14th) and Qatar (26th)—are ranked among the top 30; they are also both high-income countries. Three countries from the region are within the bottom 25: the Syrian Arab Republic, Yemen, and Algeria. This region does not have any low-income

countries represented in this year's GII rankings. The other five high-income economies in the region have rather disappointing positions: United Arab Emirates is at 34th place, Bahrain is at 46th, Kuwait at 52nd, Saudi Arabia at 54th, and Oman at 57th.

**Israel** tops the regional rankings on all three main indices, and is ranked 4th on Efficiency at the regional level. Israel's strength comes from pillar 6, Scientific outputs (where it ranks 4th), with good showings in knowledge creation and knowledge diffusion (2nd and 8th). The country also scores within the top 10 on resident filings at the Patent Cooperation Treaty (4th), scientific and technical journal articles (1st), high-tech exports (8th), and computer and communications service exports (5th).

Three upper-middle-income countries come from this region. Lebanon (regional 6th, overall 49th) and Iran (regional 13th and overall 95th) present weaknesses in both Input and Output indicators, and neither country is among the top 40 overall, while **Algeria** scores lowest among the countries with sufficient data to be included in the sample.

Jordan, an exception, ranks 4th in the region and 41st overall. The other lower-middle-income countries—Tunisia (regional 10th, overall 66th), Egypt (11th and 87th), and Morocco (12th and 94th)—are all in the lower half of the GII rankings, with Syrian Arab Republic (14th and 115th) and Yemen (15th and 123rd) among the bottom 25.

The position of **Jordan**, at 41st overall, is notable because it is more than 25 positions ahead of its closest competitor in the same region and income group, Tunisia. Although Jordan is only 8th in the region on Input, it is 3rd on Output. Jordan's

leverage comes from Creative outputs, with a strong dynamism at the level of residents' trademark registrations at the national level (where it reached 1st place) and a relatively high level of creative goods exports. Jordan is also among the top 20 on the percentage of graduates in science (ranked 9th overall) and on tertiary inbound mobility (14th), two statistics that reflect the regional attractiveness of its higher education and its relevance to innovation. The country is among the top 20 on market capitalization and stocks traded as well, both of which demonstrate the dynamism of its economy.

#### Latin America & Caribbean

Twenty countries from Latin America and the Caribbean are included in this year's GII. None of them reach the top 30 on any of the three main indices (GII, Input, and Output), and three are ranked among the bottom 25: Venezuela, Nicaragua, and Bolivia. Trinidad and Tobago, the only high-income country in the region in the sample, is ranked a disappointing 72nd on the GII, 58th on the Input Sub-Index, and 87th on the Output Sub-Index.

Three upper-middle-income countries from Latin America and the Caribbean hold top positions within their income group: Chile (38th overall and 2nd in its income group after Malaysia), Costa Rica (45th and 5th), and Brazil (47th and 6th). Argentina (58th), Uruguay (64th), and Colombia (71st) are in the third quintile; Panama (77th), Mexico (81st), Peru (83rd), and Jamaica (92nd) in the fourth; and Venezuela (102nd) is down among the bottom 25. Costa Rica is the only country in the region to be

among the regional top 3 on the GII and the Input and Output Sub-Indices (ranked 45th, 53rd, and 37th, respectively).

**Chile**, the second country in terms of GDP per capita after Argentina (with a per capita GDP of PPP \$14,331) at 38th place is the only country in the region to have reached a position within the top 40. Chile's strengths are in its Input Sub-Index (36th), with a commendable 18th position on the Institutions pillar and positions in the top 20 on six indicators: regulatory quality (18th), tax rate (19th at 25% of profits), government online service (18th), market capitalization (11th at 128% of GDP), applied tariff rate (7th at 1.0%), and FDI net inflows (18th at 7.8% of GDP). On the Output side, its strengths are in FDI net outflows (12th at 4.88% of GDP), and resident trademark registrations at the national office (6th). Chile's standing is supported by a good overall balance, because its major weaknesses are precisely in the two areas traditionally linked to innovation: Human capital and research (71st, with a disappointing 89th ranking on elementary education) and Scientific outputs (85th). Chile presents one of the lowest Efficiency Index scores of all the countries in the sample, where it is ranked 16th regionally and 93rd globally.

Among lower-middle-income countries in this region, Guyana (61st) and Paraguay (74th) are in the third quintile; Guatemala (86th), El Salvador (90th), Ecuador (93rd), and Honduras (98th) are in the fourth; and Nicaragua (110th) and Bolivia (112nd) are among the bottom 25.

### South Asia

The four countries from South Asia in the sample show mixed results. India, ranked 62 overall, tops the regional rankings; it is followed by Sri Lanka (82), Bangladesh (97), and Pakistan (105). These four countries, however, have their strengths on the Output side. In effect, although they rank between 87th (India) and 123rd (Pakistan) on the Input Sub-Index, they rank between 44th (India) and 69th (Bangladesh) on the Output Sub-Index, with Efficiency Index rankings ranging between 4th (Pakistan) and 21st (Sri Lanka).

After China, **India** is the second most densely populated country, with 1.2 billion inhabitants; it is also eleventh in GDP, with US\$1,310 billion. A lower-middle-income country, it comes second after Sri Lanka in GDP per capita in PPP dollars in the region. India is ranked 62nd on the GII, 1st in its region, and 8th in its income group—after China, Moldova, Jordan, Thailand, Viet Nam, Ukraine, and Guyana. India comes in at 44th on the Output Sub-Index, within the top 30 on labour productivity growth (21st with 4.5%) and computer and communications services exports (4th globally, with 70.0% of total commercial service exports). It also has positions within the top 40 on two knowledge diffusion indicators: high-tech exports (32nd, at 6.34% of GDP) and FDI net outflows (38th, at 1.08% of GDP). On pillar 6, Creative outputs, it ranks 39th on national feature films produced, 22nd on daily newspapers, 9th on creative goods exports, and 29th on creative services exports. India's position, however, is dragged down by its poor performance on the Input side (ranked 87th): India is in the last quintile on sub-pillars business environment, elementary

education, tertiary education, and knowledge workers. But the country has high marks—within the top 40—on R&D (35th); general infrastructure (11th), a result driven by its 9th position on gross capital formation (at 35% of GDP); and investment (15th), a result driven by a deep and dynamic stock market.

### Sub-Saharan Africa

A total of 24 countries from Sub-Saharan Africa are included in the rankings, none of which made it to the top 30, and 17 of which are ranked within the bottom 25. In this year's edition, not a single country from this region is classified as high-income. Regional leaders on the GII and the Output, Input, and Efficiency measures are Mauritius, Nigeria, South Africa, and Côte d'Ivoire. While only Mauritius and Nigeria achieve positions within the top 70 on the Output Sub-Index, it is noteworthy that six countries achieve this threshold on the Input Sub-Index: South Africa (40th), Mauritius (46th), Namibia (49th), Botswana (62nd), Ghana (65th), and Kenya (69th).

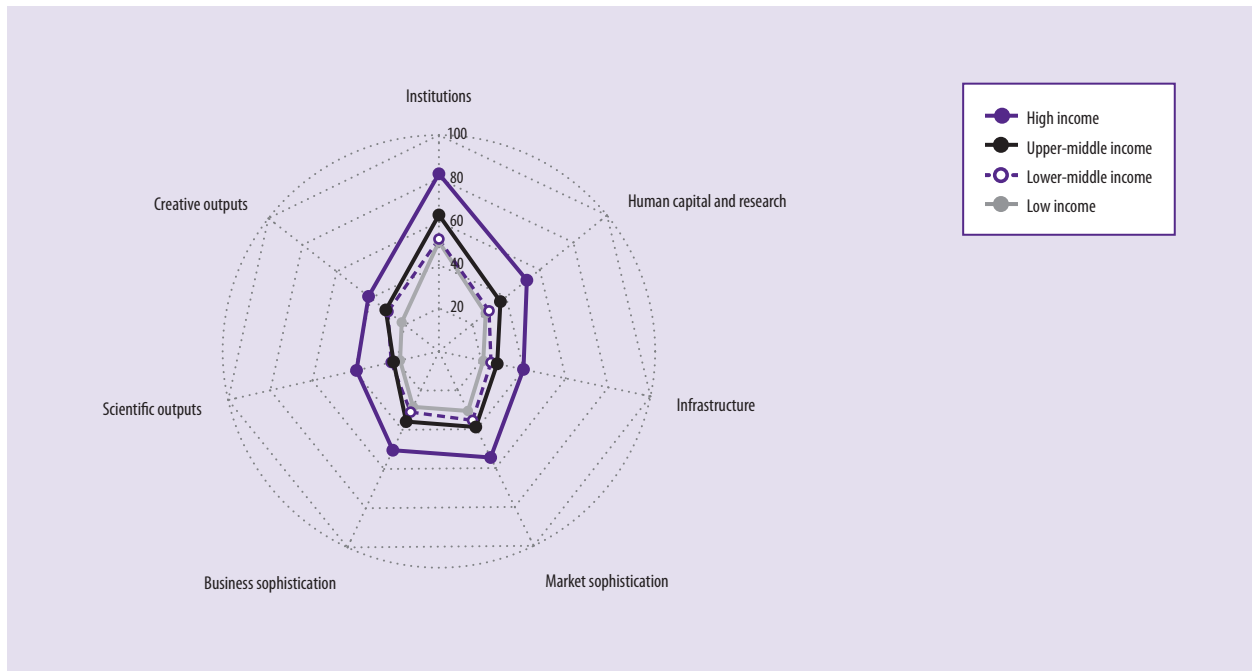
Among upper-middle-income countries, Mauritius (53rd overall) achieves the top regional spot on the GII, while South Africa (59th overall) is the runner-up, followed far behind by Namibia (regional 4th and overall 78th) and Botswana (5th and 79th).

With a population of 1.2 million and a GDP per capita of 12,838 in PPP dollars, **Mauritius** is the second least populous country in the region (after Swaziland) and the second wealthiest (after Botswana), so its top regional position is not entirely surprising. This island in the Indian Ocean is the only country in the region with rankings in the

upper half of all three main indices. On the Input side, its major strength comes from the Institutions pillar (ranked 25th), where it achieves 8th position on the business environment sub-pillar. Its 6th position on tertiary education is driven essentially by excellent rates of outbound mobility and gross enrolment of tertiary students (ranked 9th and 4th, with 29.7% and 7.7%, respectively). On the Output side, its score is leveraged primarily by its new business density score (11th globally) and by its relatively high level of creative goods exports (ranked 16th, at 3.4% of total goods exports).

**South Africa** tops the regional Input Sub-Index (40th globally). It is not only the most heavily populated country within this income group, by far, with 50.5 million inhabitants (the other three countries have less than 5.5 million combined), but it is also ranked 3rd in per capita income, with 10,277.8 PPP dollars per capita (Namibia, at PPP\$6,410.1, is the least developed of the four). The Input score is driven essentially by an 8th position (in the global ranking) on market sophistication, the result of positions within the top 10 on the strength of legal rights for credit (7th), depth of credit information (1st), and domestic credit to private sector (9th, with 145.1%). Its achievement on investment protection is one of the stronger globally (10th), leading to deep stock markets (2nd on market capitalization and 8th on stocks traded, with 246.5% and 146.8% of GDP, respectively). Ranked 83rd on the Output Sub-Index, South Africa achieves placement among the top 40 in only two areas: resident patent applications through the Patent Cooperation Treaty and computer software spending (8th globally, with 0.9% of GDP).

**Figure 5: Average scores by income group and by pillar (0–100)**



Note: Countries/economies are classified according to the World Bank Income Group Classification (January 2011).

Lower-middle-income countries all have poor performances. These are Nigeria (7th regionally and 96th overall), Senegal (8th and 100th), Swaziland (9th and 101st), Cameroon (10th and 103rd), Côte d'Ivoire (18th and 117th), and Sudan (24th and 124th).

Although **Nigeria's** position on the GII is rather low (96th), this country obtained the top regional position on the Output Sub-Index, where it is ranked 62nd, and has the second-best Efficiency Index score globally. Nigeria's leverage is similar to 1st place on the Efficiency ranking, Côte d'Ivoire. This is again a country with positions in the bottom 25 on all Input rankings, although it attains relatively high scores on two measures extremely sensitive to the economic recession: growth in labour productivity (41st at 2.55%), and FDI net outflows (80th, but at a level of 0.1%, Nigeria

scored 47.5 over 100). Nigeria also obtained relatively high scores from the survey questions on ICT use on business and organizational models (45th and 70th). On the Creative outputs pillar, Nigeria is ranked 5th globally on the production of national feature films per million population.

Low-income countries Ghana (70th) and Kenya (89th) get relatively high scores—both within the regional top 10—reaching 1st and 3rd place, respectively, in the overall low-income group. Of the remaining countries in this income group and region, Tanzania, Uganda, and Mali fare relatively better on the Output Sub-Index (their ranks are in the fourth quintile); while the scores of Rwanda, Zambia, and Malawi are driven by somewhat better scores on the Input Sub-Index (ranking in the fourth quintile). Of the rest, Madagascar,

Côte d'Ivoire, Benin, Zimbabwe, Burkina Faso, Ethiopia, and Niger are in the last quintile (the bottom 25) in all three main indices (GII, Input, and Output).

## Conclusions

Innovation is a global phenomenon: it is not only OECD countries that innovate—innovation leaders are found across the world, as is evident from the presence of European, Asian, and North American economies in the GII top 10. All regions show potential as leading hubs of innovation (all are represented in the upper half of the GII rankings). The worldwide relevance of innovation capabilities and results highlights the need for a global perspective in understanding the concept and underlying premises of

**Table 8: Heatmap for GII top 10 economies and regional and income group averages (1–100)**

Country/Economy	GI	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Input	Scientific outputs	Creative outputs	Output	Efficiency
Switzerland	63.82	92.60	55.14	44.50	70.08	68.02	66.07	62.00	54.40	58.20	0.88
Sweden	62.12	87.27	63.27	51.66	58.93	63.13	64.85	62.07	56.73	59.40	0.92
Singapore	59.64	90.42	74.69	47.62	78.71	79.11	74.11	48.93	41.42	45.18	0.61
Hong Kong (SAR), China	58.80	92.77	48.38	53.87	87.00	66.85	69.77	38.11	57.56	47.83	0.69
Finland	57.50	89.17	66.46	47.98	56.06	63.87	64.71	58.53	42.06	50.29	0.78
Denmark	56.96	94.24	60.17	45.90	64.48	58.07	64.57	46.26	52.43	49.34	0.76
United States of America	56.57	86.48	57.37	44.63	70.91	54.82	62.84	57.44	43.17	50.30	0.80
Canada	56.33	93.28	53.89	53.13	63.36	58.40	64.41	42.51	54.01	48.26	0.75
Netherlands	56.31	87.46	47.60	43.60	61.81	61.64	60.42	53.81	50.59	52.20	0.86
United Kingdom	55.96	86.37	56.06	43.65	74.44	57.78	63.66	52.27	44.27	48.27	0.76
Regions											
East Asia & Pacific	42.50	69.78	42.44	36.10	54.06	47.34	49.95	33.73	36.37	35.05	0.70
Europe & Central Asia	42.96	74.64	46.47	34.40	47.93	44.06	49.50	34.65	38.04	36.34	0.73
Latin America & Caribbean	31.43	55.69	31.61	28.17	35.51	34.02	37.00	19.00	32.73	25.86	0.70
Middle East & North Africa	34.45	62.81	42.53	27.98	39.93	34.48	41.54	25.46	29.27	27.36	0.65
North America	56.45	89.88	55.63	48.88	67.14	56.61	63.63	49.97	48.59	49.28	0.77
South Asia	29.92	50.08	23.06	24.82	33.23	26.16	31.47	22.88	33.87	28.37	0.91
Sub-Saharan Africa	26.92	54.32	28.65	21.34	31.40	30.19	33.18	18.15	23.16	20.66	0.64
Income levels											
High income	48.08	82.12	52.32	39.98	54.58	50.42	55.88	39.10	41.29	40.19	0.71
Upper-middle income	33.36	63.09	36.60	27.55	38.89	35.80	40.39	21.51	31.16	26.33	0.65
Lower-middle income	30.42	51.96	29.82	24.62	35.45	30.96	34.56	22.66	29.89	26.27	0.76
Low income	25.91	50.70	27.83	20.97	30.63	28.29	31.68	18.43	21.83	20.13	0.64

Note: Darker shadings indicate better performances. Countries/economies are classified according to the World Bank Income Group and Regional Classifications (January 2011).

innovation, which this Report has adopted.

Identifying the underlying conditions of a country and comparing performances among peers is the key to a good understanding of the implications of a country's ranking in the GII. This Report attempts to abide by this underlying principle in the analysis of the GII rankings. Countries evaluate their performances by comparing

themselves with other countries within their region, but in this Report we assess results on the basis of the development stages of countries (captured by the World Bank income classifications).

In this light, the results of the GII confirm that average rankings decrease monotonically with income levels. On average, high-income countries outpace developing countries by a wide margin

across the board (Figure 5). But some gaps are closing among developing countries in some areas, notably in the Institutions and Creative outputs pillars. In the Scientific outputs pillar, lower-middle-income countries outperform upper-middle-income countries (albeit by only a small margin of 1.15 points).

Upon closer inspection, the heatmap in Table 8 shows that, without exception, *all* regional and



income group averages are greater than 30 on the Innovation Input Sub-Index (scores range between 0 and 100), which is remarkable. In this group of enablers to innovation, the biggest progress has been made on the Institutions pillar, where income group and regional averages are all above 50; and on the Market sophistication pillar (where all averages are above 30). This shows that significant efforts have been made worldwide towards increasing political stability; improving regulatory environments; and enhancing environments for business, credit, investment, trade and competition—all crucial elements for the fulfilment of innovation capabilities. These findings also imply that some laggards are driving the scores down.

Governments have recognized that, in order to take advantage of the potential that innovation represents for their citizens, they must adopt policies that are friendlier towards technological catch-up and the absorption of knowledge so that firms can build global innovation networks and so that they can foster trans-border flows of knowledge and intellectual property. And, in turn, firms in the private sector are doing their part by participating more fully in the financing and execution of R&D projects; by making venture capital available; and through joint venture and strategic alliance deals, dynamic stock markets, increased employment in knowledge intensive services, and so on.

The main cause for alarm comes from the Human capital and research pillar. Although the average score across countries is 39.1 (this score comes in 3rd, after the Institutions and Market sophistication pillar scores), the gap between

high-income and low-income countries is the second biggest (after Institutions), at 24.9 points. A skilled workforce is essential to economic development, and deficits in this area have longstanding effects surmountable only after consistent improvements have been made, and then only after two or three generations. The only indicator from the Human capital and research pillar on which low-income countries do better on average is the percentage of graduates in science.

Looking more closely at the indicators, we see that in 41 of the 80 indicators selected for this year's GII, average scores for high-, upper-middle-, lower-middle, and low-income countries are monotonically decreasing. This decrease implies that, on average, the wealthier the country, the higher its score. But in 39 occasions this is not the pattern (see Tables 1a through 1g, included in the description of each pillar). For three indicators—2.2.5 Tertiary outbound mobility, 4.1.4 Microfinance gross loans, and 6.2.1 Growth rate of GDP PPP\$ per worker (labour productivity)—the order is reversed, which is encouraging. In two other instances, the higher average score corresponds to low-income countries: these are indicators 3.2.4 Share of renewables in energy use, and 5.2.3 R&D financed by abroad. In six other cases, the mean of the average scores of low- and middle-income countries is higher than the mean of the average of scores for upper- and middle-income countries: 2.1.2 Public expenditure/pupil over GDP per capita, 2.2.2 Graduates in science, 3.3.2 Gross capital formation, 3.3.3 Ecological footprint and biocapacity, 6.1.3 Domestic resident utility model applications, and 7.1.1 Domestic resident trademark

applications (the last two are scaled by GDP PPP dollars).

It could be argued that some aspects dictated by the nature of available statistics—the prominence of trade-related variables over output variables and the importance of count variables over value variables—may have the effect of making low- or lower-middle-income economies stand out or of biasing results in favour of small countries. However, among the indicators listed above, these concerns affect only the count statistics on utility model and trademarks applications.

At the regional level, North America is not truly comparable to the other regions. The sample includes only two countries from this region, Canada and the US, which lead on all categories except on Innovation Efficiency. Otherwise, regional comparisons show that Europe and Central Asia lead on the GII, the Output Sub-Index, and four pillars (Institutions, Human capital and Research, and Scientific and Creative outputs), while East Asia and the Pacific lead on the Input Sub-Index and the three remaining pillars (Infrastructure and both Market and Business sophistication).

East Asia and the Pacific and the Middle East and North Africa have similar income structures in the GII sample, and yet, on average, the latter region prevails only on Human capital and research, and by an insignificant margin (less than a point). On all the other pillars, differences range between 7.0 and 14.1 points. Latin America and the Caribbean comes next in terms of overall development, followed by South Asia and Sub-Saharan Africa. Although these regions achieve average positions in accordance with their level of development

in the GII, the leverage for countries from Latin America and the Caribbean comes from the Input Sub-Index and each of its pillars, while South Asian countries prevail on the Output Sub-Index and pillars.

At the regional level, perhaps lacking in this global picture is Sub-Saharan Africa—a continent where more progress could be made. In the rankings, Sub-Saharan African countries overtake South Asian ones on the Input Sub-Index and on the Institutions, Human capital and research, and Business sophistication pillars. But they lag behind on everything else.

It cannot be claimed, however, that the GII model captures all dimensions of innovation across continents. 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. Chapter 2 provides insights on innovations taking place across sectors, products, processes, and business models in Latin America.

In this respect, BRIC countries are improving their innovation capacity dramatically: China, Brazil, and, to a minor extent, India have achieved encouraging results, especially on the Output side. Chapter 3 illustrates how these countries are confronting their development challenges with the example of India, which has pioneered promising avenues in the areas of frugal and inclusive innovation. The rise of innovation in the BRIC countries will change the face not only of innovation but also of global dynamics. Large populations in countries such as India and China will demand a different type of products and services—those that provide high quality but at

affordable costs while respecting sustainability in the environment. Companies will have to adjust to these new models of innovation. Western firms are setting up centres of innovation and learning in these BRIC countries now. Other nations will need to learn to treat BRIC countries as sources of knowledge and learning for innovation, not just as threats to domestic industries or competitiveness.

Innovation efficiency is important, and it varies across regions. Some countries demonstrate a strong input performance but fail to translate their enabling capabilities into tangible results and vice versa. Lower-middle-income countries now fare better than those of all other income groups in efficiency. China, Moldova, Jordan, Viet Nam, India, Thailand, Guyana, Ukraine, Tunisia, Armenia, and Nigeria all achieved rankings in the upper half of the Output Sub-Index. Innovation capabilities might progress in waves, with uneven and non-linear improvements, leading to multiple equilibria. High-income countries, which come next in terms of innovation efficiency (and which are far behind in Output scores) enjoy a stable position at the top of all main rankings. Upper-middle-income countries seem to be finding difficulties in translating their favourable enabling conditions into innovation results. Low-income countries frequently have difficulties in taking off, and although their institutional environments show improvements, they lack the human resources and capabilities to achieve their full potential, even taking into consideration that they are beginning at a low level.

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. However, this Report provides a snapshot from which particular insights can be obtained.

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.

It is important—and feasible—to take action. Multiple success stories and best practices worldwide demonstrate ways to advance innovation, and they can be studied and drawn upon. Since innovation can potentially expand everywhere, what can be done to help it thrive in developing economies? This Report offers important avenues for action in this regard. Some 'weak pillars' need strengthening: In more than one country, a relatively poor performance on pillar 2, Human capital and research, goes hand in hand with low levels of Scientific outputs. Indeed, the highest correlation of the Scientific outputs pillar is with pillar 2. A more formal analysis is required to infer causality, however.

Despite our best efforts, we have only scratched the surface of the challenge of fully capturing the richness of innovation. The first task was to adopt a definition

and a model of innovation that would capture innovation efforts in emerging economies. What worked in theory implied a real challenge in terms of data collection, particularly in the areas of innovation linkages and creative outputs.

The computation methodology adopted for the Report, which has the advantages of being transparent and replicable, is extremely sensitive to modelling choices and missing data points. To ensure the credibility of the whole exercise, results were submitted to a statistical audit by the Joint Research Centre of the European Commission. The Audit assessed the robustness of the GII rankings to other modelling techniques, and involved the imputation of missing data, computation of geometric averages instead of arithmetic averages (the former are less compensatory), random weights, and principle components analysis, among others (refer to the appendix to this chapter). Based on the Audit, five countries with unreliable rankings were dropped from the Report. In addition, the Audit confirmed that, for the top 40 and the bottom 14 countries, median ranks after 4,000 runs of Monte Carlo simulations differed from the GII ranks by less than five positions.

We hope that this work makes a small but concrete step forward in improving our understanding of the broad phenomenon of innovation in firms, governments, and societies. It is linked to some of the ongoing work by other organizations such as the OECD. We intend to work collaboratively with them to enhance our common understanding of this phenomenon.

The challenge is to translate these intellectual ideas and ranks into action—to connect with different stakeholders engaged in

innovation in different economies and become part of the evolving dialogue around innovation. Readers are invited to contact INSEAD if they wish to explore some of the insights of the Report in more detail within their own contexts.

## Notes

- 1 Archibugi and Coco, 2004.
- 2 The Confederation of Indian Industry has been a partner of the GII since 2009.
- 3 OECD/EC, 2005, also known as the *Oslo Manual 2005*.
- 4 OECD/EC *Oslo Manual*, 1992, 1997, and 2005 editions.
- 5 OECD/EC, 2005, p. 146.
- 6 OECD, 2010b.
- 7 OECD/EC, 2005, p. 58. Disruptive innovations can, for example, change the structure of the market, create new markets or render existing products obsolete; see Christensen, 1997.
- 8 UNCTAD, 2007, p. 6.
- 9 OECD 2010b, Box 1, p. 1.
- 10 Gibbons et al., 1994.
- 11 Etzkowitz and Leydesdorff, 2000; and Leydesdorff and Etzkowitz, 1996. These authors point out that mode 2 'is the original format of science before its academic institutionalization in the 19th century [...] Mode 2 represents the material base of science, how it actually operates. Mode 1 is a construct, built upon that base in order to justify autonomy for science, especially in an earlier era when it was still a fragile institution and needed all the help it could get'.
- 12 OECD/EC, 2005, p. 38.
- 13 Silbergliitt et al., 2006.
- 14 BCG /NAM, 2009.
- 15 EC, 2011.
- 16 EIU, 2009.
- 17 World Economic Forum, 2010.
- 18 The first two are part of the six World Governance Indicators (GII) constructed by the World Bank. The Press Freedom Index is calculated by Reporters Without Borders (it is included in the Voice and Accountability Index, one of the two World Governance Indicators of the World Bank not included in the GII).
- 19 Ease of Doing Business Data Notes, <http://www.doingbusiness.org>.
- 20 ITU, 2010. The 2010 edition is based on 2008 statistics. We are grateful to Susan Teltscher, Head, and Esperanza Magpantay, Statistician, Market Information and Statistics Division, Telecommunication Development Bureau, International Telecommunication Union for sharing their data and for a useful discussion regarding the GII framework.
- 21 We are grateful to Karen Treanton, Head of Energy Balances, Prices and Emissions Section of the Energy Statistics Division of the International Energy Agency (IEA) for sharing the IEA series. Electricity consumption per capita is typically used as a proxy for infrastructure, as the power grid, to reach consumers, needs to come directly into houses and businesses. While the International Energy Agency reports on the level of energy use as a percentage of GDP in constant PPP terms, we followed the World Bank in taking the reciprocal of that variable to provide a measure of efficiency in the use of energy resources.
- 22 The surveys are conducted by the World Bank in partnership with academic and international institutions and private companies and individuals engaged in international logistics (refer to Appendix XX Sources and definitions for details). Hard statistics on infrastructure are available, but it was deemed that for the purposes of assessing infrastructure as an enabler to innovation, expert opinion was more appropriate.
- 23 In last year's edition of the GII, the measure included was the average loan balance per borrower (over GNI per capita). It was replaced by the gross loan portfolio over GDP to complement indicator 4.2.1.
- 24 We are grateful to Cornelius Bubenzer, Financial Markets Executive, Thomson Reuters, for his assistance with the extraction of data from the Thomson One database.
- 25 Query on joint ventures / strategic alliances deals announced in 2010 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 1247, the total number of deals. Of these, only 184 deals had any indication of value (disclosed or estimated), which is why only a count variable has been included in the model. We are grateful to Ifigenia Poulka, Data and Applications Specialist, Thomson Reuters, for her assistance with the extraction of data from the SDC Platinum database.
- 26 Countries are classified according to the World Bank classification. Economies are divided according to 2009 Gross National Income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low-income, US\$995 or less; lower-middle-income, US\$996 to US\$3,945; upper-middle-income, US\$3,946 to US\$12,195; and high-income, US\$12,196 or more.

- 27 Caution should be exercised in directly comparing ranks across years because the model has evolved since the first GI, as have the variables that are included and particular countries covered.
- 28 The EU15 group includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK. The discussion excludes Nordic countries Denmark, Finland and Sweden.
- 29 The EU12 group includes Bulgaria, the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, and Slovenia. Malta is not included in the GI 2011 edition.
- 30 Fifteen countries come from East Asia and the Pacific, of which 46.7%, 6.7%, 40.0% and 6.7% are high-, upper-middle, lower-middle and low-income economies. Sixteen countries come from the Middle East and North Africa, with 43.8%, 18.8%, 37.5% and 0.0% coming from these income groups. Latin America and the Caribbean: 20 countries, 5% high income, 55% upper-middle-income, 40% lower-middle-income. South Asia: four countries, 75% lower-middle income, 25% low-income. Sub-Saharan Africa: 24 countries, 16.7% upper-middle income, 25% lower-middle income; and 58.3% low-income.

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## 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. They 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 a national scale around the globe, as attempted in the GII, raises practical challenges related to the quality of available data and the combination of these into a single number.

The Econometrics and Applied Statistics Unit at the European Commission Joint Research Centre in Ispra (Italy) has experience in assessing composite indicators.<sup>1</sup> It has co-authored, with the Organisation for Economic Co-operation and Development (OECD), a *Handbook on Constructing Composite Indicators: Methodology and User Guide*, whose methodology has been used for the present analysis.

The GII was assessed along two main avenues: the conceptual and statistical coherence of its structure, and the impact of key modelling assumptions on its scores and ranks.

### Conceptual and statistical coherence in the GII framework

An earlier version of the GII model was assessed by the JRC in April 2011. Fine-tuning suggestions were made, which were taken into account in the final version of the GII model. In this way, the development of the 2011 GII moved from a one-way design process to an iterative process with the JRC with a view to laying 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 for their timeliness. To represent a fair picture of country differences, indicators were scaled (e.g., by GDP, population, total exports, or other units) as appropriate and where needed.

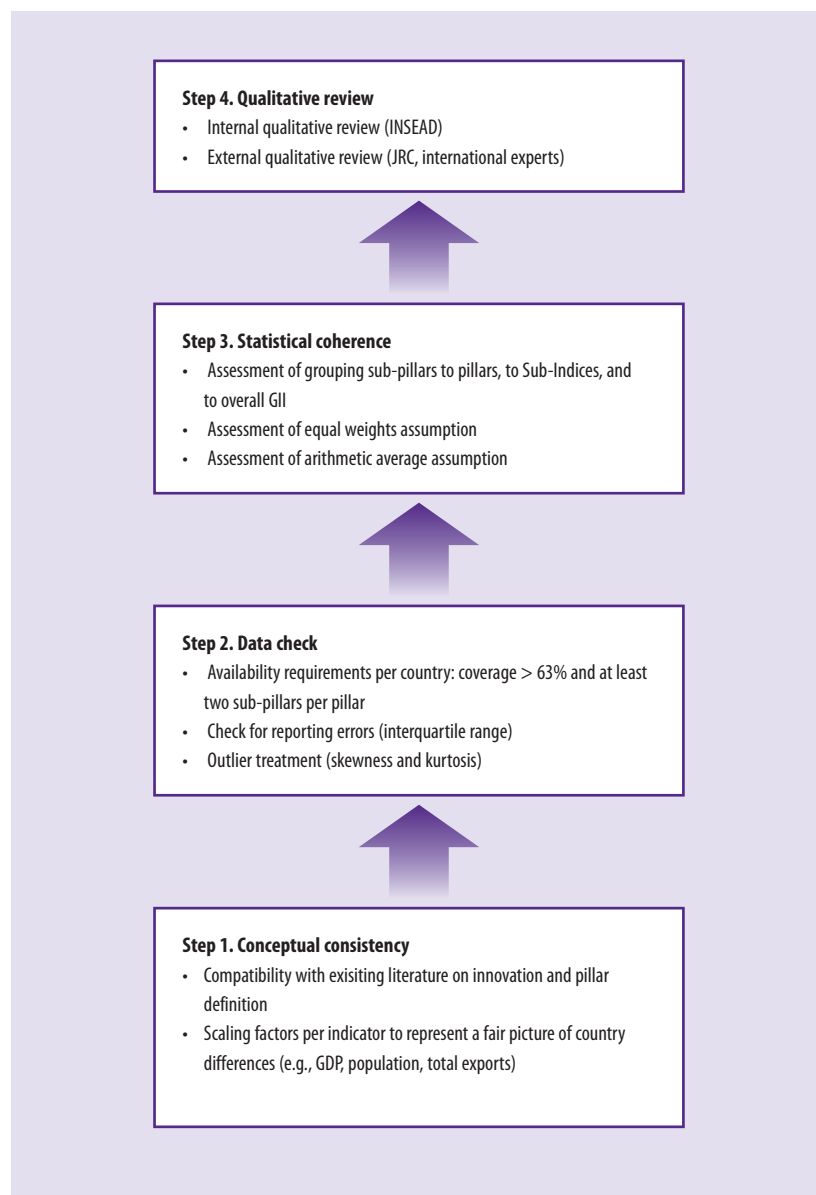
#### Step 2: Data checks

The most recently released data were used for each country, with a cut-off at year 2000. Countries were included if data availability was at

least 63% (i.e., 50 out of 80 variables) and at least two of the three sub-pillars in each pillar could be computed (the latter is a flexibility that was granted by the strong correlations between sub-pillars within each pillar found during the JRC Audit of April, which was based on a sample of 98 countries with scores on all sub-pillars). Data values outside the 2.0 interquartile range were checked for reporting errors.<sup>2</sup> Potentially problematic indicators that could bias the overall results were identified as those having a skewness (absolute) greater than 2 and kurtosis greater than 3.5,<sup>3</sup> and were treated either by winsorisation (where 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

Few cases of strong collinearity (i.e., Pearson correlation coefficients greater than ~0.92) were spotted.<sup>4</sup> These involved variables 1.2.1 with 1.2.2, 3.1.1 with 3.1.2, 3.2.1 with 3.2.2, 5.1.3 with 5.1.4, and finally 7.1.3 with 7.1.4. For some indicators, this issue was dealt with by treating the pair as a single indicator (by assigning half weight to each normalized score): this was the case for 3.2.1 and 3.2.2, Electricity output and consumption; and for

**Figure 1: Conceptual and statistical coherence in the GII 2011 framework**

Source: Saisana, European Commission Joint Research Centre, 2011 (in progress).

5.1.3 and 5.1.4, R&D performed and financed by business. For the others, full weights were kept on theoretical grounds in order to get a proper balance within the respective sub-pillar: this was the case for 1.2.1 and 1.2.2, Regulatory quality and Rule of law; and for 3.1.1 and 3.1.2, ICT access and use. A decision on the eventual treatment of 7.1.3 with 7.1.4, survey questions on ICT

and business/organizational model creation, remains. Nevertheless, no strong collinearity is present at the sub-pillar level, where the average bivariate correlation of all significant correlations is 0.46.

Principal component analysis confirms the presence of a single latent dimension in each pillar for the first six pillars (one component with eigenvalue greater than 0.9) that

captures from 54% (Infrastructure) up to 76% (Institutions) of the total variance in the three underlying sub-pillars. All sub-pillar loadings within a pillar are of the same magnitude, which justifies the use of equal weights during aggregation to pillars. Further, results confirm the expectation that the sub-pillars are more correlated to their own pillar than to any other. This analysis could not be carried out on the Creative outputs pillar because it is composed of only two sub-pillars that are not significantly correlated to each other. Our recommendation on this pillar would be to populate it with additional and relevant variables, if available. This fine-tuning issue had already been spotted in April, and led INSEAD to reduce the number of sub-pillars in the creative outputs pillar from three to two until new and better statistics become available.

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. Again, this analysis could not be carried out on the Innovation Output Sub-Index because it is made of only two pillars — Scientific outputs and Creative outputs, which are both correlated strongly with the Output Sub-Index (Pearson correlation coefficients are 0.90 and 0.83, respectively). This latter implies that the Output Sub-Index is also well balanced in its two pillars.

Lastly, building the GII as the simple average of the Input and Output Sub-Indices is also statistically justifiable, as the Pearson correlation coefficient of either sub-index with the overall GII is 0.90. So far, results show that the conceptual grouping



of sub-pillars into pillars, sub-indices, and an overall GII is statistically coherent, has a balanced structure (i.e., is not dominated by any pillar or sub-pillar), and 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, Output, or Efficiency, were evaluated by INSEAD 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 will continue to evolve 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 that include the composition of 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., selection of variables and equal weights within pillars), or common practice (e.g., the min-max method to normalize the variables in a 0-to-100 scale), driven by statistical analysis (e.g., treating outliers) or simplicity (e.g.,

**Table 1: 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	Scientific outputs	0.5	U[0.4,0.6]
	Creative outputs	0.5	U[0.4,0.6]

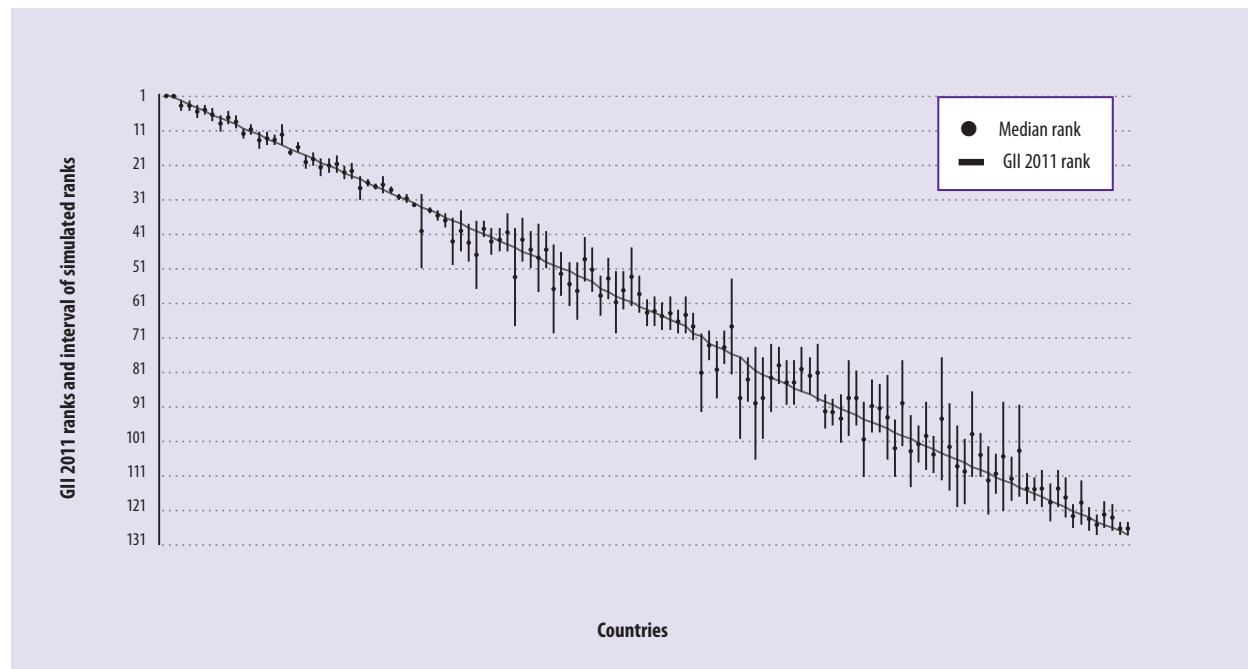
Source: Saisana, European Commission Joint Research Centre, 2011 (in progress).

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 acknowledge 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 a 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.<sup>5</sup> 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, the need to ensure a wide enough interval to have

meaningful robustness checks; on the other hand, the need to respect the rationale of the GII that the Input Sub-Index (five pillars) and the Output Sub-Index (two pillars) are placed on an 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 reasons of transparency and replicability, opted not to estimate missing data and instead calculated sub-pillar and pillar scores using only available information for each country. The 'no imputation' choice, which is common in relevant contexts, might discourage countries from reporting low data values.<sup>6</sup> To overcome this limitation, we opted to use the hot-deck imputation method within each pillar.<sup>7</sup> Regarding the GII assumption on the aggregation function (arithmetic average), and despite the fact 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

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

Source: Saisana, European Commission Joint Research Centre, 2011 (in progress).  
 Note: The Spearman rank correlation is 0.991.

which a comparative high advantage of a few variables can compensate a comparative disadvantage of many variables.<sup>8</sup> Hence, we considered the geometric average instead,<sup>9</sup> which is a partially compensatory approach.

Consequently, we tested four models based on the combination of no imputation versus hot-deck, 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-Indices.

#### Uncertainty analysis results

The main results of the robustness analysis are provided in Figure 2, which shows median ranks and

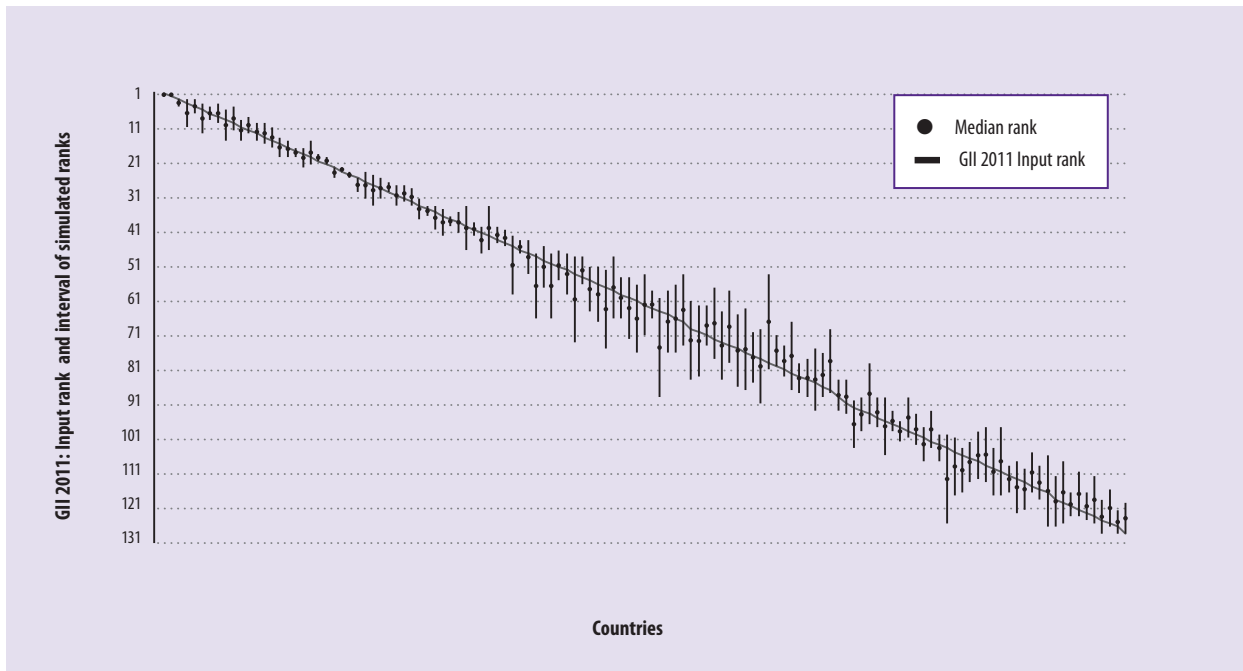
intervals computed across the 4,000 Monte Carlo simulations for the overall GII and the two Innovation Sub-Indices. Countries are ordered from best to worst according to their reference rank (black line), the dot being the median rank. Error bars represent, for each country, the 90% interval across all simulations. GII ranks are rather robust: the median rank is close to the reference rank (less than five positions for 75% of the countries). Results for the Input Sub-Index are more robust (75% of the countries shift less than three positions), while the Output Sub-Index is more sensitive to the methodological choices (75% of the countries shift less than six positions). The Output Sub-Index is more sensitive to methodological changes for two reasons: there are only two pillars and they are only moderately associated with each

other (Pearson correlation coefficient: 0.51). However, it cannot be ruled out altogether that the correlation could improve as more data become available, as suggested by theory. The currently observed moderate correlation might be to the result of: (1) the fact that missing values are particularly distorting; (2) the use of count and not value variables; and (3) the use of proxies, which is due to the lack of statistics, particularly on 7.2 (expenditure on recreation and culture, and exports of creative goods and services as proxies for creative outputs).

#### Sensitivity analysis results

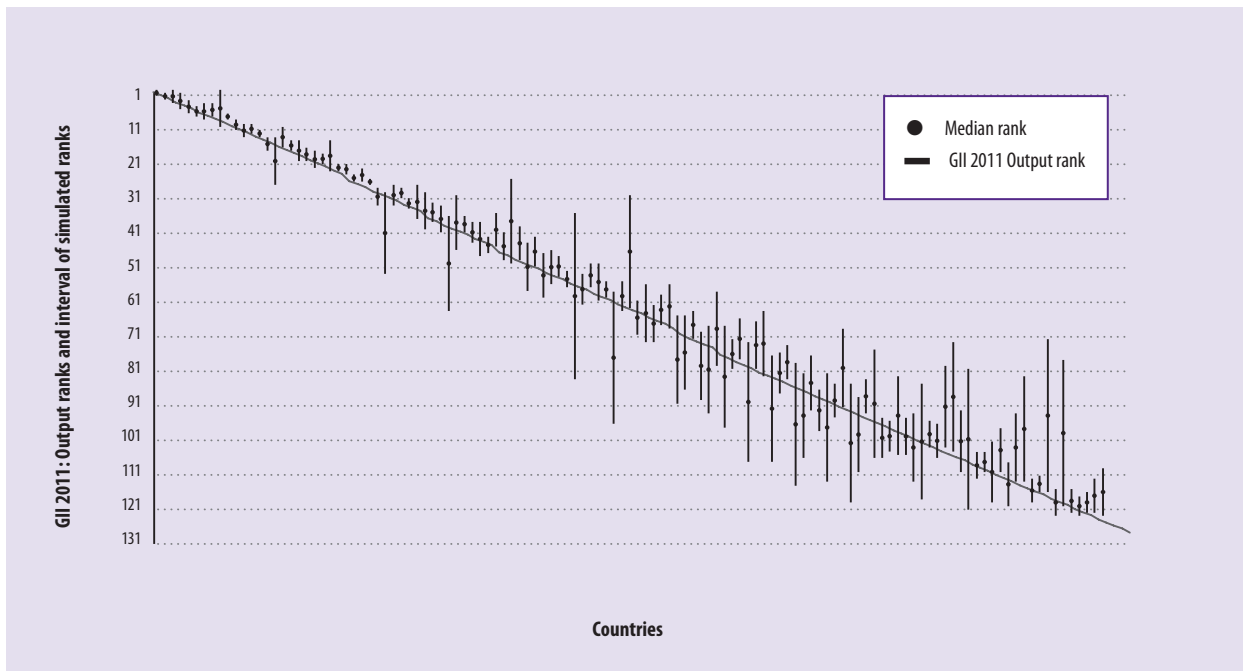
Complementary to the uncertainty analysis, sensitivity analysis has been used to identify which of the modelling assumptions have the highest impact on certain country

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



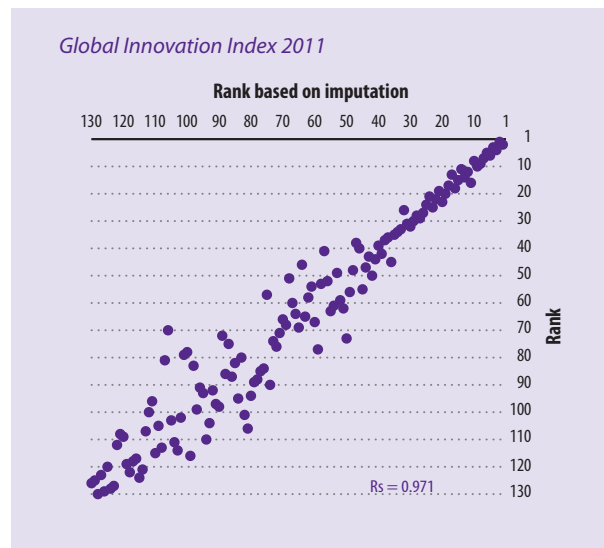
Source: Saisana, European Commission Joint Research Centre, 2011 (in progress).  
Note: The Spearman rank correlation is 0.996.

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

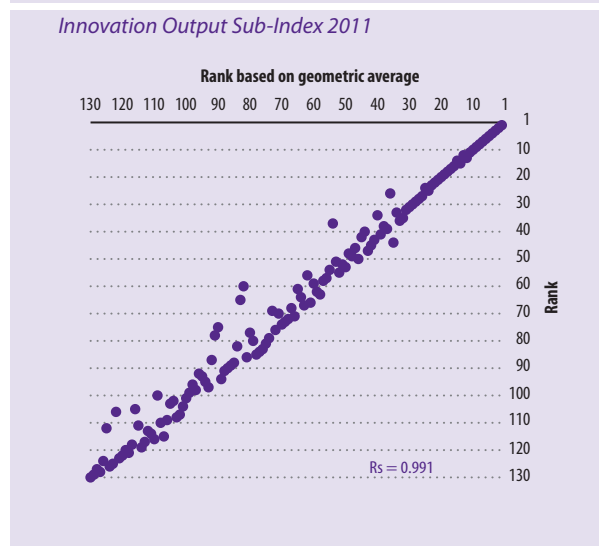
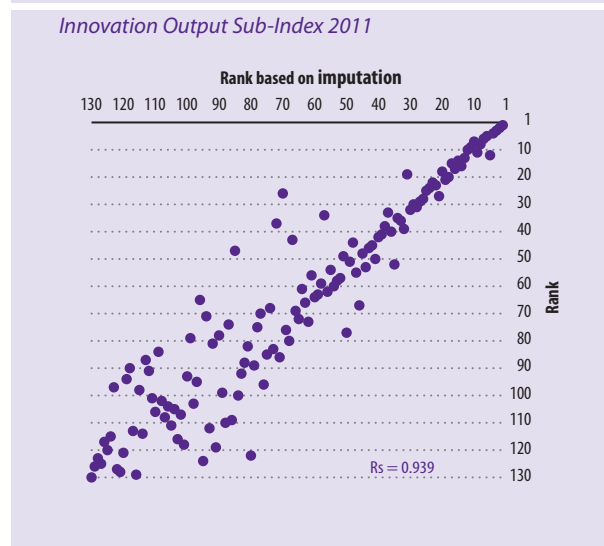
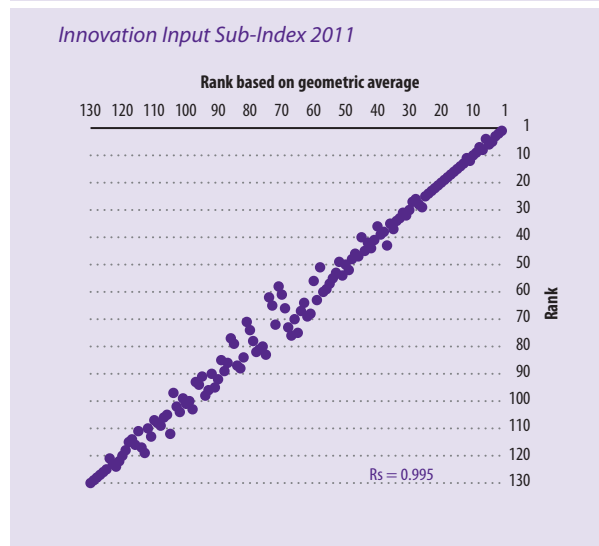
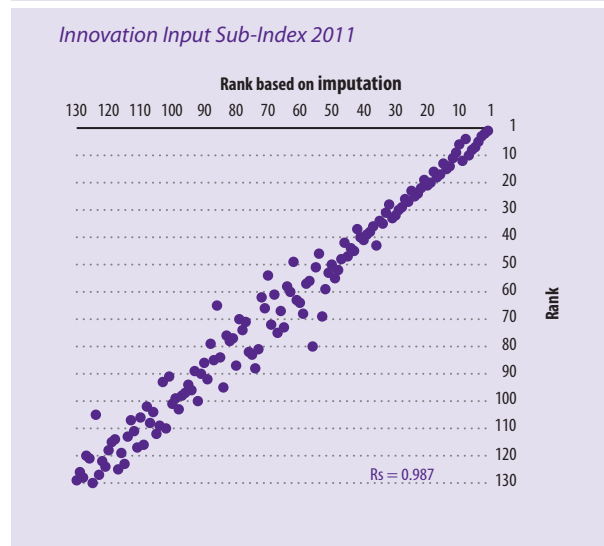
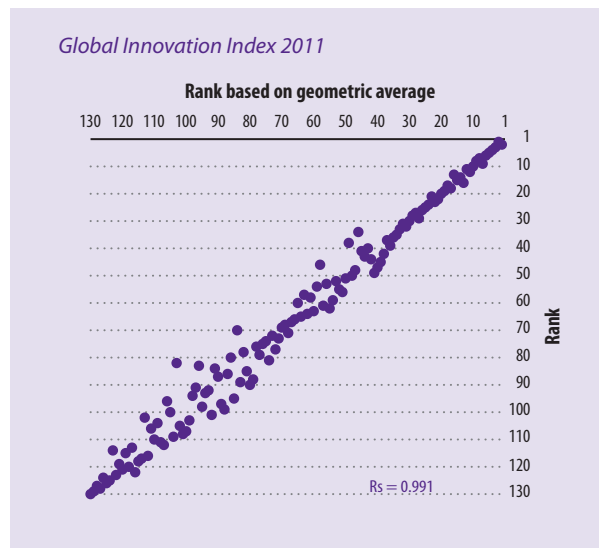


Source: Saisana, European Commission Joint Research Centre, 2011 (in progress).  
Note: The Spearman rank correlation is 0.984.

**Figure 3a: Sensitivity analysis: Impact of modelling choices**  
(GII rankings versus imputation)



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



Source: Saisana, European Commission Joint Research Centre, 2011 (in progress).

Note:  $R_s$  = Spearman rank correlation; kNN=2, imputation based on Manhattan distance and two (k) nearest neighbours (NN).

ranks. Detailed results are available in the main JRC assessment report, but the primary conclusion is that the impact of the imputation alone is noteworthy for some countries, although this 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 hot-deck imputation. This is most important for the Output Sub-Index, then for the GII, and least important for the Input Sub-Index. In one case, a country is found to lose 10 positions if a geometric aggregation is applied, or lose 44 positions if hot-deck imputation is applied. If both assumptions are changed (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, 32 countries have data coverage below 65% in the Output variables, which explains the impact of imputation on these countries' ranks and the unreliable efficiency scores (this had already spotted as peculiar during Step 4 of the expert review process, see Figure 1). Sensitivity analysis, by assessing the impact of the modelling choices, has given more transparency to the entire process and can help to appreciate the GII results with respect to the assumptions made during the development phase. Volatile ranks are a worrisome concern primarily for countries with poor data coverage on the Innovation Output Sub-Index, an impact that propagates to the

estimation of the Efficiency Index and the overall GII.

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, especially the Innovation Output Sub-Index. For this year, drawing upon the analysis made by the JRC, the recommendation is to drop the countries for which indices were found to be unreliable.

### Conclusion

The JRC analysis suggests that the conceptualized multi-level structure of the GII is statistically coherent, has a balanced structure (i.e., is not dominated by any pillar or sub-pillar), and has offered statistical justification for the use of simple averages at the various levels of aggregation from the sub-pillars onwards. Country ranks are in most cases fairly robust to methodological assumptions (estimation of missing data, weighting, and aggregation formula). Consequently, 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 currently done, but within each of the two Innovation Sub-Indices. The JRC also recommended that this year the GII drop the five countries for which ranks were found to be unreliable. This has been done, so that the GII 2011 considers a total of 125 countries. Furthermore, the 'no imputation' choice for not treating missing values, which is common in relevant contexts, as justified on grounds of transparency and replicability, can

at times have undesirable impact on aggregate scores, with the additional negative side-effect that it may discourage countries from reporting low data values.

### Notes

- 1 JRC auditing studies of composite indicators are available at <http://composite-indicators.jrc.ec.europa.eu/> (almost 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 Saisana et al., 2005; Saisana et al., 2011.
- 6 Note that here 'no imputation' is equivalent to replacing missing values with the average of the available data within each sub-pillar.
- 7 The 'hot-deck method' (also termed 'nearest neighbour method') involves substituting missing values for a given country with available data from 'similar' countries, similarity being measured by a certain distance (Little and Rubin, 2002). For the GII, after cross-validation, we selected Manhattan distance and two nearest neighbours.
- 8 Munda, 2008.
- 9 In the geometric average, pillars are multiplied as opposed to summed in the arithmetic average. Pillar weights appear as exponents in the multiplication.

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## Innovation in Latin America: Recent Insights

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There are many examples of promising policy reforms and flourishing innovations among Latin American governments and businesses. Today, ‘innovation’ means more than catching up by imitating innovative firms from more developed economies. In several revealing cases, Latin American businesses are redefining global business by developing new business models. Latin America can offer lessons about innovating with scarce resources in volatile and unpredictable environments—indeed, innovators in countries leading in research and development (R&D) increasingly face similarly challenging conditions.

However, business leaders and policy makers must do more to encourage productive risk-taking, multiply the success stories, and ensure that micro-level innovation is scaled up into more productive economies at the macro level. Innovation matters for economic growth and social development: it plays a critical role not only in promoting private profits, but also in advancing the frontier of well-being. Recent reforms to innovation policy frameworks in Latin America are promising. These need to be continued and strengthened in order to translate the wealth of innovation in the region into better economic growth and social well-being for all.

In this chapter, we highlight insights from Innovalatino, a collaboration between INSEAD

and the Development Centre of the Organisation for Economic Co-operation and Development (OECD), funded by the Telefónica Foundation. We conclude this chapter with recommendations for strengthening the contribution of innovation to social and economic development in Latin America.

### The case for innovation in Latin America

Today, in Latin America and the Caribbean, innovation—the adoption of new products, production processes, marketing methods, and business models—has risen to the top of the agenda for decision makers in government and business alike. Productivity has lagged in Latin America relative to OECD countries and other emerging economies, and the region’s policy makers recognize that investing in and promoting innovation can help to close that gap.<sup>1</sup> Innovative practices will also be necessary to make growth cleaner and more environmentally sustainable in the future. There will be a rising need for institutions and policies that support and orient the transition to new growth models.

Enhanced budget transparency, the adoption of fiscal rules, and the wise use of countercyclical macroeconomic policies—all examples of innovative policy making—allowed Latin America to resist the global financial crisis better than many

other regions of the world. But to achieve sustainable growth and development at a rate sufficient to address social needs in the region, structural changes in economic development strategies will be needed. The window of opportunity offered by the rapid recovery from the crisis and fiscal space needs to be seized for more sustainable investment in innovation.

As the Western world struggles to recover from the global financial crisis, new players are emerging in the innovation arena, challenging decades of primacy of a small number of high-income OECD countries. For example, China has dramatically increased both expenditure and employment in R&D. Brazil, India, the Russian Federation, and South Africa are likewise increasing their presence in global science, technology, and innovation. Latin America is both a protagonist in the expansion of global innovation and is challenged by the emergence of new actors such as China and India.

At the same time, decision makers in Latin America face the same challenges as their counterparts in many OECD economies—consolidating existing innovation processes, supporting investment in innovative sectors (such as green technologies), and creating the conditions to bring more players into the innovation game. Although the challenges for Latin America are specific to its

### Box 1: The Innovalatino project

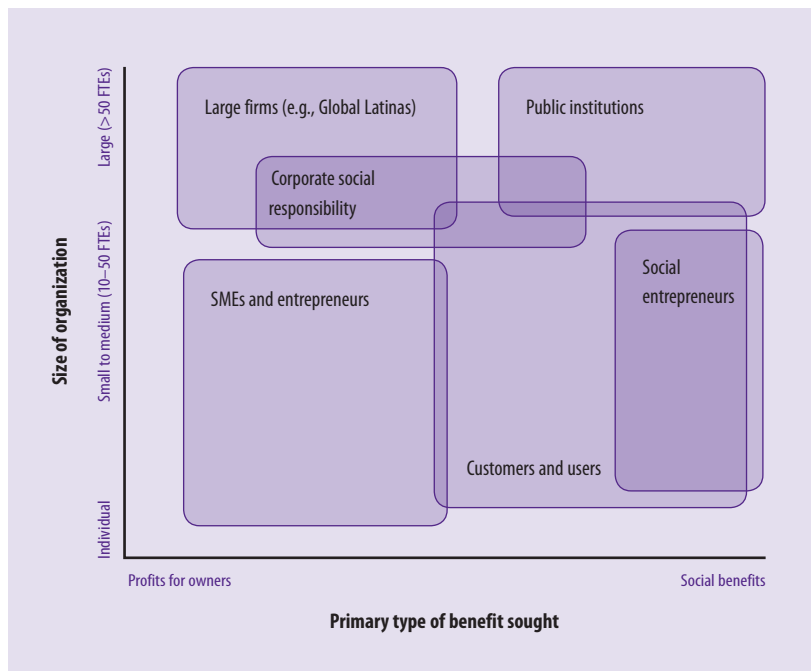
Innovalatino is a joint project of the OECD Development Centre and INSEAD's eLab, supported by the Telefónica Foundation. The objective of the project is to research innovation dynamics in the public and business sectors in Latin America with the aim both of drawing attention to and learning lessons from innovation experiments underway in the region, and of advocating greater policy attention to innovation in national development strategies.

The findings of the Innovalatino report are based on original research combining economic and statistical analysis with 50 case studies of innovators throughout the region. In particular, the report includes results of a survey of 1,500 manufacturing firms in eight of the region's countries. This Innovalatino survey provides recent data on firms' innovation strategies and trends in innovation investment in the context of the global economic crisis.

The project team worked in collaboration with key stakeholders, policy makers, and experts, in particular from the Ibero-American Network of Science and Technology (RICYT), the UN Economic Commission for Latin America and the Caribbean (ECLAC), the Inter-American Development Bank (IDB), and the European Commission.

The project website ([www.innovalatino.org](http://www.innovalatino.org)) provides country-level information and indicators of economic performance, as well as case studies of innovative firms.

Figure 1: Six different innovators based on two dimensions



Source: Casanova and Dayton-Johnson et al., 2011.

context and history and are shaped by the heterogeneity that characterizes production structures across and within its countries, the experiences of other countries can be relevant to the region. By participating in the global debate on how to foster innovation for growth, successes and failures in policy and business practices can be identified and imitated. The objective of the Innovalatino project (Box 1) is to contribute to and inform these debates.

#### Who are Latin America's innovators?

Innovalatino examines four types of innovation, united by the notion of novelty: a new product, a new process, a new way of selling something, and a new way of organizing the workplace. Box 2 provides a Latin American example of each type of innovation. Far from being limited

to products generated by laboratory research, the range of activities embraced by these four types of innovation is remarkably broad.

Innovators can be differentiated along two dimensions, yielding six varieties of innovators (Figure 1). The first dimension is the size of the organization (e.g., the number of full-time equivalents (FTEs) in the organization). Size both enables and constrains how effectively and efficiently an organization engages in innovation activities. It also influences the kinds of resources—such as credit—it can access.

The second dimension distinguishes between organizations driven primarily by maximising profits and those driven by maximising social benefits, such as poverty reduction, health care for the poor, social justice, and improved literacy. Understanding the benefits that an innovator seeks enables analysts to



assess more accurately what critical success factors correlate with different outputs. Taken together, these help define different types of innovators; specific examples of each type of innovator are provided in Box 3.

### Measuring Innovation: From the old to the new

Possibly the most frequently cited indicator of innovation performance is public and private R&D investment in innovation as a share of gross domestic product (GDP). Latin American economies are well below the OECD average for R&D expenditure and the regional average is barely above a tenth of the R&D expenditure of Korea (Figure 2). However, some OECD countries (such as Greece, Poland, and Turkey) exhibit R&D investment rates similar to those seen in Latin America.

When interpreting these figures, it must be highlighted that R&D investment measures only a part of the innovation economy. It is necessary for certain kinds of product innovations, and R&D may increase firms' capacities to adapt new technologies more generally. At the same time, differences in economic structures can lead to obvious disparities in levels of R&D. As such, economic sectors with lower R&D intensity—for example, natural resource-based sectors such as agriculture, mining, and petroleum extraction—account for a larger share of GDP in Latin America than in OECD countries, and therefore aggregate R&D investment rates in Latin America could be expected to be lower. There are also differences within the region: it is heterogeneous and characterized by the coexistence of different production structures.

### Box 2: Latin American examples of different types of innovations

These examples of innovation in Latin America illustrate the various categories of the concept, and demonstrate the range of innovations taking place in the region.

The Variable Specific Impulse Magnetoplasma Rocket (VASIMR), developed by Costa Rican astronaut and physicist Franklin Chang Díaz, is a textbook example of **product innovation** that is new to the world. The VASIMR is an electro-magnetic thruster for spacecraft propulsion that may one day be used for space transport. Chang Díaz has founded a company (Ad Astra), based in the United States of America (US) and Costa Rica, to develop the VASIMR and other advances in rocket propulsion technology.

The Brazilian airplane maker Embraer has built its success on an **innovative manufacturing process** and organization in which it shares risks with and outsources production to partners in developed economies. Although Brazil had its own supply of excellent engineers in aeronautics, the company initially did not have the resources to invest in the production of airplanes. Hence out of necessity it had to innovate and share risks and returns with partners from developed economies who designed parts of the plane for Embraer in return for a share of the returns generated from the sales. Today, this model of risk sharing has become a globally accepted 'standard' for the aeronautical industry at large.

Havaianas flip-flops, produced by Brazilian footwear and textile company Alpargatas, have become a globally successful brand, thanks to the firm's **marketing innovation**. Going against all

expectations and common practice, Alpargatas repositioned the brand from the low end of the market to the high end. During its first 30 years, Havaianas were considered a cheap sandal for low-income consumers in Brazil. During the 1990s, the firm's management radically changed its strategy, investing in advertising and exports to make Havaianas high-end footwear among consumers in Europe and the US. The brand has gone from 44 different models in 1993 to over 6,000 today.

Cinépolis is a good example of **business model innovation**: The firm has successfully adapted the traditional movie theatre venue into a space where all kinds of entertainment can be enjoyed collectively. After opening its first cinema in Mexico in 1993, Cinépolis today owns 2,320 screens worldwide, making it the largest film distributor and theatre chain in Latin America and the fourth-largest movie distributor in the world. This international firm employs 15,190 people and has a presence in Mexico, Colombia, Costa Rica, Guatemala, Panama, Peru, and El Salvador. In June 2010, Cinépolis entered India, and also plans to enter the Chilean and Argentinian markets. In Latin America, Cinépolis introduced the concept of multiplexes with modern equipment that include stadium-sized cinemas equipped with a digital sound systems and enormous screens. This was its main competitive advantage when entering India, one of the biggest film markets in the world. In 2010, Cinépolis reached an agreement with FIFA for exclusive rights to broadcast the football World Cup matches in its cinemas with digital quality.

### Box 3: Five different types of innovators in Latin America

**Large firms:** Since 1984, when Adolfo Grobocopatel founded Los Grobo in Argentina, the company has grown into one of the largest grain producers and agricultural service providers in the world—yet it owns no land, no tractors, and no harvesters. Los Grobo provides logistical and grain storage services to farmers and produces soy, corn, and wheat on a total of 300,000 hectares in Argentina, Brazil, Paraguay, and Uruguay. Los Grobo's innovative business model consists of an information-technology facilitated network of 3,800 small and medium agricultural suppliers. At its headquarters, 100 people provide inputs such as seeds, finance, technical advice, the sale and marketing of crops, and the deployment of technologies such as GPS and agricultural simulation models to help the network of farmers manage soil resources and deal with climate risk. Gustavo Grobocopatel, Adolfo's son and now president of Los Grobo, has explained: 'We are not big... but many'.<sup>1</sup> Los Grobo has received significant global recognition and awards.

**Corporate social responsibility:**

Causas.org is a non-governmental organization (NGO) created in 2005 by Arturo Franco, Vidal Cantu, and Adolfo Franco, whose initial intention was to use the Internet to more efficiently link employees from corporations looking for volunteer opportunities with the organizations offering them. Causas.org has verified, registered, and classified over 9,650 NGOs. Consequently, it has developed into a comprehensive online directory of Mexican civil society. Causas.org gives each civil organization in Mexico a free domain and hosts a simple website where an NGO can communicate its mission and vision and social action, as well as blog, post videos and photographs, and—most importantly—solicit volunteers. Participating NGOs can also administer their own websites. Causas.org

provides people looking to volunteer a place on the Web where they can search and compare various NGOs. In the first stage of the programme, Causas.org received financial support from companies such as Axtel, Coca-Cola Femsa, Cinopolis, and Scotiabank. These companies also participated in Causas.org Corporate Volunteering Programme, which generated more than 3,000 social action opportunities for their employees. In 2009, Causas.org was one of the winners of the National Solidarity and Volunteering Awards given by the government of Mexico.

**Small and medium-sized firms:** In Argentina, Guerra Creativa provides design services by leveraging crowd sourcing in ways not previously seen in concept-to-design processes. If a client wants a new logo or webpage, Guerra Creativa will host a design contest for a fixed period (e.g., 21 days), then will enable the client to evaluate entries (often over 100), to select a winner. Guerra Creativa uses this process to design logos, websites, stationery, and flash and 3D designs. Guerra Creativa also enables designers to interact and learn from each other, hosts exhibitions of their work online, and provides feedback on the designs of others. A section of the site allows users to get exclusive tutorials, with step-by-step instructions for different techniques and advice from their interactive creative director. Currently, the community includes 3,400 designers who have already uploaded more than 11,000 designs and a total membership of 6,000 clients.

**Social entrepreneurs:** In 1995, Rodrigo Baggio, a former Intel executive, founded the Centre for Digital Inclusion (CDI) based on the concept of helping people to help themselves. CDI Community Centres have three principal objectives: they are self-managed, they are self-sustainable, and they implement the CDI

pedagogy. This unique approach requires that by the end of each four-month course, students will have used technology as the main tool to initiate, plan, implement, and complete a 'social advocacy project' aimed at changing an aspect of their lives. At the same time, CDI provides the teachers with training on the use of computers and pays them higher-than-average salaries (US\$200 per month, which is more than twice the average salary of a teacher in the Brazilian public school system). Currently, there are CDI franchises in 753 schools in Brazil and 100 abroad with 1,036 volunteers, 1,726 educators, and 600,000 people from low-income communities who have been certified. When CDI mobilized five internal working groups from different disciplines to innovate new solutions for efficient growth, the result was the creation of a new multimedia learning environment, new courses, new services with business plans, revised performance indicators, a new monitoring process, and an online platform for communication and collaboration. With the support of James Wolfensohn, former President of the World Bank and the Wolfensohn Institute, CDI is in the process of expanding to the Middle East and North Africa region, to be followed by India and other parts of Africa. *Time* magazine named Baggio one of '50 Latin American Leaders of the New Millennium'.

**Public institutions:** Public institutions are also significant innovators. A number of Latin American governments have launched public programmes to address innovation. Colciencias in Colombia, founded in 1995, is a public entity that promotes science, technology, and innovation activities. With a US\$200 million budget, Colciencias funds research in universities, companies, and technical development centres; awards scholarships to doctoral students; and helps set up regional



### Box 3 Five different types of innovators in Latin America (continued)

information technology projects. The entity is focused on creating an attractive research environment for scientists in Colombia and has been active in establishing collaboration with research institutions in Europe and the United States of America. Since 2006, 22 technological development centres have been created, 1,161 research groups have received funding from the programme, 1,045 doctoral students have received scholarships, and 203 companies have received funding for scientific innovation activities, most of them co-funded by the firms.

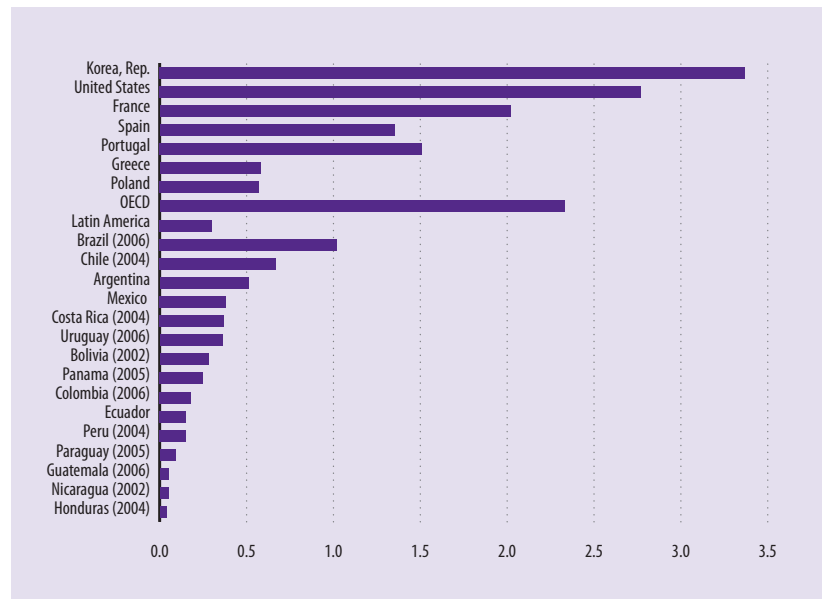
#### Note

1 Viswanathan, 2010.

Other more traditional indicators for the innovation intensity of an economy include patent applications. Again, the gap between OECD (averaging at 4,215 in 2009) and Latin American (44, in the same year) countries is wide; even the top Latin American performers—Brazil and Mexico—are well below the OECD average. In fact, there is a high level of concentration: in 2006, Japan, the United States of America (US), the Republic of Korea, Germany, and China represented 76% of all patent filings.<sup>2</sup>

The share of high-technology exports as a share of all manufacturing exports can also be taken as a proxy for technological specialization of production structures. Latin American countries are less specialized in high-tech exports than OECD economies: on average, 8%

Figure 2. R&D expenditure as a share of GDP (percentages)



Source: Main Science and Technology Indicators (2010–12), OECD Statistics; World Bank, *World Development Indicators* 2007.

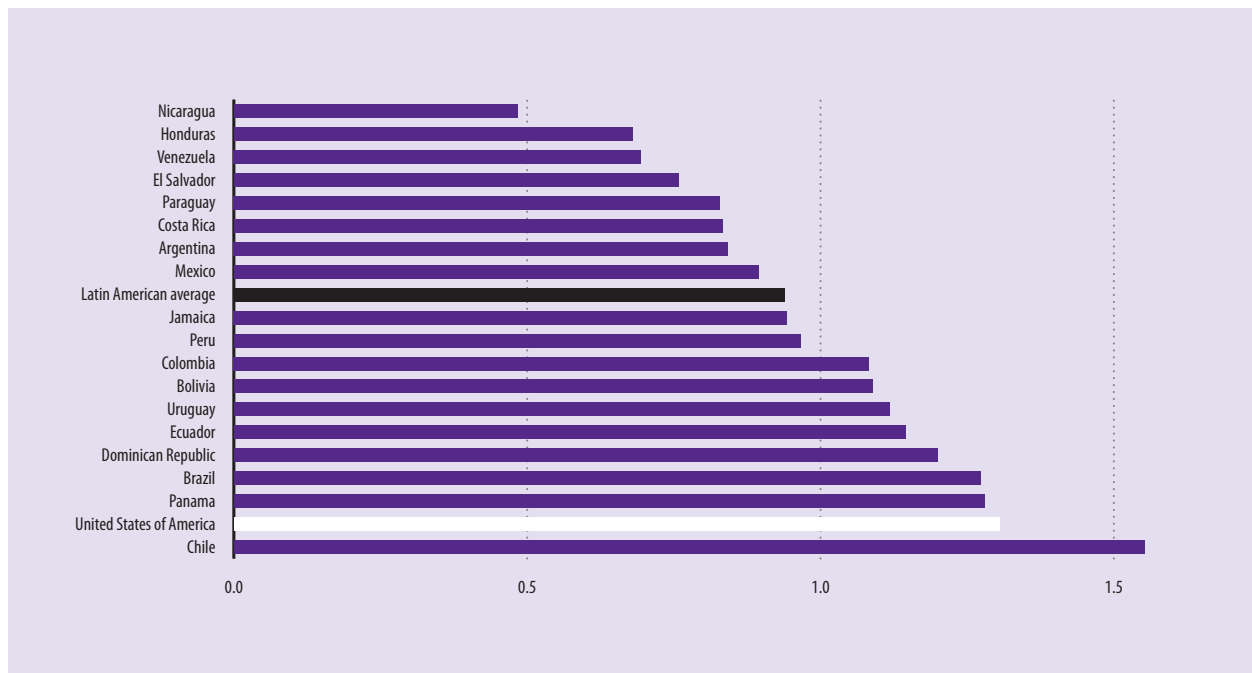
Note: All OECD values are for 2008, including the OECD average, except Mexico and Greece (2007). The average for Latin America is computed for the Latin American countries in the graph including Mexico and Chile and using World Bank data.

of Latin American exports are characterized as high-tech, against 14% of OECD exports. However, this indicator does not capture the effective value-added generated in the country, and there are some caveats regarding its interpretation. For example, the case of Costa Rica (39%) is basically explained by Intel's share of activity in the country's relatively small economy; in Mexico (19%), the large number of assembly plants (*maquilas*) has a similar effect on statistics.<sup>3</sup>

A fourth commonly accepted measure for innovation, albeit a broader one, is productivity. Changes in productivity at the macroeconomic level are typically measured using the concept of total factor productivity (TFP). If one can quantify all the inputs (types of labour, equipment, infrastructure,

etc.) used to produce a country's GDP in a given year, and there is no change in inputs but an increase in GDP the following year, the difference in growth is attributed to TFP. This corresponds, roughly speaking, to the efficiency with which inputs are combined. At least part of TFP growth can be explained by innovation, which should allow an economy to produce more output from a given quantity of labour and capital. Chile's TFP growth *exceeded* that of the US over the last half century, and Brazil's nearly matched the US rate (Figure 3). But for many countries in the region, the productivity gap with the US is widening at the same time that other emerging markets are closing their productivity gap with respect to the US.

The statistical evidence provided above characterizes some aspects

**Figure 3: Total factor productivity ratio (2005 versus 1960)**

Source: Daude, 2010.

Note: For each country, the bar shows the ratio of TFP in 2005 to TFP in 1960. If the ratio is greater than one, TFP has increased over those 45 years; otherwise, it has declined.

of innovation in Latin American economies. By developing a set of additional indicators, the multidimensionality of innovation can be better understood and measured. Prominent examples of new measures for OECD countries are those focusing on investment in intangibles and data from firm innovation surveys, including the percentage of firms that introduce new-to-market products and marketing and organizational processes (to measure innovation at the firm level). The ‘tangibles’ include machinery, equipment, and structures, while the ‘intangibles’ cover organizational and human capabilities and software, as well as trademarks and immaterial assets for which customers are ready to pay (such as design). Many of these measures are introduced and explained in the OECD Innovation Strategy, launched in 2010.<sup>4</sup> Efforts

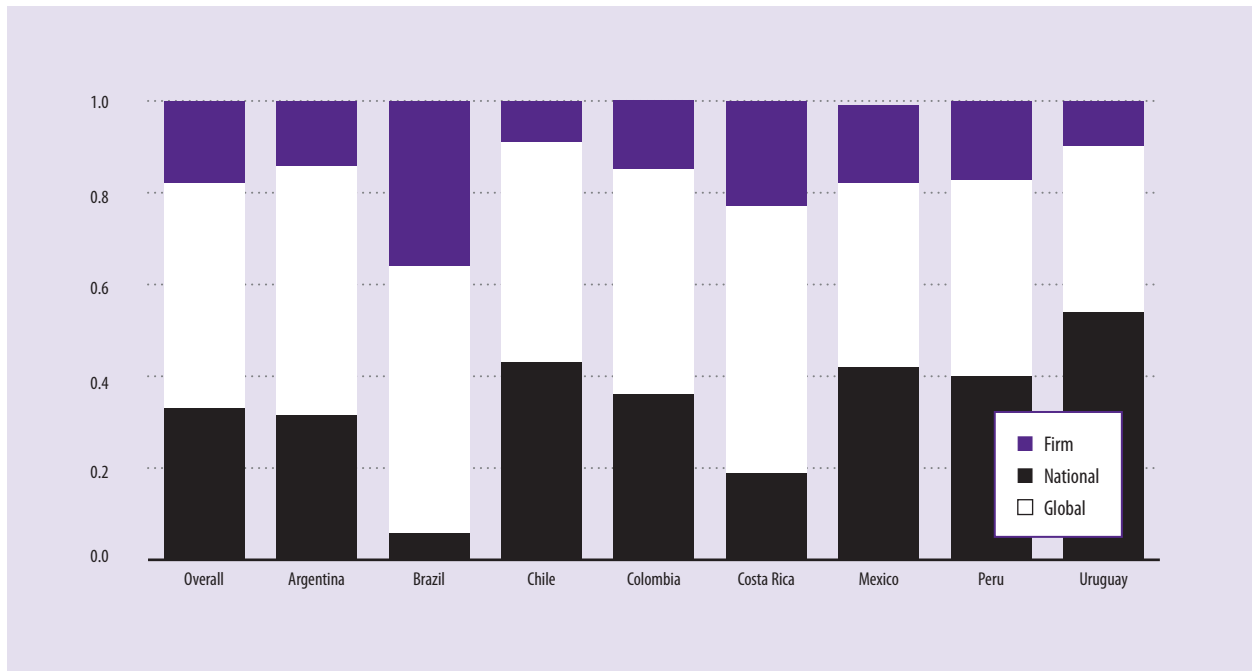
are under way to develop and adjust such indicators for Latin American countries as the basis of a better understanding of their innovation performance. INSEAD’s Global Innovation Index presented in this report, meanwhile, combines variables used to monitor innovation performance to include those more relevant to emerging economies.

In order to provide fresh insights into different manifestations of innovation in Latin America, the project developed the 2010 Innovalatino survey. This survey gathered up-to-date information on innovation activities from a large number of firms in the region, including information regarding the impact of the 2008–09 economic crisis upon firms’ innovation projects. (The scope and methodology of the survey differ from those of national innovation surveys implemented

by national statistical agencies in many of these countries. Therefore the Innovalatino survey results do not always coincide with those from other surveys.) The survey targeted firms in the manufacturing sector (comprising categories 15–37 of the ISIC Rev. 3 classification),<sup>5</sup> allowing for uniformity of what is meant by ‘innovation’ across different firms. As a result of the restriction to manufacturing and the emphasis on larger firms, the initial sample is, by design, not representative of the entire population of firms in the eight countries (Argentina, Brazil, Colombia, Chile, Costa Rica, Mexico, Peru, and Uruguay) covered.

The survey was implemented between November 2009 and January 2010 in eight countries, and post-stratification weights based on firm size and sector of activity were implemented to better reflect the

**Figure 4. Firms introducing product innovations that are new to the world, the market, or the firm**



Source: InnovaLatino: Fostering Innovation in Latin America, 2011.

Note: Percentage of manufacturing firms reporting product innovations to the world, the national market, or the firm.

population of firms in each country. These weights were constructed with reference to firm size and innovation-intensity of the firm's sub-sector.

Some results worth highlighting are presented in Figures 4 and 5. The former illustrates that emerging markets introduce a majority of innovations that are new to the market and to the firm, rather than the world. Brazil presents the highest proportion of innovations that are new to the world, at 36%.

The InnovaLatino report presents the results to these and over a dozen questions for eight countries and distinguishes responses between smaller (fewer than 50 employees) and larger (more than 50 employees) firms. The InnovaLatino survey provides a rich perspective on the broad diversity of innovation in

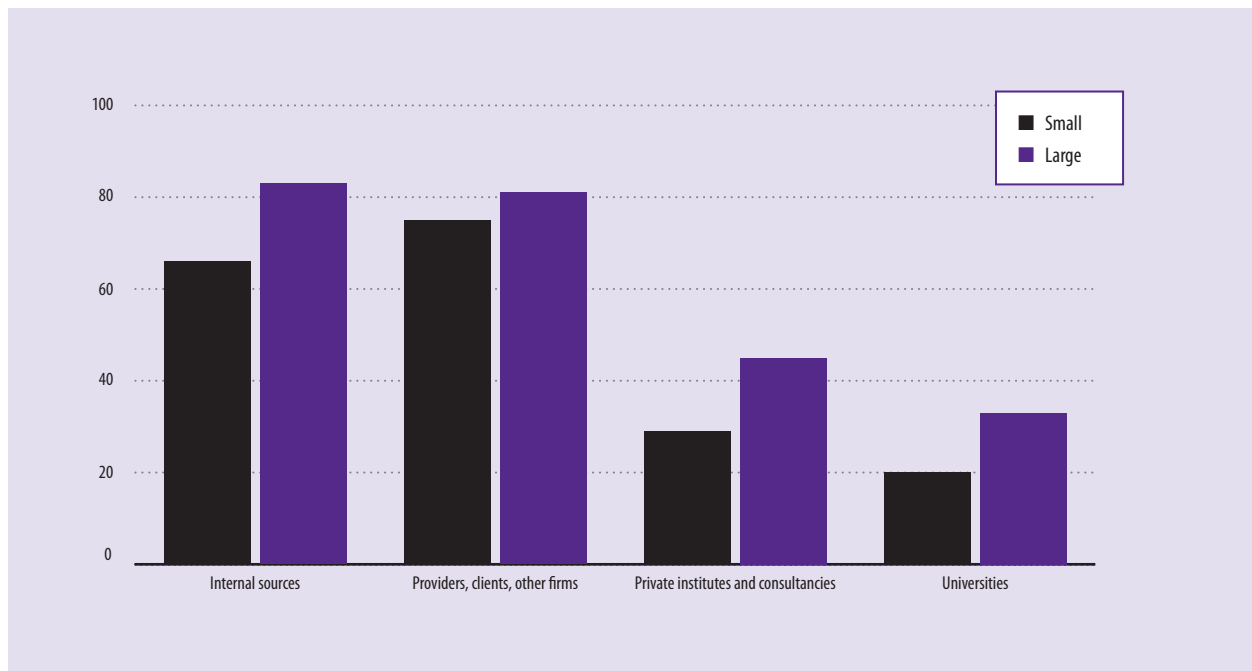
Latin America in the critical manufacturing sector.

### Learning from Latin America

Five characteristics of Latin American economies must be kept in mind when seeking to strengthen their innovation capacity. Their analysis may also offer important lessons for countries seeking to strengthen their innovation agenda amidst similar conditions.

1. **Innovation in a natural resource-abundant economy.** A key challenge for Latin American economies is to define how to promote innovation in the natural resource sectors that currently dominate the economy and, in parallel, how to further develop other sectors that offer higher

productivity gains (diversification). Recently, strategies have been developed with a clear sectoral focus, and the choice of sectors has been pragmatic: to support the strengthening of competitive clusters around natural resources, as well as to simultaneously encourage the development of emerging sectors. Firms and sectors are rising to the challenge of boosting innovation in natural resource-intensive sectors; an example of this is provided by EMBRAPA, the Brazilian Agricultural Research Corporation, a public research institute. In the field of policy initiatives, Chile's Development Agency (CORFO) has launched focused programmes to promote process innovations in the mining sector and to introduce new species of fish in the aquaculture

**Figure 5. Sources of information used for innovation**

Source: InnovaLatino: Fostering Innovation in Latin America, 2011.

sector. Similarly, in Argentina the development of dynamic clusters linked to natural resource-intensive sectors has received public funding (from FONTAR—Fondo Tecnológico Argentino) to execute both individual and associative innovation projects. This has been the case, for example, of the agricultural machinery cluster.

**2. Policies to build innovation skills by enhancing formal education and linking universities and the business sector in Latin America and beyond.** Human resources are vital to innovation. Successful innovation policy must, accordingly, be grounded in measures to help people acquire (or upgrade) and deploy the skills and creativity they need to innovate. This begins

with formal schooling—starting from early-childhood interventions all the way up to doctoral-level university studies—but also extends to the context in which educational institutions interact with the business sector and the way that information flows among them in the innovation system. The InnovaLatino survey highlights that cooperation with education institutions and firms more generally is increasingly recognized as important. For more than two in five firms (44%), cooperation is very important for the development of their innovation activities, and about the same proportion (41%) actually engage in some form of cooperation. Universities in Latin America—such as Tec de Monterrey, in Mexico—can play an important role in this area.

**3. Partnering and cluster policies.** Given the complexity and high cost of many forms of innovation, businesses increasingly recognize the benefits of partnering. A large share of firms included in the InnovaLatino survey drew upon varied information resources internal to the firm, information was received from providers, clients, and other firms. During the last decade, a number of Latin American governments implemented policies to promote clusters for different purposes: fostering SMEs, such as the Arranjo Productivo Local programme carried out by SEBRAE in Brazil; promoting regional development as in the case of the cluster programme of Antioquia, Colombia; or looking for innovative solutions to

challenges faced by a sector or group of companies, as in the case of the Technology Consortia Program implemented by Corfo in Chile.

#### 4. Innovation and green growth.

Innovation is centrally important to combating environmental degradation and can be a key factor in making green growth possible through the development and deployment of environmental technologies. Some Latin American governments and firms are already shifting to more green growth models. Latin America is the second-largest biofuel-producing region of the world. Brazil dominates the region's production, producing ethanol from sugarcane, with Colombia a distant second. Brazil's capacity to move into 'second-generation' biofuel production—with net lifecycle greenhouse gas emission reductions—is probably as great as, or greater than, the capacity of any other emerging or developing economy. Examples of green innovation, though perhaps isolated at present, extend well beyond biofuels in Latin America. Grupo Islita, for example, a member of the World Heritage Alliance for Sustainable Tourism, leads a group of Costa Rican enterprises with the common goal of promoting responsible tourism practices that foster cultural authenticity, economic opportunity, and optimum environmental stewardship.

#### 5. Adequate information systems.

Among the shortcomings of current innovation indicators, the first, as pointed out above, is that existing measures are ill-suited to monitoring the

innovation economy of middle-income countries such as the majority in Latin America. Frequently cited variables—such as R&D expenditure, patents, scientists in the population, and trademarks—are undoubtedly of great importance, but they focus on technologically oriented, patentable innovations and fail to capture non-technological innovations and new-to-market or new-to-firm innovations. The development of new and more comprehensive indicators as advocated by the OECD Innovation Strategy will help improve innovation measurement and policy assessment.<sup>6</sup>

#### Key public policy tools for fostering innovation

With regard to critical success factors for fostering innovation, several Latin American countries have institutionalized good practices that create a better environment for innovation. During the last decade, Chile has created a National Council for Innovation and Competitiveness to ensure that ministries and departments coordinate their actions and take a suitably long-term view of innovation policy. The country is also using the increased revenues from commodity exports to support innovation. Brazil's institutional innovations include the widely praised activities of FINEP, the federal innovation financing agency, which in recent years has created an innovation incubator and venture capital vehicles to promote innovation. Other cases of experimentation can be found throughout the region.

Based on these practices and on the aforementioned key aspects of the region, we recommend leaders

from the public and private sectors to consider the following:

Strengthening innovation in Latin America begins with strengthening people—researchers, entrepreneurs, managers, employees, suppliers, and customers of firms. Empowering people to innovate calls for more and better education for all. This involves developing different types of competences: basic literacy skills, occupational skills, and global knowledge economy skills, as well as offering adequate retraining opportunities. As countries pursue these educational goals, they will equip their economies to become better able to absorb, adopt, adapt, and generate new ideas and technologies.

A second group of actors in an innovation system are firms. Businesses are the place where knowledge and ideas are translated into new products, services, and business models. Innovation policy should recognize the diversity of firms in terms of size and sectoral specificities, and should foster actions and instruments suited to the characteristics of the economy. International organizations should also recognize the diversity of countries in terms of their portfolio of industry sectors and the distribution of different types of firms (e.g., their size and whether their primary objective is to gain profit or enhance social well-being). For example, the Innovalatino survey found that in Argentina, over 50% of participating large firms were conducting projects with foreigners, whereas significantly fewer participating small firms (less than 30%) conducted projects with foreigners. In contrast, in Colombia, significantly more participating small firms (35%) reported conducting projects with foreigners than large firms (18%). In particular, targeted

support to micro, small, and medium-sized enterprises is vital because of their importance for employment generation and also because of their vulnerability to failure in their early years.

Strengthening institutional and infrastructure capacities for scientific research and developing incentives to support the diffusion and application of scientific outcomes to production development are also key elements of success in innovation policies.

A tangible and intangible infrastructure for innovation is crucial. It requires investment and the provision of adequate regulatory frameworks. High-speed broadband connections, in particular, offer an important platform for boosting entrepreneurial activity in many countries of the region, but these are also important for providing basic public services such as health and education to disadvantaged sectors of the population.

As innovation is an inherently risky undertaking that requires long-term financial commitment, public policy must encourage *adequate financing* to enterprises.

Successful innovation policy requires a long-term commitment from legitimate institutions with clear mandates, as well as coordinated action among ministries, agencies, and other levels of government, calling for improved means for designing and implementing *coherent policies*.

In addition to coherence among ministries, actors, and policy domains, innovation policy implies greater coherence between *supply- and demand-side policies*. The former typically include funding basic research or increasing levels of schooling; the latter include smart

regulations, standards, pricing, consumer education, and tax measures.

Finally, policy measures to unleash and support entrepreneurial creativity in Latin America cannot ignore policies directed toward the *informal sector*. Roughly one out of two workers in the region is part of the informal sector, and in some countries a majority of middle-class households work informally. Effective innovation policies cannot overlook this part of the economy.

Latin American countries—like other emerging economies—illustrate that our conception of innovation can no longer be limited to the activities of laboratories and investment in R&D. The Innovalatino report's original firm-level indicators and data show that small and large firms in the region are innovating in this broader sense, even as most R&D expenditure in the region is largely publicly financed and quite low by international standards. How can the considerable creativity and innovation reported by firms be translated into better economic and social development? With the new measures and analyses included in the Innovalatino report, Latin America can be better armed to tackle the challenges posed to lagging productivity and to seize the window of opportunity to launch a 'Latin American decade'.

## Notes

- 1 IDB (2010) exhaustively reviews the Latin American productivity gap and the policy measures that might help to close it, including policies to promote more and better innovation. See also the Innovalatino background paper by Daude (2010), which focuses on the productivity-innovation link in Latin America.
- 2 Patent applications to the European Patent Office; see the OECD Patent Database, 2009.
- 3 World Bank, 2008.

- 4 OECD, 2010a.
- 5 See <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=2&Lg=1>, accessed by 20 May 2011.
- 6 OECD, 2010a.

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## Innovation in India: Affordable Innovations

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The buzzword in the 1990s used to be ‘globalization’. In the second decade of the 21st century, the word that has gained sudden prominence, and with reason, is ‘innovation’. The President of India has declared 2011–20 to be the ‘Decade of Innovation’. From academia to industry, everybody is busy chanting this new mantra as though it were some sort of magic word, the mere pronouncement of which would rid one of all problems.

But what *is* innovation? ‘Innovation’ is one of the most commonly used and misused buzzwords in the corporate world and beyond. In simple terms, ‘innovation’ is the conversion of information into valuable knowledge and ideas and subsequently into a significant benefit that may take the form of new or improved products, processes, or services.<sup>1</sup> It is a means to realize the potential of an invention by commercializing it so that the customer is willing to pay for it. A systematic innovation management philosophy follows through the entire process from ideation, analysis, and prioritization to implementation and monitoring.

This leads us to the next question—why this sudden focus on this word now? The answer to this lies in

the realization that the progress that science and technology has made and that has brought prosperity and better standards of living in the West is useful, but predominantly to the urban class in India. The challenges for the Indian rural population are different from those of the West or any other developed nation, and the advances brought by science and technology that work so well in the West do not really apply to the vast majority of people in India.

In effect, more than any other country in the world, India—with a population of 1.15 billion, which keeps growing at 1.5% a year—faces scarcity on a grand scale across the board: from water and food to oil and gas and to primary education and basic health care. Because of its inherent environmental and social constraints, India is a place where the need to get more value for less cost has been felt for a long time. This need is often a matter of survival. Increasingly, the scarcity of these necessities has combined with India’s mind-boggling diversity (of religions, languages, and cultures), its relative liberty (India is the world’s largest democracy and has a rapidly expanding free market economy), and growing connectivity (India is adding over 15 million mobile

telephone subscribers every month) to turn it into a large-scale, living laboratory where a large number of people across the social spectrum are daily coming up with inventions that are both affordable and sustainable. These inventions have relevance not only within the Indian context, but also in other global markets.

In this chapter we assay some recent affordable innovations in India, highlighting commonalities, the role played by key enablers in executing those innovations, and whether they meet the key goals of sustainability and inclusivity.

### Innovation in business models

Innovation in India has so far been largely product centred. Not much thought has been applied to innovating business, marketing, and delivery processes that would give superior benefits to consumers.

This focus is now changing. These days, world-class companies such as Microsoft, PepsiCo, IBM, Cisco, Nokia, GE, Xerox, and so on are using India as their research and development (R&D) base to pilot next-generation business models and organizational structures and to develop affordable and sustainable

The authors are grateful to Mr Pradeep Kashyap, Founder and CEO of the Consultancy and Knowledge-based organization on Emerging markets, MART, for sharing his vast experience on innovation in rural markets. The authors also thank Ms Shalini S. Sharma, Head, Higher Education, with the Confederation of Indian Industry (CII) Knowledge and Innovation Initiatives, for taking time out to go through the manuscript and contribute in terms of editing. The authors are grateful to Mr Anjan Das, Executive Director, Technology, CII, for providing the platform and necessary contacts for getting relevant data. Last but not least, the authors thank Mrs Daniela Benavente, INSEAD, for her contributions towards making the piece more structured and readable.

solutions that can then be marketed on a global scale. In doing so, these firms are synergistically integrating their India R&D operations into their global innovation networks. But that is only one part of the story: innovation in India is largely driven by Indian entrepreneurs.

### Inclusive innovation to integrate rural communities

With 71% of India's population (742 million people) living in rural areas,<sup>2</sup> the majority of Indian innovation efforts are focused on the countryside. There have been projects to boost the livelihood of rural communities, targeted offerings to allow rural enterprises and farmers to enrich their productivity through ICT-enabled techniques that provide useful information at the click of a button. Reverse innovation (a concept addressed later in this chapter) plays an important role, with a sizeable bottom-of-the-pyramid market and grassroots-inspired ideas.

There are major developments in the areas of microfinance that foster uplifting the role of women in rural emerging markets. Tens of thousands of self-help groups—such as those comprising artisans in remote villages—are being enabled with mobile services so that they can market their offerings optimally and obtain an appropriate return on their time and effort.

Project Shakti, co-created by Unilever and MART, and the e-Choupal initiative of the business conglomerate ITC are pioneering examples of innovative delivery and procurement models. In Project Shakti, to effectively increase the reach of fast-moving consumer goods in rural areas, women from existing microfinance groups were

hired as the last-mile distributors for Unilever household products and links were established for credit from banks via the microfinance mechanism. Unilever provided a guarantee against default, thus validating the viability of the business model.

Project Shakti began with 50 *Shakti Ammas* (SAs, or rural female partners); it now has over 45,000 SAs across 12 states. The sales of Unilever products by SAs represent 20% of the company's total rural sales.<sup>3</sup> ITC's e-Choupal initiative is aimed at selling agri-products as well as sourcing raw materials. The company established an information technology (IT)-based exchange that provided information on agricultural prices, weather, and so on, gaining trust among farmers. Further, it persuaded the existing agricultural *mandi* (market) agents to be e-Choupal *sanchalaks* (operators), thus maintaining and working with existing rural relationships.

Connecting the unconnected has been pushed globally by the GSM Association with programmes such as the Emerging Market Handset development (ultra low cost). Locally the Indian government has been playing a major role in uplifting the 600,000 villages with tools such as the Universal Services Obligation Fund.<sup>4</sup> Jagdish Sheth, author of the famous book *Chindia Rising*, has converted the 4 Ps of traditional marketing (product, price, place, promotion) into the 4 As: awareness, accessibility, affordability, and acceptability—all of which are essential for rural market development. Success in the rural market depends on bringing the total cost of ownership down for the package solution offered by the firm that may comprise all or some of the 4 As.<sup>5</sup>

The National Innovation Foundation (NIF) is leading several initiatives for rural innovations. With the Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and Grassroots Innovations Augmentation Network (GIAN) programmes,<sup>6</sup> NIF has taken grassroots innovations to a new level. This is evident in its centres that display outstanding frugal innovations. NIF has a newsletter, *Honey Bee*, and it invites visitors who want to learn more about local innovation by providing a rural immersive visit called *shodhyatra* to spread best practices and learn about locally developed innovative solutions.<sup>7</sup>

The biggest IT-enabled innovation project in the world is the building of a unique identification (UID) for all Indian citizens. '[The] unique identification project was initially conceived by the Planning Commission as an initiative that would provide identification for each resident across the country and would be used primarily as the basis for efficient delivery of welfare services. It would also act as a tool for effective monitoring of various programs and schemes of the Government.'<sup>8</sup> This is poised to bring about a revolution for *Aam Aadmi* (ordinary people) in India, whose transformation into *e-nagrik* (e-citizens) will improve the quality of their lives and livelihoods by making services such as e-health, e-banking, and e-learning more accessible.

These improvements are, in turn, advanced by the building of new innovation infrastructure, the promotion of new ideas, the development of human capital, the increasing of commercialization by ideators/inventors, the strengthening of networks and small and

medium-sized enterprise (SME) clusters, and the measuring and indexing of progress in innovation.

### The development of clusters

An interesting discussion has centred around how a Silicon Valley-type phenomenon can be replicated in India. It is felt that a direct replication would not be feasible, but the culture of entrepreneurship and open knowledge sharing with collaborative minds can achieve wonders. We see this happening as multiple industry segments, government, and academia are increasingly joining together with a reverse innovation approach to give a whole new meaning to 'GLocal'. Thus a Silicon Valley on a new scale and with a different dimension awaits us.

The 'reverse brain drain' is doing wonders for India; a lot of global talent is returning home to the motherland. The youth in urban India are now more global than ever, and they are quite in tune with new technologies, even ahead of the curve in many cases, as early 'adapters'. Being tech-savvy and up-to-date with the latest and greatest along with high aspirations and thought-provoking ideologies is changing the face of the country. With the youngest population worldwide—over 54% of its population is under the age of 25 (and 45% under 19)—India is poised to witness some game-changing innovations.

### Conceiving and launching affordability

One mega-trend we observe in the re-invention of innovation is that of *reverse innovation*. 'Reverse' or 'frugal innovation' occurs when an innovation is developed and/or adopted

#### Box 1: The Nano

Looking out of the window of his house one day, Ratan Tata saw a family of five precariously perched on a two-wheeler. That image sowed the seed in his mind of making a car that the middle-class could afford to buy. India is home to over 28 million middle-class households (those with an annual income of US\$5,000–25,000, or US\$25,000–125,000 at purchasing power parity), or 13% of total households in the country. Yet only 9% of them are estimated to own a car. Volume sales of a peoples' car were quite possible.

A team of 500 people was set up to develop such a car with the guiding principle of keeping costs low as well as adhering to regulatory requirements and performance targets such as fuel efficiency and acceleration capacity. Existing templates of cars were looked at and major changes incorporated at the design level. Obtaining the concurrence of suppliers (including international players),

convincing suppliers to set up (co-locate) their manufacturing plants near the Tata Nano production facility, and, finally, securing social and political support were some of the other major challenges faced. Today, the car that resulted from these innovations is selling in five major states and making headway in other states.

That is not all. The innovation cycle has not stopped. A feature-rich version called the 'Europa' is being developed for the export market. The successful development and launch of the Nano has created a new image of India as a hub capable of producing small cars. Several multinational corporations—such as Ford Motors and Renault—along with other Indian business groups such as Bajaj and Mahindra are venturing into developing new small cars. Thus the Nano has helped spawn innovation beyond the house of Tata in the Indian economy and abroad.

#### Source

IBEF, 2010.

first in the developing world then deployed in mature markets. It is an interesting trend that is bringing a whole new meaning and perspective to innovation, transforming traditional innovation into something new. Indian resourcefulness is embodied in the Hindi word *jugaad*—to find an effective solution, even if it is makeshift and short-term. This approach, although not innovation in the true sense but rather an inspired adaptation of existing solutions using low-cost technology, is a phenomena that emerging markets such as the BRIC countries (Brazil, Russia, India, Indonesia, and China) are increasingly exhibiting.

There is also a lot of potential for breakthrough innovations with this approach. Some examples of frugal innovations include GE's US\$1,500 hand-held electrocardiography (ECG) machine; its US\$15,000 PC-based ultrasound machine; the Rs. 3,500 ChotuKool refrigerator from Godrej; Tata's Nano (at US\$2,500, the world's cheapest car) and its Swach (one of the world's most inexpensive and widely available water filtration systems); Ginger budget hotels; and a wide array of products in sectors ranging from the known automobiles, pharmaceuticals, and IT services to lesser-known sectors such as drinking

### Box 2: ChotuKool

In India, 8% of households own a refrigerator—a proportion similar to the country's 9% car ownership. The two main reasons for this low rate are the affordability of conventional refrigerators and irregular power supply.

In developing a low-cost alternative to the conventional refrigerator, the company Godrej followed a three-stage process that focused on the community first, then the product, and finally the business model. The person in charge of the project involved rural women and built a product that had awareness and acceptability of the target group built in. It runs on a 12-volt DC supply. It reduced irrelevant functions on the basis of community feedback, and made a refrigerator that is cheaper and lighter than the conventional ones. This innovation reduced product parts from 200 to 20, eliminated a freezer, adopted a thermo-electric cooling process instead of using a compressor, and included a laptop-type built-in battery to maintain cooling capacity during power outages. Finally, the distribution drivers were to be NGO partners and not sales employees. Godrej plans to sell about 1 million units of its ChotuKool refrigerators in the next three to four years.

The product has applicability in the local hospitality sector (hotels, restaurants, flower shops, and food stalls in rural areas) and also abroad in areas where affordability or irregular power supply is an issue.

#### Source

IBEF, 2010.

water, consumer goods, health, education, utilities, public administration, and agricultural machinery. Building from the ground up with a deeply value-driven approach is an essential component of success in innovations in these areas.

#### Automobile

The Nano—the car priced at US\$2,500 or Rs. 100,000—produced by Tata Motors is already an iconic product. Product design involving over 30 patent applications, a back-mounted engine, and economical sourcing of auto components through co-location with the main Nano plant helped in making the Nano an affordable or people's car (see Box 1).

#### IT services

Developed by Infosys, a well-known brand of the Indian IT service industry, the Global Delivery Model has put the Indian IT sector on the global map. It is an efficient mix of on-site and offshore services that delivers superior performance at substantially reduced costs.

The penetration of the Internet in India has deepened the use of IT-enabled services domestically as well, and the Internet has become important for marketers within the country. Among the several solutions offered, by the company Ideacts, 'Clinck' has an advertising inventory built into a desktop application refreshed via connectivity to Ideact's servers. The result is the higher click-through rate of 2.5, versus the industry average of 1.0—this translates into more effective advertising and thus higher advertising revenues. The innovators exploited the facts that about 37% of Internet usage in India is routed via cybercafés and

that the bulk of the users are youths. Clinck is targeted at cybercafé operators and includes a free application for managing cybercafé operations such as inventory, accounts, customer relations, and so on.<sup>9</sup>

The IT industry in India is growing at a compound annual growth rate of about 20%. The talent pool fostered by the IT industry is targeting ITES delivered via the Internet. The presence of business-to-consumer (B2C) IT services can be seen in the banking and other financial products, telecommunications, education, health care, utility management, public administration, and entertainment sectors where organizations are embracing IT not only for internal administration but also for management of external relations.

Nonetheless, a vast segment of the country's businesses—its SMEs—has a low IT adoption rate. The reasons include the high cost of IT investment, lack of regular electricity supply, and a lack of awareness of the potential returns. In these conditions, another big Indian IT player, Tata Consultancy Services (TCS), is piloting a service called 'IT-as-a-Service (ITaaS)' as a comprehensive IT solution for SMEs.<sup>10</sup> ITaaS is a customized, low-cost service based on a cloud computing model wherein software, hardware, and maintenance are all offered on one platform as a monthly subscription service. SMEs can reduce their IT investment and have greater IT management control. The productivity benefits will accrue to SMEs, to their employees, to TCS for the success of its initiative, and to the economy as a whole as productivity benefits are realized in the informal sector and as the benefits are distributed across the millions of SMEs employees.<sup>11</sup>

### Water, food, energy

The B2C initiatives target the middle-income, well-educated population. The less educated and the illiterate, comprising the low-income groups, also stand to benefit as more products are developed for them. Drinking water solutions in India include personal water purifiers at a considerable cost—ranging from one-fourth of average annual per capita income for basic filters to total annual per capita income for reverse osmosis systems—clearly out of reach of low-income households. Tata's Swach is a low-cost solution for drinking water. Combining locally sourced materials with nano-silver particles for the filters helped enhance performance (90% elimination of germs) while reducing cost. Not only does Swach provide convenient and safe access to drinking water, it saves time for rural households that otherwise would have to spend it in procuring drinking water from distant sources. Further, it enables girls to attend school who are otherwise drafted for this task.

Food, being perishable, ends up being wasted in India because of the paucity of storage facilities. Inadequate supply of electricity in rural areas is a challenge for both bulk and personal food storage. Where the electricity grid is present, the supply is irregular. For most rural households in India, owning a refrigerator is both too expensive and ineffective. One of India's premier consumer goods companies, Godrej, set about addressing this problem by adopting a solutions approach. The product that emerged is ChotuKool—a portable, light-weight refrigerator that is both affordable and effective. This enables rural households to cool drinks and store food for some time, saving

both food and time for women (see Box 2).

To address the important issue of power for rural households without connectivity to the grid, the 16-year-old company SELCO has devised a solar power system for household use. They have created photovoltaic solar power systems (PV-SPS) to provide off-grid lighting in rural areas. The system costs about US\$200 and is customized. A basic solution consists of four 7-watt compact fluorescent lights, a photovoltaic cell mounted on the rooftop, and a lead acid battery for storing the electric power generated by the PV cell. For households that find even the relatively small amount of US\$200 to be a barrier to adoption, SELCO helps arrange financing from local banks or microfinance institutions. The lighting solution is a complete package that includes the product, the service, and the financing. The company's annual revenue is about US\$3 million. It has sold, serviced and financed about 100,000 PV solar systems.<sup>12</sup>

### Transport

The lowest rung of the urban transport system in India is the rickshaw, a manually operated tricycle for two passengers. The second rung is the auto-rickshaw (priced at approximately Rs. 80,000 to 100,000), which is a fossil fuel-powered vehicle that contributes to urban pollution. The Council for Scientific and Industrial Research (CSIR), through its CSIR-800 project, aimed at empowering 800 million Indians via science and technology application, came up with a Soleckshaw (priced at approximately Rs. 25,000 to 30,000). One of the 37 national laboratories of CSIR, the Central Mechanical Engineering Research

Institute (CMERI), conceived and developed the Soleckshaw—a solar-electric pedicab that can also be run using pedals. This pedicab has a zero carbon footprint. It improves the lives of the rickshaw pullers by reducing the physical effort needed for operation and increasing efficiency. It is an effective means of transport for short distances. Widespread use is expected not only as a cheap manual cab but, more importantly, as a feeder transport to mass transport systems (e.g., a metro subway). The Soleckshaw's supporting infrastructure for eco-friendly batteries and convenient charging stations (at metro stations) is a product of a collaboration with other national laboratories, commercial partners for production, and non-governmental organizations with the aim of helping adoption by rickshaw pullers and by commuters.

In another example, tractors designed to be operated by rural women—in the absence of men who might have migrated to cities, leaving their small land-holdings untended and unproductive—is a brain-child of the Indian multinational corporation the Mahindra Group. Effective land use will improve agricultural productivity and rural incomes, and in the process empower rural women.

### Health and education

The poor often go into debt because of healthcare expenses, particularly surgical expenses. The Yeshasvini rural health insurance scheme, promoted by the Narayana Hrudayalaya Hospital, addresses this problem specifically for heart care. The access to surgery at a top hospital with a low annual premium of US\$1.5 is socially transformative and represents a big leap in providing access

### Box 3: Yeshasvini Surgery Insurance and Narayana Hrudayalaya

Devi Prasad Shetty, heart surgeon and care provider to Mother Teresa, is guided by her philosophy of thinking about affordable health care. He has built his solution around scale, shared risk, and cost-control.

This solution, called 'Yeshasvini Insurance', provides insurance for cardiac surgeries at an annual premium of US\$1.5 per annum. For example, the cost reimbursed per cardiac surgery in Narayana Hrudayalaya, a specialized cardiac hospital, under the Yeshasvini scheme is US\$1,200. The actual cost is US\$3,000, while the benchmark cost for cardiac surgery in India is about US\$5,000. The cost gap between the Yeshasvini insurance charge and the average hospital cost is subsidized by the hospital's premium patients, who are charged more for rooms with better personal amenities. The cost gap between Narayana Hrudayalaya and other hospitals is the result of tight control on construction costs and higher asset utilization (for instance, Narayana Hrudayalaya performs

30 surgeries in a day, twice that of other top cardiac hospitals; it uses computerized tomography scanners, magnetic resonance imaging equipment, and other machines for 14 hours as opposed to the usual 8 hours; and offers discounted rates during late evenings).

The Yeshasvini Insurance Scheme, aimed at covering the rural population for surgical procedures with low premiums and world-class benefits, has helped achieve the required scale. Shared risk through insurance has provided access to critical health care to the under-privileged. Cost control by the hospital and incentives per surgery have reduced the cost per surgery and kept it affordable.

The Narayana Hrudayalaya aims to expand its number of beds from 5,000 to 30,000 within India over the next five years, and is considering setting up healthcare facilities in Malaysia and the Cayman Islands.

#### Source

IBEF, 2010.

to health care for those at the bottom of the pyramid (see Box 3).

Another example of innovative health care in rural areas is the 'Arogya Parivar', an innovative outreach programme launched by Novartis, which exemplifies a private-sector health service delivery model.<sup>13</sup> It builds upon existing government schemes and mechanisms to treat diseases such as tuberculosis (TB) in rural India by engaging local youths to cater to the needs of the uneducated and underprivileged (see Box 4).

The National Rural Health Mission (NRHM) is a central government programme that relies on strong central leadership coupled with local committee oversight. Typically in India, central government programmes are implemented via the state governments by local administration. The NRHM breaks ground in the way its implementation is designed. The local committees are hybrid in nature, drawing members from both government and civil society. This organizational innovation reportedly reduces both leakages of funds and resources and

the time needed for implementation. This operational structure is part of a broader pattern of public-private partnerships (PPPs) where the private sector provides expertise and executes the project, and the government provides the financing as well as enabling conditions and incentives to achieve the social goals. Such PPPs encompass the build-operate-transfer model employed by several infrastructure projects constructed by a private company in India.<sup>14</sup>

Education got a big boost with the universal primary education programme *Sarv Shiksha Abhiyan* (SSA) of the Government of India (GOI). Since 2002, the GOI has pushed hard to provide access to primary education for every child between the ages of 6 and 14 years. Along with the right to education, such access is now a right guaranteed by law, not a policy that might be diluted by future central or any state government. Some state governments (e.g., Delhi) are drawing up plans to extend this right to secondary education as well. There are now initiatives to improve the quality of schooling provided so that the access issue is largely achieved. There is also an emphasis on integrating vocational education with secondary education. With quality and employability being addressed, the chances of India realizing its demographic dividend are improving. The SSA is financed by an education cess over and above the income tax. Given the right to education, this cess may well be absorbed by general taxation. The attention paid by taxpayers to this additional tax expenditure leads to greater scrutiny of the programme.<sup>15</sup>



### Measuring value and scaling up: The key link

The above examples are a small subset of a growing number of innovations—developed by grassroots innovators, new companies, corporations, and government and non-government non-profit bodies—that are affordable by middle-income and low-income groups and thus inclusive in nature. These innovations economize on resources and use more local materials and renewable resources than do existing products.

Ideation, both grassroots and organizational, has been bottom-up. If formal ideation was impeded by the fear of failure, it received a substantial boost from key interventions (see the following discussion on strengthening the ecosystem), including those from the Department of Science and Technology (DST), a central government body under the Ministry of Science. The ideas generated under these conditions have a bearing on the end-use conditions and build solutions around it, as is evident in the innovations described earlier.

Activity in R&D that leads to breakthroughs is gaining momentum in India. In 2004–05, more than 17,000 applications were filed and about 2,000 patents granted. In 2008–09, more than 36,000 applications were filed and more than 16,000 patents were granted.<sup>16</sup> Over the last few years, the number and quality of incubators, early-stage funders, and venture capitalists have grown. This has helped ideators and inventors present proof-of-concept and secure initial funding.

Although there is reason to applaud the emergence of new ideas and their embodiment in solutions, there is also a need to determine

#### Box 4: Arogya Parivar

India is home to one-fifth of the tuberculosis (TB) patients of the world—the biggest number in any country. The Government of India launched, in 1997, the World Health Organization (WHO)–recommended Directly Observed Treatment, Short course (DOTS)—an ambitious nationwide programme to treat TB patients efficiently and cost effectively. However, access to doctors and availability of medicines remains a challenge. TB patients have to travel repeatedly to community health centres or district hospitals, and sometimes have to pay for diagnostics because testing equipment is out of order; medicines are also sometimes out of stock.

In 2008, Novartis launched Arogya Parivar, a health services delivery model in rural areas, in partnership with MART. The model created an umbrella network of private health service providers—doctors, chemists, and diagnostic centres already present locally.

Two major issues with treating TB are early detection and completion of treatment. Educated, local rural youth

were appointed as health educators to identify patients, motivate them to seek early treatment, accompany them to district health centres, and monitor their medication schedule till they were completely cured. The health educator is an entrepreneur who earns from the sale of medicines to a 30-patient case load.

The value proposition for the patients is that they receive complete treatment at an affordable, fixed price through a dependable network of health service providers. This is a convenient solution for rural patients who delay and often even discontinue treatment because they are unaware of the enormity of the health problem and are not aware of the treatment process—conditions that frequently result in a relapse of the disease.

The model is self-sustaining and scalable. The programme has been launched in five states covering 30,000 villages, and has already treated 12,000 TB patients. The company plans to expand it across 11 states in the next five years.

#### Source

Kashyap, 2011.

their commercial and economic success. Innovation starts with the idea, the invention, and the prototype development, but it is incomplete without value generation. However, the time taken from commercial launch to value generation and scale-up is variable. Without value generation—commercial gain (profits, wages), employment and gain in livelihoods, economic value-added, indirect socio-economic benefits (access gained to products and services, time-use savings, quality enhancement), and reduction in polluting emissions—any innovation

is incomplete. The discussion earlier shows that some of the Indian innovations (e.g., Project Shakti) are sustained value generators. For most others in the making (e.g., SELCO India), the value-generated numbers are fairly low and the scale-up stage is not yet reached.

The main gap in Indian innovation is weak value generation and low scale-up. The two are linked in India. First, without scale and the consequent volume of sales, affordable innovations will not achieve large monetary values. Thus scaling up is both necessary and the key link

for affordable innovations to be profitable. Thinking of achieving scale is important from the project inception stage itself, advise entrepreneurs and innovators. One of the prime movers of Project Shakti, MART,<sup>17</sup> practises scaling up in devising solutions. MART helps devise effective solutions for the poor in emerging markets by working with the existing physical and social infrastructure on the ground and with the government machinery at the local level. Scale is built in to the solution and tested in the pilot. When successful, the solution is quickly rolled out and can readily be expanded.<sup>18</sup>

Second, measuring value and monitoring the progress of innovation in India requires metrics along with financial value. Accessibility is a big issue. For that, cost has to be low. With low costs, financial valuation alone will be low. Thus the number of consumers and households served must also be a metric for affordable innovations. Precise measurement of different benefit indicators would help in a more complete valuation of the project and would therefore help in obtaining both funds from commercial and non-profit sources and guidance on the way forward.

Third, scale-up after commercialization is slow. The weakness may lie in the design of commercialization and the delivery model where the solution, the pilot, the commercialization, and the strategy for scale-up appear to be sequential but are not fully integrated from the beginning. Gleaned from learning over two decades of innovating, Pradeep Kashyap, Chief Executive Officer (CEO) of MART, identifies three requirements for scaling up innovations to the point where they are commercially viable: (1) the scale-up must be strategically and operationally built into the innovation

and tested in the pilot; (2) there must be buy-in at the top from each of the key stakeholders—the CEO of the corporation (strategic buy-in), the chief minister of the state government/s (social buy-in), and a board member or member of the senior management to head the initiative/venture (operational buy-in); and (3) it must involve the community. For new ventures, private players and now the National Innovation Council are building such networks and promoting exchanges to allow innovators to build capacity for such scaling up and to give a boost to the vibrant innovation environment in India.

#### **Innovation infrastructure initiatives: Strengthening the ecosystem**

*Jugaad*, or doing the job with minimum resources, is part of Indian DNA. Nonetheless, there is little formal ideation and experimentation. Fear of failure and an education system based on rote learning are partly to blame. To aid ideation and promote grassroots, university, and industrial innovation, several initiatives have been proposed. These initiatives increasingly try to provide support through the later stages of the innovation process.

The DST has several schemes and funds to foster innovation in the ecosystem. One such project is the India Innovation Initiative (i3), which is organized in collaboration with the Confederation of Indian Industry (CII) and Agilent Technologies. The objective of the i3 programme is to foster and harness ideas and inventions by grassroots innovators. The i3 has no age-related focus and is open to all. India's premier business school, the Indian Institute of Management,

Ahmedabad (IIM-A), provides incubation support. CII's Yi or Young Indians body provides wider outreach, including support in the commercialization of select innovations.

India's National Innovation Council (NInC) was set up in 2010 to focus exclusively on innovation in every sphere of economic activity. NInC—chaired by the Adviser to the Prime Minister on Public Information Infrastructure & Innovations and with members from the academia, research organizations, and the industry—is devising mechanisms to tap grassroots/industrial/educational/societal innovations and then take the promising ones through to commercialization and/or scale-up stages.

For university and industrial innovation, the NInC's favoured approach is the development of new networks in the form of university innovation clusters and industry innovation clusters to use existing resources optimally. The purpose is to create cluster innovation centres (CICs) where all stakeholders and innovators are connected in symbiotic relationships based on cooperation and collaboration. The CICs would connect the universities with industry, institutions, and government to share their ideas, develop them, create intellectual property rights, develop new business models, create new markets, and spawn demand-driven collaborative R&D activities and an overall ecosystem subject to organic growth. The CICs would be networked with each other so that ideas could be dynamically shared and resources optimally deployed in order to increase visibility and to spread the knowledge across the ecosystem.

To facilitate the progress of innovations through the pilot stages for various initiatives, the NInC

proposes setting up an Innovation Fund with buy-in from the government and private stakeholders such as key social venture capital funds, mentoring networks, and entrepreneurship groups. The Innovation Fund would provide an overarching umbrella (a fund of funds), within which existing innovation players as well as networks would operate. This extension of the innovation infrastructure would expand the reach of innovative products and services as well as facilitate cooperation and collaboration among various clusters.

Innovation now abounds in India, and it has had some stellar successes. However, there may be significant overlap with respect to managing the innovation process. The NInC's attempt to create networks and foster an active exchange of information is a step towards addressing this issue. Similarly, developing appropriate parameters and measures, measuring these, and monitoring value generation are also necessary steps.<sup>19</sup>

### The way forward

The Indian innovation ecosystem is acquiring greater granularity. Innovation in India is increasingly becoming local, with end-use conditions considered at the forefront of the process. This increase in local emphasis is reflected in the availability of an increasing array of products and services. Traditional strengths, such as affordable medicines, have been expanded to underserved markets beyond India. Several of the new innovations—such as the Nano car—have global potential. A growing number of these are affordable innovations across several sectors, namely, medicines and health care,

drinking water purifiers, automobiles, IT services, cellular phone services, education, e-governance, and so on. The list is expanding to include education and skills. Progress is significant in terms of ideation; development of solutions; proof of concept; and pilot, production, and commercial launch.

India needs to cultivate innovation as a habit (or attitude) so that every single individual is responsible for contributing his or her part. Innovation can manifest in several forms—from operational efficiencies and business model optimizations to product- and service-related novelties. Innovation is as much about execution as it is about creativity. The passion to innovate must eventually originate from the heart, where we can turn our dreams into reality without losing the essence of its unique and emotional selling properties.

An open innovation concept is essential. India needs to prepare itself to work with an open concept in a close collaboration from seeding the idea to rapid prototyping (embracing a philosophy of fail faster to succeed sooner), and partnering with customers (to do early pilots for beta offerings), research organizations, academic institutes, and so on. To genuinely innovate, companies should invest in an array of skunkworks projects, labs, learning centres, institutes, and other venues. These encourage collective experimentation by creative, innovative people.

The interesting new term of 'polycentric innovation' has been conceptualized at Cambridge Judge Business School as an emerging business paradigm.<sup>20</sup> This type of innovation designates the global integration of specialized R&D capabilities across multiple regions to co-create novel solutions that no

single region could have completely developed on its own. It encapsulates the synergistic global collaboration formula of '1 + 1 = 11'.

We will see a great deal of emphasis on sustainability and eco/clean tech-based solutions that will be pillars for the next wave of innovations in emerging markets. The need for sustainable solutions has been felt in developed nations, and such solutions will be more emphatically demanded in emerging markets. A greater number of initiatives in green innovation are shifting to these fast-developing nations. Vendors in the wireless industry, for example, are working on numerous initiatives from eco-friendly power to base-stations to unified offerings similar to Ericsson's Tower Tube design.<sup>21</sup> With an increasing focus on reducing its carbon footprint, the market will open its doors to numerous innovative technologies.

Collaboration among stakeholders will be key to taking this forward, a key that is underscored in India where there is a need to form optimal alliances to build powerful propositions and find a win-win for all stakeholders. With R&D centres, innovation hubs, centres of excellence, manufacturing and competence centres being established in India, the country is poised for tremendous growth and for being at the forefront of a new wave of globalization that will make the world even flatter. But there is a great deal of work to be done, and there is also a need to foster a new culture that encourages risk-taking along with enhanced creativity.

India is an emerging hub for conceiving and delivering innovative products and services in a profitable or value-generating manner to the underserved and the poor. As Mahatma Gandhi had said, 'True

innovation happens when what you think, what you say, and what you do are in harmony.' India seems well on its path to some kind of innovative harmony.

## Notes

- 1 OECD and Eurostat, 2005.
- 2 The Mother and Child Health and Education Trust, 2010.
- 3 Kashyap, 2011.
- 4 GOI, Department of Telecommunications, Ministry of Communication & Information Technology.
- 5 Sheth, 2008.
- 6 'SRISTI'—which means 'creation'—was developed in 1993 to support the activities of the Honey Bee Network, which aims to respect, recognize, and reward creativity at grassroots levels. Based in Ahmedabad, Gujarat, SRISTI is a registered charitable organization that is devoted to empowering knowledge-rich, economically poor people by adding value to their contemporary creativity as well as to their traditional knowledge. See SRISTI, 2001 and <http://www.sristi.org/cms/>. GIAN is 'an incubator of grassroots innovations and traditional knowledge.' GIANS have been set up at Ahmedabad and Jaipur to provide incubation support to grassroots innovations and traditional knowledge from West and North India, respectively. See GIAN, available at <http://www.gian.org/>.
- 7 NIF, 2004.
- 8 GOI, Unique Identification Authority of India, 2011.
- 9 IBEF, 2010.
- 10 IBEF, 2010.
- 11 IBEF, 2010.
- 12 IBEF, 2010.
- 13 See [http://www.corporatecitizenship.novartis.com/news/2009-02-12\\_rmai.shtml](http://www.corporatecitizenship.novartis.com/news/2009-02-12_rmai.shtml).
- 14 GOI, Ministry of Health & Family Welfare.
- 15 GOI, Department of School Education & Literacy.
- 16 GOI, Ministry of Finance, 2011.

17 'Established in 1993, MART is a pioneer in the rural domain and over the years has also developed as the Leading Consultancy and Knowledge based organization on Emerging Markets. MART's expertise lies in its understanding of the Base of the Pyramid (BoP) segments, their eco system and behaviour. An understanding that has been built over years of interaction and engagement with rural as well as urban low income communities.' See MART, 2011.

18 Kashyap, 2011.

19 National Innovation Council.

20 Radjou, 2009.

21 See <http://www.ericsson.com/campaign/towertube/>.

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## Making Cities Smart and Sustainable

KURT STEINERT, REVITAL MAROM, PHILIPPE RICHARD, GASPAR VEIGA, and LOUIS WITTERS, Alcatel-Lucent

Data from the United Nations report *World Urbanization Prospects*, published in 2009, indicate that urban populations will grow by an estimated 2.3 billion over the next 40 years, and as much as 70% of the world's population will live in cities by 2050.<sup>1</sup>

This growth is not limited to established urban centres and 'mega-cities' in developing markets—in fact, small and mid-sized cities in emerging markets have been driving the acceleration of urban growth for some years. Between 1990 and 2000, urbanization in developing regions was characterized by the emergence of new cities that did not exist prior to 1990<sup>2</sup>—the point being that urbanization is a pervasive trend.

The rapid growth of cities has in many cases been accompanied by the aggravation of many of the challenges associated with urban living—the protection of public safety, traffic and transport management, upkeep of public infrastructures, waste disposal, delivery of basic public services, and so on.

Accompanying this growth in population will be a dramatic shift in demographics. Each year, the percentage of people over the age of 60 increases—by 2050 the number of people over the age of 60 is expected to triple,<sup>3</sup> and will outnumber children under 15 for the first time in human history. This general ageing of the population means that the need for healthcare and elder care infrastructures to serve the elderly

will increase markedly. This situation is complicated by the fact that the ability of families to care for ageing members is decreasing.

Technology is required to provide better, safer health care and to help ensure an improved quality of life, particularly as people live longer and the percentage of the population working to support them decreases, largely because of the increasingly broad geographic distribution of many families.

The rapid urbanization of the past half century has been the primary driver of global climate change, and that trend is expected to accelerate as cities expand. This is because the increase in economic activity, industrialization, and consumption associated with cities brings with it a transformation of the physical and natural environment that, for the most part, cannot be undone. This conclusion is based on simple math: Cities consume 75% of the world's energy and produce 80% of its greenhouse gas emissions.<sup>4</sup> The vast majority of this comes from the burning of gasoline and diesel fuel for automobiles and trucks, with the remainder committed to the generation of electricity to heat, cool, and light our homes and to run electrical appliances and other technology.

Clearly the question of how best to manage the use of resources in cities and address the needs of a growing and ageing population, all while reducing the urban carbon

footprint, are daunting challenges. Making cities smarter has become a necessity. Innovation—particularly in the areas of regulation, private-public partnerships, and technology—will be absolutely critical in this process.

### Innovation and smart cities

Innovation—which is broadly defined here as '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'<sup>5</sup>—will in many ways form the foundation for the establishment of smart cities and the realization of a more sustainable approach to growth.

The concept of the smart city is a framework for a particular vision of modern urban development that recognizes the growing importance of information and communication technologies (ICT)—broadly characterized here as 'networks'—in driving the economic competitiveness, environmental sustainability, and general liveability of cities. Smart cities by definition address all of the challenges noted above. The concept of smart cities goes beyond the purely technological aspects of urban development. They are typically referred to as 'digital' or 'intelligent' cities, terms that encompass social and environmental dynamics.

A team of researchers from a number of European universities, jointly leading the European Smart Cities project, suggests that smart cities can be defined by measuring relative progress in a number of categories,<sup>6</sup> including smart governance (democratic processes and inclusion), smart people (education), smart environment (environmental sustainability/energy consumption), smart mobility (transportation), smart economy (regional/global competitiveness), and smart living (health care, social services).

Innovation can be applied to the development of smarter cities in all of the above dimensions, in a variety of ways. Examples include:

- **Smart governance:** Efficiently interconnecting governmental organizations and administrations, eliminating obstacles to communication and collaboration, improving community access to services (first responders, local officials, and service organizations, etc.), improving overall access to governmental services on the part of average city residents, and improving organizational processes to be more efficient.
- **Smart people:** Increasing inclusion by delivering a more consistent educational experience in both urban and rural areas through the use of e-education solutions (remote learning and collaboration) to help eliminate rural/urban educational disparities.
- **Smart environment:** Dramatically reducing energy consumption through the application of novel technology innovations while promoting energy conservation and material re-use.

Figure 1: Smart cities/smart services interconnection model



- **Smart mobility:** Promoting more efficient and intelligent transportation systems—effectively leveraging networks to ensure more efficient movement of vehicles, people, and goods, thus reducing gridlock; and promoting new ‘social’ attitudes such as car sharing, car pooling, and car-bike combinations.
- **Smart economy:** Creating business opportunities, providing broadband access for all citizens and businesses, helping maintain population in rural areas by leveraging networks to expand business opportunities outside the city centre, and using electronic means in business processes of all kinds (e.g., e-banking, e-shopping, e-auction).
- **Smart living:** Access to high-quality healthcare services

(including e-health or remote healthcare monitoring), electronic health records management, home automation, smart home and smart building services, and easier access—via the Internet—to social services of all kinds.

#### Enhancing the urban lifestyle through innovation

The vision of the smart city is based on the notion of leveraging ICT and public-private partnerships to lay the foundation for a range of innovations, both technical and socio-political. This foundation requires two primary elements.

- **Smart cities public-private partnerships:** The establishment of a social, political, and business environment that is supportive of innovative approaches to

city planning and management, including an open broadband regulatory framework, mechanisms for public-sector intervention, business models to support the required investment, and methodology for encouraging and fostering partnerships that can deliver innovative solutions to the community.

- **Smart cities broadband networks:** The implementation of an open broadband network that the entire community—organizations, companies, and individuals—can use, independently or through creative collaborations, to develop innovative approaches to particular social challenges and/or to establish new businesses and business models.

### How technology can help: The smart cities broadband network

Fundamentally, the establishment of a smart city depends on ubiquitous connectivity. Individuals, companies, governmental and non-governmental organizations, educational institutions, healthcare and public safety providers, objects (buildings, sensors, and fixed and mobile devices of all kinds) and utilities—and all the various processes associated with a city—need to be able to interact seamlessly, in real time, to share data and content safely and securely. In the truest sense, the smart cities broadband network is the ‘brain’ of the smart city. The interconnections among the network and city services are illustrated in Figure 1.

But what does this mean, exactly? Today most urban centres, particularly those in developed markets but increasingly those in high-growth environments as well, are webbed

by a latticework of networks of all kinds, from both fixed and mobile broadband access systems to optical transport and metro networks to private business, educational, and governmental networks, all fed by and interacting with the Internet. In some parts of the world suburban and rural areas are also increasingly connected. How is the smart cities broadband network different?

Today’s networks lack key elements that would support features that could be described as ‘intelligence’. Although networks get more and more sophisticated every day, there is enormous potential that can be tapped by embedding a range of instrumentation into networks and employing more finely tuned management and control capabilities. These enhancements will make them smarter than networks currently available.

Just as importantly, networks can and should become much more efficient so that they are less costly to operate and require less power. What is needed is a network that can deliver the level of bandwidth required by any given service or application at the absolute lowest cost per bit, coupled with the increased intelligence needed to support the rapid creation and delivery of a wide variety of new services quickly and easily. In essence, smart cities need networks with the stability, resiliency, and security profile of telecommunications networks, combined with the software-driven programmability of the Web, so that they are easy to customize in order to address requirements from different strategic government and industry sectors. All this must happen while consuming a small fraction of the energy they consume today.

The first challenge is to move from multiple networks (mobile,

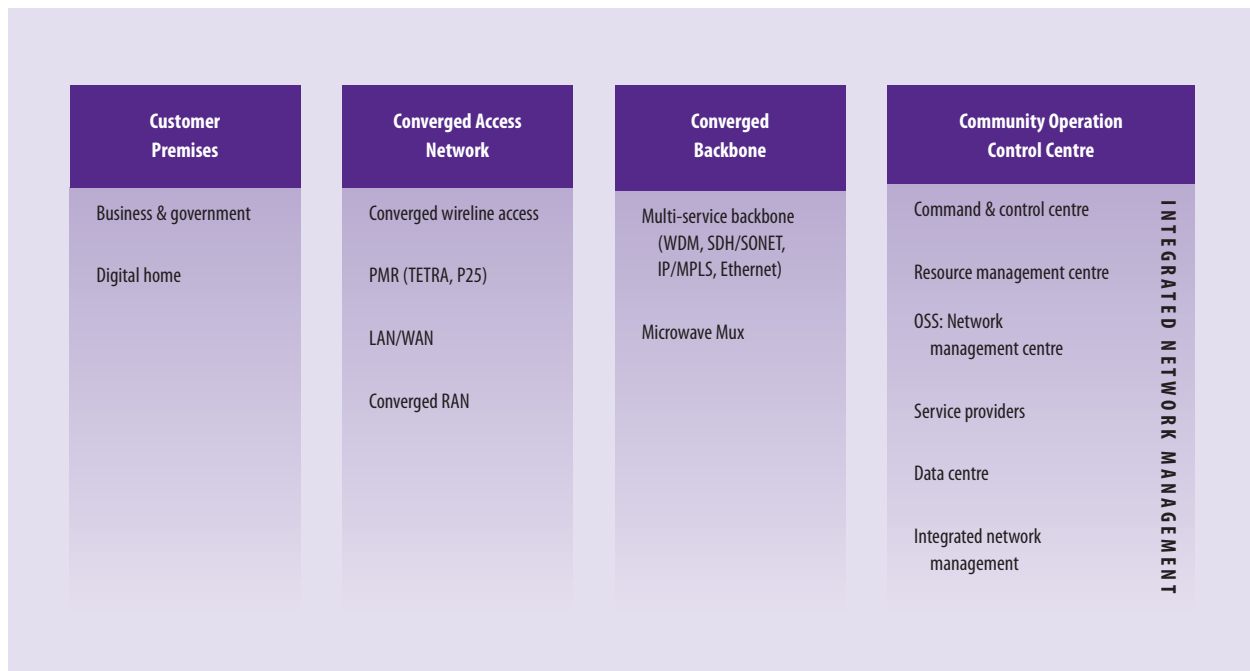
wireline, first responder, private enterprise) to a fully converged network—that is, all services offered from a common infrastructure—that operates using Internet Protocol (IP), the language of the Internet.

The second challenge is to ensure consistent, high-quality broadband connectivity for individuals, businesses, institutions, and governments alike. It is critical that smart cities leverage the range of ‘last mile’ options (the connection between the network and homes and offices), whether that connection is over fibre, copper (xDSL), or wireless (2G/3G/4G).

The third challenge is to move from multiple service control and management processes to a single, converged network and policy management function. It is vital that there be a methodology to ensure that the services that are absolutely essential get the highest priority in terms of routing and resource allocation.

All of this implies a major transformation that can encompass commercial service provider networks and municipal or regional networks, such as Australia’s planned NBN Co. and Singapore’s OpenNet. Furthermore, it implies establishing close interconnections with a variety of private or public networks that are currently owned and operated by governments, educational institutions, public utilities, and more.

Ultimately, the vision for the smart city broadband network is a central hub that houses a range of fundamental network capabilities, and that can then be accessed—via ‘spokes’—by organizations and institutions that are supporting various public and commercial functions, be they delivery of content (movies, TV, music, games), social services (e-health, educational services),

**Figure 2: Conceptual network architecture of smart cities broadband network**

Note: Converged RAN = converged radio access network; IP/MPLS = Internet protocol/multi-protocol label switching; LAN/WAN = local area network/wide area network; Microwave Mux = microwave multiplexing; OSS = operational support systems; PMR (TETRA, P25) = professional mobile radio (used by police and other first responders); SDH/SONET = synchronous digital hierarchy/synchronous optical networking; WDM = wavelength division multiplexing.

transportation (traffic management, train signalling, parking systems), and so on.

A proposed architecture for the smart cities broadband network is illustrated in Figure 2.

### Innovating regulation to drive urban transformation

The shift to smart cities broadband networks creates a range of issues for all stakeholders—industry, government, regulators, and constituents. The issues can be related to the regulatory framework, the need and mechanisms for public-sector intervention, and the business models to support the required investments. Governments—particularly Chief Information Officers for local authorities—are actively exploring the benefits broadband can bring

to a wide array of public services as well as exploiting their use as a driver for economic development.

Governments have understood the need to boost urban economies in a sustainable way and to help foster more favourable economic and technological environments in rural areas. They have reacted by launching a set of broadband stimulus incentives intended to spur innovative projects.<sup>7</sup> These incentives:

- create a more favourable environment for innovation by enabling the development of new, smarter community services such as e-health, e-government, e-business, and intelligent transport;
- create a more favourable environment for citizen engagement and inclusion by extending access to information and knowledge

through e-education and e-learning services so that regional, rural, and remote communities have equal access;

- increase the use of broadband to improve public safety capabilities for emergency and disaster response both within and across territories; and
- put in place smarter ‘infrastructure’ to provide accurate, real-time information to fuel the above-mentioned services, including capabilities such as closed circuit television systems, smart metres, traffic congestion monitors, and sensors of all kinds.

Governments alone cannot address or implement all the challenges inherent in designing, deploying, managing, and financing



such networks, for the simple reason that they typically have neither the knowledge (particularly ICT skills and experience) nor the financial resources to take on these kinds of large-scale, complex projects. The success of smart cities will depend on innovative partnerships among various parties, such as: a trusted technological partner(s) to implement and fund (in part or in whole) the deployment of the network; a combination of federal, regional, and local governmental and regulatory bodies (to drive the establishment of an open broadband regulatory framework);<sup>8</sup> and local businesses and civic organizations that can access the network and create the framework necessary for smart cities.

Open broadband networks are a relatively new phenomenon, and regulations concerning these networks are changing at a very rapid pace and in a fairly irregular fashion. As a result, the need to provide more consistent guidance to local authorities has been recognized by many federal and regional governments around the world. National governments are increasingly taking steps to encourage increases in broadband coverage. Among these measures, those directed towards giving local authorities the ability to take an active role in broadband backhaul and access roll-outs have been most prominent.

For instance, in the United States of America, the economic recovery plan pursued by the Obama Administration has encouraged local authorities to engage in the roll-out of broadband networks and has provided funding packages to facilitate this effort. In northern European countries, municipalities and utilities have invested heavily in backhaul and open access networks to increase very high speed coverage

and to foster competition among telecommunications service providers. In a recently launched ‘public consultation on state aid for broadband networks’, the EU Commission is examining the legal framework of state aid,<sup>9</sup> and whether to allow local authorities to fund—partially or wholly—next-generation fibre-based access networks even in areas where the market already delivers classic broadband services.

In each of the instances noted above, national or regional bodies are creating the regulatory environment and funding stream needed to support the development of smart cities broadband networks, while local government authorities take the lead in developing new services applications and in identifying and realizing broadband coverage and bandwidth needs.

Local communities are considered by many experts in the field to be in the best position to aggregate public services (e-education, e-health, etc.) and to ensure their availability to citizens through the Internet. Local authorities also have a direct interest in broadband coverage to attract enterprises, particularly the small to medium-sized enterprises that are drivers of economic growth.

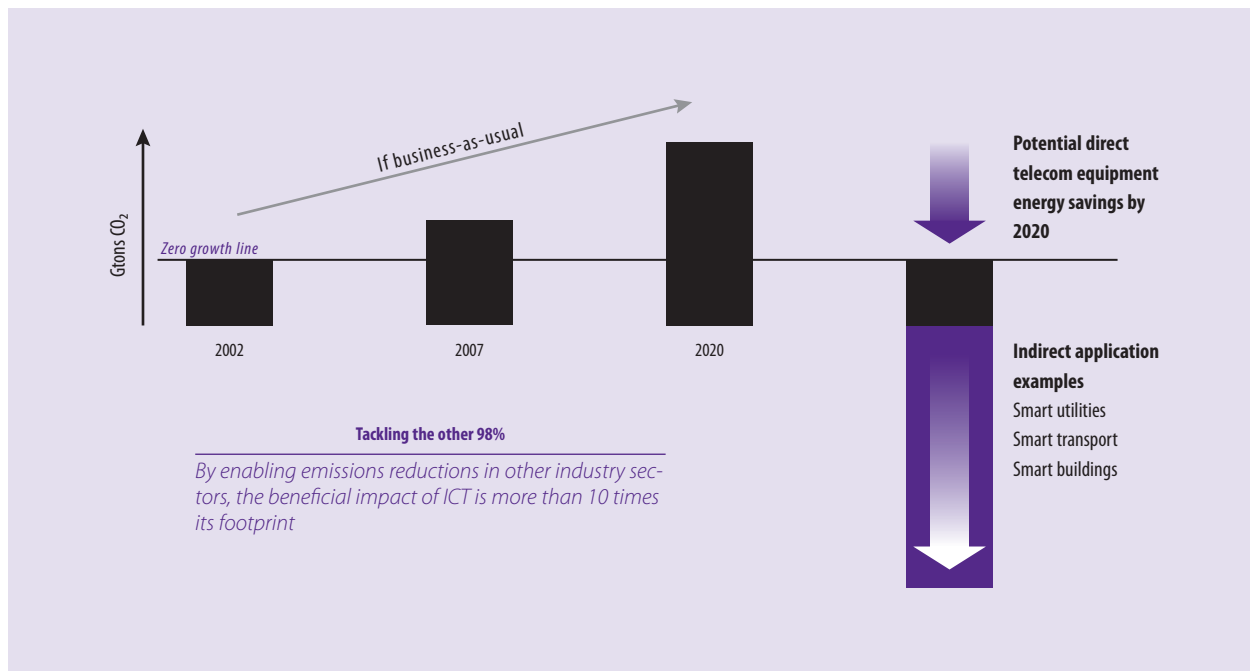
#### **Innovating business models: Smart cities’ public-private partnerships**

The ability of smart cities to offer broadband connectivity—and associated smart services—to all city residents is limited by factors that include the cost of the deployment, operation, and maintenance of the network; the availability of wireless spectrum; physical access to homes and office buildings; and more. To

overcome these challenges, innovative approaches are required.

Unsurprisingly, one of the biggest challenges is the financing (capital and operational costs) of the smart cities broadband network. A number of different approaches have been proposed by national and regional governmental bodies and various industry stakeholders. These typically involve sharing some resources—in some kind of public-private partnership arrangement—among various types of service providers, including retail and wholesale telecommunications companies, utilities, large enterprises, and governmental authorities. The primary approaches proposed are:

- **Passive infrastructure sharing:** This is the sharing of physical assets among service providers, covering such things as cell phone towers, cell sites, ducts and conduit for optical fibre, electrical power supplies, shelters to house the equipment, and cooling systems. Infrastructure sharing helps to reduce the expense of providing services by minimizing capital and operational costs. This practice is already in fairly widespread use today.
- **Active infrastructure sharing:** This is the sharing of the ‘active’ elements of a network, such as radio access network (RAN)—for wireless base stations and antennas—as well as data transport and backhaul systems and fibre optic lines into homes and businesses. Although active sharing provides the biggest benefits in terms of cost reduction, improved broadband connectivity, and wireless coverage, it is difficult to establish and implement because it requires close integration and

**Figure 3: Potential savings from ICT application to energy savings in other sectors**

Source: Alcatel-Lucent analysis of GeSI SMART 2020 data.

collaboration among independent companies that are often competitors. Also, regulations, laws against anti-competitive practices, spectrum availability, and network capacity limitations add complexity to the challenge of active sharing.

- **Full separation:** A central element of many proposed smart city initiatives, full separation involves the establishment of independently operated passive networks and active networks, which then can be accessed by retail service providers (and presumably governmental or quasi-governmental organizations) on a non-discriminatory basis. The passive and active network operators will offer only wholesale services, while operationally separate retail companies and public institutions

will deliver services to households and businesses.

In some cases, national or regional governments have gone so far as to deploy their own network infrastructures—operated on a model similar to that of public utilities—that can be used to deliver a range of public and private services. Others have taken the less radical step of encouraging cooperation through measures such as adopting master plans that can facilitate more widespread broadband access (duct installation in waiting mode, dark fibre roll-out) and mapping available infrastructures in the region.

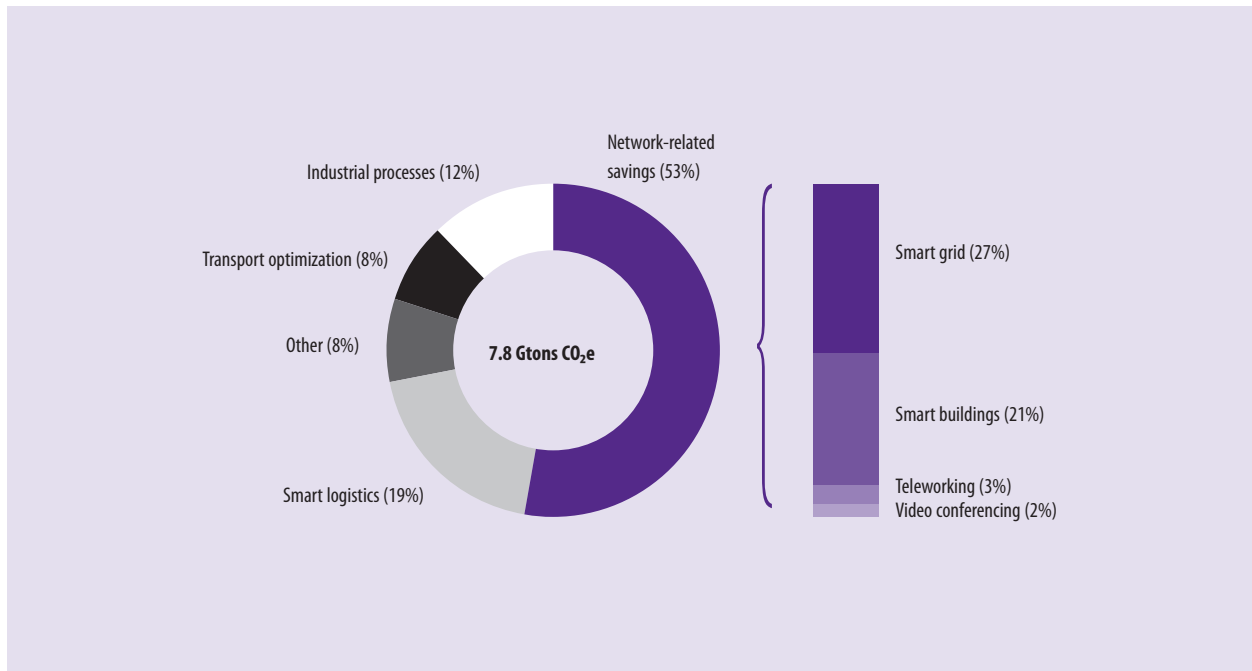
#### The environment: Smart cities' sustainability

In today's world, sustainability increasingly means reducing carbon

emissions as well as achieving durable economic growth. Although some may be tempted to portray economy and environment as mutually exclusive tradeoffs, they can, and indeed must, be seen as a single imperative. Growth that is noxious to the environment would be clearly unsustainable, as would environmental initiatives that fail to make economic sense. More than any other industrial sector, ICT industries sit at the intersection of economy and environment, and by extension at the heart of the smart city.

ICT industries hold unique potential in the drive towards sustainable growth, not only as engines for employment and creation of wealth but also as enablers of a low-carbon economy. According to one recent study,<sup>10</sup> the ICT sector can cut greenhouse gas (GHG) emissions by as much as 15% (i.e., 7.8 Gtons CO<sub>2</sub>e) by 2020—five times the

**Figure 4: Savings potential: 15% of global emissions (7.8 Gtons CO<sub>2</sub>e) in 2020**



Source: Alcatel-Lucent analysis of GeSI SMART 2020 data.

sector's own footprint—with collateral economies of up to US\$750 billion. The combined environmental and economic benefit can be achieved through innovative communications applications and solutions in areas as diverse as building design and maintenance, transport and logistics, electricity generation, distribution and consumption, travel substitution, product dematerialization, and innumerable business process streamlining efforts.

These emission improvements are illustrated in Figure 3.

ICT companies can further help organizations from other sectors and individual consumers reduce emissions by increasing energy efficiency, reducing energy use, 'virtualizing' activities that currently require physical resources, and managing other scarce resources. They can also help by providing the information and analysis tools that

support environmentally responsible behaviour.

'With nearly 70% of businesses with revenues of US\$1 billion or more planning to increase spending on energy efficiency and environmental sustainability within the next 12 months, far-reaching opportunities exist for the ICT sector to be a critical element in the drive to lower emissions', notes the International Chamber of Commerce (ICC).<sup>11</sup>

An analysis of potential emissions savings from smart ICT solutions is found in Figure 4.

#### Examples of smart ICT innovations and their low-carbon effect

So where are the areas that ICT can offer dramatic energy efficiency improvements? A few particular sector examples are explored below.

- **Smart grids:** These grids comprise software and hardware tools that enable electricity generators to route power more efficiently, thus reducing peak capacity requirements and enabling real-time, interactive information exchange with customers. Globally, smart grid technologies could reduce carbon emissions by 2.03 Gtons CO<sub>2</sub>e, worth €79 billion.
- **Smart logistics and transport optimization:** After energy, the transport sector is the second-leading source of global GHG emissions. ICT solutions can help reduce transport needs and streamline logistics. For example, ICT solutions can improve logistic networks, making it easier to mix transportation modes and select the most energy-efficient type of transport. They also help

optimize routes and reduce inventory needs, and can encourage more energy-efficient driving. As fuel prices rise, logistics companies will accelerate their adoption of ICT-based energy efficiency solutions, which will have a huge impact on reducing their emissions. Worldwide, GHG emissions savings from smart logistics could total 1.52 Gtons CO<sub>2</sub>e by 2020, with energy savings worth €280 billion.

- **Smart buildings:** Technologies to help make the design, construction, and operation of buildings more efficient, for both existing and new properties, represent an enormous opportunity. ICT-driven solutions include, for example, building management systems that run heating and cooling systems according to occupants' needs or software that switches off all personal computers and monitors after everyone has gone home. Building energy management systems can reduce energy consumption by 5 to 40%. Globally, smart building technologies could eliminate 1.68 Gtons CO<sub>2</sub>e of emissions, worth €216 billion.
- **E-substitutes:** Communications technologies such as teleconferencing and videoconferencing are helping greatly reduce GHG emissions from business travel. Research by the University of Bradford and Sustain-IT showed that the use of teleconferencing solutions by BT eliminated 717,494 face-to-face meetings.<sup>12</sup> With each conference eliminating an average total of 267 miles of travel, the report shows that each teleconference economized by at least 55 kg of CO<sub>2</sub>. Annual net

savings came to at least 53,552 tons of CO<sub>2</sub>. ICT can also help businesses greatly reduce carbon emissions through dematerialization, which involves replacing material documents such as paper documents or CDs by electronic ones or media, such as Internet-delivered documents and MP3 music files.

Because climate change and the eco-sustainability challenge are too broad for any single organization, it is essential that an open, collaborative, innovative approach prevails. The challenges of driving down energy consumption in ICT and leveraging ICT to advance green advantage are areas around which a variety of research consortia, partnerships, standards bodies, industry groups, and other collaborative efforts have arisen. An example of these efforts is the GreenTouch™ energy efficiency initiative. A global research consortium, GreenTouch™ brings together leaders in industry, academia, and government labs around a shared goal: to make communication networks 1,000 times more energy efficient. By reinventing the network, GreenTouch™ will lay the groundwork for tomorrow's sustainable networks.

To benefit from the extraordinary leverage offered by ICT—beyond developing sustainable networks—government leaders will need to define policies that support the ICT sector's potential as a driver of sustainable growth. Policy makers, regulators, and ICT industry leaders must work together to define the right framework and conditions that will support the ongoing development of innovative ICT solutions. Both as investors modernizing public services and as pioneers and supporters of those innovative initiatives

that require broad collaboration and incentives to succeed, government and public authorities play a crucial role.

All of these ICT innovations, and many others, are the lifeblood of the smart cities. They are absolutely central to their successful implementation.

## Conclusion

People around the world are moving to cities in greater and greater numbers, following the natural inclination to improve their economic circumstances. As the population in cities increases—and ages—it gets increasingly difficult for municipal governments to deliver basic services, let alone ensure a high quality of life for city residents. Even more troubling, the increasing concentration of humanity in urban environments is bringing about profound, largely damaging changes to our biosphere and climate. Current rates of growth and resource consumption are fundamentally unsustainable.

The smart city offers a vision of how to resolve some of these vexing challenges by applying ICT to mitigate the impacts of rapid urbanization and the associated follow-on effects. It also presents an opportunity to rethink how we manage growth, both regionally and locally. As importantly, by making cities smarter, we have the opportunity to reduce energy consumption in a truly dramatic way.

The success of smart city initiatives will require the creative application of technology coupled with novel public policy initiatives. It demands levels of collaboration among private and public institutions far deeper than any seen to date. It also requires the extensive

and creative application of innovation in terms of technology, public policy, finance, and governance. Smart cities by definition will involve strong public-private partnerships, engaging the active participation of governments (regional and local), private companies, educational and research institutions, entrepreneurs, and civic organizations.

There is a tremendous opportunity before us, if we act smartly (and quickly). Urbanization cannot continue on its current path. The smart city vision offers an opportunity to chart a more sustainable course and to potentially eliminate some of the inequalities in broadband access that exist today. This is the right time to fashion a more sustainable, inclusive, and economically vibrant approach to urban growth. Let us take advantage of it.

## Notes

- 1 United Nations, *World Urbanization Prospects*, 2009.
- 2 Harter et al., 2010.
- 3 United Nations, *World Urbanization Prospects*, 2009.
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## The Global Footprint of Innovation

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As companies' operations have become steadily more global, so has their approach to innovation. Multinational corporations (MNCs) are making significant investments in research and development (R&D) outside of the countries where they are headquartered, making them important contributors in global innovation, alongside governments and research institutions.

This trend is driven by the need for companies to compete on a global scale, which entails not only reducing R&D costs but also finding local talent who can offer insight into new markets. However, simply going global is not enough. The most successful companies are those that take a coherent approach to innovation by aligning their R&D strategies with their overall strategy and the business environment in which they operate.

### Innovation going global

Although the globalization of innovation is not a new phenomenon, it has increased measurably over the past few decades. In 1975, for example, foreign R&D sites represented about 45% of all sites; this number reached 66% by 2005.<sup>1</sup> The 2008 Innovation 1000, a Booz & Company study of the 1,000 companies that spend the most on R&D, shows that 91% of them conduct innovation activities outside their

headquarter countries.<sup>2</sup> Importantly, the flow of innovation activities is not unidirectional (see Figure 1). In 2007, companies headquartered outside of the United States of America (US) channelled about US\$43 billion dollars into that country.<sup>3</sup>

This growing trend reflects MNCs' need to compete with fast-growing local and regional enterprises. In doing so, they must understand their global customers and recruit international talent who can channel their ideas and help them gain global market share. To effect such goals, international firms are moving their R&D sites abroad, focusing on three key drivers:<sup>4</sup>

#### Lower costs

It is hardly news that outsourcing to emerging markets is an effective way to reduce costs, but it remains a key consideration for MNCs. This explains why they have pursued R&D in markets where scientists and engineers, as well as big-ticket items such as leasing and infrastructure, are relatively inexpensive. For example, the average annual wages of Indian and Chinese engineers are approximately US\$6,800 and US\$18,600, respectively, while those of the United Kingdom (UK) and Canada are over US\$60,000. In fact, recent Booz & Company analysis shows that 35% of decisions to move local R&D overseas have been

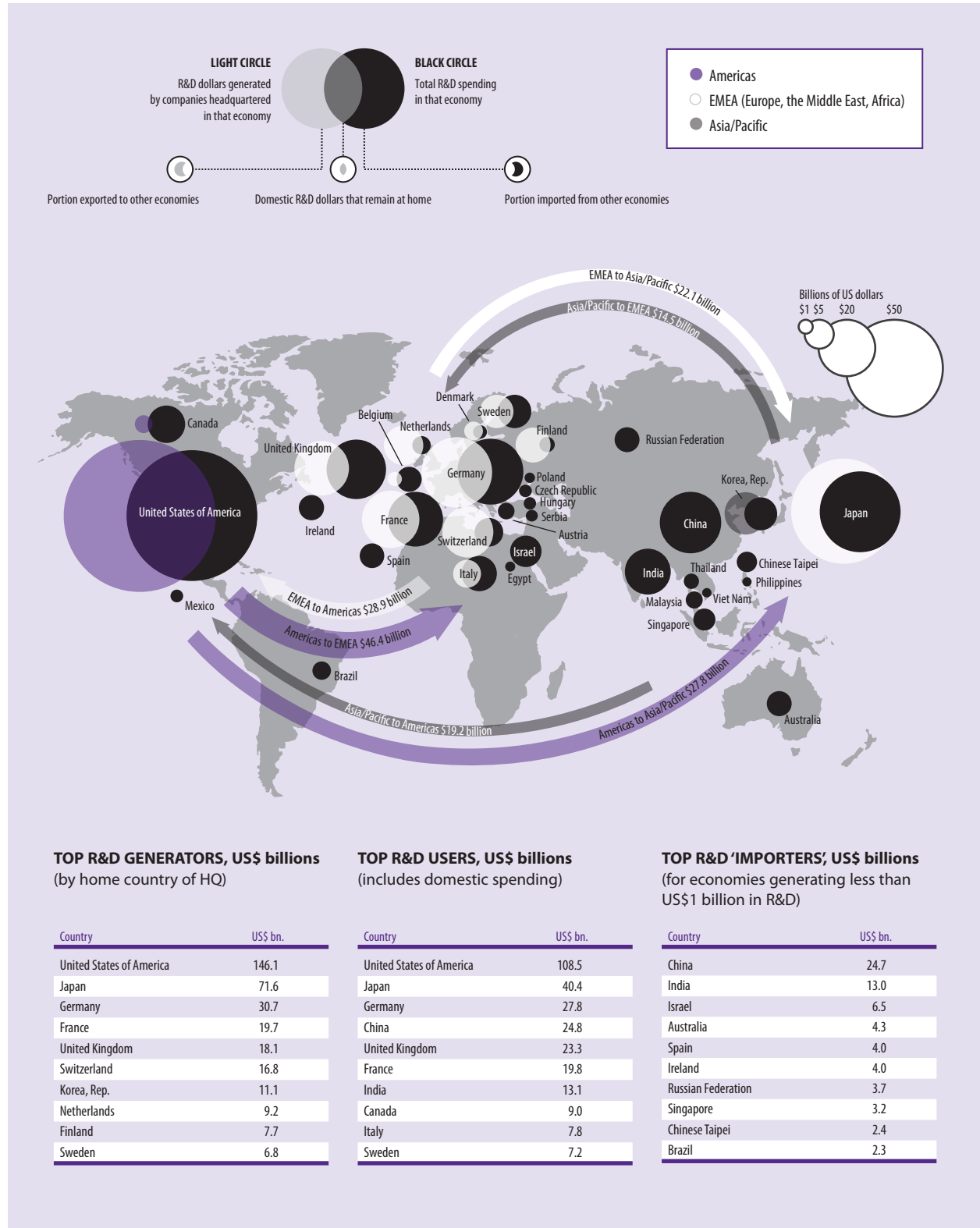
driven by wage levels and not by productivity.<sup>5</sup>

However, cost advantages in these markets are slowly eroding: In India, for example, the wage rate of high-end service workers grew from 53% of the equivalent rate for US workers in 2005 to 65% in 2008, and is expected to reach 77% in 2012 and 90% in 2020.<sup>6</sup> In Malaysia's Kuala Lumpur, a city that is cited as relatively inexpensive and often targeted for R&D because of its technically skilled, English-speaking workforce, overall costs have risen precipitously. Within the next five years, it is expected that Kuala Lumpur will be as costly to live in as London.<sup>7</sup> Going forward, therefore, part of the innovation challenge for MNCs will be to find other sources of cost savings in order to remain globally competitive.

#### Access to talent

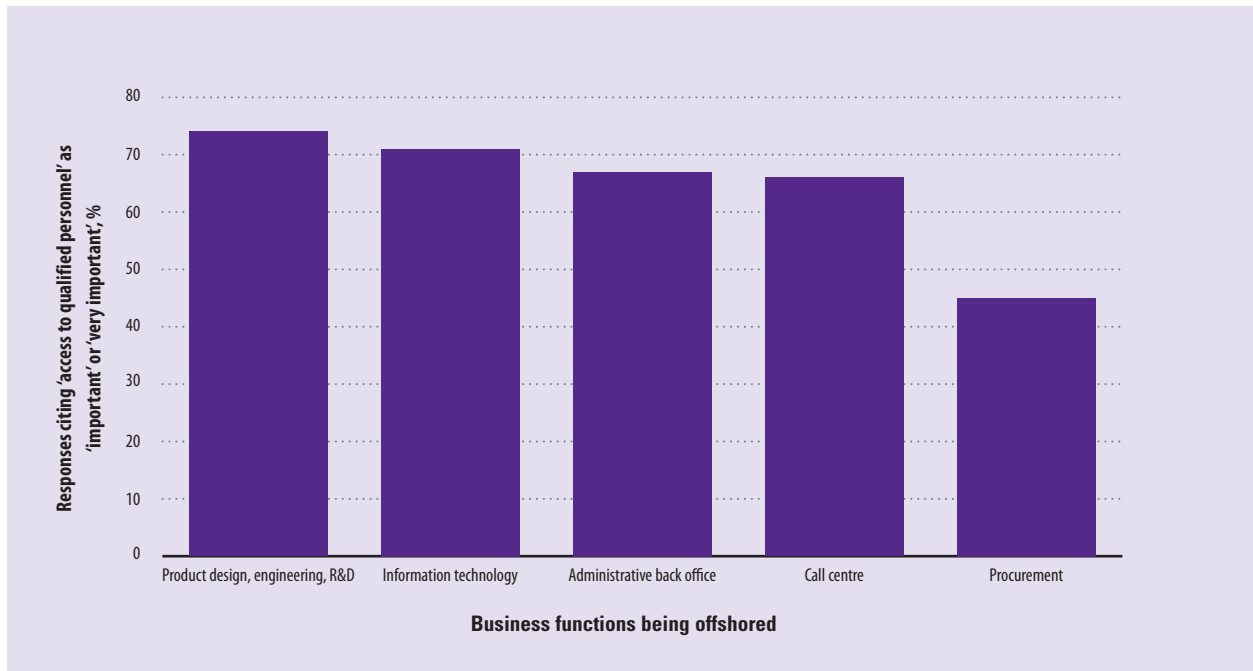
As the cost advantage slowly fades, other factors such as access to talent have become more relevant in global R&D. Many MNCs are opening up R&D sites in emerging countries to reap the talents and ideas of skilled scientists and engineers and to seek their specific expertise at the various stages of the innovation value chain, from ideation and research to product development and testing. For example, companies are recruiting more automotive engineers in India and electronics engineers in

Figure 1: A globalized innovation trend



Source: Jaruzelski and Dehoff, 2008.



**Figure 2: Access to qualified personnel**

Source: Couto et al., 2008.

China as these countries gain specialized skills in these fields. India and China boasted more than 1.3 million university-enrolled engineers and 2.0 million engineering graduates, respectively, in 2007–08—an overwhelming number compared with the 22,000 Canadian engineers in 2008–09 and the 46,000 UK engineering graduates in 2009–10.<sup>8</sup> Indeed, access to talented individuals has been cited by the majority of MNCs as the key driver of global innovation-related functions (Figure 2).

#### Market proximity and insight

Because many emerging markets have witnessed tremendous economic growth and rising demand for products and services, more and more MNCs find it necessary to conduct R&D closer to these

markets to gain insight into customers' needs. In the Indian cellular phone market, for example, many consumers are not looking for a standard cellular phone, but would spend money on a phone like those developed by Nokia, among others, to meet local needs: mobile phones fitted with flashlights, multiple phone books, and various languages that cater to low-income Indian consumers who experience frequent electric power cuts and share their mobile phones with relatives and friends.<sup>9</sup> The automotive industry is another case in point: The demand for high-quality, low-cost cars is rising in many emerging countries. Therefore, to be successful in these new markets, MNCs need engineers who understand what customers really require in a car and what is extraneous, so that they can build new models from the ground up

that are customized for that market. Indeed, what Booz & Company's 2008 Innovation 1000 study has found is that companies from different industries face their own set of challenges in their decision to globalize their R&D footprint (see Box 1).<sup>10</sup>

#### The global innovation dividend

Companies that make intelligent investments in global R&D—with the right mix of low-cost sites, quality talent, and consumer insights—are able to secure a better return on their R&D investments than those that invest their R&D exclusively in their home countries. In particular, of the 184 top spenders that Booz & Company studied in 2008, those that deployed more than 60% of their R&D outside their home countries

### Box 1: Global footprint challenges of the top innovative industries

The decision to globalize R&D activities for any company in any industry involves a combination of business strategies designed to respond to specific business needs: cost reduction, attraction of talent, access to markets and market insight, and operational improvement. Companies in the three industries that collectively represent nearly 70% of all global R&D in 2007—auto, computing and electronics (C&E), and health care—face their own set of innovation footprint challenges, revealed by our data and in interviews with key executives (see Figure 1).

#### Auto: Driven by demand

The auto industry spent 3.7% of sales revenue on its R&D in 2007. Fully 83% of the industry's R&D spending came from companies headquartered in the US, Germany, and Japan. Yet 60% of total R&D spending took place in those three countries, suggesting the importance of emerging auto markets in every auto company around the world. One example is Visteon Corporation, the US auto parts maker. More than 90% of Visteon's revenues once came from Ford. But after 2005, when the company sold a significant portion of its operations back to Ford, its geographic distribution became evenly divided among North America, Europe, and Asia with the balance tilting heavily overseas in recent years. The company's global R&D footprint is even more heavily invested outside the US than its revenue sources would suggest. Of its 18 R&D facilities worldwide in 2007, only three were in the US, whereas nine were in Europe, five were in Asia, and one was in Mexico.

Visteon's strategy has been demand driven, not cost driven, primarily because the facilities and engineers in the emerging markets—such as China, India, Brazil, and the Czech Republic—where an increasing number of cars are being made and sold

and where Visteon's customers, the automotive manufacturers, demand engineering and technical development support for their growing emerging-market base. As Visteon's vice president of corporate strategy Asaf Farashuddin points out: 'In China and India a lot of people who own vehicles, especially the larger vehicles, have chauffeurs, and the owners sit in the back seat. So you have to design audio systems and climate control systems so they can be controlled from the back seat, as well as from the front seat. That's a piece of insight that you pick up only when you're in China and India working with local engineers.'<sup>1</sup>

#### Computing and electronics: Bright ideas

Unlike the automotive industry, C&E products can be sold in just about any market without significant differentiation. This is why the C&E sector is motivated less by demand and more by the search for talent and new ideas. To that end, companies worldwide are spreading their R&D resources across a wide swath of the globe, in both developed and emerging markets.

Among the 50 C&E companies Booz & Company analysed closely, fully 70% of the sector's R&D spending originates in just the US and Japan, yet only 40% of spending takes place in those two countries. The rest is spread among more than 20 countries. This degree of diversification arose in part as a result of the industry's quest for talented scientists and skilled engineers—wherever they can be found. Consider the research footprint of HP Laboratories, the corporate research arm of Hewlett-Packard Company (HP). Despite its long-time connection to Silicon Valley, HP Labs spends just 20% of its budget in the US; the rest is spread among facilities in the UK, Israel, India, the Russian Federation, China, and Japan.

Local demand does motivate part of the footprint strategy in C&E companies. According to Prith Banerjee, director of HP Labs and senior vice president of research, 'it is difficult for researchers in Palo Alto or Cupertino to imagine the need for a keyboard for India's 23 different languages. So we've moved much of our work on gesture-based keyboards to India, to work on the best user interface for accommodating all those languages, in part because we believe our researchers there are best suited to work on these problems.'<sup>2</sup>

#### Health care: Breaking down barriers

Although our analysis of the health-care industry covers primarily the research side, both research and development are witnessing significant growth as companies look to promote open innovation in pure research, while conducting more and more of their clinical testing and development in low-cost emerging countries (LECs), such as China and India, all over the world.

Despite the sector's high level of investment in R&D—which reached US\$109 billion in 2007, second only to C&E—health care's global research footprint has been significantly less diverse than that of either autos or C&E. Much of the sector's money continues to be spent in the developed world led by the US, where 58% of the health-care companies we analysed were based, at 53% of the industry's total spending. By comparison, China, which is the only LEC among the top 10 locations, has just 3% of total spending in the industry.

When it comes to sending R&D offshore, and especially to LECs, first-mover status belongs to development, not research. We estimate that about 70% of health-care R&D is devoted to development; about two-thirds of the development money is spent on clinical trials and the rest goes to process development, regulatory



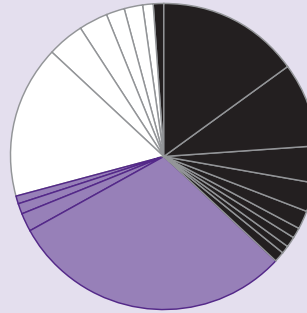
**Box 1: Global footprint challenges of the top innovative industries (continued)**

**Figure 1: Global footprints of the top three R&D industries by country, percent of R&D spent**

*1a: Auto*

Thailand	1%
Chinese Taipei	1%
India	2%
Australia	2%
Korea, Rep.	3%
China	4%
Japan	16%

Mexico	1%
Brazil	1%
Canada	2%
United States of America	30%

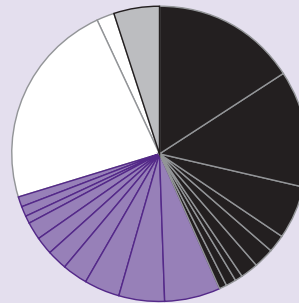


Russian Federation	15%
Israel	9%
Spain	4%
Belgium	3%
Sweden	2%
Italy	1%
United Kingdom	1%
France	1%
Germany	1%

*1b: Computing and electronics*

Canada	2%
United States of America	23%

Italy	1%
Finland	1%
Belgium	1%
Russian Federation	2%
Ireland	2%
Sweden	2%
France	3%
Germany	4%
Israel	5%
United Kingdom	6%



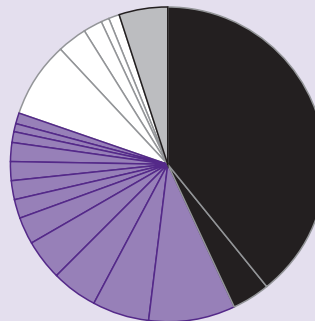
Others	5%
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Japan	16%
China	13%
India	6%
Korea, Rep.	2%
Malaysia	2%
Chinese Taipei	2%
Singapore	1%
Thailand	1%
Australia	1%

*1c: Health care*

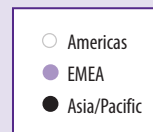
Singapore	1%
India	1%
Australia	2%
China	3%
Japan	8%

Netherlands	1%
Denmark	1%
Austria	1%
Ireland	2%
Belgium	2%
Italy	2%
Spain	2%
Sweden	3%
Switzerland	4%
Germany	5%
France	6%
United Kingdom	9%



Others	5%
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United States of America	40%
Canada	4%



Source: Jaruzelski and Dehoff, 2008.

Note: This figure shows R&D spending, by country and region, for the 50 top spenders on R&D in each industry. For methodology, see Jaruzelski and Dehoff, 2008.



### Box 1: Global footprint challenges of the top innovative industries (continued)

filings, and the like. At present, about 15 to 20% of the money spent on clinical work is going to countries outside the US, Europe, and Japan. Meanwhile, the research side has been much slower; in 2007, close to 95% of the money going into drug discovery was spent in the US, Europe, and Japan.

Companies' clinical efforts have moved faster offshore than pure research has because they need access to people willing to participate in clinical trials of new drugs, and they need to perform those trials cost effectively. In addition, access to emerging markets is becoming an important factor for health-care companies choosing where to locate R&D, as these markets become wealthier and their middle classes grow in size. Piracy concerns have also inhibited pure research. Those concerns are waning in significance, however,

as countries such as China and India establish stronger mechanisms for protecting intellectual property.

Furthermore, until recently the skills and capabilities to perform basic health-care research did not exist outside the West. That, too, is changing as the skills base in other countries improves. Western health-care companies are beginning to establish collaborative efforts with universities and other entities in emerging markets to take advantage of that improvement. Novartis AG, for instance, recently opened a major R&D facility in Singapore to conduct research on tropical diseases. And Merck & Company Inc. has been working with INBio, a nonprofit group dedicated to maintaining biodiversity in Costa Rica, to gain access to promising natural compounds.

Ultimately, of course, this shift in focus is designed to improve health—to discover new drugs in a calculated number of promising areas of medical research. In that sense, it is not unlike HP's plan to make big bets in a few areas of technology research. The effort to globalize this process will certainly bring more new good ideas to an industry that is actively looking for them.

#### Notes

- 1 Jaruzelski and Dehoff, 2008.
- 2 Jaruzelski and Dehoff, 2008.

#### Source

This box is adapted from Jaruzelski and Dehoff, 2008.

tended to perform better, over the previous three years, on several performance indicators, including operating margin, total shareholder return, market capitalization growth, and return on assets (Figure 3). The same holds true for other companies in the Booz & Company study that work to ensure that their R&D footprints are more global than their sales footprint—those whose percentage of research and development sources invested overseas is higher than their percentage of sales overseas. Indeed, for such companies, three-year market capitalization growth was 50% higher than for those who underinvest globally.<sup>11</sup>

However, a global R&D footprint is not, in itself, a guarantee of impressive performance. To succeed, companies must develop R&D strategies that are carefully aligned with

their overall corporate strategy and that suit the business environment in which they operate. Then they must execute those strategies through careful management of their far-flung R&D empires.

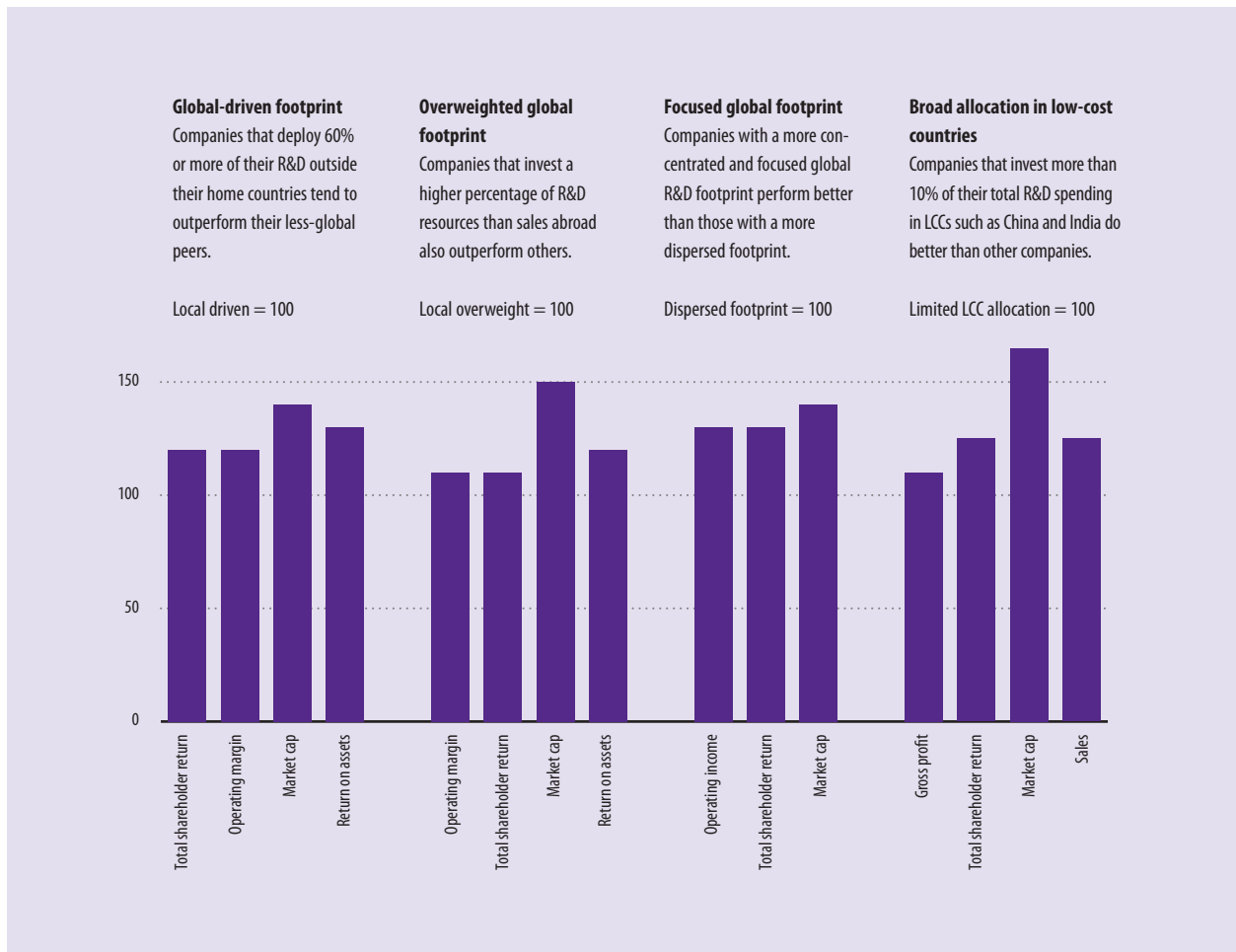
Companies that approach their innovation footprint in such a coherent way tend to perform better on a variety of performance indicators. Our study suggests that those companies with more concentrated and focused global R&D footprints perform 30% better on three-year operating income growth and total shareholder return, and 40% better on three-year market capitalization growth (see Box 2). Because these companies deploy their R&D energies more carefully, they can make better use of resources, manage their R&D networks more effectively, and improve communications and

collaboration. They also take advantage of economies of scale to leverage critical factors such as training, information technology (IT) support, and lab facilities.

Finally, but not surprisingly, companies that invest more than 10% of their total R&D spending in LECs do better, with 25% higher three-year sales growth and up to 67% better on three-year market cap growth. While it is true that companies can save money on labour costs in LECs, the knowledge they acquire by serving these fast-growing markets is equally important.

The globalization of R&D has also benefited the countries that have opened up their economies to R&D investment. China is a case in point: MNCs' entrance into China created jobs, boosted demand and trade, and increased foreign investments.

**Figure 3: The performance payoff from global R&D**



Source: Jaruzelski and Dehoff, 2008.

Note: 100 is a normalized figure. The average performance of companies in each instance = 100. The bars show relative performance in each area by companies with a global driven footprint.

For example, the influx of foreign capital that began to take shape in 1992, reaching US\$11 billion in that year, jumped to record highs of more than US\$90 billion in 2008. Foreign-funded enterprises' share of total exports reached 55% in the same year, compared with 32% in 1995. Global R&D has also helped Chinese companies such as Huawei innovate and compete internationally, selling state-of-the-art telecommunications equipment around the world.<sup>12</sup>

### The coherence premium

Global R&D spenders are more likely to succeed over the long haul if they develop a coherent approach. They must closely align their strategies and their capability sets—a combination of talent, knowledge, team structures, tools, and processes that enables their innovation efforts, creating products and services that can be successfully delivered to their target markets.

Companies that achieve a high level of coherence—those companies that have their innovation strategies and capabilities aligned with

their corporate strategy, that focus on the set of capabilities that drives performance in the marketplace, and that excel at the execution of those capabilities—have consistently and significantly outperformed their competitors on several financial measures.<sup>13</sup> For example, we found that, when normalized, the profit margins of companies in the top third in terms of coherence were 22% higher, on average, than those of companies in the bottom two-thirds, and that the coherent companies achieved 18% greater market capitalization growth as well (Figure 4).<sup>14</sup>

## Box 2: The 10 most innovative companies

Booz & Company surveyed 450 innovation executives in more than 400 companies across 10 industries and asked them to name the three companies they considered to be the most innovative worldwide.<sup>1</sup> The result was in line with popular perception. Apple topped the group, receiving 79% of the vote, followed by Google with 49% and 3M with 20% (Table 1). Importantly, the results show that success in innovation is determined not by how much you spend on R&D, but by the way you spend it. Apple is a striking example; the company has a long history of bringing innovative and stylish products to the market, from its first Apple personal computer in 1976 to the iPod, the iPhone, and the iPad today. Yet it invests only 3.1% of its revenue in R&D, less than half the average percentage of the C&E industry. Apple's financial performance has been stellar, with recent record revenues in the first quarter of 2011 and, as of 2010, a five-year total shareholder return (TSR) of 63%. Second-place Google's five-year TSR is even more impressive, at 102%. With R&D intensity (innovation spending as

a percentage of revenue) at 12%, it is just 1.3% lower than the average of the software and Internet industry as a whole. Third-place 3M has been seen as a highly innovative company for many years, and its five-year TSR of almost 50% shows that it continues to spend R&D money 'coherently'.

Only three of the companies on the 10 most innovative list—Toyota, Microsoft, and Samsung—also appear among the top 10 spenders, reiterating the lack of correlation between R&D spending and innovation results. Booz & Company also compared the overall financial results of the most innovative group with its list of top R&D spenders. The results are clear: The most innovative companies outperformed their industry peers on three different indicators of financial success (Figure 1).

Companies that are perceived to be highly innovative are clearly successful in creating new products and bringing them to market. Some spend more than others to accomplish this goal, but the real winners, financially speaking, are those companies—such as Apple, Google, and 3M—that can

innovate successfully without breaking the bank.

### Note

<sup>1</sup> To better understand the relationship between innovation strategy and capabilities, we conducted a Web-based survey of more than 450 senior managers and R&D professionals from more than 400 different companies around the globe. The companies participating represented more than US\$150 billion in R&D spending, or 40% of the total Innovation 1000 R&D spending for 2009. Respondents came from all 10 industry sectors: 52% came from North America, 33% from Europe, and 15% from the rest of the world. We asked respondents to evaluate the innovation capabilities they believed were most important across the value chain, as well as their own performance in each of these capabilities. Responses were analysed using a variety of statistical methods to allow us to distinguish the capabilities most important in pursuing each of the three innovation strategies we defined in our 2007 study. Although company names and responses were kept confidential (unless permission to use them was explicitly given), a large portion of the respondents identified themselves, enabling us to associate their survey answers with their company's performance.

### Source

This box is adapted from Jaruzelski and Dehoff, 2010.

**Table 1: Top 10 most innovative companies, 2009**

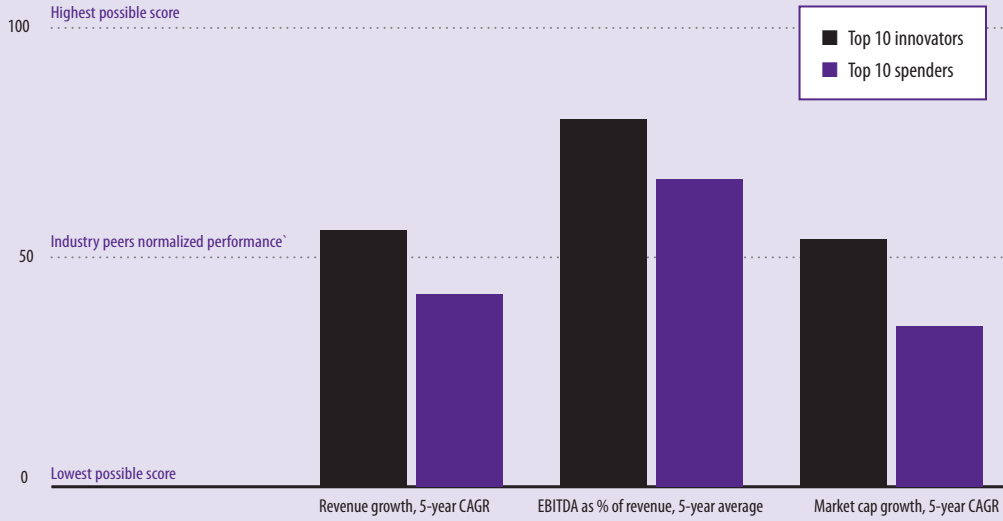
Survey rank*		R&D Spending		Sales	Intensity
		US\$ millions	Rank	US\$ millions	(spending as % of sales)
1	Apple	\$1,333	81	\$42,905	3.1%
2	Google	\$2,843	44	\$23,651	12.0%
3	3M	\$1,293	84	\$23,123	5.6%
4	GE	\$3,300	35	\$155,777	2.1%
5	Toyota	\$7,822	4	\$204,363	3.8%
6	Microsoft	\$9,010	2	\$58,437	15.4%
7	P&G	\$2,044	58	\$79,029	2.6%
8	IBM	\$5,820	12	\$95,759	6.1%
9	Samsung	\$6,002	10	\$109,541	5.5%
10	Intel	\$5,653	13	\$35,127	16.1%

\* The ranks in this column are the result of a 2009 Booz & Company survey of innovation executives, who voted overwhelmingly for Apple, Google, and 3M as the most innovative companies. Votes for the next seven were much more modest.



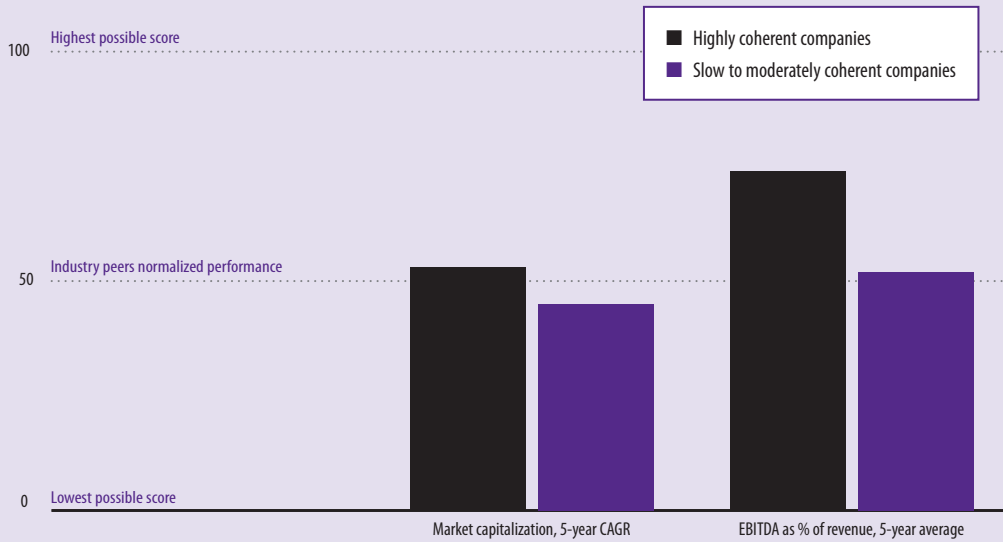
**Box 2: The 10 most innovative companies** *(continued)*

**Figure 1: Financial performance of most innovative vs. biggest spenders**



Source: Jaruzelski and Dehoff, 2010.  
 Note: CAGR = compound annual growth rate; EBITDA = earnings before interest, taxes, depreciation, and amortization.

**Figure 4: The coherent innovator's premium**



Source: Jaruzelski and Dehoff, 2010.  
 Note: Industry-normalized scores reflect the average percentile against industry peers. CAGR = compound annual growth rate; EBITDA = earnings before interest, taxes, depreciation, and amortization.

## The future of the global R&D footprint

When multinational companies globalize their R&D in a coherent manner by aligning their strategy and their capabilities, there is much to be gained. The rising number of talented, skilled, and sophisticated researchers and engineers in emerging markets will help develop these markets so that they become more attractive locations for global R&D. Companies seeking new or larger shares of the growing global economic pie will gain from understanding these new markets and developing more products locally if they hope to remain competitive with increasingly sophisticated players at both the global and country levels.

To have a greater chance of success, companies must be selective about the talent in which they want to invest and the markets they want to enter. They must also consider the other challenges they face overseas, such as operational issues in performing R&D. Although the benefits to be gained from global R&D are real, so is the need for companies to develop coherent strategies that can allow them to realize these benefits.

## Notes

- 1 Doz et al., 2006.
- 2 Jaruzelski and Dehoff, 2008.
- 3 Jaruzelski and Dehoff, 2008.
- 4 This section is adapted from Jaruzelski and Dehoff, 2008.
- 5 UBS, 2006; Booz & Company analysis.
- 6 Jaruzelski and Dehoff, 2008.
- 7 See, for example, Chamania, Mehta, and Sehgal, 2010.

- 8 Statistics Canada (available at <http://www40.statcan.ca/l01/cst01/EDUC62A-eng.htm>); UK's Higher Education Statistics Agency Limited (2011); India's Ministry of Human Resources Development, 2007–08; and China's National Bureau of Statistics (2008, available at <http://www.stats.gov.cn/english/statisticaldata/yearlydata/>).
- 9 *The Economist*, 2010.
- 10 Jaruzelski, B. and K. Dehoff, 2008.
- 11 Jaruzelski and Dehoff, 2008.
- 12 See, for example, Tse, 2010.
- 13 Jaruzelski, B. and K. Dehoff, 2010. Financial performance was normalized by industry to compare the impact of capability coherence on corporate financial performance both within strategies and across all companies.
- 14 Jaruzelski, B. and K. Dehoff, 2010. Note: These are industry-normalized scores that reflect the average percentile against peers.

UBS. 2006. *UBS Prices and Earnings*. Zurich: UBS, available at [http://www.ubs.com/1/e/wealthmanagement/wealth\\_management\\_research/prices\\_earnings.htm](http://www.ubs.com/1/e/wealthmanagement/wealth_management_research/prices_earnings.htm).

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# Accounting for Creativity in Innovation: Measuring Ambitions and Related Challenges

SACHA WUNSCH-VINCENT, World Intellectual Property Organization

The world is entering a phase that demands novel approaches to solving problems of environment, economy, and access to essential goods (food, water) and services (health care). To address the problems, the focus is increasingly on innovation in statistical fora and policy circles. This is a welcome development. Creativity, however, is an essential ingredient in the process of finding solutions and providing new products and services. While this is undeniable, the role of creativity in the process of innovation and how to foster it is still largely ignored in measurement exercises and the innovation policy debate.

## Measuring creativity

‘Creativity’ is variously defined as ‘the ability to make or otherwise bring into existence something new, whether a new solution to a problem, a new method or device, or a new artistic object or form’,<sup>1</sup> and as ‘a mental process involving the discovery of new ideas or concepts, or new associations of the existing ideas or concepts, fuelled by the process of either conscious or unconscious insight.’<sup>2</sup>

According to these definitions, creativity is an important and inseparable factor in the process leading

to inventions or innovations. The interaction between creativity and innovation is particularly crucial at the sub-national level—in particular, in regions and cities—where clusters of talent, creativity, and technology concentrate to produce economic and social value (see also the many rankings of cities that designate those that are considered the ‘most liveable’).<sup>3</sup> At the level of the firm, creativity and managerial talent are an important component in enterprise performance. New measures of well-being and economic performance, too, factor in the importance of culture and an environment that nurtures creativity.<sup>4</sup> Finally, there has recently been an increased recognition of the economic contribution of the creative industries themselves. Studies carried out in different countries show their increasing importance in terms of economic growth and employment.<sup>5</sup>

Yet, although the interaction between creativity and different forms of economic, social, cultural innovations is increasingly acknowledged, it is not well understood. Specifically, the linkages among creativity and culture, innovation, and economic performance are only slowly being untangled. Little attention has been paid to the need to measure culture and creativity or to construct relevant indices that can

shed light on this complex relationship. Furthermore, the topics of innovation, culture, and creativity are still mostly treated separately in policy discussions and in related country rankings. No international index makes a serious attempt to measure culture or creativity across nations.

Issues of perception might be one reason for this relative lack of statistical or economic studies relating to creativity and for the shortage of related data in composite indices. On the one hand, *innovation* is often equated with factors that seem to matter most: technology, patents, employment, and growth. These have, in turn, garnered significant attention in the economic literature and from policy makers (and thus in the related construction of innovation indices). *Creativity*, on the other hand, is usually associated with topics such as entertainment, culture and the social sphere. The latter concepts are harder to measure and their contribution to economic growth has traditionally not been at centre stage.

Unlike the underlying Global Innovation Index, notably pillar 7, innovation indices have seldom encapsulated indicators that are traditionally used to proxy creativity. A few examples illustrate:

The views expressed here do not necessarily reflect the views of the World Intellectual Property Organization or the views of its Member States. Thanks go to Dimiter Gantchev (WIPO) and Daniela Benavente (INSEAD) for valuable comments. All errors and omissions are the responsibility of the author.

- Although innovation indices use data on trade in high-technology products, data on the production of and trade in cultural products, in services supplied by creative professions (e.g., architectural services), or in other knowledge-intensive services are not.
- Although innovation indices use data on the number of researchers or the number of scientific publications, no attempt is made to integrate the number of artists or the number of films produced.
- Although innovation indices use patent data, few attempts are made to encapsulate innovations associated with trademarks, industrial designs, or copyrights.

The other reason is that creativity is even harder to define and measure than innovation. Clearly, to capture its broad essence, a statistical definition or measurement approach to creativity would look across the economy and society to identify the different sources and ramifications of creativity. Creativity as defined above will be found in any stream of public and private life, in the economy, in educational systems, in the arts and culture, and elsewhere.

Nonetheless, no internationally recognized statistical definition exists for creativity. While there are various definitions in dictionaries, none would help with the systematic identification of the different forms of creativity or with ways to approach the topic from a measurement point of view. Moreover, one can argue that creativity is a process relying on many ambiguous or unknown inputs and similarly undefined framework conditions.

More effort has been put into measuring culture than measuring

creativity directly, as noted earlier. Yet measuring culture and related (entertainment) products and their consumption alone only remotely captures the broader phenomenon of creativity, and does not indicate what might be needed to spur innovation.

Finally, to empirically capture creativity and culture via an index is a task at least as challenging—if not more—than producing an innovation index for the following reasons:

- There is no clear framework to select and arrange sub-variables to assess how conducive an environment is to creativity.
- Official direct input, output, and framework measures are even less available for creativity and culture than they are for innovation, especially for a broad set of countries. This is the case even if the measures are confined to cultural industries and products alone.

#### Availability of statistics on culture and creative industries

The ongoing measurement efforts are focused primarily on developing statistics related to culture and copyright, the related content industries, and their outputs and economic contribution.

In particular, efforts of the United Nations Conference on Trade and Development (UNCTAD), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Intellectual Property Organization (WIPO) described below seek to gauge the economic significance of the creative industries and to quantify the number or value of creative outputs. Furthermore, neither in these organizations

nor elsewhere are there any ongoing efforts to create a composite indicator on culture or creativity on an international scale comparable to innovation indices.

- The UNCTAD Creative Economy Report shows data on international trade in creative products (based on a classification applied to UN COMTRADE).<sup>6</sup> The available data set provides data on the international trade in creative goods, creative services, and the related industries.<sup>7</sup>
- The UNESCO Institute for Statistics (UIS) is responsible for collecting and disseminating culture statistics. It aims to gather data on more than 200 countries and territories through surveys on a range of different subjects, such as feature films, broadcasts, newspapers, and libraries. Usefully, the UIS has also, in recent years, aimed at improving cultural and related statistics, notably by developing a Framework for Cultural Statistics in 2009. The different sectors treated in this framework are cultural and natural heritage; performance and celebration; visual arts and crafts; books and press; audio-visual and interactive media; and design and creative services. Clearly, these statistics relate to cultural outputs such as films. Although coverage is improving, these data are seldom available for recent years for a broad set of countries.
- On a separate track, the measurement of creative (copyright-based) industries and their contribution to economic output have also drawn considerable resources. Prominent examples of exercises that measure this contribution are

the WIPO Project on Measuring the Economic Contribution of the Copyright-based Industries and relevant national projects.<sup>8</sup> Results demonstrate the substantive economic contribution of the creative industries in terms of their share in gross domestic product (GDP), their relative growth, and their generation of employment and trade. Currently the WIPO project covers 24 countries and studies are ongoing in another 12 countries (Table 1). The data are not produced on a yearly basis but are largely comparable across countries. They indicate that the contribution of copyright-based industries to GDP and employment is roughly 6% on average in the studied countries. OECD data for the creative economy also show that, in high-income countries, copyright-based industries have been growing at an annual rate more than twice that of the service industries overall, and more than four times that of manufacturing.<sup>9</sup>

UN classifications have begun to single out creative industries only recently. In particular, new versions of well-known UN classifications, such as the ISIC Rev. 4 classification of economic activities and the COIPOC classification of consumption (formerly known as ‘SNA 93’ on household expenditure) are moving in that direction, as is the International Labor Organization classification of occupation ISCO-08 on employment.<sup>10</sup>

### Existing composite creativity indices and their methodologies

To the best of our knowledge, there is no international effort in place for developing a creativity index with

**Table 1: The economic contribution of copyright-based industries**

Country	Contribution to GDP (%)	Employment (%)
United States of America	11.12	8.49
Singapore	5.80	5.90
Canada	4.50	5.55
Latvia	4.00	4.50
Hungary	7.40	7.20
Philippines	4.92	11.10
Bulgaria	4.54	4.92
Mexico	4.77	11.01
Lebanon	4.75	4.49
Jamaica	4.80	3.03
Russian Federation	6.06	7.30
Romania	5.54	4.17
Croatia	4.42	4.65
Peru	3.60	2.51
Ukraine	3.47	1.91
Korea, Rep.	8.67	4.31
Malaysia	5.80	7.50
Colombia	3.30	5.80
Netherlands	5.90	8.80
Australia	10.30	8.00
Kenya	5.32	3.26
China	6.41	6.50
Slovenia	5.10	6.80
Panama	6.95	6.35
<b>Average</b>	<b>5.73</b>	<b>6.00</b>

Source: Based on internal WIPO database on copyright-based industries. See [http://www.wipo.int/ip-development/en/creative\\_industry/economic\\_contribution.html](http://www.wipo.int/ip-development/en/creative_industry/economic_contribution.html) and Dimiter Gantchev (WIPO); WIPO, 2003.

significant, international country coverage. To compensate for this lack, past measurement attempts have relied on existing measures applied to the cultural sector or the creative (copyright-based) industries.

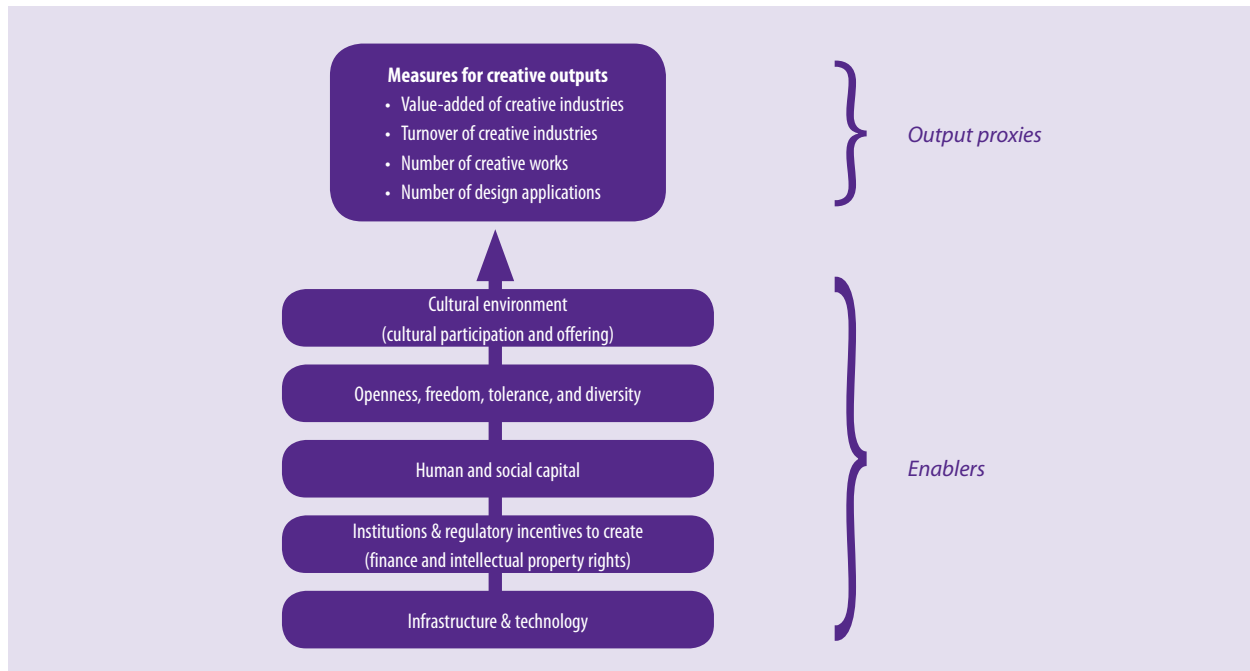
A small number of creativity indices, however, that resemble the work behind innovation indices do exist. Although there is no recognized conceptual framework that would help with the measurement of creativity, all existing creativity-related indices build on certain measurement pillars, depicted in Figure 1:

1. a broad set of variables for measuring the environment and conditions influencing creativity (e.g., human capital, openness and diversity, cultural environment, technology, institutional environment), and

2. a specific set of measures for creative outputs and industries (e.g., number of creative works, size of creative industries).

Several creativity indices exist and are described below. These may provide data and experience on which further attempts can build, although all of them are one-off exercises that are either limited to one region, to one or a few countries, or that have not yet been carried out (e.g., the European Creativity Index).

- The Creative Community Index, constructed for Silicon Valley, is one of the first explicit creativity indices. It assesses the value of the cultural infrastructure, social connectedness, and cultural participation as well as cultural policies

**Figure 1: Pillars of creativity indices**

and investment in promoting and sustaining creativity.

- Later, a creativity index was developed for Hong Kong (SAR), China, which was commissioned by the government.
- Another was developed for Singapore, which benchmarks Singapore against a set of other countries.
- The creativity index that has received the greatest attention was developed by the academic Richard Florida as part of his book on the ‘creative class’.<sup>11</sup> This index at first focused primarily on US regions (more than 350) and Canada, and then later it added some European countries.
- The KEA European Affairs Consultancy contracted by the

European Commission has proposed the construction of a European Creativity Index that will focus heavily on the cultural sector.

- Finally, there is some work on ‘Creative City’ indices, including one developed by Renmin University of China (Beijing) that is focused on ranking the cities of China.<sup>12</sup>

Apart from many indicators that overlap with those used in innovation indices, the above creativity indices rely heavily on data from the cultural or creative industry sector or their outputs. The most significant creativity indices that currently exist or have been proposed are shown in Table 2.

None of these indices measure creativity in the broad sense. Data on creative products and services and/

or cultural performances and artefacts are often used as direct output measures. As compared with innovation indices, creativity indices place an even greater emphasis on trying to measure the framework environment, often with innovative statistical proxies. They also rely on the greater availability of existing metrics for certain creative outputs (i.e., the products of the creative industries and/or the cultural sector).

Even if one agrees that indicators on cultural output are representative proxies for creativity as a whole, the availability of data is limited. Even simple metrics for creative outputs are frequently not available for all UN countries. A search for international statistics on book production in the respective database of the UIS, for instance, shows that the latest data are available only for 1999 and only for about 50 out of 200 countries. When it comes to

**Table 2: Sample of existing international creativity indices**

Title	Source	Latest year of data	Sample	Measures
Creative Community Index <sup>1</sup>	Cultural Initiatives Silicon Valley (closed in 2006)	2005	Silicon Valley	The Creative Community Index is largely compiled on the basis of opinion surveys that measure how the arts and culture operate in Silicon Valley, California, and contribute to the business and technological innovation of the place.
Hong Kong Creativity Index <sup>2</sup>	University of Hong Kong (commissioned by the HKSAR government)	2004 (one-off exercise)	Hong Kong (SAR), China	The Hong Kong Creativity Index includes 88 indicators.  Key areas covered: Economic contribution of creative industries, size of working population engaged in the creative industries, trade value of the creative industries, economic contribution of e-commerce, inventive ability of business sector, innovation activity in terms of applications of patent, and creativity activity (non-economic indicators) in the creative sector and in arts and culture.
Singapore Creativity Benchmarking Index <sup>3</sup>	Singapore IP Academy	2007–08 (one-off exercise), 2004 data	Iceland, Japan, Sweden, United States of America, United Kingdom, Denmark, Australia, Finland, Switzerland, and Singapore	The Singapore Creativity Benchmarking Index comprises 138 quantitative and qualitative indicators.  Indicators include the availability of resources; the current stock of manpower; the sustainability of these resources; the economic and regulatory system; adaptability to change; tenacity for potential growth and development; and others.
Creativity Index <sup>4</sup>	Richard Florida (book on creative class)	2002 and 2004	United States of America and Canada (also respective regions), later also 13 European countries.	This Creativity Index is based on the combination of a High-Tech Index, an Innovation Index, a measure of the size of the Creative Class, and the Composite Diversity Index (this last includes sub-indices of a Gay Index, a Bohemian Index, a Talent Index, and a Melting Pot Index).  The Euro-Creativity Index comprises the Technology Index, the Talent Index, and a Tolerance Index.
Proposal for a European Creativity Index <sup>5</sup>	KEA European Affairs Consultancy for the European Commission	Proposed in 2008–09, no follow-up since	Europe	The European Creativity Index proposes 32 indicators on the cultural dimension of creativity in five pillars: human capital, technology, the institutional environment, the social environment, and openness and diversity.

1 CPANDA, 2002; Cultural Initiatives Silicon Valley, 2005. The Creative Community Index is a research initiative that developed quantitative measures of cultural participation and creativity in the Silicon Valley. Surveys were conducted in 2002 and 2005.

2 Centre for Cultural Policy Research, 2004.

3 IP Academy, 2008.

4 Florida, 2002.

5 KAE European Affairs, 2009. This briefing note is a summary of key messages of KEA's report 'The Contribution of Culture to Creativity', conducted for the European Commission in 2008–09; the full report can be accessed via KEA's website (<http://www.keanet.eu>). Details of the index have been provided to the WIPO Economics and Statistics Division by the Head of KEA.

the production of films, more recent data are available for 2006—but again, data for only about 75 out of 200 countries exist. This situation will improve through the new surveys and activities of the UIS (on cinemas, library statistics, broadcasts). Still, it is currently very difficult to even factor in creative outputs or the size of creative industries for measurement or ranking purposes.

### Conclusion

Undoubtedly there are a strong links among innovation, culture, and creativity. This chapter has shown, however, that innovation and creativity are usually treated separately. Apart from the Global Innovation Index, almost no other innovation or technology index uses creativity-related measures either as a measurement pillar or as significant measurement variables. In part this is because of the lack of existing, reliable measurement frameworks for creativity and the absence of broadly available data. Even in the case of measuring creative outputs or the size of entertainment or creative industries alone, data are scarce.

Further measurement efforts such as those being conducted at UNESCO, UNCTAD, and WIPO are needed to foster the availability of such data. In addition, the phenomenon of creativity both in the workforce and as fostered in educational systems might need to garner more measurement and analytical attention (including in standardized scholastic aptitude tests such as the OECD's PISA rankings). On this basis, studies could be designed to better apprehend the way culture, creativity, and innovation interact with one another, and what associated policy conclusions could emerge.

### Notes

- 1 Encyclopædia Britannica, <http://www.britannica.com/EBchecked/topic/142249/creativity>.
- 2 Wikipedia, <http://en.wiktionary.org/wiki/creativity>.
- 3 See [http://www.economist.com/blogs/gulliver/2011/02/liveability\\_ranking](http://www.economist.com/blogs/gulliver/2011/02/liveability_ranking) and [http://www.eiu.com/public/topical\\_report.aspx?campaignid=Liveability2011](http://www.eiu.com/public/topical_report.aspx?campaignid=Liveability2011).
- 4 Gordon, 2006; Gordon and Beilby-Orrin, 2007; and OECD Project on the International Measurement of Culture, available at [http://www.oecd.org/document/41/0,2340,en\\_2649\\_34245\\_37151785\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/41/0,2340,en_2649_34245_37151785_1_1_1_1,00.html).
- 5 See WIPO, 2003 and [http://www.wipo.int/ip-development/en/creative\\_industry/economic\\_contribution.html](http://www.wipo.int/ip-development/en/creative_industry/economic_contribution.html).
- 6 UNCTAD/UNDP, 2010.
- 7 See the UNCTADstat Database on Creative Economy, available at [http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sRF\\_ActivePath=P,10&sRF\\_Expanded=P,10](http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sRF_ActivePath=P,10&sRF_Expanded=P,10) and [http://www.unctad.org/sections/ditc\\_tab/docs/cer2010\\_userstat\\_en.pdf](http://www.unctad.org/sections/ditc_tab/docs/cer2010_userstat_en.pdf).
- 8 The WIPO *Guide on Surveying the Economic Contribution of the Copyright-based Industries* was published in 2003. The publication outlines a methodology for measuring the contribution of copyright activities in economic terms hence providing the basis for undertaking a comparative analysis between countries on the size of their creative sector. Of significance in these exercises are the determination of economic variables/indicators, such as revenue created, employment rates, exports, growth areas and recommendations as to what policy measures are needed to sustain and/or stimulate growth. Studies also demonstrate the linkages and interdependence between economic sectors.
- 9 Gordon and Beilby-Orrin 2007, fn. 4.
- 10 The ILO International Standard Classification of Occupation, ISCO-08, is available at <http://www.ilo.org/public/english/bureau/stat/isco/isco08/index.htm>. The UN International Standard Industrial Classification of All Economic Activities, ISIC Rev. 4, is available at <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27&Lg=1>; the UN Classification of Individual Consumption According to Purpose (COICOP) is available at <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=5>.
- 11 See also Florida, 2009, available at [http://www.creativeclass.com/creative\\_class/2009/04/09/creativity-index/](http://www.creativeclass.com/creative_class/2009/04/09/creativity-index/).

- 12 Other existing rankings on the most 'liveable' cities such as the ones produced by Mercer Consulting or The Economist greatly rely on culture-related variables to proxy recreation. See the Mercer, 2010; *The Economist*, 2011; and EIU, 2011.

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# Appendices



# Appendix I

## Country Profiles



## Country/Economy Profiles

The following tables provide detailed profiles for each of the 125 economies in the Global Innovation Index 2011. They are constructed around three sections.

**1** Three key indicators at the beginning of each profile are intended to put the economy into context; population in millions,<sup>1</sup> GDP per capita in PPP current international dollars,<sup>2</sup> and GDP in US\$ billions.<sup>3</sup> While coming from different sources, the three series were extracted from the World Bank *World Development Indicators* database in April 2011.

**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. GII rankings for the 2009 and 2010 editions follow (in the past, scores were normalized in the [1, 7] range and are therefore not readily comparable and not reported).

Scores are normalized in the [0, 100] range, except for the Efficiency Index, for which scores evolve around the number one (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-

*Business environment*, which in turn appears under *pillar 1, Institutions*.

To facilitate the replicability of results, only the normalized values in the [0, 100] range are reported in the country/economy profiles, with higher values indicating better outcomes. Original values and years are reported, together with these normalized scores, in the data tables (Appendix II).

When data are either not available or too out of date, 'n/a' is used.

The GII includes 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 further details, see Appendix III, Sources and Definitions.

Albania			
<b>1</b>	<b>Key indicators</b>		
	Population (millions)	3.2	
	GDP per capita, PPP (current international \$)	3,373.0	
	GDP (US\$ billion)	12.0	
	<b>Global Innovation Index</b>	<b>39.5</b>	<b>80</b>
	Innovation Output Sub-Index	22.4	76
	Innovation Input Sub-Index	18.3	78
	Innovation Efficiency Index	4.4	76
	Global Innovation Index 2010	41	
	Global Innovation Index 2009	01	
<b>2</b>	<b>1 Institutions</b>	<b>65.2</b>	<b>63</b>
	1.1 Political environment	55.5	64
	1.1.1 Political stability*	41.5	67
	1.1.2 Government effectiveness*	47.6	78
	1.1.3 Press freedom†	77.2	65
	1.2 Regulatory environment	56.3	72
	1.2.1 Regulatory quality*	58.1	64
	1.2.2 Rule of law*	35.8	87
	1.2.3 Rigidity of employment*	75.0	61
	1.3 Business environment	83.9	47
	1.3.1 Time to start a business, days	96.2	9
	1.3.2 Cost to start a business, % income/cap.	86.5	81
	1.3.3 Total tax rate, % GDP	48.6	65
	<b>2 Human capital &amp; research</b>	<b>32.7</b>	<b>82</b>
	2.1 Education	49.8	91
	2.1.1 Education expenditure, % GDP	36.5	80
	2.1.2 Public expenditure on higher education, % GDP	n/a	n/a
	2.1.3 School life expectancy, years	42.4	90
	2.1.4 PISA score in reading, maths, & science	23.6	58
	2.1.5 Pupil-teacher ratio, secondary	81.6	63
	<b>2.2 Tertiary education</b>	<b>23.8</b>	<b>88</b>
	2.2.1 Tertiary enrolment, % gross	19.2	81
	2.2.2 Graduates in science, %	3.1	89
	2.2.3 Graduates in engineering, %	9.9	87
	2.2.4 Tertiary enrolment mobility, %	1.7	72
	2.2.5 Tertiary enrolment mobility, %	36.2	11
	2.2.6 Gross tertiary outboard enrolment, %	89.2	5
	<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.4</b>	<b>60</b>
	2.3.1 Research and development, % GDP	n/a	n/a
	2.3.2 Gross expenditure on R&D, % GDP	n/a	n/a
	2.3.3 Quality research indicator	24.4	116
	<b>3 Infrastructure</b>	<b>26.4</b>	<b>70</b>
	3.1 Info & comm. technologies (ICT)	21.3	83
	3.1.1 ICT usage*	10.7	80
	3.1.2 E-governance	11.1	76
	3.1.3 Government's Online Service*	11.1	69
	3.1.4 E-participation†	12.9	76
	<b>3.2 Energy</b>	<b>22.0</b>	<b>59</b>
	3.2.1 Electricity output, kWh/cap.	6.2	68
	3.2.2 Electricity consumption, kWh/capita	6.2	68
	3.2.3 GDP/unit of energy use, PPP/kg of oil eq.	45.9	25
	3.2.4 Share of renewables in electricity gen.	16.1	39
	<b>3.3 General infrastructure</b>	<b>36.0</b>	<b>64</b>
	3.3.1 Quality of roads & transport infrastructure*	28.5	59
	3.3.2 Gross capital formation, % GDP	45.2	21
	3.3.3 Ecological footprint & bio-capacity, NatCap	33.7	70
	<b>4 Market sophistication</b>	<b>47.5</b>	<b>35</b>
	4.1 Credit	44.6	49
	4.1.1 Strength of legal rights for creditors*	60.0	7
	4.1.2 Depth of credit information*	46.7	66
	4.1.3 Domestic credit to private sector, % GDP	13.4	69
	4.1.4 Microfinance gross loans, % GDP	39.7	13
	4.2 Investment	48.7	17
	4.2.1 Strength of investor protection*	73.0	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/GDP PPP\$	0.0	69
	4.3 Trade & competition	49.2	70
	4.3.1 Applied tariff rate-weighted mean, %	39.7	44
	4.3.2 Market access trade restrictions**	45.6	70
	4.3.3 Imports of goods & services, % GDP	34.4	32
	4.3.4 Exports of goods & services, % GDP	21.2	77
	4.3.5 Intra-regional competition†	52.9	105
	<b>5 Business sophistication</b>	<b>19.6</b>	<b>123</b>
	5.1 Knowledge workers	19.9	114
	5.1.1 Knowledge-intensive employment, %	n/a	n/a
	5.1.2 Firm offering formal training, % firms	100.0	79
	5.1.3 R&D performed by business, %	n/a	n/a
	5.1.4 R&D financed by business, %	n/a	n/a
	5.2 Innovation linkages	34.5	122
	5.2.1 University/industry collaboration†	20.3	121
	5.2.2 State of cluster development†	80.2	109
	5.2.3 R&D financed by abroad, %	n/a	n/a
	5.2.4 Knowledge alliance density/GDP PPP\$	0.0	73
	5.2.5 PCT patent filings with foreign inventors, %	0.0	73
	5.3 Knowledge absorption	25.5	99
	5.3.1 Imports & foreign trade partners, % GDP	13.1	69
	5.3.2 High-tech imports less re-exports, %	7.4	102
	5.3.3 Computer & comm. services imports, %	10.2	113
	5.3.4 FDI net inflows, % GDP	71.0	14
	<b>6 Scientific outputs</b>	<b>18.0</b>	<b>96</b>
	6.1 Knowledge creation	0.9	127
	6.1.1 Domestic resident patent applier/GDP PPP\$	n/a	n/a
	6.1.2 PCT resident patent applier/GDP PPP\$	0.5	74
	6.1.3 Domestic non-resident patent applier/GDP PPP\$	n/a	n/a
	6.1.4 Scientific & technical articles/GDP PPP\$	1.2	116
	6.2 Knowledge impact	83.3	42
	6.2.1 Growth rate of GDP PPP\$/patent, %	84.1	42
	6.2.2 New businesses/1,000 pop. 15-64 yrs.	6.5	62
	6.2.3 Computer software spending, % GDP	n/a	n/a
	6.3 Knowledge diffusion	17.8	112
	6.3.1 Imports & comm. services exports, % GDP	34.4	49
	6.3.2 High-tech exports less re-exports, %	2.4	71
	6.3.3 Computer & comm. services exports, %	14.1	102
	6.3.4 FDI net outflow, % GDP	88.1	65
	<b>7 Creative outputs</b>	<b>27.3</b>	<b>81</b>
	7.1 Creative intangibles	34.6	105
	7.1.1 Creative intangibles/GDP PPP\$	5.7	79
	7.1.2 Trademark resident trademark applier/GDP PPP\$	0.0	34
	7.1.3 Patent resident trademark applier/GDP PPP\$	16.0	80
	7.1.4 ICT & organizational intangibles†	56.7	69
	7.2 Creative goods & services	19.9	61
	7.2.1 Innovation & culture consumption, %	n/a	n/a
	7.2.2 National feature film/minor pop.	n/a	n/a
	7.2.3 Daily newspapers/1,000 literate pop.	n/a	n/a
	7.2.4 Creative goods exports, %	23.9	38
	7.2.5 Creative services exports, %	16.0	36

Index is calculated as the simple average of the last two pillars.

**3** The 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, Time to start a business*, appears under *sub-pillar 1.3*,

### Notes

- World Bank estimates based on various sources.
- World Bank, International Comparison Program database.
- World Bank national accounts data, and OECD National Accounts data files.



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## Albania

## Key indicators

Population (millions)	3.2
GDP per capita, PPP (current international \$)	8,373.0
GDP (US\$ billions)	12.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.5</b>	<b>80</b>
Innovation Output Sub-Index .....	22.6	95
Innovation Input Sub-Index.....	38.3	78
Innovation Efficiency Index.....	0.6	96
Global Innovation Index 2010.....		81
Global Innovation Index 2009.....		121

## 1 Institutions 65.2 63

<b>1.1 Political environment</b>	<b>55.5</b>	<b>64</b>
1.1.1 Political stability*.....	41.5	67
1.1.2 Government effectiveness*.....	47.6	78
1.1.3 Press freedom*.....	77.3	65
<b>1.2 Regulatory environment</b>	<b>56.3</b>	<b>72</b>
1.2.1 Regulatory quality*.....	58.1	64
1.2.2 Rule of law*.....	35.8	87
1.2.3 Rigidity of employment*.....	75.0	61
<b>1.3 Business environment</b>	<b>83.9</b>	<b>47</b>
1.3.1 Time to start a business, days.....	96.2	9
1.3.2 Cost to start a business, % income/cap.....	86.9	81
1.3.3 Total tax rate, % profits.....	68.6	65

## 2 Human capital & research 32.7 82

<b>2.1 Education</b>	<b>49.8</b>	<b>91</b>
2.1.1 Education expenditure, % GNI.....	26.5	101
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	42.4	90
2.1.4 PISA scales in reading, maths, & science.....	23.6	58
2.1.5 Pupil-teacher ratio, secondary.....	81.8	63
<b>2.2 Tertiary education</b>	<b>23.8</b>	<b>86</b>
2.2.1 Tertiary enrolment, % gross.....	19.2	81
2.2.2 Graduates in science, %.....	3.1	89
2.2.3 Graduates in engineering, %.....	9.9	87
2.2.4 Tertiary inbound mobility, %.....	1.7	72
2.2.5 Tertiary outbound mobility, %.....	58.7	11
2.2.6 Gross tertiary outbound enrolment, %.....	89.2	5
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.4</b>	<b>60</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	24.4	116

## 3 Infrastructure 26.4 70

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>21.3</b>	<b>83</b>
3.1.1 ICT access*.....	32.7	80
3.1.2 ICT use*.....	9.1	76
3.1.3 Government's Online Service*.....	31.1	69
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>22.0</b>	<b>59</b>
3.2.1 Electricity output, kWh/cap.....	6.2	83
3.2.2 Electricity consumption, kWh/capita.....	5.6	81
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	43.9	23
3.2.4 Share of renewables in energy use, %.....	16.1	39
<b>3.3 General infrastructure</b>	<b>36.0</b>	<b>64</b>
3.3.1 Quality of trade & transport infrastructure*.....	28.5	99
3.3.2 Gross capital formation, % GDP.....	45.7	21
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.7	70

## 4 Market sophistication 47.5 35

<b>4.1 Credit</b>	<b>44.6</b>	<b>49</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	13.4	66
4.1.4 Microfinance gross loans, % GDP.....	39.7	13
<b>4.2 Investment</b>	<b>48.7</b>	<b>17</b>
4.2.1 Strength of investor protection*.....	73.0	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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>49.2</b>	<b>70</b>
4.3.1 Applied tariff rate weighted mean, %.....	89.7	44
4.3.2 Market access trade restrictiveness*, %.....	45.6	70
4.3.3 Imports of goods & services, % GDP.....	34.5	37
4.3.4 Exports of goods & services, % GDP.....	21.7	77
4.3.5 Intensity local competition†.....	52.9	105

## 5 Business sophistication 19.6 123

<b>5.1 Knowledge workers</b>	<b>19.0</b>	<b>114</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	19.0	79
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>14.5</b>	<b>122</b>
5.2.1 University/industry collaboration†.....	20.3	121
5.2.2 State of cluster development†.....	30.3	103
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>25.5</b>	<b>99</b>
5.3.1 Royalty & license fees payments, % GDP.....	13.1	60
5.3.2 High-tech imports less re-imports, %.....	7.4	102
5.3.3 Computer & comm. service imports, %.....	10.5	113
5.3.4 FDI net inflows, % GDP.....	71.0	14

## 6 Scientific outputs 18.0 96

<b>6.1 Knowledge creation</b>	<b>0.9</b>	<b>121</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.5	74
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.2	116
<b>6.2 Knowledge impact</b>	<b>35.3</b>	<b>42</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	64.1	12
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	6.5	62
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>17.8</b>	<b>112</b>
6.3.1 Royalty & license fees receipts, % GDP.....	6.4	49
6.3.2 High-tech exports less re-exports, %.....	2.4	71
6.3.3 Computer & comm service exports, %.....	14.1	102
6.3.4 FDI net outflows, % GDP.....	48.1	65

## 7 Creative outputs 27.3 81

<b>7.1 Creative intangibles</b>	<b>34.6</b>	<b>105</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	5.7	93
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	58.6	62
7.1.4 ICT & organizational models†.....	56.7	49
<b>7.2 Creative goods &amp; services</b>	<b>19.9</b>	<b>61</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	23.9	38
7.2.5 Creative services exports, %.....	16.0	36



## Key indicators

Population (millions)	35.4
GDP per capita, PPP (current international \$)	8,172.5
GDP (US\$ billions)	140.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>19.8</b>	<b>125</b>
Innovation Output Sub-Index .....	7.5	125
Innovation Input Sub-Index.....	32.1	101
Innovation Efficiency Index.....	0.2	125
Global Innovation Index 2010.....		121
Global Innovation Index 2009.....		108

## 1 Institutions 45.4 112

<b>1.1 Political environment</b>	<b>32.5</b>	<b>109</b>
1.1.1 Political stability*.....	12.7	109
1.1.2 Government effectiveness*.....	34.8	92
1.1.3 Press freedom*.....	49.9	95
<b>1.2 Regulatory environment</b>	<b>35.5</b>	<b>113</b>
1.2.1 Regulatory quality*.....	20.5	115
1.2.2 Rule of law*.....	26.9	100
1.2.3 Rigidity of employment*.....	59.0	96
<b>1.3 Business environment</b>	<b>68.2</b>	<b>98</b>
1.3.1 Time to start a business, days.....	77.9	82
1.3.2 Cost to start a business, % income/cap.....	89.9	71
1.3.3 Total tax rate, % profits.....	36.7	121

## 2 Human capital & research 32.8 81

<b>2.1 Education</b>	<b>57.0</b>	<b>64</b>
2.1.1 Education expenditure, % GNI.....	48.2	54
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	51.7	66
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	66.6	90
<b>2.2 Tertiary education</b>	<b>28.5</b>	<b>72</b>
2.2.1 Tertiary enrolment, % gross.....	30.9	66
2.2.2 Graduates in science, %.....	45.3	19
2.2.3 Graduates in engineering, %.....	37.8	41
2.2.4 Tertiary inbound mobility, %.....	0.0	82
2.2.5 Tertiary outbound mobility, %.....	21.4	68
2.2.6 Gross tertiary outbound enrolment, %.....	6.9	73
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>12.9</b>	<b>107</b>
2.3.1 Researchers headcount/million pop.....	3.1	67
2.3.2 Gross expenditure on R&D, % GDP.....	0.8	88
2.3.3 Quality research institutions†.....	34.9	89

## 3 Infrastructure 23.7 90

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>13.6</b>	<b>102</b>
3.1.1 ICT access*.....	30.5	88
3.1.2 ICT use*.....	4.8	91
3.1.3 Government's Online Service*.....	9.8	115
3.1.4 E-Participation*.....	1.4	116
<b>3.2 Energy</b>	<b>11.6</b>	<b>103</b>
3.2.1 Electricity output, kWh/cap.....	6.0	84
3.2.2 Electricity consumption, kWh/capita.....	3.9	89
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	29.7	53
3.2.4 Share of renewables in energy use, %.....	0.1	106
<b>3.3 General infrastructure</b>	<b>45.7</b>	<b>18</b>
3.3.1 Quality of trade & transport infrastructure*.....	26.5	108
3.3.2 Gross capital formation, % GDP.....	76.9	3
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.9	69

## 4 Market sophistication 33.4 92

<b>4.1 Credit</b>	<b>17.2</b>	<b>111</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	2.7	108
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>35.3</b>	<b>42</b>
4.2.1 Strength of investor protection*.....	53.0	55
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>47.7</b>	<b>77</b>
4.3.1 Applied tariff rate weighted mean, %.....	52.0	110
4.3.2 Market access trade restrictiveness*, %.....	98.0	3
4.3.3 Imports of goods & services, % GDP.....	19.8	68
4.3.4 Exports of goods & services, % GDP.....	34.7	54
4.3.5 Intensity local competition†.....	58.9	87

## 5 Business sophistication 25.1 107

<b>5.1 Knowledge workers</b>	<b>25.1</b>	<b>102</b>
5.1.1 Knowledge-intensive employment, %.....	34.4	71
5.1.2 Firms offering formal training, % firms.....	15.7	82
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>18.8</b>	<b>114</b>
5.2.1 University/industry collaboration†.....	31.3	108
5.2.2 State of cluster development†.....	25.4	115
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	9.1	64
<b>5.3 Knowledge absorption</b>	<b>31.5</b>	<b>75</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	18.5	64
5.3.3 Computer & comm. service imports, %.....	n/a	n/a
5.3.4 FDI net inflows, % GDP.....	44.5	68

## 6 Scientific outputs 6.1 125

<b>6.1 Knowledge creation</b>	<b>2.3</b>	<b>103</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.9	79
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.1	84
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.0	90
<b>6.2 Knowledge impact</b>	<b>15.9</b>	<b>108</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	33.3	89
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	3.4	78
6.2.3 Computer software spending, % GDP.....	5.9	65
<b>6.3 Knowledge diffusion</b>	<b>0.0</b>	<b>124</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.0	106
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 9.0 123

<b>7.1 Creative intangibles</b>	<b>18.0</b>	<b>123</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	5.6	94
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	31.3	120
7.1.4 ICT & organizational models†.....	26.0	122
<b>7.2 Creative goods &amp; services</b>	<b>0.0</b>	<b>125</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.0	119
7.2.5 Creative services exports, %.....	n/a	n/a

# Argentina

## Key indicators

Population (millions)	40.7
GDP per capita, PPP (current international \$)	14,538.3
GDP (US\$ billions)	307.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>35.4</b>	<b>58</b>
Innovation Output Sub-Index .....	33.4	40
Innovation Input Sub-Index.....	37.3	82
Innovation Efficiency Index.....	0.9	8
Global Innovation Index 2010.....		75
Global Innovation Index 2009.....		84

## 1 Institutions 51.1 102

<b>1.1 Political environment</b>	<b>55.2</b>	<b>65</b>
1.1.1 Political stability*.....	43.4	64
1.1.2 Government effectiveness*.....	39.5	87
1.1.3 Press freedom*.....	82.7	49
<b>1.2 Regulatory environment</b>	<b>43.2</b>	<b>100</b>
1.2.1 Regulatory quality*.....	21.0	114
1.2.2 Rule of law*.....	29.7	97
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>55.0</b>	<b>115</b>
1.3.1 Time to start a business, days.....	76.0	84
1.3.2 Cost to start a business, % income/cap.....	88.9	76
1.3.3 Total tax rate, % profits.....	0.0	125

## 2 Human capital & research 37.2 63

<b>2.1 Education</b>	<b>59.3</b>	<b>56</b>
2.1.1 Education expenditure, % GNI.....	49.1	52
2.1.2 Public expenditure/pupil, % GDP/cap.....	24.5	71
2.1.3 School life expectancy, years.....	68.8	24
2.1.4 PISA scales in reading, maths, & science.....	28.1	53
2.1.5 Pupil-teacher ratio, secondary.....	87.9	44
<b>2.2 Tertiary education</b>	<b>28.0</b>	<b>74</b>
2.2.1 Tertiary enrolment, % gross.....	68.9	19
2.2.2 Graduates in science, %.....	26.8	55
2.2.3 Graduates in engineering, %.....	14.3	83
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	1.6	118
2.2.6 Gross tertiary outbound enrolment, %.....	2.9	89
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.4</b>	<b>61</b>
2.3.1 Researchers headcount/million pop.....	11.3	40
2.3.2 Gross expenditure on R&D, % GDP.....	10.0	52
2.3.3 Quality research institutions†.....	51.9	43

## 3 Infrastructure 31.5 46

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>32.6</b>	<b>50</b>
3.1.1 ICT access*.....	52.7	46
3.1.2 ICT use*.....	14.4	55
3.1.3 Government's Online Service*.....	41.3	42
3.1.4 E-Participation*.....	20.0	56
<b>3.2 Energy</b>	<b>20.2</b>	<b>63</b>
3.2.1 Electricity output, kWh/cap.....	15.7	56
3.2.2 Electricity consumption, kWh/capita.....	11.6	56
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	42.5	26
3.2.4 Share of renewables in energy use, %.....	4.3	73
<b>3.3 General infrastructure</b>	<b>41.7</b>	<b>26</b>
3.3.1 Quality of trade & transport infrastructure*.....	43.8	49
3.3.2 Gross capital formation, % GDP.....	24.9	67
3.3.3 Ecological footprint & biocapacity, ha/cap.....	56.5	10

## 4 Market sophistication 28.3 108

<b>4.1 Credit</b>	<b>29.2</b>	<b>97</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	2.9	106
4.1.4 Microfinance gross loans, % GDP.....	0.1	74
<b>4.2 Investment</b>	<b>17.7</b>	<b>105</b>
4.2.1 Strength of investor protection*.....	47.0	86
4.2.2 Market capitalization, % GDP.....	6.2	77
4.2.3 Total value of stocks traded, % GDP.....	0.5	77
4.2.4 Venture capital deals/tr GDP PPP\$.....	16.6	68
<b>4.3 Trade &amp; competition</b>	<b>38.1</b>	<b>113</b>
4.3.1 Applied tariff rate weighted mean, %.....	73.8	80
4.3.2 Market access trade restrictiveness*, %.....	51.8	67
4.3.3 Imports of goods & services, % GDP.....	3.7	122
4.3.4 Exports of goods & services, % GDP.....	13.6	106
4.3.5 Intensity local competition†.....	54.2	101

## 5 Business sophistication 38.3 53

<b>5.1 Knowledge workers</b>	<b>41.9</b>	<b>58</b>
5.1.1 Knowledge-intensive employment, %.....	31.6	77
5.1.2 Firms offering formal training, % firms.....	59.2	16
5.1.3 R&D performed by business, %.....	35.7	48
5.1.4 R&D financed by business, %.....	34.3	48
<b>5.2 Innovation linkages</b>	<b>29.7</b>	<b>75</b>
5.2.1 University/industry collaboration†.....	47.1	48
5.2.2 State of cluster development†.....	38.2	74
5.2.3 R&D financed by abroad, %.....	2.3	68
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	5.5	62
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>43.1</b>	<b>30</b>
5.3.1 Royalty & license fees payments, % GDP.....	42.9	20
5.3.2 High-tech imports less re-imports, %.....	46.0	15
5.3.3 Computer & comm. service imports, %.....	42.5	59
5.3.4 FDI net inflows, % GDP.....	41.2	89

## 6 Scientific outputs 23.5 67

<b>6.1 Knowledge creation</b>	<b>18.3</b>	<b>44</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	18.3	47
<b>6.2 Knowledge impact</b>	<b>21.6</b>	<b>93</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	45.8	42
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	3.5	77
6.2.3 Computer software spending, % GDP.....	9.2	54
<b>6.3 Knowledge diffusion</b>	<b>30.7</b>	<b>50</b>
6.3.1 Royalty & license fees receipts, % GDP.....	4.6	53
6.3.2 High-tech exports less re-exports, %.....	7.7	52
6.3.3 Computer & comm service exports, %.....	62.4	23
6.3.4 FDI net outflows, % GDP.....	47.9	69

## 7 Creative outputs 43.4 22

<b>7.1 Creative intangibles</b>	<b>57.8</b>	<b>18</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	68.1	5
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	54.3	79
7.1.4 ICT & organizational models†.....	50.9	63
<b>7.2 Creative goods &amp; services</b>	<b>29.0</b>	<b>42</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	21.5	32
7.2.3 Daily newspapers/1,000 literate pop.....	7.5	49
7.2.4 Creative goods exports, %.....	4.5	87
7.2.5 Creative services exports, %.....	67.9	9

## Key indicators

Population (millions)	3.1
GDP per capita, PPP (current international \$)	5,278.9
GDP (US\$ billions)	8.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>33.0</b>	<b>69</b>
Innovation Output Sub-Index .....	28.9	60
Innovation Input Sub-Index.....	37.1	84
Innovation Efficiency Index.....	0.8	34
Global Innovation Index 2010.....		82
Global Innovation Index 2009.....		104

## 1 Institutions 67.9 57

<b>1.1 Political environment</b>	<b>58.7</b>	<b>58</b>
1.1.1 Political stability*.....	48.1	57
1.1.2 Government effectiveness*.....	57.1	64
1.1.3 Press freedom*.....	70.9	76
<b>1.2 Regulatory environment</b>	<b>60.8</b>	<b>61</b>
1.2.1 Regulatory quality*.....	60.5	59
1.2.2 Rule of law*.....	42.9	75
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>84.2</b>	<b>45</b>
1.3.1 Time to start a business, days.....	86.5	59
1.3.2 Cost to start a business, % income/cap.....	97.6	30
1.3.3 Total tax rate, % profits.....	68.5	66

## 2 Human capital & research 30.7 88

<b>2.1 Education</b>	<b>55.1</b>	<b>68</b>
2.1.1 Education expenditure, % GNI.....	18.2	112
2.1.2 Public expenditure/pupil, % GDP/cap.....	19.0	80
2.1.3 School life expectancy, years.....	47.2	76
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	99.6	2
<b>2.2 Tertiary education</b>	<b>21.3</b>	<b>94</b>
2.2.1 Tertiary enrolment, % gross.....	50.9	45
2.2.2 Graduates in science, %.....	0.4	92
2.2.3 Graduates in engineering, %.....	15.3	81
2.2.4 Tertiary inbound mobility, %.....	11.4	42
2.2.5 Tertiary outbound mobility, %.....	26.1	57
2.2.6 Gross tertiary outbound enrolment, %.....	21.6	41
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>15.7</b>	<b>96</b>
2.3.1 Researchers headcount/million pop.....	10.1	45
2.3.2 Gross expenditure on R&D, % GDP.....	3.8	70
2.3.3 Quality research institutions†.....	33.3	96

## 3 Infrastructure 22.9 94

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>15.3</b>	<b>96</b>
3.1.1 ICT access*.....	34.1	74
3.1.2 ICT use*.....	2.2	105
3.1.3 Government's Online Service*.....	n/a	n/a
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>13.8</b>	<b>96</b>
3.2.1 Electricity output, kWh/cap.....	9.7	77
3.2.2 Electricity consumption, kWh/capita.....	6.5	75
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	30.2	52
3.2.4 Share of renewables in energy use, %.....	3.2	80
<b>3.3 General infrastructure</b>	<b>39.4</b>	<b>39</b>
3.3.1 Quality of trade & transport infrastructure*.....	33.0	86
3.3.2 Gross capital formation, % GDP.....	51.6	14
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.7	71

## 4 Market sophistication 33.7 90

<b>4.1 Credit</b>	<b>42.2</b>	<b>55</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	4.8	98
4.1.4 Microfinance gross loans, % GDP.....	58.4	7
<b>4.2 Investment</b>	<b>14.4</b>	<b>114</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	0.4	99
4.2.3 Total value of stocks traded, % GDP.....	0.0	102
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>44.3</b>	<b>92</b>
4.3.1 Applied tariff rate weighted mean, %.....	88.8	47
4.3.2 Market access trade restrictiveness*, %.....	90.8	18
4.3.3 Imports of goods & services, % GDP.....	20.1	67
4.3.4 Exports of goods & services, % GDP.....	3.3	120
4.3.5 Intensity local competition†.....	41.9	121

## 5 Business sophistication 30.3 87

<b>5.1 Knowledge workers</b>	<b>38.4</b>	<b>67</b>
5.1.1 Knowledge-intensive employment, %.....	44.8	52
5.1.2 Firms offering formal training, % firms.....	32.0	55
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>19.9</b>	<b>111</b>
5.2.1 University/industry collaboration†.....	29.4	113
5.2.2 State of cluster development†.....	30.4	102
5.2.3 R&D financed by abroad, %.....	39.7	20
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>32.7</b>	<b>67</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	14.0	84
5.3.3 Computer & comm. service imports, %.....	9.8	114
5.3.4 FDI net inflows, % GDP.....	74.4	13

## 6 Scientific outputs 29.7 41

<b>6.1 Knowledge creation</b>	<b>24.7</b>	<b>34</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	43.3	19
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	4.0	45
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	20.2	15
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	29.2	35
<b>6.2 Knowledge impact</b>	<b>38.6</b>	<b>30</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	67.2	7
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.9	50
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>25.8</b>	<b>67</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	1.4	76
6.3.3 Computer & comm service exports, %.....	27.0	83
6.3.4 FDI net outflows, % GDP.....	49.0	47

## 7 Creative outputs 28.1 78

<b>7.1 Creative intangibles</b>	<b>39.5</b>	<b>87</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	45.9	14
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	9.3	35
7.1.3 ICT & business models†.....	44.7	112
7.1.4 ICT & organizational models†.....	43.0	98
<b>7.2 Creative goods &amp; services</b>	<b>16.7</b>	<b>65</b>
7.2.1 Recreation & culture consumption, %.....	0.8	66
7.2.2 National feature films/mn pop.....	35.4	23
7.2.3 Daily newspapers/1,000 literate pop.....	1.3	59
7.2.4 Creative goods exports, %.....	27.5	33
7.2.5 Creative services exports, %.....	12.2	40

## Australia

## Key indicators

Population (millions)	21.5
GDP per capita, PPP (current international \$)	39,230.7
GDP (US\$ billions)	924.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>49.9</b>	<b>21</b>
Innovation Output Sub-Index .....	36.9	31
Innovation Input Sub-Index.....	62.8	12
Innovation Efficiency Index.....	0.6	97
Global Innovation Index 2010.....		18
Global Innovation Index 2009.....		22

## 1 Institutions 91.0 7

<b>1.1 Political environment</b>	<b>88.7</b>	<b>14</b>
1.1.1 Political stability*.....	76.4	26
1.1.2 Government effectiveness*.....	95.2	10
1.1.3 Press freedom*.....	94.3	17
<b>1.2 Regulatory environment</b>	<b>97.8</b>	<b>1</b>
1.2.1 Regulatory quality*.....	98.1	5
1.2.2 Rule of law*.....	95.3	11
1.2.3 Rigidity of employment*.....	100.0	1
<b>1.3 Business environment</b>	<b>86.5</b>	<b>28</b>
1.3.1 Time to start a business, days.....	99.0	2
1.3.2 Cost to start a business, % income/cap.....	99.5	7
1.3.3 Total tax rate, % profits.....	61.2	90

## 2 Human capital & research 57.8 9

<b>2.1 Education</b>	<b>71.3</b>	<b>14</b>
2.1.1 Education expenditure, % GNI.....	56.7	34
2.1.2 Public expenditure/pupil, % GDP/cap.....	22.7	73
2.1.3 School life expectancy, years.....	100.0	1
2.1.4 PISA scales in reading, maths, & science.....	77.0	9
2.1.5 Pupil-teacher ratio, secondary.....	n/a	n/a
<b>2.2 Tertiary education</b>	<b>43.2</b>	<b>20</b>
2.2.1 Tertiary enrolment, % gross.....	78.4	12
2.2.2 Graduates in science, %.....	43.6	22
2.2.3 Graduates in engineering, %.....	21.8	68
2.2.4 Tertiary inbound mobility, %.....	85.3	7
2.2.5 Tertiary outbound mobility, %.....	8.2	110
2.2.6 Gross tertiary outbound enrolment, %.....	7.9	70
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>59.0</b>	<b>11</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	42.0	13
2.3.3 Quality research institutions†.....	76.1	10

## 3 Infrastructure 52.3 4

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>70.3</b>	<b>3</b>
3.1.1 ICT access*.....	71.6	24
3.1.2 ICT use*.....	55.4	8
3.1.3 Government's Online Service*.....	76.5	5
3.1.4 E-Participation*.....	91.4	2
<b>3.2 Energy</b>	<b>26.9</b>	<b>26</b>
3.2.1 Electricity output, kWh/cap.....	59.1	11
3.2.2 Electricity consumption, kWh/capita.....	44.6	12
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	25.6	65
3.2.4 Share of renewables in energy use, %.....	3.2	81
<b>3.3 General infrastructure</b>	<b>59.7</b>	<b>3</b>
3.3.1 Quality of trade & transport infrastructure*.....	69.5	18
3.3.2 Gross capital formation, % GDP.....	41.8	23
3.3.3 Ecological footprint & biocapacity, ha/cap.....	67.9	5

## 4 Market sophistication 58.8 16

<b>4.1 Credit</b>	<b>71.9</b>	<b>13</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	57.1	12
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>54.8</b>	<b>12</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	55.1	7
4.2.3 Total value of stocks traded, % GDP.....	45.8	16
4.2.4 Venture capital deals/tr GDP PPP\$.....	67.4	25
<b>4.3 Trade &amp; competition</b>	<b>49.8</b>	<b>66</b>
4.3.1 Applied tariff rate weighted mean, %.....	87.7	49
4.3.2 Market access trade restrictiveness*, %.....	76.6	40
4.3.3 Imports of goods & services, % GDP.....	8.2	113
4.3.4 Exports of goods & services, % GDP.....	11.9	109
4.3.5 Intensity local competition†.....	78.0	9

## 5 Business sophistication 54.1 17

<b>5.1 Knowledge workers</b>	<b>76.0</b>	<b>14</b>
5.1.1 Knowledge-intensive employment, %.....	83.2	11
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	68.7	23
5.1.4 R&D financed by business, %.....	68.7	17
<b>5.2 Innovation linkages</b>	<b>49.6</b>	<b>23</b>
5.2.1 University/industry collaboration†.....	68.9	12
5.2.2 State of cluster development†.....	49.5	36
5.2.3 R&D financed by abroad, %.....	8.5	60
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	100.0	1
5.2.5 PCT patent filings with foreign inventor, %.....	25.8	36
<b>5.3 Knowledge absorption</b>	<b>36.7</b>	<b>50</b>
5.3.1 Royalty & license fees payments, % GDP.....	29.4	32
5.3.2 High-tech imports less re-imports, %.....	36.9	24
5.3.3 Computer & comm. service imports, %.....	34.4	70
5.3.4 FDI net inflows, % GDP.....	46.3	56

## 6 Scientific outputs 33.1 33

<b>6.1 Knowledge creation</b>	<b>34.3</b>	<b>23</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	19.2	37
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	27.8	22
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	9.8	25
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	68.0	7
<b>6.2 Knowledge impact</b>	<b>39.8</b>	<b>27</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	34.7	82
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	49.7	13
6.2.3 Computer software spending, % GDP.....	30.2	25
<b>6.3 Knowledge diffusion</b>	<b>25.3</b>	<b>70</b>
6.3.1 Royalty & license fees receipts, % GDP.....	9.1	39
6.3.2 High-tech exports less re-exports, %.....	5.7	56
6.3.3 Computer & comm service exports, %.....	29.0	76
6.3.4 FDI net outflows, % GDP.....	57.6	14

## 7 Creative outputs 40.6 36

<b>7.1 Creative intangibles</b>	<b>51.1</b>	<b>37</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	31.5	26
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	18.6	29
7.1.3 ICT & business models†.....	70.2	27
7.1.4 ICT & organizational models†.....	67.9	22
<b>7.2 Creative goods &amp; services</b>	<b>30.2</b>	<b>38</b>
7.2.1 Recreation & culture consumption, %.....	82.8	4
7.2.2 National feature films/mn pop.....	17.8	36
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	5.9	81
7.2.5 Creative services exports, %.....	34.2	19

## Key indicators

Population (millions)	8.4
GDP per capita, PPP (current international \$)	38,363.1
GDP (US\$ billions)	381.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>50.7</b>	<b>19</b>
Innovation Output Sub-Index .....	42.2	23
Innovation Input Sub-Index.....	59.3	19
Innovation Efficiency Index.....	0.7	60
Global Innovation Index 2010.....		21
Global Innovation Index 2009.....		15

## 1 Institutions 85.7 17

<b>1.1 Political environment</b>	<b>94.1</b>	<b>8</b>
1.1.1 Political stability*.....	89.2	8
1.1.2 Government effectiveness*.....	93.8	13
1.1.3 Press freedom*.....	99.5	7
<b>1.2 Regulatory environment</b>	<b>88.4</b>	<b>11</b>
1.2.1 Regulatory quality*.....	92.9	15
1.2.2 Rule of law*.....	96.2	9
1.2.3 Rigidity of employment*.....	76.0	56
<b>1.3 Business environment</b>	<b>74.5</b>	<b>82</b>
1.3.1 Time to start a business, days.....	74.0	88
1.3.2 Cost to start a business, % income/cap.....	95.9	43
1.3.3 Total tax rate, % profits.....	53.4	107

## 2 Human capital & research 58.7 8

<b>2.1 Education</b>	<b>69.9</b>	<b>19</b>
2.1.1 Education expenditure, % GNI.....	59.2	30
2.1.2 Public expenditure/pupil, % GDP/cap.....	49.0	11
2.1.3 School life expectancy, years.....	66.6	32
2.1.4 PISA scales in reading, maths, & science.....	64.3	29
2.1.5 Pupil-teacher ratio, secondary.....	91.8	32
<b>2.2 Tertiary education</b>	<b>48.9</b>	<b>14</b>
2.2.1 Tertiary enrolment, % gross.....	55.6	36
2.2.2 Graduates in science, %.....	43.0	24
2.2.3 Graduates in engineering, %.....	57.3	13
2.2.4 Tertiary inbound mobility, %.....	77.3	8
2.2.5 Tertiary outbound mobility, %.....	26.2	56
2.2.6 Gross tertiary outbound enrolment, %.....	25.0	37
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>57.4</b>	<b>15</b>
2.3.1 Researchers headcount/million pop.....	48.9	9
2.3.2 Gross expenditure on R&D, % GDP.....	54.5	10
2.3.3 Quality research institutions†.....	68.7	19

## 3 Infrastructure 44.0 16

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>58.4</b>	<b>21</b>
3.1.1 ICT access*.....	76.9	12
3.1.2 ICT use*.....	49.4	15
3.1.3 Government's Online Service*.....	47.6	33
3.1.4 E-Participation*.....	50.0	22
<b>3.2 Energy</b>	<b>32.6</b>	<b>9</b>
3.2.1 Electricity output, kWh/cap.....	40.8	24
3.2.2 Electricity consumption, kWh/capita.....	33.4	18
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	43.5	25
3.2.4 Share of renewables in energy use, %.....	17.2	37
<b>3.3 General infrastructure</b>	<b>41.0</b>	<b>32</b>
3.3.1 Quality of trade & transport infrastructure*.....	67.0	21
3.3.2 Gross capital formation, % GDP.....	25.8	65
3.3.3 Ecological footprint & biocapacity, ha/cap.....	30.1	89

## 4 Market sophistication 56.5 23

<b>4.1 Credit</b>	<b>85.0</b>	<b>5</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>22.2</b>	<b>89</b>
4.2.1 Strength of investor protection*.....	40.0	103
4.2.2 Market capitalization, % GDP.....	5.4	81
4.2.3 Total value of stocks traded, % GDP.....	3.7	54
4.2.4 Venture capital deals/tr GDP PPP\$.....	57.5	36
<b>4.3 Trade &amp; competition</b>	<b>62.2</b>	<b>20</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	27.8	45
4.3.4 Exports of goods & services, % GDP.....	45.9	33
4.3.5 Intensity local competition†.....	80.9	5

## 5 Business sophistication 51.6 22

<b>5.1 Knowledge workers</b>	<b>69.3</b>	<b>21</b>
5.1.1 Knowledge-intensive employment, %.....	70.7	26
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	83.1	11
5.1.4 R&D financed by business, %.....	52.9	33
<b>5.2 Innovation linkages</b>	<b>46.2</b>	<b>25</b>
5.2.1 University/industry collaboration†.....	65.3	17
5.2.2 State of cluster development†.....	59.5	18
5.2.3 R&D financed by abroad, %.....	52.0	14
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	4.0	67
5.2.5 PCT patent filings with foreign inventor, %.....	32.2	29
<b>5.3 Knowledge absorption</b>	<b>39.1</b>	<b>41</b>
5.3.1 Royalty & license fees payments, % GDP.....	33.6	28
5.3.2 High-tech imports less re-imports, %.....	28.0	40
5.3.3 Computer & comm. service imports, %.....	49.1	40
5.3.4 FDI net inflows, % GDP.....	45.6	59

## 6 Scientific outputs 35.4 30

<b>6.1 Knowledge creation</b>	<b>40.8</b>	<b>16</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	43.1	20
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	46.3	12
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	17.9	16
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	44.3	20
<b>6.2 Knowledge impact</b>	<b>26.6</b>	<b>76</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.0	80
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.5	72
6.2.3 Computer software spending, % GDP.....	53.8	12
<b>6.3 Knowledge diffusion</b>	<b>39.0</b>	<b>36</b>
6.3.1 Royalty & license fees receipts, % GDP.....	26.4	19
6.3.2 High-tech exports less re-exports, %.....	28.9	23
6.3.3 Computer & comm service exports, %.....	49.3	40
6.3.4 FDI net outflows, % GDP.....	51.3	33

## 7 Creative outputs 49.0 9

<b>7.1 Creative intangibles</b>	<b>58.0</b>	<b>16</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	18.2	57
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	100.0	3
7.1.3 ICT & business models†.....	73.2	20
7.1.4 ICT & organizational models†.....	61.6	37
<b>7.2 Creative goods &amp; services</b>	<b>40.0</b>	<b>15</b>
7.2.1 Recreation & culture consumption, %.....	87.4	2
7.2.2 National feature films/mn pop.....	54.7	14
7.2.3 Daily newspapers/1,000 literate pop.....	56.9	8
7.2.4 Creative goods exports, %.....	38.1	15
7.2.5 Creative services exports, %.....	2.3	73

# Azerbaijan

## Key indicators

Population (millions)	8.9
GDP per capita, PPP (current international \$)	9,638.2
GDP (US\$ billions)	43.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.2</b>	<b>88</b>
Innovation Output Sub-Index .....	21.1	100
Innovation Input Sub-Index.....	37.2	83
Innovation Efficiency Index.....	0.6	104
Global Innovation Index 2010.....		57
Global Innovation Index 2009.....		57

## 1 Institutions 57.9 79

<b>1.1 Political environment</b>	<b>35.3</b>	<b>106</b>
1.1.1 Political stability*.....	32.1	80
1.1.2 Government effectiveness*.....	33.3	95
1.1.3 Press freedom*.....	40.4	110
<b>1.2 Regulatory environment</b>	<b>52.0</b>	<b>83</b>
1.2.1 Regulatory quality*.....	43.8	87
1.2.2 Rule of law*.....	22.2	106
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>86.4</b>	<b>31</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	97.6	30
1.3.3 Total tax rate, % profits.....	68.3	67

## 2 Human capital & research 30.4 90

<b>2.1 Education</b>	<b>50.9</b>	<b>87</b>
2.1.1 Education expenditure, % GNI.....	27.8	99
2.1.2 Public expenditure/pupil, % GDP/cap.....	16.0	88
2.1.3 School life expectancy, years.....	45.4	84
2.1.4 PISA scales in reading, maths, & science.....	25.3	55
2.1.5 Pupil-teacher ratio, secondary.....	98.2	6
<b>2.2 Tertiary education</b>	<b>22.4</b>	<b>90</b>
2.2.1 Tertiary enrolment, % gross.....	19.0	82
2.2.2 Graduates in science, %.....	37.9	33
2.2.3 Graduates in engineering, %.....	17.0	77
2.2.4 Tertiary inbound mobility, %.....	12.7	37
2.2.5 Tertiary outbound mobility, %.....	31.4	47
2.2.6 Gross tertiary outbound enrolment, %.....	9.7	66
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>17.9</b>	<b>88</b>
2.3.1 Researchers headcount/million pop.....	10.2	44
2.3.2 Gross expenditure on R&D, % GDP.....	3.0	77
2.3.3 Quality research institutions†.....	40.6	72

## 3 Infrastructure 22.0 99

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>22.8</b>	<b>76</b>
3.1.1 ICT access*.....	34.0	75
3.1.2 ICT use*.....	9.7	73
3.1.3 Government's Online Service*.....	32.4	64
3.1.4 E-Participation*.....	17.1	65
<b>3.2 Energy</b>	<b>12.6</b>	<b>99</b>
3.2.1 Electricity output, kWh/cap.....	14.2	61
3.2.2 Electricity consumption, kWh/capita.....	9.6	63
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	25.0	68
3.2.4 Share of renewables in energy use, %.....	0.9	99
<b>3.3 General infrastructure</b>	<b>30.6</b>	<b>97</b>
3.3.1 Quality of trade & transport infrastructure*.....	30.8	94
3.3.2 Gross capital formation, % GDP.....	27.5	58
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.4	74

## 4 Market sophistication 44.1 47

<b>4.1 Credit</b>	<b>35.5</b>	<b>75</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	4.3	100
4.1.4 Microfinance gross loans, % GDP.....	25.6	20
<b>4.2 Investment</b>	<b>44.7</b>	<b>24</b>
4.2.1 Strength of investor protection*.....	67.0	19
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>52.2</b>	<b>59</b>
4.3.1 Applied tariff rate weighted mean, %.....	80.5	69
4.3.2 Market access trade restrictiveness*, %.....	100.0	1
4.3.3 Imports of goods & services, % GDP.....	10.8	107
4.3.4 Exports of goods & services, % GDP.....	48.1	30
4.3.5 Intensity local competition†.....	45.4	120

## 5 Business sophistication 31.7 80

<b>5.1 Knowledge workers</b>	<b>22.7</b>	<b>108</b>
5.1.1 Knowledge-intensive employment, %.....	36.8	64
5.1.2 Firms offering formal training, % firms.....	7.3	88
5.1.3 R&D performed by business, %.....	24.0	62
5.1.4 R&D financed by business, %.....	24.2	57
<b>5.2 Innovation linkages</b>	<b>32.2</b>	<b>65</b>
5.2.1 University/industry collaboration†.....	36.7	84
5.2.2 State of cluster development†.....	39.3	71
5.2.3 R&D financed by abroad, %.....	0.4	74
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	5.1	63
5.2.5 PCT patent filings with foreign inventor, %.....	50.0	18
<b>5.3 Knowledge absorption</b>	<b>40.1</b>	<b>39</b>
5.3.1 Royalty & license fees payments, % GDP.....	6.0	87
5.3.2 High-tech imports less re-imports, %.....	32.5	30
5.3.3 Computer & comm. service imports, %.....	81.4	5
5.3.4 FDI net inflows, % GDP.....	40.5	95

## 6 Scientific outputs 24.4 62

<b>6.1 Knowledge creation</b>	<b>6.2</b>	<b>71</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	17.4	41
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.3	82
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	0.5	51
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.8	95
<b>6.2 Knowledge impact</b>	<b>41.9</b>	<b>21</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	76.5	2
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	7.2	58
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>25.1</b>	<b>72</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.6	72
6.3.2 High-tech exports less re-exports, %.....	0.1	103
6.3.3 Computer & comm service exports, %.....	50.4	38
6.3.4 FDI net outflows, % GDP.....	49.4	43

## 7 Creative outputs 17.9 117

<b>7.1 Creative intangibles</b>	<b>33.0</b>	<b>108</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	7.8	91
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	1.2	51
7.1.3 ICT & business models†.....	56.4	70
7.1.4 ICT & organizational models†.....	50.7	65
<b>7.2 Creative goods &amp; services</b>	<b>2.7</b>	<b>112</b>
7.2.1 Recreation & culture consumption, %.....	5.7	63
7.2.2 National feature films/mn pop.....	3.8	65
7.2.3 Daily newspapers/1,000 literate pop.....	3.4	55
7.2.4 Creative goods exports, %.....	0.4	114
7.2.5 Creative services exports, %.....	2.6	70

## Key indicators

Population (millions)	0.8
GDP per capita, PPP (current international \$)	35,174.1
GDP (US\$ billions)	20.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>37.8</b>	<b>46</b>
Innovation Output Sub-Index .....	22.9	92
Innovation Input Sub-Index.....	52.7	28
Innovation Efficiency Index.....	0.4	122
Global Innovation Index 2010.....		40
Global Innovation Index 2009.....		34

## 1 Institutions 74.4 41

<b>1.1 Political environment</b>	<b>51.8</b>	<b>71</b>
1.1.1 Political stability*.....	40.6	68
1.1.2 Government effectiveness*.....	69.0	45
1.1.3 Press freedom*.....	45.7	106
<b>1.2 Regulatory environment</b>	<b>76.1</b>	<b>30</b>
1.2.1 Regulatory quality*.....	74.3	40
1.2.2 Rule of law*.....	64.2	47
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>95.4</b>	<b>3</b>
1.3.1 Time to start a business, days.....	92.3	34
1.3.2 Cost to start a business, % income/cap.....	99.4	10
1.3.3 Total tax rate, % profits.....	94.5	6

## 2 Human capital & research 54.0 18

<b>2.1 Education</b>	<b>67.9</b>	<b>31</b>
2.1.1 Education expenditure, % GNI.....	29.0	93
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.....	87.4	46
<b>2.2 Tertiary education</b>	<b>64.4</b>	<b>2</b>
2.2.1 Tertiary enrolment, % gross.....	52.0	41
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	100.0	5
2.2.5 Tertiary outbound mobility, %.....	50.8	14
2.2.6 Gross tertiary outbound enrolment, %.....	67.3	8
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>29.7</b>	<b>46</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	29.7	110

## 3 Infrastructure 46.9 10

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>58.8</b>	<b>18</b>
3.1.1 ICT access*.....	72.6	21
3.1.2 ICT use*.....	33.6	32
3.1.3 Government's Online Service*.....	73.0	8
3.1.4 E-Participation*.....	67.1	12
<b>3.2 Energy</b>	<b>24.3</b>	<b>43</b>
3.2.1 Electricity output, kWh/cap.....	80.5	7
3.2.2 Electricity consumption, kWh/capita.....	55.9	10
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	4.6	110
3.2.4 Share of renewables in energy use, %.....	0.0	111
<b>3.3 General infrastructure</b>	<b>57.7</b>	<b>4</b>
3.3.1 Quality of trade & transport infrastructure*.....	59.0	29
3.3.2 Gross capital formation, % GDP.....	56.4	11
3.3.3 Ecological footprint & biocapacity, ha/cap.....	n/a	n/a

## 4 Market sophistication 56.1 24

<b>4.1 Credit</b>	<b>53.2</b>	<b>32</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	53.0	15
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>37.9</b>	<b>37</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	39.1	17
4.2.3 Total value of stocks traded, % GDP.....	7.5	45
4.2.4 Venture capital deals/tr GDP PPP\$.....	58.3	34
<b>4.3 Trade &amp; competition</b>	<b>77.1</b>	<b>5</b>
4.3.1 Applied tariff rate weighted mean, %.....	82.3	58
4.3.2 Market access trade restrictiveness*, %.....	92.4	14
4.3.3 Imports of goods & services, % GDP.....	50.4	11
4.3.4 Exports of goods & services, % GDP.....	97.1	5
4.3.5 Intensity local competition†.....	70.8	37

## 5 Business sophistication 32.2 78

<b>5.1 Knowledge workers</b>	<b>37.8</b>	<b>71</b>
5.1.1 Knowledge-intensive employment, %.....	37.8	63
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
<b>5.2 Innovation linkages</b>	<b>34.6</b>	<b>53</b>
5.2.1 University/industry collaboration†.....	37.6	81
5.2.2 State of cluster development†.....	56.4	23
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	54.4	13
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>24.2</b>	<b>107</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	17.6	70
5.3.3 Computer & comm. service imports, %.....	14.0	109
5.3.4 FDI net inflows, % GDP.....	41.1	90

## 6 Scientific outputs 25.6 54

<b>6.1 Knowledge creation</b>	<b>2.9</b>	<b>98</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.5	76
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.3	85
<b>6.2 Knowledge impact</b>	<b>55.3</b>	<b>7</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	55.3	19
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>18.5</b>	<b>109</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.0	104
6.3.3 Computer & comm service exports, %.....	32.8	66
6.3.4 FDI net outflows, % GDP.....	22.6	118

## 7 Creative outputs 20.2 112

<b>7.1 Creative intangibles</b>	<b>37.8</b>	<b>95</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	8.3	89
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	66.7	39
7.1.4 ICT & organizational models†.....	57.3	47
<b>7.2 Creative goods &amp; services</b>	<b>2.6</b>	<b>113</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	2.6	99
7.2.5 Creative services exports, %.....	n/a	n/a

# Bangladesh

## Key indicators

Population (millions)	164.4
GDP per capita, PPP (current international \$)	1,416.3
GDP (US\$ billions)	89.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>28.1</b>	<b>97</b>
Innovation Output Sub-Index .....	26.5	69
Innovation Input Sub-Index.....	29.6	114
Innovation Efficiency Index.....	0.9	10
Global Innovation Index 2010.....		120
Global Innovation Index 2009.....		111

## 1 Institutions 48.2 105

<b>1.1 Political environment</b>	<b>26.4</b>	<b>117</b>
1.1.1 Political stability*.....	7.5	119
1.1.2 Government effectiveness*.....	16.7	118
1.1.3 Press freedom*.....	55.1	90
<b>1.2 Regulatory environment</b>	<b>41.1</b>	<b>106</b>
1.2.1 Regulatory quality*.....	23.3	113
1.2.2 Rule of law*.....	27.8	99
1.2.3 Rigidity of employment*.....	72.0	67
<b>1.3 Business environment</b>	<b>77.0</b>	<b>74</b>
1.3.1 Time to start a business, days.....	82.7	70
1.3.2 Cost to start a business, % income/cap.....	74.0	98
1.3.3 Total tax rate, % profits.....	74.2	47

## 2 Human capital & research 24.1 114

<b>2.1 Education</b>	<b>30.2</b>	<b>120</b>
2.1.1 Education expenditure, % GNI.....	14.9	113
2.1.2 Public expenditure/pupil, % GDP/cap.....	17.5	85
2.1.3 School life expectancy, years.....	23.2	113
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	51.3	108
<b>2.2 Tertiary education</b>	<b>12.3</b>	<b>114</b>
2.2.1 Tertiary enrolment, % gross.....	7.5	103
2.2.2 Graduates in science, %.....	31.2	48
2.2.3 Graduates in engineering, %.....	3.8	92
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	12.6	98
2.2.6 Gross tertiary outbound enrolment, %.....	0.5	107
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>29.9</b>	<b>45</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	29.9	109

## 3 Infrastructure 25.5 76

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>13.6</b>	<b>103</b>
3.1.1 ICT access*.....	17.8	111
3.1.2 ICT use*.....	0.1	124
3.1.3 Government's Online Service*.....	35.6	56
3.1.4 E-Participation*.....	10.0	87
<b>3.2 Energy</b>	<b>27.0</b>	<b>25</b>
3.2.1 Electricity output, kWh/cap.....	1.1	107
3.2.2 Electricity consumption, kWh/capita.....	0.7	106
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	60.9	4
3.2.4 Share of renewables in energy use, %.....	19.3	34
<b>3.3 General infrastructure</b>	<b>35.9</b>	<b>65</b>
3.3.1 Quality of trade & transport infrastructure*.....	37.3	69
3.3.2 Gross capital formation, % GDP.....	33.7	38
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.7	39

## 4 Market sophistication 30.5 102

<b>4.1 Credit</b>	<b>33.5</b>	<b>84</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	15.1	61
4.1.4 Microfinance gross loans, % GDP.....	34.1	16
<b>4.2 Investment</b>	<b>22.6</b>	<b>85</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	2.9	89
4.2.3 Total value of stocks traded, % GDP.....	9.1	41
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>35.3</b>	<b>114</b>
4.3.1 Applied tariff rate weighted mean, %.....	45.4	116
4.3.2 Market access trade restrictiveness*, %.....	57.1	63
4.3.3 Imports of goods & services, % GDP.....	12.2	100
4.3.4 Exports of goods & services, % GDP.....	11.5	110
4.3.5 Intensity local competition†.....	61.2	77

## 5 Business sophistication 19.9 121

<b>5.1 Knowledge workers</b>	<b>12.3</b>	<b>123</b>
5.1.1 Knowledge-intensive employment, %.....	10.2	96
5.1.2 Firms offering formal training, % firms.....	14.3	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
<b>5.2 Innovation linkages</b>	<b>30.6</b>	<b>71</b>
5.2.1 University/industry collaboration†.....	28.8	116
5.2.2 State of cluster development†.....	42.1	60
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	11.2	48
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>16.9</b>	<b>121</b>
5.3.1 Royalty & license fees payments, % GDP.....	2.9	96
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	8.8	115
5.3.4 FDI net inflows, % GDP.....	39.0	104

## 6 Scientific outputs 28.2 44

<b>6.1 Knowledge creation</b>	<b>2.3</b>	<b>105</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.5	83
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.1	102
<b>6.2 Knowledge impact</b>	<b>35.8</b>	<b>37</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	51.1	29
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	5.0	69
<b>6.3 Knowledge diffusion</b>	<b>46.6</b>	<b>23</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	89
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	92.5	2
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 24.7 96

<b>7.1 Creative intangibles</b>	<b>35.8</b>	<b>99</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	16.3	61
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	49.4	94
7.1.4 ICT & organizational models†.....	41.6	107
<b>7.2 Creative goods &amp; services</b>	<b>13.6</b>	<b>73</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	8.2	49
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	15.7	55
7.2.5 Creative services exports, %.....	14.3	37



## Key indicators

Population (millions)	10.7
GDP per capita, PPP (current international \$)	36,249.0
GDP (US\$ billions)	471.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>49.0</b>	<b>24</b>
Innovation Output Sub-Index .....	39.7	28
Innovation Input Sub-Index.....	58.4	22
Innovation Efficiency Index.....	0.7	71
Global Innovation Index 2010.....		17
Global Innovation Index 2009.....		18

## 1 Institutions 84.8 19

<b>1.1 Political environment</b>	<b>86.8</b>	<b>17</b>
1.1.1 Political stability*.....	74.1	30
1.1.2 Government effectiveness*.....	90.5	17
1.1.3 Press freedom*.....	95.8	14
<b>1.2 Regulatory environment</b>	<b>86.1</b>	<b>13</b>
1.2.1 Regulatory quality*.....	86.7	21
1.2.2 Rule of law*.....	88.7	20
1.2.3 Rigidity of employment*.....	83.0	34
<b>1.3 Business environment</b>	<b>81.6</b>	<b>56</b>
1.3.1 Time to start a business, days.....	97.1	7
1.3.2 Cost to start a business, % income/cap.....	95.8	45
1.3.3 Total tax rate, % profits.....	51.9	110

## 2 Human capital & research 52.9 22

<b>2.1 Education</b>	<b>73.9</b>	<b>10</b>
2.1.1 Education expenditure, % GNI.....	66.0	18
2.1.2 Public expenditure/pupil, % GDP/cap.....	49.0	9
2.1.3 School life expectancy, years.....	71.3	16
2.1.4 PISA scales in reading, maths, & science.....	73.2	14
2.1.5 Pupil-teacher ratio, secondary.....	93.2	23
<b>2.2 Tertiary education</b>	<b>33.2</b>	<b>52</b>
2.2.1 Tertiary enrolment, % gross.....	64.0	25
2.2.2 Graduates in science, %.....	19.5	72
2.2.3 Graduates in engineering, %.....	31.1	54
2.2.4 Tertiary inbound mobility, %.....	29.3	18
2.2.5 Tertiary outbound mobility, %.....	20.7	71
2.2.6 Gross tertiary outbound enrolment, %.....	19.5	46
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>51.7</b>	<b>19</b>
2.3.1 Researchers headcount/million pop.....	36.9	16
2.3.2 Gross expenditure on R&D, % GDP.....	39.2	15
2.3.3 Quality research institutions†.....	78.9	7

## 3 Infrastructure 39.5 24

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>58.6</b>	<b>19</b>
3.1.1 ICT access*.....	72.8	20
3.1.2 ICT use*.....	42.5	23
3.1.3 Government's Online Service*.....	62.5	17
3.1.4 E-Participation*.....	58.6	18
<b>3.2 Energy</b>	<b>23.1</b>	<b>49</b>
3.2.1 Electricity output, kWh/cap.....	43.2	19
3.2.2 Electricity consumption, kWh/capita.....	33.1	19
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	28.2	55
3.2.4 Share of renewables in energy use, %.....	2.9	85
<b>3.3 General infrastructure</b>	<b>36.8</b>	<b>56</b>
3.3.1 Quality of trade & transport infrastructure*.....	75.3	12
3.3.2 Gross capital formation, % GDP.....	22.9	73
3.3.3 Ecological footprint & biocapacity, ha/cap.....	12.2	117

## 4 Market sophistication 60.6 13

<b>4.1 Credit</b>	<b>68.3</b>	<b>17</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>40.0</b>	<b>31</b>
4.2.1 Strength of investor protection*.....	70.0	16
4.2.2 Market capitalization, % GDP.....	22.4	33
4.2.3 Total value of stocks traded, % GDP.....	15.2	35
4.2.4 Venture capital deals/tr GDP PPP\$.....	64.6	28
<b>4.3 Trade &amp; competition</b>	<b>73.5</b>	<b>10</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	47.2	16
4.3.4 Exports of goods & services, % GDP.....	70.7	11
4.3.5 Intensity local competition†.....	81.8	3

## 5 Business sophistication 54.4 16

<b>5.1 Knowledge workers</b>	<b>80.6</b>	<b>9</b>
5.1.1 Knowledge-intensive employment, %.....	84.4	9
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	81.1	14
5.1.4 R&D financed by business, %.....	72.3	14
<b>5.2 Innovation linkages</b>	<b>50.9</b>	<b>20</b>
5.2.1 University/industry collaboration†.....	70.4	10
5.2.2 State of cluster development†.....	52.6	29
5.2.3 R&D financed by abroad, %.....	45.7	18
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	5.6	61
5.2.5 PCT patent filings with foreign inventor, %.....	54.9	16
<b>5.3 Knowledge absorption</b>	<b>31.6</b>	<b>73</b>
5.3.1 Royalty & license fees payments, % GDP.....	45.0	18
5.3.2 High-tech imports less re-imports, %.....	20.5	60
5.3.3 Computer & comm. service imports, %.....	61.1	20
5.3.4 FDI net inflows, % GDP.....	0.0	123

## 6 Scientific outputs 37.0 27

<b>6.1 Knowledge creation</b>	<b>33.4</b>	<b>28</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	10.6	55
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	35.6	16
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	54.0	13
<b>6.2 Knowledge impact</b>	<b>37.2</b>	<b>34</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	33.0	91
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	33.3	22
6.2.3 Computer software spending, % GDP.....	53.4	13
<b>6.3 Knowledge diffusion</b>	<b>40.5</b>	<b>30</b>
6.3.1 Royalty & license fees receipts, % GDP.....	67.5	12
6.3.2 High-tech exports less re-exports, %.....	23.2	27
6.3.3 Computer & comm service exports, %.....	71.5	18
6.3.4 FDI net outflows, % GDP.....	0.0	119

## 7 Creative outputs 42.3 26

<b>7.1 Creative intangibles</b>	<b>40.6</b>	<b>83</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	11.7	77
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	66.1	41
7.1.4 ICT & organizational models†.....	64.2	27
<b>7.2 Creative goods &amp; services</b>	<b>44.0</b>	<b>12</b>
7.2.1 Recreation & culture consumption, %.....	62.7	27
7.2.2 National feature films/mn pop.....	87.9	4
7.2.3 Daily newspapers/1,000 literate pop.....	30.4	18
7.2.4 Creative goods exports, %.....	21.4	45
7.2.5 Creative services exports, %.....	42.0	16

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## Key indicators

Population (millions)	9.2
GDP per capita, PPP (current international \$)	1,507.9
GDP (US\$ billions)	6.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>23.8</b>	<b>118</b>
Innovation Output Sub-Index .....	19.4	112
Innovation Input Sub-Index.....	28.3	118
Innovation Efficiency Index.....	0.7	68
Global Innovation Index 2010.....		118
Global Innovation Index 2009.....		99

## 1 Institutions 46.9 107

<b>1.1 Political environment</b>	<b>59.9</b>	<b>57</b>
1.1.1 Political stability*.....	61.8	43
1.1.2 Government effectiveness*.....	38.1	89
1.1.3 Press freedom*.....	79.9	56
<b>1.2 Regulatory environment</b>	<b>42.9</b>	<b>102</b>
1.2.1 Regulatory quality*.....	40.0	92
1.2.2 Rule of law*.....	28.8	98
1.2.3 Rigidity of employment*.....	60.0	93
<b>1.3 Business environment</b>	<b>38.0</b>	<b>122</b>
1.3.1 Time to start a business, days.....	71.2	93
1.3.2 Cost to start a business, % income/cap.....	0.0	124
1.3.3 Total tax rate, % profits.....	42.8	118

## 2 Human capital & research 24.5 113

<b>2.1 Education</b>	<b>39.5</b>	<b>109</b>
2.1.1 Education expenditure, % GNI.....	32.3	87
2.1.2 Public expenditure/pupil, % GDP/cap.....	26.9	68
2.1.3 School life expectancy, years.....	29.8	106
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	59.0	101
<b>2.2 Tertiary education</b>	<b>14.2</b>	<b>109</b>
2.2.1 Tertiary enrolment, % gross.....	5.5	108
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	40.5	31
2.2.6 Gross tertiary outbound enrolment, %.....	5.4	76
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>19.7</b>	<b>76</b>
2.3.1 Researchers headcount/million pop.....	0.8	85
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	38.5	78

## 3 Infrastructure 20.8 107

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>9.7</b>	<b>112</b>
3.1.1 ICT access*.....	19.0	106
3.1.2 ICT use*.....	0.6	115
3.1.3 Government's Online Service*.....	11.8	112
3.1.4 E-Participation*.....	7.1	97
<b>3.2 Energy</b>	<b>16.8</b>	<b>80</b>
3.2.1 Electricity output, kWh/cap.....	0.0	115
3.2.2 Electricity consumption, kWh/capita.....	0.1	114
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	12.9	89
3.2.4 Share of renewables in energy use, %.....	37.4	16
<b>3.3 General infrastructure</b>	<b>36.1</b>	<b>61</b>
3.3.1 Quality of trade & transport infrastructure*.....	37.0	70
3.3.2 Gross capital formation, % GDP.....	35.3	33
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.0	48

## 4 Market sophistication 23.3 122

<b>4.1 Credit</b>	<b>16.8</b>	<b>113</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	16.7	105
4.1.3 Domestic credit to private sector, % GDP.....	7.0	90
4.1.4 Microfinance gross loans, % GDP.....	23.0	23
<b>4.2 Investment</b>	<b>22.0</b>	<b>91</b>
4.2.1 Strength of investor protection*.....	33.0	113
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>31.3</b>	<b>122</b>
4.3.1 Applied tariff rate weighted mean, %.....	23.0	121
4.3.2 Market access trade restrictiveness*, %.....	71.5	49
4.3.3 Imports of goods & services, % GDP.....	13.5	91
4.3.4 Exports of goods & services, % GDP.....	5.3	116
4.3.5 Intensity local competition†.....	63.2	71

## 5 Business sophistication 25.7 106

<b>5.1 Knowledge workers</b>	<b>34.6</b>	<b>78</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	34.6	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
<b>5.2 Innovation linkages</b>	<b>18.2</b>	<b>115</b>
5.2.1 University/industry collaboration†.....	34.8	97
5.2.2 State of cluster development†.....	28.7	112
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>24.4</b>	<b>106</b>
5.3.1 Royalty & license fees payments, % GDP.....	5.6	88
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	25.9	92
5.3.4 FDI net inflows, % GDP.....	41.7	84

## 6 Scientific outputs 15.1 108

<b>6.1 Knowledge creation</b>	<b>5.1</b>	<b>78</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	10.2	62
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>25.2</b>	<b>71</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	91
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	28.4	79
6.3.4 FDI net outflows, % GDP.....	47.1	112

## 7 Creative outputs 23.6 101

<b>7.1 Creative intangibles</b>	<b>46.3</b>	<b>57</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	53.0	86
7.1.4 ICT & organizational models†.....	39.5	108
<b>7.2 Creative goods &amp; services</b>	<b>0.9</b>	<b>121</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	0.1	61
7.2.4 Creative goods exports, %.....	0.6	111
7.2.5 Creative services exports, %.....	1.5	80

## Key indicators

Population (millions)	10.0
GDP per capita, PPP (current international \$)	4,419.3
GDP (US\$ billions)	17.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>25.4</b>	<b>112</b>
Innovation Output Sub-Index .....	20.5	105
Innovation Input Sub-Index.....	30.4	109
Innovation Efficiency Index.....	0.7	73
Global Innovation Index 2010.....		129
Global Innovation Index 2009.....		123

## 1 Institutions 30.2 123

<b>1.1 Political environment</b>	<b>39.2</b>	<b>95</b>
1.1.1 Political stability*.....	19.8	99
1.1.2 Government effectiveness*.....	27.6	105
1.1.3 Press freedom*.....	70.3	78
<b>1.2 Regulatory environment</b>	<b>17.0</b>	<b>124</b>
1.2.1 Regulatory quality*.....	18.1	117
1.2.2 Rule of law*.....	9.9	119
1.2.3 Rigidity of employment*.....	23.0	125
<b>1.3 Business environment</b>	<b>34.3</b>	<b>124</b>
1.3.1 Time to start a business, days.....	52.9	113
1.3.2 Cost to start a business, % income/cap.....	21.4	118
1.3.3 Total tax rate, % profits.....	28.6	123

## 2 Human capital & research 31.2 86

<b>2.1 Education</b>	<b>56.7</b>	<b>66</b>
2.1.1 Education expenditure, % GNI.....	50.8	46
2.1.2 Public expenditure/pupil, % GDP/cap.....	27.8	65
2.1.3 School life expectancy, years.....	57.5	52
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	73.2	82
<b>2.2 Tertiary education</b>	<b>26.2</b>	<b>78</b>
2.2.1 Tertiary enrolment, % gross.....	38.8	56
2.2.2 Graduates in science, %.....	16.4	79
2.2.3 Graduates in engineering, %.....	32.9	48
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	20.9	70
2.2.6 Gross tertiary outbound enrolment, %.....	12.5	57
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>10.8</b>	<b>116</b>
2.3.1 Researchers headcount/million pop.....	1.0	80
2.3.2 Gross expenditure on R&D, % GDP.....	5.2	64
2.3.3 Quality research institutions†.....	26.3	113

## 3 Infrastructure 26.3 71

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>18.6</b>	<b>89</b>
3.1.1 ICT access*.....	26.5	93
3.1.2 ICT use*.....	4.0	93
3.1.3 Government's Online Service*.....	30.5	73
3.1.4 E-Participation*.....	20.0	56
<b>3.2 Energy</b>	<b>11.9</b>	<b>102</b>
3.2.1 Electricity output, kWh/cap.....	3.3	96
3.2.2 Electricity consumption, kWh/capita.....	2.2	98
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	21.9	77
3.2.4 Share of renewables in energy use, %.....	11.0	50
<b>3.3 General infrastructure</b>	<b>48.6</b>	<b>10</b>
3.3.1 Quality of trade & transport infrastructure*.....	31.0	93
3.3.2 Gross capital formation, % GDP.....	14.7	99
3.3.3 Ecological footprint & biocapacity, ha/cap.....	100.0	1

## 4 Market sophistication 33.4 93

<b>4.1 Credit</b>	<b>47.2</b>	<b>45</b>
4.1.1 Strength of legal rights for credit*.....	10.0	124
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	13.0	68
4.1.4 Microfinance gross loans, % GDP.....	100.0	2
<b>4.2 Investment</b>	<b>13.2</b>	<b>118</b>
4.2.1 Strength of investor protection*.....	40.0	103
4.2.2 Market capitalization, % GDP.....	6.3	75
4.2.3 Total value of stocks traded, % GDP.....	0.0	101
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>39.8</b>	<b>106</b>
4.3.1 Applied tariff rate weighted mean, %.....	79.8	71
4.3.2 Market access trade restrictiveness*, %.....	8.1	83
4.3.3 Imports of goods & services, % GDP.....	17.3	78
4.3.4 Exports of goods & services, % GDP.....	29.5	63
4.3.5 Intensity local competition†.....	48.3	115

## 5 Business sophistication 30.7 85

<b>5.1 Knowledge workers</b>	<b>36.7</b>	<b>75</b>
5.1.1 Knowledge-intensive employment, %.....	24.6	86
5.1.2 Firms offering formal training, % firms.....	61.4	11
5.1.3 R&D performed by business, %.....	29.4	56
5.1.4 R&D financed by business, %.....	18.6	61
<b>5.2 Innovation linkages</b>	<b>28.2</b>	<b>81</b>
5.2.1 University/industry collaboration†.....	29.3	115
5.2.2 State of cluster development†.....	30.6	101
5.2.3 R&D financed by abroad, %.....	49.2	17
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>27.4</b>	<b>91</b>
5.3.1 Royalty & license fees payments, % GDP.....	11.9	64
5.3.2 High-tech imports less re-imports, %.....	26.9	41
5.3.3 Computer & comm. service imports, %.....	24.4	94
5.3.4 FDI net inflows, % GDP.....	46.3	57

## 6 Scientific outputs 14.1 115

<b>6.1 Knowledge creation</b>	<b>3.5</b>	<b>87</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.5	97
<b>6.2 Knowledge impact</b>	<b>20.8</b>	<b>99</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	46.1	39
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	3.3	79
6.2.3 Computer software spending, % GDP.....	5.1	68
<b>6.3 Knowledge diffusion</b>	<b>18.1</b>	<b>111</b>
6.3.1 Royalty & license fees receipts, % GDP.....	1.9	64
6.3.2 High-tech exports less re-exports, %.....	0.7	90
6.3.3 Computer & comm service exports, %.....	22.2	90
6.3.4 FDI net outflows, % GDP.....	47.3	86

## 7 Creative outputs 26.9 83

<b>7.1 Creative intangibles</b>	<b>40.7</b>	<b>81</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	31.5	25
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	46.5	107
7.1.4 ICT & organizational models†.....	44.0	90
<b>7.2 Creative goods &amp; services</b>	<b>13.1</b>	<b>77</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	9.4	46
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	15.0	56
7.2.5 Creative services exports, %.....	n/a	n/a

# Bosnia and Herzegovina

## Key indicators

Population (millions)	3.8
GDP per capita, PPP (current international \$)	8,490.6
GDP (US\$ billions)	17.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.8</b>	<b>76</b>
Innovation Output Sub-Index .....	19.6	111
Innovation Input Sub-Index.....	42.1	54
Innovation Efficiency Index.....	0.5	121
Global Innovation Index 2010.....		116
Global Innovation Index 2009.....		n/a

## 1 Institutions 58.6 77

<b>1.1 Political environment</b>	<b>48.0</b>	<b>77</b>
1.1.1 Political stability*.....	25.9	89
1.1.2 Government effectiveness*.....	32.4	97
1.1.3 Press freedom*.....	85.7	43
<b>1.2 Regulatory environment</b>	<b>54.1</b>	<b>74</b>
1.2.1 Regulatory quality*.....	51.4	74
1.2.2 Rule of law*.....	43.9	73
1.2.3 Rigidity of employment*.....	67.0	76
<b>1.3 Business environment</b>	<b>73.6</b>	<b>86</b>
1.3.1 Time to start a business, days.....	48.1	114
1.3.2 Cost to start a business, % income/cap.....	86.2	85
1.3.3 Total tax rate, % profits.....	86.4	14

## 2 Human capital & research 42.0 49

<b>2.1 Education</b>	<b>71.6</b>	<b>13</b>
2.1.1 Education expenditure, % GNI.....	n/a	n/a
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	56.5	56
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	86.7	50
<b>2.2 Tertiary education</b>	<b>41.4</b>	<b>27</b>
2.2.1 Tertiary enrolment, % gross.....	37.4	59
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	49.3	18
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>12.9</b>	<b>108</b>
2.3.1 Researchers headcount/million pop.....	5.9	55
2.3.2 Gross expenditure on R&D, % GDP.....	0.0	100
2.3.3 Quality research institutions†.....	32.9	97

## 3 Infrastructure 23.4 91

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>23.5</b>	<b>73</b>
3.1.1 ICT access*.....	40.2	61
3.1.2 ICT use*.....	14.3	56
3.1.3 Government's Online Service*.....	27.6	84
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>16.0</b>	<b>82</b>
3.2.1 Electricity output, kWh/cap.....	18.2	54
3.2.2 Electricity consumption, kWh/capita.....	10.2	59
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	28.0	57
3.2.4 Share of renewables in energy use, %.....	5.9	65
<b>3.3 General infrastructure</b>	<b>30.6</b>	<b>98</b>
3.3.1 Quality of trade & transport infrastructure*.....	30.5	96
3.3.2 Gross capital formation, % GDP.....	27.9	55
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.3	75

## 4 Market sophistication 42.9 51

<b>4.1 Credit</b>	<b>48.8</b>	<b>38</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	23.5	40
4.1.4 Microfinance gross loans, % GDP.....	63.5	6
<b>4.2 Investment</b>	<b>33.3</b>	<b>47</b>
4.2.1 Strength of investor protection*.....	50.0	70
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>46.7</b>	<b>81</b>
4.3.1 Applied tariff rate weighted mean, %.....	76.8	75
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	37.4	31
4.3.4 Exports of goods & services, % GDP.....	27.0	69
4.3.5 Intensity local competition†.....	45.7	119

## 5 Business sophistication 43.7 42

<b>5.1 Knowledge workers</b>	<b>77.1</b>	<b>11</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	77.1	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
<b>5.2 Innovation linkages</b>	<b>31.8</b>	<b>67</b>
5.2.1 University/industry collaboration†.....	32.6	106
5.2.2 State of cluster development†.....	37.0	78
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	41.7	24
<b>5.3 Knowledge absorption</b>	<b>22.2</b>	<b>112</b>
5.3.1 Royalty & license fees payments, % GDP.....	5.1	89
5.3.2 High-tech imports less re-imports, %.....	9.3	93
5.3.3 Computer & comm. service imports, %.....	32.6	75
5.3.4 FDI net inflows, % GDP.....	41.7	85

## 6 Scientific outputs 16.7 103

<b>6.1 Knowledge creation</b>	<b>6.7</b>	<b>69</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	11.6	52
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	5.6	38
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	2.0	37
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.2	86
<b>6.2 Knowledge impact</b>	<b>18.4</b>	<b>104</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	32.3	93
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.5	73
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>24.9</b>	<b>73</b>
6.3.1 Royalty & license fees receipts, % GDP.....	9.7	36
6.3.2 High-tech exports less re-exports, %.....	4.1	62
6.3.3 Computer & comm service exports, %.....	38.7	53
6.3.4 FDI net outflows, % GDP.....	47.1	111

## 7 Creative outputs 22.5 107

<b>7.1 Creative intangibles</b>	<b>30.3</b>	<b>112</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	8.9	87
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	21.3	26
7.1.3 ICT & business models†.....	43.9	113
7.1.4 ICT & organizational models†.....	42.7	102
<b>7.2 Creative goods &amp; services</b>	<b>14.7</b>	<b>70</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	27.9	31
7.2.5 Creative services exports, %.....	1.4	81

## Key indicators

Population (millions)	2.0
GDP per capita, PPP (current international \$)	13,384.5
GDP (US\$ billions)	11.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.5</b>	<b>79</b>
Innovation Output Sub-Index .....	20.7	104
Innovation Input Sub-Index.....	40.4	62
Innovation Efficiency Index.....	0.5	114
Global Innovation Index 2010.....		86
Global Innovation Index 2009.....		77

## 1 Institutions 76.1 38

<b>1.1 Political environment</b>	<b>77.1</b>	<b>35</b>
1.1.1 Political stability*.....	79.7	21
1.1.2 Government effectiveness*.....	70.0	43
1.1.3 Press freedom*.....	81.5	52
<b>1.2 Regulatory environment</b>	<b>74.3</b>	<b>34</b>
1.2.1 Regulatory quality*.....	69.0	47
1.2.2 Rule of law*.....	67.0	41
1.2.3 Rigidity of employment*.....	87.0	27
<b>1.3 Business environment</b>	<b>76.9</b>	<b>75</b>
1.3.1 Time to start a business, days.....	42.3	118
1.3.2 Cost to start a business, % income/cap.....	98.3	25
1.3.3 Total tax rate, % profits.....	90.0	10

## 2 Human capital & research 37.0 64

<b>2.1 Education</b>	<b>66.6</b>	<b>34</b>
2.1.1 Education expenditure, % GNI.....	87.5	2
2.1.2 Public expenditure/pupil, % GDP/cap.....	49.0	10
2.1.3 School life expectancy, years.....	47.9	73
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	83.7	57
<b>2.2 Tertiary education</b>	<b>25.7</b>	<b>79</b>
2.2.1 Tertiary enrolment, % gross.....	7.3	104
2.2.2 Graduates in science, %.....	32.9	44
2.2.3 Graduates in engineering, %.....	10.7	85
2.2.4 Tertiary inbound mobility, %.....	15.5	31
2.2.5 Tertiary outbound mobility, %.....	70.4	4
2.2.6 Gross tertiary outbound enrolment, %.....	43.6	16
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.6</b>	<b>82</b>
2.3.1 Researchers headcount/million pop.....	7.1	51
2.3.2 Gross expenditure on R&D, % GDP.....	9.9	53
2.3.3 Quality research institutions†.....	38.9	76

## 3 Infrastructure 23.9 88

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>14.8</b>	<b>98</b>
3.1.1 ICT access*.....	26.9	92
3.1.2 ICT use*.....	2.3	103
3.1.3 Government's Online Service*.....	20.0	98
3.1.4 E-Participation*.....	10.0	87
<b>3.2 Energy</b>	<b>22.7</b>	<b>51</b>
3.2.1 Electricity output, kWh/cap.....	1.6	103
3.2.2 Electricity consumption, kWh/capita.....	6.2	76
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	50.6	15
3.2.4 Share of renewables in energy use, %.....	13.7	43
<b>3.3 General infrastructure</b>	<b>34.1</b>	<b>73</b>
3.3.1 Quality of trade & transport infrastructure*.....	27.3	104
3.3.2 Gross capital formation, % GDP.....	32.9	42
3.3.3 Ecological footprint & biocapacity, ha/cap.....	42.1	20

## 4 Market sophistication 35.7 78

<b>4.1 Credit</b>	<b>37.4</b>	<b>70</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	6.5	93
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>21.2</b>	<b>94</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	13.7	53
4.2.3 Total value of stocks traded, % GDP.....	0.5	76
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>48.5</b>	<b>74</b>
4.3.1 Applied tariff rate weighted mean, %.....	57.0	103
4.3.2 Market access trade restrictiveness*, %.....	95.2	7
4.3.3 Imports of goods & services, % GDP.....	26.6	47
4.3.4 Exports of goods & services, % GDP.....	27.2	68
4.3.5 Intensity local competition†.....	60.1	84

## 5 Business sophistication 29.2 92

<b>5.1 Knowledge workers</b>	<b>32.2</b>	<b>83</b>
5.1.1 Knowledge-intensive employment, %.....	30.3	79
5.1.2 Firms offering formal training, % firms.....	41.1	39
5.1.3 R&D performed by business, %.....	18.3	65
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>22.0</b>	<b>105</b>
5.2.1 University/industry collaboration†.....	41.4	62
5.2.2 State of cluster development†.....	35.6	84
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>33.3</b>	<b>64</b>
5.3.1 Royalty & license fees payments, % GDP.....	11.0	67
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	43.9	57
5.3.4 FDI net inflows, % GDP.....	44.9	65

## 6 Scientific outputs 16.9 101

<b>6.1 Knowledge creation</b>	<b>3.6</b>	<b>86</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.5	75
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.7	75
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>30.1</b>	<b>53</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.6	71
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	42.4	48
6.3.4 FDI net outflows, % GDP.....	47.3	90

## 7 Creative outputs 24.4 97

<b>7.1 Creative intangibles</b>	<b>35.7</b>	<b>100</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	47.4	102
7.1.4 ICT & organizational models†.....	41.8	106
<b>7.2 Creative goods &amp; services</b>	<b>13.2</b>	<b>76</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	12.1	42
7.2.4 Creative goods exports, %.....	n/a	n/a
7.2.5 Creative services exports, %.....	13.7	39

## Brazil

## Key indicators

Population (millions)	195.4
GDP per capita, PPP (current international \$)	10,412.1
GDP (US\$ billions)	1,573.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>37.7</b>	<b>47</b>
Innovation Output Sub-Index .....	36.0	32
Innovation Input Sub-Index.....	39.5	68
Innovation Efficiency Index.....	0.9	7
Global Innovation Index 2010.....		68
Global Innovation Index 2009.....		50

## 1 Institutions 54.1 87

<b>1.1 Political environment</b>	<b>64.8</b>	<b>51</b>
1.1.1 Political stability*.....	54.2	51
1.1.2 Government effectiveness*.....	57.6	63
1.1.3 Press freedom*.....	82.4	50
<b>1.2 Regulatory environment</b>	<b>52.9</b>	<b>78</b>
1.2.1 Regulatory quality*.....	55.2	68
1.2.2 Rule of law*.....	49.5	66
1.2.3 Rigidity of employment*.....	54.0	106
<b>1.3 Business environment</b>	<b>44.7</b>	<b>118</b>
1.3.1 Time to start a business, days.....	0.0	124
1.3.2 Cost to start a business, % income/cap.....	94.3	56
1.3.3 Total tax rate, % profits.....	39.8	120

## 2 Human capital & research 33.9 76

<b>2.1 Education</b>	<b>54.3</b>	<b>73</b>
2.1.1 Education expenditure, % GNI.....	52.2	41
2.1.2 Public expenditure/pupil, % GDP/cap.....	28.3	63
2.1.3 School life expectancy, years.....	59.0	45
2.1.4 PISA scales in reading, maths, & science.....	30.2	50
2.1.5 Pupil-teacher ratio, secondary.....	75.6	77
<b>2.2 Tertiary education</b>	<b>19.4</b>	<b>95</b>
2.2.1 Tertiary enrolment, % gross.....	38.0	58
2.2.2 Graduates in science, %.....	25.0	60
2.2.3 Graduates in engineering, %.....	13.3	84
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	1.9	117
2.2.6 Gross tertiary outbound enrolment, %.....	1.0	103
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>27.9</b>	<b>51</b>
2.3.1 Researchers headcount/million pop.....	8.3	48
2.3.2 Gross expenditure on R&D, % GDP.....	22.2	30
2.3.3 Quality research institutions†.....	53.1	39

## 3 Infrastructure 32.2 45

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>30.4</b>	<b>53</b>
3.1.1 ICT access*.....	42.4	58
3.1.2 ICT use*.....	16.0	50
3.1.3 Government's Online Service*.....	36.8	52
3.1.4 E-Participation*.....	28.6	41
<b>3.2 Energy</b>	<b>23.9</b>	<b>45</b>
3.2.1 Electricity output, kWh/cap.....	12.5	66
3.2.2 Electricity consumption, kWh/capita.....	9.2	66
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	33.4	44
3.2.4 Share of renewables in energy use, %.....	27.3	24
<b>3.3 General infrastructure</b>	<b>42.3</b>	<b>23</b>
3.3.1 Quality of trade & transport infrastructure*.....	52.5	36
3.3.2 Gross capital formation, % GDP.....	13.5	105
3.3.3 Ecological footprint & biocapacity, ha/cap.....	61.0	7

## 4 Market sophistication 35.7 80

<b>4.1 Credit</b>	<b>31.6</b>	<b>90</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	21.9	42
4.1.4 Microfinance gross loans, % GDP.....	0.8	59
<b>4.2 Investment</b>	<b>37.0</b>	<b>38</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	29.9	23
4.2.3 Total value of stocks traded, % GDP.....	23.0	27
4.2.4 Venture capital deals/tr GDP PPP\$.....	47.2	45
<b>4.3 Trade &amp; competition</b>	<b>38.4</b>	<b>112</b>
4.3.1 Applied tariff rate weighted mean, %.....	66.5	90
4.3.2 Market access trade restrictiveness*, %.....	70.5	52
4.3.3 Imports of goods & services, % GDP.....	0.0	125
4.3.4 Exports of goods & services, % GDP.....	2.5	122
4.3.5 Intensity local competition†.....	68.5	47

## 5 Business sophistication 41.5 46

<b>5.1 Knowledge workers</b>	<b>48.3</b>	<b>45</b>
5.1.1 Knowledge-intensive employment, %.....	34.8	70
5.1.2 Firms offering formal training, % firms.....	60.2	13
5.1.3 R&D performed by business, %.....	47.3	43
5.1.4 R&D financed by business, %.....	52.6	35
<b>5.2 Innovation linkages</b>	<b>34.4</b>	<b>56</b>
5.2.1 University/industry collaboration†.....	54.9	32
5.2.2 State of cluster development†.....	52.3	30
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	9.4	54
5.2.5 PCT patent filings with foreign inventor, %.....	8.5	67
<b>5.3 Knowledge absorption</b>	<b>41.8</b>	<b>34</b>
5.3.1 Royalty & license fees payments, % GDP.....	16.9	53
5.3.2 High-tech imports less re-imports, %.....	42.5	19
5.3.3 Computer & comm. service imports, %.....	64.9	16
5.3.4 FDI net inflows, % GDP.....	42.8	75

## 6 Scientific outputs 25.2 58

<b>6.1 Knowledge creation</b>	<b>11.4</b>	<b>58</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	12.7	49
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	3.1	49
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	11.6	24
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	18.3	46
<b>6.2 Knowledge impact</b>	<b>30.5</b>	<b>64</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	51.7	26
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	18.5	38
6.2.3 Computer software spending, % GDP.....	12.2	46
<b>6.3 Knowledge diffusion</b>	<b>33.6</b>	<b>45</b>
6.3.1 Royalty & license fees receipts, % GDP.....	3.7	55
6.3.2 High-tech exports less re-exports, %.....	11.7	46
6.3.3 Computer & comm service exports, %.....	73.5	15
6.3.4 FDI net outflows, % GDP.....	45.5	117

## 7 Creative outputs 46.9 12

<b>7.1 Creative intangibles</b>	<b>56.2</b>	<b>22</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	32.4	23
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	71.6	23
7.1.4 ICT & organizational models†.....	64.8	25
<b>7.2 Creative goods &amp; services</b>	<b>37.5</b>	<b>20</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	3.4	68
7.2.3 Daily newspapers/1,000 literate pop.....	8.4	45
7.2.4 Creative goods exports, %.....	6.7	79
7.2.5 Creative services exports, %.....	100.0	2

## Key indicators

Population (millions)	0.4
GDP per capita, PPP (current international \$)	51,204.6
GDP (US\$ billions)	11.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.9</b>	<b>75</b>
Innovation Output Sub-Index .....	22.7	94
Innovation Input Sub-Index.....	39.2	70
Innovation Efficiency Index.....	0.6	101
Global Innovation Index 2010.....		48
Global Innovation Index 2009.....		n/a

## 1 Institutions 71.2 48

<b>1.1 Political environment</b>	<b>72.2</b>	<b>43</b>
1.1.1 Political stability*.....	95.3	3
1.1.2 Government effectiveness*.....	75.2	35
1.1.3 Press freedom*.....	46.1	104
<b>1.2 Regulatory environment</b>	<b>85.0</b>	<b>17</b>
1.2.1 Regulatory quality*.....	82.9	25
1.2.2 Rule of law*.....	72.2	35
1.2.3 Rigidity of employment*.....	100.0	1
<b>1.3 Business environment</b>	<b>56.3</b>	<b>113</b>
1.3.1 Time to start a business, days.....	0.0	123
1.3.2 Cost to start a business, % income/cap.....	89.5	73
1.3.3 Total tax rate, % profits.....	79.5	28

## 2 Human capital & research 33.8 77

<b>2.1 Education</b>	<b>59.6</b>	<b>54</b>
2.1.1 Education expenditure, % GNI.....	37.2	75
2.1.2 Public expenditure/pupil, % GDP/cap.....	16.1	87
2.1.3 School life expectancy, years.....	59.9	43
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	92.1	29
<b>2.2 Tertiary education</b>	<b>27.8</b>	<b>76</b>
2.2.1 Tertiary enrolment, % gross.....	17.1	87
2.2.2 Graduates in science, %.....	27.2	54
2.2.3 Graduates in engineering, %.....	22.7	64
2.2.4 Tertiary inbound mobility, %.....	18.3	28
2.2.5 Tertiary outbound mobility, %.....	70.0	5
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>14.0</b>	<b>102</b>
2.3.1 Researchers headcount/million pop.....	5.0	59
2.3.2 Gross expenditure on R&D, % GDP.....	0.2	98
2.3.3 Quality research institutions†.....	36.9	84

## 3 Infrastructure 19.4 115

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>38.3</b>	<b>41</b>
3.1.1 ICT access*.....	59.2	41
3.1.2 ICT use*.....	32.9	34
3.1.3 Government's Online Service*.....	28.3	81
3.1.4 E-Participation*.....	17.1	65
<b>3.2 Energy</b>	<b>15.5</b>	<b>87</b>
3.2.1 Electricity output, kWh/cap.....	44.4	17
3.2.2 Electricity consumption, kWh/capita.....	34.5	15
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	7.1	105
3.2.4 Share of renewables in energy use, %.....	0.0	111
<b>3.3 General infrastructure</b>	<b>4.4</b>	<b>125</b>
3.3.1 Quality of trade & transport infrastructure*.....	n/a	n/a
3.3.2 Gross capital formation, % GDP.....	4.4	121
3.3.3 Ecological footprint & biocapacity, ha/cap.....	n/a	n/a

## 4 Market sophistication 44.1 46

<b>4.1 Credit</b>	<b>24.6</b>	<b>103</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	14.1	64
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>49.7</b>	<b>16</b>
4.2.1 Strength of investor protection*.....	43.0	93
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 GDP PPP\$.....	63.0	31
<b>4.3 Trade &amp; competition</b>	<b>58.1</b>	<b>34</b>
4.3.1 Applied tariff rate weighted mean, %.....	69.6	87
4.3.2 Market access trade restrictiveness*, %.....	94.8	8
4.3.3 Imports of goods & services, % GDP.....	13.2	94
4.3.4 Exports of goods & services, % GDP.....	64.8	19
4.3.5 Intensity local competition†.....	66.6	58

## 5 Business sophistication 27.4 96

<b>5.1 Knowledge workers</b>	<b>27.8</b>	<b>93</b>
5.1.1 Knowledge-intensive employment, %.....	53.4	43
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	2.8	78
5.1.4 R&D financed by business, %.....	1.5	72
<b>5.2 Innovation linkages</b>	<b>29.2</b>	<b>78</b>
5.2.1 University/industry collaboration†.....	45.0	54
5.2.2 State of cluster development†.....	42.4	59
5.2.3 R&D financed by abroad, %.....	0.0	75
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>25.4</b>	<b>102</b>
5.3.1 Royalty & license fees payments, % GDP.....	8.5	76
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	28.6	84
5.3.4 FDI net inflows, % GDP.....	39.0	103

## 6 Scientific outputs 19.3 88

<b>6.1 Knowledge creation</b>	<b>1.0</b>	<b>117</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.0	97
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	2.1	109
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>37.6</b>	<b>37</b>
6.3.1 Royalty & license fees receipts, % 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, %.....	27.6	81
6.3.4 FDI net outflows, % GDP.....	47.7	74

## 7 Creative outputs 26.0 87

<b>7.1 Creative intangibles</b>	<b>36.0</b>	<b>98</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	1.1	97
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	54.5	77
7.1.4 ICT & organizational models†.....	52.5	57
<b>7.2 Creative goods &amp; services</b>	<b>16.0</b>	<b>67</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	16.0	35
7.2.4 Creative goods exports, %.....	n/a	n/a
7.2.5 Creative services exports, %.....	n/a	n/a

# Bulgaria

## Key indicators

Population (millions)	7.5
GDP per capita, PPP (current international \$)	13,332.7
GDP (US\$ billions)	48.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.4</b>	<b>42</b>
Innovation Output Sub-Index .....	32.6	43
Innovation Input Sub-Index.....	44.2	47
Innovation Efficiency Index.....	0.7	55
Global Innovation Index 2010.....		49
Global Innovation Index 2009.....		74

## 1 Institutions 74.5 40

<b>1.1 Political environment</b>	<b>67.2</b>	<b>46</b>
1.1.1 Political stability*.....	62.7	42
1.1.2 Government effectiveness*.....	59.0	60
1.1.3 Press freedom*.....	79.9	56
<b>1.2 Regulatory environment</b>	<b>68.7</b>	<b>48</b>
1.2.1 Regulatory quality*.....	71.4	42
1.2.2 Rule of law*.....	53.8	59
1.2.3 Rigidity of employment*.....	81.0	43
<b>1.3 Business environment</b>	<b>87.6</b>	<b>22</b>
1.3.1 Time to start a business, days.....	83.7	68
1.3.2 Cost to start a business, % income/cap.....	98.8	18
1.3.3 Total tax rate, % profits.....	80.3	24

## 2 Human capital & research 39.2 59

<b>2.1 Education</b>	<b>59.8</b>	<b>52</b>
2.1.1 Education expenditure, % GNI.....	42.7	62
2.1.2 Public expenditure/pupil, % GDP/cap.....	40.3	31
2.1.3 School life expectancy, years.....	57.0	54
2.1.4 PISA scales in reading, maths, & science.....	42.6	43
2.1.5 Pupil-teacher ratio, secondary.....	89.6	40
<b>2.2 Tertiary education</b>	<b>36.3</b>	<b>45</b>
2.2.1 Tertiary enrolment, % gross.....	51.8	42
2.2.2 Graduates in science, %.....	10.7	83
2.2.3 Graduates in engineering, %.....	45.3	27
2.2.4 Tertiary inbound mobility, %.....	12.7	36
2.2.5 Tertiary outbound mobility, %.....	40.5	32
2.2.6 Gross tertiary outbound enrolment, %.....	58.5	10
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>21.5</b>	<b>70</b>
2.3.1 Researchers headcount/million pop.....	12.9	38
2.3.2 Gross expenditure on R&D, % GDP.....	9.6	54
2.3.3 Quality research institutions†.....	41.9	68

## 3 Infrastructure 28.9 59

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>38.5</b>	<b>40</b>
3.1.1 ICT access*.....	56.7	42
3.1.2 ICT use*.....	23.4	42
3.1.3 Government's Online Service*.....	41.0	43
3.1.4 E-Participation*.....	30.0	38
<b>3.2 Energy</b>	<b>14.9</b>	<b>89</b>
3.2.1 Electricity output, kWh/cap.....	30.3	37
3.2.2 Electricity consumption, kWh/capita.....	19.2	44
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	16.6	85
3.2.4 Share of renewables in energy use, %.....	3.2	79
<b>3.3 General infrastructure</b>	<b>33.2</b>	<b>80</b>
3.3.1 Quality of trade & transport infrastructure*.....	32.5	88
3.3.2 Gross capital formation, % GDP.....	36.9	30
3.3.3 Ecological footprint & biocapacity, ha/cap.....	30.2	88

## 4 Market sophistication 43.0 50

<b>4.1 Credit</b>	<b>52.1</b>	<b>33</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	31.8	31
4.1.4 Microfinance gross loans, % GDP.....	17.1	30
<b>4.2 Investment</b>	<b>19.0</b>	<b>102</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	5.9	78
4.2.3 Total value of stocks traded, % GDP.....	0.5	79
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>57.9</b>	<b>36</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	35.6	35
4.3.4 Exports of goods & services, % GDP.....	42.9	38
4.3.5 Intensity local competition†.....	58.9	88

## 5 Business sophistication 35.4 65

<b>5.1 Knowledge workers</b>	<b>41.5</b>	<b>59</b>
5.1.1 Knowledge-intensive employment, %.....	53.9	42
5.1.2 Firms offering formal training, % firms.....	32.4	54
5.1.3 R&D performed by business, %.....	36.5	46
5.1.4 R&D financed by business, %.....	40.1	42
<b>5.2 Innovation linkages</b>	<b>24.1</b>	<b>97</b>
5.2.1 University/industry collaboration†.....	34.0	100
5.2.2 State of cluster development†.....	33.8	89
5.2.3 R&D financed by abroad, %.....	26.7	36
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	6.7	58
5.2.5 PCT patent filings with foreign inventor, %.....	12.0	59
<b>5.3 Knowledge absorption</b>	<b>40.6</b>	<b>38</b>
5.3.1 Royalty & license fees payments, % GDP.....	24.6	38
5.3.2 High-tech imports less re-imports, %.....	15.7	77
5.3.3 Computer & comm. service imports, %.....	45.4	46
5.3.4 FDI net inflows, % GDP.....	76.6	10

## 6 Scientific outputs 27.2 50

<b>6.1 Knowledge creation</b>	<b>14.9</b>	<b>52</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	15.4	45
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	4.5	43
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	14.1	20
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	25.1	38
<b>6.2 Knowledge impact</b>	<b>44.4</b>	<b>17</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	46.3	37
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	56.1	12
6.2.3 Computer software spending, % GDP.....	17.0	38
<b>6.3 Knowledge diffusion</b>	<b>22.4</b>	<b>83</b>
6.3.1 Royalty & license fees receipts, % GDP.....	2.5	60
6.3.2 High-tech exports less re-exports, %.....	12.2	45
6.3.3 Computer & comm service exports, %.....	28.6	77
6.3.4 FDI net outflows, % GDP.....	46.4	114

## 7 Creative outputs 38.1 46

<b>7.1 Creative intangibles</b>	<b>51.8</b>	<b>35</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	34.1	21
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	79.4	7
7.1.3 ICT & business models†.....	55.1	74
7.1.4 ICT & organizational models†.....	52.4	59
<b>7.2 Creative goods &amp; services</b>	<b>24.3</b>	<b>55</b>
7.2.1 Recreation & culture consumption, %.....	52.7	33
7.2.2 National feature films/mn pop.....	17.1	37
7.2.3 Daily newspapers/1,000 literate pop.....	14.2	39
7.2.4 Creative goods exports, %.....	18.4	51
7.2.5 Creative services exports, %.....	24.8	31



## Key indicators

Population (millions)	16.3
GDP per capita, PPP (current international \$)	1,186.9
GDP (US\$ billions)	8.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>23.1</b>	<b>120</b>
Innovation Output Sub-Index .....	17.0	118
Innovation Input Sub-Index.....	29.2	117
Innovation Efficiency Index.....	0.6	99
Global Innovation Index 2010.....		122
Global Innovation Index 2009.....		115

## 1 Institutions 60.4 74

<b>1.1 Political environment</b>	<b>51.9</b>	<b>70</b>
1.1.1 Political stability*.....	39.6	69
1.1.2 Government effectiveness*.....	31.9	98
1.1.3 Press freedom*.....	84.1	44
<b>1.2 Regulatory environment</b>	<b>58.2</b>	<b>69</b>
1.2.1 Regulatory quality*.....	49.0	78
1.2.2 Rule of law*.....	46.7	70
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>71.0</b>	<b>90</b>
1.3.1 Time to start a business, days.....	87.5	54
1.3.2 Cost to start a business, % income/cap.....	61.2	108
1.3.3 Total tax rate, % profits.....	64.2	80

## 2 Human capital & research 20.6 119

<b>2.1 Education</b>	<b>34.7</b>	<b>113</b>
2.1.1 Education expenditure, % GNI.....	32.1	88
2.1.2 Public expenditure/pupil, % GDP/cap.....	65.7	4
2.1.3 School life expectancy, years.....	11.7	117
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	43.5	114
<b>2.2 Tertiary education</b>	<b>10.6</b>	<b>116</b>
2.2.1 Tertiary enrolment, % gross.....	3.0	115
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	11.2	43
2.2.5 Tertiary outbound mobility, %.....	34.2	39
2.2.6 Gross tertiary outbound enrolment, %.....	1.7	95
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>16.4</b>	<b>93</b>
2.3.1 Researchers headcount/million pop.....	0.0	98
2.3.2 Gross expenditure on R&D, % GDP.....	1.7	83
2.3.3 Quality research institutions†.....	47.4	54

## 3 Infrastructure 17.4 122

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>8.9</b>	<b>117</b>
3.1.1 ICT access*.....	15.8	114
3.1.2 ICT use*.....	0.3	121
3.1.3 Government's Online Service*.....	15.6	106
3.1.4 E-Participation*.....	5.7	102
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>25.8</b>	<b>116</b>
3.3.1 Quality of trade & transport infrastructure*.....	22.3	115
3.3.2 Gross capital formation, % GDP.....	17.7	94
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.6	32

## 4 Market sophistication 24.4 120

<b>4.1 Credit</b>	<b>15.7</b>	<b>116</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	16.7	105
4.1.3 Domestic credit to private sector, % GDP.....	4.8	96
4.1.4 Microfinance gross loans, % GDP.....	22.2	25
<b>4.2 Investment</b>	<b>24.7</b>	<b>78</b>
4.2.1 Strength of investor protection*.....	37.0	111
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>32.8</b>	<b>117</b>
4.3.1 Applied tariff rate weighted mean, %.....	65.8	92
4.3.2 Market access trade restrictiveness*, %.....	38.3	75
4.3.3 Imports of goods & services, % GDP.....	12.4	99
4.3.4 Exports of goods & services, % GDP.....	2.8	121
4.3.5 Intensity local competition†.....	47.6	116

## 5 Business sophistication 23.5 113

<b>5.1 Knowledge workers</b>	<b>25.1</b>	<b>101</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	25.1	68
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>28.8</b>	<b>80</b>
5.2.1 University/industry collaboration†.....	38.9	76
5.2.2 State of cluster development†.....	21.7	121
5.2.3 R&D financed by abroad, %.....	86.2	6
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	22.9	31
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>16.6</b>	<b>122</b>
5.3.1 Royalty & license fees payments, % GDP.....	1.9	103
5.3.2 High-tech imports less re-imports, %.....	3.7	107
5.3.3 Computer & comm. service imports, %.....	15.9	106
5.3.4 FDI net inflows, % GDP.....	44.8	66

## 6 Scientific outputs 14.3 111

<b>6.1 Knowledge creation</b>	<b>2.5</b>	<b>99</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.4	94
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	7.2	71
<b>6.2 Knowledge impact</b>	<b>21.4</b>	<b>96</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	42.3	56
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.6	89
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>19.1</b>	<b>104</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.1	87
6.3.2 High-tech exports less re-exports, %.....	0.1	101
6.3.3 Computer & comm service exports, %.....	27.3	82
6.3.4 FDI net outflows, % GDP.....	49.0	48

## 7 Creative outputs 19.7 115

<b>7.1 Creative intangibles</b>	<b>35.2</b>	<b>103</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	1.2	96
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	61.3	54
7.1.4 ICT & organizational models†.....	43.0	100
<b>7.2 Creative goods &amp; services</b>	<b>4.3</b>	<b>107</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	3.8	66
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	6.3	80
7.2.5 Creative services exports, %.....	2.6	69

# Cambodia

## Key indicators

Population (millions)	15.1
GDP per capita, PPP (current international \$)	1,915.0
GDP (US\$ billions)	9.9

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>25.5</b>	<b>111</b>
Innovation Output Sub-Index .....	19.7	108
Innovation Input Sub-Index.....	31.2	103
Innovation Efficiency Index.....	0.6	87
Global Innovation Index 2010.....		102
Global Innovation Index 2009.....		117

## 1 Institutions 36.6 120

<b>1.1 Political environment</b>	<b>34.8</b>	<b>107</b>
1.1.1 Political stability*.....	25.0	90
1.1.2 Government effectiveness*.....	25.7	107
1.1.3 Press freedom*.....	53.6	92
<b>1.2 Regulatory environment</b>	<b>39.7</b>	<b>108</b>
1.2.1 Regulatory quality*.....	39.0	94
1.2.2 Rule of law*.....	16.0	112
1.2.3 Rigidity of employment*.....	64.0	82
<b>1.3 Business environment</b>	<b>35.4</b>	<b>123</b>
1.3.1 Time to start a business, days.....	19.2	121
1.3.2 Cost to start a business, % income/cap.....	0.0	122
1.3.3 Total tax rate, % profits.....	86.9	13

## 2 Human capital & research 18.5 121

<b>2.1 Education</b>	<b>28.6</b>	<b>121</b>
2.1.1 Education expenditure, % GNI.....	10.9	116
2.1.2 Public expenditure/pupil, % GDP/cap.....	0.2	104
2.1.3 School life expectancy, years.....	33.6	105
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	46.8	111
<b>2.2 Tertiary education</b>	<b>15.9</b>	<b>105</b>
2.2.1 Tertiary enrolment, % gross.....	9.7	95
2.2.2 Graduates in science, %.....	37.1	35
2.2.3 Graduates in engineering, %.....	6.0	91
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	20.4	73
2.2.6 Gross tertiary outbound enrolment, %.....	1.5	98
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>11.0</b>	<b>115</b>
2.3.1 Researchers headcount/million pop.....	0.4	92
2.3.2 Gross expenditure on R&D, % GDP.....	0.5	93
2.3.3 Quality research institutions†.....	32.2	99

## 3 Infrastructure 23.8 89

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>11.2</b>	<b>108</b>
3.1.1 ICT access*.....	20.6	102
3.1.2 ICT use*.....	0.6	116
3.1.3 Government's Online Service*.....	13.7	110
3.1.4 E-Participation*.....	11.4	85
<b>3.2 Energy</b>	<b>29.8</b>	<b>20</b>
3.2.1 Electricity output, kWh/cap.....	0.4	113
3.2.2 Electricity consumption, kWh/capita.....	0.3	111
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	46.4	20
3.2.4 Share of renewables in energy use, %.....	42.7	11
<b>3.3 General infrastructure</b>	<b>30.4</b>	<b>99</b>
3.3.1 Quality of trade & transport infrastructure*.....	28.0	102
3.3.2 Gross capital formation, % GDP.....	25.9	63
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.3	37

## 4 Market sophistication 41.6 57

<b>4.1 Credit</b>	<b>39.1</b>	<b>64</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	7.6	88
4.1.4 Microfinance gross loans, % GDP.....	100.0	3
<b>4.2 Investment</b>	<b>35.3</b>	<b>42</b>
4.2.1 Strength of investor protection*.....	53.0	55
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>50.4</b>	<b>64</b>
4.3.1 Applied tariff rate weighted mean, %.....	50.3	112
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	41.1	22
4.3.4 Exports of goods & services, % GDP.....	55.9	23
4.3.5 Intensity local competition†.....	54.4	100

## 5 Business sophistication 35.6 64

<b>5.1 Knowledge workers</b>	<b>24.8</b>	<b>103</b>
5.1.1 Knowledge-intensive employment, %.....	0.3	101
5.1.2 Firms offering formal training, % firms.....	54.5	22
5.1.3 R&D performed by business, %.....	14.2	73
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>54.8</b>	<b>12</b>
5.2.1 University/industry collaboration†.....	33.0	105
5.2.2 State of cluster development†.....	47.3	43
5.2.3 R&D financed by abroad, %.....	100.0	4
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	67.9	7
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>27.3</b>	<b>92</b>
5.3.1 Royalty & license fees payments, % GDP.....	9.8	71
5.3.2 High-tech imports less re-imports, %.....	7.5	101
5.3.3 Computer & comm. service imports, %.....	34.2	71
5.3.4 FDI net inflows, % GDP.....	57.7	26

## 6 Scientific outputs 15.1 109

<b>6.1 Knowledge creation</b>	<b>2.5</b>	<b>101</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	2.5	106
<b>6.2 Knowledge impact</b>	<b>26.5</b>	<b>79</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	51.3	27
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	1.7	83
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>16.2</b>	<b>118</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.1	88
6.3.2 High-tech exports less re-exports, %.....	0.2	98
6.3.3 Computer & comm service exports, %.....	17.0	98
6.3.4 FDI net outflows, % GDP.....	47.8	71

## 7 Creative outputs 24.3 98

<b>7.1 Creative intangibles</b>	<b>34.9</b>	<b>104</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	13.4	74
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	53.6	84
7.1.4 ICT & organizational models†.....	37.8	113
<b>7.2 Creative goods &amp; services</b>	<b>13.6</b>	<b>74</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	60.5	13
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	3.3	93
7.2.5 Creative services exports, %.....	0.6	88

## Key indicators

Population (millions)	20.0
GDP per capita, PPP (current international \$)	2,204.9
GDP (US\$ billions)	22.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>27.0</b>	<b>103</b>
Innovation Output Sub-Index .....	23.8	85
Innovation Input Sub-Index.....	30.1	110
Innovation Efficiency Index.....	0.8	32
Global Innovation Index 2010.....		119
Global Innovation Index 2009.....		106

## 1 Institutions 45.9 111

<b>1.1 Political environment</b>	<b>35.9</b>	<b>105</b>
1.1.1 Political stability*.....	31.1	81
1.1.2 Government effectiveness*.....	23.3	111
1.1.3 Press freedom*.....	53.2	93
<b>1.2 Regulatory environment</b>	<b>34.3</b>	<b>115</b>
1.2.1 Regulatory quality*.....	26.2	111
1.2.2 Rule of law*.....	15.6	113
1.2.3 Rigidity of employment*.....	61.0	90
<b>1.3 Business environment</b>	<b>67.6</b>	<b>99</b>
1.3.1 Time to start a business, days.....	82.7	70
1.3.2 Cost to start a business, % income/cap.....	60.1	109
1.3.3 Total tax rate, % profits.....	59.9	96

## 2 Human capital & research 29.2 99

<b>2.1 Education</b>	<b>46.3</b>	<b>97</b>
2.1.1 Education expenditure, % GNI.....	29.4	92
2.1.2 Public expenditure/pupil, % GDP/cap.....	18.9	81
2.1.3 School life expectancy, years.....	36.5	104
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	78.1	71
<b>2.2 Tertiary education</b>	<b>24.0</b>	<b>85</b>
2.2.1 Tertiary enrolment, % gross.....	8.7	98
2.2.2 Graduates in science, %.....	59.2	10
2.2.3 Graduates in engineering, %.....	9.9	88
2.2.4 Tertiary inbound mobility, %.....	2.3	71
2.2.5 Tertiary outbound mobility, %.....	46.0	22
2.2.6 Gross tertiary outbound enrolment, %.....	11.9	59
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>17.5</b>	<b>91</b>
2.3.1 Researchers headcount/million pop.....	0.1	97
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	34.8	90

## 3 Infrastructure 21.0 105

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>10.5</b>	<b>111</b>
3.1.1 ICT access*.....	14.6	118
3.1.2 ICT use*.....	1.3	111
3.1.3 Government's Online Service*.....	15.2	108
3.1.4 E-Participation*.....	15.7	71
<b>3.2 Energy</b>	<b>24.3</b>	<b>44</b>
3.2.1 Electricity output, kWh/cap.....	1.4	104
3.2.2 Electricity consumption, kWh/capita.....	0.9	104
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	25.0	67
3.2.4 Share of renewables in energy use, %.....	46.6	8
<b>3.3 General infrastructure</b>	<b>28.3</b>	<b>104</b>
3.3.1 Quality of trade & transport infrastructure*.....	27.5	103
3.3.2 Gross capital formation, % GDP.....	16.6	96
3.3.3 Ecological footprint & biocapacity, ha/cap.....	40.8	22

## 4 Market sophistication 28.1 110

<b>4.1 Credit</b>	<b>16.0</b>	<b>114</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	2.0	111
4.1.4 Microfinance gross loans, % GDP.....	12.9	31
<b>4.2 Investment</b>	<b>28.7</b>	<b>62</b>
4.2.1 Strength of investor protection*.....	43.0	93
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>39.5</b>	<b>107</b>
4.3.1 Applied tariff rate weighted mean, %.....	37.0	120
4.3.2 Market access trade restrictiveness*, %.....	77.0	39
4.3.3 Imports of goods & services, % GDP.....	15.7	83
4.3.4 Exports of goods & services, % GDP.....	19.4	88
4.3.5 Intensity local competition†.....	67.3	54

## 5 Business sophistication 26.4 104

<b>5.1 Knowledge workers</b>	<b>26.0</b>	<b>99</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	26.0	66
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>16.5</b>	<b>118</b>
5.2.1 University/industry collaboration†.....	33.3	103
5.2.2 State of cluster development†.....	24.5	117
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>36.6</b>	<b>52</b>
5.3.1 Royalty & license fees payments, % GDP.....	8.2	78
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	59.2	22
5.3.4 FDI net inflows, % GDP.....	42.4	79

## 6 Scientific outputs 22.5 71

<b>6.1 Knowledge creation</b>	<b>5.8</b>	<b>74</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.6	71
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	11.0	60
<b>6.2 Knowledge impact</b>	<b>28.1</b>	<b>71</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	39.6	66
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	5.1	67
<b>6.3 Knowledge diffusion</b>	<b>33.6</b>	<b>44</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	80
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	48.3	42
6.3.4 FDI net outflows, % GDP.....	52.2	29

## 7 Creative outputs 25.1 93

<b>7.1 Creative intangibles</b>	<b>44.7</b>	<b>64</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	54.7	75
7.1.4 ICT & organizational models†.....	34.6	115
<b>7.2 Creative goods &amp; services</b>	<b>5.5</b>	<b>100</b>
7.2.1 Recreation & culture consumption, %.....	13.3	58
7.2.2 National feature films/mn pop.....	4.3	62
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.4	113
7.2.5 Creative services exports, %.....	7.3	52

## Canada

## Key indicators

Population (millions)	33.9
GDP per capita, PPP (current international \$)	37,945.6
GDP (US\$ billions)	1,336.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>56.3</b>	<b>8</b>
Innovation Output Sub-Index .....	48.3	10
Innovation Input Sub-Index.....	64.4	8
Innovation Efficiency Index.....	0.7	54
Global Innovation Index 2010.....		12
Global Innovation Index 2009.....		11

## 1 Institutions 93.3 3

<b>1.1 Political environment</b>	<b>91.5</b>	<b>11</b>
1.1.1 Political stability*.....	85.4	12
1.1.2 Government effectiveness*.....	96.7	7
1.1.3 Press freedom*.....	92.6	20
<b>1.2 Regulatory environment</b>	<b>96.3</b>	<b>6</b>
1.2.1 Regulatory quality*.....	96.2	9
1.2.2 Rule of law*.....	96.7	8
1.2.3 Rigidity of employment*.....	96.0	8
<b>1.3 Business environment</b>	<b>92.0</b>	<b>11</b>
1.3.1 Time to start a business, days.....	96.2	9
1.3.2 Cost to start a business, % income/cap.....	99.7	3
1.3.3 Total tax rate, % profits.....	80.1	25

## 2 Human capital & research 53.9 19

<b>2.1 Education</b>	<b>65.5</b>	<b>38</b>
2.1.1 Education expenditure, % GNI.....	52.4	40
2.1.2 Public expenditure/pupil, % GDP/cap.....	38.6	33
2.1.3 School life expectancy, years.....	71.2	18
2.1.4 PISA scales in reading, maths, & science.....	80.1	7
2.1.5 Pupil-teacher ratio, secondary.....	72.6	84
<b>2.2 Tertiary education</b>	<b>38.1</b>	<b>38</b>
2.2.1 Tertiary enrolment, % gross.....	63.3	26
2.2.2 Graduates in science, %.....	42.6	27
2.2.3 Graduates in engineering, %.....	31.7	53
2.2.4 Tertiary inbound mobility, %.....	18.6	27
2.2.5 Tertiary outbound mobility, %.....	23.4	64
2.2.6 Gross tertiary outbound enrolment, %.....	25.7	33
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>58.0</b>	<b>13</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	37.5	17
2.3.3 Quality research institutions†.....	78.6	8

## 3 Infrastructure 53.1 3

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>66.2</b>	<b>11</b>
3.1.1 ICT access*.....	75.1	18
3.1.2 ICT use*.....	43.1	21
3.1.3 Government's Online Service*.....	88.3	3
3.1.4 E-Participation*.....	72.9	8
<b>3.2 Energy</b>	<b>36.9</b>	<b>6</b>
3.2.1 Electricity output, kWh/cap.....	96.4	5
3.2.2 Electricity consumption, kWh/capita.....	67.4	5
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	18.4	83
3.2.4 Share of renewables in energy use, %.....	10.4	51
<b>3.3 General infrastructure</b>	<b>56.2</b>	<b>5</b>
3.3.1 Quality of trade & transport infrastructure*.....	75.8	10
3.3.2 Gross capital formation, % GDP.....	25.0	66
3.3.3 Ecological footprint & biocapacity, ha/cap.....	68.0	4

## 4 Market sophistication 63.4 9

<b>4.1 Credit</b>	<b>68.7</b>	<b>16</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	57.5	11
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>67.0</b>	<b>7</b>
4.2.1 Strength of investor protection*.....	83.0	5
4.2.2 Market capitalization, % GDP.....	50.9	12
4.2.3 Total value of stocks traded, % GDP.....	51.6	11
4.2.4 Venture capital deals/tr GDP PPP\$.....	97.6	2
<b>4.3 Trade &amp; competition</b>	<b>54.4</b>	<b>45</b>
4.3.1 Applied tariff rate weighted mean, %.....	95.3	6
4.3.2 Market access trade restrictiveness*, %.....	71.9	48
4.3.3 Imports of goods & services, % GDP.....	15.3	85
4.3.4 Exports of goods & services, % GDP.....	21.8	76
4.3.5 Intensity local competition†.....	76.5	18

## 5 Business sophistication 58.4 10

<b>5.1 Knowledge workers</b>	<b>71.0</b>	<b>20</b>
5.1.1 Knowledge-intensive employment, %.....	82.3	13
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	63.7	29
5.1.4 R&D financed by business, %.....	55.9	26
<b>5.2 Innovation linkages</b>	<b>59.8</b>	<b>7</b>
5.2.1 University/industry collaboration†.....	73.4	7
5.2.2 State of cluster development†.....	59.9	15
5.2.3 R&D financed by abroad, %.....	32.8	28
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	100.0	2
5.2.5 PCT patent filings with foreign inventor, %.....	39.6	25
<b>5.3 Knowledge absorption</b>	<b>44.3</b>	<b>26</b>
5.3.1 Royalty & license fees payments, % GDP.....	56.6	13
5.3.2 High-tech imports less re-imports, %.....	33.4	28
5.3.3 Computer & comm. service imports, %.....	45.2	48
5.3.4 FDI net inflows, % GDP.....	42.2	80

## 6 Scientific outputs 42.5 21

<b>6.1 Knowledge creation</b>	<b>38.2</b>	<b>19</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	24.0	34
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	27.2	23
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	63.6	9
<b>6.2 Knowledge impact</b>	<b>46.2</b>	<b>14</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	30.9	96
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	58.9	8
6.2.3 Computer software spending, % GDP.....	51.6	14
<b>6.3 Knowledge diffusion</b>	<b>43.0</b>	<b>28</b>
6.3.1 Royalty & license fees receipts, % GDP.....	32.3	18
6.3.2 High-tech exports less re-exports, %.....	19.7	28
6.3.3 Computer & comm service exports, %.....	64.4	21
6.3.4 FDI net outflows, % GDP.....	55.8	19

## 7 Creative outputs 54.0 4

<b>7.1 Creative intangibles</b>	<b>54.2</b>	<b>29</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	9.7	85
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	78.1	8
7.1.4 ICT & organizational models†.....	74.7	6
<b>7.2 Creative goods &amp; services</b>	<b>53.9</b>	<b>5</b>
7.2.1 Recreation & culture consumption, %.....	70.0	18
7.2.2 National feature films/mn pop.....	30.6	26
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	22.2	43
7.2.5 Creative services exports, %.....	89.1	3

## Key indicators

Population (millions)	17.1
GDP per capita, PPP (current international \$)	14,330.7
GDP (US\$ billions)	163.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.8</b>	<b>38</b>
Innovation Output Sub-Index .....	29.6	57
Innovation Input Sub-Index.....	48.1	36
Innovation Efficiency Index.....	0.6	93
Global Innovation Index 2010.....		42
Global Innovation Index 2009.....		39

**1 Institutions 85.2 18**

<b>1.1 Political environment</b>	<b>81.3</b>	<b>22</b>
1.1.1 Political stability*.....	69.3	34
1.1.2 Government effectiveness*.....	85.7	23
1.1.3 Press freedom*.....	88.9	31
<b>1.2 Regulatory environment</b>	<b>87.8</b>	<b>12</b>
1.2.1 Regulatory quality*.....	93.8	14
1.2.2 Rule of law*.....	87.7	22
1.2.3 Rigidity of employment*.....	82.0	39
<b>1.3 Business environment</b>	<b>86.3</b>	<b>32</b>
1.3.1 Time to start a business, days.....	79.8	78
1.3.2 Cost to start a business, % income/cap.....	94.7	54
1.3.3 Total tax rate, % profits.....	84.4	19

**2 Human capital & research 34.9 71**

<b>2.1 Education</b>	<b>50.1</b>	<b>89</b>
2.1.1 Education expenditure, % GNI.....	36.6	77
2.1.2 Public expenditure/pupil, % GDP/cap.....	20.9	77
2.1.3 School life expectancy, years.....	63.5	37
2.1.4 PISA scales in reading, maths, & science.....	45.4	42
2.1.5 Pupil-teacher ratio, secondary.....	60.5	98
<b>2.2 Tertiary education</b>	<b>30.8</b>	<b>62</b>
2.2.1 Tertiary enrolment, % gross.....	55.6	35
2.2.2 Graduates in science, %.....	24.7	61
2.2.3 Graduates in engineering, %.....	49.7	22
2.2.4 Tertiary inbound mobility, %.....	4.2	59
2.2.5 Tertiary outbound mobility, %.....	7.9	111
2.2.6 Gross tertiary outbound enrolment, %.....	5.2	77
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>23.6</b>	<b>63</b>
2.3.1 Researchers headcount/million pop.....	8.6	47
2.3.2 Gross expenditure on R&D, % GDP.....	13.4	41
2.3.3 Quality research institutions†.....	48.9	51

**3 Infrastructure 31.1 50**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>37.4</b>	<b>44</b>
3.1.1 ICT access*.....	48.4	50
3.1.2 ICT use*.....	16.3	48
3.1.3 Government's Online Service*.....	61.0	18
3.1.4 E-Participation*.....	34.3	35
<b>3.2 Energy</b>	<b>20.4</b>	<b>62</b>
3.2.1 Electricity output, kWh/cap.....	18.4	53
3.2.2 Electricity consumption, kWh/capita.....	13.9	53
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	31.5	46
3.2.4 Share of renewables in energy use, %.....	13.5	44
<b>3.3 General infrastructure</b>	<b>35.5</b>	<b>67</b>
3.3.1 Quality of trade & transport infrastructure*.....	46.5	48
3.3.2 Gross capital formation, % GDP.....	20.0	84
3.3.3 Ecological footprint & biocapacity, ha/cap.....	40.0	25

**4 Market sophistication 47.4 37**

<b>4.1 Credit</b>	<b>43.7</b>	<b>52</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	42.5	22
4.1.4 Microfinance gross loans, % GDP.....	10.2	34
<b>4.2 Investment</b>	<b>42.5</b>	<b>29</b>
4.2.1 Strength of investor protection*.....	63.0	27
4.2.2 Market capitalization, % GDP.....	51.8	11
4.2.3 Total value of stocks traded, % GDP.....	12.8	36
4.2.4 Venture capital deals/tr GDP PPP\$.....	42.0	49
<b>4.3 Trade &amp; competition</b>	<b>56.0</b>	<b>40</b>
4.3.1 Applied tariff rate weighted mean, %.....	95.0	7
4.3.2 Market access trade restrictiveness*, %.....	68.3	55
4.3.3 Imports of goods & services, % GDP.....	15.2	86
4.3.4 Exports of goods & services, % GDP.....	32.2	56
4.3.5 Intensity local competition†.....	75.6	23

**5 Business sophistication 41.9 44**

<b>5.1 Knowledge workers</b>	<b>55.0</b>	<b>37</b>
5.1.1 Knowledge-intensive employment, %.....	58.1	38
5.1.2 Firms offering formal training, % firms.....	52.7	24
5.1.3 R&D performed by business, %.....	54.4	36
5.1.4 R&D financed by business, %.....	53.8	29
<b>5.2 Innovation linkages</b>	<b>35.3</b>	<b>49</b>
5.2.1 University/industry collaboration†.....	52.6	37
5.2.2 State of cluster development†.....	47.3	44
5.2.3 R&D financed by abroad, %.....	30.4	30
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	20.2	33
5.2.5 PCT patent filings with foreign inventor, %.....	16.1	47
<b>5.3 Knowledge absorption</b>	<b>35.5</b>	<b>56</b>
5.3.1 Royalty & license fees payments, % GDP.....	28.5	34
5.3.2 High-tech imports less re-imports, %.....	18.2	66
5.3.3 Computer & comm. service imports, %.....	25.9	91
5.3.4 FDI net inflows, % GDP.....	69.3	16

**6 Scientific outputs 20.4 85**

<b>6.1 Knowledge creation</b>	<b>11.6</b>	<b>57</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	13.0	47
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	4.7	41
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	2.7	35
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	21.6	41
<b>6.2 Knowledge impact</b>	<b>25.6</b>	<b>81</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	40.8	62
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	16.5	41
6.2.3 Computer software spending, % GDP.....	13.5	43
<b>6.3 Knowledge diffusion</b>	<b>23.9</b>	<b>75</b>
6.3.1 Royalty & license fees receipts, % GDP.....	4.8	52
6.3.2 High-tech exports less re-exports, %.....	1.3	78
6.3.3 Computer & comm service exports, %.....	28.4	78
6.3.4 FDI net outflows, % GDP.....	61.1	12

**7 Creative outputs 38.8 44**

<b>7.1 Creative intangibles</b>	<b>65.9</b>	<b>8</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	63.6	6
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	70.8	25
7.1.4 ICT & organizational models†.....	63.3	31
<b>7.2 Creative goods &amp; services</b>	<b>11.8</b>	<b>80</b>
7.2.1 Recreation & culture consumption, %.....	46.1	39
7.2.2 National feature films/mn pop.....	8.3	48
7.2.3 Daily newspapers/1,000 literate pop.....	10.7	44
7.2.4 Creative goods exports, %.....	3.7	91
7.2.5 Creative services exports, %.....	4.9	57

# China

## Key indicators

Population (millions)	1,354.1
GDP per capita, PPP (current international \$)	6,828.0
GDP (US\$ billions)	4,985.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>46.4</b>	<b>29</b>
Innovation Output Sub-Index .....	46.8	14
Innovation Input Sub-Index.....	46.1	43
Innovation Efficiency Index.....	1.0	3
Global Innovation Index 2010.....		43
Global Innovation Index 2009.....		37

## 1 Institutions 51.7 98

<b>1.1 Political environment</b>	<b>32.8</b>	<b>108</b>
1.1.1 Political stability*.....	29.7	83
1.1.2 Government effectiveness*.....	58.1	62
1.1.3 Press freedom*.....	10.5	122
<b>1.2 Regulatory environment</b>	<b>53.5</b>	<b>76</b>
1.2.1 Regulatory quality*.....	46.2	83
1.2.2 Rule of law*.....	45.3	72
1.2.3 Rigidity of employment*.....	69.0	73
<b>1.3 Business environment</b>	<b>68.8</b>	<b>95</b>
1.3.1 Time to start a business, days.....	64.4	104
1.3.2 Cost to start a business, % income/cap.....	96.5	39
1.3.3 Total tax rate, % profits.....	45.3	115

## 2 Human capital & research 39.9 56

<b>2.1 Education</b>	<b>59.9</b>	<b>51</b>
2.1.1 Education expenditure, % GNI.....	12.7	115
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	44.2	87
2.1.4 PISA scales in reading, maths, & science.....	100.0	1
2.1.5 Pupil-teacher ratio, secondary.....	79.2	67
<b>2.2 Tertiary education</b>	<b>17.3</b>	<b>102</b>
2.2.1 Tertiary enrolment, % gross.....	24.6	77
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	15.8	85
2.2.6 Gross tertiary outbound enrolment, %.....	4.3	82
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>42.3</b>	<b>32</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	29.3	24
2.3.3 Quality research institutions†.....	55.4	36

## 3 Infrastructure 35.4 33

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>28.4</b>	<b>59</b>
3.1.1 ICT access*.....	37.5	66
3.1.2 ICT use*.....	10.9	67
3.1.3 Government's Online Service*.....	36.8	52
3.1.4 E-Participation*.....	37.1	33
<b>3.2 Energy</b>	<b>14.5</b>	<b>92</b>
3.2.1 Electricity output, kWh/cap.....	13.5	64
3.2.2 Electricity consumption, kWh/capita.....	10.2	60
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	24.2	69
3.2.4 Share of renewables in energy use, %.....	7.5	56
<b>3.3 General infrastructure</b>	<b>63.3</b>	<b>2</b>
3.3.1 Quality of trade & transport infrastructure*.....	63.5	25
3.3.2 Gross capital formation, % GDP.....	93.5	2
3.3.3 Ecological footprint & biocapacity, ha/cap.....	32.9	78

## 4 Market sophistication 54.1 26

<b>4.1 Credit</b>	<b>49.1</b>	<b>36</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	56.9	13
4.1.4 Microfinance gross loans, % GDP.....	4.8	42
<b>4.2 Investment</b>	<b>63.6</b>	<b>8</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	40.6	16
4.2.3 Total value of stocks traded, % GDP.....	100.0	5
4.2.4 Venture capital deals/tr GDP PPP\$.....	64.2	30
<b>4.3 Trade &amp; competition</b>	<b>49.7</b>	<b>67</b>
4.3.1 Applied tariff rate weighted mean, %.....	80.5	68
4.3.2 Market access trade restrictiveness*, %.....	75.7	42
4.3.3 Imports of goods & services, % GDP.....	8.8	112
4.3.4 Exports of goods & services, % GDP.....	19.6	87
4.3.5 Intensity local competition†.....	77.0	17

## 5 Business sophistication 49.3 29

<b>5.1 Knowledge workers</b>	<b>64.8</b>	<b>30</b>
5.1.1 Knowledge-intensive employment, %.....	10.3	95
5.1.2 Firms offering formal training, % firms.....	100.0	1
5.1.3 R&D performed by business, %.....	85.1	10
5.1.4 R&D financed by business, %.....	83.0	6
<b>5.2 Innovation linkages</b>	<b>35.8</b>	<b>46</b>
5.2.1 University/industry collaboration†.....	59.8	24
5.2.2 State of cluster development†.....	64.6	7
5.2.3 R&D financed by abroad, %.....	4.7	65
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	17.1	37
5.2.5 PCT patent filings with foreign inventor, %.....	8.0	68
<b>5.3 Knowledge absorption</b>	<b>47.3</b>	<b>19</b>
5.3.1 Royalty & license fees payments, % GDP.....	22.8	41
5.3.2 High-tech imports less re-imports, %.....	77.9	4
5.3.3 Computer & comm. service imports, %.....	45.9	45
5.3.4 FDI net inflows, % GDP.....	42.5	78

## 6 Scientific outputs 52.7 9

<b>6.1 Knowledge creation</b>	<b>54.2</b>	<b>12</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	100.0	3
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	17.5	28
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	100.0	1
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	22.2	40
<b>6.2 Knowledge impact</b>	<b>55.1</b>	<b>9</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	71.1	3
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	23.3	30
<b>6.3 Knowledge diffusion</b>	<b>48.6</b>	<b>21</b>
6.3.1 Royalty & license fees receipts, % GDP.....	1.2	67
6.3.2 High-tech exports less re-exports, %.....	80.1	3
6.3.3 Computer & comm service exports, %.....	63.5	22
6.3.4 FDI net outflows, % GDP.....	49.8	40

## 7 Creative outputs 40.9 35

<b>7.1 Creative intangibles</b>	<b>53.7</b>	<b>30</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	54.7	9
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	7.3	37
7.1.3 ICT & business models†.....	68.1	34
7.1.4 ICT & organizational models†.....	61.6	36
<b>7.2 Creative goods &amp; services</b>	<b>28.1</b>	<b>45</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	3.2	70
7.2.3 Daily newspapers/1,000 literate pop.....	16.0	36
7.2.4 Creative goods exports, %.....	64.7	4
7.2.5 Creative services exports, %.....	9.9	46

## Key indicators

Population (millions)	46.3
GDP per capita, PPP (current international \$)	8,959.2
GDP (US\$ billions)	234.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>32.3</b>	<b>71</b>
Innovation Output Sub-Index .....	25.9	70
Innovation Input Sub-Index.....	38.7	74
Innovation Efficiency Index.....	0.7	75
Global Innovation Index 2010.....	90	
Global Innovation Index 2009.....	75	

## 1 Institutions 55.7 83

<b>1.1 Political environment</b>	<b>36.3</b>	<b>101</b>
1.1.1 Political stability*.....	7.1	120
1.1.2 Government effectiveness*.....	56.2	66
1.1.3 Press freedom*.....	45.5	107
<b>1.2 Regulatory environment</b>	<b>62.3</b>	<b>59</b>
1.2.1 Regulatory quality*.....	57.1	65
1.2.2 Rule of law*.....	39.6	81
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>68.7</b>	<b>96</b>
1.3.1 Time to start a business, days.....	87.5	54
1.3.2 Cost to start a business, % income/cap.....	88.5	77
1.3.3 Total tax rate, % profits.....	29.9	122

## 2 Human capital & research 30.0 91

<b>2.1 Education</b>	<b>44.9</b>	<b>101</b>
2.1.1 Education expenditure, % GNI.....	41.9	66
2.1.2 Public expenditure/pupil, % GDP/cap.....	24.6	70
2.1.3 School life expectancy, years.....	57.1	53
2.1.4 PISA scales in reading, maths, & science.....	29.2	51
2.1.5 Pupil-teacher ratio, secondary.....	52.3	107
<b>2.2 Tertiary education</b>	<b>30.5</b>	<b>64</b>
2.2.1 Tertiary enrolment, % gross.....	37.4	60
2.2.2 Graduates in science, %.....	2.9	90
2.2.3 Graduates in engineering, %.....	73.2	5
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	12.1	100
2.2.6 Gross tertiary outbound enrolment, %.....	5.1	79
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>14.6</b>	<b>100</b>
2.3.1 Researchers headcount/million pop.....	2.0	71
2.3.2 Gross expenditure on R&D, % GDP.....	2.7	78
2.3.3 Quality research institutions†.....	39.0	75

## 3 Infrastructure 35.7 32

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>37.6</b>	<b>43</b>
3.1.1 ICT access*.....	39.5	62
3.1.2 ICT use*.....	15.5	53
3.1.3 Government's Online Service*.....	71.1	9
3.1.4 E-Participation*.....	44.3	27
<b>3.2 Energy</b>	<b>31.3</b>	<b>14</b>
3.2.1 Electricity output, kWh/cap.....	6.5	82
3.2.2 Electricity consumption, kWh/capita.....	4.0	88
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	71.8	3
3.2.4 Share of renewables in energy use, %.....	17.0	38
<b>3.3 General infrastructure</b>	<b>38.2</b>	<b>46</b>
3.3.1 Quality of trade & transport infrastructure*.....	39.8	60
3.3.2 Gross capital formation, % GDP.....	29.0	49
3.3.3 Ecological footprint & biocapacity, ha/cap.....	45.8	14

## 4 Market sophistication 36.8 74

<b>4.1 Credit</b>	<b>36.1</b>	<b>74</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	12.7	69
4.1.4 Microfinance gross loans, % GDP.....	21.9	26
<b>4.2 Investment</b>	<b>35.4</b>	<b>41</b>
4.2.1 Strength of investor protection*.....	83.0	5
4.2.2 Market capitalization, % GDP.....	23.2	32
4.2.3 Total value of stocks traded, % GDP.....	3.1	55
4.2.4 Venture capital deals/tr GDP PPP\$.....	29.1	64
<b>4.3 Trade &amp; competition</b>	<b>38.8</b>	<b>109</b>
4.3.1 Applied tariff rate weighted mean, %.....	56.6	104
4.3.2 Market access trade restrictiveness*, %.....	86.7	26
4.3.3 Imports of goods & services, % GDP.....	5.6	121
4.3.4 Exports of goods & services, % GDP.....	8.0	113
4.3.5 Intensity local competition†.....	61.2	78

## 5 Business sophistication 35.4 66

<b>5.1 Knowledge workers</b>	<b>37.4</b>	<b>73</b>
5.1.1 Knowledge-intensive employment, %.....	39.5	61
5.1.2 Firms offering formal training, % firms.....	43.4	35
5.1.3 R&D performed by business, %.....	26.7	59
5.1.4 R&D financed by business, %.....	31.8	50
<b>5.2 Innovation linkages</b>	<b>30.2</b>	<b>73</b>
5.2.1 University/industry collaboration†.....	49.5	44
5.2.2 State of cluster development†.....	48.9	37
5.2.3 R&D financed by abroad, %.....	14.4	53
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	1.6	70
5.2.5 PCT patent filings with foreign inventor, %.....	14.3	52
<b>5.3 Knowledge absorption</b>	<b>38.5</b>	<b>44</b>
5.3.1 Royalty & license fees payments, % GDP.....	12.2	62
5.3.2 High-tech imports less re-imports, %.....	50.8	9
5.3.3 Computer & comm. service imports, %.....	42.1	60
5.3.4 FDI net inflows, % GDP.....	49.1	47

## 6 Scientific outputs 14.1 114

<b>6.1 Knowledge creation</b>	<b>2.3</b>	<b>104</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.9	80
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.5	57
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	2.8	34
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.4	99
<b>6.2 Knowledge impact</b>	<b>18.6</b>	<b>103</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	34.6	83
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	8.3	57
6.2.3 Computer software spending, % GDP.....	7.2	62
<b>6.3 Knowledge diffusion</b>	<b>21.4</b>	<b>90</b>
6.3.1 Royalty & license fees receipts, % GDP.....	2.8	58
6.3.2 High-tech exports less re-exports, %.....	3.0	68
6.3.3 Computer & comm service exports, %.....	29.0	75
6.3.4 FDI net outflows, % GDP.....	51.0	34

## 7 Creative outputs 37.7 47

<b>7.1 Creative intangibles</b>	<b>49.8</b>	<b>47</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	23.9	38
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	63.4	46
7.1.4 ICT & organizational models†.....	62.1	35
<b>7.2 Creative goods &amp; services</b>	<b>25.6</b>	<b>52</b>
7.2.1 Recreation & culture consumption, %.....	40.0	45
7.2.2 National feature films/mn pop.....	1.5	75
7.2.3 Daily newspapers/1,000 literate pop.....	5.2	53
7.2.4 Creative goods exports, %.....	21.3	46
7.2.5 Creative services exports, %.....	45.0	15

# Costa Rica

## Key indicators

Population (millions)	4.6
GDP per capita, PPP (current international \$)	11,105.7
GDP (US\$ billions)	29.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>37.9</b>	<b>45</b>
Innovation Output Sub-Index .....	33.6	37
Innovation Input Sub-Index.....	42.2	53
Innovation Efficiency Index.....	0.8	29
Global Innovation Index 2010.....		41
Global Innovation Index 2009.....		48

## 1 Institutions 67.9 58

<b>1.1 Political environment</b>	<b>75.8</b>	<b>37</b>
1.1.1 Political stability*.....	70.3	32
1.1.2 Government effectiveness*.....	65.7	49
1.1.3 Press freedom*.....	91.5	27
<b>1.2 Regulatory environment</b>	<b>64.7</b>	<b>54</b>
1.2.1 Regulatory quality*.....	67.6	50
1.2.2 Rule of law*.....	65.6	44
1.2.3 Rigidity of employment*.....	61.0	90
<b>1.3 Business environment</b>	<b>63.0</b>	<b>106</b>
1.3.1 Time to start a business, days.....	43.3	117
1.3.2 Cost to start a business, % income/cap.....	91.8	65
1.3.3 Total tax rate, % profits.....	54.0	106

## 2 Human capital & research 33.1 79

<b>2.1 Education</b>	<b>58.2</b>	<b>60</b>
2.1.1 Education expenditure, % GNI.....	70.6	13
2.1.2 Public expenditure/pupil, % GDP/cap.....	29.9	58
2.1.3 School life expectancy, years.....	45.2	86
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	79.0	69
<b>2.2 Tertiary education</b>	<b>16.5</b>	<b>103</b>
2.2.1 Tertiary enrolment, % gross.....	25.5	75
2.2.2 Graduates in science, %.....	21.4	69
2.2.3 Graduates in engineering, %.....	16.1	79
2.2.4 Tertiary inbound mobility, %.....	3.9	62
2.2.5 Tertiary outbound mobility, %.....	14.1	92
2.2.6 Gross tertiary outbound enrolment, %.....	4.8	80
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.5</b>	<b>57</b>
2.3.1 Researchers headcount/million pop.....	5.9	54
2.3.2 Gross expenditure on R&D, % GDP.....	6.1	62
2.3.3 Quality research institutions†.....	61.5	30

## 3 Infrastructure 29.6 55

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>25.5</b>	<b>67</b>
3.1.1 ICT access*.....	39.1	63
3.1.2 ICT use*.....	12.1	64
3.1.3 Government's Online Service*.....	30.5	73
3.1.4 E-Participation*.....	20.0	56
<b>3.2 Energy</b>	<b>31.5</b>	<b>13</b>
3.2.1 Electricity output, kWh/cap.....	10.8	73
3.2.2 Electricity consumption, kWh/capita.....	7.7	71
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	51.7	13
3.2.4 Share of renewables in energy use, %.....	33.4	20
<b>3.3 General infrastructure</b>	<b>31.8</b>	<b>87</b>
3.3.1 Quality of trade & transport infrastructure*.....	39.0	63
3.3.2 Gross capital formation, % GDP.....	21.7	77
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.7	65

## 4 Market sophistication 32.7 94

<b>4.1 Credit</b>	<b>35.4</b>	<b>76</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	20.6	46
4.1.4 Microfinance gross loans, % GDP.....	2.6	51
<b>4.2 Investment</b>	<b>9.1</b>	<b>124</b>
4.2.1 Strength of investor protection*.....	30.0	119
4.2.2 Market capitalization, % GDP.....	1.8	96
4.2.3 Total value of stocks traded, % GDP.....	0.1	93
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>53.7</b>	<b>49</b>
4.3.1 Applied tariff rate weighted mean, %.....	81.3	67
4.3.2 Market access trade restrictiveness*, %.....	61.8	60
4.3.3 Imports of goods & services, % GDP.....	24.6	54
4.3.4 Exports of goods & services, % GDP.....	37.9	47
4.3.5 Intensity local competition†.....	66.8	56

## 5 Business sophistication 47.9 33

<b>5.1 Knowledge workers</b>	<b>49.2</b>	<b>42</b>
5.1.1 Knowledge-intensive employment, %.....	51.5	46
5.1.2 Firms offering formal training, % firms.....	52.0	26
5.1.3 R&D performed by business, %.....	38.9	45
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>53.8</b>	<b>15</b>
5.2.1 University/industry collaboration†.....	58.5	27
5.2.2 State of cluster development†.....	46.4	47
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	83.3	8
<b>5.3 Knowledge absorption</b>	<b>40.7</b>	<b>37</b>
5.3.1 Royalty & license fees payments, % GDP.....	22.7	42
5.3.2 High-tech imports less re-imports, %.....	47.5	14
5.3.3 Computer & comm. service imports, %.....	37.1	65
5.3.4 FDI net inflows, % GDP.....	55.7	30

## 6 Scientific outputs 28.4 43

<b>6.1 Knowledge creation</b>	<b>3.2</b>	<b>95</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.8	68
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.7	81
<b>6.2 Knowledge impact</b>	<b>40.0</b>	<b>26</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	27.1	101
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	68.3	5
6.2.3 Computer software spending, % GDP.....	9.1	57
<b>6.3 Knowledge diffusion</b>	<b>42.1</b>	<b>29</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.3	77
6.3.2 High-tech exports less re-exports, %.....	65.2	5
6.3.3 Computer & comm service exports, %.....	55.5	32
6.3.4 FDI net outflows, % GDP.....	47.3	85

## 7 Creative outputs 38.8 45

<b>7.1 Creative intangibles</b>	<b>69.5</b>	<b>5</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	78.2	2
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	69.5	30
7.1.4 ICT & organizational models†.....	60.8	41
<b>7.2 Creative goods &amp; services</b>	<b>8.0</b>	<b>92</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	14.6	38
7.2.4 Creative goods exports, %.....	12.4	64
7.2.5 Creative services exports, %.....	0.4	90



## Key indicators

Population (millions)	21.6
GDP per capita, PPP (current international \$)	1,701.2
GDP (US\$ billions)	23.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>24.1</b>	<b>117</b>
Innovation Output Sub-Index .....	24.8	79
Innovation Input Sub-Index.....	23.4	125
Innovation Efficiency Index.....	1.1	1
Global Innovation Index 2010.....		89
Global Innovation Index 2009.....		n/a

## 1 Institutions 33.3 122

<b>1.1 Political environment</b>	<b>26.5</b>	<b>116</b>
1.1.1 Political stability*.....	8.0	118
1.1.2 Government effectiveness*.....	9.5	122
1.1.3 Press freedom*.....	61.9	84
<b>1.2 Regulatory environment</b>	<b>30.9</b>	<b>119</b>
1.2.1 Regulatory quality*.....	19.5	116
1.2.2 Rule of law*.....	6.1	122
1.2.3 Rigidity of employment*.....	67.0	76
<b>1.3 Business environment</b>	<b>42.4</b>	<b>120</b>
1.3.1 Time to start a business, days.....	62.5	108
1.3.2 Cost to start a business, % income/cap.....	0.0	123
1.3.3 Total tax rate, % profits.....	64.7	77

## 2 Human capital & research 21.1 118

<b>2.1 Education</b>	<b>30.6</b>	<b>117</b>
2.1.1 Education expenditure, % GNI.....	50.9	45
2.1.2 Public expenditure/pupil, % GDP/cap.....	47.9	14
2.1.3 School life expectancy, years.....	11.9	116
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	n/a	n/a
<b>2.2 Tertiary education</b>	<b>14.3</b>	<b>108</b>
2.2.1 Tertiary enrolment, % gross.....	8.1	101
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	26.6	55
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.4</b>	<b>84</b>
2.3.1 Researchers headcount/million pop.....	0.9	83
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	36.0	85

## 3 Infrastructure 19.7 113

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>15.2</b>	<b>97</b>
3.1.1 ICT access*.....	19.8	103
3.1.2 ICT use*.....	1.1	112
3.1.3 Government's Online Service*.....	32.4	64
3.1.4 E-Participation*.....	17.1	65
<b>3.2 Energy</b>	<b>19.0</b>	<b>70</b>
3.2.1 Electricity output, kWh/cap.....	1.4	106
3.2.2 Electricity consumption, kWh/capita.....	0.6	107
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	9.8	97
3.2.4 Share of renewables in energy use, %.....	46.3	9
<b>3.3 General infrastructure</b>	<b>24.8</b>	<b>119</b>
3.3.1 Quality of trade & transport infrastructure*.....	34.3	79
3.3.2 Gross capital formation, % GDP.....	0.0	124
3.3.3 Ecological footprint & biocapacity, ha/cap.....	40.2	24

## 4 Market sophistication 23.6 121

<b>4.1 Credit</b>	<b>11.9</b>	<b>119</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	16.7	105
4.1.3 Domestic credit to private sector, % GDP.....	4.7	99
4.1.4 Microfinance gross loans, % GDP.....	3.5	47
<b>4.2 Investment</b>	<b>12.5</b>	<b>121</b>
4.2.1 Strength of investor protection*.....	33.0	113
4.2.2 Market capitalization, % GDP.....	10.6	60
4.2.3 Total value of stocks traded, % GDP.....	0.3	83
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>46.4</b>	<b>86</b>
4.3.1 Applied tariff rate weighted mean, %.....	67.4	89
4.3.2 Market access trade restrictiveness*, %.....	49.2	68
4.3.3 Imports of goods & services, % GDP.....	18.0	76
4.3.4 Exports of goods & services, % GDP.....	36.2	52
4.3.5 Intensity local competition†.....	62.5	73

## 5 Business sophistication 19.3 125

<b>5.1 Knowledge workers</b>	<b>18.0</b>	<b>116</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	18.0	80
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>14.0</b>	<b>123</b>
5.2.1 University/industry collaboration†.....	27.0	118
5.2.2 State of cluster development†.....	22.1	120
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>25.9</b>	<b>97</b>
5.3.1 Royalty & license fees payments, % GDP.....	10.3	69
5.3.2 High-tech imports less re-imports, %.....	15.6	79
5.3.3 Computer & comm. service imports, %.....	35.1	69
5.3.4 FDI net inflows, % GDP.....	42.8	74

## 6 Scientific outputs 22.9 69

<b>6.1 Knowledge creation</b>	<b>1.7</b>	<b>113</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.4	80
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.0	103
<b>6.2 Knowledge impact</b>	<b>35.5</b>	<b>41</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.5	77
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>31.6</b>	<b>48</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	82
6.3.2 High-tech exports less re-exports, %.....	5.1	60
6.3.3 Computer & comm service exports, %.....	74.0	13
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 26.6 86

<b>7.1 Creative intangibles</b>	<b>50.9</b>	<b>39</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	57.9	64
7.1.4 ICT & organizational models†.....	44.0	91
<b>7.2 Creative goods &amp; services</b>	<b>2.3</b>	<b>116</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	1.6	103
7.2.5 Creative services exports, %.....	3.0	65

## Croatia

## Key indicators

Population (millions)	4.4
GDP per capita, PPP (current international \$)	19,805.4
GDP (US\$ billions)	63.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.0</b>	<b>44</b>
Innovation Output Sub-Index .....	31.0	48
Innovation Input Sub-Index.....	45.0	45
Innovation Efficiency Index.....	0.7	65
Global Innovation Index 2010.....		45
Global Innovation Index 2009.....		62

## 1 Institutions 73.6 42

<b>1.1 Political environment</b>	<b>73.1</b>	<b>41</b>
1.1.1 Political stability*.....	67.5	37
1.1.2 Government effectiveness*.....	70.5	42
1.1.3 Press freedom*.....	81.5	52
<b>1.2 Regulatory environment</b>	<b>59.5</b>	<b>65</b>
1.2.1 Regulatory quality*.....	68.1	49
1.2.2 Rule of law*.....	60.4	52
1.2.3 Rigidity of employment*.....	50.0	110
<b>1.3 Business environment</b>	<b>88.1</b>	<b>21</b>
1.3.1 Time to start a business, days.....	94.2	21
1.3.2 Cost to start a business, % income/cap.....	93.3	60
1.3.3 Total tax rate, % profits.....	76.8	40

## 2 Human capital & research 43.5 43

<b>2.1 Education</b>	<b>64.5</b>	<b>41</b>
2.1.1 Education expenditure, % GNI.....	46.5	58
2.1.2 Public expenditure/pupil, % GDP/cap.....	38.0	35
2.1.3 School life expectancy, years.....	58.3	46
2.1.4 PISA scales in reading, maths, & science.....	59.2	35
2.1.5 Pupil-teacher ratio, secondary.....	95.5	11
<b>2.2 Tertiary education</b>	<b>36.8</b>	<b>42</b>
2.2.1 Tertiary enrolment, % gross.....	51.3	44
2.2.2 Graduates in science, %.....	36.0	41
2.2.3 Graduates in engineering, %.....	43.2	34
2.2.4 Tertiary inbound mobility, %.....	11.8	40
2.2.5 Tertiary outbound mobility, %.....	29.8	50
2.2.6 Gross tertiary outbound enrolment, %.....	28.7	29
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>29.1</b>	<b>48</b>
2.3.1 Researchers headcount/million pop.....	19.0	34
2.3.2 Gross expenditure on R&D, % GDP.....	18.0	35
2.3.3 Quality research institutions†.....	50.2	47

## 3 Infrastructure 34.1 37

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>47.2</b>	<b>29</b>
3.1.1 ICT access*.....	67.4	30
3.1.2 ICT use*.....	30.3	37
3.1.3 Government's Online Service*.....	42.2	39
3.1.4 E-Participation*.....	45.7	26
<b>3.2 Energy</b>	<b>19.5</b>	<b>67</b>
3.2.1 Electricity output, kWh/cap.....	14.3	60
3.2.2 Electricity consumption, kWh/capita.....	16.2	46
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	38.1	32
3.2.4 Share of renewables in energy use, %.....	5.3	69
<b>3.3 General infrastructure</b>	<b>35.5</b>	<b>66</b>
3.3.1 Quality of trade & transport infrastructure*.....	34.0	81
3.3.2 Gross capital formation, % GDP.....	39.6	28
3.3.3 Ecological footprint & biocapacity, ha/cap.....	32.9	79

## 4 Market sophistication 35.7 79

<b>4.1 Credit</b>	<b>36.3</b>	<b>72</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	27.3	38
4.1.4 Microfinance gross loans, % GDP.....	0.1	70
<b>4.2 Investment</b>	<b>16.4</b>	<b>110</b>
4.2.1 Strength of investor protection*.....	40.0	103
4.2.2 Market capitalization, % GDP.....	16.3	45
4.2.3 Total value of stocks traded, % GDP.....	1.3	65
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>54.4</b>	<b>46</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.6	9
4.3.2 Market access trade restrictiveness*, %.....	89.9	21
4.3.3 Imports of goods & services, % GDP.....	22.5	61
4.3.4 Exports of goods & services, % GDP.....	29.9	61
4.3.5 Intensity local competition†.....	52.7	106

## 5 Business sophistication 38.2 54

<b>5.1 Knowledge workers</b>	<b>45.4</b>	<b>53</b>
5.1.1 Knowledge-intensive employment, %.....	57.0	40
5.1.2 Firms offering formal training, % firms.....	29.1	60
5.1.3 R&D performed by business, %.....	52.2	37
5.1.4 R&D financed by business, %.....	48.0	38
<b>5.2 Innovation linkages</b>	<b>25.2</b>	<b>93</b>
5.2.1 University/industry collaboration†.....	40.7	68
5.2.2 State of cluster development†.....	35.5	86
5.2.3 R&D financed by abroad, %.....	27.6	35
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	10.8	61
<b>5.3 Knowledge absorption</b>	<b>43.9</b>	<b>28</b>
5.3.1 Royalty & license fees payments, % GDP.....	33.8	27
5.3.2 High-tech imports less re-imports, %.....	19.6	62
5.3.3 Computer & comm. service imports, %.....	66.5	13
5.3.4 FDI net inflows, % GDP.....	56.0	29

## 6 Scientific outputs 25.2 57

<b>6.1 Knowledge creation</b>	<b>20.9</b>	<b>40</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	19.1	38
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	8.1	33
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	12.1	23
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	39.8	29
<b>6.2 Knowledge impact</b>	<b>30.3</b>	<b>66</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	40.5	64
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	20.0	36
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>24.4</b>	<b>74</b>
6.3.1 Royalty & license fees receipts, % GDP.....	6.9	47
6.3.2 High-tech exports less re-exports, %.....	18.5	29
6.3.3 Computer & comm service exports, %.....	19.0	93
6.3.4 FDI net outflows, % GDP.....	53.1	24

## 7 Creative outputs 36.7 51

<b>7.1 Creative intangibles</b>	<b>40.9</b>	<b>79</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	14.2	69
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	65.6	9
7.1.3 ICT & business models†.....	49.5	93
7.1.4 ICT & organizational models†.....	46.6	79
<b>7.2 Creative goods &amp; services</b>	<b>32.6</b>	<b>28</b>
7.2.1 Recreation & culture consumption, %.....	72.2	16
7.2.2 National feature films/mn pop.....	5.2	59
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	31.8	24
7.2.5 Creative services exports, %.....	27.4	27

## Key indicators

Population (millions)	0.9
GDP per capita, PPP (current international \$)	30,223.4
GDP (US\$ billions)	24.9

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>46.5</b>	<b>28</b>
Innovation Output Sub-Index .....	40.5	27
Innovation Input Sub-Index.....	52.4	30
Innovation Efficiency Index.....	0.8	37
Global Innovation Index 2010.....		32
Global Innovation Index 2009.....		45

## 1 Institutions 83.5 22

<b>1.1 Political environment</b>	<b>77.3</b>	<b>34</b>
1.1.1 Political stability*.....	57.5	48
1.1.2 Government effectiveness*.....	88.6	20
1.1.3 Press freedom*.....	85.8	41
<b>1.2 Regulatory environment</b>	<b>83.2</b>	<b>21</b>
1.2.1 Regulatory quality*.....	87.6	20
1.2.2 Rule of law*.....	85.8	23
1.2.3 Rigidity of employment*.....	76.0	56
<b>1.3 Business environment</b>	<b>89.9</b>	<b>17</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	90.2	70
1.3.3 Total tax rate, % profits.....	86.2	16

## 2 Human capital & research 48.6 29

<b>2.1 Education</b>	<b>69.6</b>	<b>22</b>
2.1.1 Education expenditure, % GNI.....	75.3	11
2.1.2 Public expenditure/pupil, % GDP/cap.....	36.2	40
2.1.3 School life expectancy, years.....	60.2	41
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	92.7	28
<b>2.2 Tertiary education</b>	<b>50.5</b>	<b>9</b>
2.2.1 Tertiary enrolment, % gross.....	43.2	50
2.2.2 Graduates in science, %.....	37.0	36
2.2.3 Graduates in engineering, %.....	6.4	90
2.2.4 Tertiary inbound mobility, %.....	100.0	4
2.2.5 Tertiary outbound mobility, %.....	81.5	2
2.2.6 Gross tertiary outbound enrolment, %.....	100.0	1
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>25.8</b>	<b>55</b>
2.3.1 Researchers headcount/million pop.....	14.7	36
2.3.2 Gross expenditure on R&D, % GDP.....	9.1	56
2.3.3 Quality research institutions†.....	53.6	38

## 3 Infrastructure 36.5 28

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>46.0</b>	<b>30</b>
3.1.1 ICT access*.....	64.7	33
3.1.2 ICT use*.....	30.5	36
3.1.3 Government's Online Service*.....	37.1	51
3.1.4 E-Participation*.....	48.6	24
<b>3.2 Energy</b>	<b>22.3</b>	<b>55</b>
3.2.1 Electricity output, kWh/cap.....	32.9	31
3.2.2 Electricity consumption, kWh/capita.....	25.9	30
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	35.1	40
3.2.4 Share of renewables in energy use, %.....	2.4	88
<b>3.3 General infrastructure</b>	<b>41.0</b>	<b>31</b>
3.3.1 Quality of trade & transport infrastructure*.....	48.5	44
3.3.2 Gross capital formation, % GDP.....	33.5	40
3.3.3 Ecological footprint & biocapacity, ha/cap.....	n/a	n/a

## 4 Market sophistication 49.5 32

<b>4.1 Credit</b>	<b>56.1</b>	<b>30</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	67.2	7
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>29.7</b>	<b>60</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	12.7	56
4.2.3 Total value of stocks traded, % GDP.....	5.1	50
4.2.4 Venture capital deals/tr GDP PPP\$.....	72.0	18
<b>4.3 Trade &amp; competition</b>	<b>62.8</b>	<b>18</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	37.8	30
4.3.4 Exports of goods & services, % GDP.....	42.1	40
4.3.5 Intensity local competition†.....	77.2	16

## 5 Business sophistication 43.9 41

<b>5.1 Knowledge workers</b>	<b>41.3</b>	<b>60</b>
5.1.1 Knowledge-intensive employment, %.....	59.7	37
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	26.7	58
5.1.4 R&D financed by business, %.....	19.1	60
<b>5.2 Innovation linkages</b>	<b>51.2</b>	<b>19</b>
5.2.1 University/industry collaboration†.....	50.6	42
5.2.2 State of cluster development†.....	50.0	34
5.2.3 R&D financed by abroad, %.....	51.1	15
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	78.8	9
<b>5.3 Knowledge absorption</b>	<b>39.0</b>	<b>42</b>
5.3.1 Royalty & license fees payments, % GDP.....	17.7	52
5.3.2 High-tech imports less re-imports, %.....	15.0	81
5.3.3 Computer & comm. service imports, %.....	23.4	97
5.3.4 FDI net inflows, % GDP.....	100.0	3

## 6 Scientific outputs 43.7 19

<b>6.1 Knowledge creation</b>	<b>14.9</b>	<b>51</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.6	82
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	24.6	25
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	18.6	45
<b>6.2 Knowledge impact</b>	<b>69.7</b>	<b>3</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	39.4	67
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	100.0	1
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>46.3</b>	<b>24</b>
6.3.1 Royalty & license fees receipts, % GDP.....	6.9	46
6.3.2 High-tech exports less re-exports, %.....	43.9	14
6.3.3 Computer & comm service exports, %.....	34.5	64
6.3.4 FDI net outflows, % GDP.....	100.0	3

## 7 Creative outputs 37.4 48

<b>7.1 Creative intangibles</b>	<b>42.7</b>	<b>73</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	22.9	43
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	30.2	20
7.1.3 ICT & business models†.....	61.0	56
7.1.4 ICT & organizational models†.....	50.4	68
<b>7.2 Creative goods &amp; services</b>	<b>32.1</b>	<b>31</b>
7.2.1 Recreation & culture consumption, %.....	72.6	15
7.2.2 National feature films/mn pop.....	65.2	9
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	19.4	48
7.2.5 Creative services exports, %.....	7.9	50

# Czech Republic

## Key indicators

Population (millions)	10.4
GDP per capita, PPP (current international \$)	25,232.0
GDP (US\$ billions)	190.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>47.3</b>	<b>27</b>
Innovation Output Sub-Index .....	41.5	24
Innovation Input Sub-Index.....	53.1	26
Innovation Efficiency Index.....	0.8	33
Global Innovation Index 2010.....		27
Global Innovation Index 2009.....		33

## 1 Institutions 82.6 24

<b>1.1 Political environment</b>	<b>84.1</b>	<b>18</b>
1.1.1 Political stability*.....	81.1	18
1.1.2 Government effectiveness*.....	79.0	31
1.1.3 Press freedom*.....	92.1	22
<b>1.2 Regulatory environment</b>	<b>85.4</b>	<b>16</b>
1.2.1 Regulatory quality*.....	86.2	22
1.2.2 Rule of law*.....	81.1	29
1.2.3 Rigidity of employment*.....	89.0	25
<b>1.3 Business environment</b>	<b>78.2</b>	<b>68</b>
1.3.1 Time to start a business, days.....	81.7	75
1.3.2 Cost to start a business, % income/cap.....	92.8	62
1.3.3 Total tax rate, % profits.....	60.2	95

## 2 Human capital & research 49.9 28

<b>2.1 Education</b>	<b>66.2</b>	<b>37</b>
2.1.1 Education expenditure, % GNI.....	46.7	57
2.1.2 Public expenditure/pupil, % GDP/cap.....	35.1	44
2.1.3 School life expectancy, years.....	67.9	27
2.1.4 PISA scales in reading, maths, & science.....	65.7	26
2.1.5 Pupil-teacher ratio, secondary.....	90.0	37
<b>2.2 Tertiary education</b>	<b>40.0</b>	<b>32</b>
2.2.1 Tertiary enrolment, % gross.....	59.2	31
2.2.2 Graduates in science, %.....	36.9	37
2.2.3 Graduates in engineering, %.....	51.1	20
2.2.4 Tertiary inbound mobility, %.....	27.9	20
2.2.5 Tertiary outbound mobility, %.....	20.4	72
2.2.6 Gross tertiary outbound enrolment, %.....	17.7	49
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>43.5</b>	<b>28</b>
2.3.1 Researchers headcount/million pop.....	32.5	22
2.3.2 Gross expenditure on R&D, % GDP.....	29.8	23
2.3.3 Quality research institutions†.....	68.1	20

## 3 Infrastructure 32.4 44

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>41.1</b>	<b>37</b>
3.1.1 ICT access*.....	60.9	38
3.1.2 ICT use*.....	33.3	33
3.1.3 Government's Online Service*.....	45.4	35
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>19.8</b>	<b>66</b>
3.2.1 Electricity output, kWh/cap.....	40.7	25
3.2.2 Electricity consumption, kWh/capita.....	25.7	31
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	22.3	74
3.2.4 Share of renewables in energy use, %.....	3.9	75
<b>3.3 General infrastructure</b>	<b>36.2</b>	<b>59</b>
3.3.1 Quality of trade & transport infrastructure*.....	56.3	33
3.3.2 Gross capital formation, % GDP.....	26.4	61
3.3.3 Ecological footprint & biocapacity, ha/cap.....	25.9	97

## 4 Market sophistication 47.7 34

<b>4.1 Credit</b>	<b>46.6</b>	<b>46</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	21.5	44
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>26.1</b>	<b>72</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	11.0	58
4.2.3 Total value of stocks traded, % GDP.....	6.0	47
4.2.4 Venture capital deals/tr GDP PPP\$.....	49.0	43
<b>4.3 Trade &amp; competition</b>	<b>70.3</b>	<b>12</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	42.0	21
4.3.4 Exports of goods & services, % GDP.....	66.9	13
4.3.5 Intensity local competition†.....	77.8	10

## 5 Business sophistication 53.0 18

<b>5.1 Knowledge workers</b>	<b>76.0</b>	<b>13</b>
5.1.1 Knowledge-intensive employment, %.....	78.3	18
5.1.2 Firms offering formal training, % firms.....	82.4	4
5.1.3 R&D performed by business, %.....	72.9	21
5.1.4 R&D financed by business, %.....	61.5	19
<b>5.2 Innovation linkages</b>	<b>33.5</b>	<b>60</b>
5.2.1 University/industry collaboration†.....	58.3	28
5.2.2 State of cluster development†.....	47.9	39
5.2.3 R&D financed by abroad, %.....	18.8	47
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	5.0	64
5.2.5 PCT patent filings with foreign inventor, %.....	15.9	48
<b>5.3 Knowledge absorption</b>	<b>49.6</b>	<b>16</b>
5.3.1 Royalty & license fees payments, % GDP.....	38.0	24
5.3.2 High-tech imports less re-imports, %.....	47.7	13
5.3.3 Computer & comm. service imports, %.....	70.9	9
5.3.4 FDI net inflows, % GDP.....	41.8	83

## 6 Scientific outputs 36.2 29

<b>6.1 Knowledge creation</b>	<b>25.5</b>	<b>33</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	18.8	39
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	7.0	35
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	42.0	9
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	42.4	24
<b>6.2 Knowledge impact</b>	<b>46.1</b>	<b>16</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	43.8	50
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	23.3	31
6.2.3 Computer software spending, % GDP.....	96.1	2
<b>6.3 Knowledge diffusion</b>	<b>37.0</b>	<b>39</b>
6.3.1 Royalty & license fees receipts, % GDP.....	6.8	48
6.3.2 High-tech exports less re-exports, %.....	40.4	17
6.3.3 Computer & comm service exports, %.....	51.6	36
6.3.4 FDI net outflows, % GDP.....	49.2	45

## 7 Creative outputs 46.8 13

<b>7.1 Creative intangibles</b>	<b>47.1</b>	<b>54</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	20.2	51
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	62.6	10
7.1.3 ICT & business models†.....	61.2	55
7.1.4 ICT & organizational models†.....	52.3	60
<b>7.2 Creative goods &amp; services</b>	<b>46.5</b>	<b>10</b>
7.2.1 Recreation & culture consumption, %.....	80.3	7
7.2.2 National feature films/mn pop.....	46.6	17
7.2.3 Daily newspapers/1,000 literate pop.....	33.0	15
7.2.4 Creative goods exports, %.....	36.5	17
7.2.5 Creative services exports, %.....	46.3	12

## Key indicators

Population (millions)	5.5
GDP per capita, PPP (current international \$)	36,761.7
GDP (US\$ billions)	309.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>57.0</b>	<b>6</b>
Innovation Output Sub-Index .....	49.3	7
Innovation Input Sub-Index.....	64.6	7
Innovation Efficiency Index.....	0.8	47
Global Innovation Index 2010.....		5
Global Innovation Index 2009.....		8

## 1 Institutions 94.2 1

<b>1.1 Political environment</b>	<b>94.2</b>	<b>7</b>
1.1.1 Political stability*.....	85.8	11
1.1.2 Government effectiveness*.....	99.5	2
1.1.3 Press freedom*.....	97.4	11
<b>1.2 Regulatory environment</b>	<b>96.7</b>	<b>4</b>
1.2.1 Regulatory quality*.....	99.0	3
1.2.2 Rule of law*.....	98.1	5
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>91.8</b>	<b>12</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	100.0	1
1.3.3 Total tax rate, % profits.....	80.1	25

## 2 Human capital & research 60.2 6

<b>2.1 Education</b>	<b>79.4</b>	<b>1</b>
2.1.1 Education expenditure, % GNI.....	87.4	3
2.1.2 Public expenditure/pupil, % GDP/cap.....	59.4	5
2.1.3 School life expectancy, years.....	76.6	7
2.1.4 PISA scales in reading, maths, & science.....	69.2	19
2.1.5 Pupil-teacher ratio, secondary.....	93.1	24
<b>2.2 Tertiary education</b>	<b>37.6</b>	<b>40</b>
2.2.1 Tertiary enrolment, % gross.....	79.5	9
2.2.2 Graduates in science, %.....	26.3	56
2.2.3 Graduates in engineering, %.....	38.5	40
2.2.4 Tertiary inbound mobility, %.....	9.5	44
2.2.5 Tertiary outbound mobility, %.....	18.8	75
2.2.6 Gross tertiary outbound enrolment, %.....	21.2	44
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>63.6</b>	<b>8</b>
2.3.1 Researchers headcount/million pop.....	59.9	5
2.3.2 Gross expenditure on R&D, % GDP.....	55.6	8
2.3.3 Quality research institutions†.....	75.3	12

## 3 Infrastructure 45.9 11

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>68.9</b>	<b>6</b>
3.1.1 ICT access*.....	83.4	8
3.1.2 ICT use*.....	57.6	6
3.1.3 Government's Online Service*.....	67.3	13
3.1.4 E-Participation*.....	64.3	14
<b>3.2 Energy</b>	<b>30.7</b>	<b>16</b>
3.2.1 Electricity output, kWh/cap.....	34.1	30
3.2.2 Electricity consumption, kWh/capita.....	26.1	29
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	49.6	17
3.2.4 Share of renewables in energy use, %.....	12.3	47
<b>3.3 General infrastructure</b>	<b>38.1</b>	<b>49</b>
3.3.1 Quality of trade & transport infrastructure*.....	74.8	15
3.3.2 Gross capital formation, % GDP.....	14.9	98
3.3.3 Ecological footprint & biocapacity, ha/cap.....	24.6	100

## 4 Market sophistication 64.5 7

<b>4.1 Credit</b>	<b>89.2</b>	<b>2</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	100.0	2
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>44.4</b>	<b>26</b>
4.2.1 Strength of investor protection*.....	63.0	27
4.2.2 Market capitalization, % GDP.....	24.3	30
4.2.3 Total value of stocks traded, % GDP.....	26.7	24
4.2.4 Venture capital deals/tr GDP PPP\$.....	83.0	10
<b>4.3 Trade &amp; competition</b>	<b>59.8</b>	<b>27</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	26.1	50
4.3.4 Exports of goods & services, % GDP.....	42.9	39
4.3.5 Intensity local competition†.....	76.1	21

## 5 Business sophistication 58.1 11

<b>5.1 Knowledge workers</b>	<b>82.6</b>	<b>7</b>
5.1.1 Knowledge-intensive employment, %.....	87.9	5
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	82.6	12
5.1.4 R&D financed by business, %.....	72.1	15
<b>5.2 Innovation linkages</b>	<b>53.3</b>	<b>17</b>
5.2.1 University/industry collaboration†.....	72.4	8
5.2.2 State of cluster development†.....	59.6	17
5.2.3 R&D financed by abroad, %.....	34.1	26
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	55.6	11
5.2.5 PCT patent filings with foreign inventor, %.....	36.5	26
<b>5.3 Knowledge absorption</b>	<b>38.2</b>	<b>46</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	29.6	36
5.3.3 Computer & comm. service imports, %.....	45.4	47
5.3.4 FDI net inflows, % GDP.....	39.8	99

## 6 Scientific outputs 46.3 17

<b>6.1 Knowledge creation</b>	<b>58.3</b>	<b>10</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	47.0	16
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	77.6	10
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	8.2	30
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	75.3	6
<b>6.2 Knowledge impact</b>	<b>35.7</b>	<b>38</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	25.6	103
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	35.6	19
6.2.3 Computer software spending, % GDP.....	56.5	11
<b>6.3 Knowledge diffusion</b>	<b>44.8</b>	<b>25</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	33.0	22
6.3.3 Computer & comm service exports, %.....	48.2	43
6.3.4 FDI net outflows, % GDP.....	53.1	23

## 7 Creative outputs 52.4 5

<b>7.1 Creative intangibles</b>	<b>50.7</b>	<b>43</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	14.6	66
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	56.4	12
7.1.3 ICT & business models†.....	67.5	36
7.1.4 ICT & organizational models†.....	67.2	23
<b>7.2 Creative goods &amp; services</b>	<b>54.1</b>	<b>3</b>
7.2.1 Recreation & culture consumption, %.....	69.0	20
7.2.2 National feature films/mn pop.....	50.4	15
7.2.3 Daily newspapers/1,000 literate pop.....	70.2	6
7.2.4 Creative goods exports, %.....	40.6	13
7.2.5 Creative services exports, %.....	n/a	n/a

## Ecuador

## Key indicators

Population (millions)	13.8
GDP per capita, PPP (current international \$)	8,267.7
GDP (US\$ billions)	57.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>28.8</b>	<b>93</b>
Innovation Output Sub-Index .....	24.9	77
Innovation Input Sub-Index.....	32.6	100
Innovation Efficiency Index.....	0.8	44
Global Innovation Index 2010.....		126
Global Innovation Index 2009.....		109

## 1 Institutions 42.8 113

<b>1.1 Political environment</b>	<b>37.9</b>	<b>99</b>
1.1.1 Political stability*.....	20.8	98
1.1.2 Government effectiveness*.....	21.9	113
1.1.3 Press freedom*.....	70.9	76
<b>1.2 Regulatory environment</b>	<b>25.2</b>	<b>121</b>
1.2.1 Regulatory quality*.....	6.2	122
1.2.2 Rule of law*.....	7.5	120
1.2.3 Rigidity of employment*.....	62.0	84
<b>1.3 Business environment</b>	<b>65.2</b>	<b>103</b>
1.3.1 Time to start a business, days.....	47.1	115
1.3.2 Cost to start a business, % income/cap.....	74.6	96
1.3.3 Total tax rate, % profits.....	73.9	50

## 2 Human capital & research 27.0 103

<b>2.1 Education</b>	<b>48.6</b>	<b>93</b>
2.1.1 Education expenditure, % GNI.....	7.0	118
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	55.1	57
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	62.8	96
<b>2.2 Tertiary education</b>	<b>23.7</b>	<b>87</b>
2.2.1 Tertiary enrolment, % gross.....	42.9	51
2.2.2 Graduates in science, %.....	19.3	74
2.2.3 Graduates in engineering, %.....	20.8	71
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	15.3	88
2.2.6 Gross tertiary outbound enrolment, %.....	8.3	69
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>8.8</b>	<b>120</b>
2.3.1 Researchers headcount/million pop.....	0.8	84
2.3.2 Gross expenditure on R&D, % GDP.....	2.5	80
2.3.3 Quality research institutions†.....	23.1	119

## 3 Infrastructure 26.4 69

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>22.4</b>	<b>77</b>
3.1.1 ICT access*.....	33.5	77
3.1.2 ICT use*.....	9.8	72
3.1.3 Government's Online Service*.....	31.8	67
3.1.4 E-Participation*.....	15.7	71
<b>3.2 Energy</b>	<b>14.4</b>	<b>94</b>
3.2.1 Electricity output, kWh/cap.....	7.1	81
3.2.2 Electricity consumption, kWh/capita.....	4.6	84
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	27.7	59
3.2.4 Share of renewables in energy use, %.....	9.6	52
<b>3.3 General infrastructure</b>	<b>42.6</b>	<b>21</b>
3.3.1 Quality of trade & transport infrastructure*.....	34.5	77
3.3.2 Gross capital formation, % GDP.....	53.8	13
3.3.3 Ecological footprint & biocapacity, ha/cap.....	39.4	27

## 4 Market sophistication 30.4 104

<b>4.1 Credit</b>	<b>32.0</b>	<b>89</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	8.9	84
4.1.4 Microfinance gross loans, % GDP.....	29.1	18
<b>4.2 Investment</b>	<b>12.6</b>	<b>120</b>
4.2.1 Strength of investor protection*.....	40.0	103
4.2.2 Market capitalization, % GDP.....	2.7	90
4.2.3 Total value of stocks traded, % GDP.....	1.3	64
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>46.5</b>	<b>84</b>
4.3.1 Applied tariff rate weighted mean, %.....	73.3	81
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	29.4	42
4.3.4 Exports of goods & services, % GDP.....	31.1	59
4.3.5 Intensity local competition†.....	52.2	108

## 5 Business sophistication 36.3 62

<b>5.1 Knowledge workers</b>	<b>42.9</b>	<b>56</b>
5.1.1 Knowledge-intensive employment, %.....	32.3	76
5.1.2 Firms offering formal training, % firms.....	71.1	7
5.1.3 R&D performed by business, %.....	25.4	61
5.1.4 R&D financed by business, %.....	25.2	55
<b>5.2 Innovation linkages</b>	<b>41.7</b>	<b>34</b>
5.2.1 University/industry collaboration†.....	30.6	111
5.2.2 State of cluster development†.....	29.8	106
5.2.3 R&D financed by abroad, %.....	24.6	39
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	94.1	5
<b>5.3 Knowledge absorption</b>	<b>24.2</b>	<b>108</b>
5.3.1 Royalty & license fees payments, % GDP.....	9.6	72
5.3.2 High-tech imports less re-imports, %.....	25.7	44
5.3.3 Computer & comm. service imports, %.....	23.4	98
5.3.4 FDI net inflows, % GDP.....	38.1	108

## 6 Scientific outputs 18.5 91

<b>6.1 Knowledge creation</b>	<b>1.8</b>	<b>112</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.7	91
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	3.8	46
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	0.3	52
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.6	113
<b>6.2 Knowledge impact</b>	<b>33.3</b>	<b>57</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	47.0	35
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	5.8	66
<b>6.3 Knowledge diffusion</b>	<b>20.4</b>	<b>96</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	1.0	85
6.3.3 Computer & comm service exports, %.....	13.1	104
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 31.4 68

<b>7.1 Creative intangibles</b>	<b>44.3</b>	<b>66</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	38.9	19
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	49.0	97
7.1.4 ICT & organizational models†.....	45.0	85
<b>7.2 Creative goods &amp; services</b>	<b>18.4</b>	<b>63</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	2.8	97
7.2.5 Creative services exports, %.....	34.1	20

## Key indicators

Population (millions)	84.5
GDP per capita, PPP (current international \$)	5,672.6
GDP (US\$ billions)	188.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.2</b>	<b>87</b>
Innovation Output Sub-Index .....	23.3	89
Innovation Input Sub-Index.....	35.1	88
Innovation Efficiency Index.....	0.7	76
Global Innovation Index 2010.....		74
Global Innovation Index 2009.....		76

## 1 Institutions 61.7 70

<b>1.1 Political environment</b>	<b>41.0</b>	<b>88</b>
1.1.1 Political stability*.....	24.5	91
1.1.2 Government effectiveness*.....	44.3	83
1.1.3 Press freedom*.....	54.2	91
<b>1.2 Regulatory environment</b>	<b>58.8</b>	<b>67</b>
1.2.1 Regulatory quality*.....	48.6	79
1.2.2 Rule of law*.....	54.7	58
1.2.3 Rigidity of employment*.....	73.0	64
<b>1.3 Business environment</b>	<b>85.3</b>	<b>37</b>
1.3.1 Time to start a business, days.....	94.2	21
1.3.2 Cost to start a business, % income/cap.....	95.1	51
1.3.3 Total tax rate, % profits.....	66.5	73

## 2 Human capital & research 26.4 107

<b>2.1 Education</b>	<b>51.7</b>	<b>84</b>
2.1.1 Education expenditure, % GNI.....	47.4	56
2.1.2 Public expenditure/pupil, % GDP/cap.....	28.9	61
2.1.3 School life expectancy, years.....	41.0	93
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	75.9	76
<b>2.2 Tertiary education</b>	<b>12.6</b>	<b>113</b>
2.2.1 Tertiary enrolment, % gross.....	28.6	70
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	3.7	63
2.2.5 Tertiary outbound mobility, %.....	1.4	119
2.2.6 Gross tertiary outbound enrolment, %.....	0.6	105
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>14.8</b>	<b>99</b>
2.3.1 Researchers headcount/million pop.....	9.0	46
2.3.2 Gross expenditure on R&D, % GDP.....	4.1	68
2.3.3 Quality research institutions†.....	31.3	103

## 3 Infrastructure 21.7 100

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>25.9</b>	<b>65</b>
3.1.1 ICT access*.....	29.2	90
3.1.2 ICT use*.....	7.7	79
3.1.3 Government's Online Service*.....	53.0	23
3.1.4 E-Participation*.....	28.6	41
<b>3.2 Energy</b>	<b>10.8</b>	<b>106</b>
3.2.1 Electricity output, kWh/cap.....	8.3	78
3.2.2 Electricity consumption, kWh/capita.....	5.8	80
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	22.9	71
3.2.4 Share of renewables in energy use, %.....	2.5	87
<b>3.3 General infrastructure</b>	<b>28.3</b>	<b>105</b>
3.3.1 Quality of trade & transport infrastructure*.....	30.5	96
3.3.2 Gross capital formation, % GDP.....	20.6	83
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.7	72

## 4 Market sophistication 35.0 83

<b>4.1 Credit</b>	<b>33.0</b>	<b>87</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	16.8	57
4.1.4 Microfinance gross loans, % GDP.....	1.5	55
<b>4.2 Investment</b>	<b>29.7</b>	<b>59</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	19.2	41
4.2.3 Total value of stocks traded, % GDP.....	15.6	34
4.2.4 Venture capital deals/tr GDP PPP\$.....	32.7	61
<b>4.3 Trade &amp; competition</b>	<b>42.3</b>	<b>99</b>
4.3.1 Applied tariff rate weighted mean, %.....	60.2	98
4.3.2 Market access trade restrictiveness*, %.....	72.4	47
4.3.3 Imports of goods & services, % GDP.....	16.4	80
4.3.4 Exports of goods & services, % GDP.....	17.7	92
4.3.5 Intensity local competition†.....	59.9	85

## 5 Business sophistication 30.7 86

<b>5.1 Knowledge workers</b>	<b>39.3</b>	<b>64</b>
5.1.1 Knowledge-intensive employment, %.....	57.3	39
5.1.2 Firms offering formal training, % firms.....	21.2	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
<b>5.2 Innovation linkages</b>	<b>25.8</b>	<b>90</b>
5.2.1 University/industry collaboration†.....	30.8	109
5.2.2 State of cluster development†.....	42.8	58
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	4.1	66
5.2.5 PCT patent filings with foreign inventor, %.....	14.6	51
<b>5.3 Knowledge absorption</b>	<b>26.9</b>	<b>95</b>
5.3.1 Royalty & license fees payments, % GDP.....	16.1	54
5.3.2 High-tech imports less re-imports, %.....	9.5	91
5.3.3 Computer & comm. service imports, %.....	31.0	78
5.3.4 FDI net inflows, % GDP.....	51.2	41

## 6 Scientific outputs 17.2 100

<b>6.1 Knowledge creation</b>	<b>7.1</b>	<b>67</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	6.3	64
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.3	62
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	13.5	58
<b>6.2 Knowledge impact</b>	<b>23.7</b>	<b>88</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	54.2	22
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	1.0	86
6.2.3 Computer software spending, % GDP.....	8.2	60
<b>6.3 Knowledge diffusion</b>	<b>20.8</b>	<b>94</b>
6.3.1 Royalty & license fees receipts, % GDP.....	12.5	30
6.3.2 High-tech exports less re-exports, %.....	1.0	84
6.3.3 Computer & comm service exports, %.....	21.6	91
6.3.4 FDI net outflows, % GDP.....	48.1	64

## 7 Creative outputs 29.5 72

<b>7.1 Creative intangibles</b>	<b>43.9</b>	<b>69</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	3.1	48
7.1.3 ICT & business models†.....	57.5	66
7.1.4 ICT & organizational models†.....	50.7	66
<b>7.2 Creative goods &amp; services</b>	<b>15.1</b>	<b>69</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	9.4	45
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	29.2	29
7.2.5 Creative services exports, %.....	3.8	62

# El Salvador

## Key indicators

Population (millions)	6.2
GDP per capita, PPP (current international \$)	6,629.3
GDP (US\$ billions)	21.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.1</b>	<b>90</b>
Innovation Output Sub-Index .....	23.7	86
Innovation Input Sub-Index.....	34.6	91
Innovation Efficiency Index.....	0.7	69
Global Innovation Index 2010.....		91
Global Innovation Index 2009.....		88

## 1 Institutions 63.1 67

<b>1.1 Political environment</b>	<b>60.8</b>	<b>56</b>
1.1.1 Political stability*.....	46.2	60
1.1.2 Government effectiveness*.....	52.9	68
1.1.3 Press freedom*.....	83.3	46
<b>1.2 Regulatory environment</b>	<b>54.0</b>	<b>75</b>
1.2.1 Regulatory quality*.....	63.3	54
1.2.2 Rule of law*.....	22.6	105
1.2.3 Rigidity of employment*.....	76.0	56
<b>1.3 Business environment</b>	<b>74.6</b>	<b>80</b>
1.3.1 Time to start a business, days.....	84.6	65
1.3.2 Cost to start a business, % income/cap.....	64.9	105
1.3.3 Total tax rate, % profits.....	74.2	47

## 2 Human capital & research 26.8 105

<b>2.1 Education</b>	<b>41.2</b>	<b>108</b>
2.1.1 Education expenditure, % GNI.....	33.0	85
2.1.2 Public expenditure/pupil, % GDP/cap.....	12.9	91
2.1.3 School life expectancy, years.....	47.6	75
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	53.1	105
<b>2.2 Tertiary education</b>	<b>31.3</b>	<b>59</b>
2.2.1 Tertiary enrolment, % gross.....	24.7	76
2.2.2 Graduates in science, %.....	71.6	3
2.2.3 Graduates in engineering, %.....	32.9	50
2.2.4 Tertiary inbound mobility, %.....	0.5	81
2.2.5 Tertiary outbound mobility, %.....	17.4	79
2.2.6 Gross tertiary outbound enrolment, %.....	5.5	75
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>8.0</b>	<b>121</b>
2.3.1 Researchers headcount/million pop.....	0.4	90
2.3.2 Gross expenditure on R&D, % GDP.....	1.3	85
2.3.3 Quality research institutions†.....	22.3	120

## 3 Infrastructure 23.9 87

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>20.6</b>	<b>84</b>
3.1.1 ICT access*.....	32.2	82
3.1.2 ICT use*.....	4.8	90
3.1.3 Government's Online Service*.....	42.5	38
3.1.4 E-Participation*.....	7.1	97
<b>3.2 Energy</b>	<b>26.7</b>	<b>27</b>
3.2.1 Electricity output, kWh/cap.....	5.0	88
3.2.2 Electricity consumption, kWh/capita.....	3.8	90
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	38.0	33
3.2.4 Share of renewables in energy use, %.....	37.7	14
<b>3.3 General infrastructure</b>	<b>24.4</b>	<b>121</b>
3.3.1 Quality of trade & transport infrastructure*.....	36.0	72
3.3.2 Gross capital formation, % GDP.....	4.8	119
3.3.3 Ecological footprint & biocapacity, ha/cap.....	32.5	80

## 4 Market sophistication 34.2 86

<b>4.1 Credit</b>	<b>41.0</b>	<b>58</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	16.1	58
4.1.4 Microfinance gross loans, % GDP.....	22.8	24
<b>4.2 Investment</b>	<b>14.7</b>	<b>113</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	7.9	68
4.2.3 Total value of stocks traded, % GDP.....	0.5	75
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>46.9</b>	<b>80</b>
4.3.1 Applied tariff rate weighted mean, %.....	84.7	51
4.3.2 Market access trade restrictiveness*, %.....	39.6	73
4.3.3 Imports of goods & services, % GDP.....	21.2	66
4.3.4 Exports of goods & services, % GDP.....	14.6	103
4.3.5 Intensity local competition†.....	70.8	38

## 5 Business sophistication 24.9 108

<b>5.1 Knowledge workers</b>	<b>31.1</b>	<b>85</b>
5.1.1 Knowledge-intensive employment, %.....	20.8	90
5.1.2 Firms offering formal training, % firms.....	56.1	20
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	1.8	71
<b>5.2 Innovation linkages</b>	<b>20.9</b>	<b>110</b>
5.2.1 University/industry collaboration†.....	33.2	104
5.2.2 State of cluster development†.....	37.3	77
5.2.3 R&D financed by abroad, %.....	26.0	37
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>22.8</b>	<b>110</b>
5.3.1 Royalty & license fees payments, % GDP.....	13.5	58
5.3.2 High-tech imports less re-imports, %.....	17.2	71
5.3.3 Computer & comm. service imports, %.....	16.2	105
5.3.4 FDI net inflows, % GDP.....	44.6	67

## 6 Scientific outputs 15.6 107

<b>6.1 Knowledge creation</b>	<b>n/a</b>	<b>n/a</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	0.0	124
<b>6.2 Knowledge impact</b>	<b>9.2</b>	<b>112</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.2	54
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>21.9</b>	<b>88</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	79
6.3.2 High-tech exports less re-exports, %.....	12.4	44
6.3.3 Computer & comm service exports, %.....	29.4	74
6.3.4 FDI net outflows, % GDP.....	45.5	116

## 7 Creative outputs 31.8 67

<b>7.1 Creative intangibles</b>	<b>52.0</b>	<b>33</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	53.6	83
7.1.4 ICT & organizational models†.....	50.4	69
<b>7.2 Creative goods &amp; services</b>	<b>11.6</b>	<b>81</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	10.8	43
7.2.4 Creative goods exports, %.....	23.4	39
7.2.5 Creative services exports, %.....	0.2	92



## Key indicators

Population (millions)	1.3
GDP per capita, PPP (current international \$)	19,451.4
GDP (US\$ billions)	19.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>49.2</b>	<b>23</b>
Innovation Output Sub-Index .....	43.5	20
Innovation Input Sub-Index.....	54.9	24
Innovation Efficiency Index.....	0.8	31
Global Innovation Index 2010.....		29
Global Innovation Index 2009.....		29

## 1 Institutions 80.8 27

<b>1.1 Political environment</b>	<b>83.2</b>	<b>19</b>
1.1.1 Political stability*.....	67.0	38
1.1.2 Government effectiveness*.....	84.8	25
1.1.3 Press freedom*.....	97.9	9
<b>1.2 Regulatory environment</b>	<b>75.3</b>	<b>33</b>
1.2.1 Regulatory quality*.....	91.9	17
1.2.2 Rule of law*.....	84.9	25
1.2.3 Rigidity of employment*.....	49.0	112
<b>1.3 Business environment</b>	<b>84.1</b>	<b>46</b>
1.3.1 Time to start a business, days.....	94.2	21
1.3.2 Cost to start a business, % income/cap.....	98.5	20
1.3.3 Total tax rate, % profits.....	59.4	97

## 2 Human capital & research 50.5 27

<b>2.1 Education</b>	<b>69.8</b>	<b>20</b>
2.1.1 Education expenditure, % GNI.....	50.1	48
2.1.2 Public expenditure/pupil, % GDP/cap.....	34.2	46
2.1.3 School life expectancy, years.....	69.8	22
2.1.4 PISA scales in reading, maths, & science.....	74.9	12
2.1.5 Pupil-teacher ratio, secondary.....	94.7	16
<b>2.2 Tertiary education</b>	<b>39.1</b>	<b>36</b>
2.2.1 Tertiary enrolment, % gross.....	64.8	24
2.2.2 Graduates in science, %.....	40.0	30
2.2.3 Graduates in engineering, %.....	31.9	51
2.2.4 Tertiary inbound mobility, %.....	4.2	58
2.2.5 Tertiary outbound mobility, %.....	31.7	46
2.2.6 Gross tertiary outbound enrolment, %.....	42.4	17
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>42.6</b>	<b>31</b>
2.3.1 Researchers headcount/million pop.....	39.2	15
2.3.2 Gross expenditure on R&D, % GDP.....	26.2	27
2.3.3 Quality research institutions†.....	62.5	25

## 3 Infrastructure 38.0 26

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>58.5</b>	<b>20</b>
3.1.1 ICT access*.....	75.9	15
3.1.2 ICT use*.....	40.2	27
3.1.3 Government's Online Service*.....	50.2	27
3.1.4 E-Participation*.....	68.6	10
<b>3.2 Energy</b>	<b>19.9</b>	<b>65</b>
3.2.1 Electricity output, kWh/cap.....	41.0	23
3.2.2 Electricity consumption, kWh/capita.....	26.6	28
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	18.6	82
3.2.4 Share of renewables in energy use, %.....	7.3	57
<b>3.3 General infrastructure</b>	<b>35.5</b>	<b>68</b>
3.3.1 Quality of trade & transport infrastructure*.....	43.8	49
3.3.2 Gross capital formation, % GDP.....	20.9	82
3.3.3 Ecological footprint & biocapacity, ha/cap.....	41.8	21

## 4 Market sophistication 53.4 29

<b>4.1 Credit</b>	<b>59.7</b>	<b>25</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	42.7	21
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>30.8</b>	<b>56</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	5.4	82
4.2.3 Total value of stocks traded, % GDP.....	1.1	68
4.2.4 Venture capital deals/tr GDP PPP\$.....	88.4	7
<b>4.3 Trade &amp; competition</b>	<b>69.9</b>	<b>13</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	43.2	18
4.3.4 Exports of goods & services, % GDP.....	68.1	12
4.3.5 Intensity local competition†.....	74.0	28

## 5 Business sophistication 51.6 21

<b>5.1 Knowledge workers</b>	<b>66.9</b>	<b>26</b>
5.1.1 Knowledge-intensive employment, %.....	74.9	23
5.1.2 Firms offering formal training, % firms.....	80.6	5
5.1.3 R&D performed by business, %.....	50.9	38
5.1.4 R&D financed by business, %.....	39.5	43
<b>5.2 Innovation linkages</b>	<b>41.8</b>	<b>32</b>
5.2.1 University/industry collaboration†.....	53.2	34
5.2.2 State of cluster development†.....	38.6	73
5.2.3 R&D financed by abroad, %.....	54.5	12
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	27.0	29
5.2.5 PCT patent filings with foreign inventor, %.....	34.8	27
<b>5.3 Knowledge absorption</b>	<b>46.0</b>	<b>24</b>
5.3.1 Royalty & license fees payments, % GDP.....	24.5	39
5.3.2 High-tech imports less re-imports, %.....	29.7	35
5.3.3 Computer & comm. service imports, %.....	54.2	30
5.3.4 FDI net inflows, % GDP.....	75.5	12

## 6 Scientific outputs 38.1 25

<b>6.1 Knowledge creation</b>	<b>33.5</b>	<b>26</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	19.4	36
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	24.5	26
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	43.5	7
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	51.4	14
<b>6.2 Knowledge impact</b>	<b>40.9</b>	<b>22</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	18.7	105
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	63.1	6
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>39.9</b>	<b>32</b>
6.3.1 Royalty & license fees receipts, % GDP.....	17.2	24
6.3.2 High-tech exports less re-exports, %.....	25.8	26
6.3.3 Computer & comm service exports, %.....	46.2	46
6.3.4 FDI net outflows, % GDP.....	70.5	6

## 7 Creative outputs 48.9 11

<b>7.1 Creative intangibles</b>	<b>55.2</b>	<b>25</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	32.1	24
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	31.6	19
7.1.3 ICT & business models†.....	76.0	12
7.1.4 ICT & organizational models†.....	69.4	16
<b>7.2 Creative goods &amp; services</b>	<b>42.6</b>	<b>13</b>
7.2.1 Recreation & culture consumption, %.....	73.5	12
7.2.2 National feature films/mn pop.....	71.9	6
7.2.3 Daily newspapers/1,000 literate pop.....	34.7	14
7.2.4 Creative goods exports, %.....	33.6	20
7.2.5 Creative services exports, %.....	25.4	30

## Ethiopia

## Key indicators

Population (millions)	85.0
GDP per capita, PPP (current international \$)	934.4
GDP (US\$ billions)	28.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>22.9</b>	<b>121</b>
Innovation Output Sub-Index .....	16.5	121
Innovation Input Sub-Index.....	29.3	116
Innovation Efficiency Index.....	0.6	106
Global Innovation Index 2010.....		123
Global Innovation Index 2009.....		120

## 1 Institutions 51.8 96

<b>1.1 Political environment</b>	<b>31.5</b>	<b>113</b>
1.1.1 Political stability*.....	6.1	121
1.1.2 Government effectiveness*.....	40.5	86
1.1.3 Press freedom*.....	47.8	101
<b>1.2 Regulatory environment</b>	<b>37.6</b>	<b>110</b>
1.2.1 Regulatory quality*.....	17.6	118
1.2.2 Rule of law*.....	23.1	104
1.2.3 Rigidity of employment*.....	72.0	67
<b>1.3 Business environment</b>	<b>86.5</b>	<b>29</b>
1.3.1 Time to start a business, days.....	92.3	34
1.3.2 Cost to start a business, % income/cap.....	89.0	75
1.3.3 Total tax rate, % profits.....	78.2	34

## 2 Human capital & research 16.8 123

<b>2.1 Education</b>	<b>22.8</b>	<b>124</b>
2.1.1 Education expenditure, % GNI.....	38.2	72
2.1.2 Public expenditure/pupil, % GDP/cap.....	47.5	16
2.1.3 School life expectancy, years.....	25.7	111
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	0.0	119
<b>2.2 Tertiary education</b>	<b>15.2</b>	<b>107</b>
2.2.1 Tertiary enrolment, % gross.....	3.2	113
2.2.2 Graduates in science, %.....	33.1	43
2.2.3 Graduates in engineering, %.....	17.4	76
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	14.4	90
2.2.6 Gross tertiary outbound enrolment, %.....	0.0	110
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>12.2</b>	<b>109</b>
2.3.1 Researchers headcount/million pop.....	0.2	95
2.3.2 Gross expenditure on R&D, % GDP.....	3.0	76
2.3.3 Quality research institutions†.....	33.5	95

## 3 Infrastructure 20.0 112

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>8.5</b>	<b>119</b>
3.1.1 ICT access*.....	13.3	121
3.1.2 ICT use*.....	0.1	123
3.1.3 Government's Online Service*.....	20.0	98
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>23.4</b>	<b>47</b>
3.2.1 Electricity output, kWh/cap.....	0.2	114
3.2.2 Electricity consumption, kWh/capita.....	0.0	115
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	12.8	90
3.2.4 Share of renewables in energy use, %.....	57.2	2
<b>3.3 General infrastructure</b>	<b>28.0</b>	<b>109</b>
3.3.1 Quality of trade & transport infrastructure*.....	19.3	120
3.3.2 Gross capital formation, % GDP.....	28.7	51
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.0	47

## 4 Market sophistication 26.8 116

<b>4.1 Credit</b>	<b>20.4</b>	<b>109</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	5.0	94
4.1.4 Microfinance gross loans, % GDP.....	18.7	28
<b>4.2 Investment</b>	<b>28.7</b>	<b>62</b>
4.2.1 Strength of investor protection*.....	43.0	93
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>31.2</b>	<b>123</b>
4.3.1 Applied tariff rate weighted mean, %.....	50.0	113
4.3.2 Market access trade restrictiveness*, %.....	42.5	71
4.3.3 Imports of goods & services, % GDP.....	14.0	90
4.3.4 Exports of goods & services, % GDP.....	1.7	124
4.3.5 Intensity local competition†.....	53.6	103

## 5 Business sophistication 31.1 82

<b>5.1 Knowledge workers</b>	<b>31.2</b>	<b>84</b>
5.1.1 Knowledge-intensive employment, %.....	20.6	91
5.1.2 Firms offering formal training, % firms.....	41.8	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
<b>5.2 Innovation linkages</b>	<b>38.5</b>	<b>37</b>
5.2.1 University/industry collaboration†.....	35.1	92
5.2.2 State of cluster development†.....	32.8	96
5.2.3 R&D financed by abroad, %.....	94.9	5
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>23.7</b>	<b>109</b>
5.3.1 Royalty & license fees payments, % GDP.....	2.7	98
5.3.2 High-tech imports less re-imports, %.....	25.1	46
5.3.3 Computer & comm. service imports, %.....	27.8	86
5.3.4 FDI net inflows, % GDP.....	39.1	102

## 6 Scientific outputs 19.1 89

<b>6.1 Knowledge creation</b>	<b>4.8</b>	<b>81</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.1	87
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	8.7	29
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.6	77
<b>6.2 Knowledge impact</b>	<b>33.8</b>	<b>53</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	67.4	6
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.2	91
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>18.7</b>	<b>106</b>
6.3.1 Royalty & license fees receipts, % GDP.....	1.0	68
6.3.2 High-tech exports less re-exports, %.....	1.1	83
6.3.3 Computer & comm service exports, %.....	25.6	86
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 13.8 121

<b>7.1 Creative intangibles</b>	<b>25.2</b>	<b>118</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	4.4	95
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	39.4	117
7.1.4 ICT & organizational models†.....	31.9	118
<b>7.2 Creative goods &amp; services</b>	<b>2.4</b>	<b>114</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	2.7	56
7.2.4 Creative goods exports, %.....	2.8	96
7.2.5 Creative services exports, %.....	1.9	77

## Key indicators

Population (millions)	5.3
GDP per capita, PPP (current international \$)	34,719.7
GDP (US\$ billions)	238.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>57.5</b>	<b>5</b>
Innovation Output Sub-Index .....	50.3	6
Innovation Input Sub-Index.....	64.7	6
Innovation Efficiency Index.....	0.8	35
Global Innovation Index 2010.....		6
Global Innovation Index 2009.....		13

## 1 Institutions 89.2 10

<b>1.1 Political environment</b>	<b>98.3</b>	<b>1</b>
1.1.1 Political stability*.....	95.8	2
1.1.2 Government effectiveness*.....	99.0	3
1.1.3 Press freedom*.....	100.0	1
<b>1.2 Regulatory environment</b>	<b>85.5</b>	<b>15</b>
1.2.1 Regulatory quality*.....	97.6	6
1.2.2 Rule of law*.....	100.0	1
1.2.3 Rigidity of employment*.....	59.0	96
<b>1.3 Business environment</b>	<b>83.7</b>	<b>48</b>
1.3.1 Time to start a business, days.....	87.5	54
1.3.2 Cost to start a business, % income/cap.....	99.1	14
1.3.3 Total tax rate, % profits.....	64.5	79

## 2 Human capital & research 66.5 3

<b>2.1 Education</b>	<b>76.9</b>	<b>5</b>
2.1.1 Education expenditure, % GNI.....	63.8	21
2.1.2 Public expenditure/pupil, % GDP/cap.....	44.8	22
2.1.3 School life expectancy, years.....	78.1	6
2.1.4 PISA scales in reading, maths, & science.....	86.8	3
2.1.5 Pupil-teacher ratio, secondary.....	93.2	22
<b>2.2 Tertiary education</b>	<b>49.0</b>	<b>13</b>
2.2.1 Tertiary enrolment, % gross.....	96.3	2
2.2.2 Graduates in science, %.....	47.5	18
2.2.3 Graduates in engineering, %.....	48.1	25
2.2.4 Tertiary inbound mobility, %.....	13.3	33
2.2.5 Tertiary outbound mobility, %.....	18.6	76
2.2.6 Gross tertiary outbound enrolment, %.....	25.3	35
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>73.5</b>	<b>3</b>
2.3.1 Researchers headcount/million pop.....	76.7	2
2.3.2 Gross expenditure on R&D, % GDP.....	71.0	3
2.3.3 Quality research institutions†.....	72.8	13

## 3 Infrastructure 48.0 7

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>57.1</b>	<b>23</b>
3.1.1 ICT access*.....	74.0	19
3.1.2 ICT use*.....	52.5	11
3.1.3 Government's Online Service*.....	47.9	31
3.1.4 E-Participation*.....	41.4	31
<b>3.2 Energy</b>	<b>34.5</b>	<b>8</b>
3.2.1 Electricity output, kWh/cap.....	69.7	10
3.2.2 Electricity consumption, kWh/capita.....	63.4	7
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	22.0	76
3.2.4 Share of renewables in energy use, %.....	15.0	40
<b>3.3 General infrastructure</b>	<b>52.3</b>	<b>6</b>
3.3.1 Quality of trade & transport infrastructure*.....	77.0	8
3.3.2 Gross capital formation, % GDP.....	18.2	92
3.3.3 Ecological footprint & biocapacity, ha/cap.....	61.8	6

## 4 Market sophistication 56.1 25

<b>4.1 Credit</b>	<b>76.7</b>	<b>12</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>38.3</b>	<b>34</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	15.3	48
4.2.3 Total value of stocks traded, % GDP.....	21.4	30
4.2.4 Venture capital deals/tr GDP PPP\$.....	80.8	14
<b>4.3 Trade &amp; competition</b>	<b>53.2</b>	<b>53</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	18.9	73
4.3.4 Exports of goods & services, % GDP.....	31.4	58
4.3.5 Intensity local competition†.....	68.3	49

## 5 Business sophistication 63.9 6

<b>5.1 Knowledge workers</b>	<b>84.0</b>	<b>5</b>
5.1.1 Knowledge-intensive employment, %.....	85.2	7
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	85.2	9
5.1.4 R&D financed by business, %.....	80.4	8
<b>5.2 Innovation linkages</b>	<b>57.7</b>	<b>9</b>
5.2.1 University/industry collaboration†.....	77.4	3
5.2.2 State of cluster development†.....	68.6	2
5.2.3 R&D financed by abroad, %.....	22.9	40
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	56.8	9
5.2.5 PCT patent filings with foreign inventor, %.....	45.0	21
<b>5.3 Knowledge absorption</b>	<b>49.9</b>	<b>14</b>
5.3.1 Royalty & license fees payments, % GDP.....	52.9	15
5.3.2 High-tech imports less re-imports, %.....	28.7	38
5.3.3 Computer & comm. service imports, %.....	82.4	4
5.3.4 FDI net inflows, % GDP.....	35.8	117

## 6 Scientific outputs 58.5 3

<b>6.1 Knowledge creation</b>	<b>70.9</b>	<b>5</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	60.6	12
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	100.0	2
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	21.3	13
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	76.7	5
<b>6.2 Knowledge impact</b>	<b>35.6</b>	<b>40</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	32.6	92
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	26.2	28
6.2.3 Computer software spending, % GDP.....	60.3	9
<b>6.3 Knowledge diffusion</b>	<b>69.1</b>	<b>5</b>
6.3.1 Royalty & license fees receipts, % GDP.....	97.8	7
6.3.2 High-tech exports less re-exports, %.....	26.9	24
6.3.3 Computer & comm service exports, %.....	100.0	1
6.3.4 FDI net outflows, % GDP.....	51.8	30

## 7 Creative outputs 42.1 28

<b>7.1 Creative intangibles</b>	<b>50.7</b>	<b>44</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	14.6	67
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	31.7	18
7.1.3 ICT & business models†.....	73.9	17
7.1.4 ICT & organizational models†.....	73.2	8
<b>7.2 Creative goods &amp; services</b>	<b>33.4</b>	<b>26</b>
7.2.1 Recreation & culture consumption, %.....	78.5	8
7.2.2 National feature films/mn pop.....	49.4	16
7.2.3 Daily newspapers/1,000 literate pop.....	80.4	3
7.2.4 Creative goods exports, %.....	12.6	63
7.2.5 Creative services exports, %.....	0.2	93

## France

## Key indicators

Population (millions)	62.6
GDP per capita, PPP (current international \$)	33,655.5
GDP (US\$ billions)	2,649.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>49.3</b>	<b>22</b>
Innovation Output Sub-Index .....	42.9	21
Innovation Input Sub-Index.....	55.6	23
Innovation Efficiency Index.....	0.8	39
Global Innovation Index 2010.....		22
Global Innovation Index 2009.....		19

## 1 Institutions 77.9 34

<b>1.1 Political environment</b>	<b>80.5</b>	<b>26</b>
1.1.1 Political stability*.....	65.6	39
1.1.2 Government effectiveness*.....	90.0	18
1.1.3 Press freedom*.....	85.9	40
<b>1.2 Regulatory environment</b>	<b>74.3</b>	<b>35</b>
1.2.1 Regulatory quality*.....	85.2	23
1.2.2 Rule of law*.....	89.6	19
1.2.3 Rigidity of employment*.....	48.0	113
<b>1.3 Business environment</b>	<b>78.8</b>	<b>66</b>
1.3.1 Time to start a business, days.....	94.2	21
1.3.2 Cost to start a business, % income/cap.....	99.3	12
1.3.3 Total tax rate, % profits.....	43.0	117

## 2 Human capital & research 53.0 21

<b>2.1 Education</b>	<b>69.3</b>	<b>25</b>
2.1.1 Education expenditure, % GNI.....	56.0	36
2.1.2 Public expenditure/pupil, % GDP/cap.....	40.7	30
2.1.3 School life expectancy, years.....	72.4	14
2.1.4 PISA scales in reading, maths, & science.....	68.3	22
2.1.5 Pupil-teacher ratio, secondary.....	87.7	45
<b>2.2 Tertiary education</b>	<b>41.5</b>	<b>26</b>
2.2.1 Tertiary enrolment, % gross.....	55.4	37
2.2.2 Graduates in science, %.....	42.6	26
2.2.3 Graduates in engineering, %.....	49.9	21
2.2.4 Tertiary inbound mobility, %.....	45.5	13
2.2.5 Tertiary outbound mobility, %.....	18.3	77
2.2.6 Gross tertiary outbound enrolment, %.....	14.0	53
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>48.2</b>	<b>22</b>
2.3.1 Researchers headcount/million pop.....	33.6	20
2.3.2 Gross expenditure on R&D, % GDP.....	41.2	14
2.3.3 Quality research institutions†.....	69.7	18

## 3 Infrastructure 43.1 22

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>61.9</b>	<b>17</b>
3.1.1 ICT access*.....	75.2	17
3.1.2 ICT use*.....	46.4	19
3.1.3 Government's Online Service*.....	68.3	11
3.1.4 E-Participation*.....	60.0	16
<b>3.2 Energy</b>	<b>25.7</b>	<b>32</b>
3.2.1 Electricity output, kWh/cap.....	43.3	18
3.2.2 Electricity consumption, kWh/capita.....	31.5	22
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	34.7	42
3.2.4 Share of renewables in energy use, %.....	4.9	71
<b>3.3 General infrastructure</b>	<b>41.6</b>	<b>28</b>
3.3.1 Quality of trade & transport infrastructure*.....	75.0	13
3.3.2 Gross capital formation, % GDP.....	19.8	85
3.3.3 Ecological footprint & biocapacity, ha/cap.....	30.0	90

## 4 Market sophistication 53.8 28

<b>4.1 Credit</b>	<b>68.3</b>	<b>17</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>43.5</b>	<b>27</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	30.0	22
4.2.3 Total value of stocks traded, % GDP.....	28.7	22
4.2.4 Venture capital deals/tr GDP PPP\$.....	81.1	13
<b>4.3 Trade &amp; competition</b>	<b>49.5</b>	<b>69</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	10.9	106
4.3.4 Exports of goods & services, % GDP.....	15.5	101
4.3.5 Intensity local competition†.....	77.2	15

## 5 Business sophistication 50.3 24

<b>5.1 Knowledge workers</b>	<b>72.9</b>	<b>18</b>
5.1.1 Knowledge-intensive employment, %.....	78.9	16
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	74.2	19
5.1.4 R&D financed by business, %.....	59.4	21
<b>5.2 Innovation linkages</b>	<b>38.3</b>	<b>39</b>
5.2.1 University/industry collaboration†.....	50.6	41
5.2.2 State of cluster development†.....	54.7	26
5.2.3 R&D financed by abroad, %.....	28.1	34
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	16.5	39
5.2.5 PCT patent filings with foreign inventor, %.....	25.7	37
<b>5.3 Knowledge absorption</b>	<b>39.8</b>	<b>40</b>
5.3.1 Royalty & license fees payments, % GDP.....	20.6	46
5.3.2 High-tech imports less re-imports, %.....	39.6	21
5.3.3 Computer & comm. service imports, %.....	53.3	32
5.3.4 FDI net inflows, % GDP.....	45.5	61

## 6 Scientific outputs 41.1 22

<b>6.1 Knowledge creation</b>	<b>36.8</b>	<b>21</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	41.3	21
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	44.7	13
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	0.0	56
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	42.6	23
<b>6.2 Knowledge impact</b>	<b>32.1</b>	<b>63</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.9	74
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	23.9	30
6.2.3 Computer software spending, % GDP.....	40.7	20
<b>6.3 Knowledge diffusion</b>	<b>54.5</b>	<b>16</b>
6.3.1 Royalty & license fees receipts, % GDP.....	47.5	17
6.3.2 High-tech exports less re-exports, %.....	55.0	10
6.3.3 Computer & comm service exports, %.....	52.5	34
6.3.4 FDI net outflows, % GDP.....	63.0	11

## 7 Creative outputs 44.7 17

<b>7.1 Creative intangibles</b>	<b>58.0</b>	<b>17</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	26.4	32
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	51.7	13
7.1.3 ICT & business models†.....	80.5	4
7.1.4 ICT & organizational models†.....	70.2	13
<b>7.2 Creative goods &amp; services</b>	<b>31.4</b>	<b>34</b>
7.2.1 Recreation & culture consumption, %.....	61.1	29
7.2.2 National feature films/mn pop.....	45.2	19
7.2.3 Daily newspapers/1,000 literate pop.....	31.1	17
7.2.4 Creative goods exports, %.....	31.4	25
7.2.5 Creative services exports, %.....	9.7	47

## Key indicators

Population (millions)	4.2
GDP per capita, PPP (current international \$)	4,774.1
GDP (US\$ billions)	10.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>31.9</b>	<b>73</b>
Innovation Output Sub-Index .....	25.2	75
Innovation Input Sub-Index.....	38.5	76
Innovation Efficiency Index.....	0.7	81
Global Innovation Index 2010.....		84
Global Innovation Index 2009.....		98

## 1 Institutions 72.4 45

<b>1.1 Political environment</b>	<b>50.1</b>	<b>75</b>
1.1.1 Political stability*.....	17.0	103
1.1.2 Government effectiveness*.....	61.9	55
1.1.3 Press freedom*.....	71.4	75
<b>1.2 Regulatory environment</b>	<b>71.0</b>	<b>43</b>
1.2.1 Regulatory quality*.....	70.0	45
1.2.2 Rule of law*.....	50.0	65
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>96.1</b>	<b>2</b>
1.3.1 Time to start a business, days.....	98.1	3
1.3.2 Cost to start a business, % income/cap.....	96.1	41
1.3.3 Total tax rate, % profits.....	94.2	7

## 2 Human capital & research 32.6 83

<b>2.1 Education</b>	<b>58.8</b>	<b>57</b>
2.1.1 Education expenditure, % GNI.....	25.8	103
2.1.2 Public expenditure/pupil, % GDP/cap.....	21.1	76
2.1.3 School life expectancy, years.....	53.7	64
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	99.2	3
<b>2.2 Tertiary education</b>	<b>24.0</b>	<b>84</b>
2.2.1 Tertiary enrolment, % gross.....	25.6	74
2.2.2 Graduates in science, %.....	22.6	68
2.2.3 Graduates in engineering, %.....	28.3	57
2.2.4 Tertiary inbound mobility, %.....	0.0	83
2.2.5 Tertiary outbound mobility, %.....	35.2	38
2.2.6 Gross tertiary outbound enrolment, %.....	28.1	31
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>15.0</b>	<b>98</b>
2.3.1 Researchers headcount/million pop.....	13.7	37
2.3.2 Gross expenditure on R&D, % GDP.....	3.1	74
2.3.3 Quality research institutions†.....	28.2	111

## 3 Infrastructure 20.2 111

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>19.5</b>	<b>87</b>
3.1.1 ICT access*.....	30.9	87
3.1.2 ICT use*.....	12.3	63
3.1.3 Government's Online Service*.....	24.8	91
3.1.4 E-Participation*.....	5.7	102
<b>3.2 Energy</b>	<b>18.9</b>	<b>71</b>
3.2.1 Electricity output, kWh/cap.....	10.0	74
3.2.2 Electricity consumption, kWh/capita.....	6.8	73
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	27.5	60
3.2.4 Share of renewables in energy use, %.....	20.7	31
<b>3.3 General infrastructure</b>	<b>22.3</b>	<b>123</b>
3.3.1 Quality of trade & transport infrastructure*.....	29.3	98
3.3.2 Gross capital formation, % GDP.....	2.3	122
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.3	57

## 4 Market sophistication 41.1 58

<b>4.1 Credit</b>	<b>48.7</b>	<b>39</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	12.3	71
4.1.4 Microfinance gross loans, % GDP.....	48.7	11
<b>4.2 Investment</b>	<b>19.9</b>	<b>99</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	2.5	93
4.2.3 Total value of stocks traded, % GDP.....	0.0	100
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>54.8</b>	<b>44</b>
4.3.1 Applied tariff rate weighted mean, %.....	97.7	5
4.3.2 Market access trade restrictiveness*, %.....	93.7	11
4.3.3 Imports of goods & services, % GDP.....	30.2	41
4.3.4 Exports of goods & services, % GDP.....	22.7	75
4.3.5 Intensity local competition†.....	49.1	113

## 5 Business sophistication 26.4 103

<b>5.1 Knowledge workers</b>	<b>26.6</b>	<b>96</b>
5.1.1 Knowledge-intensive employment, %.....	40.9	58
5.1.2 Firms offering formal training, % firms.....	12.2	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
<b>5.2 Innovation linkages</b>	<b>23.7</b>	<b>99</b>
5.2.1 University/industry collaboration†.....	25.5	119
5.2.2 State of cluster development†.....	32.6	97
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	25.0	38
<b>5.3 Knowledge absorption</b>	<b>28.9</b>	<b>82</b>
5.3.1 Royalty & license fees payments, % GDP.....	9.3	73
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	15.1	108
5.3.4 FDI net inflows, % GDP.....	62.3	22

## 6 Scientific outputs 30.6 37

<b>6.1 Knowledge creation</b>	<b>32.9</b>	<b>29</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	72.5	10
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	3.1	50
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	43.3	8
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	18.0	48
<b>6.2 Knowledge impact</b>	<b>36.5</b>	<b>36</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	55.0	20
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	18.0	39
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>22.3</b>	<b>84</b>
6.3.1 Royalty & license fees receipts, % GDP.....	9.3	38
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	10.4	111
6.3.4 FDI net outflows, % GDP.....	47.2	109

## 7 Creative outputs 19.8 114

<b>7.1 Creative intangibles</b>	<b>34.0</b>	<b>106</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	19.8	52
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	14.1	33
7.1.3 ICT & business models†.....	49.0	96
7.1.4 ICT & organizational models†.....	43.0	99
<b>7.2 Creative goods &amp; services</b>	<b>5.7</b>	<b>99</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	3.7	92
7.2.5 Creative services exports, %.....	7.7	51

# Germany

## Key indicators

Population (millions)	82.1
GDP per capita, PPP (current international \$)	36,267.4
GDP (US\$ billions)	3,330.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>54.9</b>	<b>12</b>
Innovation Output Sub-Index .....	50.7	4
Innovation Input Sub-Index.....	59.0	21
Innovation Efficiency Index.....	0.9	15
Global Innovation Index 2010.....		16
Global Innovation Index 2009.....		2

## 1 Institutions 83.5 21

<b>1.1 Political environment</b>	<b>88.1</b>	<b>16</b>
1.1.1 Political stability*.....	76.9	25
1.1.2 Government effectiveness*.....	91.9	15
1.1.3 Press freedom*.....	95.5	16
<b>1.2 Regulatory environment</b>	<b>81.1</b>	<b>23</b>
1.2.1 Regulatory quality*.....	92.4	16
1.2.2 Rule of law*.....	92.9	15
1.2.3 Rigidity of employment*.....	58.0	100
<b>1.3 Business environment</b>	<b>81.2</b>	<b>59</b>
1.3.1 Time to start a business, days.....	86.5	59
1.3.2 Cost to start a business, % income/cap.....	96.3	40
1.3.3 Total tax rate, % profits.....	60.9	91

## 2 Human capital & research 57.5 11

<b>2.1 Education</b>	<b>72.5</b>	<b>12</b>
2.1.1 Education expenditure, % GNI.....	45.7	59
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.....	73.5	13
2.1.5 Pupil-teacher ratio, secondary.....	85.3	54
<b>2.2 Tertiary education</b>	<b>42.4</b>	<b>24</b>
2.2.1 Tertiary enrolment, % gross.....	n/a	n/a
2.2.2 Graduates in science, %.....	54.0	15
2.2.3 Graduates in engineering, %.....	41.3	37
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	n/a	n/a
2.2.6 Gross tertiary outbound enrolment, %.....	21.3	43
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>57.8</b>	<b>14</b>
2.3.1 Researchers headcount/million pop.....	40.3	13
2.3.2 Gross expenditure on R&D, % GDP.....	51.9	11
2.3.3 Quality research institutions†.....	81.1	6

## 3 Infrastructure 43.2 21

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>63.7</b>	<b>15</b>
3.1.1 ICT access*.....	85.4	4
3.1.2 ICT use*.....	47.6	17
3.1.3 Government's Online Service*.....	54.9	21
3.1.4 E-Participation*.....	61.4	15
<b>3.2 Energy</b>	<b>25.2</b>	<b>40</b>
3.2.1 Electricity output, kWh/cap.....	37.3	28
3.2.2 Electricity consumption, kWh/capita.....	28.4	26
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	36.5	37
3.2.4 Share of renewables in energy use, %.....	6.1	63
<b>3.3 General infrastructure</b>	<b>40.9</b>	<b>33</b>
3.3.1 Quality of trade & transport infrastructure*.....	83.5	1
3.3.2 Gross capital formation, % GDP.....	13.5	106
3.3.3 Ecological footprint & biocapacity, ha/cap.....	25.6	98

## 4 Market sophistication 59.3 14

<b>4.1 Credit</b>	<b>85.0</b>	<b>5</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>34.5</b>	<b>44</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	15.5	47
4.2.3 Total value of stocks traded, % GDP.....	21.4	29
4.2.4 Venture capital deals/tr GDP PPP\$.....	67.4	26
<b>4.3 Trade &amp; competition</b>	<b>58.5</b>	<b>30</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	19.7	69
4.3.4 Exports of goods & services, % GDP.....	35.2	53
4.3.5 Intensity local competition†.....	85.0	1

## 5 Business sophistication 51.6 20

<b>5.1 Knowledge workers</b>	<b>66.9</b>	<b>25</b>
5.1.1 Knowledge-intensive employment, %.....	81.3	14
5.1.2 Firms offering formal training, % firms.....	38.3	43
5.1.3 R&D performed by business, %.....	82.4	13
5.1.4 R&D financed by business, %.....	80.1	9
<b>5.2 Innovation linkages</b>	<b>43.3</b>	<b>30</b>
5.2.1 University/industry collaboration†.....	70.6	9
5.2.2 State of cluster development†.....	64.3	8
5.2.3 R&D financed by abroad, %.....	14.1	54
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	13.8	45
5.2.5 PCT patent filings with foreign inventor, %.....	24.5	41
<b>5.3 Knowledge absorption</b>	<b>44.5</b>	<b>25</b>
5.3.1 Royalty & license fees payments, % GDP.....	42.0	21
5.3.2 High-tech imports less re-imports, %.....	38.5	23
5.3.3 Computer & comm. service imports, %.....	56.9	26
5.3.4 FDI net inflows, % GDP.....	40.8	94

## 6 Scientific outputs 49.8 14

<b>6.1 Knowledge creation</b>	<b>69.2</b>	<b>7</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	100.0	4
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	78.4	9
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	39.6	11
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	43.9	21
<b>6.2 Knowledge impact</b>	<b>26.6</b>	<b>77</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	34.5	85
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.2	53
6.2.3 Computer software spending, % GDP.....	45.4	16
<b>6.3 Knowledge diffusion</b>	<b>53.6</b>	<b>18</b>
6.3.1 Royalty & license fees receipts, % GDP.....	55.4	14
6.3.2 High-tech exports less re-exports, %.....	36.6	20
6.3.3 Computer & comm service exports, %.....	70.0	19
6.3.4 FDI net outflows, % GDP.....	52.4	28

## 7 Creative outputs 51.7 6

<b>7.1 Creative intangibles</b>	<b>56.1</b>	<b>23</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	18.8	54
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	61.7	11
7.1.3 ICT & business models†.....	77.4	11
7.1.4 ICT & organizational models†.....	69.4	15
<b>7.2 Creative goods &amp; services</b>	<b>47.2</b>	<b>8</b>
7.2.1 Recreation & culture consumption, %.....	65.8	25
7.2.2 National feature films/mn pop.....	28.5	27
7.2.3 Daily newspapers/1,000 literate pop.....	48.1	11
7.2.4 Creative goods exports, %.....	26.0	35
7.2.5 Creative services exports, %.....	68.1	7

## Key indicators

Population (millions)	24.3
GDP per capita, PPP (current international \$)	1,552.4
GDP (US\$ billions)	26.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>32.5</b>	<b>70</b>
Innovation Output Sub-Index .....	25.1	76
Innovation Input Sub-Index.....	39.8	65
Innovation Efficiency Index.....	0.6	86
Global Innovation Index 2010.....		105
Global Innovation Index 2009.....		n/a

## 1 Institutions 69.8 53

<b>1.1 Political environment</b>	<b>66.1</b>	<b>49</b>
1.1.1 Political stability*.....	50.0	55
1.1.2 Government effectiveness*.....	56.7	65
1.1.3 Press freedom*.....	91.5	25
<b>1.2 Regulatory environment</b>	<b>59.9</b>	<b>64</b>
1.2.1 Regulatory quality*.....	54.8	69
1.2.2 Rule of law*.....	51.9	62
1.2.3 Rigidity of employment*.....	73.0	64
<b>1.3 Business environment</b>	<b>83.4</b>	<b>49</b>
1.3.1 Time to start a business, days.....	89.4	43
1.3.2 Cost to start a business, % income/cap.....	84.2	89
1.3.3 Total tax rate, % profits.....	76.6	41

## 2 Human capital & research 39.0 60

<b>2.1 Education</b>	<b>51.8</b>	<b>83</b>
2.1.1 Education expenditure, % GNI.....	51.8	43
2.1.2 Public expenditure/pupil, % GDP/cap.....	38.3	34
2.1.3 School life expectancy, years.....	37.6	101
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	72.9	83
<b>2.2 Tertiary education</b>	<b>19.2</b>	<b>97</b>
2.2.1 Tertiary enrolment, % gross.....	8.3	100
2.2.2 Graduates in science, %.....	39.3	31
2.2.3 Graduates in engineering, %.....	18.9	74
2.2.4 Tertiary inbound mobility, %.....	3.5	64
2.2.5 Tertiary outbound mobility, %.....	32.4	43
2.2.6 Gross tertiary outbound enrolment, %.....	3.5	85
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>46.1</b>	<b>24</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	46.1	60

## 3 Infrastructure 22.9 93

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>11.5</b>	<b>107</b>
3.1.1 ICT access*.....	20.6	101
3.1.2 ICT use*.....	2.1	106
3.1.3 Government's Online Service*.....	14.9	109
3.1.4 E-Participation*.....	8.6	92
<b>3.2 Energy</b>	<b>25.5</b>	<b>37</b>
3.2.1 Electricity output, kWh/cap.....	1.8	102
3.2.2 Electricity consumption, kWh/capita.....	1.0	103
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	30.8	50
3.2.4 Share of renewables in energy use, %.....	44.4	10
<b>3.3 General infrastructure</b>	<b>31.6</b>	<b>88</b>
3.3.1 Quality of trade & transport infrastructure*.....	38.0	68
3.3.2 Gross capital formation, % GDP.....	21.4	80
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.5	55

## 4 Market sophistication 31.8 99

<b>4.1 Credit</b>	<b>29.3</b>	<b>96</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	50.0	89
4.1.3 Domestic credit to private sector, % GDP.....	4.9	95
4.1.4 Microfinance gross loans, % GDP.....	6.5	38
<b>4.2 Investment</b>	<b>26.7</b>	<b>69</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	6.3	76
4.2.3 Total value of stocks traded, % GDP.....	0.2	87
4.2.4 Venture capital deals/tr GDP PPP\$.....	53.8	41
<b>4.3 Trade &amp; competition</b>	<b>39.3</b>	<b>108</b>
4.3.1 Applied tariff rate weighted mean, %.....	51.1	111
4.3.2 Market access trade restrictiveness*, %.....	28.2	79
4.3.3 Imports of goods & services, % GDP.....	24.0	57
4.3.4 Exports of goods & services, % GDP.....	23.8	73
4.3.5 Intensity local competition†.....	64.1	68

## 5 Business sophistication 35.7 63

<b>5.1 Knowledge workers</b>	<b>35.3</b>	<b>77</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	35.3	48
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>22.3</b>	<b>104</b>
5.2.1 University/industry collaboration†.....	35.8	89
5.2.2 State of cluster development†.....	33.4	91
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	17.4	36
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>49.7</b>	<b>15</b>
5.3.1 Royalty & license fees payments, % 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, %.....	35.7	67
5.3.4 FDI net inflows, % GDP.....	63.6	20

## 6 Scientific outputs 24.6 61

<b>6.1 Knowledge creation</b>	<b>4.9</b>	<b>80</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	9.8	63
<b>6.2 Knowledge impact</b>	<b>29.6</b>	<b>68</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	53.7	23
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	5.6	67
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>39.3</b>	<b>34</b>
6.3.1 Royalty & license fees receipts, % 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, %.....	31.2	69
6.3.4 FDI net outflows, % GDP.....	47.3	84

## 7 Creative outputs 25.6 91

<b>7.1 Creative intangibles</b>	<b>42.2</b>	<b>75</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	59.0	61
7.1.4 ICT & organizational models†.....	46.6	78
<b>7.2 Creative goods &amp; services</b>	<b>9.0</b>	<b>89</b>
7.2.1 Recreation & culture consumption, %.....	25.8	53
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.7	110
7.2.5 Creative services exports, %.....	n/a	n/a

## Greece

## Key indicators

Population (millions)	11.2
GDP per capita, PPP (current international \$)	29,663.4
GDP (US\$ billions)	329.9

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>34.2</b>	<b>63</b>
Innovation Output Sub-Index .....	25.9	72
Innovation Input Sub-Index.....	42.5	50
Innovation Efficiency Index.....	0.6	95
Global Innovation Index 2010.....		46
Global Innovation Index 2009.....		54

## 1 Institutions 67.8 59

<b>1.1 Political environment</b>	<b>63.5</b>	<b>53</b>
1.1.1 Political stability*.....	42.0	66
1.1.2 Government effectiveness*.....	68.6	46
1.1.3 Press freedom*.....	79.9	56
<b>1.2 Regulatory environment</b>	<b>63.8</b>	<b>57</b>
1.2.1 Regulatory quality*.....	74.8	39
1.2.2 Rule of law*.....	66.5	42
1.2.3 Rigidity of employment*.....	50.0	110
<b>1.3 Business environment</b>	<b>76.1</b>	<b>76</b>
1.3.1 Time to start a business, days.....	82.7	70
1.3.2 Cost to start a business, % income/cap.....	83.9	90
1.3.3 Total tax rate, % profits.....	61.9	88

## 2 Human capital & research 47.4 33

<b>2.1 Education</b>	<b>66.3</b>	<b>35</b>
2.1.1 Education expenditure, % GNI.....	25.4	104
2.1.2 Public expenditure/pupil, % GDP/cap.....	34.0	48
2.1.3 School life expectancy, years.....	74.5	11
2.1.4 PISA scales in reading, maths, & science.....	58.8	36
2.1.5 Pupil-teacher ratio, secondary.....	98.5	5
<b>2.2 Tertiary education</b>	<b>51.7</b>	<b>7</b>
2.2.1 Tertiary enrolment, % gross.....	92.6	3
2.2.2 Graduates in science, %.....	43.7	21
2.2.3 Graduates in engineering, %.....	44.2	31
2.2.4 Tertiary inbound mobility, %.....	12.7	35
2.2.5 Tertiary outbound mobility, %.....	32.6	42
2.2.6 Gross tertiary outbound enrolment, %.....	59.2	9
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.1</b>	<b>62</b>
2.3.1 Researchers headcount/million pop.....	22.8	28
2.3.2 Gross expenditure on R&D, % GDP.....	11.3	50
2.3.3 Quality research institutions†.....	38.3	81

## 3 Infrastructure 32.6 42

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>44.1</b>	<b>36</b>
3.1.1 ICT access*.....	64.5	34
3.1.2 ICT use*.....	37.2	29
3.1.3 Government's Online Service*.....	35.6	56
3.1.4 E-Participation*.....	25.7	47
<b>3.2 Energy</b>	<b>25.4</b>	<b>38</b>
3.2.1 Electricity output, kWh/cap.....	25.3	43
3.2.2 Electricity consumption, kWh/capita.....	20.5	39
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	49.6	16
3.2.4 Share of renewables in energy use, %.....	3.7	76
<b>3.3 General infrastructure</b>	<b>28.1</b>	<b>107</b>
3.3.1 Quality of trade & transport infrastructure*.....	48.5	44
3.3.2 Gross capital formation, % GDP.....	12.7	109
3.3.3 Ecological footprint & biocapacity, ha/cap.....	23.2	104

## 4 Market sophistication 32.3 96

<b>4.1 Credit</b>	<b>37.7</b>	<b>69</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	18.8	51
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>13.8</b>	<b>117</b>
4.2.1 Strength of investor protection*.....	33.0	113
4.2.2 Market capitalization, % GDP.....	6.5	74
4.2.3 Total value of stocks traded, % GDP.....	8.7	42
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>45.4</b>	<b>91</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	14.4	89
4.3.4 Exports of goods & services, % GDP.....	10.7	111
4.3.5 Intensity local competition†.....	62.4	74

## 5 Business sophistication 32.3 76

<b>5.1 Knowledge workers</b>	<b>39.0</b>	<b>66</b>
5.1.1 Knowledge-intensive employment, %.....	64.0	32
5.1.2 Firms offering formal training, % firms.....	19.0	78
5.1.3 R&D performed by business, %.....	31.7	53
5.1.4 R&D financed by business, %.....	36.4	44
<b>5.2 Innovation linkages</b>	<b>30.4</b>	<b>72</b>
5.2.1 University/industry collaboration†.....	33.8	102
5.2.2 State of cluster development†.....	34.5	88
5.2.3 R&D financed by abroad, %.....	66.8	8
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	5.9	60
5.2.5 PCT patent filings with foreign inventor, %.....	16.9	46
<b>5.3 Knowledge absorption</b>	<b>27.7</b>	<b>89</b>
5.3.1 Royalty & license fees payments, % GDP.....	20.6	47
5.3.2 High-tech imports less re-imports, %.....	20.6	57
5.3.3 Computer & comm. service imports, %.....	30.5	79
5.3.4 FDI net inflows, % GDP.....	38.9	105

## 6 Scientific outputs 20.6 83

<b>6.1 Knowledge creation</b>	<b>17.6</b>	<b>46</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	12.9	48
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	3.6	48
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	0.1	55
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	45.2	17
<b>6.2 Knowledge impact</b>	<b>24.5</b>	<b>83</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	42.3	54
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.2	55
6.2.3 Computer software spending, % GDP.....	19.7	34
<b>6.3 Knowledge diffusion</b>	<b>19.6</b>	<b>100</b>
6.3.1 Royalty & license fees receipts, % GDP.....	1.9	63
6.3.2 High-tech exports less re-exports, %.....	15.4	36
6.3.3 Computer & comm service exports, %.....	12.0	105
6.3.4 FDI net outflows, % GDP.....	49.1	46

## 7 Creative outputs 31.2 69

<b>7.1 Creative intangibles</b>	<b>30.5</b>	<b>111</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	13.6	72
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	6.8	40
7.1.3 ICT & business models†.....	51.7	90
7.1.4 ICT & organizational models†.....	38.0	111
<b>7.2 Creative goods &amp; services</b>	<b>31.9</b>	<b>32</b>
7.2.1 Recreation & culture consumption, %.....	71.0	17
7.2.2 National feature films/mn pop.....	26.5	28
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	40.3	14
7.2.5 Creative services exports, %.....	6.7	53



## Key indicators

Population (millions)	14.4
GDP per capita, PPP (current international \$)	4,719.5
GDP (US\$ billions)	37.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.3</b>	<b>86</b>
Innovation Output Sub-Index .....	25.5	73
Innovation Input Sub-Index.....	33.2	97
Innovation Efficiency Index.....	0.8	41
Global Innovation Index 2010.....		95
Global Innovation Index 2009.....		81

## 1 Institutions 51.2 100

<b>1.1 Political environment</b>	<b>43.0</b>	<b>85</b>
1.1.1 Political stability*.....	21.2	97
1.1.2 Government effectiveness*.....	29.0	102
1.1.3 Press freedom*.....	78.6	62
<b>1.2 Regulatory environment</b>	<b>45.5</b>	<b>96</b>
1.2.1 Regulatory quality*.....	51.0	75
1.2.2 Rule of law*.....	13.7	115
1.2.3 Rigidity of employment*.....	72.0	67
<b>1.3 Business environment</b>	<b>65.1</b>	<b>104</b>
1.3.1 Time to start a business, days.....	65.4	103
1.3.2 Cost to start a business, % income/cap.....	61.7	107
1.3.3 Total tax rate, % profits.....	68.3	67

## 2 Human capital & research 25.2 109

<b>2.1 Education</b>	<b>44.6</b>	<b>102</b>
2.1.1 Education expenditure, % GNI.....	27.0	100
2.1.2 Public expenditure/pupil, % GDP/cap.....	9.2	99
2.1.3 School life expectancy, years.....	38.5	98
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	77.1	74
<b>2.2 Tertiary education</b>	<b>18.8</b>	<b>98</b>
2.2.1 Tertiary enrolment, % gross.....	17.6	86
2.2.2 Graduates in science, %.....	6.2	87
2.2.3 Graduates in engineering, %.....	44.7	28
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	11.0	105
2.2.6 Gross tertiary outbound enrolment, %.....	2.0	93
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>12.1</b>	<b>110</b>
2.3.1 Researchers headcount/million pop.....	0.3	93
2.3.2 Gross expenditure on R&D, % GDP.....	0.7	92
2.3.3 Quality research institutions†.....	35.5	87

## 3 Infrastructure 24.5 82

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>23.0</b>	<b>75</b>
3.1.1 ICT access*.....	32.7	81
3.1.2 ICT use*.....	5.3	86
3.1.3 Government's Online Service*.....	30.8	71
3.1.4 E-Participation*.....	31.4	36
<b>3.2 Energy</b>	<b>25.6</b>	<b>35</b>
3.2.1 Electricity output, kWh/cap.....	3.2	98
3.2.2 Electricity consumption, kWh/capita.....	2.1	99
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	39.1	30
3.2.4 Share of renewables in energy use, %.....	35.1	17
<b>3.3 General infrastructure</b>	<b>24.7</b>	<b>120</b>
3.3.1 Quality of trade & transport infrastructure*.....	34.3	79
3.3.2 Gross capital formation, % GDP.....	4.7	120
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.2	58

## 4 Market sophistication 38.4 71

<b>4.1 Credit</b>	<b>40.6</b>	<b>60</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	9.4	79
4.1.4 Microfinance gross loans, % GDP.....	4.0	45
<b>4.2 Investment</b>	<b>26.7</b>	<b>70</b>
4.2.1 Strength of investor protection*.....	40.0	103
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>48.0</b>	<b>76</b>
4.3.1 Applied tariff rate weighted mean, %.....	85.0	50
4.3.2 Market access trade restrictiveness*, %.....	56.8	64
4.3.3 Imports of goods & services, % GDP.....	17.4	77
4.3.4 Exports of goods & services, % GDP.....	15.9	99
4.3.5 Intensity local competition†.....	69.3	45

## 5 Business sophistication 26.6 100

<b>5.1 Knowledge workers</b>	<b>19.9</b>	<b>113</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	29.2	59
5.1.3 R&D performed by business, %.....	1.2	79
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>35.6</b>	<b>47</b>
5.2.1 University/industry collaboration†.....	46.5	49
5.2.2 State of cluster development†.....	45.9	49
5.2.3 R&D financed by abroad, %.....	100.0	3
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>24.5</b>	<b>105</b>
5.3.1 Royalty & license fees payments, % GDP.....	25.3	37
5.3.2 High-tech imports less re-imports, %.....	18.1	67
5.3.3 Computer & comm. service imports, %.....	11.7	112
5.3.4 FDI net inflows, % GDP.....	42.7	77

## 6 Scientific outputs 14.2 112

<b>6.1 Knowledge creation</b>	<b>0.7</b>	<b>123</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.6	92
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.4	78
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.3	46
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	0.7	120
<b>6.2 Knowledge impact</b>	<b>19.9</b>	<b>101</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	34.5	84
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	5.3	68
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>22.1</b>	<b>85</b>
6.3.1 Royalty & license fees receipts, % GDP.....	4.2	54
6.3.2 High-tech exports less re-exports, %.....	5.5	57
6.3.3 Computer & comm service exports, %.....	31.4	68
6.3.4 FDI net outflows, % GDP.....	47.5	81

## 7 Creative outputs 36.7 52

<b>7.1 Creative intangibles</b>	<b>63.3</b>	<b>10</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	62.6	7
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	65.6	42
7.1.4 ICT & organizational models†.....	61.5	38
<b>7.2 Creative goods &amp; services</b>	<b>10.2</b>	<b>87</b>
7.2.1 Recreation & culture consumption, %.....	29.4	52
7.2.2 National feature films/mn pop.....	0.0	79
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	14.8	57
7.2.5 Creative services exports, %.....	1.1	84

# Guyana

## Key indicators

Population (millions)	0.8
GDP per capita, PPP (current international \$)	3,088.2
GDP (US\$ billions)	1.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>34.8</b>	<b>61</b>
Innovation Output Sub-Index .....	31.0	49
Innovation Input Sub-Index.....	38.7	75
Innovation Efficiency Index.....	0.8	27
Global Innovation Index 2010.....		113
Global Innovation Index 2009.....		103

## 1 Institutions 58.5 78

<b>1.1 Political environment</b>	<b>52.1</b>	<b>69</b>
1.1.1 Political stability*.....	26.9	87
1.1.2 Government effectiveness*.....	47.1	79
1.1.3 Press freedom*.....	82.4	51
<b>1.2 Regulatory environment</b>	<b>47.4</b>	<b>94</b>
1.2.1 Regulatory quality*.....	28.1	110
1.2.2 Rule of law*.....	33.0	92
1.2.3 Rigidity of employment*.....	81.0	43
<b>1.3 Business environment</b>	<b>75.9</b>	<b>77</b>
1.3.1 Time to start a business, days.....	72.1	91
1.3.2 Cost to start a business, % income/cap.....	85.4	88
1.3.3 Total tax rate, % profits.....	70.3	61

## 2 Human capital & research 35.1 69

<b>2.1 Education</b>	<b>53.5</b>	<b>77</b>
2.1.1 Education expenditure, % GNI.....	64.5	19
2.1.2 Public expenditure/pupil, % GDP/cap.....	35.7	43
2.1.3 School life expectancy, years.....	46.6	78
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	63.7	92
<b>2.2 Tertiary education</b>	<b>24.9</b>	<b>81</b>
2.2.1 Tertiary enrolment, % gross.....	11.0	91
2.2.2 Graduates in science, %.....	36.4	39
2.2.3 Graduates in engineering, %.....	22.8	63
2.2.4 Tertiary inbound mobility, %.....	0.0	84
2.2.5 Tertiary outbound mobility, %.....	54.6	13
2.2.6 Gross tertiary outbound enrolment, %.....	29.1	26
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>27.1</b>	<b>53</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	27.1	112

## 3 Infrastructure 31.1 49

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>13.3</b>	<b>104</b>
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*.....	18.1	101
3.1.4 E-Participation*.....	8.6	92
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>48.9</b>	<b>9</b>
3.3.1 Quality of trade & transport infrastructure*.....	24.8	113
3.3.2 Gross capital formation, % GDP.....	73.1	4
3.3.3 Ecological footprint & biocapacity, ha/cap.....	n/a	n/a

## 4 Market sophistication 33.5 91

<b>4.1 Credit</b>	<b>21.8</b>	<b>106</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	23.5	41
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>18.0</b>	<b>104</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	9.9	61
4.2.3 Total value of stocks traded, % GDP.....	0.0	97
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>60.7</b>	<b>26</b>
4.3.1 Applied tariff rate weighted mean, %.....	65.9	91
4.3.2 Market access trade restrictiveness*, %.....	22.1	82
4.3.3 Imports of goods & services, % GDP.....	73.0	5
4.3.4 Exports of goods & services, % GDP.....	65.5	18
4.3.5 Intensity local competition†.....	57.7	93

## 5 Business sophistication 35.3 67

<b>5.1 Knowledge workers</b>	<b>23.5</b>	<b>106</b>
5.1.1 Knowledge-intensive employment, %.....	21.2	89
5.1.2 Firms offering formal training, % firms.....	25.7	67
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>25.7</b>	<b>91</b>
5.2.1 University/industry collaboration†.....	30.7	110
5.2.2 State of cluster development†.....	33.6	90
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>56.7</b>	<b>9</b>
5.3.1 Royalty & license fees payments, % GDP.....	100.0	4
5.3.2 High-tech imports less re-imports, %.....	7.6	100
5.3.3 Computer & comm. service imports, %.....	52.5	34
5.3.4 FDI net inflows, % GDP.....	66.6	18

## 6 Scientific outputs 34.3 31

<b>6.1 Knowledge creation</b>	<b>7.9</b>	<b>65</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	7.9	68
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>60.7</b>	<b>11</b>
6.3.1 Royalty & license fees receipts, % GDP.....	100.0	1
6.3.2 High-tech exports less re-exports, %.....	0.0	107
6.3.3 Computer & comm service exports, %.....	82.2	10
6.3.4 FDI net outflows, % GDP.....	n/a	n/a

## 7 Creative outputs 27.6 79

<b>7.1 Creative intangibles</b>	<b>45.5</b>	<b>60</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	49.1	95
7.1.4 ICT & organizational models†.....	42.0	104
<b>7.2 Creative goods &amp; services</b>	<b>9.6</b>	<b>88</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	2.5	100
7.2.5 Creative services exports, %.....	16.8	35

## Key indicators

Population (millions)	7.6
GDP per capita, PPP (current international \$)	3,841.6
GDP (US\$ billions)	14.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>27.8</b>	<b>98</b>
Innovation Output Sub-Index .....	22.5	96
Innovation Input Sub-Index.....	33.1	98
Innovation Efficiency Index.....	0.7	70
Global Innovation Index 2010.....		112
Global Innovation Index 2009.....		83

**1 Institutions 47.7 106**

<b>1.1 Political environment</b>	<b>36.0</b>	<b>104</b>
1.1.1 Political stability*.....	34.0	76
1.1.2 Government effectiveness*.....	28.1	104
1.1.3 Press freedom*.....	45.9	105
<b>1.2 Regulatory environment</b>	<b>36.5</b>	<b>112</b>
1.2.1 Regulatory quality*.....	45.7	84
1.2.2 Rule of law*.....	20.8	108
1.2.3 Rigidity of employment*.....	43.0	119
<b>1.3 Business environment</b>	<b>70.5</b>	<b>91</b>
1.3.1 Time to start a business, days.....	87.5	54
1.3.2 Cost to start a business, % income/cap.....	63.2	106
1.3.3 Total tax rate, % profits.....	60.8	92

**2 Human capital & research 28.4 101**

<b>2.1 Education</b>	<b>60.5</b>	<b>50</b>
2.1.1 Education expenditure, % GNI.....	35.9	78
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	43.3	88
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	90.0	38
<b>2.2 Tertiary education</b>	<b>14.2</b>	<b>110</b>
2.2.1 Tertiary enrolment, % gross.....	18.6	84
2.2.2 Graduates in science, %.....	2.0	91
2.2.3 Graduates in engineering, %.....	33.2	47
2.2.4 Tertiary inbound mobility, %.....	0.7	78
2.2.5 Tertiary outbound mobility, %.....	15.9	83
2.2.6 Gross tertiary outbound enrolment, %.....	3.5	86
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>10.3</b>	<b>117</b>
2.3.1 Researchers headcount/million pop.....	0.5	88
2.3.2 Gross expenditure on R&D, % GDP.....	0.3	97
2.3.3 Quality research institutions†.....	30.2	107

**3 Infrastructure 23.9 86**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>18.7</b>	<b>88</b>
3.1.1 ICT access*.....	30.4	89
3.1.2 ICT use*.....	4.4	92
3.1.3 Government's Online Service*.....	29.5	77
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>22.6</b>	<b>53</b>
3.2.1 Electricity output, kWh/cap.....	4.6	89
3.2.2 Electricity consumption, kWh/capita.....	2.8	93
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	35.9	38
3.2.4 Share of renewables in energy use, %.....	28.2	22
<b>3.3 General infrastructure</b>	<b>30.6</b>	<b>96</b>
3.3.1 Quality of trade & transport infrastructure*.....	32.8	87
3.3.2 Gross capital formation, % GDP.....	21.6	79
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.4	34

**4 Market sophistication 38.9 68**

<b>4.1 Credit</b>	<b>44.4</b>	<b>50</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	21.1	45
4.1.4 Microfinance gross loans, % GDP.....	19.7	27
<b>4.2 Investment</b>	<b>20.0</b>	<b>97</b>
4.2.1 Strength of investor protection*.....	30.0	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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>52.4</b>	<b>58</b>
4.3.1 Applied tariff rate weighted mean, %.....	84.2	53
4.3.2 Market access trade restrictiveness*, %.....	34.2	77
4.3.3 Imports of goods & services, % GDP.....	39.6	27
4.3.4 Exports of goods & services, % GDP.....	36.6	49
4.3.5 Intensity local competition†.....	58.1	91

**5 Business sophistication 26.5 102**

<b>5.1 Knowledge workers</b>	<b>28.6</b>	<b>90</b>
5.1.1 Knowledge-intensive employment, %.....	21.5	88
5.1.2 Firms offering formal training, % firms.....	35.7	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
<b>5.2 Innovation linkages</b>	<b>21.7</b>	<b>108</b>
5.2.1 University/industry collaboration†.....	36.9	83
5.2.2 State of cluster development†.....	39.1	72
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>29.3</b>	<b>80</b>
5.3.1 Royalty & license fees payments, % GDP.....	13.9	57
5.3.2 High-tech imports less re-imports, %.....	20.5	58
5.3.3 Computer & comm. service imports, %.....	32.0	77
5.3.4 FDI net inflows, % GDP.....	50.9	42

**6 Scientific outputs 11.2 121**

<b>6.1 Knowledge creation</b>	<b>0.8</b>	<b>122</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	2.0	78
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.0	50
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	0.3	123
<b>6.2 Knowledge impact</b>	<b>11.5</b>	<b>111</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	11.5	47
<b>6.3 Knowledge diffusion</b>	<b>21.4</b>	<b>91</b>
6.3.1 Royalty & license fees receipts, % GDP.....	1.3	66
6.3.2 High-tech exports less re-exports, %.....	1.2	82
6.3.3 Computer & comm service exports, %.....	35.7	62
6.3.4 FDI net outflows, % GDP.....	47.3	88

**7 Creative outputs 33.8 61**

<b>7.1 Creative intangibles</b>	<b>57.1</b>	<b>20</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	56.4	8
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	58.5	63
7.1.4 ICT & organizational models†.....	56.4	51
<b>7.2 Creative goods &amp; services</b>	<b>10.5</b>	<b>84</b>
7.2.1 Recreation & culture consumption, %.....	31.5	48
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	4.2	89
7.2.5 Creative services exports, %.....	6.4	55

# Hong Kong (SAR), China

## Key indicators

Population (millions)	7.1
GDP per capita, PPP (current international \$)	44,303.8
GDP (US\$ billions)	215.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>58.8</b>	<b>4</b>
Innovation Output Sub-Index .....	47.8	12
Innovation Input Sub-Index.....	69.8	2
Innovation Efficiency Index.....	0.7	66
Global Innovation Index 2010.....		3
Global Innovation Index 2009.....		12

## 1 Institutions 92.8 4

<b>1.1 Political environment</b>	<b>88.6</b>	<b>15</b>
1.1.1 Political stability*.....	81.6	17
1.1.2 Government effectiveness*.....	95.7	9
1.1.3 Press freedom*.....	88.6	32
<b>1.2 Regulatory environment</b>	<b>96.7</b>	<b>5</b>
1.2.1 Regulatory quality*.....	99.5	2
1.2.2 Rule of law*.....	90.6	18
1.2.3 Rigidity of employment*.....	100.0	1
<b>1.3 Business environment</b>	<b>93.0</b>	<b>7</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	98.4	22
1.3.3 Total tax rate, % profits.....	85.3	17

## 2 Human capital & research 48.4 30

<b>2.1 Education</b>	<b>59.4</b>	<b>55</b>
2.1.1 Education expenditure, % GNI.....	28.4	96
2.1.2 Public expenditure/pupil, % GDP/cap.....	41.2	28
2.1.3 School life expectancy, years.....	69.9	21
2.1.4 PISA scales in reading, maths, & science.....	87.6	2
2.1.5 Pupil-teacher ratio, secondary.....	n/a	n/a
<b>2.2 Tertiary education</b>	<b>53.6</b>	<b>5</b>
2.2.1 Tertiary enrolment, % gross.....	57.5	34
2.2.2 Graduates in science, %.....	63.1	6
2.2.3 Graduates in engineering, %.....	63.6	9
2.2.4 Tertiary inbound mobility, %.....	13.2	34
2.2.5 Tertiary outbound mobility, %.....	47.1	20
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>32.1</b>	<b>42</b>
2.3.1 Researchers headcount/million pop.....	22.6	29
2.3.2 Gross expenditure on R&D, % GDP.....	16.2	37
2.3.3 Quality research institutions†.....	57.7	33

## 3 Infrastructure 53.9 2

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>70.2</b>	<b>4</b>
3.1.1 ICT access*.....	88.2	1
3.1.2 ICT use*.....	52.2	13
3.1.3 Government's Online Service*.....	n/a	n/a
3.1.4 E-Participation*.....	n/a	n/a
<b>3.2 Energy</b>	<b>42.2</b>	<b>4</b>
3.2.1 Electricity output, kWh/cap.....	28.2	39
3.2.2 Electricity consumption, kWh/capita.....	24.6	33
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	100.0	1
3.2.4 Share of renewables in energy use, %.....	0.2	105
<b>3.3 General infrastructure</b>	<b>49.2</b>	<b>8</b>
3.3.1 Quality of trade & transport infrastructure*.....	75.0	13
3.3.2 Gross capital formation, % GDP.....	23.4	71
3.3.3 Ecological footprint & biocapacity, ha/cap.....	n/a	n/a

## 4 Market sophistication 87.0 1

<b>4.1 Credit</b>	<b>78.0</b>	<b>11</b>
4.1.1 Strength of legal rights for credit*.....	100.0	1
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	64.2	10
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>91.4</b>	<b>1</b>
4.2.1 Strength of investor protection*.....	90.0	3
4.2.2 Market capitalization, % GDP.....	100.0	1
4.2.3 Total value of stocks traded, % GDP.....	100.0	1
4.2.4 Venture capital deals/tr GDP PPP\$.....	59.7	33
<b>4.3 Trade &amp; competition</b>	<b>91.7</b>	<b>2</b>
4.3.1 Applied tariff rate weighted mean, %.....	100.0	1
4.3.2 Market access trade restrictiveness*, %.....	77.8	36
4.3.3 Imports of goods & services, % GDP.....	100.0	2
4.3.4 Exports of goods & services, % GDP.....	100.0	2
4.3.5 Intensity local competition†.....	73.6	29

## 5 Business sophistication 66.9 5

<b>5.1 Knowledge workers</b>	<b>65.6</b>	<b>29</b>
5.1.1 Knowledge-intensive employment, %.....	69.0	30
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	62.0	31
5.1.4 R&D financed by business, %.....	62.2	18
<b>5.2 Innovation linkages</b>	<b>59.2</b>	<b>8</b>
5.2.1 University/industry collaboration†.....	59.5	25
5.2.2 State of cluster development†.....	63.5	9
5.2.3 R&D financed by abroad, %.....	13.6	56
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	95.8	4
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>75.8</b>	<b>3</b>
5.3.1 Royalty & license fees payments, % GDP.....	72.8	9
5.3.2 High-tech imports less re-imports, %.....	100.0	1
5.3.3 Computer & comm. service imports, %.....	30.4	81
5.3.4 FDI net inflows, % GDP.....	100.0	2

## 6 Scientific outputs 38.1 24

<b>6.1 Knowledge creation</b>	<b>5.1</b>	<b>77</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	3.0	74
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	9.3	28
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	n/a	n/a
<b>6.2 Knowledge impact</b>	<b>57.5</b>	<b>4</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.6	76
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	100.0	2
6.2.3 Computer software spending, % GDP.....	16.4	39
<b>6.3 Knowledge diffusion</b>	<b>51.7</b>	<b>20</b>
6.3.1 Royalty & license fees receipts, % GDP.....	23.6	20
6.3.2 High-tech exports less re-exports, %.....	33.4	21
6.3.3 Computer & comm service exports, %.....	49.7	39
6.3.4 FDI net outflows, % GDP.....	100.0	2

## 7 Creative outputs 57.6 1

<b>7.1 Creative intangibles</b>	<b>54.8</b>	<b>27</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	20.9	48
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	73.5	18
7.1.4 ICT & organizational models†.....	69.9	14
<b>7.2 Creative goods &amp; services</b>	<b>60.4</b>	<b>1</b>
7.2.1 Recreation & culture consumption, %.....	59.4	30
7.2.2 National feature films/mn pop.....	100.0	3
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	100.0	1
7.2.5 Creative services exports, %.....	1.4	82

## Key indicators

Population (millions)	10.0
GDP per capita, PPP (current international \$)	19,764.3
GDP (US\$ billions)	129.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>48.1</b>	<b>25</b>
Innovation Output Sub-Index .....	45.2	16
Innovation Input Sub-Index.....	51.0	33
Innovation Efficiency Index.....	0.9	11
Global Innovation Index 2010.....		36
Global Innovation Index 2009.....		47

## 1 Institutions 79.3 31

<b>1.1 Political environment</b>	<b>77.9</b>	<b>31</b>
1.1.1 Political stability*.....	67.9	36
1.1.2 Government effectiveness*.....	73.8	36
1.1.3 Press freedom*.....	92.1	22
<b>1.2 Regulatory environment</b>	<b>77.8</b>	<b>28</b>
1.2.1 Regulatory quality*.....	81.9	27
1.2.2 Rule of law*.....	73.6	34
1.2.3 Rigidity of employment*.....	78.0	54
<b>1.3 Business environment</b>	<b>82.1</b>	<b>54</b>
1.3.1 Time to start a business, days.....	97.1	7
1.3.2 Cost to start a business, % income/cap.....	93.6	59
1.3.3 Total tax rate, % profits.....	55.7	104

## 2 Human capital & research 45.7 36

<b>2.1 Education</b>	<b>70.0</b>	<b>18</b>
2.1.1 Education expenditure, % GNI.....	59.8	27
2.1.2 Public expenditure/pupil, % GDP/cap.....	43.0	25
2.1.3 School life expectancy, years.....	67.1	30
2.1.4 PISA scales in reading, maths, & science.....	67.8	24
2.1.5 Pupil-teacher ratio, secondary.....	92.7	27
<b>2.2 Tertiary education</b>	<b>28.9</b>	<b>68</b>
2.2.1 Tertiary enrolment, % gross.....	66.1	22
2.2.2 Graduates in science, %.....	20.6	70
2.2.3 Graduates in engineering, %.....	21.5	70
2.2.4 Tertiary inbound mobility, %.....	13.6	32
2.2.5 Tertiary outbound mobility, %.....	15.9	84
2.2.6 Gross tertiary outbound enrolment, %.....	13.8	54
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>38.2</b>	<b>38</b>
2.3.1 Researchers headcount/million pop.....	24.9	26
2.3.2 Gross expenditure on R&D, % GDP.....	19.4	33
2.3.3 Quality research institutions†.....	70.3	17

## 3 Infrastructure 33.9 39

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>45.8</b>	<b>31</b>
3.1.1 ICT access*.....	62.1	36
3.1.2 ICT use*.....	34.4	31
3.1.3 Government's Online Service*.....	50.5	26
3.1.4 E-Participation*.....	31.4	36
<b>3.2 Energy</b>	<b>17.7</b>	<b>74</b>
3.2.1 Electricity output, kWh/cap.....	18.6	52
3.2.2 Electricity consumption, kWh/capita.....	15.7	47
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	31.4	48
3.2.4 Share of renewables in energy use, %.....	4.7	72
<b>3.3 General infrastructure</b>	<b>38.1</b>	<b>48</b>
3.3.1 Quality of trade & transport infrastructure*.....	52.0	37
3.3.2 Gross capital formation, % GDP.....	27.6	57
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.8	62

## 4 Market sophistication 47.4 36

<b>4.1 Credit</b>	<b>42.5</b>	<b>54</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	29.5	34
4.1.4 Microfinance gross loans, % GDP.....	0.0	77
<b>4.2 Investment</b>	<b>24.5</b>	<b>80</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	8.7	66
4.2.3 Total value of stocks traded, % GDP.....	11.2	39
4.2.4 Venture capital deals/tr GDP PPP\$.....	46.0	46
<b>4.3 Trade &amp; competition</b>	<b>75.2</b>	<b>7</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	55.2	7
4.3.4 Exports of goods & services, % GDP.....	80.1	9
4.3.5 Intensity local competition†.....	71.3	36

## 5 Business sophistication 48.9 30

<b>5.1 Knowledge workers</b>	<b>46.2</b>	<b>49</b>
5.1.1 Knowledge-intensive employment, %.....	70.5	27
5.1.2 Firms offering formal training, % firms.....	12.6	86
5.1.3 R&D performed by business, %.....	59.3	33
5.1.4 R&D financed by business, %.....	51.6	36
<b>5.2 Innovation linkages</b>	<b>31.8</b>	<b>66</b>
5.2.1 University/industry collaboration†.....	55.8	30
5.2.2 State of cluster development†.....	36.2	80
5.2.3 R&D financed by abroad, %.....	39.0	22
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	15.7	50
<b>5.3 Knowledge absorption</b>	<b>68.7</b>	<b>5</b>
5.3.1 Royalty & license fees payments, % GDP.....	100.0	5
5.3.2 High-tech imports less re-imports, %.....	56.1	7
5.3.3 Computer & comm. service imports, %.....	73.6	7
5.3.4 FDI net inflows, % GDP.....	45.1	63

## 6 Scientific outputs 45.5 18

<b>6.1 Knowledge creation</b>	<b>22.4</b>	<b>37</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	24.7	32
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	12.0	30
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	9.6	26
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	37.0	31
<b>6.2 Knowledge impact</b>	<b>50.3</b>	<b>13</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	42.1	57
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	48.7	14
6.2.3 Computer software spending, % GDP.....	69.9	5
<b>6.3 Knowledge diffusion</b>	<b>63.9</b>	<b>7</b>
6.3.1 Royalty & license fees receipts, % GDP.....	82.9	10
6.3.2 High-tech exports less re-exports, %.....	57.1	9
6.3.3 Computer & comm service exports, %.....	62.4	24
6.3.4 FDI net outflows, % GDP.....	53.3	22

## 7 Creative outputs 44.9 16

<b>7.1 Creative intangibles</b>	<b>43.2</b>	<b>71</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	12.7	75
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	76.4	8
7.1.3 ICT & business models†.....	55.5	71
7.1.4 ICT & organizational models†.....	44.9	86
<b>7.2 Creative goods &amp; services</b>	<b>46.5</b>	<b>9</b>
7.2.1 Recreation & culture consumption, %.....	52.5	34
7.2.2 National feature films/mn pop.....	62.9	10
7.2.3 Daily newspapers/1,000 literate pop.....	39.6	12
7.2.4 Creative goods exports, %.....	11.0	67
7.2.5 Creative services exports, %.....	74.2	6

## Iceland

## Key indicators

Population (millions)	0.3
GDP per capita, PPP (current international \$)	37,595.1
GDP (US\$ billions)	12.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>55.1</b>	<b>11</b>
Innovation Output Sub-Index .....	47.7	13
Innovation Input Sub-Index.....	62.5	13
Innovation Efficiency Index.....	0.8	48
Global Innovation Index 2010.....		1
Global Innovation Index 2009.....		20

## 1 Institutions 90.6 8

<b>1.1 Political environment</b>	<b>95.1</b>	<b>6</b>
1.1.1 Political stability*.....	92.0	5
1.1.2 Government effectiveness*.....	93.3	14
1.1.3 Press freedom*.....	100.0	1
<b>1.2 Regulatory environment</b>	<b>84.3</b>	<b>19</b>
1.2.1 Regulatory quality*.....	79.0	33
1.2.2 Rule of law*.....	94.8	12
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>92.3</b>	<b>10</b>
1.3.1 Time to start a business, days.....	96.2	9
1.3.2 Cost to start a business, % income/cap.....	98.2	26
1.3.3 Total tax rate, % profits.....	82.6	23

## 2 Human capital & research 65.7 4

<b>2.1 Education</b>	<b>78.8</b>	<b>4</b>
2.1.1 Education expenditure, % GNI.....	86.0	4
2.1.2 Public expenditure/pupil, % GDP/cap.....	44.4	23
2.1.3 School life expectancy, years.....	85.9	3
2.1.4 PISA scales in reading, maths, & science.....	69.8	16
2.1.5 Pupil-teacher ratio, secondary.....	89.9	39
<b>2.2 Tertiary education</b>	<b>44.9</b>	<b>18</b>
2.2.1 Tertiary enrolment, % gross.....	75.9	13
2.2.2 Graduates in science, %.....	23.9	63
2.2.3 Graduates in engineering, %.....	19.7	72
2.2.4 Tertiary inbound mobility, %.....	16.2	30
2.2.5 Tertiary outbound mobility, %.....	48.7	19
2.2.6 Gross tertiary outbound enrolment, %.....	100.0	3
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>73.5</b>	<b>2</b>
2.3.1 Researchers headcount/million pop.....	100.0	1
2.3.2 Gross expenditure on R&D, % GDP.....	54.7	9
2.3.3 Quality research institutions†.....	65.9	23

## 3 Infrastructure 45.4 12

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>51.8</b>	<b>26</b>
3.1.1 ICT access*.....	85.1	5
3.1.2 ICT use*.....	48.4	16
3.1.3 Government's Online Service*.....	39.7	46
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>52.1</b>	<b>3</b>
3.2.1 Electricity output, kWh/cap.....	100.0	1
3.2.2 Electricity consumption, kWh/capita.....	100.0	1
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	5.0	108
3.2.4 Share of renewables in energy use, %.....	51.1	6
<b>3.3 General infrastructure</b>	<b>32.4</b>	<b>84</b>
3.3.1 Quality of trade & transport infrastructure*.....	58.3	30
3.3.2 Gross capital formation, % GDP.....	6.6	116
3.3.3 Ecological footprint & biocapacity, ha/cap.....	n/a	n/a

## 4 Market sophistication 57.9 20

<b>4.1 Credit</b>	<b>88.3</b>	<b>3</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	100.0	1
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>26.8</b>	<b>68</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	3.5	87
4.2.3 Total value of stocks traded, % GDP.....	1.8	59
4.2.4 Venture capital deals/tr GDP PPP\$.....	71.2	19
<b>4.3 Trade &amp; competition</b>	<b>58.4</b>	<b>32</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.8	8
4.3.2 Market access trade restrictiveness*, %.....	55.0	65
4.3.3 Imports of goods & services, % GDP.....	26.3	48
4.3.4 Exports of goods & services, % GDP.....	48.6	28
4.3.5 Intensity local competition†.....	65.5	63

## 5 Business sophistication 52.8 19

<b>5.1 Knowledge workers</b>	<b>75.8</b>	<b>16</b>
5.1.1 Knowledge-intensive employment, %.....	89.7	4
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	64.3	28
5.1.4 R&D financed by business, %.....	59.3	22
<b>5.2 Innovation linkages</b>	<b>55.6</b>	<b>10</b>
5.2.1 University/industry collaboration†.....	66.2	15
5.2.2 State of cluster development†.....	46.4	48
5.2.3 R&D financed by abroad, %.....	35.3	25
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	53.8	14
5.2.5 PCT patent filings with foreign inventor, %.....	65.2	13
<b>5.3 Knowledge absorption</b>	<b>27.0</b>	<b>94</b>
5.3.1 Royalty & license fees payments, % GDP.....	4.2	91
5.3.2 High-tech imports less re-imports, %.....	17.7	68
5.3.3 Computer & comm. service imports, %.....	48.2	42
5.3.4 FDI net inflows, % GDP.....	37.9	109

## 6 Scientific outputs 53.2 8

<b>6.1 Knowledge creation</b>	<b>49.8</b>	<b>13</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	32.6	25
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	61.9	11
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	54.9	12
<b>6.2 Knowledge impact</b>	<b>72.5</b>	<b>2</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	45.0	44
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	100.0	4
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>37.2</b>	<b>38</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	92
6.3.2 High-tech exports less re-exports, %.....	8.2	50
6.3.3 Computer & comm service exports, %.....	40.5	50
6.3.4 FDI net outflows, % GDP.....	100.0	4

## 7 Creative outputs 42.3 25

<b>7.1 Creative intangibles</b>	<b>56.9</b>	<b>21</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	27.2	31
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	42.4	16
7.1.3 ICT & business models†.....	79.1	7
7.1.4 ICT & organizational models†.....	71.6	11
<b>7.2 Creative goods &amp; services</b>	<b>27.7</b>	<b>48</b>
7.2.1 Recreation & culture consumption, %.....	58.5	31
7.2.2 National feature films/mn pop.....	100.0	2
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	1.1	105
7.2.5 Creative services exports, %.....	2.7	68

## Key indicators

Population (millions)	1,214.5
GDP per capita, PPP (current international \$)	3,270.1
GDP (US\$ billions)	1,310.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>34.5</b>	<b>62</b>
Innovation Output Sub-Index .....	32.6	44
Innovation Input Sub-Index.....	36.5	87
Innovation Efficiency Index.....	0.9	9
Global Innovation Index 2010.....		56
Global Innovation Index 2009.....		41

## 1 Institutions 52.3 94

<b>1.1 Political environment</b>	<b>42.2</b>	<b>86</b>
1.1.1 Political stability*.....	13.2	108
1.1.2 Government effectiveness*.....	54.3	67
1.1.3 Press freedom*.....	59.0	87
<b>1.2 Regulatory environment</b>	<b>56.6</b>	<b>71</b>
1.2.1 Regulatory quality*.....	44.3	86
1.2.2 Rule of law*.....	55.7	57
1.2.3 Rigidity of employment*.....	70.0	72
<b>1.3 Business environment</b>	<b>58.2</b>	<b>111</b>
1.3.1 Time to start a business, days.....	73.1	89
1.3.2 Cost to start a business, % income/cap.....	56.0	111
1.3.3 Total tax rate, % profits.....	45.5	114

## 2 Human capital & research 26.9 104

<b>2.1 Education</b>	<b>32.3</b>	<b>115</b>
2.1.1 Education expenditure, % GNI.....	31.0	91
2.1.2 Public expenditure/pupil, % GDP/cap.....	14.3	89
2.1.3 School life expectancy, years.....	36.8	103
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	37.5	115
<b>2.2 Tertiary education</b>	<b>9.5</b>	<b>119</b>
2.2.1 Tertiary enrolment, % gross.....	13.3	88
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	10.1	106
2.2.6 Gross tertiary outbound enrolment, %.....	1.3	99
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>38.8</b>	<b>35</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	16.0	38
2.3.3 Quality research institutions†.....	61.6	29

## 3 Infrastructure 27.7 63

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>16.3</b>	<b>94</b>
3.1.1 ICT access*.....	18.8	108
3.1.2 ICT use*.....	1.7	109
3.1.3 Government's Online Service*.....	36.8	52
3.1.4 E-Participation*.....	20.0	56
<b>3.2 Energy</b>	<b>18.5</b>	<b>72</b>
3.2.1 Electricity output, kWh/cap.....	3.7	92
3.2.2 Electricity consumption, kWh/capita.....	2.2	97
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	35.3	39
3.2.4 Share of renewables in energy use, %.....	17.2	36
<b>3.3 General infrastructure</b>	<b>48.3</b>	<b>11</b>
3.3.1 Quality of trade & transport infrastructure*.....	47.8	46
3.3.2 Gross capital formation, % GDP.....	61.1	9
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.1	45

## 4 Market sophistication 44.6 45

<b>4.1 Credit</b>	<b>38.2</b>	<b>67</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	19.8	50
4.1.4 Microfinance gross loans, % GDP.....	4.5	44
<b>4.2 Investment</b>	<b>49.7</b>	<b>15</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	36.3	19
4.2.3 Total value of stocks traded, % GDP.....	46.3	13
4.2.4 Venture capital deals/tr GDP PPP\$.....	63.0	32
<b>4.3 Trade &amp; competition</b>	<b>46.1</b>	<b>88</b>
4.3.1 Applied tariff rate weighted mean, %.....	69.7	86
4.3.2 Market access trade restrictiveness*, %.....	78.9	32
4.3.3 Imports of goods & services, % GDP.....	11.1	105
4.3.4 Exports of goods & services, % GDP.....	12.8	107
4.3.5 Intensity local competition†.....	74.1	27

## 5 Business sophistication 30.8 84

<b>5.1 Knowledge workers</b>	<b>24.4</b>	<b>104</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	14.0	85
5.1.3 R&D performed by business, %.....	34.9	50
5.1.4 R&D financed by business, %.....	34.7	47
<b>5.2 Innovation linkages</b>	<b>34.8</b>	<b>52</b>
5.2.1 University/industry collaboration†.....	45.6	52
5.2.2 State of cluster development†.....	51.8	31
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	22.1	32
5.2.5 PCT patent filings with foreign inventor, %.....	13.3	56
<b>5.3 Knowledge absorption</b>	<b>33.2</b>	<b>65</b>
5.3.1 Royalty & license fees payments, % GDP.....	15.2	56
5.3.2 High-tech imports less re-imports, %.....	25.9	43
5.3.3 Computer & comm. service imports, %.....	45.0	52
5.3.4 FDI net inflows, % GDP.....	46.6	55

## 6 Scientific outputs 24.8 60

<b>6.1 Knowledge creation</b>	<b>10.4</b>	<b>62</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	10.7	54
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	4.4	44
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	16.1	52
<b>6.2 Knowledge impact</b>	<b>24.2</b>	<b>85</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	54.4	21
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.9	87
6.2.3 Computer software spending, % GDP.....	10.6	50
<b>6.3 Knowledge diffusion</b>	<b>39.9</b>	<b>33</b>
6.3.1 Royalty & license fees receipts, % GDP.....	2.0	62
6.3.2 High-tech exports less re-exports, %.....	16.9	32
6.3.3 Computer & comm service exports, %.....	90.3	4
6.3.4 FDI net outflows, % GDP.....	50.3	38

## 7 Creative outputs 40.3 38

<b>7.1 Creative intangibles</b>	<b>51.0</b>	<b>38</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	22.9	44
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	68.0	35
7.1.4 ICT & organizational models†.....	62.1	33
<b>7.2 Creative goods &amp; services</b>	<b>29.6</b>	<b>39</b>
7.2.1 Recreation & culture consumption, %.....	9.7	60
7.2.2 National feature films/mn pop.....	12.7	39
7.2.3 Daily newspapers/1,000 literate pop.....	26.7	22
7.2.4 Creative goods exports, %.....	53.0	9
7.2.5 Creative services exports, %.....	26.1	29

# Indonesia

## Key indicators

Population (millions)	232.5
GDP per capita, PPP (current international \$)	4,198.8
GDP (US\$ billions)	540.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>27.8</b>	<b>99</b>
Innovation Output Sub-Index .....	22.0	97
Innovation Input Sub-Index.....	33.6	95
Innovation Efficiency Index.....	0.7	80
Global Innovation Index 2010.....		72
Global Innovation Index 2009.....		49

## 1 Institutions 53.4 90

<b>1.1 Political environment</b>	<b>44.3</b>	<b>80</b>
1.1.1 Political stability*.....	24.1	92
1.1.2 Government effectiveness*.....	46.7	80
1.1.3 Press freedom*.....	62.1	83
<b>1.2 Regulatory environment</b>	<b>45.8</b>	<b>95</b>
1.2.1 Regulatory quality*.....	42.9	89
1.2.2 Rule of law*.....	34.4	90
1.2.3 Rigidity of employment*.....	60.0	93
<b>1.3 Business environment</b>	<b>70.1</b>	<b>92</b>
1.3.1 Time to start a business, days.....	55.8	111
1.3.2 Cost to start a business, % income/cap.....	82.6	91
1.3.3 Total tax rate, % profits.....	71.9	55

## 2 Human capital & research 29.6 96

<b>2.1 Education</b>	<b>46.1</b>	<b>99</b>
2.1.1 Education expenditure, % GNI.....	3.9	120
2.1.2 Public expenditure/pupil, % GDP/cap.....	12.3	92
2.1.3 School life expectancy, years.....	54.2	62
2.1.4 PISA scales in reading, maths, & science.....	23.9	56
2.1.5 Pupil-teacher ratio, secondary.....	86.9	48
<b>2.2 Tertiary education</b>	<b>24.6</b>	<b>83</b>
2.2.1 Tertiary enrolment, % gross.....	23.6	79
2.2.2 Graduates in science, %.....	19.4	73
2.2.3 Graduates in engineering, %.....	51.8	19
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	6.1	113
2.2.6 Gross tertiary outbound enrolment, %.....	1.2	101
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.1</b>	<b>86</b>
2.3.1 Researchers headcount/million pop.....	1.2	79
2.3.2 Gross expenditure on R&D, % GDP.....	0.5	94
2.3.3 Quality research institutions†.....	52.6	41

## 3 Infrastructure 24.5 81

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>16.2</b>	<b>95</b>
3.1.1 ICT access*.....	26.0	94
3.1.2 ICT use*.....	3.9	94
3.1.3 Government's Online Service*.....	24.4	93
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>14.9</b>	<b>90</b>
3.2.1 Electricity output, kWh/cap.....	3.3	95
3.2.2 Electricity consumption, kWh/capita.....	2.3	95
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	20.7	79
3.2.4 Share of renewables in energy use, %.....	21.1	30
<b>3.3 General infrastructure</b>	<b>42.4</b>	<b>22</b>
3.3.1 Quality of trade & transport infrastructure*.....	38.5	67
3.3.2 Gross capital formation, % GDP.....	50.6	15
3.3.3 Ecological footprint & biocapacity, ha/cap.....	38.2	29

## 4 Market sophistication 32.2 97

<b>4.1 Credit</b>	<b>23.0</b>	<b>105</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	9.1	83
4.1.4 Microfinance gross loans, % GDP.....	0.2	66
<b>4.2 Investment</b>	<b>27.0</b>	<b>67</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	13.1	54
4.2.3 Total value of stocks traded, % GDP.....	11.9	38
4.2.4 Venture capital deals/tr GDP PPP\$.....	18.7	66
<b>4.3 Trade &amp; competition</b>	<b>46.7</b>	<b>82</b>
4.3.1 Applied tariff rate weighted mean, %.....	82.4	57
4.3.2 Market access trade restrictiveness*, %.....	70.6	51
4.3.3 Imports of goods & services, % GDP.....	8.0	115
4.3.4 Exports of goods & services, % GDP.....	16.7	93
4.3.5 Intensity local competition†.....	67.8	51

## 5 Business sophistication 28.2 94

<b>5.1 Knowledge workers</b>	<b>7.0</b>	<b>124</b>
5.1.1 Knowledge-intensive employment, %.....	10.4	93
5.1.2 Firms offering formal training, % firms.....	0.0	90
5.1.3 R&D performed by business, %.....	4.4	75
5.1.4 R&D financed by business, %.....	17.0	62
<b>5.2 Innovation linkages</b>	<b>40.8</b>	<b>36</b>
5.2.1 University/industry collaboration†.....	52.7	36
5.2.2 State of cluster development†.....	58.3	20
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	14.0	44
5.2.5 PCT patent filings with foreign inventor, %.....	25.0	38
<b>5.3 Knowledge absorption</b>	<b>36.7</b>	<b>51</b>
5.3.1 Royalty & license fees payments, % GDP.....	28.6	33
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	41.8	61
5.3.4 FDI net inflows, % GDP.....	39.6	101

## 6 Scientific outputs 18.3 94

<b>6.1 Knowledge creation</b>	<b>1.0</b>	<b>116</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	2.1	77
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.2	83
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	2.0	39
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	0.4	122
<b>6.2 Knowledge impact</b>	<b>23.2</b>	<b>92</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	50.0	31
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	1.4	85
6.2.3 Computer software spending, % GDP.....	13.5	44
<b>6.3 Knowledge diffusion</b>	<b>30.5</b>	<b>51</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.9	69
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	41.7	49
6.3.4 FDI net outflows, % GDP.....	48.8	52

## 7 Creative outputs 25.7 89

<b>7.1 Creative intangibles</b>	<b>48.6</b>	<b>50</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	29.9	28
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	59.1	60
7.1.4 ICT & organizational models†.....	56.8	48
<b>7.2 Creative goods &amp; services</b>	<b>2.8</b>	<b>111</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	3.7	67
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	n/a	n/a
7.2.5 Creative services exports, %.....	2.4	71



## Key indicators

Population (millions)	75.1
GDP per capita, PPP (current international \$)	11,558.4
GDP (US\$ billions)	331.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>28.4</b>	<b>95</b>
Innovation Output Sub-Index .....	25.9	71
Innovation Input Sub-Index.....	30.9	106
Innovation Efficiency Index.....	0.8	19
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 42.7 114

<b>1.1 Political environment</b>	<b>11.6</b>	<b>123</b>
1.1.1 Political stability*.....	8.5	117
1.1.2 Government effectiveness*.....	26.2	106
1.1.3 Press freedom*.....	0.0	125
<b>1.2 Regulatory environment</b>	<b>31.4</b>	<b>118</b>
1.2.1 Regulatory quality*.....	3.3	124
1.2.2 Rule of law*.....	19.8	109
1.2.3 Rigidity of employment*.....	71.0	70
<b>1.3 Business environment</b>	<b>85.1</b>	<b>41</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	96.9	37
1.3.3 Total tax rate, % profits.....	65.0	76

## 2 Human capital & research 39.5 58

<b>2.1 Education</b>	<b>44.1</b>	<b>104</b>
2.1.1 Education expenditure, % GNI.....	42.5	63
2.1.2 Public expenditure/pupil, % GDP/cap.....	31.3	54
2.1.3 School life expectancy, years.....	51.4	67
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	n/a	n/a
<b>2.2 Tertiary education</b>	<b>51.0</b>	<b>8</b>
2.2.1 Tertiary enrolment, % gross.....	36.9	61
2.2.2 Graduates in science, %.....	37.9	34
2.2.3 Graduates in engineering, %.....	100.0	1
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	7.6	112
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>23.2</b>	<b>66</b>
2.3.1 Researchers headcount/million pop.....	7.1	50
2.3.2 Gross expenditure on R&D, % GDP.....	13.3	43
2.3.3 Quality research institutions†.....	49.2	48

## 3 Infrastructure 22.9 92

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>20.4</b>	<b>85</b>
3.1.1 ICT access*.....	33.6	76
3.1.2 ICT use*.....	10.7	68
3.1.3 Government's Online Service*.....	26.7	85
3.1.4 E-Participation*.....	7.1	97
<b>3.2 Energy</b>	<b>8.0</b>	<b>112</b>
3.2.1 Electricity output, kWh/cap.....	15.4	58
3.2.2 Electricity consumption, kWh/capita.....	10.1	61
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	10.9	95
3.2.4 Share of renewables in energy use, %.....	0.4	104
<b>3.3 General infrastructure</b>	<b>40.3</b>	<b>37</b>
3.3.1 Quality of trade & transport infrastructure*.....	34.0	81
3.3.2 Gross capital formation, % GDP.....	56.3	12
3.3.3 Ecological footprint & biocapacity, ha/cap.....	30.5	87

## 4 Market sophistication 26.1 117

<b>4.1 Credit</b>	<b>36.9</b>	<b>71</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	20.4	47
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>11.5</b>	<b>122</b>
4.2.1 Strength of investor protection*.....	30.0	119
4.2.2 Market capitalization, % GDP.....	7.5	72
4.2.3 Total value of stocks traded, % GDP.....	2.9	56
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>29.8</b>	<b>125</b>
4.3.1 Applied tariff rate weighted mean, %.....	0.0	125
4.3.2 Market access trade restrictiveness*, %.....	94.3	10
4.3.3 Imports of goods & services, % GDP.....	8.2	114
4.3.4 Exports of goods & services, % GDP.....	25.6	71
4.3.5 Intensity local competition†.....	53.4	104

## 5 Business sophistication 23.5 114

<b>5.1 Knowledge workers</b>	<b>21.3</b>	<b>110</b>
5.1.1 Knowledge-intensive employment, %.....	26.1	84
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	16.7	69
5.1.4 R&D financed by business, %.....	16.5	63
<b>5.2 Innovation linkages</b>	<b>29.2</b>	<b>77</b>
5.2.1 University/industry collaboration†.....	36.3	88
5.2.2 State of cluster development†.....	36.4	79
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.8	72
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>19.8</b>	<b>117</b>
5.3.1 Royalty & license fees payments, % 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, %.....	0.0	120
5.3.4 FDI net inflows, % GDP.....	39.7	100

## 6 Scientific outputs 28.2 45

<b>6.1 Knowledge creation</b>	<b>32.1</b>	<b>30</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	48.3	15
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	15.9	54
<b>6.2 Knowledge impact</b>	<b>26.9</b>	<b>74</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.8	75
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	9.2	55
<b>6.3 Knowledge diffusion</b>	<b>25.5</b>	<b>68</b>
6.3.1 Royalty & license fees receipts, % 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, %.....	3.8	117
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 23.6 100

<b>7.1 Creative intangibles</b>	<b>32.6</b>	<b>109</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	21.2	47
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	1.9	49
7.1.3 ICT & business models†.....	48.3	99
7.1.4 ICT & organizational models†.....	43.7	92
<b>7.2 Creative goods &amp; services</b>	<b>14.7</b>	<b>71</b>
7.2.1 Recreation & culture consumption, %.....	30.3	49
7.2.2 National feature films/mn pop.....	4.2	63
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	12.1	66
7.2.5 Creative services exports, %.....	n/a	n/a

## Ireland

## Key indicators

Population (millions)	4.6
GDP per capita, PPP (current international \$)	41,278.2
GDP (US\$ billions)	227.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>54.1</b>	<b>13</b>
Innovation Output Sub-Index .....	42.7	22
Innovation Input Sub-Index.....	65.5	4
Innovation Efficiency Index.....	0.7	83
Global Innovation Index 2010.....		19
Global Innovation Index 2009.....		21

## 1 Institutions 91.2 6

<b>1.1 Political environment</b>	<b>90.1</b>	<b>12</b>
1.1.1 Political stability*.....	84.4	14
1.1.2 Government effectiveness*.....	88.1	21
1.1.3 Press freedom*.....	97.9	9
<b>1.2 Regulatory environment</b>	<b>93.2</b>	<b>9</b>
1.2.1 Regulatory quality*.....	95.2	11
1.2.2 Rule of law*.....	94.3	13
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>90.3</b>	<b>16</b>
1.3.1 Time to start a business, days.....	88.5	48
1.3.2 Cost to start a business, % income/cap.....	99.7	3
1.3.3 Total tax rate, % profits.....	82.9	22

## 2 Human capital & research 57.8 10

<b>2.1 Education</b>	<b>79.3</b>	<b>2</b>
2.1.1 Education expenditure, % GNI.....	57.6	33
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	83.1	4
2.1.4 PISA scales in reading, maths, & science.....	68.3	21
2.1.5 Pupil-teacher ratio, secondary.....	91.9	30
<b>2.2 Tertiary education</b>	<b>49.3</b>	<b>10</b>
2.2.1 Tertiary enrolment, % gross.....	59.2	30
2.2.2 Graduates in science, %.....	57.4	12
2.2.3 Graduates in engineering, %.....	31.8	52
2.2.4 Tertiary inbound mobility, %.....	28.2	19
2.2.5 Tertiary outbound mobility, %.....	42.7	27
2.2.6 Gross tertiary outbound enrolment, %.....	76.4	7
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>44.7</b>	<b>26</b>
2.3.1 Researchers headcount/million pop.....	33.7	19
2.3.2 Gross expenditure on R&D, % GDP.....	28.9	25
2.3.3 Quality research institutions†.....	71.5	16

## 3 Infrastructure 39.5 23

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>55.5</b>	<b>24</b>
3.1.1 ICT access*.....	76.6	13
3.1.2 ICT use*.....	42.8	22
3.1.3 Government's Online Service*.....	49.8	28
3.1.4 E-Participation*.....	44.3	27
<b>3.2 Energy</b>	<b>28.9</b>	<b>22</b>
3.2.1 Electricity output, kWh/cap.....	31.4	34
3.2.2 Electricity consumption, kWh/capita.....	24.3	34
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	56.3	9
3.2.4 Share of renewables in energy use, %.....	2.7	86
<b>3.3 General infrastructure</b>	<b>34.1</b>	<b>72</b>
3.3.1 Quality of trade & transport infrastructure*.....	69.0	19
3.3.2 Gross capital formation, % GDP.....	6.4	117
3.3.3 Ecological footprint & biocapacity, ha/cap.....	26.9	95

## 4 Market sophistication 65.3 6

<b>4.1 Credit</b>	<b>81.7</b>	<b>7</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>39.2</b>	<b>32</b>
4.2.1 Strength of investor protection*.....	83.0	5
4.2.2 Market capitalization, % GDP.....	5.1	83
4.2.3 Total value of stocks traded, % GDP.....	4.5	52
4.2.4 Venture capital deals/tr GDP PPP\$.....	88.9	6
<b>4.3 Trade &amp; competition</b>	<b>75.1</b>	<b>8</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	49.9	12
4.3.4 Exports of goods & services, % GDP.....	87.9	7
4.3.5 Intensity local competition†.....	68.4	48

## 5 Business sophistication 73.8 3

<b>5.1 Knowledge workers</b>	<b>75.9</b>	<b>15</b>
5.1.1 Knowledge-intensive employment, %.....	74.9	22
5.1.2 Firms offering formal training, % firms.....	85.5	33
5.1.3 R&D performed by business, %.....	76.4	16
5.1.4 R&D financed by business, %.....	58.4	23
<b>5.2 Innovation linkages</b>	<b>55.6</b>	<b>11</b>
5.2.1 University/industry collaboration†.....	66.2	16
5.2.2 State of cluster development†.....	51.2	33
5.2.3 R&D financed by abroad, %.....	55.9	11
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	25.3	30
5.2.5 PCT patent filings with foreign inventor, %.....	64.3	14
<b>5.3 Knowledge absorption</b>	<b>90.0</b>	<b>1</b>
5.3.1 Royalty & license fees payments, % GDP.....	100.0	1
5.3.2 High-tech imports less re-imports, %.....	76.3	5
5.3.3 Computer & comm. service imports, %.....	100.0	1
5.3.4 FDI net inflows, % GDP.....	83.8	8

## 6 Scientific outputs 51.2 11

<b>6.1 Knowledge creation</b>	<b>33.7</b>	<b>25</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	31.0	27
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	32.3	19
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	37.6	30
<b>6.2 Knowledge impact</b>	<b>37.7</b>	<b>33</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	29.1	100
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	36.4	17
6.2.3 Computer software spending, % GDP.....	57.5	10
<b>6.3 Knowledge diffusion</b>	<b>82.2</b>	<b>1</b>
6.3.1 Royalty & license fees receipts, % GDP.....	100.0	4
6.3.2 High-tech exports less re-exports, %.....	60.5	7
6.3.3 Computer & comm service exports, %.....	90.8	3
6.3.4 FDI net outflows, % GDP.....	77.4	5

## 7 Creative outputs 34.2 58

<b>7.1 Creative intangibles</b>	<b>40.1</b>	<b>84</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	8.8	88
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	6.6	41
7.1.3 ICT & business models†.....	66.1	40
7.1.4 ICT & organizational models†.....	62.1	34
<b>7.2 Creative goods &amp; services</b>	<b>28.2</b>	<b>44</b>
7.2.1 Recreation & culture consumption, %.....	46.0	40
7.2.2 National feature films/mn pop.....	61.3	12
7.2.3 Daily newspapers/1,000 literate pop.....	35.5	13
7.2.4 Creative goods exports, %.....	19.1	50
7.2.5 Creative services exports, %.....	8.4	48

## Key indicators

Population (millions)	7.3
GDP per capita, PPP (current international \$)	27,759.2
GDP (US\$ billions)	195.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>54.0</b>	<b>14</b>
Innovation Output Sub-Index .....	48.9	8
Innovation Input Sub-Index.....	59.1	20
Innovation Efficiency Index.....	0.8	22
Global Innovation Index 2010.....		23
Global Innovation Index 2009.....		23

## 1 Institutions 72.1 46

<b>1.1 Political environment</b>	<b>55.7</b>	<b>63</b>
1.1.1 Political stability*.....	9.4	115
1.1.2 Government effectiveness*.....	82.4	29
1.1.3 Press freedom*.....	75.4	70
<b>1.2 Regulatory environment</b>	<b>79.7</b>	<b>24</b>
1.2.1 Regulatory quality*.....	81.4	28
1.2.2 Rule of law*.....	74.5	32
1.2.3 Rigidity of employment*.....	83.0	34
<b>1.3 Business environment</b>	<b>80.8</b>	<b>61</b>
1.3.1 Time to start a business, days.....	68.3	98
1.3.2 Cost to start a business, % income/cap.....	96.6	38
1.3.3 Total tax rate, % profits.....	77.6	38

## 2 Human capital & research 69.8 2

<b>2.1 Education</b>	<b>68.0</b>	<b>30</b>
2.1.1 Education expenditure, % GNI.....	67.3	15
2.1.2 Public expenditure/pupil, % GDP/cap.....	31.5	53
2.1.3 School life expectancy, years.....	67.8	28
2.1.4 PISA scales in reading, maths, & science.....	53.1	39
2.1.5 Pupil-teacher ratio, secondary.....	94.2	18
<b>2.2 Tertiary education</b>	<b>47.7</b>	<b>16</b>
2.2.1 Tertiary enrolment, % gross.....	60.7	29
2.2.2 Graduates in science, %.....	23.3	65
2.2.3 Graduates in engineering, %.....	77.2	4
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	28.1	53
2.2.6 Gross tertiary outbound enrolment, %.....	31.3	23
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>93.7</b>	<b>1</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	100.0	1
2.3.3 Quality research institutions†.....	87.4	1

## 3 Infrastructure 38.4 25

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>54.4</b>	<b>25</b>
3.1.1 ICT access*.....	72.2	23
3.1.2 ICT use*.....	41.2	25
3.1.3 Government's Online Service*.....	58.4	19
3.1.4 E-Participation*.....	41.4	31
<b>3.2 Energy</b>	<b>27.7</b>	<b>24</b>
3.2.1 Electricity output, kWh/cap.....	40.0	26
3.2.2 Electricity consumption, kWh/capita.....	29.6	23
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	45.4	21
3.2.4 Share of renewables in energy use, %.....	3.0	84
<b>3.3 General infrastructure</b>	<b>32.9</b>	<b>83</b>
3.3.1 Quality of trade & transport infrastructure*.....	65.0	23
3.3.2 Gross capital formation, % GDP.....	13.2	107
3.3.3 Ecological footprint & biocapacity, ha/cap.....	20.4	112

## 4 Market sophistication 58.6 17

<b>4.1 Credit</b>	<b>61.7</b>	<b>24</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	36.7	28
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>56.0</b>	<b>11</b>
4.2.1 Strength of investor protection*.....	83.0	5
4.2.2 Market capitalization, % GDP.....	37.8	18
4.2.3 Total value of stocks traded, % GDP.....	25.2	25
4.2.4 Venture capital deals/tr GDP PPP\$.....	100.0	1
<b>4.3 Trade &amp; competition</b>	<b>58.0</b>	<b>35</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.6	9
4.3.2 Market access trade restrictiveness*, %.....	90.6	19
4.3.3 Imports of goods & services, % GDP.....	16.7	79
4.3.4 Exports of goods & services, % GDP.....	28.3	66
4.3.5 Intensity local competition†.....	76.2	20

## 5 Business sophistication 56.8 13

<b>5.1 Knowledge workers</b>	<b>86.6</b>	<b>4</b>
5.1.1 Knowledge-intensive employment, %.....	80.0	15
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	95.2	3
5.1.4 R&D financed by business, %.....	91.1	3
<b>5.2 Innovation linkages</b>	<b>37.2</b>	<b>41</b>
5.2.1 University/industry collaboration†.....	68.0	13
5.2.2 State of cluster development†.....	41.4	63
5.2.3 R&D financed by abroad, %.....	10.6	57
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	48.2	15
5.2.5 PCT patent filings with foreign inventor, %.....	9.9	63
<b>5.3 Knowledge absorption</b>	<b>46.7</b>	<b>21</b>
5.3.1 Royalty & license fees payments, % GDP.....	45.3	17
5.3.2 High-tech imports less re-imports, %.....	33.8	27
5.3.3 Computer & comm. service imports, %.....	63.4	18
5.3.4 FDI net inflows, % GDP.....	44.4	69

## 6 Scientific outputs 57.5 4

<b>6.1 Knowledge creation</b>	<b>77.4</b>	<b>2</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	40.4	23
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	91.7	5
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	100.0	1
<b>6.2 Knowledge impact</b>	<b>33.1</b>	<b>58</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	33.8	87
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	34.7	21
6.2.3 Computer software spending, % GDP.....	28.5	27
<b>6.3 Knowledge diffusion</b>	<b>62.0</b>	<b>8</b>
6.3.1 Royalty & license fees receipts, % GDP.....	52.1	15
6.3.2 High-tech exports less re-exports, %.....	58.9	8
6.3.3 Computer & comm service exports, %.....	88.2	5
6.3.4 FDI net outflows, % GDP.....	49.0	49

## 7 Creative outputs 40.4 37

<b>7.1 Creative intangibles</b>	<b>51.8</b>	<b>34</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	10.3	81
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	72.7	21
7.1.4 ICT & organizational models†.....	72.5	9
<b>7.2 Creative goods &amp; services</b>	<b>28.9</b>	<b>43</b>
7.2.1 Recreation & culture consumption, %.....	52.1	35
7.2.2 National feature films/mn pop.....	42.6	21
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	10.5	69
7.2.5 Creative services exports, %.....	n/a	n/a

## Italy

## Key indicators

Population (millions)	60.1
GDP per capita, PPP (current international \$)	31,908.6
GDP (US\$ billions)	2,112.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>40.7</b>	<b>35</b>
Innovation Output Sub-Index .....	33.5	39
Innovation Input Sub-Index.....	47.9	37
Innovation Efficiency Index.....	0.7	63
Global Innovation Index 2010.....		38
Global Innovation Index 2009.....		31

## 1 Institutions 71.1 49

<b>1.1 Political environment</b>	<b>72.3</b>	<b>42</b>
1.1.1 Political stability*.....	64.6	40
1.1.2 Government effectiveness*.....	68.1	47
1.1.3 Press freedom*.....	84.1	44
<b>1.2 Regulatory environment</b>	<b>67.5</b>	<b>49</b>
1.2.1 Regulatory quality*.....	77.6	35
1.2.2 Rule of law*.....	62.7	48
1.2.3 Rigidity of employment*.....	62.0	84
<b>1.3 Business environment</b>	<b>73.6</b>	<b>85</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	85.6	86
1.3.3 Total tax rate, % profits.....	40.2	119

## 2 Human capital & research 44.5 39

<b>2.1 Education</b>	<b>69.4</b>	<b>24</b>
2.1.1 Education expenditure, % GNI.....	48.9	53
2.1.2 Public expenditure/pupil, % GDP/cap.....	39.9	32
2.1.3 School life expectancy, years.....	73.5	13
2.1.4 PISA scales in reading, maths, & science.....	63.9	31
2.1.5 Pupil-teacher ratio, secondary.....	93.0	25
<b>2.2 Tertiary education</b>	<b>35.1</b>	<b>49</b>
2.2.1 Tertiary enrolment, % gross.....	68.3	20
2.2.2 Graduates in science, %.....	24.4	62
2.2.3 Graduates in engineering, %.....	43.7	32
2.2.4 Tertiary inbound mobility, %.....	12.2	39
2.2.5 Tertiary outbound mobility, %.....	16.3	81
2.2.6 Gross tertiary outbound enrolment, %.....	14.8	52
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>29.1</b>	<b>47</b>
2.3.1 Researchers headcount/million pop.....	17.6	35
2.3.2 Gross expenditure on R&D, % GDP.....	23.9	29
2.3.3 Quality research institutions†.....	45.9	61

## 3 Infrastructure 35.9 30

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>44.7</b>	<b>34</b>
3.1.1 ICT access*.....	68.3	29
3.1.2 ICT use*.....	40.7	26
3.1.3 Government's Online Service*.....	28.9	80
3.1.4 E-Participation*.....	21.4	53
<b>3.2 Energy</b>	<b>26.1</b>	<b>29</b>
3.2.1 Electricity output, kWh/cap.....	24.8	45
3.2.2 Electricity consumption, kWh/capita.....	22.0	37
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	49.0	18
3.2.4 Share of renewables in energy use, %.....	5.9	64
<b>3.3 General infrastructure</b>	<b>36.9</b>	<b>55</b>
3.3.1 Quality of trade & transport infrastructure*.....	68.0	20
3.3.2 Gross capital formation, % GDP.....	19.7	89
3.3.3 Ecological footprint & biocapacity, ha/cap.....	22.9	107

## 4 Market sophistication 42.7 53

<b>4.1 Credit</b>	<b>56.7</b>	<b>28</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>25.9</b>	<b>74</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	5.8	79
4.2.3 Total value of stocks traded, % GDP.....	12.1	37
4.2.4 Venture capital deals/tr GDP PPP\$.....	31.1	62
<b>4.3 Trade &amp; competition</b>	<b>45.6</b>	<b>89</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	10.4	110
4.3.4 Exports of goods & services, % GDP.....	16.5	95
4.3.5 Intensity local competition†.....	61.0	80

## 5 Business sophistication 45.2 36

<b>5.1 Knowledge workers</b>	<b>65.6</b>	<b>28</b>
5.1.1 Knowledge-intensive employment, %.....	76.6	21
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	59.9	32
5.1.4 R&D financed by business, %.....	49.4	37
<b>5.2 Innovation linkages</b>	<b>34.4</b>	<b>55</b>
5.2.1 University/industry collaboration†.....	41.4	63
5.2.2 State of cluster development†.....	65.1	6
5.2.3 R&D financed by abroad, %.....	33.5	27
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	10.6	50
5.2.5 PCT patent filings with foreign inventor, %.....	9.0	65
<b>5.3 Knowledge absorption</b>	<b>35.4</b>	<b>57</b>
5.3.1 Royalty & license fees payments, % GDP.....	10.3	70
5.3.2 High-tech imports less re-imports, %.....	23.6	50
5.3.3 Computer & comm. service imports, %.....	66.2	14
5.3.4 FDI net inflows, % GDP.....	41.7	86

## 6 Scientific outputs 27.8 46

<b>6.1 Knowledge creation</b>	<b>27.7</b>	<b>32</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	30.4	28
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	19.6	27
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	9.3	27
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	42.2	25
<b>6.2 Knowledge impact</b>	<b>23.8</b>	<b>87</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	29.2	99
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	13.8	44
6.2.3 Computer software spending, % GDP.....	33.2	23
<b>6.3 Knowledge diffusion</b>	<b>31.9</b>	<b>47</b>
6.3.1 Royalty & license fees receipts, % GDP.....	7.1	45
6.3.2 High-tech exports less re-exports, %.....	18.2	31
6.3.3 Computer & comm service exports, %.....	49.1	41
6.3.4 FDI net outflows, % GDP.....	53.1	25

## 7 Creative outputs 39.2 43

<b>7.1 Creative intangibles</b>	<b>39.6</b>	<b>86</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	15.8	63
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	45.2	14
7.1.3 ICT & business models†.....	53.8	81
7.1.4 ICT & organizational models†.....	46.4	82
<b>7.2 Creative goods &amp; services</b>	<b>38.8</b>	<b>17</b>
7.2.1 Recreation & culture consumption, %.....	49.9	37
7.2.2 National feature films/mn pop.....	26.5	29
7.2.3 Daily newspapers/1,000 literate pop.....	24.8	25
7.2.4 Creative goods exports, %.....	56.1	6
7.2.5 Creative services exports, %.....	29.1	25

## Key indicators

Population (millions)	2.7
GDP per capita, PPP (current international \$)	7,632.6
GDP (US\$ billions)	12.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>28.9</b>	<b>92</b>
Innovation Output Sub-Index .....	18.9	115
Innovation Input Sub-Index.....	38.9	73
Innovation Efficiency Index.....	0.5	120
Global Innovation Index 2010.....		70
Global Innovation Index 2009.....		73

## 1 Institutions 69.3 55

<b>1.1 Political environment</b>	<b>61.2</b>	<b>55</b>
1.1.1 Political stability*.....	33.0	78
1.1.2 Government effectiveness*.....	58.6	61
1.1.3 Press freedom*.....	91.9	24
<b>1.2 Regulatory environment</b>	<b>63.9</b>	<b>56</b>
1.2.1 Regulatory quality*.....	59.0	62
1.2.2 Rule of law*.....	36.8	85
1.2.3 Rigidity of employment*.....	96.0	8
<b>1.3 Business environment</b>	<b>82.7</b>	<b>51</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	95.9	43
1.3.3 Total tax rate, % profits.....	58.9	99

## 2 Human capital & research 35.5 68

<b>2.1 Education</b>	<b>58.0</b>	<b>61</b>
2.1.1 Education expenditure, % GNI.....	64.3	20
2.1.2 Public expenditure/pupil, % GDP/cap.....	29.0	60
2.1.3 School life expectancy, years.....	58.0	47
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	69.2	88
<b>2.2 Tertiary education</b>	<b>25.7</b>	<b>80</b>
2.2.1 Tertiary enrolment, % gross.....	24.3	78
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	7.2	49
2.2.5 Tertiary outbound mobility, %.....	42.2	28
2.2.6 Gross tertiary outbound enrolment, %.....	30.3	25
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>23.0</b>	<b>67</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	0.7	90
2.3.3 Quality research institutions†.....	45.3	63

## 3 Infrastructure 20.6 109

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>23.8</b>	<b>72</b>
3.1.1 ICT access*.....	34.5	72
3.1.2 ICT use*.....	21.2	44
3.1.3 Government's Online Service*.....	22.9	96
3.1.4 E-Participation*.....	8.6	92
<b>3.2 Energy</b>	<b>9.9</b>	<b>107</b>
3.2.1 Electricity output, kWh/cap.....	15.0	59
3.2.2 Electricity consumption, kWh/capita.....	10.6	57
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	9.7	98
3.2.4 Share of renewables in energy use, %.....	7.1	58
<b>3.3 General infrastructure</b>	<b>28.1</b>	<b>108</b>
3.3.1 Quality of trade & transport infrastructure*.....	26.8	107
3.3.2 Gross capital formation, % GDP.....	25.9	64
3.3.3 Ecological footprint & biocapacity, ha/cap.....	31.8	85

## 4 Market sophistication 30.2 105

<b>4.1 Credit</b>	<b>25.0</b>	<b>101</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	9.9	78
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>20.1</b>	<b>96</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	16.9	43
4.2.3 Total value of stocks traded, % GDP.....	0.5	78
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>45.4</b>	<b>90</b>
4.3.1 Applied tariff rate weighted mean, %.....	55.7	106
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	33.6	38
4.3.4 Exports of goods & services, % GDP.....	28.4	65
4.3.5 Intensity local competition†.....	64.0	69

## 5 Business sophistication 38.9 52

<b>5.1 Knowledge workers</b>	<b>48.7</b>	<b>44</b>
5.1.1 Knowledge-intensive employment, %.....	36.5	66
5.1.2 Firms offering formal training, % firms.....	60.9	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
<b>5.2 Innovation linkages</b>	<b>31.8</b>	<b>68</b>
5.2.1 University/industry collaboration†.....	43.2	59
5.2.2 State of cluster development†.....	36.2	81
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>36.2</b>	<b>53</b>
5.3.1 Royalty & license fees payments, % GDP.....	37.0	25
5.3.2 High-tech imports less re-imports, %.....	8.2	96
5.3.3 Computer & comm. service imports, %.....	44.3	55
5.3.4 FDI net inflows, % GDP.....	55.1	31

## 6 Scientific outputs 12.8 118

<b>6.1 Knowledge creation</b>	<b>6.3</b>	<b>70</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	6.1	65
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.6	76
<b>6.2 Knowledge impact</b>	<b>13.6</b>	<b>110</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	20.6	104
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.0	56
6.2.3 Computer software spending, % GDP.....	8.8	59
<b>6.3 Knowledge diffusion</b>	<b>18.4</b>	<b>110</b>
6.3.1 Royalty & license fees receipts, % GDP.....	10.1	33
6.3.2 High-tech exports less re-exports, %.....	0.9	88
6.3.3 Computer & comm service exports, %.....	14.0	103
6.3.4 FDI net outflows, % GDP.....	48.7	57

## 7 Creative outputs 24.9 95

<b>7.1 Creative intangibles</b>	<b>43.3</b>	<b>70</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	18.6	56
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	60.4	57
7.1.4 ICT & organizational models†.....	51.0	62
<b>7.2 Creative goods &amp; services</b>	<b>6.6</b>	<b>96</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	1.6	102
7.2.5 Creative services exports, %.....	11.5	41

## Japan

## Key indicators

Population (millions)	127.0
GDP per capita, PPP (current international \$)	32,452.8
GDP (US\$ billions)	5,069.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>50.3</b>	<b>20</b>
Innovation Output Sub-Index .....	41.3	26
Innovation Input Sub-Index.....	59.3	18
Innovation Efficiency Index.....	0.7	64
Global Innovation Index 2010.....		13
Global Innovation Index 2009.....		9

## 1 Institutions 83.8 20

<b>1.1 Political environment</b>	<b>89.2</b>	<b>13</b>
1.1.1 Political stability*.....	83.5	15
1.1.2 Government effectiveness*.....	86.7	22
1.1.3 Press freedom*.....	97.4	11
<b>1.2 Regulatory environment</b>	<b>84.4</b>	<b>18</b>
1.2.1 Regulatory quality*.....	81.0	29
1.2.2 Rule of law*.....	88.2	21
1.2.3 Rigidity of employment*.....	84.0	33
<b>1.3 Business environment</b>	<b>77.8</b>	<b>69</b>
1.3.1 Time to start a business, days.....	78.8	81
1.3.2 Cost to start a business, % income/cap.....	94.2	57
1.3.3 Total tax rate, % profits.....	60.4	93

## 2 Human capital & research 53.7 20

<b>2.1 Education</b>	<b>64.8</b>	<b>40</b>
2.1.1 Education expenditure, % GNI.....	31.0	90
2.1.2 Public expenditure/pupil, % GDP/cap.....	33.6	49
2.1.3 School life expectancy, years.....	65.8	34
2.1.4 PISA scales in reading, maths, & science.....	81.2	6
2.1.5 Pupil-teacher ratio, secondary.....	88.1	43
<b>2.2 Tertiary education</b>	<b>31.2</b>	<b>60</b>
2.2.1 Tertiary enrolment, % gross.....	59.0	32
2.2.2 Graduates in science, %.....	8.1	85
2.2.3 Graduates in engineering, %.....	57.2	14
2.2.4 Tertiary inbound mobility, %.....	11.4	41
2.2.5 Tertiary outbound mobility, %.....	12.4	99
2.2.6 Gross tertiary outbound enrolment, %.....	9.0	67
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>65.1</b>	<b>7</b>
2.3.1 Researchers headcount/million pop.....	52.6	8
2.3.2 Gross expenditure on R&D, % GDP.....	70.6	4
2.3.3 Quality research institutions†.....	72.0	15

## 3 Infrastructure 45.4 13

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>68.8</b>	<b>7</b>
3.1.1 ICT access*.....	71.6	25
3.1.2 ICT use*.....	63.4	4
3.1.3 Government's Online Service*.....	67.3	13
3.1.4 E-Participation*.....	75.7	6
<b>3.2 Energy</b>	<b>25.6</b>	<b>36</b>
3.2.1 Electricity output, kWh/cap.....	42.4	21
3.2.2 Electricity consumption, kWh/capita.....	32.8	20
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	37.0	36
3.2.4 Share of renewables in energy use, %.....	2.1	91
<b>3.3 General infrastructure</b>	<b>41.7</b>	<b>27</b>
3.3.1 Quality of trade & transport infrastructure*.....	79.8	5
3.3.2 Gross capital formation, % GDP.....	23.4	70
3.3.3 Ecological footprint & biocapacity, ha/cap.....	21.9	109

## 4 Market sophistication 57.9 19

<b>4.1 Credit</b>	<b>79.7</b>	<b>8</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	74.4	6
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>45.6</b>	<b>23</b>
4.2.1 Strength of investor protection*.....	70.0	16
4.2.2 Market capitalization, % GDP.....	26.8	29
4.2.3 Total value of stocks traded, % GDP.....	46.0	15
4.2.4 Venture capital deals/tr GDP PPP\$.....	33.4	60
<b>4.3 Trade &amp; competition</b>	<b>48.5</b>	<b>75</b>
4.3.1 Applied tariff rate weighted mean, %.....	93.5	38
4.3.2 Market access trade restrictiveness*, %.....	78.8	33
4.3.3 Imports of goods & services, % GDP.....	0.7	124
4.3.4 Exports of goods & services, % GDP.....	3.9	119
4.3.5 Intensity local competition†.....	80.8	6

## 5 Business sophistication 55.9 14

<b>5.1 Knowledge workers</b>	<b>82.3</b>	<b>8</b>
5.1.1 Knowledge-intensive employment, %.....	72.8	25
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	91.7	4
5.1.4 R&D financed by business, %.....	91.7	2
<b>5.2 Innovation linkages</b>	<b>41.2</b>	<b>35</b>
5.2.1 University/industry collaboration†.....	64.3	18
5.2.2 State of cluster development†.....	68.0	3
5.2.3 R&D financed by abroad, %.....	1.2	70
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	18.8	35
5.2.5 PCT patent filings with foreign inventor, %.....	22.5	43
<b>5.3 Knowledge absorption</b>	<b>44.3</b>	<b>27</b>
5.3.1 Royalty & license fees payments, % GDP.....	33.3	31
5.3.2 High-tech imports less re-imports, %.....	41.8	20
5.3.3 Computer & comm. service imports, %.....	65.3	15
5.3.4 FDI net inflows, % GDP.....	36.7	115

## 6 Scientific outputs 49.8 13

<b>6.1 Knowledge creation</b>	<b>69.4</b>	<b>6</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	100.0	2
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	100.0	4
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	14.8	18
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	35.4	32
<b>6.2 Knowledge impact</b>	<b>21.5</b>	<b>95</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	34.0	86
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	10.0	48
6.2.3 Computer software spending, % GDP.....	19.4	35
<b>6.3 Knowledge diffusion</b>	<b>58.5</b>	<b>14</b>
6.3.1 Royalty & license fees receipts, % GDP.....	57.3	13
6.3.2 High-tech exports less re-exports, %.....	45.1	13
6.3.3 Computer & comm service exports, %.....	80.2	11
6.3.4 FDI net outflows, % GDP.....	51.4	32

## 7 Creative outputs 32.8 65

<b>7.1 Creative intangibles</b>	<b>42.3</b>	<b>74</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	14.5	68
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	6.3	42
7.1.3 ICT & business models†.....	71.1	24
7.1.4 ICT & organizational models†.....	59.3	43
<b>7.2 Creative goods &amp; services</b>	<b>23.3</b>	<b>57</b>
7.2.1 Recreation & culture consumption, %.....	75.5	9
7.2.2 National feature films/mn pop.....	43.5	20
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	9.7	73
7.2.5 Creative services exports, %.....	0.9	87

## Key indicators

Population (millions)	6.5
GDP per capita, PPP (current international \$)	5,597.0
GDP (US\$ billions)	25.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.4</b>	<b>41</b>
Innovation Output Sub-Index .....	35.5	33
Innovation Input Sub-Index.....	41.3	56
Innovation Efficiency Index.....	0.9	16
Global Innovation Index 2010.....		58
Global Innovation Index 2009.....		55

## 1 Institutions 65.8 62

<b>1.1 Political environment</b>	<b>53.5</b>	<b>66</b>
1.1.1 Political stability*.....	36.3	73
1.1.2 Government effectiveness*.....	63.3	53
1.1.3 Press freedom*.....	60.9	85
<b>1.2 Regulatory environment</b>	<b>66.6</b>	<b>53</b>
1.2.1 Regulatory quality*.....	61.4	57
1.2.2 Rule of law*.....	62.3	49
1.2.3 Rigidity of employment*.....	76.0	56
<b>1.3 Business environment</b>	<b>77.3</b>	<b>73</b>
1.3.1 Time to start a business, days.....	88.5	48
1.3.2 Cost to start a business, % income/cap.....	65.2	104
1.3.3 Total tax rate, % profits.....	78.1	35

## 2 Human capital & research 41.4 50

<b>2.1 Education</b>	<b>63.2</b>	<b>43</b>
2.1.1 Education expenditure, % GNI.....	63.4	22
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	53.7	63
2.1.4 PISA scales in reading, maths, & science.....	30.7	49
2.1.5 Pupil-teacher ratio, secondary.....	88.7	41
<b>2.2 Tertiary education</b>	<b>39.6</b>	<b>35</b>
2.2.1 Tertiary enrolment, % gross.....	41.1	52
2.2.2 Graduates in science, %.....	59.5	9
2.2.3 Graduates in engineering, %.....	32.9	49
2.2.4 Tertiary inbound mobility, %.....	42.1	14
2.2.5 Tertiary outbound mobility, %.....	27.3	54
2.2.6 Gross tertiary outbound enrolment, %.....	19.8	45
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>21.3</b>	<b>71</b>
2.3.1 Researchers headcount/million pop.....	22.9	27
2.3.2 Gross expenditure on R&D, % GDP.....	6.4	61
2.3.3 Quality research institutions†.....	34.7	91

## 3 Infrastructure 22.6 96

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>29.4</b>	<b>56</b>
3.1.1 ICT access*.....	37.4	67
3.1.2 ICT use*.....	9.9	71
3.1.3 Government's Online Service*.....	53.3	22
3.1.4 E-Participation*.....	28.6	41
<b>3.2 Energy</b>	<b>11.1</b>	<b>105</b>
3.2.1 Electricity output, kWh/cap.....	12.1	69
3.2.2 Electricity consumption, kWh/capita.....	8.5	69
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	21.9	77
3.2.4 Share of renewables in energy use, %.....	1.1	97
<b>3.3 General infrastructure</b>	<b>27.4</b>	<b>113</b>
3.3.1 Quality of trade & transport infrastructure*.....	42.3	53
3.3.2 Gross capital formation, % GDP.....	9.1	112
3.3.3 Ecological footprint & biocapacity, ha/cap.....	30.7	86

## 4 Market sophistication 44.7 44

<b>4.1 Credit</b>	<b>29.5</b>	<b>94</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	33.9	30
4.1.4 Microfinance gross loans, % GDP.....	6.1	40
<b>4.2 Investment</b>	<b>47.4</b>	<b>21</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	56.6	6
4.2.3 Total value of stocks traded, % GDP.....	33.3	19
4.2.4 Venture capital deals/tr GDP PPP\$.....	66.1	27
<b>4.3 Trade &amp; competition</b>	<b>57.1</b>	<b>38</b>
4.3.1 Applied tariff rate weighted mean, %.....	72.1	82
4.3.2 Market access trade restrictiveness*, %.....	68.5	54
4.3.3 Imports of goods & services, % GDP.....	43.0	19
4.3.4 Exports of goods & services, % GDP.....	38.1	46
4.3.5 Intensity local competition†.....	69.4	43

## 5 Business sophistication 32.3 77

<b>5.1 Knowledge workers</b>	<b>24.0</b>	<b>105</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	24.0	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
<b>5.2 Innovation linkages</b>	<b>38.4</b>	<b>38</b>
5.2.1 University/industry collaboration†.....	35.6	90
5.2.2 State of cluster development†.....	41.2	64
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	38.6	19
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>34.4</b>	<b>61</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	13.8	85
5.3.3 Computer & comm. service imports, %.....	12.5	111
5.3.4 FDI net inflows, % GDP.....	76.8	9

## 6 Scientific outputs 22.1 77

<b>6.1 Knowledge creation</b>	<b>22.4</b>	<b>36</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	10.9	53
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	33.9	33
<b>6.2 Knowledge impact</b>	<b>21.1</b>	<b>98</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	42.5	53
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	5.7	65
6.2.3 Computer software spending, % GDP.....	9.1	56
<b>6.3 Knowledge diffusion</b>	<b>22.9</b>	<b>81</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	5.5	58
6.3.3 Computer & comm service exports, %.....	15.1	101
6.3.4 FDI net outflows, % GDP.....	48.1	66

## 7 Creative outputs 48.9 10

<b>7.1 Creative intangibles</b>	<b>70.1</b>	<b>4</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	100.0	1
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	57.1	67
7.1.4 ICT & organizational models†.....	53.1	56
<b>7.2 Creative goods &amp; services</b>	<b>27.7</b>	<b>47</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	27.7	32
7.2.5 Creative services exports, %.....	n/a	n/a

# Kazakhstan

## Key indicators

Population (millions)	15.8
GDP per capita, PPP (current international \$)	11,509.9
GDP (US\$ billions)	115.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.3</b>	<b>84</b>
Innovation Output Sub-Index .....	20.8	103
Innovation Input Sub-Index.....	39.9	64
Innovation Efficiency Index.....	0.5	112
Global Innovation Index 2010.....		63
Global Innovation Index 2009.....		72

## 1 Institutions 62.6 68

<b>1.1 Political environment</b>	<b>48.5</b>	<b>76</b>
1.1.1 Political stability*.....	69.8	33
1.1.2 Government effectiveness*.....	48.1	77
1.1.3 Press freedom*.....	27.6	117
<b>1.2 Regulatory environment</b>	<b>52.2</b>	<b>82</b>
1.2.1 Regulatory quality*.....	38.6	95
1.2.2 Rule of law*.....	34.9	89
1.2.3 Rigidity of employment*.....	83.0	34
<b>1.3 Business environment</b>	<b>87.2</b>	<b>23</b>
1.3.1 Time to start a business, days.....	82.7	70
1.3.2 Cost to start a business, % income/cap.....	99.2	13
1.3.3 Total tax rate, % profits.....	79.7	27

## 2 Human capital & research 34.6 74

<b>2.1 Education</b>	<b>58.2</b>	<b>59</b>
2.1.1 Education expenditure, % GNI.....	47.5	55
2.1.2 Public expenditure/pupil, % GDP/cap.....	8.8	100
2.1.3 School life expectancy, years.....	66.0	33
2.1.4 PISA scales in reading, maths, & science.....	29.2	52
2.1.5 Pupil-teacher ratio, secondary.....	94.9	15
<b>2.2 Tertiary education</b>	<b>32.3</b>	<b>53</b>
2.2.1 Tertiary enrolment, % gross.....	40.6	54
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	6.1	55
2.2.5 Tertiary outbound mobility, %.....	35.3	37
2.2.6 Gross tertiary outbound enrolment, %.....	38.8	19
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>13.2</b>	<b>106</b>
2.3.1 Researchers headcount/million pop.....	4.8	61
2.3.2 Gross expenditure on R&D, % GDP.....	3.9	69
2.3.3 Quality research institutions†.....	30.9	105

## 3 Infrastructure 28.5 60

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>33.8</b>	<b>48</b>
3.1.1 ICT access*.....	41.0	60
3.1.2 ICT use*.....	6.0	82
3.1.3 Government's Online Service*.....	52.7	24
3.1.4 E-Participation*.....	55.7	19
<b>3.2 Energy</b>	<b>9.5</b>	<b>108</b>
3.2.1 Electricity output, kWh/cap.....	26.5	41
3.2.2 Electricity consumption, kWh/capita.....	19.6	43
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	4.7	109
3.2.4 Share of renewables in energy use, %.....	0.7	102
<b>3.3 General infrastructure</b>	<b>42.1</b>	<b>24</b>
3.3.1 Quality of trade & transport infrastructure*.....	41.5	54
3.3.2 Gross capital formation, % GDP.....	49.3	17
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.6	53

## 4 Market sophistication 36.6 75

<b>4.1 Credit</b>	<b>33.0</b>	<b>88</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	20.0	49
4.1.4 Microfinance gross loans, % GDP.....	1.6	54
<b>4.2 Investment</b>	<b>23.8</b>	<b>82</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	21.2	38
4.2.3 Total value of stocks traded, % GDP.....	2.1	58
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>53.1</b>	<b>54</b>
4.3.1 Applied tariff rate weighted mean, %.....	89.4	46
4.3.2 Market access trade restrictiveness*, %.....	82.9	28
4.3.3 Imports of goods & services, % GDP.....	18.0	75
4.3.4 Exports of goods & services, % GDP.....	36.5	51
4.3.5 Intensity local competition†.....	53.7	102

## 5 Business sophistication 37.0 60

<b>5.1 Knowledge workers</b>	<b>38.1</b>	<b>69</b>
5.1.1 Knowledge-intensive employment, %.....	53.4	44
5.1.2 Firms offering formal training, % firms.....	45.1	33
5.1.3 R&D performed by business, %.....	16.0	71
5.1.4 R&D financed by business, %.....	15.7	65
<b>5.2 Innovation linkages</b>	<b>23.9</b>	<b>98</b>
5.2.1 University/industry collaboration†.....	33.8	101
5.2.2 State of cluster development†.....	40.9	67
5.2.3 R&D financed by abroad, %.....	0.0	75
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	10.5	51
5.2.5 PCT patent filings with foreign inventor, %.....	15.8	49
<b>5.3 Knowledge absorption</b>	<b>49.0</b>	<b>17</b>
5.3.1 Royalty & license fees payments, % GDP.....	7.0	81
5.3.2 High-tech imports less re-imports, %.....	18.4	65
5.3.3 Computer & comm. service imports, %.....	83.8	3
5.3.4 FDI net inflows, % GDP.....	86.9	7

## 6 Scientific outputs 21.4 81

<b>6.1 Knowledge creation</b>	<b>15.5</b>	<b>48</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	50.3	14
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.3	60
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	2.0	38
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.5	115
<b>6.2 Knowledge impact</b>	<b>27.7</b>	<b>72</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.4	78
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	20.1	35
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>20.9</b>	<b>93</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	94
6.3.2 High-tech exports less re-exports, %.....	11.2	47
6.3.3 Computer & comm service exports, %.....	17.6	95
6.3.4 FDI net outflows, % GDP.....	54.9	20

## 7 Creative outputs 20.2 113

<b>7.1 Creative intangibles</b>	<b>29.8</b>	<b>114</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	6.8	92
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	3.6	47
7.1.3 ICT & business models†.....	48.6	98
7.1.4 ICT & organizational models†.....	47.1	77
<b>7.2 Creative goods &amp; services</b>	<b>10.5</b>	<b>83</b>
7.2.1 Recreation & culture consumption, %.....	6.9	62
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.1	118
7.2.5 Creative services exports, %.....	22.7	33



## Key indicators

Population (millions)	40.9
GDP per capita, PPP (current international \$)	1,572.6
GDP (US\$ billions)	29.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.1</b>	<b>89</b>
Innovation Output Sub-Index .....	19.1	114
Innovation Input Sub-Index.....	39.2	69
Innovation Efficiency Index.....	0.5	119
Global Innovation Index 2010.....		83
Global Innovation Index 2009.....		78

## 1 Institutions 51.9 95

<b>1.1 Political environment</b>	<b>41.0</b>	<b>87</b>
1.1.1 Political stability*.....	12.3	110
1.1.2 Government effectiveness*.....	31.0	99
1.1.3 Press freedom*.....	79.9	56
<b>1.2 Regulatory environment</b>	<b>48.4</b>	<b>92</b>
1.2.1 Regulatory quality*.....	47.1	81
1.2.2 Rule of law*.....	15.1	114
1.2.3 Rigidity of employment*.....	83.0	34
<b>1.3 Business environment</b>	<b>66.2</b>	<b>100</b>
1.3.1 Time to start a business, days.....	69.2	97
1.3.2 Cost to start a business, % income/cap.....	70.1	102
1.3.3 Total tax rate, % profits.....	59.3	98

## 2 Human capital & research 43.3 44

<b>2.1 Education</b>	<b>46.7</b>	<b>96</b>
2.1.1 Education expenditure, % GNI.....	67.3	16
2.1.2 Public expenditure/pupil, % GDP/cap.....	42.1	26
2.1.3 School life expectancy, years.....	40.5	94
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	44.9	113
<b>2.2 Tertiary education</b>	<b>34.3</b>	<b>50</b>
2.2.1 Tertiary enrolment, % gross.....	3.6	112
2.2.2 Graduates in science, %.....	52.4	16
2.2.3 Graduates in engineering, %.....	56.3	15
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	46.0	23
2.2.6 Gross tertiary outbound enrolment, %.....	3.4	87
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>48.9</b>	<b>21</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	48.9	50

## 3 Infrastructure 21.4 102

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>14.3</b>	<b>100</b>
3.1.1 ICT access*.....	16.5	112
3.1.2 ICT use*.....	3.2	98
3.1.3 Government's Online Service*.....	23.8	94
3.1.4 E-Participation*.....	22.9	51
<b>3.2 Energy</b>	<b>20.1</b>	<b>64</b>
3.2.1 Electricity output, kWh/cap.....	0.9	109
3.2.2 Electricity consumption, kWh/capita.....	0.5	109
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	8.4	101
3.2.4 Share of renewables in energy use, %.....	51.4	5
<b>3.3 General infrastructure</b>	<b>29.7</b>	<b>101</b>
3.3.1 Quality of trade & transport infrastructure*.....	28.5	99
3.3.2 Gross capital formation, % GDP.....	24.8	68
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.7	52

## 4 Market sophistication 40.1 63

<b>4.1 Credit</b>	<b>47.5</b>	<b>44</b>
4.1.1 Strength of legal rights for credit*.....	100.0	1
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	10.7	73
4.1.4 Microfinance gross loans, % GDP.....	49.3	10
<b>4.2 Investment</b>	<b>30.2</b>	<b>58</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	14.2	52
4.2.3 Total value of stocks traded, % GDP.....	0.9	69
4.2.4 Venture capital deals/tr GDP PPP\$.....	81.3	12
<b>4.3 Trade &amp; competition</b>	<b>42.7</b>	<b>97</b>
4.3.1 Applied tariff rate weighted mean, %.....	68.7	88
4.3.2 Market access trade restrictiveness*, %.....	32.5	78
4.3.3 Imports of goods & services, % GDP.....	21.6	64
4.3.4 Exports of goods & services, % GDP.....	17.9	91
4.3.5 Intensity local competition†.....	67.8	52

## 5 Business sophistication 39.5 51

<b>5.1 Knowledge workers</b>	<b>44.9</b>	<b>55</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	44.9	34
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>45.8</b>	<b>27</b>
5.2.1 University/industry collaboration†.....	46.4	50
5.2.2 State of cluster development†.....	47.2	45
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	66.7	12
<b>5.3 Knowledge absorption</b>	<b>27.8</b>	<b>88</b>
5.3.1 Royalty & license fees payments, % GDP.....	8.7	75
5.3.2 High-tech imports less re-imports, %.....	30.7	33
5.3.3 Computer & comm. service imports, %.....	33.9	72
5.3.4 FDI net inflows, % GDP.....	37.8	111

## 6 Scientific outputs 15.8 105

<b>6.1 Knowledge creation</b>	<b>5.3</b>	<b>75</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	4.1	70
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.8	67
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.5	45
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	12.8	59
<b>6.2 Knowledge impact</b>	<b>20.1</b>	<b>100</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	32.2	94
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	6.6	61
6.2.3 Computer software spending, % GDP.....	23.0	31
<b>6.3 Knowledge diffusion</b>	<b>22.1</b>	<b>86</b>
6.3.1 Royalty & license fees receipts, % GDP.....	8.8	41
6.3.2 High-tech exports less re-exports, %.....	5.9	53
6.3.3 Computer & comm service exports, %.....	25.9	85
6.3.4 FDI net outflows, % GDP.....	47.7	73

## 7 Creative outputs 22.3 108

<b>7.1 Creative intangibles</b>	<b>38.1</b>	<b>92</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	17.3	60
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	1.6	50
7.1.3 ICT & business models†.....	62.2	51
7.1.4 ICT & organizational models†.....	53.1	55
<b>7.2 Creative goods &amp; services</b>	<b>6.5</b>	<b>97</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	12.7	62
7.2.5 Creative services exports, %.....	0.3	91

## Korea, Rep.

## Key indicators

Population (millions)	48.5
GDP per capita, PPP (current international \$)	27,168.5
GDP (US\$ billions)	832.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>53.7</b>	<b>16</b>
Innovation Output Sub-Index .....	47.9	11
Innovation Input Sub-Index.....	59.4	17
Innovation Efficiency Index.....	0.8	25
Global Innovation Index 2010.....		20
Global Innovation Index 2009.....		6

## 1 Institutions 77.4 35

<b>1.1 Political environment</b>	<b>73.9</b>	<b>40</b>
1.1.1 Political stability*.....	52.4	53
1.1.2 Government effectiveness*.....	83.3	28
1.1.3 Press freedom*.....	85.9	39
<b>1.2 Regulatory environment</b>	<b>73.3</b>	<b>40</b>
1.2.1 Regulatory quality*.....	75.2	38
1.2.2 Rule of law*.....	82.5	28
1.2.3 Rigidity of employment*.....	62.0	84
<b>1.3 Business environment</b>	<b>85.2</b>	<b>39</b>
1.3.1 Time to start a business, days.....	87.5	54
1.3.2 Cost to start a business, % income/cap.....	88.5	77
1.3.3 Total tax rate, % profits.....	79.5	28

## 2 Human capital & research 59.9 7

<b>2.1 Education</b>	<b>64.9</b>	<b>39</b>
2.1.1 Education expenditure, % GNI.....	41.1	67
2.1.2 Public expenditure/pupil, % GDP/cap.....	27.5	67
2.1.3 School life expectancy, years.....	76.6	8
2.1.4 PISA scales in reading, maths, & science.....	85.8	5
2.1.5 Pupil-teacher ratio, secondary.....	73.5	80
<b>2.2 Tertiary education</b>	<b>56.4</b>	<b>4</b>
2.2.1 Tertiary enrolment, % gross.....	100.0	1
2.2.2 Graduates in science, %.....	28.8	50
2.2.3 Graduates in engineering, %.....	82.1	3
2.2.4 Tertiary inbound mobility, %.....	3.1	66
2.2.5 Tertiary outbound mobility, %.....	25.9	58
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>58.4</b>	<b>12</b>
2.3.1 Researchers headcount/million pop.....	45.7	11
2.3.2 Gross expenditure on R&D, % GDP.....	65.8	5
2.3.3 Quality research institutions†.....	63.7	24

## 3 Infrastructure 48.2 6

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>81.0</b>	<b>1</b>
3.1.1 ICT access*.....	76.0	14
3.1.2 ICT use*.....	66.9	2
3.1.3 Government's Online Service*.....	100.0	1
3.1.4 E-Participation*.....	100.0	1
<b>3.2 Energy</b>	<b>22.4</b>	<b>54</b>
3.2.1 Electricity output, kWh/cap.....	47.2	13
3.2.2 Electricity consumption, kWh/capita.....	37.1	14
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	24.1	70
3.2.4 Share of renewables in energy use, %.....	1.0	98
<b>3.3 General infrastructure</b>	<b>41.2</b>	<b>30</b>
3.3.1 Quality of trade & transport infrastructure*.....	65.5	22
3.3.2 Gross capital formation, % GDP.....	37.7	29
3.3.3 Ecological footprint & biocapacity, ha/cap.....	20.3	113

## 4 Market sophistication 61.8 12

<b>4.1 Credit</b>	<b>66.3</b>	<b>19</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	47.5	18
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>62.8</b>	<b>9</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	40.6	15
4.2.3 Total value of stocks traded, % GDP.....	100.0	4
4.2.4 Venture capital deals/tr GDP PPP\$.....	52.1	42
<b>4.3 Trade &amp; competition</b>	<b>56.4</b>	<b>39</b>
4.3.1 Applied tariff rate weighted mean, %.....	64.7	95
4.3.2 Market access trade restrictiveness*, %.....	76.4	41
4.3.3 Imports of goods & services, % GDP.....	27.7	46
4.3.4 Exports of goods & services, % GDP.....	45.2	34
4.3.5 Intensity local competition†.....	77.7	12

## 5 Business sophistication 49.8 26

<b>5.1 Knowledge workers</b>	<b>57.7</b>	<b>35</b>
5.1.1 Knowledge-intensive employment, %.....	41.3	57
5.1.2 Firms offering formal training, % firms.....	43.4	36
5.1.3 R&D performed by business, %.....	89.8	5
5.1.4 R&D financed by business, %.....	86.9	5
<b>5.2 Innovation linkages</b>	<b>33.5</b>	<b>61</b>
5.2.1 University/industry collaboration†.....	61.3	22
5.2.2 State of cluster development†.....	54.7	25
5.2.3 R&D financed by abroad, %.....	0.8	71
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	17.0	38
5.2.5 PCT patent filings with foreign inventor, %.....	8.9	66
<b>5.3 Knowledge absorption</b>	<b>58.4</b>	<b>8</b>
5.3.1 Royalty & license fees payments, % GDP.....	82.1	8
5.3.2 High-tech imports less re-imports, %.....	50.4	10
5.3.3 Computer & comm. service imports, %.....	64.5	17
5.3.4 FDI net inflows, % GDP.....	36.5	116

## 6 Scientific outputs 53.7 7

<b>6.1 Knowledge creation</b>	<b>80.8</b>	<b>1</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	100.0	1
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	91.7	6
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	100.0	5
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	41.3	26
<b>6.2 Knowledge impact</b>	<b>26.5</b>	<b>78</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	41.8	59
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	13.4	45
6.2.3 Computer software spending, % GDP.....	22.2	32
<b>6.3 Knowledge diffusion</b>	<b>53.6</b>	<b>17</b>
6.3.1 Royalty & license fees receipts, % GDP.....	51.2	16
6.3.2 High-tech exports less re-exports, %.....	76.1	4
6.3.3 Computer & comm service exports, %.....	36.3	58
6.3.4 FDI net outflows, % GDP.....	50.9	36

## 7 Creative outputs 42.2 27

<b>7.1 Creative intangibles</b>	<b>58.7</b>	<b>15</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	53.0	12
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	5.5	44
7.1.3 ICT & business models†.....	81.3	2
7.1.4 ICT & organizational models†.....	68.6	19
<b>7.2 Creative goods &amp; services</b>	<b>25.6</b>	<b>51</b>
7.2.1 Recreation & culture consumption, %.....	68.6	21
7.2.2 National feature films/mn pop.....	34.7	24
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	11.0	68
7.2.5 Creative services exports, %.....	14.2	38

## Key indicators

Population (millions)	3.1
GDP per capita, PPP (current international \$)	48,631.3
GDP (US\$ billions)	148.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>36.6</b>	<b>52</b>
Innovation Output Index.....	30.8	51
Innovation Input Index .....	42.4	51
Innovation Efficiency index.....	0.7	57
Global Innovation Index 2010.....		33
Global Innovation Index 2009.....		30

## 1 Institutions 75.3 39

<b>1.1 Political environment</b>	<b>65.2</b>	<b>50</b>
1.1.1 Political stability*.....	59.4	45
1.1.2 Government effectiveness*.....	61.4	56
1.1.3 Press freedom*.....	74.9	71
<b>1.2 Regulatory environment</b>	<b>73.9</b>	<b>37</b>
1.2.1 Regulatory quality*.....	55.7	67
1.2.2 Rule of law*.....	66.0	43
1.2.3 Rigidity of employment*.....	100.0	1
<b>1.3 Business environment</b>	<b>86.8</b>	<b>26</b>
1.3.1 Time to start a business, days.....	67.3	99
1.3.2 Cost to start a business, % income/cap.....	99.0	15
1.3.3 Total tax rate, % profits.....	94.0	8

## 2 Human capital & research 35.8 67

<b>2.1 Education</b>	<b>61.1</b>	<b>49</b>
2.1.1 Education expenditure, % GNI.....	29.0	94
2.1.2 Public expenditure/pupil, % GDP/cap.....	44.4	24
2.1.3 School life expectancy, years.....	48.8	72
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	97.7	7
<b>2.2 Tertiary education</b>	<b>31.8</b>	<b>56</b>
2.2.1 Tertiary enrolment, % gross.....	18.9	83
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	49.5	17
2.2.6 Gross tertiary outbound enrolment, %.....	39.8	18
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>14.5</b>	<b>101</b>
2.3.1 Researchers headcount/million pop.....	1.2	78
2.3.2 Gross expenditure on R&D, % GDP.....	1.2	87
2.3.3 Quality research institutions**.....	41.1	70

## 3 Infrastructure 31.2 48

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>30.8</b>	<b>52</b>
3.1.1 ICT access*.....	45.0	54
3.1.2 ICT use*.....	12.9	58
3.1.3 Government's Online Service*.....	46.0	34
3.1.4 E-Participation*.....	22.9	51
<b>3.2 Energy</b>	<b>31.8</b>	<b>11</b>
3.2.1 Electricity output, kWh/cap.....	98.4	4
3.2.2 Electricity consumption, kWh/capita.....	70.5	4
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	10.9	95
3.2.4 Share of renewables in energy use, %.....	0.0	111
<b>3.3 General infrastructure</b>	<b>31.0</b>	<b>95</b>
3.3.1 Quality of trade & transport infrastructure*.....	58.3	30
3.3.2 Gross capital formation, % GDP.....	19.8	88
3.3.3 Ecological footprint & biocapacity, ha/cap.....	15.0	116

## 4 Market sophistication 46.9 40

<b>4.1 Credit</b>	<b>40.7</b>	<b>59</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	28.0	36
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>44.5</b>	<b>25</b>
4.2.1 Strength of investor protection*.....	63.0	27
4.2.2 Market capitalization, % GDP.....	29.2	24
4.2.3 Total value of stocks traded, % GDP.....	46.2	14
4.2.4 Venture capital deals/tr GDP PPP\$.....	34.9	58
<b>4.3 Trade &amp; competition</b>	<b>55.4</b>	<b>43</b>
4.3.1 Applied tariff rate weighted mean, %.....	80.0	70
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	11.5	102
4.3.4 Exports of goods & services, % GDP.....	63.5	20
4.3.5 Intensity local competition**.....	66.7	57

## 5 Business sophistication 23.1 115

<b>5.1 Knowledge workers</b>	<b>23.2</b>	<b>107</b>
5.1.1 Knowledge-intensive employment, %.....	33.6	72
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, %.....	2.4	69
<b>5.2 Innovation linkages</b>	<b>27.5</b>	<b>85</b>
5.2.1 University/industry collaboration**.....	36.3	87
5.2.2 State of cluster development**.....	40.8	68
5.2.3 R&D financed by abroad, %.....	2.7	67
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	8.0	56
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>18.5</b>	<b>120</b>
5.3.1 Royalty & license fees payments, % 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, %.....	1.4	118
5.3.4 FDI net inflows, % GDP.....	35.7	118

## 6 Scientific outputs 38.1 23

<b>6.1 Knowledge creation</b>	<b>5.1</b>	<b>76</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.1	87
<b>6.2 Knowledge impact</b>	<b>34.3</b>	<b>50</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	46.1	40
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	10.7	49
<b>6.3 Knowledge diffusion</b>	<b>75.0</b>	<b>3</b>
6.3.1 Royalty & license fees receipts, % 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, %.....	85.4	7
6.3.4 FDI net outflows, % GDP.....	64.6	10

## 7 Creative outputs 23.5 103

<b>7.1 Creative intangibles</b>	<b>46.2</b>	<b>58</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models**.....	45.9	108
7.1.4 ICT & organizational models**.....	46.5	81
<b>7.2 Creative goods &amp; services</b>	<b>0.9</b>	<b>120</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.9	107
7.2.5 Creative services exports, %.....	n/a	n/a

## Kyrgyzstan

## Key indicators

Population (millions)	5.6
GDP per capita, PPP (current international \$)	2,283.3
GDP (US\$ billions)	4.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.8</b>	<b>85</b>
Innovation Output Sub-Index .....	24.7	80
Innovation Input Sub-Index.....	34.9	89
Innovation Efficiency Index.....	0.7	61
Global Innovation Index 2010.....		104
Global Innovation Index 2009.....		122

## 1 Institutions 49.5 104

<b>1.1 Political environment</b>	<b>25.6</b>	<b>118</b>
1.1.1 Political stability*.....	26.4	88
1.1.2 Government effectiveness*.....	17.1	117
1.1.3 Press freedom*.....	33.4	116
<b>1.2 Regulatory environment</b>	<b>42.9</b>	<b>103</b>
1.2.1 Regulatory quality*.....	39.5	93
1.2.2 Rule of law*.....	7.1	121
1.2.3 Rigidity of employment*.....	82.0	39
<b>1.3 Business environment</b>	<b>80.1</b>	<b>64</b>
1.3.1 Time to start a business, days.....	91.3	39
1.3.2 Cost to start a business, % income/cap.....	97.1	35
1.3.3 Total tax rate, % profits.....	51.7	111

## 2 Human capital & research 29.7 95

<b>2.1 Education</b>	<b>51.6</b>	<b>85</b>
2.1.1 Education expenditure, % GNI.....	58.2	31
2.1.2 Public expenditure/pupil, % GDP/cap.....	35.8	42
2.1.3 School life expectancy, years.....	49.1	70
2.1.4 PISA scales in reading, maths, & science.....	0.0	62
2.1.5 Pupil-teacher ratio, secondary.....	84.5	56
<b>2.2 Tertiary education</b>	<b>28.5</b>	<b>71</b>
2.2.1 Tertiary enrolment, % gross.....	51.6	43
2.2.2 Graduates in science, %.....	19.2	76
2.2.3 Graduates in engineering, %.....	29.1	56
2.2.4 Tertiary inbound mobility, %.....	34.4	16
2.2.5 Tertiary outbound mobility, %.....	13.4	94
2.2.6 Gross tertiary outbound enrolment, %.....	8.8	68
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>8.9</b>	<b>118</b>
2.3.1 Researchers headcount/million pop.....	2.8	68
2.3.2 Gross expenditure on R&D, % GDP.....	4.2	66
2.3.3 Quality research institutions†.....	19.6	121

## 3 Infrastructure 22.5 97

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>21.8</b>	<b>80</b>
3.1.1 ICT access*.....	22.7	96
3.1.2 ICT use*.....	5.3	87
3.1.3 Government's Online Service*.....	31.8	67
3.1.4 E-Participation*.....	42.9	29
<b>3.2 Energy</b>	<b>14.9</b>	<b>91</b>
3.2.1 Electricity output, kWh/cap.....	11.6	71
3.2.2 Electricity consumption, kWh/capita.....	5.9	79
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	15.9	87
3.2.4 Share of renewables in energy use, %.....	19.9	33
<b>3.3 General infrastructure</b>	<b>31.0</b>	<b>94</b>
3.3.1 Quality of trade & transport infrastructure*.....	27.3	104
3.3.2 Gross capital formation, % GDP.....	27.8	56
3.3.3 Ecological footprint & biocapacity, ha/cap.....	38.0	31

## 4 Market sophistication 40.2 61

<b>4.1 Credit</b>	<b>45.5</b>	<b>47</b>
4.1.1 Strength of legal rights for credit*.....	100.0	1
4.1.2 Depth of credit information*.....	50.0	89
4.1.3 Domestic credit to private sector, % GDP.....	3.6	103
4.1.4 Microfinance gross loans, % GDP.....	70.0	5
<b>4.2 Investment</b>	<b>22.3</b>	<b>88</b>
4.2.1 Strength of investor protection*.....	77.0	12
4.2.2 Market capitalization, % GDP.....	0.4	100
4.2.3 Total value of stocks traded, % GDP.....	0.8	70
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>52.8</b>	<b>56</b>
4.3.1 Applied tariff rate weighted mean, %.....	57.7	102
4.3.2 Market access trade restrictiveness*, %.....	63.0	59
4.3.3 Imports of goods & services, % GDP.....	55.6	6
4.3.4 Exports of goods & services, % GDP.....	45.2	35
4.3.5 Intensity local competition†.....	47.4	117

## 5 Business sophistication 32.7 75

<b>5.1 Knowledge workers</b>	<b>34.0</b>	<b>81</b>
5.1.1 Knowledge-intensive employment, %.....	32.8	75
5.1.2 Firms offering formal training, % firms.....	31.2	56
5.1.3 R&D performed by business, %.....	33.4	52
5.1.4 R&D financed by business, %.....	42.7	40
<b>5.2 Innovation linkages</b>	<b>36.1</b>	<b>45</b>
5.2.1 University/industry collaboration†.....	19.7	122
5.2.2 State of cluster development†.....	24.8	116
5.2.3 R&D financed by abroad, %.....	0.0	75
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	100.0	1
<b>5.3 Knowledge absorption</b>	<b>28.0</b>	<b>86</b>
5.3.1 Royalty & license fees payments, % GDP.....	26.9	35
5.3.2 High-tech imports less re-imports, %.....	7.2	103
5.3.3 Computer & comm. service imports, %.....	24.3	95
5.3.4 FDI net inflows, % GDP.....	53.6	35

## 6 Scientific outputs 26.1 53

<b>6.1 Knowledge creation</b>	<b>21.7</b>	<b>39</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	69.1	11
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.1	65
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	3.7	33
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	4.1	91
<b>6.2 Knowledge impact</b>	<b>32.6</b>	<b>60</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	55.4	18
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.8	51
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>23.8</b>	<b>76</b>
6.3.1 Royalty & license fees receipts, % GDP.....	10.9	31
6.3.2 High-tech exports less re-exports, %.....	0.6	91
6.3.3 Computer & comm service exports, %.....	36.6	57
6.3.4 FDI net outflows, % GDP.....	47.2	107

## 7 Creative outputs 23.3 104

<b>7.1 Creative intangibles</b>	<b>22.4</b>	<b>121</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	13.4	73
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	35.1	119
7.1.4 ICT & organizational models†.....	29.9	119
<b>7.2 Creative goods &amp; services</b>	<b>24.1</b>	<b>56</b>
7.2.1 Recreation & culture consumption, %.....	3.5	64
7.2.2 National feature films/mn pop.....	1.6	74
7.2.3 Daily newspapers/1,000 literate pop.....	0.0	62
7.2.4 Creative goods exports, %.....	4.8	86
7.2.5 Creative services exports, %.....	77.0	5

## Key indicators

Population (millions)	2.2
GDP per capita, PPP (current international \$)	15,412.8
GDP (US\$ billions)	26.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>39.8</b>	<b>36</b>
Innovation Output Sub-Index .....	32.1	45
Innovation Input Sub-Index.....	47.5	38
Innovation Efficiency Index.....	0.7	72
Global Innovation Index 2010.....		44
Global Innovation Index 2009.....		60

## 1 Institutions 76.4 36

<b>1.1 Political environment</b>	<b>74.0</b>	<b>39</b>
1.1.1 Political stability*.....	61.3	44
1.1.2 Government effectiveness*.....	69.5	44
1.1.3 Press freedom*.....	91.0	28
<b>1.2 Regulatory environment</b>	<b>70.4</b>	<b>46</b>
1.2.1 Regulatory quality*.....	80.0	31
1.2.2 Rule of law*.....	74.1	33
1.2.3 Rigidity of employment*.....	57.0	102
<b>1.3 Business environment</b>	<b>85.0</b>	<b>42</b>
1.3.1 Time to start a business, days.....	85.6	63
1.3.2 Cost to start a business, % income/cap.....	98.8	17
1.3.3 Total tax rate, % profits.....	70.7	59

## 2 Human capital & research 42.8 47

<b>2.1 Education</b>	<b>69.7</b>	<b>21</b>
2.1.1 Education expenditure, % GNI.....	62.9	23
2.1.2 Public expenditure/pupil, % GDP/cap.....	37.7	36
2.1.3 School life expectancy, years.....	67.8	29
2.1.4 PISA scales in reading, maths, & science.....	64.2	30
2.1.5 Pupil-teacher ratio, secondary.....	93.7	20
<b>2.2 Tertiary education</b>	<b>30.5</b>	<b>65</b>
2.2.1 Tertiary enrolment, % gross.....	70.4	18
2.2.2 Graduates in science, %.....	17.3	78
2.2.3 Graduates in engineering, %.....	21.8	69
2.2.4 Tertiary inbound mobility, %.....	2.7	68
2.2.5 Tertiary outbound mobility, %.....	24.4	62
2.2.6 Gross tertiary outbound enrolment, %.....	28.2	30
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>28.3</b>	<b>50</b>
2.3.1 Researchers headcount/million pop.....	26.1	25
2.3.2 Gross expenditure on R&D, % GDP.....	12.1	47
2.3.3 Quality research institutions†.....	46.6	57

## 3 Infrastructure 33.4 40

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>40.5</b>	<b>38</b>
3.1.1 ICT access*.....	59.9	39
3.1.2 ICT use*.....	27.2	40
3.1.3 Government's Online Service*.....	41.6	40
3.1.4 E-Participation*.....	27.1	44
<b>3.2 Energy</b>	<b>23.1</b>	<b>50</b>
3.2.1 Electricity output, kWh/cap.....	12.0	70
3.2.2 Electricity consumption, kWh/capita.....	12.9	54
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	37.9	34
3.2.4 Share of renewables in energy use, %.....	18.9	35
<b>3.3 General infrastructure</b>	<b>36.7</b>	<b>57</b>
3.3.1 Quality of trade & transport infrastructure*.....	47.0	47
3.3.2 Gross capital formation, % GDP.....	19.8	87
3.3.3 Ecological footprint & biocapacity, ha/cap.....	43.2	15

## 4 Market sophistication 47.3 38

<b>4.1 Credit</b>	<b>62.9</b>	<b>23</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	39.2	24
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>25.0</b>	<b>75</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	2.6	91
4.2.3 Total value of stocks traded, % GDP.....	0.0	95
4.2.4 Venture capital deals/tr GDP PPP\$.....	56.1	37
<b>4.3 Trade &amp; competition</b>	<b>54.1</b>	<b>48</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	25.4	52
4.3.4 Exports of goods & services, % GDP.....	36.7	48
4.3.5 Intensity local competition†.....	59.9	86

## 5 Business sophistication 37.3 59

<b>5.1 Knowledge workers</b>	<b>52.2</b>	<b>40</b>
5.1.1 Knowledge-intensive employment, %.....	77.7	19
5.1.2 Firms offering formal training, % firms.....	48.4	31
5.1.3 R&D performed by business, %.....	29.5	55
5.1.4 R&D financed by business, %.....	31.7	51
<b>5.2 Innovation linkages</b>	<b>32.7</b>	<b>62</b>
5.2.1 University/industry collaboration†.....	41.0	66
5.2.2 State of cluster development†.....	34.8	87
5.2.3 R&D financed by abroad, %.....	81.3	7
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	14.3	52
<b>5.3 Knowledge absorption</b>	<b>27.1</b>	<b>93</b>
5.3.1 Royalty & license fees payments, % GDP.....	11.0	68
5.3.2 High-tech imports less re-imports, %.....	15.3	80
5.3.3 Computer & comm. service imports, %.....	44.7	54
5.3.4 FDI net inflows, % GDP.....	37.3	113

## 6 Scientific outputs 23.3 68

<b>6.1 Knowledge creation</b>	<b>22.3</b>	<b>38</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	45.7	17
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	10.6	32
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	10.5	61
<b>6.2 Knowledge impact</b>	<b>24.1</b>	<b>86</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	12.4	107
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	35.9	18
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>23.4</b>	<b>79</b>
6.3.1 Royalty & license fees receipts, % GDP.....	3.6	56
6.3.2 High-tech exports less re-exports, %.....	14.0	39
6.3.3 Computer & comm service exports, %.....	29.5	73
6.3.4 FDI net outflows, % GDP.....	46.6	113

## 7 Creative outputs 41.0 33

<b>7.1 Creative intangibles</b>	<b>49.1</b>	<b>49</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	24.5	36
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	97.5	4
7.1.3 ICT & business models†.....	51.6	91
7.1.4 ICT & organizational models†.....	47.2	76
<b>7.2 Creative goods &amp; services</b>	<b>32.9</b>	<b>27</b>
7.2.1 Recreation & culture consumption, %.....	73.2	14
7.2.2 National feature films/mn pop.....	11.1	42
7.2.3 Daily newspapers/1,000 literate pop.....	27.8	20
7.2.4 Creative goods exports, %.....	28.1	30
7.2.5 Creative services exports, %.....	30.9	24

## Lebanon

## Key indicators

Population (millions)	4.3
GDP per capita, PPP (current international \$)	13,069.7
GDP (US\$ billions)	34.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>37.1</b>	<b>49</b>
Innovation Output Sub-Index .....	33.3	41
Innovation Input Sub-Index.....	40.9	57
Innovation Efficiency Index.....	0.8	23
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 54.3 86

<b>1.1 Political environment</b>	<b>39.3</b>	<b>94</b>
1.1.1 Political stability*.....	9.0	116
1.1.2 Government effectiveness*.....	30.5	100
1.1.3 Press freedom*.....	78.3	63
<b>1.2 Regulatory environment</b>	<b>52.5</b>	<b>80</b>
1.2.1 Regulatory quality*.....	50.5	76
1.2.2 Rule of law*.....	32.1	94
1.2.3 Rigidity of employment*.....	75.0	61
<b>1.3 Business environment</b>	<b>71.0</b>	<b>88</b>
1.3.1 Time to start a business, days.....	92.3	34
1.3.2 Cost to start a business, % income/cap.....	41.5	113
1.3.3 Total tax rate, % profits.....	79.1	31

## 2 Human capital & research 41.0 51

<b>2.1 Education</b>	<b>52.6</b>	<b>81</b>
2.1.1 Education expenditure, % GNI.....	9.5	117
2.1.2 Public expenditure/pupil, % GDP/cap.....	0.0	105
2.1.3 School life expectancy, years.....	57.7	48
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	95.2	13
<b>2.2 Tertiary education</b>	<b>46.8</b>	<b>17</b>
2.2.1 Tertiary enrolment, % gross.....	53.3	40
2.2.2 Graduates in science, %.....	58.0	11
2.2.3 Graduates in engineering, %.....	34.0	46
2.2.4 Tertiary inbound mobility, %.....	49.2	12
2.2.5 Tertiary outbound mobility, %.....	36.1	35
2.2.6 Gross tertiary outbound enrolment, %.....	45.1	15
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>23.6</b>	<b>64</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	23.6	117

## 3 Infrastructure 25.6 75

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>23.1</b>	<b>74</b>
3.1.1 ICT access*.....	32.0	84
3.1.2 ICT use*.....	10.3	70
3.1.3 Government's Online Service*.....	26.7	85
3.1.4 E-Participation*.....	27.1	44
<b>3.2 Energy</b>	<b>11.1</b>	<b>104</b>
3.2.1 Electricity output, kWh/cap.....	13.3	65
3.2.2 Electricity consumption, kWh/capita.....	9.5	65
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	19.8	80
3.2.4 Share of renewables in energy use, %.....	2.3	90
<b>3.3 General infrastructure</b>	<b>42.7</b>	<b>20</b>
3.3.1 Quality of trade & transport infrastructure*.....	51.3	40
3.3.2 Gross capital formation, % GDP.....	48.6	18
3.3.3 Ecological footprint & biocapacity, ha/cap.....	28.1	93

## 4 Market sophistication 39.0 67

<b>4.1 Credit</b>	<b>35.4</b>	<b>77</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	31.6	32
4.1.4 Microfinance gross loans, % GDP.....	0.6	61
<b>4.2 Investment</b>	<b>28.3</b>	<b>64</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	15.0	50
4.2.3 Total value of stocks traded, % GDP.....	1.7	61
4.2.4 Venture capital deals/tr GDP PPP\$.....	64.5	29
<b>4.3 Trade &amp; competition</b>	<b>53.4</b>	<b>51</b>
4.3.1 Applied tariff rate weighted mean, %.....	76.4	76
4.3.2 Market access trade restrictiveness*, %.....	88.8	23
4.3.3 Imports of goods & services, % GDP.....	28.6	44
4.3.4 Exports of goods & services, % GDP.....	14.7	102
4.3.5 Intensity local competition†.....	76.3	19

## 5 Business sophistication 44.5 39

<b>5.1 Knowledge workers</b>	<b>60.1</b>	<b>32</b>
5.1.1 Knowledge-intensive employment, %.....	60.6	36
5.1.2 Firms offering formal training, % firms.....	59.5	14
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>26.8</b>	<b>87</b>
5.2.1 University/industry collaboration†.....	34.2	99
5.2.2 State of cluster development†.....	32.9	95
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>46.6</b>	<b>22</b>
5.3.1 Royalty & license fees payments, % GDP.....	2.0	102
5.3.2 High-tech imports less re-imports, %.....	16.2	75
5.3.3 Computer & comm. service imports, %.....	72.3	8
5.3.4 FDI net inflows, % GDP.....	96.0	5

## 6 Scientific outputs 31.0 35

<b>6.1 Knowledge creation</b>	<b>15.1</b>	<b>49</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	15.1	55
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>46.9</b>	<b>22</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	12.4	43
6.3.3 Computer & comm service exports, %.....	71.7	16
6.3.4 FDI net outflows, % GDP.....	56.5	18

## 7 Creative outputs 35.7 56

<b>7.1 Creative intangibles</b>	<b>42.1</b>	<b>76</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	46.6	106
7.1.4 ICT & organizational models†.....	37.7	114
<b>7.2 Creative goods &amp; services</b>	<b>29.2</b>	<b>40</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	26.1	30
7.2.3 Daily newspapers/1,000 literate pop.....	13.1	40
7.2.4 Creative goods exports, %.....	68.1	3
7.2.5 Creative services exports, %.....	0.0	98

## Key indicators

Population (millions)	3.3
GDP per capita, PPP (current international \$)	16,747.1
GDP (US\$ billions)	37.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.5</b>	<b>40</b>
Innovation Output Sub-Index .....	29.5	59
Innovation Input Sub-Index.....	47.5	39
Innovation Efficiency Index.....	0.6	91
Global Innovation Index 2010.....		39
Global Innovation Index 2009.....		42

## 1 Institutions 78.0 33

<b>1.1 Political environment</b>	<b>80.5</b>	<b>25</b>
1.1.1 Political stability*.....	70.8	31
1.1.2 Government effectiveness*.....	73.3	37
1.1.3 Press freedom*.....	97.4	11
<b>1.2 Regulatory environment</b>	<b>70.9</b>	<b>44</b>
1.2.1 Regulatory quality*.....	79.5	32
1.2.2 Rule of law*.....	71.2	36
1.2.3 Rigidity of employment*.....	62.0	84
<b>1.3 Business environment</b>	<b>82.7</b>	<b>52</b>
1.3.1 Time to start a business, days.....	79.8	78
1.3.2 Cost to start a business, % income/cap.....	97.8	29
1.3.3 Total tax rate, % profits.....	70.5	60

## 2 Human capital & research 47.0 34

<b>2.1 Education</b>	<b>67.7</b>	<b>32</b>
2.1.1 Education expenditure, % GNI.....	49.8	50
2.1.2 Public expenditure/pupil, % GDP/cap.....	30.1	57
2.1.3 School life expectancy, years.....	71.3	17
2.1.4 PISA scales in reading, maths, & science.....	61.1	34
2.1.5 Pupil-teacher ratio, secondary.....	95.3	12
<b>2.2 Tertiary education</b>	<b>39.9</b>	<b>33</b>
2.2.1 Tertiary enrolment, % gross.....	78.7	10
2.2.2 Graduates in science, %.....	19.2	75
2.2.3 Graduates in engineering, %.....	49.7	23
2.2.4 Tertiary inbound mobility, %.....	3.9	61
2.2.5 Tertiary outbound mobility, %.....	25.8	59
2.2.6 Gross tertiary outbound enrolment, %.....	34.6	21
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>33.4</b>	<b>40</b>
2.3.1 Researchers headcount/million pop.....	30.2	23
2.3.2 Gross expenditure on R&D, % GDP.....	16.0	39
2.3.3 Quality research institutions†.....	53.9	37

## 3 Infrastructure 35.0 35

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>47.7</b>	<b>28</b>
3.1.1 ICT access*.....	63.3	35
3.1.2 ICT use*.....	29.3	38
3.1.3 Government's Online Service*.....	48.3	29
3.1.4 E-Participation*.....	52.9	20
<b>3.2 Energy</b>	<b>17.4</b>	<b>79</b>
3.2.1 Electricity output, kWh/cap.....	20.5	49
3.2.2 Electricity consumption, kWh/capita.....	14.8	50
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	28.8	54
3.2.4 Share of renewables in energy use, %.....	5.7	68
<b>3.3 General infrastructure</b>	<b>40.0</b>	<b>38</b>
3.3.1 Quality of trade & transport infrastructure*.....	43.0	52
3.3.2 Gross capital formation, % GDP.....	40.5	26
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.5	41

## 4 Market sophistication 43.9 48

<b>4.1 Credit</b>	<b>50.7</b>	<b>35</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	26.3	39
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>15.7</b>	<b>112</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	4.6	84
4.2.3 Total value of stocks traded, % GDP.....	0.5	80
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>65.4</b>	<b>14</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	48.3	15
4.3.4 Exports of goods & services, % GDP.....	56.6	21
4.3.5 Intensity local competition†.....	62.2	75

## 5 Business sophistication 33.3 74

<b>5.1 Knowledge workers</b>	<b>51.6</b>	<b>41</b>
5.1.1 Knowledge-intensive employment, %.....	76.6	20
5.1.2 Firms offering formal training, % firms.....	51.5	27
5.1.3 R&D performed by business, %.....	28.0	57
5.1.4 R&D financed by business, %.....	25.0	56
<b>5.2 Innovation linkages</b>	<b>28.1</b>	<b>82</b>
5.2.1 University/industry collaboration†.....	54.1	33
5.2.2 State of cluster development†.....	30.9	100
5.2.3 R&D financed by abroad, %.....	54.5	13
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>20.2</b>	<b>116</b>
5.3.1 Royalty & license fees payments, % GDP.....	9.2	74
5.3.2 High-tech imports less re-imports, %.....	8.2	95
5.3.3 Computer & comm. service imports, %.....	25.2	93
5.3.4 FDI net inflows, % GDP.....	38.4	107

## 6 Scientific outputs 21.8 78

<b>6.1 Knowledge creation</b>	<b>11.3</b>	<b>60</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	10.0	56
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	2.6	52
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	21.4	42
<b>6.2 Knowledge impact</b>	<b>33.5</b>	<b>54</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	50.0	30
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	17.0	40
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>20.7</b>	<b>95</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.1	85
6.3.2 High-tech exports less re-exports, %.....	16.2	35
6.3.3 Computer & comm service exports, %.....	17.6	96
6.3.4 FDI net outflows, % GDP.....	48.8	53

## 7 Creative outputs 37.2 49

<b>7.1 Creative intangibles</b>	<b>48.0</b>	<b>52</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	23.6	40
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	18.2	30
7.1.3 ICT & business models†.....	69.9	28
7.1.4 ICT & organizational models†.....	65.4	24
<b>7.2 Creative goods &amp; services</b>	<b>26.4</b>	<b>50</b>
7.2.1 Recreation & culture consumption, %.....	68.5	22
7.2.2 National feature films/mn pop.....	3.0	71
7.2.3 Daily newspapers/1,000 literate pop.....	20.0	31
7.2.4 Creative goods exports, %.....	35.4	18
7.2.5 Creative services exports, %.....	11.4	42

# Luxembourg

## Key indicators

Population (millions)	0.5
GDP per capita, PPP (current international \$)	83,758.8
GDP (US\$ billions)	52.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>52.7</b>	<b>17</b>
Innovation Output Sub-Index .....	41.4	25
Innovation Input Sub-Index.....	63.9	9
Innovation Efficiency Index.....	0.6	84
Global Innovation Index 2010.....		15
Global Innovation Index 2009.....		17

## 1 Institutions 88.3 11

<b>1.1 Political environment</b>	<b>96.1</b>	<b>3</b>
1.1.1 Political stability*.....	96.2	1
1.1.2 Government effectiveness*.....	96.2	8
1.1.3 Press freedom*.....	95.8	14
<b>1.2 Regulatory environment</b>	<b>79.1</b>	<b>27</b>
1.2.1 Regulatory quality*.....	95.7	10
1.2.2 Rule of law*.....	97.6	6
1.2.3 Rigidity of employment*.....	44.0	116
<b>1.3 Business environment</b>	<b>89.8</b>	<b>18</b>
1.3.1 Time to start a business, days.....	82.7	70
1.3.2 Cost to start a business, % income/cap.....	98.4	23
1.3.3 Total tax rate, % profits.....	88.3	11

## 2 Human capital & research 56.6 14

<b>2.1 Education</b>	<b>61.1</b>	<b>48</b>
2.1.1 Education expenditure, % GNI.....	38.3	71
2.1.2 Public expenditure/pupil, % GDP/cap.....	32.0	52
2.1.3 School life expectancy, years.....	54.8	60
2.1.4 PISA scales in reading, maths, & science.....	62.2	33
2.1.5 Pupil-teacher ratio, secondary.....	92.8	26
<b>2.2 Tertiary education</b>	<b>63.9</b>	<b>3</b>
2.2.1 Tertiary enrolment, % gross.....	97.7	96
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	100.0	1
2.2.5 Tertiary outbound mobility, %.....	100.0	1
2.2.6 Gross tertiary outbound enrolment, %.....	100.0	2
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>44.7</b>	<b>25</b>
2.3.1 Researchers headcount/million pop.....	39.4	14
2.3.2 Gross expenditure on R&D, % GDP.....	35.4	18
2.3.3 Quality research institutions†.....	59.3	32

## 3 Infrastructure 43.3 20

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>62.1</b>	<b>16</b>
3.1.1 ICT access*.....	88.0	2
3.1.2 ICT use*.....	70.9	1
3.1.3 Government's Online Service*.....	38.1	50
3.1.4 E-Participation*.....	17.1	65
<b>3.2 Energy</b>	<b>29.8</b>	<b>19</b>
3.2.1 Electricity output, kWh/cap.....	32.5	33
3.2.2 Electricity consumption, kWh/capita.....	60.4	8
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	41.2	27
3.2.4 Share of renewables in energy use, %.....	1.8	95
<b>3.3 General infrastructure</b>	<b>37.9</b>	<b>52</b>
3.3.1 Quality of trade & transport infrastructure*.....	76.5	9
3.3.2 Gross capital formation, % GDP.....	13.6	104
3.3.3 Ecological footprint & biocapacity, ha/cap.....	23.5	102

## 4 Market sophistication 57.5 22

<b>4.1 Credit</b>	<b>35.0</b>	<b>79</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>46.4</b>	<b>22</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	81.6	3
4.2.3 Total value of stocks traded, % GDP.....	0.3	85
4.2.4 Venture capital deals/tr GDP PPP\$.....	74.9	15
<b>4.3 Trade &amp; competition</b>	<b>91.0</b>	<b>3</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	100.0	3
4.3.4 Exports of goods & services, % GDP.....	100.0	3
4.3.5 Intensity local competition†.....	69.8	41

## 5 Business sophistication 74.0 2

<b>5.1 Knowledge workers</b>	<b>92.8</b>	<b>1</b>
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, %.....	96.0	2
5.1.4 R&D financed by business, %.....	89.7	4
<b>5.2 Innovation linkages</b>	<b>67.6</b>	<b>2</b>
5.2.1 University/industry collaboration†.....	67.7	14
5.2.2 State of cluster development†.....	65.3	5
5.2.3 R&D financed by abroad, %.....	19.9	43
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	68.0	6
5.2.5 PCT patent filings with foreign inventor, %.....	93.5	6
<b>5.3 Knowledge absorption</b>	<b>61.7</b>	<b>6</b>
5.3.1 Royalty & license fees payments, % GDP.....	86.1	6
5.3.2 High-tech imports less re-imports, %.....	23.3	53
5.3.3 Computer & comm. service imports, %.....	37.4	64
5.3.4 FDI net inflows, % GDP.....	100.0	1

## 6 Scientific outputs 43.2 20

<b>6.1 Knowledge creation</b>	<b>33.7</b>	<b>24</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	9.7	57
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	86.3	7
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.3	84
<b>6.2 Knowledge impact</b>	<b>34.1</b>	<b>52</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	10.7	108
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	57.4	10
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>61.9</b>	<b>9</b>
6.3.1 Royalty & license fees receipts, % GDP.....	99.2	5
6.3.2 High-tech exports less re-exports, %.....	18.4	30
6.3.3 Computer & comm service exports, %.....	30.0	71
6.3.4 FDI net outflows, % GDP.....	100.0	1

## 7 Creative outputs 39.5 42

<b>7.1 Creative intangibles</b>	<b>42.8</b>	<b>72</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	20.5	50
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	68.2	33
7.1.4 ICT & organizational models†.....	61.0	40
<b>7.2 Creative goods &amp; services</b>	<b>36.2</b>	<b>22</b>
7.2.1 Recreation & culture consumption, %.....	63.0	26
7.2.2 National feature films/mn pop.....	100.0	1
7.2.3 Daily newspapers/1,000 literate pop.....	50.2	10
7.2.4 Creative goods exports, %.....	14.1	59
7.2.5 Creative services exports, %.....	6.1	56



## Key indicators

Population (millions)	2.0
GDP per capita, PPP (current international \$)	10,822.7
GDP (US\$ billions)	9.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>33.5</b>	<b>67</b>
Innovation Output Sub-Index .....	26.6	68
Innovation Input Sub-Index.....	40.4	61
Innovation Efficiency Index.....	0.7	78
Global Innovation Index 2010.....		77
Global Innovation Index 2009.....		89

## 1 Institutions 73.0 43

<b>1.1 Political environment</b>	<b>56.1</b>	<b>62</b>
1.1.1 Political stability*.....	37.3	72
1.1.2 Government effectiveness*.....	50.5	72
1.1.3 Press freedom*.....	80.5	55
<b>1.2 Regulatory environment</b>	<b>64.4</b>	<b>55</b>
1.2.1 Regulatory quality*.....	59.5	61
1.2.2 Rule of law*.....	47.6	69
1.2.3 Rigidity of employment*.....	86.0	32
<b>1.3 Business environment</b>	<b>98.4</b>	<b>1</b>
1.3.1 Time to start a business, days.....	98.1	3
1.3.2 Cost to start a business, % income/cap.....	98.1	27
1.3.3 Total tax rate, % profits.....	99.0	2

## 2 Human capital & research 34.7 72

<b>2.1 Education</b>	<b>54.9</b>	<b>70</b>
2.1.1 Education expenditure, % GNI.....	54.0	37
2.1.2 Public expenditure/pupil, % GDP/cap.....	25.4	69
2.1.3 School life expectancy, years.....	54.9	59
2.1.4 PISA scales in reading, maths, & science.....	23.9	57
2.1.5 Pupil-teacher ratio, secondary.....	85.7	52
<b>2.2 Tertiary education</b>	<b>31.1</b>	<b>61</b>
2.2.1 Tertiary enrolment, % gross.....	40.9	53
2.2.2 Graduates in science, %.....	31.6	46
2.2.3 Graduates in engineering, %.....	28.3	58
2.2.4 Tertiary inbound mobility, %.....	6.5	53
2.2.5 Tertiary outbound mobility, %.....	40.7	30
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.0</b>	<b>87</b>
2.3.1 Researchers headcount/million pop.....	8.2	49
2.3.2 Gross expenditure on R&D, % GDP.....	3.8	71
2.3.3 Quality research institutions†.....	42.0	66

## 3 Infrastructure 26.2 72

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>32.8</b>	<b>49</b>
3.1.1 ICT access*.....	52.6	47
3.1.2 ICT use*.....	18.9	45
3.1.3 Government's Online Service*.....	32.1	66
3.1.4 E-Participation*.....	21.4	53
<b>3.2 Energy</b>	<b>14.5</b>	<b>93</b>
3.2.1 Electricity output, kWh/cap.....	16.0	55
3.2.2 Electricity consumption, kWh/capita.....	15.6	48
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	22.8	72
3.2.4 Share of renewables in energy use, %.....	5.0	70
<b>3.3 General infrastructure</b>	<b>31.2</b>	<b>92</b>
3.3.1 Quality of trade & transport infrastructure*.....	38.8	66
3.3.2 Gross capital formation, % GDP.....	33.5	41
3.3.3 Ecological footprint & biocapacity, ha/cap.....	21.5	110

## 4 Market sophistication 40.2 62

<b>4.1 Credit</b>	<b>41.4</b>	<b>56</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	17.3	55
4.1.4 Microfinance gross loans, % GDP.....	35.5	15
<b>4.2 Investment</b>	<b>20.3</b>	<b>95</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	3.8	86
4.2.3 Total value of stocks traded, % GDP.....	0.4	81
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>58.8</b>	<b>29</b>
4.3.1 Applied tariff rate weighted mean, %.....	83.4	56
4.3.2 Market access trade restrictiveness*, %.....	78.1	34
4.3.3 Imports of goods & services, % GDP.....	44.8	17
4.3.4 Exports of goods & services, % GDP.....	39.0	45
4.3.5 Intensity local competition†.....	58.4	90

## 5 Business sophistication 27.9 95

<b>5.1 Knowledge workers</b>	<b>25.7</b>	<b>100</b>
5.1.1 Knowledge-intensive employment, %.....	47.6	48
5.1.2 Firms offering formal training, % firms.....	17.8	81
5.1.3 R&D performed by business, %.....	14.5	72
5.1.4 R&D financed by business, %.....	8.9	66
<b>5.2 Innovation linkages</b>	<b>22.3</b>	<b>103</b>
5.2.1 University/industry collaboration†.....	41.0	67
5.2.2 State of cluster development†.....	33.1	93
5.2.3 R&D financed by abroad, %.....	30.1	31
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>35.7</b>	<b>54</b>
5.3.1 Royalty & license fees payments, % GDP.....	22.5	43
5.3.2 High-tech imports less re-imports, %.....	13.8	86
5.3.3 Computer & comm. service imports, %.....	59.0	23
5.3.4 FDI net inflows, % GDP.....	47.4	54

## 6 Scientific outputs 26.3 52

<b>6.1 Knowledge creation</b>	<b>7.4</b>	<b>66</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	12.1	51
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.3	63
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	8.8	66
<b>6.2 Knowledge impact</b>	<b>42.6</b>	<b>20</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	41.3	60
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	43.8	15
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>29.1</b>	<b>57</b>
6.3.1 Royalty & license fees receipts, % GDP.....	9.0	40
6.3.2 High-tech exports less re-exports, %.....	4.3	61
6.3.3 Computer & comm service exports, %.....	55.3	33
6.3.4 FDI net outflows, % GDP.....	47.7	76

## 7 Creative outputs 26.8 84

<b>7.1 Creative intangibles</b>	<b>39.7</b>	<b>85</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	25.1	34
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	24.3	23
7.1.3 ICT & business models†.....	55.5	72
7.1.4 ICT & organizational models†.....	46.3	83
<b>7.2 Creative goods &amp; services</b>	<b>13.9</b>	<b>72</b>
7.2.1 Recreation & culture consumption, %.....	21.3	57
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	17.6	33
7.2.4 Creative goods exports, %.....	8.3	77
7.2.5 Creative services exports, %.....	n/a	n/a

# Madagascar

## Key indicators

Population (millions)	20.1
GDP per capita, PPP (current international \$)	1,048.6
GDP (US\$ billions)	9.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>25.4</b>	<b>113</b>
Innovation Output Sub-Index .....	19.6	109
Innovation Input Sub-Index.....	31.2	104
Innovation Efficiency Index.....	0.6	88
Global Innovation Index 2010.....		125
Global Innovation Index 2009.....		113

## 1 Institutions 53.3 91

<b>1.1 Political environment</b>	<b>39.9</b>	<b>91</b>
1.1.1 Political stability*.....	23.6	93
1.1.2 Government effectiveness*.....	32.9	96
1.1.3 Press freedom*.....	63.1	82
<b>1.2 Regulatory environment</b>	<b>34.9</b>	<b>114</b>
1.2.1 Regulatory quality*.....	34.8	102
1.2.2 Rule of law*.....	25.9	102
1.2.3 Rigidity of employment*.....	44.0	116
<b>1.3 Business environment</b>	<b>85.2</b>	<b>38</b>
1.3.1 Time to start a business, days.....	94.2	21
1.3.2 Cost to start a business, % income/cap.....	89.9	71
1.3.3 Total tax rate, % profits.....	71.5	58

## 2 Human capital & research 24.1 115

<b>2.1 Education</b>	<b>38.7</b>	<b>111</b>
2.1.1 Education expenditure, % GNI.....	23.6	106
2.1.2 Public expenditure/pupil, % GDP/cap.....	10.0	95
2.1.3 School life expectancy, years.....	39.2	97
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	60.1	100
<b>2.2 Tertiary education</b>	<b>22.5</b>	<b>89</b>
2.2.1 Tertiary enrolment, % gross.....	3.2	114
2.2.2 Graduates in science, %.....	54.0	14
2.2.3 Graduates in engineering, %.....	22.4	65
2.2.4 Tertiary inbound mobility, %.....	5.5	57
2.2.5 Tertiary outbound mobility, %.....	35.7	36
2.2.6 Gross tertiary outbound enrolment, %.....	2.2	92
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>11.1</b>	<b>114</b>
2.3.1 Researchers headcount/million pop.....	0.7	87
2.3.2 Gross expenditure on R&D, % GDP.....	2.4	81
2.3.3 Quality research institutions†.....	30.1	108

## 3 Infrastructure 28.2 61

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>8.8</b>	<b>118</b>
3.1.1 ICT access*.....	14.7	117
3.1.2 ICT use*.....	0.6	117
3.1.3 Government's Online Service*.....	16.5	105
3.1.4 E-Participation*.....	5.7	102
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>47.5</b>	<b>14</b>
3.3.1 Quality of trade & transport infrastructure*.....	40.8	58
3.3.2 Gross capital formation, % GDP.....	59.2	10
3.3.3 Ecological footprint & biocapacity, ha/cap.....	42.6	18

## 4 Market sophistication 28.0 112

<b>4.1 Credit</b>	<b>5.9</b>	<b>125</b>
4.1.1 Strength of legal rights for credit*.....	20.0	121
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	1.7	112
4.1.4 Microfinance gross loans, % GDP.....	6.2	39
<b>4.2 Investment</b>	<b>38.0</b>	<b>35</b>
4.2.1 Strength of investor protection*.....	57.0	44
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>40.0</b>	<b>105</b>
4.3.1 Applied tariff rate weighted mean, %.....	58.3	99
4.3.2 Market access trade restrictiveness*, %.....	25.9	80
4.3.3 Imports of goods & services, % GDP.....	32.4	39
4.3.4 Exports of goods & services, % GDP.....	21.2	79
4.3.5 Intensity local competition†.....	55.0	97

## 5 Business sophistication 22.4 116

<b>5.1 Knowledge workers</b>	<b>13.9</b>	<b>122</b>
5.1.1 Knowledge-intensive employment, %.....	0.0	102
5.1.2 Firms offering formal training, % firms.....	27.9	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
<b>5.2 Innovation linkages</b>	<b>19.7</b>	<b>112</b>
5.2.1 University/industry collaboration†.....	35.2	91
5.2.2 State of cluster development†.....	28.8	111
5.2.3 R&D financed by abroad, %.....	29.4	32
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>33.7</b>	<b>62</b>
5.3.1 Royalty & license fees payments, % GDP.....	18.9	49
5.3.2 High-tech imports less re-imports, %.....	7.8	99
5.3.3 Computer & comm. service imports, %.....	45.1	49
5.3.4 FDI net inflows, % GDP.....	63.1	21

## 6 Scientific outputs 15.7 106

<b>6.1 Knowledge creation</b>	<b>2.5</b>	<b>100</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.3	95
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	7.2	70
<b>6.2 Knowledge impact</b>	<b>21.5</b>	<b>94</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	42.5	52
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.5	90
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>23.1</b>	<b>80</b>
6.3.1 Royalty & license fees receipts, % GDP.....	6.2	50
6.3.2 High-tech exports less re-exports, %.....	2.6	69
6.3.3 Computer & comm service exports, %.....	36.2	59
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 23.6 102

<b>7.1 Creative intangibles</b>	<b>29.9</b>	<b>113</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	19.4	53
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	1.1	52
7.1.3 ICT & business models†.....	47.0	104
7.1.4 ICT & organizational models†.....	37.8	112
<b>7.2 Creative goods &amp; services</b>	<b>17.2</b>	<b>64</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	32.6	21
7.2.5 Creative services exports, %.....	1.8	78

## Key indicators

Population (millions)	15.7
GDP per capita, PPP (current international \$)	858.2
GDP (US\$ billions)	5.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>26.0</b>	<b>108</b>
Innovation Output Sub-Index .....	19.1	113
Innovation Input Sub-Index.....	32.8	99
Innovation Efficiency Index.....	0.6	100
Global Innovation Index 2010.....		97
Global Innovation Index 2009.....		n/a

## 1 Institutions 53.3 92

<b>1.1 Political environment</b>	<b>52.3</b>	<b>68</b>
1.1.1 Political stability*.....	42.5	65
1.1.2 Government effectiveness*.....	36.7	90
1.1.3 Press freedom*.....	77.8	64
<b>1.2 Regulatory environment</b>	<b>53.2</b>	<b>77</b>
1.2.1 Regulatory quality*.....	31.9	106
1.2.2 Rule of law*.....	48.6	68
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>54.4</b>	<b>116</b>
1.3.1 Time to start a business, days.....	63.5	106
1.3.2 Cost to start a business, % income/cap.....	15.5	119
1.3.3 Total tax rate, % profits.....	84.3	20

## 2 Human capital & research 29.7 94

<b>2.1 Education</b>	<b>30.4</b>	<b>118</b>
2.1.1 Education expenditure, % GNI.....	35.4	82
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	27.9	108
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	n/a	n/a
<b>2.2 Tertiary education</b>	<b>18.1</b>	<b>101</b>
2.2.1 Tertiary enrolment, % gross.....	0.0	120
2.2.2 Graduates in science, %.....	26.1	57
2.2.3 Graduates in engineering, %.....	15.1	82
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	61.1	10
2.2.6 Gross tertiary outbound enrolment, %.....	1.2	100
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>40.8</b>	<b>33</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	40.8	71

## 3 Infrastructure 18.9 117

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>6.4</b>	<b>125</b>
3.1.1 ICT access*.....	14.4	119
3.1.2 ICT use*.....	0.7	114
3.1.3 Government's Online Service*.....	1.6	122
3.1.4 E-Participation*.....	n/a	n/a
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>31.4</b>	<b>89</b>
3.3.1 Quality of trade & transport infrastructure*.....	28.3	101
3.3.2 Gross capital formation, % GDP.....	28.3	54
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.6	33

## 4 Market sophistication 28.7 107

<b>4.1 Credit</b>	<b>17.1</b>	<b>112</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	2.9	107
4.1.4 Microfinance gross loans, % GDP.....	9.5	35
<b>4.2 Investment</b>	<b>30.2</b>	<b>57</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	16.6	44
4.2.3 Total value of stocks traded, % GDP.....	0.8	71
4.2.4 Venture capital deals/tr GDP PPP\$.....	71.0	21
<b>4.3 Trade &amp; competition</b>	<b>38.7</b>	<b>111</b>
4.3.1 Applied tariff rate weighted mean, %.....	70.4	84
4.3.2 Market access trade restrictiveness*, %.....	42.5	72
4.3.3 Imports of goods & services, % GDP.....	9.4	111
4.3.4 Exports of goods & services, % GDP.....	12.3	108
4.3.5 Intensity local competition†.....	61.0	79

## 5 Business sophistication 33.5 72

<b>5.1 Knowledge workers</b>	<b>54.6</b>	<b>38</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	54.6	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
<b>5.2 Innovation linkages</b>	<b>24.3</b>	<b>96</b>
5.2.1 University/industry collaboration†.....	39.9	72
5.2.2 State of cluster development†.....	45.1	51
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>21.6</b>	<b>114</b>
5.3.1 Royalty & license fees payments, % GDP.....	2.6	99
5.3.2 High-tech imports less re-imports, %.....	24.1	48
5.3.3 Computer & comm. service imports, %.....	18.3	104
5.3.4 FDI net inflows, % GDP.....	41.3	88

## 6 Scientific outputs 13.2 117

<b>6.1 Knowledge creation</b>	<b>6.7</b>	<b>68</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	2.2	76
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	17.9	49
<b>6.2 Knowledge impact</b>	<b>32.5</b>	<b>61</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	64.5	10
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.6	88
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>0.3</b>	<b>123</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.5	92
6.3.3 Computer & comm service exports, %.....	0.0	120
6.3.4 FDI net outflows, % GDP.....	n/a	n/a

## 7 Creative outputs 25.0 94

<b>7.1 Creative intangibles</b>	<b>39.5</b>	<b>88</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	15.1	64
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	54.5	78
7.1.4 ICT & organizational models†.....	48.8	73
<b>7.2 Creative goods &amp; services</b>	<b>10.6</b>	<b>82</b>
7.2.1 Recreation & culture consumption, %.....	11.0	59
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	10.4	70
7.2.5 Creative services exports, %.....	n/a	n/a

# Malaysia

## Key indicators

Population (millions)	27.9
GDP per capita, PPP (current international \$)	14,012.0
GDP (US\$ billions)	193.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>44.1</b>	<b>31</b>
Innovation Output Sub-Index .....	35.2	35
Innovation Input Sub-Index.....	52.9	27
Innovation Efficiency Index.....	0.7	77
Global Innovation Index 2010.....		28
Global Innovation Index 2009.....		25

## 1 Institutions 70.5 51

<b>1.1 Political environment</b>	<b>57.5</b>	<b>60</b>
1.1.1 Political stability*.....	46.7	59
1.1.2 Government effectiveness*.....	79.5	30
1.1.3 Press freedom*.....	46.3	103
<b>1.2 Regulatory environment</b>	<b>71.7</b>	<b>42</b>
1.2.1 Regulatory quality*.....	60.0	60
1.2.2 Rule of law*.....	65.1	45
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>82.2</b>	<b>53</b>
1.3.1 Time to start a business, days.....	84.6	65
1.3.2 Cost to start a business, % income/cap.....	86.4	83
1.3.3 Total tax rate, % profits.....	75.6	44

## 2 Human capital & research 43.5 42

<b>2.1 Education</b>	<b>55.0</b>	<b>69</b>
2.1.1 Education expenditure, % GNI.....	42.5	64
2.1.2 Public expenditure/pupil, % GDP/cap.....	20.9	78
2.1.3 School life expectancy, years.....	50.5	69
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	82.9	58
<b>2.2 Tertiary education</b>	<b>49.2</b>	<b>11</b>
2.2.1 Tertiary enrolment, % gross.....	36.8	62
2.2.2 Graduates in science, %.....	61.6	8
2.2.3 Graduates in engineering, %.....	84.3	2
2.2.4 Tertiary inbound mobility, %.....	18.7	26
2.2.5 Tertiary outbound mobility, %.....	33.4	40
2.2.6 Gross tertiary outbound enrolment, %.....	25.2	36
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>26.4</b>	<b>54</b>
2.3.1 Researchers headcount/million pop.....	5.5	57
2.3.2 Gross expenditure on R&D, % GDP.....	12.6	46
2.3.3 Quality research institutions†.....	61.1	31

## 3 Infrastructure 30.1 53

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>44.2</b>	<b>35</b>
3.1.1 ICT access*.....	43.8	56
3.1.2 ICT use*.....	24.3	41
3.1.3 Government's Online Service*.....	63.2	16
3.1.4 E-Participation*.....	65.7	13
<b>3.2 Energy</b>	<b>12.8</b>	<b>98</b>
3.2.1 Electricity output, kWh/cap.....	18.7	51
3.2.2 Electricity consumption, kWh/capita.....	14.6	52
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	18.6	81
3.2.4 Share of renewables in energy use, %.....	3.0	82
<b>3.3 General infrastructure</b>	<b>33.3</b>	<b>79</b>
3.3.1 Quality of trade & transport infrastructure*.....	62.5	27
3.3.2 Gross capital formation, % GDP.....	8.4	114
3.3.3 Ecological footprint & biocapacity, ha/cap.....	29.0	91

## 4 Market sophistication 62.1 10

<b>4.1 Credit</b>	<b>58.0</b>	<b>26</b>
4.1.1 Strength of legal rights for credit*.....	100.0	1
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	44.3	20
4.1.4 Microfinance gross loans, % GDP.....	1.2	57
<b>4.2 Investment</b>	<b>52.0</b>	<b>13</b>
4.2.1 Strength of investor protection*.....	87.0	4
4.2.2 Market capitalization, % GDP.....	54.1	9
4.2.3 Total value of stocks traded, % GDP.....	21.2	31
4.2.4 Venture capital deals/tr GDP PPP\$.....	39.6	55
<b>4.3 Trade &amp; competition</b>	<b>76.3</b>	<b>6</b>
4.3.1 Applied tariff rate weighted mean, %.....	84.4	52
4.3.2 Market access trade restrictiveness*, %.....	79.5	30
4.3.3 Imports of goods & services, % GDP.....	50.9	10
4.3.4 Exports of goods & services, % GDP.....	96.6	6
4.3.5 Intensity local competition†.....	71.8	35

## 5 Business sophistication 58.5 9

<b>5.1 Knowledge workers</b>	<b>69.0</b>	<b>23</b>
5.1.1 Knowledge-intensive employment, %.....	50.3	47
5.1.2 Firms offering formal training, % firms.....	56.7	19
5.1.3 R&D performed by business, %.....	100.0	1
5.1.4 R&D financed by business, %.....	100.0	1
<b>5.2 Innovation linkages</b>	<b>44.9</b>	<b>29</b>
5.2.1 University/industry collaboration†.....	61.7	21
5.2.2 State of cluster development†.....	62.1	13
5.2.3 R&D financed by abroad, %.....	0.7	73
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	57.8	8
5.2.5 PCT patent filings with foreign inventor, %.....	26.4	35
<b>5.3 Knowledge absorption</b>	<b>61.6</b>	<b>7</b>
5.3.1 Royalty & license fees payments, % GDP.....	57.5	11
5.3.2 High-tech imports less re-imports, %.....	100.0	2
5.3.3 Computer & comm. service imports, %.....	50.0	37
5.3.4 FDI net inflows, % GDP.....	38.8	106

## 6 Scientific outputs 30.4 38

<b>6.1 Knowledge creation</b>	<b>8.8</b>	<b>63</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	12.7	50
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	11.8	31
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	0.2	53
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.2	79
<b>6.2 Knowledge impact</b>	<b>30.4</b>	<b>65</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	43.5	51
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	19.8	37
6.2.3 Computer software spending, % GDP.....	25.2	28
<b>6.3 Knowledge diffusion</b>	<b>52.1</b>	<b>19</b>
6.3.1 Royalty & license fees receipts, % GDP.....	18.4	23
6.3.2 High-tech exports less re-exports, %.....	94.9	2
6.3.3 Computer & comm service exports, %.....	36.1	60
6.3.4 FDI net outflows, % GDP.....	59.0	13

## 7 Creative outputs 39.9 40

<b>7.1 Creative intangibles</b>	<b>55.2</b>	<b>26</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	22.2	45
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	72.5	22
7.1.4 ICT & organizational models†.....	70.8	12
<b>7.2 Creative goods &amp; services</b>	<b>24.7</b>	<b>54</b>
7.2.1 Recreation & culture consumption, %.....	41.5	43
7.2.2 National feature films/mn pop.....	11.9	41
7.2.3 Daily newspapers/1,000 literate pop.....	27.7	21
7.2.4 Creative goods exports, %.....	18.3	52
7.2.5 Creative services exports, %.....	27.5	26

## Key indicators

Population (millions)	13.3
GDP per capita, PPP (current international \$)	1,185.5
GDP (US\$ billions)	9.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>26.4</b>	<b>107</b>
Innovation Output Sub-Index .....	22.9	93
Innovation Input Sub-Index.....	29.9	113
Innovation Efficiency Index.....	0.8	43
Global Innovation Index 2010.....		107
Global Innovation Index 2009.....		97

## 1 Institutions 54.0 89

<b>1.1 Political environment</b>	<b>50.2</b>	<b>74</b>
1.1.1 Political stability*.....	34.9	74
1.1.2 Government effectiveness*.....	24.3	109
1.1.3 Press freedom*.....	91.5	25
<b>1.2 Regulatory environment</b>	<b>49.1</b>	<b>90</b>
1.2.1 Regulatory quality*.....	36.2	99
1.2.2 Rule of law*.....	42.0	77
1.2.3 Rigidity of employment*.....	69.0	73
<b>1.3 Business environment</b>	<b>62.6</b>	<b>107</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	37.9	115
1.3.3 Total tax rate, % profits.....	56.8	102

## 2 Human capital & research 24.9 111

<b>2.1 Education</b>	<b>39.3</b>	<b>110</b>
2.1.1 Education expenditure, % GNI.....	32.8	86
2.1.2 Public expenditure/pupil, % GDP/cap.....	34.5	45
2.1.3 School life expectancy, years.....	23.9	112
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	60.3	99
<b>2.2 Tertiary education</b>	<b>14.0</b>	<b>112</b>
2.2.1 Tertiary enrolment, % gross.....	5.6	106
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	25.5	22
2.2.5 Tertiary outbound mobility, %.....	30.4	48
2.2.6 Gross tertiary outbound enrolment, %.....	2.7	91
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>21.3</b>	<b>72</b>
2.3.1 Researchers headcount/million pop.....	0.7	86
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	41.9	67

## 3 Infrastructure 21.2 104

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>11.2</b>	<b>109</b>
3.1.1 ICT access*.....	18.1	110
3.1.2 ICT use*.....	0.5	119
3.1.3 Government's Online Service*.....	18.4	100
3.1.4 E-Participation*.....	11.4	85
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>31.1</b>	<b>93</b>
3.3.1 Quality of trade & transport infrastructure*.....	25.0	110
3.3.2 Gross capital formation, % GDP.....	28.6	52
3.3.3 Ecological footprint & biocapacity, ha/cap.....	39.8	26

## 4 Market sophistication 26.9 114

<b>4.1 Credit</b>	<b>13.8</b>	<b>118</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	16.7	105
4.1.3 Domestic credit to private sector, % GDP.....	4.8	97
4.1.4 Microfinance gross loans, % GDP.....	12.7	32
<b>4.2 Investment</b>	<b>24.7</b>	<b>78</b>
4.2.1 Strength of investor protection*.....	37.0	111
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>42.3</b>	<b>100</b>
4.3.1 Applied tariff rate weighted mean, %.....	58.1	100
4.3.2 Market access trade restrictiveness*, %.....	60.0	61
4.3.3 Imports of goods & services, % GDP.....	19.4	72
4.3.4 Exports of goods & services, % GDP.....	19.0	90
4.3.5 Intensity local competition†.....	64.0	70

## 5 Business sophistication 22.4 117

<b>5.1 Knowledge workers</b>	<b>22.2</b>	<b>109</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	22.2	74
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>26.1</b>	<b>89</b>
5.2.1 University/industry collaboration†.....	37.4	82
5.2.2 State of cluster development†.....	33.0	94
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	41.6	18
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>18.8</b>	<b>119</b>
5.3.1 Royalty & license fees payments, % GDP.....	3.5	95
5.3.2 High-tech imports less re-imports, %.....	8.1	98
5.3.3 Computer & comm. service imports, %.....	22.5	100
5.3.4 FDI net inflows, % GDP.....	41.0	91

## 6 Scientific outputs 22.5 72

<b>6.1 Knowledge creation</b>	<b>1.9</b>	<b>109</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.8	96
<b>6.2 Knowledge impact</b>	<b>43.8</b>	<b>19</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	43.8	49
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>21.6</b>	<b>89</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.3	75
6.3.2 High-tech exports less re-exports, %.....	0.5	93
6.3.3 Computer & comm service exports, %.....	38.5	55
6.3.4 FDI net outflows, % GDP.....	47.3	87

## 7 Creative outputs 23.2 105

<b>7.1 Creative intangibles</b>	<b>45.1</b>	<b>61</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	47.4	103
7.1.4 ICT & organizational models†.....	42.8	101
<b>7.2 Creative goods &amp; services</b>	<b>1.4</b>	<b>118</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.8	109
7.2.5 Creative services exports, %.....	1.9	76

## Mauritius

## Key indicators

Population (millions)	1.3
GDP per capita, PPP (current international \$)	12,838.4
GDP (US\$ billions)	8.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>36.5</b>	<b>53</b>
Innovation Output Sub-Index .....	28.1	63
Innovation Input Sub-Index.....	44.8	46
Innovation Efficiency Index.....	0.6	89
Global Innovation Index 2010.....		73
Global Innovation Index 2009.....		66

## 1 Institutions 82.0 25

<b>1.1 Political environment</b>	<b>74.1</b>	<b>38</b>
1.1.1 Political stability*.....	68.4	35
1.1.2 Government effectiveness*.....	72.9	38
1.1.3 Press freedom*.....	81.0	54
<b>1.2 Regulatory environment</b>	<b>79.3</b>	<b>26</b>
1.2.1 Regulatory quality*.....	75.7	37
1.2.2 Rule of law*.....	80.2	31
1.2.3 Rigidity of employment*.....	82.0	39
<b>1.3 Business environment</b>	<b>92.5</b>	<b>8</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	97.0	36
1.3.3 Total tax rate, % profits.....	85.3	17

## 2 Human capital & research 43.2 45

<b>2.1 Education</b>	<b>53.5</b>	<b>76</b>
2.1.1 Education expenditure, % GNI.....	34.0	83
2.1.2 Public expenditure/pupil, % GDP/cap.....	16.4	86
2.1.3 School life expectancy, years.....	56.8	55
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	78.4	70
<b>2.2 Tertiary education</b>	<b>53.3</b>	<b>6</b>
2.2.1 Tertiary enrolment, % gross.....	26.0	73
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	61.2	9
2.2.6 Gross tertiary outbound enrolment, %.....	100.0	4
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>22.8</b>	<b>68</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	7.2	59
2.3.3 Quality research institutions†.....	38.4	79

## 3 Infrastructure 25.7 74

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>24.0</b>	<b>70</b>
3.1.1 ICT access*.....	41.9	59
3.1.2 ICT use*.....	12.7	60
3.1.3 Government's Online Service*.....	29.5	77
3.1.4 E-Participation*.....	5.7	102
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>27.3</b>	<b>114</b>
3.3.1 Quality of trade & transport infrastructure*.....	32.3	90
3.3.2 Gross capital formation, % GDP.....	26.1	62
3.3.3 Ecological footprint & biocapacity, ha/cap.....	23.5	103

## 4 Market sophistication 42.1 56

<b>4.1 Credit</b>	<b>44.1</b>	<b>51</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	50.0	89
4.1.3 Domestic credit to private sector, % GDP.....	38.1	27
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>28.9</b>	<b>61</b>
4.2.1 Strength of investor protection*.....	77.0	12
4.2.2 Market capitalization, % GDP.....	22.2	34
4.2.3 Total value of stocks traded, % GDP.....	2.1	57
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>53.2</b>	<b>52</b>
4.3.1 Applied tariff rate weighted mean, %.....	89.8	43
4.3.2 Market access trade restrictiveness*, %.....	0.0	85
4.3.3 Imports of goods & services, % GDP.....	38.2	29
4.3.4 Exports of goods & services, % GDP.....	43.6	37
4.3.5 Intensity local competition†.....	67.7	53

## 5 Business sophistication 31.0 83

<b>5.1 Knowledge workers</b>	<b>26.8</b>	<b>94</b>
5.1.1 Knowledge-intensive employment, %.....	27.6	82
5.1.2 Firms offering formal training, % firms.....	26.0	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
<b>5.2 Innovation linkages</b>	<b>33.9</b>	<b>58</b>
5.2.1 University/industry collaboration†.....	36.5	85
5.2.2 State of cluster development†.....	48.3	38
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>32.4</b>	<b>69</b>
5.3.1 Royalty & license fees payments, % GDP.....	7.5	80
5.3.2 High-tech imports less re-imports, %.....	21.3	56
5.3.3 Computer & comm. service imports, %.....	52.1	36
5.3.4 FDI net inflows, % GDP.....	48.7	48

## 6 Scientific outputs 27.2 49

<b>6.1 Knowledge creation</b>	<b>2.0</b>	<b>108</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.8	90
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.2	101
<b>6.2 Knowledge impact</b>	<b>57.1</b>	<b>5</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	57.1	11
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>22.7</b>	<b>82</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.1	86
6.3.2 High-tech exports less re-exports, %.....	3.4	67
6.3.3 Computer & comm service exports, %.....	38.7	54
6.3.4 FDI net outflows, % GDP.....	48.5	61

## 7 Creative outputs 29.1 74

<b>7.1 Creative intangibles</b>	<b>39.1</b>	<b>89</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	0.0	101
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	61.9	52
7.1.4 ICT & organizational models†.....	55.5	52
<b>7.2 Creative goods &amp; services</b>	<b>19.0</b>	<b>62</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	18.5	32
7.2.4 Creative goods exports, %.....	37.1	16
7.2.5 Creative services exports, %.....	1.2	83

## Key indicators

Population (millions)	110.6
GDP per capita, PPP (current international \$)	14,335.1
GDP (US\$ billions)	874.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.4</b>	<b>81</b>
Innovation Output Sub-Index .....	23.4	88
Innovation Input Sub-Index.....	37.5	81
Innovation Efficiency Index.....	0.6	90
Global Innovation Index 2010.....		69
Global Innovation Index 2009.....		61

**1 Institutions 58.6 76**

<b>1.1 Political environment</b>	<b>44.1</b>	<b>81</b>
1.1.1 Political stability*.....	22.2	95
1.1.2 Government effectiveness*.....	60.5	58
1.1.3 Press freedom*.....	49.8	98
<b>1.2 Regulatory environment</b>	<b>51.3</b>	<b>86</b>
1.2.1 Regulatory quality*.....	61.0	58
1.2.2 Rule of law*.....	34.0	91
1.2.3 Rigidity of employment*.....	59.0	96
<b>1.3 Business environment</b>	<b>80.4</b>	<b>62</b>
1.3.1 Time to start a business, days.....	92.3	34
1.3.2 Cost to start a business, % income/cap.....	90.4	69
1.3.3 Total tax rate, % profits.....	58.5	101

**2 Human capital & research 34.7 73**

<b>2.1 Education</b>	<b>53.4</b>	<b>78</b>
2.1.1 Education expenditure, % GNI.....	52.0	42
2.1.2 Public expenditure/pupil, % GDP/cap.....	21.6	75
2.1.3 School life expectancy, years.....	57.7	49
2.1.4 PISA scales in reading, maths, & science.....	37.7	47
2.1.5 Pupil-teacher ratio, secondary.....	73.6	79
<b>2.2 Tertiary education</b>	<b>31.5</b>	<b>57</b>
2.2.1 Tertiary enrolment, % gross.....	27.4	71
2.2.2 Graduates in science, %.....	43.4	23
2.2.3 Graduates in engineering, %.....	49.2	24
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	9.5	108
2.2.6 Gross tertiary outbound enrolment, %.....	2.8	90
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>19.0</b>	<b>78</b>
2.3.1 Researchers headcount/million pop.....	3.2	66
2.3.2 Gross expenditure on R&D, % GDP.....	7.2	58
2.3.3 Quality research institutions†.....	46.7	56

**3 Infrastructure 27.0 65**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>29.0</b>	<b>57</b>
3.1.1 ICT access*.....	34.8	69
3.1.2 ICT use*.....	11.7	65
3.1.3 Government's Online Service*.....	44.1	37
3.1.4 E-Participation*.....	37.1	33
<b>3.2 Energy</b>	<b>15.7</b>	<b>85</b>
3.2.1 Electricity output, kWh/cap.....	12.1	68
3.2.2 Electricity consumption, kWh/capita.....	8.0	70
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	31.2	49
3.2.4 Share of renewables in energy use, %.....	5.8	66
<b>3.3 General infrastructure</b>	<b>36.4</b>	<b>58</b>
3.3.1 Quality of trade & transport infrastructure*.....	48.8	43
3.3.2 Gross capital formation, % GDP.....	28.6	53
3.3.3 Ecological footprint & biocapacity, ha/cap.....	31.8	84

**4 Market sophistication 37.2 73**

<b>4.1 Credit</b>	<b>33.4</b>	<b>85</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	6.5	92
4.1.4 Microfinance gross loans, % GDP.....	4.0	46
<b>4.2 Investment</b>	<b>27.4</b>	<b>66</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	15.6	46
4.2.3 Total value of stocks traded, % GDP.....	4.9	51
4.2.4 Venture capital deals/tr GDP PPP\$.....	30.5	63
<b>4.3 Trade &amp; competition</b>	<b>50.8</b>	<b>63</b>
4.3.1 Applied tariff rate weighted mean, %.....	90.7	41
4.3.2 Market access trade restrictiveness*, %.....	89.8	22
4.3.3 Imports of goods & services, % GDP.....	14.4	88
4.3.4 Exports of goods & services, % GDP.....	20.8	82
4.3.5 Intensity local competition†.....	57.9	92

**5 Business sophistication 29.9 89**

<b>5.1 Knowledge workers</b>	<b>37.4</b>	<b>72</b>
5.1.1 Knowledge-intensive employment, %.....	33.1	74
5.1.2 Firms offering formal training, % firms.....	24.8	71
5.1.3 R&D performed by business, %.....	55.8	35
5.1.4 R&D financed by business, %.....	53.1	32
<b>5.2 Innovation linkages</b>	<b>26.1</b>	<b>88</b>
5.2.1 University/industry collaboration†.....	45.4	53
5.2.2 State of cluster development†.....	43.7	54
5.2.3 R&D financed by abroad, %.....	4.8	64
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	3.9	68
5.2.5 PCT patent filings with foreign inventor, %.....	10.9	60
<b>5.3 Knowledge absorption</b>	<b>26.1</b>	<b>96</b>
5.3.1 Royalty & license fees payments, % GDP.....	6.7	86
5.3.2 High-tech imports less re-imports, %.....	54.0	8
5.3.3 Computer & comm. service imports, %.....	0.8	119
5.3.4 FDI net inflows, % GDP.....	42.9	73

**6 Scientific outputs 16.7 102**

<b>6.1 Knowledge creation</b>	<b>3.9</b>	<b>84</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	3.4	71
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.7	54
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.7	42
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	7.9	69
<b>6.2 Knowledge impact</b>	<b>18.0</b>	<b>105</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	34.9	81
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.8	69
6.2.3 Computer software spending, % GDP.....	10.5	52
<b>6.3 Knowledge diffusion</b>	<b>28.2</b>	<b>59</b>
6.3.1 Royalty & license fees receipts, % GDP.....	10.0	34
6.3.2 High-tech exports less re-exports, %.....	45.3	12
6.3.3 Computer & comm service exports, %.....	7.8	115
6.3.4 FDI net outflows, % GDP.....	49.7	42

**7 Creative outputs 30.1 71**

<b>7.1 Creative intangibles</b>	<b>44.2</b>	<b>68</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	24.3	37
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	57.6	65
7.1.4 ICT & organizational models†.....	50.9	64
<b>7.2 Creative goods &amp; services</b>	<b>16.0</b>	<b>66</b>
7.2.1 Recreation & culture consumption, %.....	41.1	44
7.2.2 National feature films/mn pop.....	7.5	52
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	19.3	49
7.2.5 Creative services exports, %.....	4.5	59

## Moldova, Rep.

## Key indicators

Population (millions)	3.6
GDP per capita, PPP (current international \$)	2,854.3
GDP (US\$ billions)	5.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.7</b>	<b>39</b>
Innovation Output Sub-Index .....	38.9	29
Innovation Input Sub-Index.....	38.4	77
Innovation Efficiency Index.....	1.0	5
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....		116

## 1 Institutions 61.2 72

<b>1.1 Political environment</b>	<b>47.8</b>	<b>78</b>
1.1.1 Political stability*.....	27.8	85
1.1.2 Government effectiveness*.....	35.7	91
1.1.3 Press freedom*.....	79.8	60
<b>1.2 Regulatory environment</b>	<b>48.7</b>	<b>91</b>
1.2.1 Regulatory quality*.....	48.1	80
1.2.2 Rule of law*.....	39.2	82
1.2.3 Rigidity of employment*.....	59.0	96
<b>1.3 Business environment</b>	<b>87.1</b>	<b>24</b>
1.3.1 Time to start a business, days.....	91.3	39
1.3.2 Cost to start a business, % income/cap.....	91.5	67
1.3.3 Total tax rate, % profits.....	78.4	33

## 2 Human capital & research 43.6 41

<b>2.1 Education</b>	<b>78.9</b>	<b>3</b>
2.1.1 Education expenditure, % GNI.....	100.0	1
2.1.2 Public expenditure/pupil, % GDP/cap.....	100.0	1
2.1.3 School life expectancy, years.....	46.3	79
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	90.3	35
<b>2.2 Tertiary education</b>	<b>35.5</b>	<b>47</b>
2.2.1 Tertiary enrolment, % gross.....	38.7	57
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	2.4	70
2.2.5 Tertiary outbound mobility, %.....	43.3	26
2.2.6 Gross tertiary outbound enrolment, %.....	54.1	11
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>16.3</b>	<b>94</b>
2.3.1 Researchers headcount/million pop.....	5.4	58
2.3.2 Gross expenditure on R&D, % GDP.....	10.7	51
2.3.3 Quality research institutions†.....	32.8	98

## 3 Infrastructure 21.3 103

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>24.0</b>	<b>71</b>
3.1.1 ICT access*.....	36.0	68
3.1.2 ICT use*.....	11.3	66
3.1.3 Government's Online Service*.....	29.5	77
3.1.4 E-Participation*.....	20.0	56
<b>3.2 Energy</b>	<b>6.0</b>	<b>113</b>
3.2.1 Electricity output, kWh/cap.....	5.1	86
3.2.2 Electricity consumption, kWh/capita.....	5.3	83
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	11.1	93
3.2.4 Share of renewables in energy use, %.....	1.7	96
<b>3.3 General infrastructure</b>	<b>34.0</b>	<b>74</b>
3.3.1 Quality of trade & transport infrastructure*.....	26.3	109
3.3.2 Gross capital formation, % GDP.....	40.8	25
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.9	61

## 4 Market sophistication 38.6 70

<b>4.1 Credit</b>	<b>24.0</b>	<b>104</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	13.8	65
4.1.4 Microfinance gross loans, % GDP.....	12.3	33
<b>4.2 Investment</b>	<b>33.6</b>	<b>46</b>
4.2.1 Strength of investor protection*.....	47.0	86
4.2.2 Market capitalization, % GDP.....	n/a	n/a
4.2.3 Total value of stocks traded, % GDP.....	0.1	89
4.2.4 Venture capital deals/tr GDP PPP\$.....	73.7	17
<b>4.3 Trade &amp; competition</b>	<b>58.3</b>	<b>33</b>
4.3.1 Applied tariff rate weighted mean, %.....	87.9	48
4.3.2 Market access trade restrictiveness*, %.....	77.6	37
4.3.3 Imports of goods & services, % GDP.....	49.7	13
4.3.4 Exports of goods & services, % GDP.....	30.8	60
4.3.5 Intensity local competition†.....	55.4	95

## 5 Business sophistication 27.3 97

<b>5.1 Knowledge workers</b>	<b>39.0</b>	<b>65</b>
5.1.1 Knowledge-intensive employment, %.....	53.1	45
5.1.2 Firms offering formal training, % firms.....	35.5	46
5.1.3 R&D performed by business, %.....	18.2	66
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>14.6</b>	<b>121</b>
5.2.1 University/industry collaboration†.....	29.4	114
5.2.2 State of cluster development†.....	24.2	118
5.2.3 R&D financed by abroad, %.....	9.4	58
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>28.1</b>	<b>83</b>
5.3.1 Royalty & license fees payments, % GDP.....	20.4	48
5.3.2 High-tech imports less re-imports, %.....	15.7	76
5.3.3 Computer & comm. service imports, %.....	30.4	80
5.3.4 FDI net inflows, % GDP.....	46.0	58

## 6 Scientific outputs 36.8 28

<b>6.1 Knowledge creation</b>	<b>43.4</b>	<b>15</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	80.0	7
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.3	64
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	100.0	4
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	20.5	43
<b>6.2 Knowledge impact</b>	<b>40.0</b>	<b>25</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	69.7	4
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	10.3	47
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>27.0</b>	<b>62</b>
6.3.1 Royalty & license fees receipts, % GDP.....	10.8	32
6.3.2 High-tech exports less re-exports, %.....	5.9	54
6.3.3 Computer & comm service exports, %.....	43.8	47
6.3.4 FDI net outflows, % GDP.....	47.6	79

## 7 Creative outputs 41.1 32

<b>7.1 Creative intangibles</b>	<b>55.4</b>	<b>24</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	69.1	3
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	80.6	6
7.1.3 ICT & business models†.....	42.7	115
7.1.4 ICT & organizational models†.....	41.9	105
<b>7.2 Creative goods &amp; services</b>	<b>26.7</b>	<b>49</b>
7.2.1 Recreation & culture consumption, %.....	2.3	65
7.2.2 National feature films/mn pop.....	10.2	44
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	63.1	5
7.2.5 Creative services exports, %.....	10.7	44



## Key indicators

Population (millions)	2.7
GDP per capita, PPP (current international \$)	3,522.3
GDP (US\$ billions)	4.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>33.4</b>	<b>68</b>
Innovation Output Sub-Index .....	24.5	81
Innovation Input Sub-Index.....	42.3	52
Innovation Efficiency Index.....	0.6	102
Global Innovation Index 2010.....		87
Global Innovation Index 2009.....		105

**1 Institutions 66.3 61**

<b>1.1 Political environment</b>	<b>52.5</b>	<b>67</b>
1.1.1 Political stability*.....	55.2	49
1.1.2 Government effectiveness*.....	22.9	112
1.1.3 Press freedom*.....	79.5	61
<b>1.2 Regulatory environment</b>	<b>55.6</b>	<b>73</b>
1.2.1 Regulatory quality*.....	40.5	91
1.2.2 Rule of law*.....	43.4	74
1.2.3 Rigidity of employment*.....	83.0	34
<b>1.3 Business environment</b>	<b>90.8</b>	<b>15</b>
1.3.1 Time to start a business, days.....	88.5	48
1.3.2 Cost to start a business, % income/cap.....	97.5	32
1.3.3 Total tax rate, % profits.....	86.4	14

**2 Human capital & research 34.1 75**

<b>2.1 Education</b>	<b>57.0</b>	<b>63</b>
2.1.1 Education expenditure, % GNI.....	50.1	49
2.1.2 Public expenditure/pupil, % GDP/cap.....	27.8	66
2.1.3 School life expectancy, years.....	59.9	42
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	72.2	85
<b>2.2 Tertiary education</b>	<b>31.9</b>	<b>55</b>
2.2.1 Tertiary enrolment, % gross.....	53.5	39
2.2.2 Graduates in science, %.....	18.9	77
2.2.3 Graduates in engineering, %.....	36.2	43
2.2.4 Tertiary inbound mobility, %.....	0.7	79
2.2.5 Tertiary outbound mobility, %.....	33.0	41
2.2.6 Gross tertiary outbound enrolment, %.....	35.9	20
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>13.4</b>	<b>105</b>
2.3.1 Researchers headcount/million pop.....	5.0	60
2.3.2 Gross expenditure on R&D, % GDP.....	4.1	67
2.3.3 Quality research institutions†.....	31.1	104

**3 Infrastructure 32.4 43**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>25.5</b>	<b>66</b>
3.1.1 ICT access*.....	21.9	98
3.1.2 ICT use*.....	5.5	85
3.1.3 Government's Online Service*.....	55.6	20
3.1.4 E-Participation*.....	42.9	29
<b>3.2 Energy</b>	<b>5.7</b>	<b>114</b>
3.2.1 Electricity output, kWh/cap.....	8.1	79
3.2.2 Electricity consumption, kWh/capita.....	6.1	77
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	7.9	103
3.2.4 Share of renewables in energy use, %.....	2.0	93
<b>3.3 General infrastructure</b>	<b>66.0</b>	<b>1</b>
3.3.1 Quality of trade & transport infrastructure*.....	23.5	114
3.3.2 Gross capital formation, % GDP.....	100.0	1
3.3.3 Ecological footprint & biocapacity, ha/cap.....	74.5	2

**4 Market sophistication 46.6 41**

<b>4.1 Credit</b>	<b>48.9</b>	<b>37</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	50.0	89
4.1.3 Domestic credit to private sector, % GDP.....	17.2	56
4.1.4 Microfinance gross loans, % GDP.....	100.0	1
<b>4.2 Investment</b>	<b>32.3</b>	<b>51</b>
4.2.1 Strength of investor protection*.....	63.0	27
4.2.2 Market capitalization, % GDP.....	3.9	85
4.2.3 Total value of stocks traded, % GDP.....	0.2	86
4.2.4 Venture capital deals/tr GDP PPP\$.....	92.1	4
<b>4.3 Trade &amp; competition</b>	<b>58.5</b>	<b>31</b>
4.3.1 Applied tariff rate weighted mean, %.....	74.7	78
4.3.2 Market access trade restrictiveness*, %.....	74.0	45
4.3.3 Imports of goods & services, % GDP.....	41.1	23
4.3.4 Exports of goods & services, % GDP.....	51.8	27
4.3.5 Intensity local competition†.....	58.9	89

**5 Business sophistication 32.2 79**

<b>5.1 Knowledge workers</b>	<b>36.9</b>	<b>74</b>
5.1.1 Knowledge-intensive employment, %.....	36.7	65
5.1.2 Firms offering formal training, % firms.....	70.6	8
5.1.3 R&D performed by business, %.....	3.6	76
5.1.4 R&D financed by business, %.....	3.3	68
<b>5.2 Innovation linkages</b>	<b>24.5</b>	<b>95</b>
5.2.1 University/industry collaboration†.....	37.7	79
5.2.2 State of cluster development†.....	23.2	119
5.2.3 R&D financed by abroad, %.....	5.7	63
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	68.2	5
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>35.2</b>	<b>59</b>
5.3.1 Royalty & license fees payments, % GDP.....	3.5	94
5.3.2 High-tech imports less re-imports, %.....	10.9	89
5.3.3 Computer & comm. service imports, %.....	26.4	90
5.3.4 FDI net inflows, % GDP.....	100.0	4

**6 Scientific outputs 27.4 48**

<b>6.1 Knowledge creation</b>	<b>38.7</b>	<b>18</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	78.6	8
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	100.0	3
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	7.0	72
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>16.0</b>	<b>119</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.6	70
6.3.2 High-tech exports less re-exports, %.....	1.0	86
6.3.3 Computer & comm service exports, %.....	11.5	108
6.3.4 FDI net outflows, % GDP.....	50.9	35

**7 Creative outputs 21.6 110**

<b>7.1 Creative intangibles</b>	<b>38.0</b>	<b>94</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	28.5	30
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	6.9	39
7.1.3 ICT & business models†.....	56.7	69
7.1.4 ICT & organizational models†.....	44.3	87
<b>7.2 Creative goods &amp; services</b>	<b>5.2</b>	<b>101</b>
7.2.1 Recreation & culture consumption, %.....	21.9	54
7.2.2 National feature films/mn pop.....	4.3	61
7.2.3 Daily newspapers/1,000 literate pop.....	4.2	54
7.2.4 Creative goods exports, %.....	2.9	94
7.2.5 Creative services exports, %.....	0.1	94

## Morocco

## Key indicators

Population (millions)	32.4
GDP per capita, PPP (current international \$)	4,494.4
GDP (US\$ billions)	91.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>28.7</b>	<b>94</b>
Innovation Output Sub-Index .....	20.8	102
Innovation Input Sub-Index.....	36.7	86
Innovation Efficiency Index.....	0.6	105
Global Innovation Index 2010.....		94
Global Innovation Index 2009.....		82

## 1 Institutions 57.6 80

<b>1.1 Political environment</b>	<b>43.8</b>	<b>82</b>
1.1.1 Political stability*.....	30.2	82
1.1.2 Government effectiveness*.....	51.4	70
1.1.3 Press freedom*.....	49.9	97
<b>1.2 Regulatory environment</b>	<b>47.5</b>	<b>93</b>
1.2.1 Regulatory quality*.....	51.9	73
1.2.2 Rule of law*.....	50.5	64
1.2.3 Rigidity of employment*.....	40.0	121
<b>1.3 Business environment</b>	<b>81.5</b>	<b>57</b>
1.3.1 Time to start a business, days.....	89.4	43
1.3.2 Cost to start a business, % income/cap.....	87.7	80
1.3.3 Total tax rate, % profits.....	67.4	70

## 2 Human capital & research 38.0 61

<b>2.1 Education</b>	<b>54.8</b>	<b>72</b>
2.1.1 Education expenditure, % GNI.....	58.2	32
2.1.2 Public expenditure/pupil, % GDP/cap.....	41.3	27
2.1.3 School life expectancy, years.....	37.6	100
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	77.1	75
<b>2.2 Tertiary education</b>	<b>40.9</b>	<b>28</b>
2.2.1 Tertiary enrolment, % gross.....	12.7	89
2.2.2 Graduates in science, %.....	100.0	1
2.2.3 Graduates in engineering, %.....	38.7	39
2.2.4 Tertiary inbound mobility, %.....	5.8	56
2.2.5 Tertiary outbound mobility, %.....	43.5	25
2.2.6 Gross tertiary outbound enrolment, %.....	16.3	51
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.3</b>	<b>85</b>
2.3.1 Researchers headcount/million pop.....	6.8	52
2.3.2 Gross expenditure on R&D, % GDP.....	12.6	45
2.3.3 Quality research institutions†.....	35.6	86

## 3 Infrastructure 29.2 57

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>21.4</b>	<b>81</b>
3.1.1 ICT access*.....	33.3	78
3.1.2 ICT use*.....	12.6	61
3.1.3 Government's Online Service*.....	23.8	94
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>22.1</b>	<b>56</b>
3.2.1 Electricity output, kWh/cap.....	3.4	94
3.2.2 Electricity consumption, kWh/capita.....	3.0	92
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	60.7	5
3.2.4 Share of renewables in energy use, %.....	2.4	89
<b>3.3 General infrastructure</b>	<b>44.0</b>	<b>19</b>
3.3.1 Quality of trade & transport infrastructure*.....	33.3	85
3.3.2 Gross capital formation, % GDP.....	63.5	8
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.3	56

## 4 Market sophistication 34.4 84

<b>4.1 Credit</b>	<b>38.1</b>	<b>68</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	34.3	29
4.1.4 Microfinance gross loans, % GDP.....	8.7	36
<b>4.2 Investment</b>	<b>22.5</b>	<b>86</b>
4.2.1 Strength of investor protection*.....	33.0	113
4.2.2 Market capitalization, % GDP.....	27.9	27
4.2.3 Total value of stocks traded, % GDP.....	18.0	32
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>42.6</b>	<b>98</b>
4.3.1 Applied tariff rate weighted mean, %.....	53.2	109
4.3.2 Market access trade restrictiveness*, %.....	59.9	62
4.3.3 Imports of goods & services, % GDP.....	22.5	60
4.3.4 Exports of goods & services, % GDP.....	21.6	78
4.3.5 Intensity local competition†.....	64.2	66

## 5 Business sophistication 24.1 110

<b>5.1 Knowledge workers</b>	<b>20.1</b>	<b>111</b>
5.1.1 Knowledge-intensive employment, %.....	9.1	97
5.1.2 Firms offering formal training, % firms.....	24.9	70
5.1.3 R&D performed by business, %.....	26.0	60
5.1.4 R&D financed by business, %.....	26.5	54
<b>5.2 Innovation linkages</b>	<b>21.7</b>	<b>109</b>
5.2.1 University/industry collaboration†.....	34.9	95
5.2.2 State of cluster development†.....	42.0	61
5.2.3 R&D financed by abroad, %.....	9.2	59
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	5.3	70
<b>5.3 Knowledge absorption</b>	<b>30.4</b>	<b>76</b>
5.3.1 Royalty & license fees payments, % GDP.....	6.8	84
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	39.3	62
5.3.4 FDI net inflows, % GDP.....	45.1	64

## 6 Scientific outputs 19.5 87

<b>6.1 Knowledge creation</b>	<b>5.8</b>	<b>73</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	7.7	62
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.4	58
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	8.3	67
<b>6.2 Knowledge impact</b>	<b>25.6</b>	<b>82</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	48.8	34
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.9	49
6.2.3 Computer software spending, % GDP.....	10.5	51
<b>6.3 Knowledge diffusion</b>	<b>27.0</b>	<b>63</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.3	76
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	32.0	67
6.3.4 FDI net outflows, % GDP.....	48.7	56

## 7 Creative outputs 22.1 109

<b>7.1 Creative intangibles</b>	<b>35.7</b>	<b>101</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	29.4	29
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	9.3	36
7.1.3 ICT & business models†.....	46.8	105
7.1.4 ICT & organizational models†.....	44.1	88
<b>7.2 Creative goods &amp; services</b>	<b>8.6</b>	<b>90</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	4.3	60
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	12.7	61
7.2.5 Creative services exports, %.....	6.6	54

## Key indicators

Population (millions)	2.2
GDP per capita, PPP (current international \$)	6,410.1
GDP (US\$ billions)	9.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.7</b>	<b>78</b>
Innovation Output Sub-Index .....	18.5	116
Innovation Input Sub-Index.....	43.0	49
Innovation Efficiency Index.....	0.4	123
Global Innovation Index 2010.....		92
Global Innovation Index 2009.....		95

## 1 Institutions 72.6 44

<b>1.1 Political environment</b>	<b>76.2</b>	<b>36</b>
1.1.1 Political stability*.....	75.0	28
1.1.2 Government effectiveness*.....	61.0	57
1.1.3 Press freedom*.....	92.6	20
<b>1.2 Regulatory environment</b>	<b>67.4</b>	<b>51</b>
1.2.1 Regulatory quality*.....	53.8	71
1.2.2 Rule of law*.....	61.3	50
1.2.3 Rigidity of employment*.....	87.0	27
<b>1.3 Business environment</b>	<b>74.4</b>	<b>84</b>
1.3.1 Time to start a business, days.....	37.5	120
1.3.2 Cost to start a business, % income/cap.....	85.6	86
1.3.3 Total tax rate, % profits.....	100.0	1

## 2 Human capital & research 37.9 62

<b>2.1 Education</b>	<b>53.9</b>	<b>74</b>
2.1.1 Education expenditure, % GNI.....	85.6	5
2.1.2 Public expenditure/pupil, % GDP/cap.....	30.8	55
2.1.3 School life expectancy, years.....	45.9	82
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	57.7	102
<b>2.2 Tertiary education</b>	<b>19.4</b>	<b>96</b>
2.2.1 Tertiary enrolment, % gross.....	8.6	99
2.2.2 Graduates in science, %.....	0.0	93
2.2.3 Graduates in engineering, %.....	0.0	93
2.2.4 Tertiary inbound mobility, %.....	40.9	15
2.2.5 Tertiary outbound mobility, %.....	67.6	6
2.2.6 Gross tertiary outbound enrolment, %.....	49.2	13
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>40.2</b>	<b>34</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	40.2	74

## 3 Infrastructure 24.4 85

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>9.3</b>	<b>114</b>
3.1.1 ICT access*.....	22.2	97
3.1.2 ICT use*.....	1.8	108
3.1.3 Government's Online Service*.....	6.7	118
3.1.4 E-Participation*.....	1.4	116
<b>3.2 Energy</b>	<b>24.8</b>	<b>41</b>
3.2.1 Electricity output, kWh/cap.....	5.1	87
3.2.2 Electricity consumption, kWh/capita.....	7.5	72
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	56.9	8
3.2.4 Share of renewables in energy use, %.....	11.1	49
<b>3.3 General infrastructure</b>	<b>39.0</b>	<b>41</b>
3.3.1 Quality of trade & transport infrastructure*.....	17.8	121
3.3.2 Gross capital formation, % GDP.....	40.8	24
3.3.3 Ecological footprint & biocapacity, ha/cap.....	58.4	9

## 4 Market sophistication 39.4 65

<b>4.1 Credit</b>	<b>39.9</b>	<b>61</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	18.1	53
4.1.4 Microfinance gross loans, % GDP.....	0.1	75
<b>4.2 Investment</b>	<b>16.1</b>	<b>111</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	3.4	88
4.2.3 Total value of stocks traded, % GDP.....	0.1	90
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>62.0</b>	<b>21</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.5	11
4.3.2 Market access trade restrictiveness*, %.....	87.6	24
4.3.3 Imports of goods & services, % GDP.....	38.9	28
4.3.4 Exports of goods & services, % GDP.....	41.6	42
4.3.5 Intensity local competition†.....	60.4	83

## 5 Business sophistication 40.8 49

<b>5.1 Knowledge workers</b>	<b>39.8</b>	<b>62</b>
5.1.1 Knowledge-intensive employment, %.....	29.9	81
5.1.2 Firms offering formal training, % firms.....	49.7	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
<b>5.2 Innovation linkages</b>	<b>50.6</b>	<b>21</b>
5.2.1 University/industry collaboration†.....	39.8	73
5.2.2 State of cluster development†.....	37.4	76
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	100.0	1
<b>5.3 Knowledge absorption</b>	<b>32.0</b>	<b>71</b>
5.3.1 Royalty & license fees payments, % GDP.....	7.6	79
5.3.2 High-tech imports less re-imports, %.....	8.1	97
5.3.3 Computer & comm. service imports, %.....	53.4	31
5.3.4 FDI net inflows, % GDP.....	58.6	25

## 6 Scientific outputs 14.1 113

<b>6.1 Knowledge creation</b>	<b>14.9</b>	<b>50</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	27.0	24
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	2.8	104
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>13.4</b>	<b>120</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	95
6.3.2 High-tech exports less re-exports, %.....	1.3	79
6.3.3 Computer & comm service exports, %.....	5.0	116
6.3.4 FDI net outflows, % GDP.....	47.2	110

## 7 Creative outputs 22.8 106

<b>7.1 Creative intangibles</b>	<b>38.4</b>	<b>90</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	47.4	101
7.1.4 ICT & organizational models†.....	48.5	74
<b>7.2 Creative goods &amp; services</b>	<b>7.2</b>	<b>95</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	5.9	56
7.2.3 Daily newspapers/1,000 literate pop.....	8.2	46
7.2.4 Creative goods exports, %.....	12.1	65
7.2.5 Creative services exports, %.....	2.4	72

# Netherlands

## Key indicators

Population (millions)	16.7
GDP per capita, PPP (current international \$)	40,714.7
GDP (US\$ billions)	792.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>56.3</b>	<b>9</b>
Innovation Output Sub-Index .....	52.2	3
Innovation Input Sub-Index.....	60.4	16
Innovation Efficiency Index.....	0.9	13
Global Innovation Index 2010.....		8
Global Innovation Index 2009.....		10

## 1 Institutions 87.5 13

<b>1.1 Political environment</b>	<b>92.4</b>	<b>10</b>
1.1.1 Political stability*.....	83.0	16
1.1.2 Government effectiveness*.....	94.3	12
1.1.3 Press freedom*.....	100.0	1
<b>1.2 Regulatory environment</b>	<b>84.1</b>	<b>20</b>
1.2.1 Regulatory quality*.....	97.1	7
1.2.2 Rule of law*.....	97.2	7
1.2.3 Rigidity of employment*.....	58.0	100
<b>1.3 Business environment</b>	<b>85.8</b>	<b>34</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	95.6	48
1.3.3 Total tax rate, % profits.....	68.7	64

## 2 Human capital & research 47.6 32

<b>2.1 Education</b>	<b>70.6</b>	<b>16</b>
2.1.1 Education expenditure, % GNI.....	53.2	38
2.1.2 Public expenditure/pupil, % GDP/cap.....	41.0	29
2.1.3 School life expectancy, years.....	75.9	10
2.1.4 PISA scales in reading, maths, & science.....	77.0	10
2.1.5 Pupil-teacher ratio, secondary.....	85.4	53
<b>2.2 Tertiary education</b>	<b>28.4</b>	<b>73</b>
2.2.1 Tertiary enrolment, % gross.....	61.6	27
2.2.2 Graduates in science, %.....	23.0	66
2.2.3 Graduates in engineering, %.....	22.0	67
2.2.4 Tertiary inbound mobility, %.....	19.0	25
2.2.5 Tertiary outbound mobility, %.....	13.1	95
2.2.6 Gross tertiary outbound enrolment, %.....	10.1	63
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>43.9</b>	<b>27</b>
2.3.1 Researchers headcount/million pop.....	21.3	30
2.3.2 Gross expenditure on R&D, % GDP.....	33.1	20
2.3.3 Quality research institutions†.....	77.2	9

## 3 Infrastructure 43.6 18

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>68.3</b>	<b>8</b>
3.1.1 ICT access*.....	84.2	7
3.1.2 ICT use*.....	56.6	7
3.1.3 Government's Online Service*.....	67.9	12
3.1.4 E-Participation*.....	60.0	16
<b>3.2 Energy</b>	<b>23.3</b>	<b>48</b>
3.2.1 Electricity output, kWh/cap.....	35.1	29
3.2.2 Electricity consumption, kWh/capita.....	28.5	25
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	34.9	41
3.2.4 Share of renewables in energy use, %.....	3.0	83
<b>3.3 General infrastructure</b>	<b>39.2</b>	<b>40</b>
3.3.1 Quality of trade & transport infrastructure*.....	81.3	2
3.3.2 Gross capital formation, % GDP.....	18.6	91
3.3.3 Ecological footprint & biocapacity, ha/cap.....	17.9	114

## 4 Market sophistication 61.8 11

<b>4.1 Credit</b>	<b>71.7</b>	<b>14</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>43.4</b>	<b>28</b>
4.2.1 Strength of investor protection*.....	47.0	86
4.2.2 Market capitalization, % GDP.....	27.6	28
4.2.3 Total value of stocks traded, % GDP.....	42.4	17
4.2.4 Venture capital deals/tr GDP PPP\$.....	69.9	22
<b>4.3 Trade &amp; competition</b>	<b>70.3</b>	<b>11</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	40.7	24
4.3.4 Exports of goods & services, % GDP.....	66.8	14
4.3.5 Intensity local competition†.....	79.5	8

## 5 Business sophistication 61.6 8

<b>5.1 Knowledge workers</b>	<b>77.3</b>	<b>10</b>
5.1.1 Knowledge-intensive employment, %.....	92.2	2
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	64.8	26
5.1.4 R&D financed by business, %.....	60.1	20
<b>5.2 Innovation linkages</b>	<b>53.5</b>	<b>16</b>
5.2.1 University/industry collaboration†.....	69.8	11
5.2.2 State of cluster development†.....	61.3	14
5.2.3 R&D financed by abroad, %.....	39.7	21
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	14.7	42
5.2.5 PCT patent filings with foreign inventor, %.....	55.8	15
<b>5.3 Knowledge absorption</b>	<b>54.1</b>	<b>12</b>
5.3.1 Royalty & license fees payments, % GDP.....	50.6	16
5.3.2 High-tech imports less re-imports, %.....	44.3	17
5.3.3 Computer & comm. service imports, %.....	67.6	11
5.3.4 FDI net inflows, % GDP.....	53.9	34

## 6 Scientific outputs 53.8 6

<b>6.1 Knowledge creation</b>	<b>55.4</b>	<b>11</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	23.6	35
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	79.6	8
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	63.0	10
<b>6.2 Knowledge impact</b>	<b>39.7</b>	<b>28</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	37.6	73
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	24.1	29
6.2.3 Computer software spending, % GDP.....	74.9	3
<b>6.3 Knowledge diffusion</b>	<b>66.4</b>	<b>6</b>
6.3.1 Royalty & license fees receipts, % GDP.....	92.5	8
6.3.2 High-tech exports less re-exports, %.....	42.0	16
6.3.3 Computer & comm service exports, %.....	73.7	14
6.3.4 FDI net outflows, % GDP.....	57.3	16

## 7 Creative outputs 50.6 8

<b>7.1 Creative intangibles</b>	<b>46.7</b>	<b>55</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	17.7	59
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	74.1	15
7.1.4 ICT & organizational models†.....	71.6	10
<b>7.2 Creative goods &amp; services</b>	<b>54.5</b>	<b>2</b>
7.2.1 Recreation & culture consumption, %.....	68.1	23
7.2.2 National feature films/mn pop.....	16.9	38
7.2.3 Daily newspapers/1,000 literate pop.....	60.3	7
7.2.4 Creative goods exports, %.....	18.0	53
7.2.5 Creative services exports, %.....	100.0	1

## Key indicators

Population (millions)	4.3
GDP per capita, PPP (current international \$)	29,072.2
GDP (US\$ billions)	126.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>53.8</b>	<b>15</b>
Innovation Output Sub-Index .....	46.6	15
Innovation Input Sub-Index.....	61.0	15
Innovation Efficiency Index.....	0.8	46
Global Innovation Index 2010.....		9
Global Innovation Index 2009.....		27

## 1 Institutions 94.0 2

<b>1.1 Political environment</b>	<b>93.6</b>	<b>9</b>
1.1.1 Political stability*.....	84.9	13
1.1.2 Government effectiveness*.....	97.6	6
1.1.3 Press freedom*.....	98.4	8
<b>1.2 Regulatory environment</b>	<b>96.9</b>	<b>3</b>
1.2.1 Regulatory quality*.....	98.6	4
1.2.2 Rule of law*.....	99.1	3
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>91.5</b>	<b>14</b>
1.3.1 Time to start a business, days.....	100.0	1
1.3.2 Cost to start a business, % income/cap.....	99.7	3
1.3.3 Total tax rate, % profits.....	74.9	46

## 2 Human capital & research 56.4 15

<b>2.1 Education</b>	<b>76.8</b>	<b>6</b>
2.1.1 Education expenditure, % GNI.....	76.8	10
2.1.2 Public expenditure/pupil, % GDP/cap.....	32.8	50
2.1.3 School life expectancy, years.....	92.3	2
2.1.4 PISA scales in reading, maths, & science.....	79.1	8
2.1.5 Pupil-teacher ratio, secondary.....	82.2	61
<b>2.2 Tertiary education</b>	<b>42.4</b>	<b>22</b>
2.2.1 Tertiary enrolment, % gross.....	79.9	8
2.2.2 Graduates in science, %.....	52.0	17
2.2.3 Graduates in engineering, %.....	16.4	78
2.2.4 Tertiary inbound mobility, %.....	52.6	11
2.2.5 Tertiary outbound mobility, %.....	15.7	86
2.2.6 Gross tertiary outbound enrolment, %.....	16.6	50
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>50.1</b>	<b>20</b>
2.3.1 Researchers headcount/million pop.....	53.7	6
2.3.2 Gross expenditure on R&D, % GDP.....	24.4	28
2.3.3 Quality research institutions†.....	72.1	14

## 3 Infrastructure 47.8 8

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>64.7</b>	<b>12</b>
3.1.1 ICT access*.....	72.5	22
3.1.2 ICT use*.....	51.1	14
3.1.3 Government's Online Service*.....	63.8	15
3.1.4 E-Participation*.....	77.1	4
<b>3.2 Energy</b>	<b>31.6</b>	<b>12</b>
3.2.1 Electricity output, kWh/cap.....	51.9	12
3.2.2 Electricity consumption, kWh/capita.....	38.9	13
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	27.1	61
3.2.4 Share of renewables in energy use, %.....	22.4	28
<b>3.3 General infrastructure</b>	<b>47.1</b>	<b>16</b>
3.3.1 Quality of trade & transport infrastructure*.....	63.5	25
3.3.2 Gross capital formation, % GDP.....	17.7	93
3.3.3 Ecological footprint & biocapacity, ha/cap.....	60.2	8

## 4 Market sophistication 57.9 18

<b>4.1 Credit</b>	<b>79.3</b>	<b>9</b>
4.1.1 Strength of legal rights for credit*.....	100.0	1
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	66.9	8
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>48.3</b>	<b>19</b>
4.2.1 Strength of investor protection*.....	97.0	1
4.2.2 Market capitalization, % GDP.....	21.5	36
4.2.3 Total value of stocks traded, % GDP.....	16.5	33
4.2.4 Venture capital deals/tr GDP PPP\$.....	68.0	24
<b>4.3 Trade &amp; competition</b>	<b>46.3</b>	<b>87</b>
4.3.1 Applied tariff rate weighted mean, %.....	90.2	42
4.3.2 Market access trade restrictiveness*, %.....	36.9	76
4.3.3 Imports of goods & services, % GDP.....	12.2	101
4.3.4 Exports of goods & services, % GDP.....	21.2	80
4.3.5 Intensity local competition†.....	66.2	61

## 5 Business sophistication 48.7 31

<b>5.1 Knowledge workers</b>	<b>66.0</b>	<b>27</b>
5.1.1 Knowledge-intensive employment, %.....	83.4	10
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	50.2	40
5.1.4 R&D financed by business, %.....	47.2	39
<b>5.2 Innovation linkages</b>	<b>43.2</b>	<b>31</b>
5.2.1 University/industry collaboration†.....	63.0	20
5.2.2 State of cluster development†.....	43.9	52
5.2.3 R&D financed by abroad, %.....	16.9	50
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	54.7	12
5.2.5 PCT patent filings with foreign inventor, %.....	30.1	31
<b>5.3 Knowledge absorption</b>	<b>36.8</b>	<b>49</b>
5.3.1 Royalty & license fees payments, % GDP.....	39.0	23
5.3.2 High-tech imports less re-imports, %.....	32.9	29
5.3.3 Computer & comm. service imports, %.....	44.0	56
5.3.4 FDI net inflows, % GDP.....	31.4	121

## 6 Scientific outputs 47.6 16

<b>6.1 Knowledge creation</b>	<b>64.6</b>	<b>8</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	80.5	6
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	33.9	17
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	79.5	4
<b>6.2 Knowledge impact</b>	<b>54.7</b>	<b>10</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	27.0	102
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	100.0	3
6.2.3 Computer software spending, % GDP.....	19.4	36
<b>6.3 Knowledge diffusion</b>	<b>23.5</b>	<b>77</b>
6.3.1 Royalty & license fees receipts, % GDP.....	16.2	26
6.3.2 High-tech exports less re-exports, %.....	5.4	59
6.3.3 Computer & comm service exports, %.....	26.6	84
6.3.4 FDI net outflows, % GDP.....	45.9	115

## 7 Creative outputs 45.6 15

<b>7.1 Creative intangibles</b>	<b>60.1</b>	<b>13</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	48.1	13
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	68.5	31
7.1.4 ICT & organizational models†.....	63.7	29
<b>7.2 Creative goods &amp; services</b>	<b>31.1</b>	<b>35</b>
7.2.1 Recreation & culture consumption, %.....	100.0	1
7.2.2 National feature films/mn pop.....	19.0	35
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	9.7	72
7.2.5 Creative services exports, %.....	24.1	32

# Nicaragua

## Key indicators

Population (millions)	5.8
GDP per capita, PPP (current international \$)	2,641.3
GDP (US\$ billions)	6.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>25.8</b>	<b>110</b>
Innovation Output Sub-Index .....	20.4	106
Innovation Input Sub-Index.....	31.1	105
Innovation Efficiency Index.....	0.7	79
Global Innovation Index 2010.....		117
Global Innovation Index 2009.....		114

## 1 Institutions 40.8 116

<b>1.1 Political environment</b>	<b>39.3</b>	<b>93</b>
1.1.1 Political stability*.....	27.4	86
1.1.2 Government effectiveness*.....	14.3	119
1.1.3 Press freedom*.....	76.4	68
<b>1.2 Regulatory environment</b>	<b>44.1</b>	<b>97</b>
1.2.1 Regulatory quality*.....	37.6	97
1.2.2 Rule of law*.....	21.7	107
1.2.3 Rigidity of employment*.....	73.0	64
<b>1.3 Business environment</b>	<b>39.1</b>	<b>121</b>
1.3.1 Time to start a business, days.....	63.5	106
1.3.2 Cost to start a business, % income/cap.....	8.1	120
1.3.3 Total tax rate, % profits.....	45.6	113

## 2 Human capital & research 19.4 120

<b>2.1 Education</b>	<b>35.2</b>	<b>112</b>
2.1.1 Education expenditure, % GNI.....	28.2	97
2.1.2 Public expenditure/pupil, % GDP/cap.....	9.4	97
2.1.3 School life expectancy, years.....	39.4	95
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	47.6	110
<b>2.2 Tertiary education</b>	<b>14.1</b>	<b>111</b>
2.2.1 Tertiary enrolment, % gross.....	18.0	85
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	16.2	82
2.2.6 Gross tertiary outbound enrolment, %.....	4.3	83
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>8.8</b>	<b>119</b>
2.3.1 Researchers headcount/million pop.....	0.4	91
2.3.2 Gross expenditure on R&D, % GDP.....	0.4	96
2.3.3 Quality research institutions†.....	25.7	114

## 3 Infrastructure 25.3 77

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>18.2</b>	<b>91</b>
3.1.1 ICT access*.....	25.4	95
3.1.2 ICT use*.....	1.6	110
3.1.3 Government's Online Service*.....	25.4	89
3.1.4 E-Participation*.....	30.0	38
<b>3.2 Energy</b>	<b>22.6</b>	<b>52</b>
3.2.1 Electricity output, kWh/cap.....	3.0	99
3.2.2 Electricity consumption, kWh/capita.....	1.7	100
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	27.9	58
3.2.4 Share of renewables in energy use, %.....	37.7	15
<b>3.3 General infrastructure</b>	<b>34.9</b>	<b>69</b>
3.3.1 Quality of trade & transport infrastructure*.....	30.8	94
3.3.2 Gross capital formation, % GDP.....	31.4	45
3.3.3 Ecological footprint & biocapacity, ha/cap.....	42.5	19

## 4 Market sophistication 43.5 49

<b>4.1 Credit</b>	<b>48.4</b>	<b>40</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	14.4	63
4.1.4 Microfinance gross loans, % GDP.....	100.0	4
<b>4.2 Investment</b>	<b>33.3</b>	<b>47</b>
4.2.1 Strength of investor protection*.....	50.0	70
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>48.7</b>	<b>73</b>
4.3.1 Applied tariff rate weighted mean, %.....	82.2	59
4.3.2 Market access trade restrictiveness*, %.....	38.3	74
4.3.3 Imports of goods & services, % GDP.....	40.0	25
4.3.4 Exports of goods & services, % GDP.....	28.9	64
4.3.5 Intensity local competition†.....	48.8	114

## 5 Business sophistication 26.7 99

<b>5.1 Knowledge workers</b>	<b>27.9</b>	<b>92</b>
5.1.1 Knowledge-intensive employment, %.....	25.6	85
5.1.2 Firms offering formal training, % firms.....	30.1	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
<b>5.2 Innovation linkages</b>	<b>19.4</b>	<b>113</b>
5.2.1 University/industry collaboration†.....	32.2	107
5.2.2 State of cluster development†.....	35.6	85
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>32.8</b>	<b>66</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	16.3	72
5.3.3 Computer & comm. service imports, %.....	15.7	107
5.3.4 FDI net inflows, % GDP.....	66.4	19

## 6 Scientific outputs 11.4 120

<b>6.1 Knowledge creation</b>	<b>3.3</b>	<b>94</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	7.1	63
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.9	66
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.8	111
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>19.6</b>	<b>101</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	1.4	77
6.3.3 Computer & comm service exports, %.....	10.1	112
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 29.4 73

<b>7.1 Creative intangibles</b>	<b>46.3</b>	<b>56</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	53.5	10
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	41.6	116
7.1.4 ICT & organizational models†.....	43.7	93
<b>7.2 Creative goods &amp; services</b>	<b>12.6</b>	<b>79</b>
7.2.1 Recreation & culture consumption, %.....	21.5	55
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	8.2	78
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	15.9
GDP per capita, PPP (current international \$)	674.6
GDP (US\$ billions)	5.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>21.4</b>	<b>122</b>
Innovation Output Sub-Index .....	11.4	124
Innovation Input Sub-Index.....	31.4	102
Innovation Efficiency Index.....	0.4	124
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 40.1 117

<b>1.1 Political environment</b>	<b>36.3</b>	<b>102</b>
1.1.1 Political stability*.....	14.2	107
1.1.2 Government effectiveness*.....	24.8	108
1.1.3 Press freedom*.....	69.9	79
<b>1.2 Regulatory environment</b>	<b>32.5</b>	<b>116</b>
1.2.1 Regulatory quality*.....	33.8	103
1.2.2 Rule of law*.....	31.6	95
1.2.3 Rigidity of employment*.....	32.0	123
<b>1.3 Business environment</b>	<b>51.6</b>	<b>117</b>
1.3.1 Time to start a business, days.....	84.6	65
1.3.2 Cost to start a business, % income/cap.....	7.6	121
1.3.3 Total tax rate, % profits.....	62.6	85

## 2 Human capital & research 29.0 100

<b>2.1 Education</b>	<b>34.6</b>	<b>114</b>
2.1.1 Education expenditure, % GNI.....	36.9	76
2.1.2 Public expenditure/pupil, % GDP/cap.....	73.6	3
2.1.3 School life expectancy, years.....	3.4	118
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	45.1	112
<b>2.2 Tertiary education</b>	<b>23.4</b>	<b>88</b>
2.2.1 Tertiary enrolment, % gross.....	1.0	119
2.2.2 Graduates in science, %.....	41.9	28
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	25.7	21
2.2.5 Tertiary outbound mobility, %.....	50.7	15
2.2.6 Gross tertiary outbound enrolment, %.....	1.8	94
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>n/a</b>	<b>n/a</b>
2.3.1 Researchers headcount/million pop.....	0.0	99
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	n/a	n/a

## 3 Infrastructure 20.3 110

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>7.6</b>	<b>124</b>
3.1.1 ICT access*.....	15.6	115
3.1.2 ICT use*.....	0.2	122
3.1.3 Government's Online Service*.....	3.8	121
3.1.4 E-Participation*.....	10.0	87
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>33.0</b>	<b>81</b>
3.3.1 Quality of trade & transport infrastructure*.....	32.0	91
3.3.2 Gross capital formation, % GDP.....	30.5	47
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.7	40

## 4 Market sophistication 22.4 123

<b>4.1 Credit</b>	<b>10.8</b>	<b>120</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	16.7	105
4.1.3 Domestic credit to private sector, % GDP.....	2.3	109
4.1.4 Microfinance gross loans, % GDP.....	2.5	52
<b>4.2 Investment</b>	<b>22.0</b>	<b>91</b>
4.2.1 Strength of investor protection*.....	33.0	113
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>34.5</b>	<b>115</b>
4.3.1 Applied tariff rate weighted mean, %.....	54.5	108
4.3.2 Market access trade restrictiveness*, %.....	97.2	4
4.3.3 Imports of goods & services, % GDP.....	10.7	108
4.3.4 Exports of goods & services, % GDP.....	7.0	114
4.3.5 Intensity local competition†.....	n/a	n/a

## 5 Business sophistication 45.4 35

<b>5.1 Knowledge workers</b>	<b>34.2</b>	<b>80</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	34.2	51
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>66.7</b>	<b>3</b>
5.2.1 University/industry 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 GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	100.0	1
<b>5.3 Knowledge absorption</b>	<b>35.2</b>	<b>58</b>
5.3.1 Royalty & license fees payments, % GDP.....	2.2	100
5.3.2 High-tech imports less re-imports, %.....	20.4	61
5.3.3 Computer & comm. service imports, %.....	23.1	99
5.3.4 FDI net inflows, % GDP.....	95.2	6

## 6 Scientific outputs 17.6 97

<b>6.1 Knowledge creation</b>	<b>3.4</b>	<b>90</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.7	74
<b>6.2 Knowledge impact</b>	<b>30.0</b>	<b>67</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	59.9	14
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.0	93
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>19.4</b>	<b>103</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	93
6.3.2 High-tech exports less re-exports, %.....	1.3	80
6.3.3 Computer & comm service exports, %.....	27.6	80
6.3.4 FDI net outflows, % GDP.....	48.5	60

## 7 Creative outputs 5.2 124

<b>7.1 Creative intangibles</b>	<b>n/a</b>	<b>n/a</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	n/a	n/a
7.1.4 ICT & organizational models†.....	n/a	n/a
<b>7.2 Creative goods &amp; services</b>	<b>5.2</b>	<b>103</b>
7.2.1 Recreation & culture consumption, %.....	21.4	56
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	0.0	63
7.2.4 Creative goods exports, %.....	0.9	108
7.2.5 Creative services exports, %.....	4.0	60

# Nigeria

## Key indicators

Population (millions)	158.3
GDP per capita, PPP (current international \$)	2,203.3
GDP (US\$ billions)	173.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>28.2</b>	<b>96</b>
Innovation Output Sub-Index .....	28.6	62
Innovation Input Sub-Index.....	27.7	119
Innovation Efficiency Index.....	1.0	2
Global Innovation Index 2010.....		96
Global Innovation Index 2009.....		70

## 1 Institutions 41.6 115

<b>1.1 Political environment</b>	<b>19.5</b>	<b>122</b>
1.1.1 Political stability*.....	4.2	122
1.1.2 Government effectiveness*.....	8.6	123
1.1.3 Press freedom*.....	45.5	107
<b>1.2 Regulatory environment</b>	<b>43.0</b>	<b>101</b>
1.2.1 Regulatory quality*.....	25.7	112
1.2.2 Rule of law*.....	10.4	118
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>62.2</b>	<b>108</b>
1.3.1 Time to start a business, days.....	71.2	93
1.3.2 Cost to start a business, % income/cap.....	38.5	114
1.3.3 Total tax rate, % profits.....	77.1	39

## 2 Human capital & research 18.3 122

<b>2.1 Education</b>	<b>30.2</b>	<b>119</b>
2.1.1 Education expenditure, % GNI.....	0.0	122
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	27.6	109
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	47.9	109
<b>2.2 Tertiary education</b>	<b>8.8</b>	<b>121</b>
2.2.1 Tertiary enrolment, % gross.....	9.8	94
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	14.0	93
2.2.6 Gross tertiary outbound enrolment, %.....	1.6	97
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>15.9</b>	<b>95</b>
2.3.1 Researchers headcount/million pop.....	1.5	74
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	30.4	106

## 3 Infrastructure 21.0 106

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>9.2</b>	<b>115</b>
3.1.1 ICT access*.....	16.0	113
3.1.2 ICT use*.....	6.1	80
3.1.3 Government's Online Service*.....	9.5	116
3.1.4 E-Participation*.....	1.4	116
<b>3.2 Energy</b>	<b>17.7</b>	<b>75</b>
3.2.1 Electricity output, kWh/cap.....	0.6	110
3.2.2 Electricity consumption, kWh/capita.....	0.4	110
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	2.6	113
3.2.4 Share of renewables in energy use, %.....	50.1	7
<b>3.3 General infrastructure</b>	<b>36.1</b>	<b>60</b>
3.3.1 Quality of trade & transport infrastructure*.....	35.8	76
3.3.2 Gross capital formation, % GDP.....	n/a	n/a
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.5	42

## 4 Market sophistication 31.1 100

<b>4.1 Credit</b>	<b>21.1</b>	<b>107</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	12.6	70
4.1.4 Microfinance gross loans, % GDP.....	0.5	62
<b>4.2 Investment</b>	<b>24.8</b>	<b>77</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	7.8	70
4.2.3 Total value of stocks traded, % GDP.....	1.5	62
4.2.4 Venture capital deals/tr GDP PPP\$.....	41.4	52
<b>4.3 Trade &amp; competition</b>	<b>47.3</b>	<b>79</b>
4.3.1 Applied tariff rate weighted mean, %.....	55.8	105
4.3.2 Market access trade restrictiveness*, %.....	96.9	6
4.3.3 Imports of goods & services, % GDP.....	12.7	97
4.3.4 Exports of goods & services, % GDP.....	29.7	62
4.3.5 Intensity local competition†.....	66.3	59

## 5 Business sophistication 26.6 101

<b>5.1 Knowledge workers</b>	<b>26.2</b>	<b>97</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	26.2	64
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>23.3</b>	<b>100</b>
5.2.1 University/industry collaboration†.....	34.9	93
5.2.2 State of cluster development†.....	45.7	50
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	1.9	69
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>30.3</b>	<b>78</b>
5.3.1 Royalty & license fees payments, % GDP.....	13.2	59
5.3.2 High-tech imports less re-imports, %.....	13.1	88
5.3.3 Computer & comm. service imports, %.....	44.8	53
5.3.4 FDI net inflows, % GDP.....	50.2	44

## 6 Scientific outputs 13.4 116

<b>6.1 Knowledge creation</b>	<b>2.0</b>	<b>107</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.1	85
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.9	94
<b>6.2 Knowledge impact</b>	<b>21.1</b>	<b>97</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	45.9	41
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	6.1	63
6.2.3 Computer software spending, % GDP.....	1.6	72
<b>6.3 Knowledge diffusion</b>	<b>17.1</b>	<b>115</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.2	97
6.3.3 Computer & comm service exports, %.....	3.5	119
6.3.4 FDI net outflows, % GDP.....	47.5	80

## 7 Creative outputs 43.8 21

<b>7.1 Creative intangibles</b>	<b>57.2</b>	<b>19</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	64.3	45
7.1.4 ICT & organizational models†.....	50.2	70
<b>7.2 Creative goods &amp; services</b>	<b>30.3</b>	<b>37</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	85.6	5
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	2.6	98
7.2.5 Creative services exports, %.....	n/a	n/a



## Key indicators

Population (millions)	4.9
GDP per capita, PPP (current international \$)	55,672.1
GDP (US\$ billions)	381.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>52.6</b>	<b>18</b>
Innovation Output Sub-Index .....	44.0	18
Innovation Input Sub-Index.....	61.2	14
Innovation Efficiency Index.....	0.7	59
Global Innovation Index 2010.....		10
Global Innovation Index 2009.....		14

## 1 Institutions 88.1 12

<b>1.1 Political environment</b>	<b>95.4</b>	<b>5</b>
1.1.1 Political stability*.....	91.5	6
1.1.2 Government effectiveness*.....	94.8	11
1.1.3 Press freedom*.....	100.0	1
<b>1.2 Regulatory environment</b>	<b>82.0</b>	<b>22</b>
1.2.1 Regulatory quality*.....	91.4	18
1.2.2 Rule of law*.....	98.6	4
1.2.3 Rigidity of employment*.....	56.0	105
<b>1.3 Business environment</b>	<b>86.8</b>	<b>25</b>
1.3.1 Time to start a business, days.....	94.2	21
1.3.2 Cost to start a business, % income/cap.....	98.6	19
1.3.3 Total tax rate, % profits.....	67.5	69

## 2 Human capital & research 57.5 12

<b>2.1 Education</b>	<b>76.7</b>	<b>7</b>
2.1.1 Education expenditure, % GNI.....	69.0	14
2.1.2 Public expenditure/pupil, % GDP/cap.....	46.6	20
2.1.3 School life expectancy, years.....	79.7	5
2.1.4 PISA scales in reading, maths, & science.....	69.6	17
2.1.5 Pupil-teacher ratio, secondary.....	96.2	10
<b>2.2 Tertiary education</b>	<b>40.2</b>	<b>31</b>
2.2.1 Tertiary enrolment, % gross.....	74.5	14
2.2.2 Graduates in science, %.....	28.4	51
2.2.3 Graduates in engineering, %.....	22.0	66
2.2.4 Tertiary inbound mobility, %.....	29.9	17
2.2.5 Tertiary outbound mobility, %.....	32.1	44
2.2.6 Gross tertiary outbound enrolment, %.....	49.9	12
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>55.5</b>	<b>17</b>
2.3.1 Researchers headcount/million pop.....	67.1	3
2.3.2 Gross expenditure on R&D, % GDP.....	32.8	21
2.3.3 Quality research institutions†.....	66.7	22

## 3 Infrastructure 55.5 1

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>64.6</b>	<b>13</b>
3.1.1 ICT access*.....	79.1	11
3.1.2 ICT use*.....	52.9	10
3.1.3 Government's Online Service*.....	73.7	7
3.1.4 E-Participation*.....	50.0	22
<b>3.2 Energy</b>	<b>55.2</b>	<b>1</b>
3.2.1 Electricity output, kWh/cap.....	100.0	2
3.2.2 Electricity consumption, kWh/capita.....	100.0	2
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	37.2	35
3.2.4 Share of renewables in energy use, %.....	28.3	21
<b>3.3 General infrastructure</b>	<b>46.8</b>	<b>17</b>
3.3.1 Quality of trade & transport infrastructure*.....	80.5	3
3.3.2 Gross capital formation, % GDP.....	22.5	74
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.4	35

## 4 Market sophistication 53.8 27

<b>4.1 Credit</b>	<b>53.3</b>	<b>31</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	38.2	26
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>48.6</b>	<b>18</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	23.9	31
4.2.3 Total value of stocks traded, % GDP.....	36.1	18
4.2.4 Venture capital deals/tr GDP PPP\$.....	86.1	8
<b>4.3 Trade &amp; competition</b>	<b>59.7</b>	<b>28</b>
4.3.1 Applied tariff rate weighted mean, %.....	97.9	4
4.3.2 Market access trade restrictiveness*, %.....	92.8	13
4.3.3 Imports of goods & services, % GDP.....	12.8	96
4.3.4 Exports of goods & services, % GDP.....	36.5	50
4.3.5 Intensity local competition†.....	74.9	25

## 5 Business sophistication 50.8 23

<b>5.1 Knowledge workers</b>	<b>71.4</b>	<b>19</b>
5.1.1 Knowledge-intensive employment, %.....	84.5	8
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	63.4	30
5.1.4 R&D financed by business, %.....	53.2	31
<b>5.2 Innovation linkages</b>	<b>45.5</b>	<b>28</b>
5.2.1 University/industry collaboration†.....	64.2	19
5.2.2 State of cluster development†.....	57.9	21
5.2.3 R&D financed by abroad, %.....	29.2	33
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	37.2	20
5.2.5 PCT patent filings with foreign inventor, %.....	26.8	34
<b>5.3 Knowledge absorption</b>	<b>35.6</b>	<b>55</b>
5.3.1 Royalty & license fees payments, % GDP.....	15.5	55
5.3.2 High-tech imports less re-imports, %.....	30.7	34
5.3.3 Computer & comm. service imports, %.....	47.8	43
5.3.4 FDI net inflows, % GDP.....	48.5	50

## 6 Scientific outputs 37.4 26

<b>6.1 Knowledge creation</b>	<b>38.1</b>	<b>20</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	29.9	29
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	36.2	15
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	48.2	15
<b>6.2 Knowledge impact</b>	<b>35.1</b>	<b>45</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	30.6	97
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	34.9	20
6.2.3 Computer software spending, % GDP.....	44.4	17
<b>6.3 Knowledge diffusion</b>	<b>39.1</b>	<b>35</b>
6.3.1 Royalty & license fees receipts, % GDP.....	22.4	21
6.3.2 High-tech exports less re-exports, %.....	10.0	48
6.3.3 Computer & comm service exports, %.....	56.9	27
6.3.4 FDI net outflows, % GDP.....	67.2	8

## 7 Creative outputs 50.6 7

<b>7.1 Creative intangibles</b>	<b>50.9</b>	<b>40</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	9.0	86
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	28.3	21
7.1.3 ICT & business models†.....	79.4	6
7.1.4 ICT & organizational models†.....	75.5	4
<b>7.2 Creative goods &amp; services</b>	<b>50.4</b>	<b>6</b>
7.2.1 Recreation & culture consumption, %.....	81.0	5
7.2.2 National feature films/mn pop.....	62.0	11
7.2.3 Daily newspapers/1,000 literate pop.....	100.0	1
7.2.4 Creative goods exports, %.....	2.8	95
7.2.5 Creative services exports, %.....	52.1	10

## Oman

## Key indicators

Population (millions)	2.9
GDP per capita, PPP (current international \$)	25,462.1
GDP (US\$ billions)	46.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>35.5</b>	<b>57</b>
Innovation Output Sub-Index .....	24.8	78
Innovation Input Sub-Index.....	46.2	42
Innovation Efficiency Index.....	0.5	110
Global Innovation Index 2010.....		65
Global Innovation Index 2009.....		52

## 1 Institutions 78.7 32

<b>1.1 Political environment</b>	<b>68.1</b>	<b>44</b>
1.1.1 Political stability*.....	75.5	27
1.1.2 Government effectiveness*.....	71.4	40
1.1.3 Press freedom*.....	57.4	89
<b>1.2 Regulatory environment</b>	<b>76.6</b>	<b>29</b>
1.2.1 Regulatory quality*.....	73.3	41
1.2.2 Rule of law*.....	69.3	38
1.2.3 Rigidity of employment*.....	87.0	27
<b>1.3 Business environment</b>	<b>91.6</b>	<b>13</b>
1.3.1 Time to start a business, days.....	89.4	43
1.3.2 Cost to start a business, % income/cap.....	97.4	33
1.3.3 Total tax rate, % profits.....	87.8	12

## 2 Human capital & research 45.9 35

<b>2.1 Education</b>	<b>52.9</b>	<b>80</b>
2.1.1 Education expenditure, % GNI.....	40.6	69
2.1.2 Public expenditure/pupil, % GDP/cap.....	22.0	74
2.1.3 School life expectancy, years.....	46.0	81
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	81.5	64
<b>2.2 Tertiary education</b>	<b>36.6</b>	<b>44</b>
2.2.1 Tertiary enrolment, % gross.....	26.6	72
2.2.2 Graduates in science, %.....	62.8	7
2.2.3 Graduates in engineering, %.....	39.3	38
2.2.4 Tertiary inbound mobility, %.....	7.6	47
2.2.5 Tertiary outbound mobility, %.....	38.1	34
2.2.6 Gross tertiary outbound enrolment, %.....	26.4	32
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>48.0</b>	<b>23</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	48.0	53

## 3 Infrastructure 26.7 66

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>26.3</b>	<b>64</b>
3.1.1 ICT access*.....	43.7	57
3.1.2 ICT use*.....	9.0	77
3.1.3 Government's Online Service*.....	36.8	52
3.1.4 E-Participation*.....	15.7	71
<b>3.2 Energy</b>	<b>11.9</b>	<b>101</b>
3.2.1 Electricity output, kWh/cap.....	29.2	38
3.2.2 Electricity consumption, kWh/capita.....	20.5	40
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	11.0	94
3.2.4 Share of renewables in energy use, %.....	0.0	111
<b>3.3 General infrastructure</b>	<b>41.9</b>	<b>25</b>
3.3.1 Quality of trade & transport infrastructure*.....	51.5	39
3.3.2 Gross capital formation, % GDP.....	47.4	19
3.3.3 Ecological footprint & biocapacity, ha/cap.....	26.8	96

## 4 Market sophistication 35.1 82

<b>4.1 Credit</b>	<b>25.0</b>	<b>100</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	13.3	67
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>19.3</b>	<b>100</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	9.8	62
4.2.3 Total value of stocks traded, % GDP.....	7.8	44
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>61.1</b>	<b>23</b>
4.3.1 Applied tariff rate weighted mean, %.....	83.6	55
4.3.2 Market access trade restrictiveness*, %.....	93.0	12
4.3.3 Imports of goods & services, % GDP.....	21.3	65
4.3.4 Exports of goods & services, % GDP.....	55.6	24
4.3.5 Intensity local competition†.....	68.1	50

## 5 Business sophistication 44.7 38

<b>5.1 Knowledge workers</b>	<b>32.6</b>	<b>82</b>
5.1.1 Knowledge-intensive employment, %.....	45.0	50
5.1.2 Firms offering formal training, % firms.....	20.2	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
<b>5.2 Innovation linkages</b>	<b>63.8</b>	<b>4</b>
5.2.1 University/industry collaboration†.....	47.9	46
5.2.2 State of cluster development†.....	53.2	28
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	44.9	17
5.2.5 PCT patent filings with foreign inventor, %.....	100.0	1
<b>5.3 Knowledge absorption</b>	<b>37.6</b>	<b>48</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	9.4	92
5.3.3 Computer & comm. service imports, %.....	46.8	44
5.3.4 FDI net inflows, % GDP.....	56.5	28

## 6 Scientific outputs 22.3 74

<b>6.1 Knowledge creation</b>	<b>3.3</b>	<b>93</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.7	69
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.8	80
<b>6.2 Knowledge impact</b>	<b>35.1</b>	<b>46</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	57.1	15
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	13.0	46
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>28.7</b>	<b>58</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.2	99
6.3.3 Computer & comm service exports, %.....	36.1	61
6.3.4 FDI net outflows, % GDP.....	49.7	41

## 7 Creative outputs 27.2 82

<b>7.1 Creative intangibles</b>	<b>52.2</b>	<b>32</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	67.2	37
7.1.4 ICT & organizational models†.....	63.5	30
<b>7.2 Creative goods &amp; services</b>	<b>2.2</b>	<b>117</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	4.1	64
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	1.3	104
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	184.8
GDP per capita, PPP (current international \$)	2,608.6
GDP (US\$ billions)	162.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>26.8</b>	<b>105</b>
Innovation Output Sub-Index .....	26.9	67
Innovation Input Sub-Index.....	26.6	123
Innovation Efficiency Index.....	1.0	4
Global Innovation Index 2010.....		103
Global Innovation Index 2009.....		93

## 1 Institutions 46.7 108

<b>1.1 Political environment</b>	<b>20.0</b>	<b>121</b>
1.1.1 Political stability*.....	0.5	125
1.1.2 Government effectiveness*.....	19.0	115
1.1.3 Press freedom*.....	40.6	109
<b>1.2 Regulatory environment</b>	<b>36.6</b>	<b>111</b>
1.2.1 Regulatory quality*.....	33.3	104
1.2.2 Rule of law*.....	19.3	110
1.2.3 Rigidity of employment*.....	57.0	102
<b>1.3 Business environment</b>	<b>83.4</b>	<b>50</b>
1.3.1 Time to start a business, days.....	80.8	77
1.3.2 Cost to start a business, % income/cap.....	91.7	66
1.3.3 Total tax rate, % profits.....	77.7	37

## 2 Human capital & research 14.0 124

<b>2.1 Education</b>	<b>14.5</b>	<b>125</b>
2.1.1 Education expenditure, % GNI.....	14.1	114
2.1.2 Public expenditure/pupil, % GDP/cap.....	12.1	93
2.1.3 School life expectancy, years.....	15.4	115
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	15.0	118
<b>2.2 Tertiary education</b>	<b>8.9</b>	<b>120</b>
2.2.1 Tertiary enrolment, % gross.....	6.1	105
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	22.4	67
2.2.6 Gross tertiary outbound enrolment, %.....	1.2	102
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.6</b>	<b>81</b>
2.3.1 Researchers headcount/million pop.....	2.3	69
2.3.2 Gross expenditure on R&D, % GDP.....	13.4	42
2.3.3 Quality research institutions†.....	40.2	73

## 3 Infrastructure 19.5 114

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>14.7</b>	<b>99</b>
3.1.1 ICT access*.....	19.6	104
3.1.2 ICT use*.....	3.5	97
3.1.3 Government's Online Service*.....	24.8	91
3.1.4 E-Participation*.....	17.1	65
<b>3.2 Energy</b>	<b>15.9</b>	<b>83</b>
3.2.1 Electricity output, kWh/cap.....	2.8	100
3.2.2 Electricity consumption, kWh/capita.....	1.7	101
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	22.5	73
3.2.4 Share of renewables in energy use, %.....	23.1	27
<b>3.3 General infrastructure</b>	<b>27.7</b>	<b>111</b>
3.3.1 Quality of trade & transport infrastructure*.....	27.0	106
3.3.2 Gross capital formation, % GDP.....	19.8	86
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.4	44

## 4 Market sophistication 28.1 111

<b>4.1 Credit</b>	<b>29.9</b>	<b>93</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	10.5	74
4.1.4 Microfinance gross loans, % GDP.....	1.7	53
<b>4.2 Investment</b>	<b>22.5</b>	<b>87</b>
4.2.1 Strength of investor protection*.....	63.0	27
4.2.2 Market capitalization, % GDP.....	7.8	69
4.2.3 Total value of stocks traded, % GDP.....	7.9	43
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>31.8</b>	<b>121</b>
4.3.1 Applied tariff rate weighted mean, %.....	55.3	107
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	7.2	118
4.3.4 Exports of goods & services, % GDP.....	4.2	118
4.3.5 Intensity local competition†.....	60.5	82

## 5 Business sophistication 24.7 109

<b>5.1 Knowledge workers</b>	<b>18.8</b>	<b>115</b>
5.1.1 Knowledge-intensive employment, %.....	35.2	69
5.1.2 Firms offering formal training, % firms.....	2.5	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
<b>5.2 Innovation linkages</b>	<b>29.7</b>	<b>76</b>
5.2.1 University/industry collaboration†.....	39.6	74
5.2.2 State of cluster development†.....	47.1	46
5.2.3 R&D financed by abroad, %.....	3.3	66
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	1.5	71
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>25.5</b>	<b>100</b>
5.3.1 Royalty & license fees payments, % GDP.....	7.0	82
5.3.2 High-tech imports less re-imports, %.....	14.5	83
5.3.3 Computer & comm. service imports, %.....	38.3	63
5.3.4 FDI net inflows, % GDP.....	42.1	81

## 6 Scientific outputs 17.5 98

<b>6.1 Knowledge creation</b>	<b>3.7</b>	<b>85</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	2.4	75
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.0	89
<b>6.2 Knowledge impact</b>	<b>23.4</b>	<b>90</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	53.0	24
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	0.2	92
6.2.3 Computer software spending, % GDP.....	10.4	53
<b>6.3 Knowledge diffusion</b>	<b>25.5</b>	<b>69</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.5	73
6.3.2 High-tech exports less re-exports, %.....	3.6	66
6.3.3 Computer & comm service exports, %.....	50.8	37
6.3.4 FDI net outflows, % GDP.....	47.2	108

## 7 Creative outputs 36.3 53

<b>7.1 Creative intangibles</b>	<b>41.0</b>	<b>78</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	15.9	62
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	54.6	76
7.1.4 ICT & organizational models†.....	52.4	58
<b>7.2 Creative goods &amp; services</b>	<b>31.7</b>	<b>33</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	0.5	78
7.2.3 Daily newspapers/1,000 literate pop.....	24.9	24
7.2.4 Creative goods exports, %.....	72.4	2
7.2.5 Creative services exports, %.....	10.1	45

## Panama

## Key indicators

Population (millions)	3.5
GDP per capita, PPP (current international \$)	13,057.1
GDP (US\$ billions)	24.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.8</b>	<b>77</b>
Innovation Output Sub-Index .....	20.8	101
Innovation Input Sub-Index.....	40.7	60
Innovation Efficiency Index.....	0.5	115
Global Innovation Index 2010.....		66
Global Innovation Index 2009.....		67

## 1 Institutions 64.8 64

<b>1.1 Political environment</b>	<b>62.9</b>	<b>54</b>
1.1.1 Political stability*.....	49.5	56
1.1.2 Government effectiveness*.....	62.4	54
1.1.3 Press freedom*.....	76.9	66
<b>1.2 Regulatory environment</b>	<b>50.4</b>	<b>89</b>
1.2.1 Regulatory quality*.....	64.8	51
1.2.2 Rule of law*.....	52.4	61
1.2.3 Rigidity of employment*.....	34.0	122
<b>1.3 Business environment</b>	<b>81.1</b>	<b>60</b>
1.3.1 Time to start a business, days.....	92.3	34
1.3.2 Cost to start a business, % income/cap.....	92.0	64
1.3.3 Total tax rate, % profits.....	58.9	99

## 2 Human capital & research 32.0 84

<b>2.1 Education</b>	<b>49.1</b>	<b>92</b>
2.1.1 Education expenditure, % GNI.....	35.7	80
2.1.2 Public expenditure/pupil, % GDP/cap.....	17.7	84
2.1.3 School life expectancy, years.....	54.5	61
2.1.4 PISA scales in reading, maths, & science.....	17.4	60
2.1.5 Pupil-teacher ratio, secondary.....	81.8	62
<b>2.2 Tertiary education</b>	<b>29.9</b>	<b>66</b>
2.2.1 Tertiary enrolment, % gross.....	45.7	48
2.2.2 Graduates in science, %.....	14.2	80
2.2.3 Graduates in engineering, %.....	46.7	26
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	16.4	80
2.2.6 Gross tertiary outbound enrolment, %.....	9.8	65
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>16.9</b>	<b>92</b>
2.3.1 Researchers headcount/million pop.....	1.2	77
2.3.2 Gross expenditure on R&D, % GDP.....	3.7	72
2.3.3 Quality research institutions†.....	45.6	62

## 3 Infrastructure 30.7 51

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>28.3</b>	<b>60</b>
3.1.1 ICT access*.....	44.2	55
3.1.2 ICT use*.....	12.4	62
3.1.3 Government's Online Service*.....	28.3	81
3.1.4 E-Participation*.....	n/a	n/a
<b>3.2 Energy</b>	<b>25.7</b>	<b>33</b>
3.2.1 Electricity output, kWh/cap.....	9.7	76
3.2.2 Electricity consumption, kWh/capita.....	6.8	74
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	54.0	10
3.2.4 Share of renewables in energy use, %.....	14.8	41
<b>3.3 General infrastructure</b>	<b>38.1</b>	<b>50</b>
3.3.1 Quality of trade & transport infrastructure*.....	40.8	58
3.3.2 Gross capital formation, % GDP.....	34.8	34
3.3.3 Ecological footprint & biocapacity, ha/cap.....	38.7	28

## 4 Market sophistication 42.5 54

<b>4.1 Credit</b>	<b>47.7</b>	<b>43</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	38.9	25
4.1.4 Microfinance gross loans, % GDP.....	0.9	58
<b>4.2 Investment</b>	<b>17.2</b>	<b>108</b>
4.2.1 Strength of investor protection*.....	47.0	86
4.2.2 Market capitalization, % GDP.....	13.0	55
4.2.3 Total value of stocks traded, % GDP.....	0.1	91
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>62.6</b>	<b>19</b>
4.3.1 Applied tariff rate weighted mean, %.....	64.8	94
4.3.2 Market access trade restrictiveness*, %.....	69.9	53
4.3.3 Imports of goods & services, % GDP.....	39.9	26
4.3.4 Exports of goods & services, % GDP.....	75.2	10
4.3.5 Intensity local competition†.....	67.0	55

## 5 Business sophistication 33.7 70

<b>5.1 Knowledge workers</b>	<b>26.8</b>	<b>95</b>
5.1.1 Knowledge-intensive employment, %.....	31.5	78
5.1.2 Firms offering formal training, % firms.....	48.9	29
5.1.3 R&D performed by business, %.....	0.0	80
5.1.4 R&D financed by business, %.....	0.1	73
<b>5.2 Innovation linkages</b>	<b>46.2</b>	<b>26</b>
5.2.1 University/industry collaboration†.....	38.5	77
5.2.2 State of cluster development†.....	50.0	35
5.2.3 R&D financed by abroad, %.....	100.0	1
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>28.1</b>	<b>84</b>
5.3.1 Royalty & license fees payments, % GDP.....	11.3	66
5.3.2 High-tech imports less re-imports, %.....	20.5	59
5.3.3 Computer & comm. service imports, %.....	13.9	110
5.3.4 FDI net inflows, % GDP.....	66.8	17

## 6 Scientific outputs 8.4 123

<b>6.1 Knowledge creation</b>	<b>3.1</b>	<b>96</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.6	81
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.0	49
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.6	82
<b>6.2 Knowledge impact</b>	<b>2.4</b>	<b>114</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	2.0	81
6.2.3 Computer software spending, % GDP.....	3.1	71
<b>6.3 Knowledge diffusion</b>	<b>19.8</b>	<b>98</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.3	95
6.3.3 Computer & comm service exports, %.....	11.7	107
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 33.2 62

<b>7.1 Creative intangibles</b>	<b>61.4</b>	<b>12</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	53.0	11
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	69.6	29
7.1.4 ICT & organizational models†.....	61.5	39
<b>7.2 Creative goods &amp; services</b>	<b>5.1</b>	<b>104</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	3.2	69
7.2.3 Daily newspapers/1,000 literate pop.....	15.5	37
7.2.4 Creative goods exports, %.....	5.8	82
7.2.5 Creative services exports, %.....	0.1	96

## Key indicators

Population (millions)	6.5
GDP per capita, PPP (current international \$)	4,522.5
GDP (US\$ billions)	14.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>31.2</b>	<b>74</b>
Innovation Output Sub-Index .....	27.9	64
Innovation Input Sub-Index.....	34.4	92
Innovation Efficiency Index.....	0.8	24
Global Innovation Index 2010.....		127
Global Innovation Index 2009.....		118

## 1 Institutions 46.2 110

<b>1.1 Political environment</b>	<b>39.9</b>	<b>90</b>
1.1.1 Political stability*.....	17.5	102
1.1.2 Government effectiveness*.....	19.5	114
1.1.3 Press freedom*.....	82.8	48
<b>1.2 Regulatory environment</b>	<b>32.4</b>	<b>117</b>
1.2.1 Regulatory quality*.....	36.7	98
1.2.2 Rule of law*.....	16.5	111
1.2.3 Rigidity of employment*.....	44.0	116
<b>1.3 Business environment</b>	<b>66.2</b>	<b>101</b>
1.3.1 Time to start a business, days.....	67.3	99
1.3.2 Cost to start a business, % income/cap.....	57.1	110
1.3.3 Total tax rate, % profits.....	74.2	47

## 2 Human capital & research 24.9 110

<b>2.1 Education</b>	<b>51.2</b>	<b>86</b>
2.1.1 Education expenditure, % GNI.....	40.3	70
2.1.2 Public expenditure/pupil, % GDP/cap.....	18.2	83
2.1.3 School life expectancy, years.....	45.4	85
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	79.0	68
<b>2.2 Tertiary education</b>	<b>18.3</b>	<b>100</b>
2.2.1 Tertiary enrolment, % gross.....	28.7	69
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	11.7	101
2.2.6 Gross tertiary outbound enrolment, %.....	3.9	84
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>5.3</b>	<b>122</b>
2.3.1 Researchers headcount/million pop.....	0.9	81
2.3.2 Gross expenditure on R&D, % GDP.....	1.3	86
2.3.3 Quality research institutions†.....	13.6	122

## 3 Infrastructure 36.3 29

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>17.2</b>	<b>93</b>
3.1.1 ICT access*.....	31.9	85
3.1.2 ICT use*.....	5.7	83
3.1.3 Government's Online Service*.....	26.4	87
3.1.4 E-Participation*.....	1.4	116
<b>3.2 Energy</b>	<b>53.3</b>	<b>2</b>
3.2.1 Electricity output, kWh/cap.....	46.2	14
3.2.2 Electricity consumption, kWh/capita.....	4.1	87
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	34.6	43
3.2.4 Share of renewables in energy use, %.....	100.0	1
<b>3.3 General infrastructure</b>	<b>38.5</b>	<b>44</b>
3.3.1 Quality of trade & transport infrastructure*.....	36.0	72
3.3.2 Gross capital formation, % GDP.....	11.0	110
3.3.3 Ecological footprint & biocapacity, ha/cap.....	68.5	3

## 4 Market sophistication 36.2 77

<b>4.1 Credit</b>	<b>38.4</b>	<b>65</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	7.5	89
4.1.4 Microfinance gross loans, % GDP.....	47.2	12
<b>4.2 Investment</b>	<b>16.7</b>	<b>109</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	1.5	98
4.2.3 Total value of stocks traded, % GDP.....	0.0	99
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>53.6</b>	<b>50</b>
4.3.1 Applied tariff rate weighted mean, %.....	83.7	54
4.3.2 Market access trade restrictiveness*, %.....	63.6	58
4.3.3 Imports of goods & services, % GDP.....	32.2	40
4.3.4 Exports of goods & services, % GDP.....	41.5	43
4.3.5 Intensity local competition†.....	51.8	109

## 5 Business sophistication 28.6 93

<b>5.1 Knowledge workers</b>	<b>30.6</b>	<b>87</b>
5.1.1 Knowledge-intensive employment, %.....	23.9	87
5.1.2 Firms offering formal training, % firms.....	52.6	25
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	0.0	74
<b>5.2 Innovation linkages</b>	<b>27.2</b>	<b>86</b>
5.2.1 University/industry collaboration†.....	27.7	117
5.2.2 State of cluster development†.....	28.9	110
5.2.3 R&D financed by abroad, %.....	49.8	16
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>28.0</b>	<b>87</b>
5.3.1 Royalty & license fees payments, % GDP.....	2.9	97
5.3.2 High-tech imports less re-imports, %.....	65.2	6
5.3.3 Computer & comm. service imports, %.....	1.9	117
5.3.4 FDI net inflows, % GDP.....	42.0	82

## 6 Scientific outputs 30.0 39

<b>6.1 Knowledge creation</b>	<b>1.0</b>	<b>118</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.0	118
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>59.0</b>	<b>13</b>
6.3.1 Royalty & license fees receipts, % GDP.....	100.0	2
6.3.2 High-tech exports less re-exports, %.....	2.5	70
6.3.3 Computer & comm service exports, %.....	86.0	6
6.3.4 FDI net outflows, % GDP.....	47.4	82

## 7 Creative outputs 25.8 88

<b>7.1 Creative intangibles</b>	<b>44.4</b>	<b>65</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	45.6	110
7.1.4 ICT & organizational models†.....	43.3	96
<b>7.2 Creative goods &amp; services</b>	<b>7.2</b>	<b>94</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	8.2	50
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	5.7	83
7.2.5 Creative services exports, %.....	8.2	49

## Peru

## Key indicators

Population (millions)	29.5
GDP per capita, PPP (current international \$)	8,629.5
GDP (US\$ billions)	130.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.3</b>	<b>83</b>
Innovation Output Sub-Index .....	21.6	98
Innovation Input Sub-Index.....	39.1	72
Innovation Efficiency Index.....	0.6	108
Global Innovation Index 2010.....		88
Global Innovation Index 2009.....		85

## 1 Institutions 57.5 81

<b>1.1 Political environment</b>	<b>43.2</b>	<b>84</b>
1.1.1 Political stability*.....	17.9	101
1.1.2 Government effectiveness*.....	43.3	84
1.1.3 Press freedom*.....	68.3	80
<b>1.2 Regulatory environment</b>	<b>51.7</b>	<b>85</b>
1.2.1 Regulatory quality*.....	63.8	53
1.2.2 Rule of law*.....	30.2	96
1.2.3 Rigidity of employment*.....	61.0	90
<b>1.3 Business environment</b>	<b>77.8</b>	<b>70</b>
1.3.1 Time to start a business, days.....	75.0	85
1.3.2 Cost to start a business, % income/cap.....	89.4	74
1.3.3 Total tax rate, % profits.....	69.0	62

## 2 Human capital & research 25.7 108

<b>2.1 Education</b>	<b>43.3</b>	<b>106</b>
2.1.1 Education expenditure, % GNI.....	20.7	110
2.1.2 Public expenditure/pupil, % GDP/cap.....	4.7	102
2.1.3 School life expectancy, years.....	52.5	65
2.1.4 PISA scales in reading, maths, & science.....	17.1	61
2.1.5 Pupil-teacher ratio, secondary.....	77.9	72
<b>2.2 Tertiary education</b>	<b>21.9</b>	<b>91</b>
2.2.1 Tertiary enrolment, % gross.....	34.8	63
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	11.5	103
2.2.6 Gross tertiary outbound enrolment, %.....	6.4	74
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>11.8</b>	<b>112</b>
2.3.1 Researchers headcount/million pop.....	1.3	76
2.3.2 Gross expenditure on R&D, % GDP.....	2.5	79
2.3.3 Quality research institutions†.....	31.5	102

## 3 Infrastructure 31.4 47

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>24.4</b>	<b>69</b>
3.1.1 ICT access*.....	34.6	71
3.1.2 ICT use*.....	9.6	74
3.1.3 Government's Online Service*.....	41.0	43
3.1.4 E-Participation*.....	17.1	65
<b>3.2 Energy</b>	<b>30.9</b>	<b>15</b>
3.2.1 Electricity output, kWh/cap.....	5.8	85
3.2.2 Electricity consumption, kWh/capita.....	4.2	85
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	72.9	2
3.2.4 Share of renewables in energy use, %.....	14.7	42
<b>3.3 General infrastructure</b>	<b>39.0</b>	<b>42</b>
3.3.1 Quality of trade & transport infrastructure*.....	41.5	54
3.3.2 Gross capital formation, % GDP.....	28.8	50
3.3.3 Ecological footprint & biocapacity, ha/cap.....	46.6	13

## 4 Market sophistication 42.7 52

<b>4.1 Credit</b>	<b>48.2</b>	<b>42</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	8.2	85
4.1.4 Microfinance gross loans, % GDP.....	54.6	9
<b>4.2 Investment</b>	<b>31.0</b>	<b>55</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	22.1	35
4.2.3 Total value of stocks traded, % GDP.....	1.4	63
4.2.4 Venture capital deals/tr GDP PPP\$.....	35.8	56
<b>4.3 Trade &amp; competition</b>	<b>49.0</b>	<b>72</b>
4.3.1 Applied tariff rate weighted mean, %.....	89.6	45
4.3.2 Market access trade restrictiveness*, %.....	87.2	25
4.3.3 Imports of goods & services, % GDP.....	6.7	120
4.3.4 Exports of goods & services, % GDP.....	16.1	96
4.3.5 Intensity local competition†.....	64.4	65

## 5 Business sophistication 37.9 55

<b>5.1 Knowledge workers</b>	<b>46.6</b>	<b>48</b>
5.1.1 Knowledge-intensive employment, %.....	33.3	73
5.1.2 Firms offering formal training, % firms.....	66.1	10
5.1.3 R&D performed by business, %.....	34.4	51
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>35.4</b>	<b>48</b>
5.2.1 University/industry collaboration†.....	36.4	86
5.2.2 State of cluster development†.....	37.7	75
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	50.0	18
<b>5.3 Knowledge absorption</b>	<b>31.7</b>	<b>72</b>
5.3.1 Royalty & license fees payments, % GDP.....	12.4	61
5.3.2 High-tech imports less re-imports, %.....	26.8	42
5.3.3 Computer & comm. service imports, %.....	36.1	66
5.3.4 FDI net inflows, % GDP.....	51.5	40

## 6 Scientific outputs 14.5 110

<b>6.1 Knowledge creation</b>	<b>1.1</b>	<b>115</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.9	89
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.4	81
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.9	40
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.7	112
<b>6.2 Knowledge impact</b>	<b>26.0</b>	<b>80</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	40.2	65
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	20.7	33
6.2.3 Computer software spending, % GDP.....	8.2	61
<b>6.3 Knowledge diffusion</b>	<b>16.3</b>	<b>117</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	81
6.3.2 High-tech exports less re-exports, %.....	1.2	81
6.3.3 Computer & comm service exports, %.....	15.5	100
6.3.4 FDI net outflows, % GDP.....	48.1	63

## 7 Creative outputs 28.8 76

<b>7.1 Creative intangibles</b>	<b>53.2</b>	<b>31</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	40.2	18
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	62.9	49
7.1.4 ICT & organizational models†.....	56.6	50
<b>7.2 Creative goods &amp; services</b>	<b>4.4</b>	<b>106</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	1.9	72
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	9.1	74
7.2.5 Creative services exports, %.....	1.0	85

## Key indicators

Population (millions)	93.6
GDP per capita, PPP (current international \$)	3,541.7
GDP (US\$ billions)	161.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>29.0</b>	<b>91</b>
Innovation Output Sub-Index .....	24.0	84
Innovation Input Sub-Index.....	34.0	93
Innovation Efficiency Index.....	0.7	62
Global Innovation Index 2010.....	76	
Global Innovation Index 2009.....	63	

**1 Institutions 51.2 101**

<b>1.1 Political environment</b>	<b>32.5</b>	<b>110</b>
1.1.1 Political stability*.....	10.8	113
1.1.2 Government effectiveness*.....	50.0	73
1.1.3 Press freedom*.....	36.5	113
<b>1.2 Regulatory environment</b>	<b>52.9</b>	<b>79</b>
1.2.1 Regulatory quality*.....	52.4	72
1.2.2 Rule of law*.....	35.4	88
1.2.3 Rigidity of employment*.....	71.0	70
<b>1.3 Business environment</b>	<b>68.2</b>	<b>97</b>
1.3.1 Time to start a business, days.....	64.4	104
1.3.2 Cost to start a business, % income/cap.....	76.9	93
1.3.3 Total tax rate, % profits.....	63.3	83

**2 Human capital & research 23.7 116**

<b>2.1 Education</b>	<b>30.8</b>	<b>116</b>
2.1.1 Education expenditure, % GNI.....	21.6	109
2.1.2 Public expenditure/pupil, % GDP/cap.....	8.2	101
2.1.3 School life expectancy, years.....	46.1	80
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	31.5	116
<b>2.2 Tertiary education</b>	<b>28.7</b>	<b>69</b>
2.2.1 Tertiary enrolment, % gross.....	28.9	68
2.2.2 Graduates in science, %.....	40.7	29
2.2.3 Graduates in engineering, %.....	44.5	29
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	0.8	120
2.2.6 Gross tertiary outbound enrolment, %.....	0.5	108
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>11.5</b>	<b>113</b>
2.3.1 Researchers headcount/million pop.....	0.9	82
2.3.2 Gross expenditure on R&D, % GDP.....	1.9	82
2.3.3 Quality research institutions†.....	31.7	101

**3 Infrastructure 26.5 68**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>22.3</b>	<b>78</b>
3.1.1 ICT access*.....	33.0	79
3.1.2 ICT use*.....	5.1	88
3.1.3 Government's Online Service*.....	39.4	47
3.1.4 E-Participation*.....	18.6	62
<b>3.2 Energy</b>	<b>29.4</b>	<b>21</b>
3.2.1 Electricity output, kWh/cap.....	3.4	93
3.2.2 Electricity consumption, kWh/capita.....	2.3	96
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	58.9	7
3.2.4 Share of renewables in energy use, %.....	26.4	25
<b>3.3 General infrastructure</b>	<b>27.7</b>	<b>112</b>
3.3.1 Quality of trade & transport infrastructure*.....	39.3	62
3.3.2 Gross capital formation, % GDP.....	8.8	113
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.1	59

**4 Market sophistication 32.0 98**

<b>4.1 Credit</b>	<b>21.0</b>	<b>108</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	50.0	89
4.1.3 Domestic credit to private sector, % GDP.....	10.2	77
4.1.4 Microfinance gross loans, % GDP.....	4.8	43
<b>4.2 Investment</b>	<b>24.9</b>	<b>76</b>
4.2.1 Strength of investor protection*.....	40.0	103
4.2.2 Market capitalization, % GDP.....	20.0	40
4.2.3 Total value of stocks traded, % GDP.....	6.0	48
4.2.4 Venture capital deals/tr GDP PPP\$.....	42.0	50
<b>4.3 Trade &amp; competition</b>	<b>50.1</b>	<b>65</b>
4.3.1 Applied tariff rate weighted mean, %.....	82.1	60
4.3.2 Market access trade restrictiveness*, %.....	74.3	44
4.3.3 Imports of goods & services, % GDP.....	15.6	84
4.3.4 Exports of goods & services, % GDP.....	25.0	72
4.3.5 Intensity local competition†.....	65.6	62

**5 Business sophistication 36.7 61**

<b>5.1 Knowledge workers</b>	<b>46.7</b>	<b>47</b>
5.1.1 Knowledge-intensive employment, %.....	35.7	67
5.1.2 Firms offering formal training, % firms.....	33.0	53
5.1.3 R&D performed by business, %.....	69.0	22
5.1.4 R&D financed by business, %.....	73.8	13
<b>5.2 Innovation linkages</b>	<b>30.9</b>	<b>70</b>
5.2.1 University/industry collaboration†.....	37.8	78
5.2.2 State of cluster development†.....	42.8	57
5.2.3 R&D financed by abroad, %.....	16.8	51
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	56.5	10
5.2.5 PCT patent filings with foreign inventor, %.....	6.3	69
<b>5.3 Knowledge absorption</b>	<b>32.4</b>	<b>68</b>
5.3.1 Royalty & license fees payments, % GDP.....	26.5	36
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	29.7	82
5.3.4 FDI net inflows, % GDP.....	41.0	92

**6 Scientific outputs 22.3 76**

<b>6.1 Knowledge creation</b>	<b>3.3</b>	<b>92</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	3.2	72
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.6	72
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	12.5	21
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.6	114
<b>6.2 Knowledge impact</b>	<b>19.6</b>	<b>102</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	45.3	43
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	1.5	84
6.2.3 Computer software spending, % GDP.....	4.7	70
<b>6.3 Knowledge diffusion</b>	<b>43.8</b>	<b>26</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	83
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	83.4	8
6.3.4 FDI net outflows, % GDP.....	47.9	70

**7 Creative outputs 25.7 90**

<b>7.1 Creative intangibles</b>	<b>41.1</b>	<b>77</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	18.1	58
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	55.3	73
7.1.4 ICT & organizational models†.....	49.9	71
<b>7.2 Creative goods &amp; services</b>	<b>10.2</b>	<b>86</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	9.3	47
7.2.3 Daily newspapers/1,000 literate pop.....	20.4	30
7.2.4 Creative goods exports, %.....	12.8	60
7.2.5 Creative services exports, %.....	3.0	66

## Poland

## Key indicators

Population (millions)	38.0
GDP per capita, PPP (current international \$)	19,058.7
GDP (US\$ billions)	430.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>38.0</b>	<b>43</b>
Innovation Output Sub-Index .....	29.7	55
Innovation Input Sub-Index.....	46.3	41
Innovation Efficiency Index.....	0.6	85
Global Innovation Index 2010.....		47
Global Innovation Index 2009.....		56

## 1 Institutions 76.4 37

<b>1.1 Political environment</b>	<b>80.6</b>	<b>24</b>
1.1.1 Political stability*.....	80.2	20
1.1.2 Government effectiveness*.....	71.0	41
1.1.3 Press freedom*.....	90.6	30
<b>1.2 Regulatory environment</b>	<b>74.1</b>	<b>36</b>
1.2.1 Regulatory quality*.....	78.6	34
1.2.2 Rule of law*.....	68.9	39
1.2.3 Rigidity of employment*.....	75.0	61
<b>1.3 Business environment</b>	<b>74.5</b>	<b>83</b>
1.3.1 Time to start a business, days.....	70.2	95
1.3.2 Cost to start a business, % income/cap.....	86.4	83
1.3.3 Total tax rate, % profits.....	66.8	72

## 2 Human capital & research 42.4 48

<b>2.1 Education</b>	<b>68.8</b>	<b>26</b>
2.1.1 Education expenditure, % GNI.....	60.9	24
2.1.2 Public expenditure/pupil, % GDP/cap.....	36.1	41
2.1.3 School life expectancy, years.....	66.8	31
2.1.4 PISA scales in reading, maths, & science.....	69.9	15
2.1.5 Pupil-teacher ratio, secondary.....	90.7	34
<b>2.2 Tertiary education</b>	<b>30.7</b>	<b>63</b>
2.2.1 Tertiary enrolment, % gross.....	70.6	17
2.2.2 Graduates in science, %.....	28.9	49
2.2.3 Graduates in engineering, %.....	24.8	61
2.2.4 Tertiary inbound mobility, %.....	0.7	77
2.2.5 Tertiary outbound mobility, %.....	14.4	91
2.2.6 Gross tertiary outbound enrolment, %.....	13.0	55
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>27.6</b>	<b>52</b>
2.3.1 Researchers headcount/million pop.....	19.3	33
2.3.2 Gross expenditure on R&D, % GDP.....	12.0	48
2.3.3 Quality research institutions†.....	51.5	44

## 3 Infrastructure 30.4 52

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>39.8</b>	<b>39</b>
3.1.1 ICT access*.....	59.2	40
3.1.2 ICT use*.....	28.6	39
3.1.3 Government's Online Service*.....	38.7	48
3.1.4 E-Participation*.....	24.3	50
<b>3.2 Energy</b>	<b>17.5</b>	<b>76</b>
3.2.1 Electricity output, kWh/cap.....	20.5	50
3.2.2 Electricity consumption, kWh/capita.....	15.0	49
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	30.8	51
3.2.4 Share of renewables in energy use, %.....	4.1	74
<b>3.3 General infrastructure</b>	<b>33.8</b>	<b>76</b>
3.3.1 Quality of trade & transport infrastructure*.....	49.5	42
3.3.2 Gross capital formation, % GDP.....	23.0	72
3.3.3 Ecological footprint & biocapacity, ha/cap.....	29.0	92

## 4 Market sophistication 40.9 59

<b>4.1 Credit</b>	<b>39.4</b>	<b>62</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	20.1	48
4.1.4 Microfinance gross loans, % GDP.....	0.2	69
<b>4.2 Investment</b>	<b>27.7</b>	<b>65</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	12.5	57
4.2.3 Total value of stocks traded, % GDP.....	7.2	46
4.2.4 Venture capital deals/tr GDP PPP\$.....	34.2	59
<b>4.3 Trade &amp; competition</b>	<b>55.5</b>	<b>42</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	22.0	63
4.3.4 Exports of goods & services, % GDP.....	33.0	55
4.3.5 Intensity local competition†.....	72.9	32

## 5 Business sophistication 41.4 47

<b>5.1 Knowledge workers</b>	<b>56.3</b>	<b>36</b>
5.1.1 Knowledge-intensive employment, %.....	62.5	33
5.1.2 Firms offering formal training, % firms.....	70.2	9
5.1.3 R&D performed by business, %.....	36.4	47
5.1.4 R&D financed by business, %.....	35.7	45
<b>5.2 Innovation linkages</b>	<b>25.7</b>	<b>92</b>
5.2.1 University/industry collaboration†.....	43.8	57
5.2.2 State of cluster development†.....	32.0	98
5.2.3 R&D financed by abroad, %.....	19.1	46
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	8.8	55
5.2.5 PCT patent filings with foreign inventor, %.....	13.0	58
<b>5.3 Knowledge absorption</b>	<b>42.3</b>	<b>33</b>
5.3.1 Royalty & license fees payments, % GDP.....	35.7	26
5.3.2 High-tech imports less re-imports, %.....	29.5	37
5.3.3 Computer & comm. service imports, %.....	54.3	29
5.3.4 FDI net inflows, % GDP.....	49.6	46

## 6 Scientific outputs 23.7 66

<b>6.1 Knowledge creation</b>	<b>18.6</b>	<b>43</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	25.1	30
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	3.7	47
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	8.1	31
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	32.4	34
<b>6.2 Knowledge impact</b>	<b>23.3</b>	<b>91</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	38.1	70
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.1	74
6.2.3 Computer software spending, % GDP.....	31.9	24
<b>6.3 Knowledge diffusion</b>	<b>29.1</b>	<b>56</b>
6.3.1 Royalty & license fees receipts, % GDP.....	3.2	57
6.3.2 High-tech exports less re-exports, %.....	15.0	37
6.3.3 Computer & comm service exports, %.....	47.8	44
6.3.4 FDI net outflows, % GDP.....	50.6	37

## 7 Creative outputs 35.8 54

<b>7.1 Creative intangibles</b>	<b>36.3</b>	<b>97</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	14.0	70
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	23.5	25
7.1.3 ICT & business models†.....	53.1	85
7.1.4 ICT & organizational models†.....	48.1	75
<b>7.2 Creative goods &amp; services</b>	<b>35.3</b>	<b>24</b>
7.2.1 Recreation & culture consumption, %.....	55.8	32
7.2.2 National feature films/mn pop.....	12.5	40
7.2.3 Daily newspapers/1,000 literate pop.....	21.3	29
7.2.4 Creative goods exports, %.....	33.7	19
7.2.5 Creative services exports, %.....	45.2	14



## Key indicators

Population (millions)	10.7
GDP per capita, PPP (current international \$)	24,569.4
GDP (US\$ billions)	232.9

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>42.4</b>	<b>33</b>
Innovation Output Sub-Index .....	34.5	36
Innovation Input Sub-Index.....	50.3	34
Innovation Efficiency Index.....	0.7	67
Global Innovation Index 2010.....		34
Global Innovation Index 2009.....		40

## 1 Institutions 80.4 28

<b>1.1 Political environment</b>	<b>82.2</b>	<b>21</b>
1.1.1 Political stability*.....	74.5	29
1.1.2 Government effectiveness*.....	85.2	24
1.1.3 Press freedom*.....	86.9	37
<b>1.2 Regulatory environment</b>	<b>73.7</b>	<b>39</b>
1.2.1 Regulatory quality*.....	80.5	30
1.2.2 Rule of law*.....	83.5	27
1.2.3 Rigidity of employment*.....	57.0	102
<b>1.3 Business environment</b>	<b>85.3</b>	<b>36</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	94.9	53
1.3.3 Total tax rate, % profits.....	65.8	75

## 2 Human capital & research 52.5 23

<b>2.1 Education</b>	<b>73.7</b>	<b>11</b>
2.1.1 Education expenditure, % GNI.....	59.3	29
2.1.2 Public expenditure/pupil, % GDP/cap.....	50.1	8
2.1.3 School life expectancy, years.....	70.5	20
2.1.4 PISA scales in reading, maths, & science.....	65.4	27
2.1.5 Pupil-teacher ratio, secondary.....	100.0	1
<b>2.2 Tertiary education</b>	<b>40.8</b>	<b>30</b>
2.2.1 Tertiary enrolment, % gross.....	61.2	28
2.2.2 Graduates in science, %.....	42.7	25
2.2.3 Graduates in engineering, %.....	54.0	16
2.2.4 Tertiary inbound mobility, %.....	6.9	50
2.2.5 Tertiary outbound mobility, %.....	22.9	66
2.2.6 Gross tertiary outbound enrolment, %.....	22.0	40
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>43.0</b>	<b>29</b>
2.3.1 Researchers headcount/million pop.....	36.6	17
2.3.2 Gross expenditure on R&D, % GDP.....	30.7	22
2.3.3 Quality research institutions†.....	61.7	27

## 3 Infrastructure 34.7 36

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>45.1</b>	<b>33</b>
3.1.1 ICT access*.....	66.4	31
3.1.2 ICT use*.....	35.9	30
3.1.3 Government's Online Service*.....	38.7	48
3.1.4 E-Participation*.....	27.1	44
<b>3.2 Energy</b>	<b>25.2</b>	<b>39</b>
3.2.1 Electricity output, kWh/cap.....	24.0	46
3.2.2 Electricity consumption, kWh/capita.....	19.9	42
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	40.6	28
3.2.4 Share of renewables in energy use, %.....	13.0	45
<b>3.3 General infrastructure</b>	<b>33.9</b>	<b>75</b>
3.3.1 Quality of trade & transport infrastructure*.....	54.3	34
3.3.2 Gross capital formation, % GDP.....	22.0	75
3.3.3 Ecological footprint & biocapacity, ha/cap.....	25.4	99

## 4 Market sophistication 46.3 42

<b>4.1 Credit</b>	<b>56.7</b>	<b>28</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>31.3</b>	<b>54</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	17.4	42
4.2.3 Total value of stocks traded, % GDP.....	11.2	40
4.2.4 Venture capital deals/tr GDP PPP\$.....	41.7	51
<b>4.3 Trade &amp; competition</b>	<b>51.1</b>	<b>62</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	19.5	71
4.3.4 Exports of goods & services, % GDP.....	21.0	81
4.3.5 Intensity local competition†.....	69.6	42

## 5 Business sophistication 37.6 57

<b>5.1 Knowledge workers</b>	<b>45.4</b>	<b>52</b>
5.1.1 Knowledge-intensive employment, %.....	45.2	49
5.1.2 Firms offering formal training, % firms.....	33.9	52
5.1.3 R&D performed by business, %.....	58.9	34
5.1.4 R&D financed by business, %.....	55.3	28
<b>5.2 Innovation linkages</b>	<b>34.1</b>	<b>57</b>
5.2.1 University/industry collaboration†.....	58.0	29
5.2.2 State of cluster development†.....	43.7	55
5.2.3 R&D financed by abroad, %.....	19.1	45
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	7.7	57
5.2.5 PCT patent filings with foreign inventor, %.....	21.4	44
<b>5.3 Knowledge absorption</b>	<b>33.3</b>	<b>63</b>
5.3.1 Royalty & license fees payments, % GDP.....	22.4	44
5.3.2 High-tech imports less re-imports, %.....	17.6	69
5.3.3 Computer & comm. service imports, %.....	52.3	35
5.3.4 FDI net inflows, % GDP.....	40.9	93

## 6 Scientific outputs 24.8 59

<b>6.1 Knowledge creation</b>	<b>16.0</b>	<b>47</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	9.0	59
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	6.0	37
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	2.2	36
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	39.8	28
<b>6.2 Knowledge impact</b>	<b>32.7</b>	<b>59</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	33.1	90
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	30.5	26
6.2.3 Computer software spending, % GDP.....	36.1	21
<b>6.3 Knowledge diffusion</b>	<b>25.9</b>	<b>66</b>
6.3.1 Royalty & license fees receipts, % GDP.....	8.5	42
6.3.2 High-tech exports less re-exports, %.....	7.8	51
6.3.3 Computer & comm service exports, %.....	38.3	56
6.3.4 FDI net outflows, % GDP.....	48.8	54

## 7 Creative outputs 44.1 19

<b>7.1 Creative intangibles</b>	<b>54.5</b>	<b>28</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	43.9	16
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	16.8	31
7.1.3 ICT & business models†.....	73.9	16
7.1.4 ICT & organizational models†.....	64.6	26
<b>7.2 Creative goods &amp; services</b>	<b>33.7</b>	<b>25</b>
7.2.1 Recreation & culture consumption, %.....	49.7	38
7.2.2 National feature films/mn pop.....	41.2	22
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	24.5	36
7.2.5 Creative services exports, %.....	31.2	23

## Qatar

## Key indicators

Population (millions)	1.5
GDP per capita, PPP (current international \$)	91,378.7
GDP (US\$ billions)	98.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>47.7</b>	<b>26</b>
Innovation Output Sub-Index .....	43.8	19
Innovation Input Sub-Index.....	51.7	31
Innovation Efficiency Index.....	0.8	18
Global Innovation Index 2010.....		35
Global Innovation Index 2009.....		24

## 1 Institutions 83.5 23

<b>1.1 Political environment</b>	<b>77.4</b>	<b>33</b>
1.1.1 Political stability*.....	88.7	9
1.1.2 Government effectiveness*.....	83.8	27
1.1.3 Press freedom*.....	59.8	86
<b>1.2 Regulatory environment</b>	<b>79.5</b>	<b>25</b>
1.2.1 Regulatory quality*.....	71.0	43
1.2.2 Rule of law*.....	80.7	30
1.2.3 Rigidity of employment*.....	87.0	27
<b>1.3 Business environment</b>	<b>93.4</b>	<b>6</b>
1.3.1 Time to start a business, days.....	89.4	43
1.3.2 Cost to start a business, % income/cap.....	92.4	63
1.3.3 Total tax rate, % profits.....	98.3	3

## 2 Human capital & research 52.5 25

<b>2.1 Education</b>	<b>52.2</b>	<b>82</b>
2.1.1 Education expenditure, % GNI.....	n/a	n/a
2.1.2 Public expenditure/pupil, % GDP/cap.....	11.6	94
2.1.3 School life expectancy, years.....	47.0	77
2.1.4 PISA scales in reading, maths, & science.....	19.1	59
2.1.5 Pupil-teacher ratio, secondary.....	94.2	17
<b>2.2 Tertiary education</b>	<b>37.2</b>	<b>41</b>
2.2.1 Tertiary enrolment, % gross.....	10.0	92
2.2.2 Graduates in science, %.....	36.7	38
2.2.3 Graduates in engineering, %.....	34.8	45
2.2.4 Tertiary inbound mobility, %.....	100.0	3
2.2.5 Tertiary outbound mobility, %.....	50.0	16
2.2.6 Gross tertiary outbound enrolment, %.....	21.6	42
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>68.1</b>	<b>6</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	68.1	21

## 3 Infrastructure 33.9 38

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>34.8</b>	<b>46</b>
3.1.1 ICT access*.....	65.8	32
3.1.2 ICT use*.....	18.3	46
3.1.3 Government's Online Service*.....	27.9	83
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>26.3</b>	<b>28</b>
3.2.1 Electricity output, kWh/cap.....	87.7	6
3.2.2 Electricity consumption, kWh/capita.....	66.0	6
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	1.9	114
3.2.4 Share of renewables in energy use, %.....	0.0	109
<b>3.3 General infrastructure</b>	<b>40.6</b>	<b>35</b>
3.3.1 Quality of trade & transport infrastructure*.....	43.8	49
3.3.2 Gross capital formation, % GDP.....	71.1	5
3.3.3 Ecological footprint & biocapacity, ha/cap.....	7.0	118

## 4 Market sophistication 39.2 66

<b>4.1 Credit</b>	<b>25.1</b>	<b>99</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	18.6	52
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>36.5</b>	<b>39</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	54.4	8
4.2.3 Total value of stocks traded, % GDP.....	23.4	26
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>55.9</b>	<b>41</b>
4.3.1 Applied tariff rate weighted mean, %.....	81.6	63
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	15.9	81
4.3.4 Exports of goods & services, % GDP.....	41.7	41
4.3.5 Intensity local competition†.....	84.4	2

## 5 Business sophistication 49.5 27

<b>5.1 Knowledge workers</b>	<b>44.9</b>	<b>54</b>
5.1.1 Knowledge-intensive employment, %.....	44.9	51
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
<b>5.2 Innovation linkages</b>	<b>54.2</b>	<b>13</b>
5.2.1 University/industry collaboration†.....	58.7	26
5.2.2 State of cluster development†.....	58.5	19
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	36.6	21
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>n/a</b>	<b>n/a</b>
5.3.1 Royalty & license fees payments, % 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.....	n/a	n/a

## 6 Scientific outputs 50.6 12

<b>6.1 Knowledge creation</b>	<b>1.2</b>	<b>114</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.2	117
<b>6.2 Knowledge impact</b>	<b>100.0</b>	<b>1</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	100.0	1
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>n/a</b>	<b>n/a</b>
6.3.1 Royalty & license fees receipts, % 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 36.9 50

<b>7.1 Creative intangibles</b>	<b>73.6</b>	<b>1</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	73.5	19
7.1.4 ICT & organizational models†.....	73.8	7
<b>7.2 Creative goods &amp; services</b>	<b>0.3</b>	<b>123</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.3	115
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	21.2
GDP per capita, PPP (current international \$)	14,278.0
GDP (US\$ billions)	161.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>36.8</b>	<b>50</b>
Innovation Output Sub-Index .....	31.9	47
Innovation Input Sub-Index.....	41.8	55
Innovation Efficiency Index.....	0.8	49
Global Innovation Index 2010.....		52
Global Innovation Index 2009.....		69

## 1 Institutions 69.8 52

<b>1.1 Political environment</b>	<b>64.2</b>	<b>52</b>
1.1.1 Political stability*.....	58.5	47
1.1.2 Government effectiveness*.....	51.0	71
1.1.3 Press freedom*.....	83.1	47
<b>1.2 Regulatory environment</b>	<b>60.7</b>	<b>62</b>
1.2.1 Regulatory quality*.....	70.5	44
1.2.2 Rule of law*.....	57.5	55
1.2.3 Rigidity of employment*.....	54.0	106
<b>1.3 Business environment</b>	<b>84.5</b>	<b>44</b>
1.3.1 Time to start a business, days.....	91.3	39
1.3.2 Cost to start a business, % income/cap.....	98.0	28
1.3.3 Total tax rate, % profits.....	64.2	80

## 2 Human capital & research 36.8 65

<b>2.1 Education</b>	<b>58.6</b>	<b>58</b>
2.1.1 Education expenditure, % GNI.....	34.0	84
2.1.2 Public expenditure/pupil, % GDP/cap.....	34.1	47
2.1.3 School life expectancy, years.....	64.3	36
2.1.4 PISA scales in reading, maths, & science.....	40.4	45
2.1.5 Pupil-teacher ratio, secondary.....	86.6	51
<b>2.2 Tertiary education</b>	<b>31.3</b>	<b>58</b>
2.2.1 Tertiary enrolment, % gross.....	66.7	21
2.2.2 Graduates in science, %.....	23.5	64
2.2.3 Graduates in engineering, %.....	30.5	55
2.2.4 Tertiary inbound mobility, %.....	3.4	65
2.2.5 Tertiary outbound mobility, %.....	19.2	74
2.2.6 Gross tertiary outbound enrolment, %.....	18.1	48
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>20.4</b>	<b>75</b>
2.3.1 Researchers headcount/million pop.....	10.8	42
2.3.2 Gross expenditure on R&D, % GDP.....	11.7	49
2.3.3 Quality research institutions†.....	38.7	77

## 3 Infrastructure 30.0 54

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>35.5</b>	<b>45</b>
3.1.1 ICT access*.....	53.0	45
3.1.2 ICT use*.....	23.3	43
3.1.3 Government's Online Service*.....	41.6	40
3.1.4 E-Participation*.....	18.6	62
<b>3.2 Energy</b>	<b>16.2</b>	<b>81</b>
3.2.1 Electricity output, kWh/cap.....	15.6	57
3.2.2 Electricity consumption, kWh/capita.....	10.3	58
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	26.9	62
3.2.4 Share of renewables in energy use, %.....	8.6	53
<b>3.3 General infrastructure</b>	<b>38.5</b>	<b>43</b>
3.3.1 Quality of trade & transport infrastructure*.....	31.3	92
3.3.2 Gross capital formation, % GDP.....	49.6	16
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.8	63

## 4 Market sophistication 38.9 69

<b>4.1 Credit</b>	<b>39.1</b>	<b>63</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	14.7	62
4.1.4 Microfinance gross loans, % GDP.....	2.8	50
<b>4.2 Investment</b>	<b>26.0</b>	<b>73</b>
4.2.1 Strength of investor protection*.....	60.0	34
4.2.2 Market capitalization, % GDP.....	7.4	73
4.2.3 Total value of stocks traded, % GDP.....	0.6	73
4.2.4 Venture capital deals/tr GDP PPP\$.....	45.6	47
<b>4.3 Trade &amp; competition</b>	<b>51.6</b>	<b>61</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	23.2	59
4.3.4 Exports of goods & services, % GDP.....	26.9	70
4.3.5 Intensity local competition†.....	61.9	76

## 5 Business sophistication 33.5 71

<b>5.1 Knowledge workers</b>	<b>35.6</b>	<b>76</b>
5.1.1 Knowledge-intensive employment, %.....	40.0	60
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	35.3	49
5.1.4 R&D financed by business, %.....	27.2	53
<b>5.2 Innovation linkages</b>	<b>21.7</b>	<b>107</b>
5.2.1 University/industry collaboration†.....	34.9	94
5.2.2 State of cluster development†.....	31.7	99
5.2.3 R&D financed by abroad, %.....	14.0	55
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	13.3	56
<b>5.3 Knowledge absorption</b>	<b>43.2</b>	<b>29</b>
5.3.1 Royalty & license fees payments, % GDP.....	21.7	45
5.3.2 High-tech imports less re-imports, %.....	31.3	32
5.3.3 Computer & comm. service imports, %.....	66.9	12
5.3.4 FDI net inflows, % GDP.....	52.7	38

## 6 Scientific outputs 30.7 36

<b>6.1 Knowledge creation</b>	<b>11.7</b>	<b>56</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	25.1	31
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.5	73
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.9	41
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	14.5	56
<b>6.2 Knowledge impact</b>	<b>40.1</b>	<b>24</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	64.2	11
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	28.5	27
6.2.3 Computer software spending, % GDP.....	15.2	41
<b>6.3 Knowledge diffusion</b>	<b>40.4</b>	<b>31</b>
6.3.1 Royalty & license fees receipts, % GDP.....	16.0	27
6.3.2 High-tech exports less re-exports, %.....	26.3	25
6.3.3 Computer & comm service exports, %.....	71.6	17
6.3.4 FDI net outflows, % GDP.....	47.7	77

## 7 Creative outputs 33.0 64

<b>7.1 Creative intangibles</b>	<b>35.4</b>	<b>102</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	24.6	35
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	7.1	38
7.1.3 ICT & business models†.....	52.6	87
7.1.4 ICT & organizational models†.....	43.2	97
<b>7.2 Creative goods &amp; services</b>	<b>30.6</b>	<b>36</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	10.6	43
7.2.3 Daily newspapers/1,000 literate pop.....	13.1	41
7.2.4 Creative goods exports, %.....	32.5	22
7.2.5 Creative services exports, %.....	47.4	11

# Russian Federation

## Key indicators

Population (millions)	140.4
GDP per capita, PPP (current international \$)	18,962.6
GDP (US\$ billions)	1,231.9

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>35.9</b>	<b>56</b>
Innovation Output Sub-Index .....	30.9	50
Innovation Input Sub-Index.....	40.8	59
Innovation Efficiency Index.....	0.8	52
Global Innovation Index 2010.....		64
Global Innovation Index 2009.....		68

## 1 Institutions 51.8 97

<b>1.1 Political environment</b>	<b>37.9</b>	<b>98</b>
1.1.1 Political stability*.....	21.7	96
1.1.2 Government effectiveness*.....	44.8	82
1.1.3 Press freedom*.....	47.2	102
<b>1.2 Regulatory environment</b>	<b>40.3</b>	<b>107</b>
1.2.1 Regulatory quality*.....	35.2	101
1.2.2 Rule of law*.....	23.6	103
1.2.3 Rigidity of employment*.....	62.0	84
<b>1.3 Business environment</b>	<b>77.3</b>	<b>72</b>
1.3.1 Time to start a business, days.....	72.1	91
1.3.2 Cost to start a business, % income/cap.....	97.2	34
1.3.3 Total tax rate, % profits.....	62.6	85

## 2 Human capital & research 45.1 38

<b>2.1 Education</b>	<b>62.0</b>	<b>46</b>
2.1.1 Education expenditure, % GNI.....	35.9	79
2.1.2 Public expenditure/pupil, % GDP/cap.....	28.0	64
2.1.3 School life expectancy, years.....	59.8	44
2.1.4 PISA scales in reading, maths, & science.....	57.0	37
2.1.5 Pupil-teacher ratio, secondary.....	96.9	9
<b>2.2 Tertiary education</b>	<b>43.3</b>	<b>19</b>
2.2.1 Tertiary enrolment, % gross.....	78.6	11
2.2.2 Graduates in science, %.....	20.6	71
2.2.3 Graduates in engineering, %.....	70.6	6
2.2.4 Tertiary inbound mobility, %.....	3.9	60
2.2.5 Tertiary outbound mobility, %.....	3.1	116
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>30.0</b>	<b>44</b>
2.3.1 Researchers headcount/million pop.....	20.1	32
2.3.2 Gross expenditure on R&D, % GDP.....	20.8	31
2.3.3 Quality research institutions†.....	48.9	49

## 3 Infrastructure 25.8 73

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>31.1</b>	<b>51</b>
3.1.1 ICT access*.....	55.9	43
3.1.2 ICT use*.....	14.5	54
3.1.3 Government's Online Service*.....	33.0	63
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>14.1</b>	<b>95</b>
3.2.1 Electricity output, kWh/cap.....	38.0	27
3.2.2 Electricity consumption, kWh/capita.....	27.0	27
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	8.0	102
3.2.4 Share of renewables in energy use, %.....	1.9	94
<b>3.3 General infrastructure</b>	<b>32.2</b>	<b>85</b>
3.3.1 Quality of trade & transport infrastructure*.....	34.5	77
3.3.2 Gross capital formation, % GDP.....	19.2	90
3.3.3 Ecological footprint & biocapacity, ha/cap.....	42.8	17

## 4 Market sophistication 36.4 76

<b>4.1 Credit</b>	<b>29.1</b>	<b>98</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	16.1	59
4.1.4 Microfinance gross loans, % GDP.....	0.2	68
<b>4.2 Investment</b>	<b>36.2</b>	<b>40</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	28.2	26
4.2.3 Total value of stocks traded, % GDP.....	30.9	20
4.2.4 Venture capital deals/tr GDP PPP\$.....	35.0	57
<b>4.3 Trade &amp; competition</b>	<b>43.8</b>	<b>94</b>
4.3.1 Applied tariff rate weighted mean, %.....	71.2	83
4.3.2 Market access trade restrictiveness*, %.....	91.5	16
4.3.3 Imports of goods & services, % GDP.....	7.2	119
4.3.4 Exports of goods & services, % GDP.....	20.7	83
4.3.5 Intensity local competition†.....	52.3	107

## 5 Business sophistication 44.9 37

<b>5.1 Knowledge workers</b>	<b>64.0</b>	<b>31</b>
5.1.1 Knowledge-intensive employment, %.....	78.8	17
5.1.2 Firms offering formal training, % firms.....	59.3	15
5.1.3 R&D performed by business, %.....	74.1	20
5.1.4 R&D financed by business, %.....	33.6	49
<b>5.2 Innovation linkages</b>	<b>27.6</b>	<b>83</b>
5.2.1 University/industry collaboration†.....	44.5	55
5.2.2 State of cluster development†.....	35.8	82
5.2.3 R&D financed by abroad, %.....	20.9	42
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	18.9	34
5.2.5 PCT patent filings with foreign inventor, %.....	10.3	62
<b>5.3 Knowledge absorption</b>	<b>43.0</b>	<b>31</b>
5.3.1 Royalty & license fees payments, % GDP.....	33.4	30
5.3.2 High-tech imports less re-imports, %.....	31.5	31
5.3.3 Computer & comm. service imports, %.....	58.7	24
5.3.4 FDI net inflows, % GDP.....	48.6	49

## 6 Scientific outputs 32.9 34

<b>6.1 Knowledge creation</b>	<b>33.4</b>	<b>27</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	73.2	9
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	4.5	42
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	40.8	10
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	18.8	44
<b>6.2 Knowledge impact</b>	<b>34.5</b>	<b>49</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	55.5	17
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	20.3	34
6.2.3 Computer software spending, % GDP.....	20.7	33
<b>6.3 Knowledge diffusion</b>	<b>30.7</b>	<b>49</b>
6.3.1 Royalty & license fees receipts, % GDP.....	5.4	51
6.3.2 High-tech exports less re-exports, %.....	3.9	65
6.3.3 Computer & comm service exports, %.....	56.2	30
6.3.4 FDI net outflows, % GDP.....	57.5	15

## 7 Creative outputs 28.9 75

<b>7.1 Creative intangibles</b>	<b>33.0</b>	<b>107</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	8.3	90
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	20.3	27
7.1.3 ICT & business models†.....	50.5	92
7.1.4 ICT & organizational models†.....	46.6	80
<b>7.2 Creative goods &amp; services</b>	<b>24.9</b>	<b>53</b>
7.2.1 Recreation & culture consumption, %.....	8.2	61
7.2.2 National feature films/mn pop.....	5.5	58
7.2.3 Daily newspapers/1,000 literate pop.....	16.6	34
7.2.4 Creative goods exports, %.....	4.0	90
7.2.5 Creative services exports, %.....	67.9	8

## Key indicators

Population (millions)	10.3
GDP per capita, PPP (current international \$)	1,069.7
GDP (US\$ billions)	5.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>25.9</b>	<b>109</b>
Innovation Output Sub-Index .....	17.0	119
Innovation Input Sub-Index.....	34.7	90
Innovation Efficiency Index.....	0.5	118
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 59.6 75

<b>1.1 Political environment</b>	<b>32.1</b>	<b>111</b>
1.1.1 Political stability*.....	33.5	77
1.1.2 Government effectiveness*.....	48.6	76
1.1.3 Press freedom*.....	14.3	120
<b>1.2 Regulatory environment</b>	<b>56.9</b>	<b>70</b>
1.2.1 Regulatory quality*.....	41.4	90
1.2.2 Rule of law*.....	36.3	86
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>89.7</b>	<b>19</b>
1.3.1 Time to start a business, days.....	98.1	3
1.3.2 Cost to start a business, % income/cap.....	93.1	61
1.3.3 Total tax rate, % profits.....	78.0	36

## 2 Human capital & research 29.9 93

<b>2.1 Education</b>	<b>46.3</b>	<b>98</b>
2.1.1 Education expenditure, % GNI.....	49.4	51
2.1.2 Public expenditure/pupil, % GDP/cap.....	20.4	79
2.1.3 School life expectancy, years.....	41.6	92
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	62.3	97
<b>2.2 Tertiary education</b>	<b>8.2</b>	<b>122</b>
2.2.1 Tertiary enrolment, % gross.....	4.4	109
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	0.8	75
2.2.5 Tertiary outbound mobility, %.....	29.8	51
2.2.6 Gross tertiary outbound enrolment, %.....	1.7	96
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>35.3</b>	<b>39</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	35.3	88

## 3 Infrastructure 17.6 121

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>8.3</b>	<b>120</b>
3.1.1 ICT access*.....	13.5	120
3.1.2 ICT use*.....	1.1	113
3.1.3 Government's Online Service*.....	17.5	103
3.1.4 E-Participation*.....	2.9	113
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>26.9</b>	<b>115</b>
3.3.1 Quality of trade & transport infrastructure*.....	15.8	122
3.3.2 Gross capital formation, % GDP.....	29.1	48
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.9	49

## 4 Market sophistication 35.3 81

<b>4.1 Credit</b>	<b>31.3</b>	<b>91</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	2.2	110
4.1.4 Microfinance gross loans, % GDP.....	5.3	41
<b>4.2 Investment</b>	<b>42.0</b>	<b>30</b>
4.2.1 Strength of investor protection*.....	63.0	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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>32.5</b>	<b>120</b>
4.3.1 Applied tariff rate weighted mean, %.....	40.5	119
4.3.2 Market access trade restrictiveness*, %.....	75.3	43
4.3.3 Imports of goods & services, % GDP.....	12.6	98
4.3.4 Exports of goods & services, % GDP.....	0.0	125
4.3.5 Intensity local competition†.....	55.6	94

## 5 Business sophistication 31.2 81

<b>5.1 Knowledge workers</b>	<b>28.5</b>	<b>91</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	28.5	61
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>34.8</b>	<b>51</b>
5.2.1 University/industry collaboration†.....	43.2	58
5.2.2 State of cluster development†.....	43.8	53
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>30.4</b>	<b>77</b>
5.3.1 Royalty & license fees payments, % GDP.....	3.6	93
5.3.2 High-tech imports less re-imports, %.....	44.7	16
5.3.3 Computer & comm. service imports, %.....	27.7	87
5.3.4 FDI net inflows, % GDP.....	45.6	60

## 6 Scientific outputs 8.7 122

<b>6.1 Knowledge creation</b>	<b>3.4</b>	<b>89</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.4	98
<b>6.2 Knowledge impact</b>	<b>4.0</b>	<b>113</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.0	75
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>18.6</b>	<b>108</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.4	74
6.3.2 High-tech exports less re-exports, %.....	16.7	33
6.3.3 Computer & comm service exports, %.....	10.0	113
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 25.3 92

<b>7.1 Creative intangibles</b>	<b>44.7</b>	<b>63</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	0.9	98
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	70.5	26
7.1.4 ICT & organizational models†.....	62.8	32
<b>7.2 Creative goods &amp; services</b>	<b>5.9</b>	<b>98</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	9.9	71
7.2.5 Creative services exports, %.....	1.9	75

# Saudi Arabia

## Key indicators

Population (millions)	26.2
GDP per capita, PPP (current international \$)	23,395.4
GDP (US\$ billions)	369.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>36.4</b>	<b>54</b>
Innovation Output Sub-Index .....	26.9	66
Innovation Input Sub-Index.....	45.9	44
Innovation Efficiency Index.....	0.6	98
Global Innovation Index 2010.....		54
Global Innovation Index 2009.....		32

## 1 Institutions 67.5 60

<b>1.1 Political environment</b>	<b>39.8</b>	<b>92</b>
1.1.1 Political stability*.....	32.5	79
1.1.2 Government effectiveness*.....	51.9	69
1.1.3 Press freedom*.....	35.0	114
<b>1.2 Regulatory environment</b>	<b>67.4</b>	<b>50</b>
1.2.1 Regulatory quality*.....	56.7	66
1.2.2 Rule of law*.....	58.5	53
1.2.3 Rigidity of employment*.....	87.0	27
<b>1.3 Business environment</b>	<b>95.2</b>	<b>4</b>
1.3.1 Time to start a business, days.....	96.2	9
1.3.2 Cost to start a business, % income/cap.....	94.5	55
1.3.3 Total tax rate, % profits.....	95.0	5

## 2 Human capital & research 40.4 53

<b>2.1 Education</b>	<b>68.6</b>	<b>29</b>
2.1.1 Education expenditure, % GNI.....	84.4	6
2.1.2 Public expenditure/pupil, % GDP/cap.....	32.0	51
2.1.3 School life expectancy, years.....	57.6	50
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	90.0	36
<b>2.2 Tertiary education</b>	<b>33.9</b>	<b>51</b>
2.2.1 Tertiary enrolment, % gross.....	33.1	65
2.2.2 Graduates in science, %.....	86.8	2
2.2.3 Graduates in engineering, %.....	10.1	86
2.2.4 Tertiary inbound mobility, %.....	8.9	46
2.2.5 Tertiary outbound mobility, %.....	23.8	63
2.2.6 Gross tertiary outbound enrolment, %.....	12.1	58
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.9</b>	<b>79</b>
2.3.1 Researchers headcount/million pop.....	0.2	94
2.3.2 Gross expenditure on R&D, % GDP.....	0.5	95
2.3.3 Quality research institutions†.....	55.9	34

## 3 Infrastructure 27.8 62

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>30.2</b>	<b>54</b>
3.1.1 ICT access*.....	54.4	44
3.1.2 ICT use*.....	15.7	52
3.1.3 Government's Online Service*.....	31.1	69
3.1.4 E-Participation*.....	10.0	87
<b>3.2 Energy</b>	<b>15.0</b>	<b>88</b>
3.2.1 Electricity output, kWh/cap.....	43.0	20
3.2.2 Electricity consumption, kWh/capita.....	31.8	21
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	7.5	104
3.2.4 Share of renewables in energy use, %.....	0.0	110
<b>3.3 General infrastructure</b>	<b>38.2</b>	<b>47</b>
3.3.1 Quality of trade & transport infrastructure*.....	56.8	32
3.3.2 Gross capital formation, % GDP.....	36.5	31
3.3.3 Ecological footprint & biocapacity, ha/cap.....	21.2	111

## 4 Market sophistication 52.7 30

<b>4.1 Credit</b>	<b>48.3</b>	<b>41</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	21.7	43
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>47.9</b>	<b>20</b>
4.2.1 Strength of investor protection*.....	70.0	16
4.2.2 Market capitalization, % GDP.....	34.9	21
4.2.3 Total value of stocks traded, % GDP.....	50.8	12
4.2.4 Venture capital deals/tr GDP PPP\$.....	24.3	65
<b>4.3 Trade &amp; competition</b>	<b>61.8</b>	<b>22</b>
4.3.1 Applied tariff rate weighted mean, %.....	81.4	65
4.3.2 Market access trade restrictiveness*, %.....	94.5	9
4.3.3 Imports of goods & services, % GDP.....	25.1	53
4.3.4 Exports of goods & services, % GDP.....	48.2	29
4.3.5 Intensity local competition†.....	76.1	22

## 5 Business sophistication 41.3 48

<b>5.1 Knowledge workers</b>	<b>42.2</b>	<b>57</b>
5.1.1 Knowledge-intensive employment, %.....	42.2	55
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
<b>5.2 Innovation linkages</b>	<b>46.8</b>	<b>24</b>
5.2.1 University/industry collaboration†.....	55.1	31
5.2.2 State of cluster development†.....	57.0	22
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	9.7	53
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>35.0</b>	<b>60</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	21.5	55
5.3.3 Computer & comm. service imports, %.....	35.6	68
5.3.4 FDI net inflows, % GDP.....	47.8	52

## 6 Scientific outputs 18.3 93

<b>6.1 Knowledge creation</b>	<b>2.1</b>	<b>106</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.4	84
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	2.8	105
<b>6.2 Knowledge impact</b>	<b>35.2</b>	<b>43</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	43.9	48
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	17.9	37
<b>6.3 Knowledge diffusion</b>	<b>17.5</b>	<b>113</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.0	105
6.3.3 Computer & comm service exports, %.....	3.6	118
6.3.4 FDI net outflows, % GDP.....	48.9	50

## 7 Creative outputs 35.6 57

<b>7.1 Creative intangibles</b>	<b>68.8</b>	<b>6</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	68.3	32
7.1.4 ICT & organizational models†.....	69.3	18
<b>7.2 Creative goods &amp; services</b>	<b>2.4</b>	<b>115</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	2.4	101
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	12.9
GDP per capita, PPP (current international \$)	1,816.6
GDP (US\$ billions)	12.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>27.6</b>	<b>100</b>
Innovation Output Sub-Index .....	24.4	82
Innovation Input Sub-Index.....	30.7	107
Innovation Efficiency Index.....	0.8	30
Global Innovation Index 2010.....		106
Global Innovation Index 2009.....		90

## 1 Institutions 54.7 85

<b>1.1 Political environment</b>	<b>51.1</b>	<b>73</b>
1.1.1 Political stability*.....	38.7	70
1.1.2 Government effectiveness*.....	41.0	85
1.1.3 Press freedom*.....	73.6	73
<b>1.2 Regulatory environment</b>	<b>44.0</b>	<b>98</b>
1.2.1 Regulatory quality*.....	44.8	85
1.2.2 Rule of law*.....	46.2	71
1.2.3 Rigidity of employment*.....	41.0	120
<b>1.3 Business environment</b>	<b>69.1</b>	<b>94</b>
1.3.1 Time to start a business, days.....	93.3	27
1.3.2 Cost to start a business, % income/cap.....	50.8	112
1.3.3 Total tax rate, % profits.....	63.1	84

## 2 Human capital & research 26.7 106

<b>2.1 Education</b>	<b>42.0</b>	<b>107</b>
2.1.1 Education expenditure, % GNI.....	60.6	26
2.1.2 Public expenditure/pupil, % GDP/cap.....	46.8	19
2.1.3 School life expectancy, years.....	19.2	114
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	53.0	106
<b>2.2 Tertiary education</b>	<b>18.7</b>	<b>99</b>
2.2.1 Tertiary enrolment, % gross.....	7.7	102
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	46.7	21
2.2.6 Gross tertiary outbound enrolment, %.....	12.7	56
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>19.4</b>	<b>77</b>
2.3.1 Researchers headcount/million pop.....	5.5	56
2.3.2 Gross expenditure on R&D, % GDP.....	1.3	84
2.3.3 Quality research institutions†.....	51.3	45

## 3 Infrastructure 24.6 80

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>11.1</b>	<b>110</b>
3.1.1 ICT access*.....	20.8	100
3.1.2 ICT use*.....	3.0	100
3.1.3 Government's Online Service*.....	17.8	102
3.1.4 E-Participation*.....	1.4	116
<b>3.2 Energy</b>	<b>22.1</b>	<b>57</b>
3.2.1 Electricity output, kWh/cap.....	0.9	108
3.2.2 Electricity consumption, kWh/capita.....	0.5	108
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	39.6	29
3.2.4 Share of renewables in energy use, %.....	26.0	26
<b>3.3 General infrastructure</b>	<b>40.6</b>	<b>34</b>
3.3.1 Quality of trade & transport infrastructure*.....	41.0	57
3.3.2 Gross capital formation, % GDP.....	42.8	22
3.3.3 Ecological footprint & biocapacity, ha/cap.....	38.1	30

## 4 Market sophistication 28.3 109

<b>4.1 Credit</b>	<b>18.5</b>	<b>110</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	16.7	105
4.1.3 Domestic credit to private sector, % GDP.....	8.0	86
4.1.4 Microfinance gross loans, % GDP.....	29.7	17
<b>4.2 Investment</b>	<b>20.0</b>	<b>97</b>
4.2.1 Strength of investor protection*.....	30.0	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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>46.4</b>	<b>85</b>
4.3.1 Applied tariff rate weighted mean, %.....	57.8	101
4.3.2 Market access trade restrictiveness*, %.....	79.4	31
4.3.3 Imports of goods & services, % GDP.....	26.1	49
4.3.4 Exports of goods & services, % GDP.....	16.6	94
4.3.5 Intensity local competition†.....	68.5	46

## 5 Business sophistication 19.4 124

<b>5.1 Knowledge workers</b>	<b>14.5</b>	<b>120</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	14.5	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
<b>5.2 Innovation linkages</b>	<b>23.1</b>	<b>101</b>
5.2.1 University/industry collaboration†.....	47.6	47
5.2.2 State of cluster development†.....	33.2	92
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>20.6</b>	<b>115</b>
5.3.1 Royalty & license fees payments, % GDP.....	8.2	77
5.3.2 High-tech imports less re-imports, %.....	4.5	105
5.3.3 Computer & comm. service imports, %.....	26.7	89
5.3.4 FDI net inflows, % GDP.....	42.7	76

## 6 Scientific outputs 16.0 104

<b>6.1 Knowledge creation</b>	<b>4.6</b>	<b>82</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	9.2	65
<b>6.2 Knowledge impact</b>	<b>17.3</b>	<b>107</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	35.1	79
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	1.7	82
6.2.3 Computer software spending, % GDP.....	13.1	45
<b>6.3 Knowledge diffusion</b>	<b>26.0</b>	<b>65</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	78
6.3.2 High-tech exports less re-exports, %.....	1.8	74
6.3.3 Computer & comm service exports, %.....	51.9	35
6.3.4 FDI net outflows, % GDP.....	50.0	39

## 7 Creative outputs 32.8 66

<b>7.1 Creative intangibles</b>	<b>61.6</b>	<b>11</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	62.7	50
7.1.4 ICT & organizational models†.....	60.5	42
<b>7.2 Creative goods &amp; services</b>	<b>4.0</b>	<b>109</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	5.7	52
7.2.4 Creative goods exports, %.....	5.0	85
7.2.5 Creative services exports, %.....	2.1	74

## Serbia

## Key indicators

Population (millions)	9.9
GDP per capita, PPP (current international \$)	11,719.2
GDP (US\$ billions)	43.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>36.3</b>	<b>55</b>
Innovation Output Sub-Index .....	33.5	38
Innovation Input Sub-Index.....	39.1	71
Innovation Efficiency Index.....	0.9	17
Global Innovation Index 2010.....		101
Global Innovation Index 2009.....		92

## 1 Institutions 63.2 66

<b>1.1 Political environment</b>	<b>51.2</b>	<b>72</b>
1.1.1 Political stability*.....	28.3	84
1.1.2 Government effectiveness*.....	49.5	74
1.1.3 Press freedom*.....	75.7	69
<b>1.2 Regulatory environment</b>	<b>52.5</b>	<b>81</b>
1.2.1 Regulatory quality*.....	50.0	77
1.2.2 Rule of law*.....	42.5	76
1.2.3 Rigidity of employment*.....	65.0	79
<b>1.3 Business environment</b>	<b>85.9</b>	<b>33</b>
1.3.1 Time to start a business, days.....	88.5	48
1.3.2 Cost to start a business, % income/cap.....	93.8	58
1.3.3 Total tax rate, % profits.....	75.3	45

## 2 Human capital & research 40.3 54

<b>2.1 Education</b>	<b>63.9</b>	<b>42</b>
2.1.1 Education expenditure, % GNI.....	51.1	44
2.1.2 Public expenditure/pupil, % GDP/cap.....	48.5	13
2.1.3 School life expectancy, years.....	57.5	51
2.1.4 PISA scales in reading, maths, & science.....	46.6	41
2.1.5 Pupil-teacher ratio, secondary.....	93.2	21
<b>2.2 Tertiary education</b>	<b>35.2</b>	<b>48</b>
2.2.1 Tertiary enrolment, % gross.....	50.6	46
2.2.2 Graduates in science, %.....	27.9	53
2.2.3 Graduates in engineering, %.....	44.5	30
2.2.4 Tertiary inbound mobility, %.....	16.5	29
2.2.5 Tertiary outbound mobility, %.....	28.3	52
2.2.6 Gross tertiary outbound enrolment, %.....	25.6	34
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>21.9</b>	<b>69</b>
2.3.1 Researchers headcount/million pop.....	10.8	41
2.3.2 Gross expenditure on R&D, % GDP.....	6.7	60
2.3.3 Quality research institutions†.....	48.2	52

## 3 Infrastructure 24.5 83

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>26.7</b>	<b>63</b>
3.1.1 ICT access*.....	50.6	48
3.1.2 ICT use*.....	16.3	49
3.1.3 Government's Online Service*.....	22.2	97
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>13.7</b>	<b>97</b>
3.2.1 Electricity output, kWh/cap.....	25.9	42
3.2.2 Electricity consumption, kWh/capita.....	17.9	45
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	12.7	91
3.2.4 Share of renewables in energy use, %.....	6.4	62
<b>3.3 General infrastructure</b>	<b>33.0</b>	<b>82</b>
3.3.1 Quality of trade & transport infrastructure*.....	32.5	88
3.3.2 Gross capital formation, % GDP.....	32.5	43
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.9	68

## 4 Market sophistication 34.2 87

<b>4.1 Credit</b>	<b>43.4</b>	<b>53</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	15.2	60
4.1.4 Microfinance gross loans, % GDP.....	23.1	22
<b>4.2 Investment</b>	<b>18.4</b>	<b>103</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	10.7	59
4.2.3 Total value of stocks traded, % GDP.....	0.7	72
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>40.8</b>	<b>103</b>
4.3.1 Applied tariff rate weighted mean, %.....	70.0	85
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	26.1	51
4.3.4 Exports of goods & services, % GDP.....	20.4	85
4.3.5 Intensity local competition†.....	46.5	118

## 5 Business sophistication 33.3 73

<b>5.1 Knowledge workers</b>	<b>38.2</b>	<b>68</b>
5.1.1 Knowledge-intensive employment, %.....	54.2	41
5.1.2 Firms offering formal training, % firms.....	39.7	41
5.1.3 R&D performed by business, %.....	2.9	77
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>22.9</b>	<b>102</b>
5.2.1 University/industry collaboration†.....	41.2	64
5.2.2 State of cluster development†.....	29.6	107
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	8.0	26
5.2.5 PCT patent filings with foreign inventor, %.....	5.3	70
<b>5.3 Knowledge absorption</b>	<b>39.0</b>	<b>43</b>
5.3.1 Royalty & license fees payments, % GDP.....	33.5	29
5.3.2 High-tech imports less re-imports, %.....	14.5	82
5.3.3 Computer & comm. service imports, %.....	52.8	33
5.3.4 FDI net inflows, % GDP.....	55.1	32

## 6 Scientific outputs 23.7 65

<b>6.1 Knowledge creation</b>	<b>20.1</b>	<b>41</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	24.1	33
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	3.1	51
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	6.1	32
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	40.2	27
<b>6.2 Knowledge impact</b>	<b>15.1</b>	<b>109</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	15.1	43
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>35.9</b>	<b>41</b>
6.3.1 Royalty & license fees receipts, % GDP.....	19.7	22
6.3.2 High-tech exports less re-exports, %.....	8.4	49
6.3.3 Computer & comm service exports, %.....	68.0	20
6.3.4 FDI net outflows, % GDP.....	47.6	78

## 7 Creative outputs 43.4 23

<b>7.1 Creative intangibles</b>	<b>36.5</b>	<b>96</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	11.4	78
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	94.3	5
7.1.3 ICT & business models†.....	35.8	118
7.1.4 ICT & organizational models†.....	33.5	117
<b>7.2 Creative goods &amp; services</b>	<b>50.2</b>	<b>7</b>
7.2.1 Recreation & culture consumption, %.....	51.1	36
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	22.2	42
7.2.5 Creative services exports, %.....	77.7	4



## Key indicators

Population (millions)	4.8
GDP per capita, PPP (current international \$)	50,632.8
GDP (US\$ billions)	182.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>59.6</b>	<b>3</b>
Innovation Output Sub-Index .....	45.2	17
Innovation Input Sub-Index.....	74.1	1
Innovation Efficiency Index.....	0.6	94
Global Innovation Index 2010.....	7	
Global Innovation Index 2009.....	5	

<b>1</b>	<b>Institutions</b>	<b>90.4</b>	<b>9</b>
1.1	<i>Political environment</i>	80.0	28
1.1.1	Political stability*.....	90.1	7
1.1.2	Government effectiveness*.....	100.0	1
1.1.3	Press freedom*.....	49.8	98
1.2	<i>Regulatory environment</i>	97.5	2
1.2.1	Regulatory quality*.....	100.0	1
1.2.2	Rule of law*.....	92.5	16
1.2.3	Rigidity of employment*.....	100.0	1
1.3	<i>Business environment</i>	93.8	5
1.3.1	Time to start a business, days.....	98.1	3
1.3.2	Cost to start a business, % income/cap.....	99.5	7
1.3.3	Total tax rate, % profits.....	84.0	21
<b>2</b>	<b>Human capital &amp; research</b>	<b>74.7</b>	<b>1</b>
2.1	<i>Education</i>	69.5	23
2.1.1	Education expenditure, % GNI.....	28.8	95
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.....	86.6	4
2.1.5	Pupil-teacher ratio, secondary.....	81.2	65
2.2	<i>Tertiary education</i>	94.4	1
2.2.1	Tertiary enrolment, % gross.....	n/a	n/a
2.2.2	Graduates in science, %.....	n/a	n/a
2.2.3	Graduates in engineering, %.....	n/a	n/a
2.2.4	Tertiary inbound mobility, %.....	94.4	6
2.2.5	Tertiary outbound mobility, %.....	n/a	n/a
2.2.6	Gross tertiary outbound enrolment, %.....	n/a	n/a
2.3	<i>Research &amp; development (R&amp;D)</i>	60.2	10
2.3.1	Researchers headcount/million pop.....	53.5	7
2.3.2	Gross expenditure on R&D, % GDP.....	51.5	12
2.3.3	Quality research institutions†.....	75.6	11
<b>3</b>	<b>Infrastructure</b>	<b>47.6</b>	<b>9</b>
3.1	<i>Info &amp; comm. technologies (ICT)</i>	69.0	5
3.1.1	ICT access*.....	80.2	10
3.1.2	ICT use*.....	58.1	5
3.1.3	Government's Online Service*.....	68.6	10
3.1.4	E-Participation*.....	68.6	10
3.2	<i>Energy</i>	26.0	31
3.2.1	Electricity output, kWh/cap.....	44.7	16
3.2.2	Electricity consumption, kWh/capita.....	34.4	16
3.2.3	GDP/unit of energy use, PPP\$/kg oil eq.....	38.6	31
3.2.4	Share of renewables in energy use, %.....	0.0	111
3.3	<i>General infrastructure</i>	47.9	13
3.3.1	Quality of trade & transport infrastructure*.....	80.5	3
3.3.2	Gross capital formation, % GDP.....	45.8	20
3.3.3	Ecological footprint & biocapacity, ha/cap.....	17.3	115

<b>4</b>	<b>Market sophistication</b>	<b>78.7</b>	<b>2</b>
4.1	<i>Credit</i>	65.1	20
4.1.1	Strength of legal rights for credit*.....	100.0	1
4.1.2	Depth of credit information*.....	66.7	66
4.1.3	Domestic credit to private sector, % GDP.....	46.9	19
4.1.4	Microfinance gross loans, % GDP.....	n/a	n/a
4.2	<i>Investment</i>	78.5	2
4.2.1	Strength of investor protection*.....	93.0	2
4.2.2	Market capitalization, % GDP.....	69.1	5
4.2.3	Total value of stocks traded, % GDP.....	77.0	7
4.2.4	Venture capital deals/tr GDP PPP\$.....	71.1	20
4.3	<i>Trade &amp; competition</i>	92.5	1
4.3.1	Applied tariff rate weighted mean, %.....	100.0	1
4.3.2	Market access trade restrictiveness*, %.....	84.2	27
4.3.3	Imports of goods & services, % GDP.....	100.0	1
4.3.4	Exports of goods & services, % GDP.....	100.0	1
4.3.5	Intensity local competition†.....	74.3	26
<b>5</b>	<b>Business sophistication</b>	<b>79.1</b>	<b>1</b>
5.1	<i>Knowledge workers</i>	87.3	3
5.1.1	Knowledge-intensive employment, %.....	100.0	1
5.1.2	Firms offering formal training, % firms.....	n/a	n/a
5.1.3	R&D performed by business, %.....	78.7	15
5.1.4	R&D financed by business, %.....	70.5	16
5.2	<i>Innovation linkages</i>	68.3	1
5.2.1	University/industry collaboration†.....	74.0	6
5.2.2	State of cluster development†.....	68.9	1
5.2.3	R&D financed by abroad, %.....	15.2	52
5.2.4	JV/strategic alliance deals/tr GDP PPP\$.....	100.0	3
5.2.5	PCT patent filings with foreign inventor, %.....	72.9	11
5.3	<i>Knowledge absorption</i>	81.7	2
5.3.1	Royalty & license fees payments, % GDP.....	100.0	2
5.3.2	High-tech imports less re-imports, %.....	95.8	3
5.3.3	Computer & comm. service imports, %.....	55.3	28
5.3.4	FDI net inflows, % GDP.....	75.7	11
<b>6</b>	<b>Scientific outputs</b>	<b>48.9</b>	<b>15</b>
6.1	<i>Knowledge creation</i>	32.0	31
6.1.1	Domestic resident patent ap/bn GDP PPP\$.....	18.0	40
6.1.2	PCT resident patent ap/bn GDP PPP\$.....	32.9	18
6.1.3	Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4	Scientific & technical articles/bn GDP PPP\$.....	45.1	18
6.2	<i>Knowledge impact</i>	36.8	35
6.2.1	Growth rate of GDP PPP\$/worker, %.....	12.8	106
6.2.2	New businesses/1,000 pop. 15–64 yrs.....	57.6	9
6.2.3	Computer software spending, % GDP.....	43.0	19
6.3	<i>Knowledge diffusion</i>	78.0	2
6.3.1	Royalty & license fees receipts, % GDP.....	98.4	6
6.3.2	High-tech exports less re-exports, %.....	100.0	1
6.3.3	Computer & comm service exports, %.....	57.0	26
6.3.4	FDI net outflows, % GDP.....	56.5	17
<b>7</b>	<b>Creative outputs</b>	<b>41.4</b>	<b>30</b>
7.1	<i>Creative intangibles</i>	50.4	45
7.1.1	Domestic res trademark ap/bn GDP PPP\$.....	10.8	79
7.1.2	Madrid resident trademark ap/bn GDP PPP\$.....	19.6	28
7.1.3	ICT & business models†.....	80.5	3
7.1.4	ICT & organizational models†.....	75.3	5
7.2	<i>Creative goods &amp; services</i>	32.4	30
7.2.1	Recreation & culture consumption, %.....	85.7	3
7.2.2	National feature films/mn pop.....	30.7	25
7.2.3	Daily newspapers/1,000 literate pop.....	75.1	5
7.2.4	Creative goods exports, %.....	16.3	54
7.2.5	Creative services exports, %.....	1.5	79

# Slovak Republic

## Key indicators

Population (millions)	5.4
GDP per capita, PPP (current international \$)	22,356.3
GDP (US\$ billions)	87.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>39.0</b>	<b>37</b>
Innovation Output Sub-Index .....	29.8	54
Innovation Input Sub-Index.....	48.3	35
Innovation Efficiency Index.....	0.6	92
Global Innovation Index 2010.....		37
Global Innovation Index 2009.....		35

## 1 Institutions 79.6 30

<b>1.1 Political environment</b>	<b>81.1</b>	<b>23</b>
1.1.1 Political stability*.....	78.8	22
1.1.2 Government effectiveness*.....	76.7	34
1.1.3 Press freedom*.....	87.8	33
<b>1.2 Regulatory environment</b>	<b>76.1</b>	<b>31</b>
1.2.1 Regulatory quality*.....	82.4	26
1.2.2 Rule of law*.....	67.9	40
1.2.3 Rigidity of employment*.....	78.0	54
<b>1.3 Business environment</b>	<b>81.5</b>	<b>58</b>
1.3.1 Time to start a business, days.....	85.6	63
1.3.2 Cost to start a business, % income/cap.....	98.5	20
1.3.3 Total tax rate, % profits.....	60.3	94

## 2 Human capital & research 42.8 46

<b>2.1 Education</b>	<b>61.3</b>	<b>47</b>
2.1.1 Education expenditure, % GNI.....	37.9	73
2.1.2 Public expenditure/pupil, % GDP/cap.....	23.4	72
2.1.3 School life expectancy, years.....	64.5	35
2.1.4 PISA scales in reading, maths, & science.....	64.8	28
2.1.5 Pupil-teacher ratio, secondary.....	86.9	47
<b>2.2 Tertiary education</b>	<b>42.4</b>	<b>23</b>
2.2.1 Tertiary enrolment, % gross.....	54.4	38
2.2.2 Graduates in science, %.....	28.1	52
2.2.3 Graduates in engineering, %.....	41.8	36
2.2.4 Tertiary inbound mobility, %.....	7.4	48
2.2.5 Tertiary outbound mobility, %.....	44.9	24
2.2.6 Gross tertiary outbound enrolment, %.....	80.3	6
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.8</b>	<b>56</b>
2.3.1 Researchers headcount/million pop.....	27.8	24
2.3.2 Gross expenditure on R&D, % GDP.....	9.2	55
2.3.3 Quality research institutions†.....	37.6	83

## 3 Infrastructure 35.2 34

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>38.1</b>	<b>42</b>
3.1.1 ICT access*.....	61.6	37
3.1.2 ICT use*.....	31.7	35
3.1.3 Government's Online Service*.....	34.6	58
3.1.4 E-Participation*.....	7.1	97
<b>3.2 Energy</b>	<b>17.5</b>	<b>77</b>
3.2.1 Electricity output, kWh/cap.....	24.9	44
3.2.2 Electricity consumption, kWh/capita.....	20.6	38
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	26.0	63
3.2.4 Share of renewables in energy use, %.....	3.6	77
<b>3.3 General infrastructure</b>	<b>50.1</b>	<b>7</b>
3.3.1 Quality of trade & transport infrastructure*.....	50.0	41
3.3.2 Gross capital formation, % GDP.....	67.8	7
3.3.3 Ecological footprint & biocapacity, ha/cap.....	32.4	82

## 4 Market sophistication 45.9 43

<b>4.1 Credit</b>	<b>38.4</b>	<b>66</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	17.7	54
4.1.4 Microfinance gross loans, % GDP.....	0.0	79
<b>4.2 Investment</b>	<b>14.0</b>	<b>116</b>
4.2.1 Strength of investor protection*.....	47.0	86
4.2.2 Market capitalization, % GDP.....	1.9	95
4.2.3 Total value of stocks traded, % GDP.....	0.1	92
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>85.4</b>	<b>4</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	74.0	4
4.3.4 Exports of goods & services, % GDP.....	100.0	4
4.3.5 Intensity local competition†.....	73.2	30

## 5 Business sophistication 37.8 56

<b>5.1 Knowledge workers</b>	<b>49.1</b>	<b>43</b>
5.1.1 Knowledge-intensive employment, %.....	66.2	31
5.1.2 Firms offering formal training, % firms.....	35.4	47
5.1.3 R&D performed by business, %.....	50.5	39
5.1.4 R&D financed by business, %.....	40.7	41
<b>5.2 Innovation linkages</b>	<b>32.4</b>	<b>64</b>
5.2.1 University/industry collaboration†.....	37.6	80
5.2.2 State of cluster development†.....	40.3	70
5.2.3 R&D financed by abroad, %.....	43.2	19
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	30.0	32
<b>5.3 Knowledge absorption</b>	<b>32.0</b>	<b>70</b>
5.3.1 Royalty & license fees payments, % GDP.....	18.5	51
5.3.2 High-tech imports less re-imports, %.....	25.1	45
5.3.3 Computer & comm. service imports, %.....	48.7	41
5.3.4 FDI net inflows, % GDP.....	35.6	119

## 6 Scientific outputs 26.5 51

<b>6.1 Knowledge creation</b>	<b>13.6</b>	<b>54</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	9.3	58
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	5.0	39
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	16.5	17
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	25.1	39
<b>6.2 Knowledge impact</b>	<b>38.2</b>	<b>31</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	49.0	33
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	31.4	25
6.2.3 Computer software spending, % GDP.....	30.0	26
<b>6.3 Knowledge diffusion</b>	<b>27.9</b>	<b>61</b>
6.3.1 Royalty & license fees receipts, % GDP.....	14.0	28
6.3.2 High-tech exports less re-exports, %.....	14.7	38
6.3.3 Computer & comm service exports, %.....	34.1	65
6.3.4 FDI net outflows, % GDP.....	48.6	58

## 7 Creative outputs 33.1 63

<b>7.1 Creative intangibles</b>	<b>38.2</b>	<b>91</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	13.6	71
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	44.6	15
7.1.3 ICT & business models†.....	52.6	88
7.1.4 ICT & organizational models†.....	45.3	84
<b>7.2 Creative goods &amp; services</b>	<b>28.0</b>	<b>46</b>
7.2.1 Recreation & culture consumption, %.....	73.3	13
7.2.2 National feature films/mn pop.....	6.7	54
7.2.3 Daily newspapers/1,000 literate pop.....	23.3	27
7.2.4 Creative goods exports, %.....	19.4	47
7.2.5 Creative services exports, %.....	27.0	28

## Key indicators

Population (millions)	2.0
GDP per capita, PPP (current international \$)	27,004.4
GDP (US\$ billions)	48.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>45.1</b>	<b>30</b>
Innovation Output Sub-Index .....	38.9	30
Innovation Input Sub-Index.....	51.3	32
Innovation Efficiency Index.....	0.8	51
Global Innovation Index 2010.....		26
Global Innovation Index 2009.....		36

**1 Institutions 80.4 29**

<b>1.1 Political environment</b>	<b>82.5</b>	<b>20</b>
1.1.1 Political stability*.....	77.4	24
1.1.2 Government effectiveness*.....	84.3	26
1.1.3 Press freedom*.....	85.8	42
<b>1.2 Regulatory environment</b>	<b>69.0</b>	<b>47</b>
1.2.1 Regulatory quality*.....	77.1	36
1.2.2 Rule of law*.....	84.0	26
1.2.3 Rigidity of employment*.....	46.0	114
<b>1.3 Business environment</b>	<b>89.7</b>	<b>20</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	100.0	1
1.3.3 Total tax rate, % profits.....	73.8	51

**2 Human capital & research 51.3 26**

<b>2.1 Education</b>	<b>74.3</b>	<b>9</b>
2.1.1 Education expenditure, % GNI.....	59.4	28
2.1.2 Public expenditure/pupil, % GDP/cap.....	48.6	12
2.1.3 School life expectancy, years.....	76.5	9
2.1.4 PISA scales in reading, maths, & science.....	69.0	20
2.1.5 Pupil-teacher ratio, secondary.....	94.9	14
<b>2.2 Tertiary education</b>	<b>36.8</b>	<b>43</b>
2.2.1 Tertiary enrolment, % gross.....	88.3	4
2.2.2 Graduates in science, %.....	12.7	81
2.2.3 Graduates in engineering, %.....	42.7	35
2.2.4 Tertiary inbound mobility, %.....	2.8	67
2.2.5 Tertiary outbound mobility, %.....	18.2	78
2.2.6 Gross tertiary outbound enrolment, %.....	22.4	38
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>42.9</b>	<b>30</b>
2.3.1 Researchers headcount/million pop.....	32.9	21
2.3.2 Gross expenditure on R&D, % GDP.....	33.8	19
2.3.3 Quality research institutions†.....	61.9	26

**3 Infrastructure 36.6 27**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>51.8</b>	<b>27</b>
3.1.1 ICT access*.....	70.6	27
3.1.2 ICT use*.....	39.1	28
3.1.3 Government's Online Service*.....	40.0	45
3.1.4 E-Participation*.....	51.4	21
<b>3.2 Energy</b>	<b>24.6</b>	<b>42</b>
3.2.1 Electricity output, kWh/cap.....	42.1	22
3.2.2 Electricity consumption, kWh/capita.....	29.0	24
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	31.4	47
3.2.4 Share of renewables in energy use, %.....	6.9	59
<b>3.3 General infrastructure</b>	<b>33.3</b>	<b>78</b>
3.3.1 Quality of trade & transport infrastructure*.....	41.3	56
3.3.2 Gross capital formation, % GDP.....	31.3	46
3.3.3 Ecological footprint & biocapacity, ha/cap.....	27.3	94

**4 Market sophistication 40.3 60**

<b>4.1 Credit</b>	<b>34.7</b>	<b>80</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	27.7	37
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>22.2</b>	<b>90</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	9.6	63
4.2.3 Total value of stocks traded, % GDP.....	1.2	67
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>64.0</b>	<b>16</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	36.9	33
4.3.4 Exports of goods & services, % GDP.....	55.2	25
4.3.5 Intensity local competition†.....	69.8	40

**5 Business sophistication 47.8 34**

<b>5.1 Knowledge workers</b>	<b>67.2</b>	<b>24</b>
5.1.1 Knowledge-intensive employment, %.....	73.2	24
5.1.2 Firms offering formal training, % firms.....	53.4	23
5.1.3 R&D performed by business, %.....	76.0	17
5.1.4 R&D financed by business, %.....	74.0	12
<b>5.2 Innovation linkages</b>	<b>35.3</b>	<b>50</b>
5.2.1 University/industry collaboration†.....	52.9	35
5.2.2 State of cluster development†.....	47.4	42
5.2.3 R&D financed by abroad, %.....	19.6	44
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	34.5	24
5.2.5 PCT patent filings with foreign inventor, %.....	13.9	54
<b>5.3 Knowledge absorption</b>	<b>41.0</b>	<b>36</b>
5.3.1 Royalty & license fees payments, % GDP.....	58.5	10
5.3.2 High-tech imports less re-imports, %.....	16.3	73
5.3.3 Computer & comm. service imports, %.....	58.5	25
5.3.4 FDI net inflows, % GDP.....	30.6	122

**6 Scientific outputs 33.9 32**

<b>6.1 Knowledge creation</b>	<b>38.9</b>	<b>17</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	40.6	22
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	29.3	20
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.6	43
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	65.5	8
<b>6.2 Knowledge impact</b>	<b>34.9</b>	<b>47</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	38.1	71
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	32.4	23
6.2.3 Computer software spending, % GDP.....	33.7	22
<b>6.3 Knowledge diffusion</b>	<b>27.9</b>	<b>60</b>
6.3.1 Royalty & license fees receipts, % GDP.....	9.8	35
6.3.2 High-tech exports less re-exports, %.....	13.2	41
6.3.3 Computer & comm service exports, %.....	40.3	51
6.3.4 FDI net outflows, % GDP.....	48.2	62

**7 Creative outputs 43.8 20**

<b>7.1 Creative intangibles</b>	<b>51.4</b>	<b>36</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	18.7	55
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	100.0	2
7.1.3 ICT & business models†.....	60.1	58
7.1.4 ICT & organizational models†.....	51.2	61
<b>7.2 Creative goods &amp; services</b>	<b>36.2</b>	<b>23</b>
7.2.1 Recreation & culture consumption, %.....	74.9	10
7.2.2 National feature films/mn pop.....	19.8	34
7.2.3 Daily newspapers/1,000 literate pop.....	31.3	16
7.2.4 Creative goods exports, %.....	31.3	26
7.2.5 Creative services exports, %.....	32.3	22

# South Africa

## Key indicators

Population (millions)	50.5
GDP per capita, PPP (current international \$)	10,277.8
GDP (US\$ billions)	285.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>35.2</b>	<b>59</b>
Innovation Output Sub-Index .....	24.1	83
Innovation Input Sub-Index.....	46.4	40
Innovation Efficiency Index.....	0.5	113
Global Innovation Index 2010.....		51
Global Innovation Index 2009.....		43

## 1 Institutions 71.0 50

<b>1.1 Political environment</b>	<b>66.4</b>	<b>48</b>
1.1.1 Political stability*.....	44.3	63
1.1.2 Government effectiveness*.....	67.6	48
1.1.3 Press freedom*.....	87.3	35
<b>1.2 Regulatory environment</b>	<b>61.8</b>	<b>60</b>
1.2.1 Regulatory quality*.....	64.3	52
1.2.2 Rule of law*.....	56.1	56
1.2.3 Rigidity of employment*.....	65.0	79
<b>1.3 Business environment</b>	<b>84.6</b>	<b>43</b>
1.3.1 Time to start a business, days.....	79.8	78
1.3.2 Cost to start a business, % income/cap.....	95.3	49
1.3.3 Total tax rate, % profits.....	78.8	32

## 2 Human capital & research 30.0 92

<b>2.1 Education</b>	<b>57.8</b>	<b>62</b>
2.1.1 Education expenditure, % GNI.....	60.7	25
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.....	56.3	104
<b>2.2 Tertiary education</b>	<b>3.3</b>	<b>124</b>
2.2.1 Tertiary enrolment, % gross.....	n/a	n/a
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	6.0	114
2.2.6 Gross tertiary outbound enrolment, %.....	0.7	104
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>28.8</b>	<b>49</b>
2.3.1 Researchers headcount/million pop.....	6.1	53
2.3.2 Gross expenditure on R&D, % GDP.....	18.7	34
2.3.3 Quality research institutions†.....	61.7	28

## 3 Infrastructure 24.8 79

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>20.3</b>	<b>86</b>
3.1.1 ICT access*.....	31.4	86
3.1.2 ICT use*.....	4.9	89
3.1.3 Government's Online Service*.....	30.8	71
3.1.4 E-Participation*.....	18.6	62
<b>3.2 Energy</b>	<b>15.8</b>	<b>84</b>
3.2.1 Electricity output, kWh/cap.....	27.2	40
3.2.2 Electricity consumption, kWh/capita.....	20.0	41
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	17.3	84
3.2.4 Share of renewables in energy use, %.....	6.4	61
<b>3.3 General infrastructure</b>	<b>38.2</b>	<b>45</b>
3.3.1 Quality of trade & transport infrastructure*.....	60.5	28
3.3.2 Gross capital formation, % GDP.....	21.0	81
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.2	76

## 4 Market sophistication 63.9 8

<b>4.1 Credit</b>	<b>64.8</b>	<b>21</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	65.3	9
4.1.4 Microfinance gross loans, % GDP.....	3.3	48
<b>4.2 Investment</b>	<b>77.3</b>	<b>4</b>
4.2.1 Strength of investor protection*.....	80.0	10
4.2.2 Market capitalization, % GDP.....	100.0	2
4.2.3 Total value of stocks traded, % GDP.....	66.7	8
4.2.4 Venture capital deals/tr GDP PPP\$.....	47.5	44
<b>4.3 Trade &amp; competition</b>	<b>49.6</b>	<b>68</b>
4.3.1 Applied tariff rate weighted mean, %.....	77.7	73
4.3.2 Market access trade restrictiveness*, %.....	91.0	17
4.3.3 Imports of goods & services, % GDP.....	13.5	92
4.3.4 Exports of goods & services, % GDP.....	20.2	86
4.3.5 Intensity local competition†.....	66.2	60

## 5 Business sophistication 42.3 43

<b>5.1 Knowledge workers</b>	<b>48.0</b>	<b>46</b>
5.1.1 Knowledge-intensive employment, %.....	43.8	54
5.1.2 Firms offering formal training, % firms.....	40.0	40
5.1.3 R&D performed by business, %.....	67.9	24
5.1.4 R&D financed by business, %.....	52.7	34
<b>5.2 Innovation linkages</b>	<b>36.4</b>	<b>44</b>
5.2.1 University/industry collaboration†.....	60.1	23
5.2.2 State of cluster development†.....	47.9	41
5.2.3 R&D financed by abroad, %.....	37.2	23
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	10.1	52
5.2.5 PCT patent filings with foreign inventor, %.....	13.9	55
<b>5.3 Knowledge absorption</b>	<b>42.4</b>	<b>32</b>
5.3.1 Royalty & license fees payments, % GDP.....	56.9	12
5.3.2 High-tech imports less re-imports, %.....	35.2	26
5.3.3 Computer & comm. service imports, %.....	33.6	73
5.3.4 FDI net inflows, % GDP.....	43.9	72

## 6 Scientific outputs 21.5 79

<b>6.1 Knowledge creation</b>	<b>13.2</b>	<b>55</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	15.6	44
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	7.6	34
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	16.6	50
<b>6.2 Knowledge impact</b>	<b>32.5</b>	<b>62</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	44.5	46
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	5.9	64
6.2.3 Computer software spending, % GDP.....	61.4	8
<b>6.3 Knowledge diffusion</b>	<b>18.9</b>	<b>105</b>
6.3.1 Royalty & license fees receipts, % GDP.....	2.2	61
6.3.2 High-tech exports less re-exports, %.....	5.8	55
6.3.3 Computer & comm service exports, %.....	18.9	94
6.3.4 FDI net outflows, % GDP.....	48.6	59

## 7 Creative outputs 26.6 85

<b>7.1 Creative intangibles</b>	<b>45.1</b>	<b>62</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	21.3	46
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	59.2	59
7.1.4 ICT & organizational models†.....	54.7	53
<b>7.2 Creative goods &amp; services</b>	<b>8.2</b>	<b>91</b>
7.2.1 Recreation & culture consumption, %.....	29.9	51
7.2.2 National feature films/mn pop.....	1.8	73
7.2.3 Daily newspapers/1,000 literate pop.....	8.0	47
7.2.4 Creative goods exports, %.....	5.1	84
7.2.5 Creative services exports, %.....	3.7	64

## Key indicators

Population (millions)	45.3
GDP per capita, PPP (current international \$)	32,544.8
GDP (US\$ billions)	1,460.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>43.8</b>	<b>32</b>
Innovation Output Sub-Index .....	35.2	34
Innovation Input Sub-Index.....	52.4	29
Innovation Efficiency Index.....	0.7	74
Global Innovation Index 2010.....		30
Global Innovation Index 2009.....		28

## 1 Institutions 68.9 56

<b>1.1 Political environment</b>	<b>67.6</b>	<b>45</b>
1.1.1 Political stability*.....	38.2	71
1.1.2 Government effectiveness*.....	77.6	32
1.1.3 Press freedom*.....	87.0	36
<b>1.2 Regulatory environment</b>	<b>73.7</b>	<b>38</b>
1.2.1 Regulatory quality*.....	84.8	24
1.2.2 Rule of law*.....	85.4	24
1.2.3 Rigidity of employment*.....	51.0	108
<b>1.3 Business environment</b>	<b>65.5</b>	<b>102</b>
1.3.1 Time to start a business, days.....	55.8	111
1.3.2 Cost to start a business, % income/cap.....	88.2	79
1.3.3 Total tax rate, % profits.....	52.4	109

## 2 Human capital & research 48.2 31

<b>2.1 Education</b>	<b>67.3</b>	<b>33</b>
2.1.1 Education expenditure, % GNI.....	40.7	68
2.1.2 Public expenditure/pupil, % GDP/cap.....	37.0	37
2.1.3 School life expectancy, years.....	73.8	12
2.1.4 PISA scales in reading, maths, & science.....	63.3	32
2.1.5 Pupil-teacher ratio, secondary.....	91.3	33
<b>2.2 Tertiary education</b>	<b>38.9</b>	<b>37</b>
2.2.1 Tertiary enrolment, % gross.....	71.8	16
2.2.2 Graduates in science, %.....	36.2	40
2.2.3 Graduates in engineering, %.....	52.7	18
2.2.4 Tertiary inbound mobility, %.....	6.8	52
2.2.5 Tertiary outbound mobility, %.....	11.6	102
2.2.6 Gross tertiary outbound enrolment, %.....	10.3	62
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>38.4</b>	<b>36</b>
2.3.1 Researchers headcount/million pop.....	35.5	18
2.3.2 Gross expenditure on R&D, % GDP.....	27.2	26
2.3.3 Quality research institutions†.....	52.6	40

## 3 Infrastructure 43.5 19

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>64.0</b>	<b>14</b>
3.1.1 ICT access*.....	69.2	28
3.1.2 ICT use*.....	43.1	20
3.1.3 Government's Online Service*.....	76.5	5
3.1.4 E-Participation*.....	82.9	3
<b>3.2 Energy</b>	<b>26.1</b>	<b>30</b>
3.2.1 Electricity output, kWh/cap.....	32.8	32
3.2.2 Electricity consumption, kWh/capita.....	24.6	32
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	43.7	24
3.2.4 Share of renewables in energy use, %.....	5.8	67
<b>3.3 General infrastructure</b>	<b>40.5</b>	<b>36</b>
3.3.1 Quality of trade & transport infrastructure*.....	64.5	24
3.3.2 Gross capital formation, % GDP.....	34.0	37
3.3.3 Ecological footprint & biocapacity, ha/cap.....	23.1	106

## 4 Market sophistication 57.5 21

<b>4.1 Credit</b>	<b>71.7</b>	<b>14</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	n/a	n/a
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>51.8</b>	<b>14</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	35.9	20
4.2.3 Total value of stocks traded, % GDP.....	61.0	9
4.2.4 Venture capital deals/tr GDP PPP\$.....	68.6	23
<b>4.3 Trade &amp; competition</b>	<b>49.2</b>	<b>71</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	11.4	103
4.3.4 Exports of goods & services, % GDP.....	15.9	97
4.3.5 Intensity local competition†.....	75.1	24

## 5 Business sophistication 43.9 40

<b>5.1 Knowledge workers</b>	<b>59.7</b>	<b>33</b>
5.1.1 Knowledge-intensive employment, %.....	61.8	34
5.1.2 Firms offering formal training, % firms.....	58.1	17
5.1.3 R&D performed by business, %.....	64.7	27
5.1.4 R&D financed by business, %.....	53.5	30
<b>5.2 Innovation linkages</b>	<b>33.6</b>	<b>59</b>
5.2.1 University/industry collaboration†.....	49.6	43
5.2.2 State of cluster development†.....	47.9	40
5.2.3 R&D financed by abroad, %.....	24.6	38
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	12.3	47
5.2.5 PCT patent filings with foreign inventor, %.....	18.4	45
<b>5.3 Knowledge absorption</b>	<b>38.5</b>	<b>45</b>
5.3.1 Royalty & license fees payments, % GDP.....	24.2	40
5.3.2 High-tech imports less re-imports, %.....	23.3	52
5.3.3 Computer & comm. service imports, %.....	69.0	10
5.3.4 FDI net inflows, % GDP.....	37.6	112

## 6 Scientific outputs 29.4 42

<b>6.1 Knowledge creation</b>	<b>24.0</b>	<b>35</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	16.0	43
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	16.6	29
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	14.2	19
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	44.5	19
<b>6.2 Knowledge impact</b>	<b>34.6</b>	<b>48</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	41.9	58
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	22.7	32
6.2.3 Computer software spending, % GDP.....	43.7	18
<b>6.3 Knowledge diffusion</b>	<b>29.6</b>	<b>55</b>
6.3.1 Royalty & license fees receipts, % GDP.....	9.5	37
6.3.2 High-tech exports less re-exports, %.....	13.1	42
6.3.3 Computer & comm service exports, %.....	46.9	45
6.3.4 FDI net outflows, % GDP.....	48.8	55

## 7 Creative outputs 41.0 34

<b>7.1 Creative intangibles</b>	<b>44.3</b>	<b>67</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	23.3	41
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	15.2	32
7.1.3 ICT & business models†.....	65.1	43
7.1.4 ICT & organizational models†.....	58.8	44
<b>7.2 Creative goods &amp; services</b>	<b>37.7</b>	<b>19</b>
7.2.1 Recreation & culture consumption, %.....	66.5	24
7.2.2 National feature films/mn pop.....	46.5	18
7.2.3 Daily newspapers/1,000 literate pop.....	26.5	23
7.2.4 Creative goods exports, %.....	24.4	37
7.2.5 Creative services exports, %.....	37.7	17

## Sri Lanka

## Key indicators

Population (millions)	20.4
GDP per capita, PPP (current international \$)	4,771.6
GDP (US\$ billions)	42.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>30.4</b>	<b>82</b>
Innovation Output Sub-Index .....	27.5	65
Innovation Input Sub-Index.....	33.2	96
Innovation Efficiency Index.....	0.8	21
Global Innovation Index 2010.....	79	
Global Innovation Index 2009.....	58	

## 1 Institutions 53.2 93

<b>1.1 Political environment</b>	<b>31.6</b>	<b>112</b>
1.1.1 Political stability*.....	11.8	111
1.1.2 Government effectiveness*.....	49.0	75
1.1.3 Press freedom*.....	33.9	115
<b>1.2 Regulatory environment</b>	<b>58.9</b>	<b>66</b>
1.2.1 Regulatory quality*.....	43.3	88
1.2.2 Rule of law*.....	53.3	60
1.2.3 Rigidity of employment*.....	80.0	45
<b>1.3 Business environment</b>	<b>69.1</b>	<b>93</b>
1.3.1 Time to start a business, days.....	67.3	99
1.3.2 Cost to start a business, % income/cap.....	95.8	45
1.3.3 Total tax rate, % profits.....	44.1	116

## 2 Human capital & research 27.2 102

<b>2.1 Education</b>	<b>52.9</b>	<b>79</b>
2.1.1 Education expenditure, % GNI.....	22.7	108
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	51.1	68
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	69.9	87
<b>2.2 Tertiary education</b>	<b>10.1</b>	<b>118</b>
2.2.1 Tertiary enrolment, % gross.....	n/a	n/a
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	n/a	n/a
2.2.6 Gross tertiary outbound enrolment, %.....	10.1	64
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.6</b>	<b>80</b>
2.3.1 Researchers headcount/million pop.....	1.7	72
2.3.2 Gross expenditure on R&D, % GDP.....	3.1	75
2.3.3 Quality research institutions†.....	51.2	46

## 3 Infrastructure 26.6 67

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>17.3</b>	<b>92</b>
3.1.1 ICT access*.....	28.8	91
3.1.2 ICT use*.....	3.0	101
3.1.3 Government's Online Service*.....	26.0	88
3.1.4 E-Participation*.....	14.3	74
<b>3.2 Energy</b>	<b>32.2</b>	<b>10</b>
3.2.1 Electricity output, kWh/cap.....	2.3	101
3.2.2 Electricity consumption, kWh/capita.....	1.5	102
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	60.0	6
3.2.4 Share of renewables in energy use, %.....	34.7	18
<b>3.3 General infrastructure</b>	<b>30.3</b>	<b>100</b>
3.3.1 Quality of trade & transport infrastructure*.....	22.0	116
3.3.2 Gross capital formation, % GDP.....	34.1	36
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.7	64

## 4 Market sophistication 29.7 106

<b>4.1 Credit</b>	<b>30.4</b>	<b>92</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	10.2	76
4.1.4 Microfinance gross loans, % GDP.....	8.3	37
<b>4.2 Investment</b>	<b>17.7</b>	<b>106</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	7.6	71
4.2.3 Total value of stocks traded, % GDP.....	1.2	66
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>41.1</b>	<b>102</b>
4.3.1 Applied tariff rate weighted mean, %.....	64.5	96
4.3.2 Market access trade restrictiveness*, %.....	46.6	69
4.3.3 Imports of goods & services, % GDP.....	13.2	93
4.3.4 Exports of goods & services, % GDP.....	13.7	105
4.3.5 Intensity local competition†.....	70.2	39

## 5 Business sophistication 29.3 91

<b>5.1 Knowledge workers</b>	<b>30.9</b>	<b>86</b>
5.1.1 Knowledge-intensive employment, %.....	35.6	68
5.1.2 Firms offering formal training, % firms.....	34.8	49
5.1.3 R&D performed by business, %.....	22.5	63
5.1.4 R&D financed by business, %.....	22.2	58
<b>5.2 Innovation linkages</b>	<b>34.6</b>	<b>54</b>
5.2.1 University/industry collaboration†.....	48.5	45
5.2.2 State of cluster development†.....	51.4	32
5.2.3 R&D financed by abroad, %.....	17.0	49
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	30.0	32
<b>5.3 Knowledge absorption</b>	<b>22.4</b>	<b>111</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	8.2	94
5.3.3 Computer & comm. service imports, %.....	19.0	102
5.3.4 FDI net inflows, % GDP.....	39.9	97

## 6 Scientific outputs 20.9 82

<b>6.1 Knowledge creation</b>	<b>6.1</b>	<b>72</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	13.1	46
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.3	61
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.9	93
<b>6.2 Knowledge impact</b>	<b>26.8</b>	<b>75</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	64.8	8
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	2.2	80
6.2.3 Computer software spending, % GDP.....	0.0	74
<b>6.3 Knowledge diffusion</b>	<b>29.8</b>	<b>54</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	2.0	72
6.3.3 Computer & comm service exports, %.....	40.2	52
6.3.4 FDI net outflows, % GDP.....	47.4	83

## 7 Creative outputs 34.1 59

<b>7.1 Creative intangibles</b>	<b>47.7</b>	<b>53</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	23.7	39
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	61.8	53
7.1.4 ICT & organizational models†.....	57.7	46
<b>7.2 Creative goods &amp; services</b>	<b>20.5</b>	<b>60</b>
7.2.1 Recreation & culture consumption, %.....	30.1	50
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	5.8	51
7.2.4 Creative goods exports, %.....	23.1	40
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	43.2
GDP per capita, PPP (current international \$)	2,209.7
GDP (US\$ billions)	54.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>20.4</b>	<b>124</b>
Innovation Output Sub-Index .....	14.7	122
Innovation Input Sub-Index.....	26.1	124
Innovation Efficiency Index.....	0.6	107
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 34.4 121

<b>1.1 Political environment</b>	<b>6.1</b>	<b>125</b>
1.1.1 Political stability*.....	1.4	124
1.1.2 Government effectiveness*.....	7.1	124
1.1.3 Press freedom*.....	9.8	123
<b>1.2 Regulatory environment</b>	<b>25.9</b>	<b>120</b>
1.2.1 Regulatory quality*.....	8.6	121
1.2.2 Rule of law*.....	5.2	123
1.2.3 Rigidity of employment*.....	64.0	82
<b>1.3 Business environment</b>	<b>71.1</b>	<b>87</b>
1.3.1 Time to start a business, days.....	66.3	102
1.3.2 Cost to start a business, % income/cap.....	73.8	99
1.3.3 Total tax rate, % profits.....	73.1	53

## 2 Human capital & research 11.9 125

<b>2.1 Education</b>	<b>25.3</b>	<b>123</b>
2.1.1 Education expenditure, % GNI.....	0.2	121
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	0.0	119
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	63.2	94
<b>2.2 Tertiary education</b>	<b>6.6</b>	<b>123</b>
2.2.1 Tertiary enrolment, % gross.....	5.6	107
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	15.0	89
2.2.6 Gross tertiary outbound enrolment, %.....	0.2	109
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>3.8</b>	<b>123</b>
2.3.1 Researchers headcount/million pop.....	2.1	70
2.3.2 Gross expenditure on R&D, % GDP.....	5.4	63
2.3.3 Quality research institutions†.....	n/a	n/a

## 3 Infrastructure 22.4 98

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>11.7</b>	<b>106</b>
3.1.1 ICT access*.....	18.9	107
3.1.2 ICT use*.....	3.6	96
3.1.3 Government's Online Service*.....	15.6	106
3.1.4 E-Participation*.....	10.0	87
<b>3.2 Energy</b>	<b>23.5</b>	<b>46</b>
3.2.1 Electricity output, kWh/cap.....	0.5	111
3.2.2 Electricity consumption, kWh/capita.....	0.2	112
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	28.1	56
3.2.4 Share of renewables in energy use, %.....	42.2	13
<b>3.3 General infrastructure</b>	<b>31.9</b>	<b>86</b>
3.3.1 Quality of trade & transport infrastructure*.....	19.5	119
3.3.2 Gross capital formation, % GDP.....	35.8	32
3.3.3 Ecological footprint & biocapacity, ha/cap.....	40.3	23

## 4 Market sophistication 21.0 124

<b>4.1 Credit</b>	<b>10.6</b>	<b>122</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	1.5	113
4.1.4 Microfinance gross loans, % GDP.....	0.1	73
<b>4.2 Investment</b>	<b>22.0</b>	<b>91</b>
4.2.1 Strength of investor protection*.....	33.0	113
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>30.3</b>	<b>124</b>
4.3.1 Applied tariff rate weighted mean, %.....	43.1	118
4.3.2 Market access trade restrictiveness*, %.....	97.0	5
4.3.3 Imports of goods & services, % GDP.....	7.6	116
4.3.4 Exports of goods & services, % GDP.....	6.7	115
4.3.5 Intensity local competition†.....	n/a	n/a

## 5 Business sophistication 40.7 50

<b>5.1 Knowledge workers</b>	<b>39.7</b>	<b>63</b>
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, %.....	39.7	44
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>n/a</b>	<b>n/a</b>
5.2.1 University/industry 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 GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>41.7</b>	<b>35</b>
5.3.1 Royalty & license fees payments, % GDP.....	1.7	106
5.3.2 High-tech imports less re-imports, %.....	18.7	63
5.3.3 Computer & comm. service imports, %.....	89.4	2
5.3.4 FDI net inflows, % GDP.....	57.0	27

## 6 Scientific outputs 24.2 63

<b>6.1 Knowledge creation</b>	<b>0.4</b>	<b>124</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.2	96
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.0	119
<b>6.2 Knowledge impact</b>	<b>46.2</b>	<b>15</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	46.2	38
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>26.1</b>	<b>64</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.3	96
6.3.3 Computer & comm service exports, %.....	30.7	70
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 5.1 125

<b>7.1 Creative intangibles</b>	<b>9.9</b>	<b>124</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	14.8	65
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.2	53
7.1.3 ICT & business models†.....	n/a	n/a
7.1.4 ICT & organizational models†.....	n/a	n/a
<b>7.2 Creative goods &amp; services</b>	<b>0.2</b>	<b>124</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	0.0	120
7.2.5 Creative services exports, %.....	0.4	89

## Swaziland

## Key indicators

Population (millions)	1.2
GDP per capita, PPP (current international \$)	4,998.4
GDP (US\$ billions)	3.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>27.5</b>	<b>101</b>
Innovation Output Sub-Index .....	18.1	117
Innovation Input Sub-Index.....	36.9	85
Innovation Efficiency Index.....	0.5	117
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 51.4 99

<b>1.1 Political environment</b>	<b>37.7</b>	<b>100</b>
1.1.1 Political stability*.....	45.3	61
1.1.2 Government effectiveness*.....	28.6	103
1.1.3 Press freedom*.....	39.2	112
<b>1.2 Regulatory environment</b>	<b>51.8</b>	<b>84</b>
1.2.1 Regulatory quality*.....	32.9	105
1.2.2 Rule of law*.....	32.5	93
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>64.6</b>	<b>105</b>
1.3.1 Time to start a business, days.....	47.1	115
1.3.2 Cost to start a business, % income/cap.....	74.3	97
1.3.3 Total tax rate, % profits.....	72.4	54

## 2 Human capital & research 33.1 78

<b>2.1 Education</b>	<b>59.7</b>	<b>53</b>
2.1.1 Education expenditure, % GNI.....	84.3	7
2.1.2 Public expenditure/pupil, % GDP/cap.....	55.7	6
2.1.3 School life expectancy, years.....	38.0	99
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	71.0	86
<b>2.2 Tertiary education</b>	<b>16.2</b>	<b>104</b>
2.2.1 Tertiary enrolment, % gross.....	4.0	110
2.2.2 Graduates in science, %.....	5.1	88
2.2.3 Graduates in engineering, %.....	7.4	89
2.2.4 Tertiary inbound mobility, %.....	6.9	51
2.2.5 Tertiary outbound mobility, %.....	71.8	3
2.2.6 Gross tertiary outbound enrolment, %.....	33.9	22
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>23.3</b>	<b>65</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	23.3	118

## 3 Infrastructure 18.5 118

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>11.8</b>	<b>105</b>
3.1.1 ICT access*.....	21.2	99
3.1.2 ICT use*.....	2.3	104
3.1.3 Government's Online Service*.....	n/a	n/a
3.1.4 E-Participation*.....	n/a	n/a
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>25.2</b>	<b>118</b>
3.3.1 Quality of trade & transport infrastructure*.....	n/a	n/a
3.3.2 Gross capital formation, % GDP.....	14.5	100
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.8	50

## 4 Market sophistication 33.8 88

<b>4.1 Credit</b>	<b>35.4</b>	<b>78</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	7.7	87
4.1.4 Microfinance gross loans, % GDP.....	18.2	29
<b>4.2 Investment</b>	<b>13.0</b>	<b>119</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	2.5	92
4.2.3 Total value of stocks traded, % GDP.....	0.0	103
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>52.9</b>	<b>55</b>
4.3.1 Applied tariff rate weighted mean, %.....	74.2	79
4.3.2 Market access trade restrictiveness*, %.....	0.7	84
4.3.3 Imports of goods & services, % GDP.....	52.2	9
4.3.4 Exports of goods & services, % GDP.....	56.1	22
4.3.5 Intensity local competition†.....	55.4	96

## 5 Business sophistication 48.0 32

<b>5.1 Knowledge workers</b>	<b>57.7</b>	<b>34</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	57.7	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
<b>5.2 Innovation linkages</b>	<b>16.9</b>	<b>117</b>
5.2.1 University/industry collaboration†.....	29.7	112
5.2.2 State of cluster development†.....	29.3	109
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>69.3</b>	<b>4</b>
5.3.1 Royalty & license fees payments, % GDP.....	100.0	3
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	62.6	19
5.3.4 FDI net inflows, % GDP.....	45.2	62

## 6 Scientific outputs 22.3 75

<b>6.1 Knowledge creation</b>	<b>1.0</b>	<b>119</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	1.9	110
<b>6.2 Knowledge impact</b>	<b>n/a</b>	<b>n/a</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	n/a	n/a
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>43.6</b>	<b>27</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.2	84
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	82.7	9
6.3.4 FDI net outflows, % GDP.....	47.9	68

## 7 Creative outputs 13.9 120

<b>7.1 Creative intangibles</b>	<b>22.7</b>	<b>120</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	30.0	122
7.1.4 ICT & organizational models†.....	26.7	121
<b>7.2 Creative goods &amp; services</b>	<b>5.2</b>	<b>102</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	7.7	48
7.2.4 Creative goods exports, %.....	n/a	n/a
7.2.5 Creative services exports, %.....	4.0	61



## Key indicators

Population (millions)	9.3
GDP per capita, PPP (current international \$)	37,904.6
GDP (US\$ billions)	406.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>62.1</b>	<b>2</b>
Innovation Output Sub-Index .....	59.4	1
Innovation Input Sub-Index.....	64.9	5
Innovation Efficiency Index.....	0.9	6
Global Innovation Index 2010.....		2
Global Innovation Index 2009.....		3

**1 Institutions 87.3 14**

<b>1.1 Political environment</b>	<b>95.6</b>	<b>4</b>
1.1.1 Political stability*.....	88.2	10
1.1.2 Government effectiveness*.....	98.6	4
1.1.3 Press freedom*.....	100.0	1
<b>1.2 Regulatory environment</b>	<b>86.1</b>	<b>14</b>
1.2.1 Regulatory quality*.....	96.7	8
1.2.2 Rule of law*.....	99.5	2
1.2.3 Rigidity of employment*.....	62.0	84
<b>1.3 Business environment</b>	<b>80.1</b>	<b>63</b>
1.3.1 Time to start a business, days.....	86.5	59
1.3.2 Cost to start a business, % income/cap.....	99.5	6
1.3.3 Total tax rate, % profits.....	54.4	105

**2 Human capital & research 63.3 5**

<b>2.1 Education</b>	<b>74.3</b>	<b>8</b>
2.1.1 Education expenditure, % GNI.....	74.0	12
2.1.2 Public expenditure/pupil, % GDP/cap.....	52.0	7
2.1.3 School life expectancy, years.....	69.1	23
2.1.4 PISA scales in reading, maths, & science.....	67.8	25
2.1.5 Pupil-teacher ratio, secondary.....	94.1	19
<b>2.2 Tertiary education</b>	<b>42.3</b>	<b>25</b>
2.2.1 Tertiary enrolment, % gross.....	72.3	15
2.2.2 Graduates in science, %.....	25.9	59
2.2.3 Graduates in engineering, %.....	53.6	17
2.2.4 Tertiary inbound mobility, %.....	21.4	24
2.2.5 Tertiary outbound mobility, %.....	25.3	60
2.2.6 Gross tertiary outbound enrolment, %.....	30.8	24
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>73.2</b>	<b>4</b>
2.3.1 Researchers headcount/million pop.....	60.5	4
2.3.2 Gross expenditure on R&D, % GDP.....	77.0	2
2.3.3 Quality research institutions†.....	82.0	5

**3 Infrastructure 51.7 5**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>67.4</b>	<b>10</b>
3.1.1 ICT access*.....	87.5	3
3.1.2 ICT use*.....	63.9	3
3.1.3 Government's Online Service*.....	52.7	24
3.1.4 E-Participation*.....	48.6	24
<b>3.2 Energy</b>	<b>40.3</b>	<b>5</b>
3.2.1 Electricity output, kWh/cap.....	74.6	8
3.2.2 Electricity consumption, kWh/capita.....	57.7	9
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	33.1	45
3.2.4 Share of renewables in energy use, %.....	21.6	29
<b>3.3 General infrastructure</b>	<b>47.3</b>	<b>15</b>
3.3.1 Quality of trade & transport infrastructure*.....	75.8	10
3.3.2 Gross capital formation, % GDP.....	13.7	102
3.3.3 Ecological footprint & biocapacity, ha/cap.....	52.5	12

**4 Market sophistication 58.9 15**

<b>4.1 Credit</b>	<b>57.6</b>	<b>27</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	56.9	14
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>58.4</b>	<b>10</b>
4.2.1 Strength of investor protection*.....	63.0	27
4.2.2 Market capitalization, % GDP.....	43.0	13
4.2.3 Total value of stocks traded, % GDP.....	53.5	10
4.2.4 Venture capital deals/tr GDP PPP\$.....	89.6	5
<b>4.3 Trade &amp; competition</b>	<b>60.8</b>	<b>24</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	24.3	55
4.3.4 Exports of goods & services, % GDP.....	43.7	36
4.3.5 Intensity local competition†.....	81.1	4

**5 Business sophistication 63.1 7**

<b>5.1 Knowledge workers</b>	<b>83.9</b>	<b>6</b>
5.1.1 Knowledge-intensive employment, %.....	86.5	6
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	87.2	6
5.1.4 R&D financed by business, %.....	75.4	11
<b>5.2 Innovation linkages</b>	<b>54.1</b>	<b>14</b>
5.2.1 University/industry collaboration†.....	75.7	5
5.2.2 State of cluster development†.....	65.3	4
5.2.3 R&D financed by abroad, %.....	32.8	29
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	32.3	25
5.2.5 PCT patent filings with foreign inventor, %.....	42.6	23
<b>5.3 Knowledge absorption</b>	<b>51.4</b>	<b>13</b>
5.3.1 Royalty & license fees payments, % GDP.....	44.6	19
5.3.2 High-tech imports less re-imports, %.....	39.0	22
5.3.3 Computer & comm. service imports, %.....	74.0	6
5.3.4 FDI net inflows, % GDP.....	48.0	51

**6 Scientific outputs 62.1 1**

<b>6.1 Knowledge creation</b>	<b>75.1</b>	<b>3</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	40.3	24
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	100.0	3
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	84.8	3
<b>6.2 Knowledge impact</b>	<b>39.3</b>	<b>29</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	30.1	98
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	31.8	24
6.2.3 Computer software spending, % GDP.....	72.5	4
<b>6.3 Knowledge diffusion</b>	<b>71.9</b>	<b>4</b>
6.3.1 Royalty & license fees receipts, % GDP.....	100.0	3
6.3.2 High-tech exports less re-exports, %.....	38.0	19
6.3.3 Computer & comm service exports, %.....	80.1	12
6.3.4 FDI net outflows, % GDP.....	69.5	7

**7 Creative outputs 56.7 2**

<b>7.1 Creative intangibles</b>	<b>59.3</b>	<b>14</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	23.2	42
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	23.9	24
7.1.3 ICT & business models†.....	88.8	1
7.1.4 ICT & organizational models†.....	83.8	1
<b>7.2 Creative goods &amp; services</b>	<b>54.1</b>	<b>4</b>
7.2.1 Recreation & culture consumption, %.....	69.2	19
7.2.2 National feature films/mn pop.....	69.8	8
7.2.3 Daily newspapers/1,000 literate pop.....	89.8	2
7.2.4 Creative goods exports, %.....	29.2	28
7.2.5 Creative services exports, %.....	45.8	13

# Switzerland

## Key indicators

Population (millions)	7.6
GDP per capita, PPP (current international \$)	45,116.9
GDP (US\$ billions)	491.9

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>63.8</b>	<b>1</b>
Innovation Output Sub-Index .....	58.2	2
Innovation Input Sub-Index.....	66.1	3
Innovation Efficiency Index.....	0.9	12
Global Innovation Index 2010.....		4
Global Innovation Index 2009.....		7

## 1 Institutions 92.6 5

<b>1.1 Political environment</b>	<b>96.8</b>	<b>2</b>
1.1.1 Political stability*.....	92.5	4
1.1.2 Government effectiveness*.....	98.1	5
1.1.3 Press freedom*.....	100.0	1
<b>1.2 Regulatory environment</b>	<b>94.5</b>	<b>7</b>
1.2.1 Regulatory quality*.....	94.8	12
1.2.2 Rule of law*.....	95.8	10
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>86.4</b>	<b>30</b>
1.3.1 Time to start a business, days.....	81.7	75
1.3.2 Cost to start a business, % income/cap.....	98.4	23
1.3.3 Total tax rate, % profits.....	79.2	30

## 2 Human capital & research 55.1 17

<b>2.1 Education</b>	<b>62.2</b>	<b>45</b>
2.1.1 Education expenditure, % GNI.....	50.7	47
2.1.2 Public expenditure/pupil, % GDP/cap.....	47.8	15
2.1.3 School life expectancy, years.....	68.3	26
2.1.4 PISA scales in reading, maths, & science.....	76.3	11
2.1.5 Pupil-teacher ratio, secondary.....	n/a	n/a
<b>2.2 Tertiary education</b>	<b>39.7</b>	<b>34</b>
2.2.1 Tertiary enrolment, % gross.....	50.1	47
2.2.2 Graduates in science, %.....	33.7	42
2.2.3 Graduates in engineering, %.....	36.7	42
2.2.4 Tertiary inbound mobility, %.....	57.7	10
2.2.5 Tertiary outbound mobility, %.....	29.8	49
2.2.6 Gross tertiary outbound enrolment, %.....	28.8	28
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>63.5</b>	<b>9</b>
2.3.1 Researchers headcount/million pop.....	44.3	12
2.3.2 Gross expenditure on R&D, % GDP.....	59.4	6
2.3.3 Quality research institutions†.....	86.7	2

## 3 Infrastructure 44.5 15

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>57.1</b>	<b>22</b>
3.1.1 ICT access*.....	85.0	6
3.1.2 ICT use*.....	54.0	9
3.1.3 Government's Online Service*.....	44.4	36
3.1.4 E-Participation*.....	20.0	56
<b>3.2 Energy</b>	<b>35.0</b>	<b>7</b>
3.2.1 Electricity output, kWh/cap.....	45.1	15
3.2.2 Electricity consumption, kWh/capita.....	34.0	17
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	52.9	12
3.2.4 Share of renewables in energy use, %.....	12.5	46
<b>3.3 General infrastructure</b>	<b>41.4</b>	<b>29</b>
3.3.1 Quality of trade & transport infrastructure*.....	79.3	6
3.3.2 Gross capital formation, % GDP.....	21.8	76
3.3.3 Ecological footprint & biocapacity, ha/cap.....	23.2	105

## 4 Market sophistication 70.1 5

<b>4.1 Credit</b>	<b>78.3</b>	<b>10</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	74.9	5
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>67.8</b>	<b>6</b>
4.2.1 Strength of investor protection*.....	30.0	119
4.2.2 Market capitalization, % GDP.....	69.9	4
4.2.3 Total value of stocks traded, % GDP.....	100.0	3
4.2.4 Venture capital deals/tr GDP PPP\$.....	74.7	16
<b>4.3 Trade &amp; competition</b>	<b>64.1</b>	<b>15</b>
4.3.1 Applied tariff rate weighted mean, %.....	100.0	1
4.3.2 Market access trade restrictiveness*, %.....	90.3	20
4.3.3 Imports of goods & services, % GDP.....	23.5	58
4.3.4 Exports of goods & services, % GDP.....	47.2	32
4.3.5 Intensity local competition†.....	72.8	33

## 5 Business sophistication 68.0 4

<b>5.1 Knowledge workers</b>	<b>88.3</b>	<b>2</b>
5.1.1 Knowledge-intensive employment, %.....	92.0	3
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	86.8	7
5.1.4 R&D financed by business, %.....	82.2	7
<b>5.2 Innovation linkages</b>	<b>61.5</b>	<b>6</b>
5.2.1 University/industry collaboration†.....	78.5	2
5.2.2 State of cluster development†.....	62.4	11
5.2.3 R&D financed by abroad, %.....	18.4	48
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	34.7	23
5.2.5 PCT patent filings with foreign inventor, %.....	78.7	10
<b>5.3 Knowledge absorption</b>	<b>54.3</b>	<b>11</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	42.7	18
5.3.3 Computer & comm. service imports, %.....	60.1	21
5.3.4 FDI net inflows, % GDP.....	60.0	23

## 6 Scientific outputs 62.0 2

<b>6.1 Knowledge creation</b>	<b>73.4</b>	<b>4</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	32.5	26
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	100.0	1
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	87.6	2
<b>6.2 Knowledge impact</b>	<b>50.8</b>	<b>12</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	38.9	69
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	38.0	16
6.2.3 Computer software spending, % GDP.....	100.0	1
<b>6.3 Knowledge diffusion</b>	<b>61.9</b>	<b>10</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	63.2	6
6.3.3 Computer & comm service exports, %.....	55.8	31
6.3.4 FDI net outflows, % GDP.....	66.6	9

## 7 Creative outputs 54.4 3

<b>7.1 Creative intangibles</b>	<b>63.5</b>	<b>9</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	25.2	33
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	100.0	1
7.1.3 ICT & business models†.....	77.6	10
7.1.4 ICT & organizational models†.....	69.4	17
<b>7.2 Creative goods &amp; services</b>	<b>45.3</b>	<b>11</b>
7.2.1 Recreation & culture consumption, %.....	61.8	28
7.2.2 National feature films/mn pop.....	70.0	7
7.2.3 Daily newspapers/1,000 literate pop.....	77.8	4
7.2.4 Creative goods exports, %.....	53.9	8
7.2.5 Creative services exports, %.....	0.0	97

## Key indicators

Population (millions)	22.5
GDP per capita, PPP (current international \$)	4,730.0
GDP (US\$ billions)	52.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>24.8</b>	<b>115</b>
Innovation Output Sub-Index .....	19.6	110
Innovation Input Sub-Index.....	30.0	111
Innovation Efficiency Index.....	0.7	82
Global Innovation Index 2010.....		132
Global Innovation Index 2009.....		94

## 1 Institutions 46.3 109

<b>1.1 Political environment</b>	<b>20.1</b>	<b>120</b>
1.1.1 Political stability*.....	22.6	94
1.1.2 Government effectiveness*.....	34.3	93
1.1.3 Press freedom*.....	3.2	124
<b>1.2 Regulatory environment</b>	<b>43.8</b>	<b>99</b>
1.2.1 Regulatory quality*.....	13.3	119
1.2.2 Rule of law*.....	38.2	83
1.2.3 Rigidity of employment*.....	80.0	45
<b>1.3 Business environment</b>	<b>75.0</b>	<b>79</b>
1.3.1 Time to start a business, days.....	88.5	48
1.3.2 Cost to start a business, % income/cap.....	70.3	101
1.3.3 Total tax rate, % profits.....	66.2	74

## 2 Human capital & research 40.2 55

<b>2.1 Education</b>	<b>55.9</b>	<b>67</b>
2.1.1 Education expenditure, % GNI.....	23.3	107
2.1.2 Public expenditure/pupil, % GDP/cap.....	29.5	59
2.1.3 School life expectancy, years.....	42.4	91
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	98.8	4
<b>2.2 Tertiary education</b>	<b>n/a</b>	<b>n/a</b>
2.2.1 Tertiary enrolment, % gross.....	n/a	n/a
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	n/a	n/a
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.5</b>	<b>58</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	24.5	115

## 3 Infrastructure 16.9 123

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>14.3</b>	<b>101</b>
3.1.1 ICT access*.....	34.6	70
3.1.2 ICT use*.....	5.6	84
3.1.3 Government's Online Service*.....	4.1	120
3.1.4 E-Participation*.....	1.4	116
<b>3.2 Energy</b>	<b>8.4</b>	<b>111</b>
3.2.1 Electricity output, kWh/cap.....	10.0	75
3.2.2 Electricity consumption, kWh/capita.....	6.1	78
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	16.5	86
3.2.4 Share of renewables in energy use, %.....	0.8	101
<b>3.3 General infrastructure</b>	<b>27.9</b>	<b>110</b>
3.3.1 Quality of trade & transport infrastructure*.....	36.3	71
3.3.2 Gross capital formation, % GDP.....	13.0	108
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.5	66

## 4 Market sophistication 25.1 119

<b>4.1 Credit</b>	<b>10.4</b>	<b>123</b>
4.1.1 Strength of legal rights for credit*.....	10.0	124
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	4.0	102
4.1.4 Microfinance gross loans, % GDP.....	0.5	63
<b>4.2 Investment</b>	<b>31.3</b>	<b>53</b>
4.2.1 Strength of investor protection*.....	47.0	86
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>33.5</b>	<b>116</b>
4.3.1 Applied tariff rate weighted mean, %.....	23.0	121
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	19.5	70
4.3.4 Exports of goods & services, % GDP.....	27.5	67
4.3.5 Intensity local competition†.....	64.2	67

## 5 Business sophistication 21.7 118

<b>5.1 Knowledge workers</b>	<b>34.5</b>	<b>79</b>
5.1.1 Knowledge-intensive employment, %.....	27.0	83
5.1.2 Firms offering formal training, % firms.....	41.9	37
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>14.8</b>	<b>120</b>
5.2.1 University/industry collaboration†.....	21.7	120
5.2.2 State of cluster development†.....	30.2	104
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>15.8</b>	<b>123</b>
5.3.1 Royalty & license fees payments, % GDP.....	7.0	83
5.3.2 High-tech imports less re-imports, %.....	0.0	108
5.3.3 Computer & comm. service imports, %.....	8.5	116
5.3.4 FDI net inflows, % GDP.....	47.6	53

## 6 Scientific outputs 20.5 84

<b>6.1 Knowledge creation</b>	<b>4.2</b>	<b>83</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	8.6	61
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.6	55
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	2.3	107
<b>6.2 Knowledge impact</b>	<b>37.9</b>	<b>32</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	37.9	72
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>19.5</b>	<b>102</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	1.6	75
6.3.3 Computer & comm service exports, %.....	9.6	114
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 18.7 116

<b>7.1 Creative intangibles</b>	<b>24.2</b>	<b>119</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	3.7	46
7.1.3 ICT & business models†.....	30.1	121
7.1.4 ICT & organizational models†.....	28.6	120
<b>7.2 Creative goods &amp; services</b>	<b>13.2</b>	<b>75</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	22.8	41
7.2.5 Creative services exports, %.....	3.7	63

## Tajikistan

## Key indicators

Population (millions)	7.1
GDP per capita, PPP (current international \$)	1,972.1
GDP (US\$ billions)	5.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>24.5</b>	<b>116</b>
Innovation Output Sub-Index .....	21.4	99
Innovation Input Sub-Index.....	27.6	120
Innovation Efficiency Index.....	0.8	38
Global Innovation Index 2010.....		115
Global Innovation Index 2009.....		112

## 1 Institutions 37.3 118

<b>1.1 Political environment</b>	<b>30.6</b>	<b>114</b>
1.1.1 Political stability*.....	16.0	104
1.1.2 Government effectiveness*.....	12.4	120
1.1.3 Press freedom*.....	63.5	81
<b>1.2 Regulatory environment</b>	<b>25.1</b>	<b>122</b>
1.2.1 Regulatory quality*.....	12.9	120
1.2.2 Rule of law*.....	11.3	117
1.2.3 Rigidity of employment*.....	51.0	108
<b>1.3 Business environment</b>	<b>56.3</b>	<b>114</b>
1.3.1 Time to start a business, days.....	75.0	85
1.3.2 Cost to start a business, % income/cap.....	71.2	100
1.3.3 Total tax rate, % profits.....	22.5	124

## 2 Human capital & research 29.4 98

<b>2.1 Education</b>	<b>47.6</b>	<b>95</b>
2.1.1 Education expenditure, % GNI.....	31.3	89
2.1.2 Public expenditure/pupil, % GDP/cap.....	13.9	90
2.1.3 School life expectancy, years.....	43.0	89
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	77.2	73
<b>2.2 Tertiary education</b>	<b>28.6</b>	<b>70</b>
2.2.1 Tertiary enrolment, % gross.....	19.7	80
2.2.2 Graduates in science, %.....	64.5	5
2.2.3 Graduates in engineering, %.....	24.9	60
2.2.4 Tertiary inbound mobility, %.....	6.5	54
2.2.5 Tertiary outbound mobility, %.....	24.7	61
2.2.6 Gross tertiary outbound enrolment, %.....	7.9	71
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>12.0</b>	<b>111</b>
2.3.1 Researchers headcount/million pop.....	1.4	75
2.3.2 Gross expenditure on R&D, % GDP.....	0.8	89
2.3.3 Quality research institutions†.....	33.8	93

## 3 Infrastructure 19.3 116

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>9.4</b>	<b>113</b>
3.1.1 ICT access*.....	19.0	105
3.1.2 ICT use*.....	3.2	99
3.1.3 Government's Online Service*.....	8.9	117
3.1.4 E-Participation*.....	2.9	113
<b>3.2 Energy</b>	<b>19.3</b>	<b>69</b>
3.2.1 Electricity output, kWh/cap.....	12.2	67
3.2.2 Electricity consumption, kWh/capita.....	8.6	68
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	14.1	88
3.2.4 Share of renewables in energy use, %.....	33.5	19
<b>3.3 General infrastructure</b>	<b>29.2</b>	<b>102</b>
3.3.1 Quality of trade & transport infrastructure*.....	25.0	110
3.3.2 Gross capital formation, % GDP.....	26.8	60
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.0	46

## 4 Market sophistication 32.3 95

<b>4.1 Credit</b>	<b>15.8</b>	<b>115</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	10.2	75
4.1.4 Microfinance gross loans, % GDP.....	28.7	19
<b>4.2 Investment</b>	<b>38.0</b>	<b>35</b>
4.2.1 Strength of investor protection*.....	57.0	44
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>43.1</b>	<b>95</b>
4.3.1 Applied tariff rate weighted mean, %.....	81.4	65
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	36.0	34
4.3.4 Exports of goods & services, % GDP.....	4.9	117
4.3.5 Intensity local competition†.....	50.2	112

## 5 Business sophistication 19.9 122

<b>5.1 Knowledge workers</b>	<b>14.4</b>	<b>121</b>
5.1.1 Knowledge-intensive employment, %.....	n/a	n/a
5.1.2 Firms offering formal training, % firms.....	20.5	76
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	2.3	70
<b>5.2 Innovation linkages</b>	<b>15.6</b>	<b>119</b>
5.2.1 University/industry collaboration†.....	34.6	98
5.2.2 State of cluster development†.....	27.4	113
5.2.3 R&D financed by abroad, %.....	0.7	72
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>29.6</b>	<b>79</b>
5.3.1 Royalty & license fees payments, % GDP.....	1.9	104
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	49.8	38
5.3.4 FDI net inflows, % GDP.....	37.1	114

## 6 Scientific outputs 27.7 47

<b>6.1 Knowledge creation</b>	<b>13.8</b>	<b>53</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	4.9	67
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	76.5	6
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.0	88
<b>6.2 Knowledge impact</b>	<b>34.2</b>	<b>51</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	64.8	9
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	3.7	76
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>35.1</b>	<b>43</b>
6.3.1 Royalty & license fees receipts, % GDP.....	1.7	65
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	56.5	29
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 15.0 119

<b>7.1 Creative intangibles</b>	<b>27.0</b>	<b>116</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	9.9	84
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	45.8	109
7.1.4 ICT & organizational models†.....	38.9	110
<b>7.2 Creative goods &amp; services</b>	<b>3.0</b>	<b>110</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	n/a	n/a
7.2.5 Creative services exports, %.....	3.0	67

## Key indicators

Population (millions)	45.0
GDP per capita, PPP (current international \$)	1,355.7
GDP (US\$ billions)	21.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>26.9</b>	<b>104</b>
Innovation Output Sub-Index .....	23.3	90
Innovation Input Sub-Index.....	30.5	108
Innovation Efficiency Index.....	0.8	45
Global Innovation Index 2010.....		98
Global Innovation Index 2009.....		86

## 1 Institutions 56.7 82

<b>1.1 Political environment</b>	<b>57.6</b>	<b>59</b>
1.1.1 Political stability*.....	47.6	58
1.1.2 Government effectiveness*.....	39.0	88
1.1.3 Press freedom*.....	86.3	38
<b>1.2 Regulatory environment</b>	<b>41.4</b>	<b>105</b>
1.2.1 Regulatory quality*.....	38.1	96
1.2.2 Rule of law*.....	40.1	80
1.2.3 Rigidity of employment*.....	46.0	114
<b>1.3 Business environment</b>	<b>71.0</b>	<b>89</b>
1.3.1 Time to start a business, days.....	73.1	89
1.3.2 Cost to start a business, % income/cap.....	75.9	95
1.3.3 Total tax rate, % profits.....	63.9	82

## 2 Human capital & research 29.4 97

<b>2.1 Education</b>	<b>28.2</b>	<b>122</b>
2.1.1 Education expenditure, % GNI.....	20.6	111
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	29.0	107
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	31.3	117
<b>2.2 Tertiary education</b>	<b>21.7</b>	<b>93</b>
2.2.1 Tertiary enrolment, % gross.....	1.0	118
2.2.2 Graduates in science, %.....	7.9	86
2.2.3 Graduates in engineering, %.....	58.4	12
2.2.4 Tertiary inbound mobility, %.....	0.5	80
2.2.5 Tertiary outbound mobility, %.....	38.3	33
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>38.3</b>	<b>37</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	38.3	80

## 3 Infrastructure 17.8 120

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>8.9</b>	<b>116</b>
3.1.1 ICT access*.....	15.4	116
3.1.2 ICT use*.....	0.6	118
3.1.3 Government's Online Service*.....	17.5	103
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>19.4</b>	<b>68</b>
3.2.1 Electricity output, kWh/cap.....	0.5	112
3.2.2 Electricity consumption, kWh/capita.....	0.2	113
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	3.0	112
3.2.4 Share of renewables in energy use, %.....	54.8	4
<b>3.3 General infrastructure</b>	<b>25.2</b>	<b>117</b>
3.3.1 Quality of trade & transport infrastructure*.....	25.0	110
3.3.2 Gross capital formation, % GDP.....	13.7	103
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.1	38

## 4 Market sophistication 26.9 115

<b>4.1 Credit</b>	<b>24.8</b>	<b>102</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	4.1	101
4.1.4 Microfinance gross loans, % GDP.....	35.5	14
<b>4.2 Investment</b>	<b>23.2</b>	<b>83</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	2.3	94
4.2.3 Total value of stocks traded, % GDP.....	0.0	94
4.2.4 Venture capital deals/tr GDP PPP\$.....	57.6	35
<b>4.3 Trade &amp; competition</b>	<b>32.8</b>	<b>118</b>
4.3.1 Applied tariff rate weighted mean, %.....	49.3	114
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	12.9	95
4.3.4 Exports of goods & services, % GDP.....	14.0	104
4.3.5 Intensity local competition†.....	55.0	98

## 5 Business sophistication 21.4 120

<b>5.1 Knowledge workers</b>	<b>20.0</b>	<b>112</b>
5.1.1 Knowledge-intensive employment, %.....	0.4	100
5.1.2 Firms offering formal training, % firms.....	39.7	42
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>24.9</b>	<b>94</b>
5.2.1 University/industry collaboration†.....	40.5	70
5.2.2 State of cluster development†.....	41.0	66
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	11.1	49
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>19.4</b>	<b>118</b>
5.3.1 Royalty & license fees payments, % GDP.....	1.8	105
5.3.2 High-tech imports less re-imports, %.....	13.2	87
5.3.3 Computer & comm. service imports, %.....	18.4	103
5.3.4 FDI net inflows, % GDP.....	44.1	70

## 6 Scientific outputs 25.5 55

<b>6.1 Knowledge creation</b>	<b>3.5</b>	<b>88</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.9	73
<b>6.2 Knowledge impact</b>	<b>55.8</b>	<b>6</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	55.8	16
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>17.3</b>	<b>114</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	96
6.3.2 High-tech exports less re-exports, %.....	1.9	73
6.3.3 Computer & comm service exports, %.....	20.1	92
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 21.1 111

<b>7.1 Creative intangibles</b>	<b>29.3</b>	<b>115</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	0.5	99
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	45.4	111
7.1.4 ICT & organizational models†.....	42.0	103
<b>7.2 Creative goods &amp; services</b>	<b>12.8</b>	<b>78</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	0.4	60
7.2.4 Creative goods exports, %.....	27.3	34
7.2.5 Creative services exports, %.....	4.6	58

## Thailand

## Key indicators

Population (millions)	68.1
GDP per capita, PPP (current international \$)	7,995.1
GDP (US\$ billions)	263.8

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>37.6</b>	<b>48</b>
Innovation Output Sub-Index .....	31.9	46
Innovation Input Sub-Index.....	43.3	48
Innovation Efficiency Index.....	0.7	56
Global Innovation Index 2010.....		60
Global Innovation Index 2009.....		44

## 1 Institutions 61.5 71

<b>1.1 Political environment</b>	<b>38.0</b>	<b>97</b>
1.1.1 Political stability*.....	14.6	106
1.1.2 Government effectiveness*.....	59.5	59
1.1.3 Press freedom*.....	39.9	111
<b>1.2 Regulatory environment</b>	<b>67.3</b>	<b>52</b>
1.2.1 Regulatory quality*.....	61.9	56
1.2.2 Rule of law*.....	50.9	63
1.2.3 Rigidity of employment*.....	89.0	25
<b>1.3 Business environment</b>	<b>79.2</b>	<b>65</b>
1.3.1 Time to start a business, days.....	70.2	95
1.3.2 Cost to start a business, % income/cap.....	95.6	47
1.3.3 Total tax rate, % profits.....	71.8	57

## 2 Human capital & research 31.0 87

<b>2.1 Education</b>	<b>48.2</b>	<b>94</b>
2.1.1 Education expenditure, % GNI.....	43.0	61
2.1.2 Public expenditure/pupil, % GDP/cap.....	28.8	62
2.1.3 School life expectancy, years.....	47.9	74
2.1.4 PISA scales in reading, maths, & science.....	38.4	46
2.1.5 Pupil-teacher ratio, secondary.....	65.7	91
<b>2.2 Tertiary education</b>	<b>26.2</b>	<b>77</b>
2.2.1 Tertiary enrolment, % gross.....	45.6	49
2.2.2 Graduates in science, %.....	38.1	32
2.2.3 Graduates in engineering, %.....	26.1	59
2.2.4 Tertiary inbound mobility, %.....	1.1	74
2.2.5 Tertiary outbound mobility, %.....	9.8	107
2.2.6 Gross tertiary outbound enrolment, %.....	5.2	78
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>18.5</b>	<b>83</b>
2.3.1 Researchers headcount/million pop.....	3.8	63
2.3.2 Gross expenditure on R&D, % GDP.....	4.6	65
2.3.3 Quality research institutions†.....	47.1	55

## 3 Infrastructure 25.0 78

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>21.3</b>	<b>82</b>
3.1.1 ICT access*.....	34.1	73
3.1.2 ICT use*.....	8.9	78
3.1.3 Government's Online Service*.....	33.3	62
3.1.4 E-Participation*.....	8.6	92
<b>3.2 Energy</b>	<b>15.6</b>	<b>86</b>
3.2.1 Electricity output, kWh/cap.....	11.3	72
3.2.2 Electricity consumption, kWh/capita.....	8.6	67
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	25.2	66
3.2.4 Share of renewables in energy use, %.....	11.8	48
<b>3.3 General infrastructure</b>	<b>38.1</b>	<b>51</b>
3.3.1 Quality of trade & transport infrastructure*.....	54.0	35
3.3.2 Gross capital formation, % GDP.....	27.2	59
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.0	77

## 4 Market sophistication 49.0 33

<b>4.1 Credit</b>	<b>44.7</b>	<b>48</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	50.1	17
4.1.4 Microfinance gross loans, % GDP.....	0.0	78
<b>4.2 Investment</b>	<b>38.6</b>	<b>33</b>
4.2.1 Strength of investor protection*.....	77.0	12
4.2.2 Market capitalization, % GDP.....	21.0	39
4.2.3 Total value of stocks traded, % GDP.....	28.5	23
4.2.4 Venture capital deals/tr GDP PPP\$.....	17.4	67
<b>4.3 Trade &amp; competition</b>	<b>63.6</b>	<b>17</b>
4.3.1 Applied tariff rate weighted mean, %.....	77.3	74
4.3.2 Market access trade restrictiveness*, %.....	67.7	56
4.3.3 Imports of goods & services, % GDP.....	37.3	32
4.3.4 Exports of goods & services, % GDP.....	65.6	16
4.3.5 Intensity local competition†.....	72.0	34

## 5 Business sophistication 50.2 25

<b>5.1 Knowledge workers</b>	<b>52.7</b>	<b>39</b>
5.1.1 Knowledge-intensive employment, %.....	17.3	92
5.1.2 Firms offering formal training, % firms.....	88.2	2
5.1.3 R&D performed by business, %.....	48.2	42
5.1.4 R&D financed by business, %.....	57.3	24
<b>5.2 Innovation linkages</b>	<b>41.8</b>	<b>33</b>
5.2.1 University/industry collaboration†.....	51.1	39
5.2.2 State of cluster development†.....	53.3	27
5.2.3 R&D financed by abroad, %.....	6.5	62
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	15.4	41
5.2.5 PCT patent filings with foreign inventor, %.....	51.7	17
<b>5.3 Knowledge absorption</b>	<b>56.1</b>	<b>10</b>
5.3.1 Royalty & license fees payments, % GDP.....	82.7	7
5.3.2 High-tech imports less re-imports, %.....	48.3	11
5.3.3 Computer & comm. service imports, %.....	49.5	39
5.3.4 FDI net inflows, % GDP.....	43.9	71

## 6 Scientific outputs 23.9 64

<b>6.1 Knowledge creation</b>	<b>8.6</b>	<b>64</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	8.8	60
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.7	53
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	20.6	14
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	9.3	64
<b>6.2 Knowledge impact</b>	<b>27.0</b>	<b>73</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	39.3	68
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.6	71
6.2.3 Computer software spending, % GDP.....	47.1	15
<b>6.3 Knowledge diffusion</b>	<b>36.2</b>	<b>40</b>
6.3.1 Royalty & license fees receipts, % GDP.....	7.4	44
6.3.2 High-tech exports less re-exports, %.....	51.0	11
6.3.3 Computer & comm service exports, %.....	34.9	63
6.3.4 FDI net outflows, % GDP.....	51.7	31

## 7 Creative outputs 39.9 39

<b>7.1 Creative intangibles</b>	<b>50.7</b>	<b>41</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	30.5	27
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	63.3	47
7.1.4 ICT & organizational models†.....	58.4	45
<b>7.2 Creative goods &amp; services</b>	<b>29.1</b>	<b>41</b>
7.2.1 Recreation & culture consumption, %.....	44.7	42
7.2.2 National feature films/mn pop.....	7.7	51
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	32.0	23
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)		1.3
GDP per capita, PPP (current international \$)		25,571.7
GDP (US\$ billions)		21.2

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>32.2</b>	<b>72</b>
Innovation Output Sub-Index .....	23.5	87
Innovation Input Sub-Index.....	40.9	58
Innovation Efficiency Index.....	0.6	103
Global Innovation Index 2010.....		55
Global Innovation Index 2009.....		65

**1 Institutions 71.9 47**

<b>1.1 Political environment</b>	<b>66.7</b>	<b>47</b>
1.1.1 Political stability*.....	44.8	62
1.1.2 Government effectiveness*.....	64.3	51
1.1.3 Press freedom*.....	91.0	28
<b>1.2 Regulatory environment</b>	<b>70.5</b>	<b>45</b>
1.2.1 Regulatory quality*.....	69.5	46
1.2.2 Rule of law*.....	49.1	67
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>78.4</b>	<b>67</b>
1.3.1 Time to start a business, days.....	59.6	109
1.3.2 Cost to start a business, % income/cap.....	99.4	10
1.3.3 Total tax rate, % profits.....	76.2	42

**2 Human capital & research 36.7 66**

<b>2.1 Education</b>	<b>53.5</b>	<b>75</b>
2.1.1 Education expenditure, % GNI.....	42.0	65
2.1.2 Public expenditure/pupil, % GDP/cap.....	30.1	56
2.1.3 School life expectancy, years.....	48.9	71
2.1.4 PISA scales in reading, maths, & science.....	35.2	48
2.1.5 Pupil-teacher ratio, secondary.....	84.6	55
<b>2.2 Tertiary education</b>	<b>40.9</b>	<b>29</b>
2.2.1 Tertiary enrolment, % gross.....	11.4	90
2.2.2 Graduates in science, %.....	44.9	20
2.2.3 Graduates in engineering, %.....	62.6	11
2.2.4 Tertiary inbound mobility, %.....	22.3	23
2.2.5 Tertiary outbound mobility, %.....	62.0	7
2.2.6 Gross tertiary outbound enrolment, %.....	46.0	14
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>15.6</b>	<b>97</b>
2.3.1 Researchers headcount/million pop.....	3.5	65
2.3.2 Gross expenditure on R&D, % GDP.....	0.7	91
2.3.3 Quality research institutions†.....	42.6	65

**3 Infrastructure 18.1 119**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>28.5</b>	<b>58</b>
3.1.1 ICT access*.....	49.3	49
3.1.2 ICT use*.....	12.8	59
3.1.3 Government's Online Service*.....	34.0	61
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>9.1</b>	<b>110</b>
3.2.1 Electricity output, kWh/cap.....	30.5	36
3.2.2 Electricity consumption, kWh/capita.....	24.2	35
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	0.0	115
3.2.4 Share of renewables in energy use, %.....	0.0	107
<b>3.3 General infrastructure</b>	<b>16.8</b>	<b>124</b>
3.3.1 Quality of trade & transport infrastructure*.....	n/a	n/a
3.3.2 Gross capital formation, % GDP.....	1.7	123
3.3.3 Ecological footprint & biocapacity, ha/cap.....	31.8	83

**4 Market sophistication 42.4 55**

<b>4.1 Credit</b>	<b>33.1</b>	<b>86</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	9.3	81
4.1.4 Microfinance gross loans, % GDP.....	0.2	65
<b>4.2 Investment</b>	<b>33.2</b>	<b>49</b>
4.2.1 Strength of investor protection*.....	67.0	19
4.2.2 Market capitalization, % GDP.....	21.2	37
4.2.3 Total value of stocks traded, % GDP.....	0.6	74
4.2.4 Venture capital deals/tr GDP PPP\$.....	55.0	39
<b>4.3 Trade &amp; competition</b>	<b>60.8</b>	<b>25</b>
4.3.1 Applied tariff rate weighted mean, %.....	79.3	72
4.3.2 Market access trade restrictiveness*, %.....	73.5	46
4.3.3 Imports of goods & services, % GDP.....	22.5	62
4.3.4 Exports of goods & services, % GDP.....	65.6	15
4.3.5 Intensity local competition†.....	69.3	44

**5 Business sophistication 35.3 68**

<b>5.1 Knowledge workers</b>	<b>37.8</b>	<b>70</b>
5.1.1 Knowledge-intensive employment, %.....	41.9	56
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	29.6	54
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>36.4</b>	<b>43</b>
5.2.1 University/industry collaboration†.....	41.7	61
5.2.2 State of cluster development†.....	35.6	83
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	50.0	18
<b>5.3 Knowledge absorption</b>	<b>31.6</b>	<b>74</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	16.2	74
5.3.3 Computer & comm. service imports, %.....	28.3	85
5.3.4 FDI net inflows, % GDP.....	50.2	45

**6 Scientific outputs 22.7 70**

<b>6.1 Knowledge creation</b>	<b>1.9</b>	<b>110</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	0.5	93
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.4	79
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	0.2	54
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	5.5	83
<b>6.2 Knowledge impact</b>	<b>44.2</b>	<b>18</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	44.2	47
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>22.0</b>	<b>87</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.1	102
6.3.3 Computer & comm service exports, %.....	10.9	110
6.3.4 FDI net outflows, % GDP.....	54.9	21

**7 Creative outputs 24.3 99**

<b>7.1 Creative intangibles</b>	<b>38.1</b>	<b>93</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	10.2	82
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	53.7	82
7.1.4 ICT & organizational models†.....	50.4	67
<b>7.2 Creative goods &amp; services</b>	<b>10.4</b>	<b>85</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	29.4	19
7.2.4 Creative goods exports, %.....	1.0	106
7.2.5 Creative services exports, %.....	n/a	n/a

## Tunisia

## Key indicators

Population (millions)	10.4
GDP per capita, PPP (current international \$)	8,272.5
GDP (US\$ billions)	39.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>33.9</b>	<b>66</b>
Innovation Output Sub-Index .....	29.6	58
Innovation Input Sub-Index.....	38.2	79
Innovation Efficiency Index.....	0.8	36
Global Innovation Index 2010.....		62
Global Innovation Index 2009.....		46

## 1 Institutions 61.1 73

<b>1.1 Political environment</b>	<b>47.3</b>	<b>79</b>
1.1.1 Political stability*.....	53.3	52
1.1.2 Government effectiveness*.....	65.2	50
1.1.3 Press freedom*.....	23.3	118
<b>1.2 Regulatory environment</b>	<b>58.4</b>	<b>68</b>
1.2.1 Regulatory quality*.....	54.3	70
1.2.2 Rule of law*.....	60.8	51
1.2.3 Rigidity of employment*.....	60.0	93
<b>1.3 Business environment</b>	<b>77.5</b>	<b>71</b>
1.3.1 Time to start a business, days.....	90.4	42
1.3.2 Cost to start a business, % income/cap.....	96.1	41
1.3.3 Total tax rate, % profits.....	46.0	112

## 2 Human capital & research 39.8 57

<b>2.1 Education</b>	<b>62.4</b>	<b>44</b>
2.1.1 Education expenditure, % GNI.....	77.4	9
2.1.2 Public expenditure/pupil, % GDP/cap.....	47.2	18
2.1.3 School life expectancy, years.....	62.3	39
2.1.4 PISA scales in reading, maths, & science.....	26.6	54
2.1.5 Pupil-teacher ratio, secondary.....	80.5	66
<b>2.2 Tertiary education</b>	<b>24.6</b>	<b>82</b>
2.2.1 Tertiary enrolment, % gross.....	34.0	64
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	0.8	76
2.2.5 Tertiary outbound mobility, %.....	32.0	45
2.2.6 Gross tertiary outbound enrolment, %.....	22.4	39
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>32.4</b>	<b>41</b>
2.3.1 Researchers headcount/million pop.....	20.9	31
2.3.2 Gross expenditure on R&D, % GDP.....	20.6	32
2.3.3 Quality research institutions†.....	55.7	35

## 3 Infrastructure 29.0 58

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>27.2</b>	<b>61</b>
3.1.1 ICT access*.....	32.1	83
3.1.2 ICT use*.....	10.4	69
3.1.3 Government's Online Service*.....	48.3	29
3.1.4 E-Participation*.....	30.0	38
<b>3.2 Energy</b>	<b>22.0</b>	<b>58</b>
3.2.1 Electricity output, kWh/cap.....	7.6	80
3.2.2 Electricity consumption, kWh/capita.....	5.3	82
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	51.3	14
3.2.4 Share of renewables in energy use, %.....	8.4	54
<b>3.3 General infrastructure</b>	<b>37.7</b>	<b>53</b>
3.3.1 Quality of trade & transport infrastructure*.....	39.0	63
3.3.2 Gross capital formation, % GDP.....	40.0	27
3.3.3 Ecological footprint & biocapacity, ha/cap.....	34.2	67

## 4 Market sophistication 34.3 85

<b>4.1 Credit</b>	<b>34.5</b>	<b>81</b>
4.1.1 Strength of legal rights for credit*.....	30.0	97
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	28.9	35
4.1.4 Microfinance gross loans, % GDP.....	1.4	56
<b>4.2 Investment</b>	<b>24.1</b>	<b>81</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	9.1	65
4.2.3 Total value of stocks traded, % GDP.....	1.8	60
4.2.4 Venture capital deals/tr GDP PPP\$.....	41.2	53
<b>4.3 Trade &amp; competition</b>	<b>44.2</b>	<b>93</b>
4.3.1 Applied tariff rate weighted mean, %.....	9.2	124
4.3.2 Market access trade restrictiveness*, %.....	67.4	57
4.3.3 Imports of goods & services, % GDP.....	35.2	36
4.3.4 Exports of goods & services, % GDP.....	47.5	31
4.3.5 Intensity local competition†.....	73.2	31

## 5 Business sophistication 26.9 98

<b>5.1 Knowledge workers</b>	<b>16.7</b>	<b>119</b>
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, %.....	17.0	68
5.1.4 R&D financed by business, %.....	16.3	64
<b>5.2 Innovation linkages</b>	<b>36.6</b>	<b>42</b>
5.2.1 University/industry collaboration†.....	51.3	38
5.2.2 State of cluster development†.....	43.3	56
5.2.3 R&D financed by abroad, %.....	36.6	24
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	33.3	28
<b>5.3 Knowledge absorption</b>	<b>27.4</b>	<b>90</b>
5.3.1 Royalty & license fees payments, % GDP.....	5.0	90
5.3.2 High-tech imports less re-imports, %.....	22.6	54
5.3.3 Computer & comm. service imports, %.....	28.9	83
5.3.4 FDI net inflows, % GDP.....	53.2	36

## 6 Scientific outputs 19.5 86

<b>6.1 Knowledge creation</b>	<b>11.3</b>	<b>59</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	4.5	69
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.4	59
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	28.2	36
<b>6.2 Knowledge impact</b>	<b>23.7</b>	<b>89</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	42.3	55
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	9.6	52
6.2.3 Computer software spending, % GDP.....	14.7	42
<b>6.3 Knowledge diffusion</b>	<b>23.5</b>	<b>78</b>
6.3.1 Royalty & license fees receipts, % GDP.....	8.5	43
6.3.2 High-tech exports less re-exports, %.....	13.8	40
6.3.3 Computer & comm service exports, %.....	23.8	87
6.3.4 FDI net outflows, % GDP.....	47.8	72

## 7 Creative outputs 39.6 41

<b>7.1 Creative intangibles</b>	<b>71.7</b>	<b>2</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	74.8	14
7.1.4 ICT & organizational models†.....	68.6	20
<b>7.2 Creative goods &amp; services</b>	<b>7.6</b>	<b>93</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	6.6	50
7.2.4 Creative goods exports, %.....	14.8	58
7.2.5 Creative services exports, %.....	0.9	86



## Key indicators

Population (millions)	75.7
GDP per capita, PPP (current international \$)	13,885.0
GDP (US\$ billions)	614.6

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>34.1</b>	<b>65</b>
Innovation Output Sub-Index .....	30.3	53
Innovation Input Sub-Index.....	38.0	80
Innovation Efficiency Index.....	0.8	28
Global Innovation Index 2010.....		67
Global Innovation Index 2009.....		51

**1 Institutions 62.1 69**

<b>1.1 Political environment</b>	<b>43.5</b>	<b>83</b>
1.1.1 Political stability*.....	18.9	100
1.1.2 Government effectiveness*.....	63.8	52
1.1.3 Press freedom*.....	47.9	100
<b>1.2 Regulatory environment</b>	<b>60.5</b>	<b>63</b>
1.2.1 Regulatory quality*.....	58.6	63
1.2.2 Rule of law*.....	58.0	54
1.2.3 Rigidity of employment*.....	65.0	79
<b>1.3 Business environment</b>	<b>82.1</b>	<b>55</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	86.6	82
1.3.3 Total tax rate, % profits.....	64.6	78

**2 Human capital & research 32.9 80**

<b>2.1 Education</b>	<b>49.9</b>	<b>90</b>
2.1.1 Education expenditure, % GNI.....	37.6	74
2.1.2 Public expenditure/pupil, % GDP/cap.....	18.6	82
2.1.3 School life expectancy, years.....	45.8	83
2.1.4 PISA scales in reading, maths, & science.....	51.4	40
2.1.5 Pupil-teacher ratio, secondary.....	74.9	78
<b>2.2 Tertiary education</b>	<b>27.9</b>	<b>75</b>
2.2.1 Tertiary enrolment, % gross.....	38.8	55
2.2.2 Graduates in science, %.....	31.4	47
2.2.3 Graduates in engineering, %.....	43.3	33
2.2.4 Tertiary inbound mobility, %.....	1.2	73
2.2.5 Tertiary outbound mobility, %.....	15.4	87
2.2.6 Gross tertiary outbound enrolment, %.....	7.6	72
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>20.9</b>	<b>74</b>
2.3.1 Researchers headcount/million pop.....	10.5	43
2.3.2 Gross expenditure on R&D, % GDP.....	14.4	40
2.3.3 Quality research institutions†.....	37.7	82

**3 Infrastructure 27.5 64**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>30.1</b>	<b>55</b>
3.1.1 ICT access*.....	46.6	52
3.1.2 ICT use*.....	15.8	51
3.1.3 Government's Online Service*.....	34.6	58
3.1.4 E-Participation*.....	21.4	53
<b>3.2 Energy</b>	<b>21.1</b>	<b>61</b>
3.2.1 Electricity output, kWh/cap.....	13.9	62
3.2.2 Electricity consumption, kWh/capita.....	9.5	64
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	45.2	22
3.2.4 Share of renewables in energy use, %.....	6.5	60
<b>3.3 General infrastructure</b>	<b>31.3</b>	<b>91</b>
3.3.1 Quality of trade & transport infrastructure*.....	52.0	37
3.3.2 Gross capital formation, % GDP.....	9.5	111
3.3.3 Ecological footprint & biocapacity, ha/cap.....	32.4	81

**4 Market sophistication 38.0 72**

<b>4.1 Credit</b>	<b>29.5</b>	<b>95</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	12.0	72
4.1.4 Microfinance gross loans, % GDP.....	0.0	76
<b>4.2 Investment</b>	<b>32.5</b>	<b>50</b>
4.2.1 Strength of investor protection*.....	57.0	44
4.2.2 Market capitalization, % GDP.....	14.6	51
4.2.3 Total value of stocks traded, % GDP.....	22.0	28
4.2.4 Venture capital deals/tr GDP PPP\$.....	40.2	54
<b>4.3 Trade &amp; competition</b>	<b>52.0</b>	<b>60</b>
4.3.1 Applied tariff rate weighted mean, %.....	91.2	40
4.3.2 Market access trade restrictiveness*, %.....	77.9	35
4.3.3 Imports of goods & services, % GDP.....	10.5	109
4.3.4 Exports of goods & services, % GDP.....	15.7	100
4.3.5 Intensity local competition†.....	77.7	13

**5 Business sophistication 29.4 90**

<b>5.1 Knowledge workers</b>	<b>41.1</b>	<b>61</b>
5.1.1 Knowledge-intensive employment, %.....	40.6	59
5.1.2 Firms offering formal training, % firms.....	30.0	58
5.1.3 R&D performed by business, %.....	48.6	41
5.1.4 R&D financed by business, %.....	57.0	25
<b>5.2 Innovation linkages</b>	<b>21.8</b>	<b>106</b>
5.2.1 University/industry collaboration†.....	39.5	75
5.2.2 State of cluster development†.....	41.0	65
5.2.3 R&D financed by abroad, %.....	1.8	69
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	4.9	65
5.2.5 PCT patent filings with foreign inventor, %.....	3.5	72
<b>5.3 Knowledge absorption</b>	<b>25.1</b>	<b>103</b>
5.3.1 Royalty & license fees payments, % GDP.....	11.7	65
5.3.2 High-tech imports less re-imports, %.....	23.6	51
5.3.3 Computer & comm. service imports, %.....	23.4	96
5.3.4 FDI net inflows, % GDP.....	41.6	87

**6 Scientific outputs 18.9 90**

<b>6.1 Knowledge creation</b>	<b>17.9</b>	<b>45</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	16.8	42
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	6.7	36
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	24.7	12
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	26.7	37
<b>6.2 Knowledge impact</b>	<b>17.7</b>	<b>106</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	31.9	95
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	6.7	60
6.2.3 Computer software spending, % GDP.....	11.1	48
<b>6.3 Knowledge diffusion</b>	<b>21.0</b>	<b>92</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	4.1	63
6.3.3 Computer & comm service exports, %.....	11.0	109
6.3.4 FDI net outflows, % GDP.....	48.0	67

**7 Creative outputs 41.6 29**

<b>7.1 Creative intangibles</b>	<b>50.7</b>	<b>42</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	43.4	17
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	36.2	17
7.1.3 ICT & business models†.....	63.0	48
7.1.4 ICT & organizational models†.....	53.1	54
<b>7.2 Creative goods &amp; services</b>	<b>32.5</b>	<b>29</b>
7.2.1 Recreation & culture consumption, %.....	33.9	46
7.2.2 National feature films/mn pop.....	5.7	57
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	44.3	11
7.2.5 Creative services exports, %.....	33.5	21

## Uganda

## Key indicators

Population (millions)	33.8
GDP per capita, PPP (current international \$)	1,217.2
GDP (US\$ billions)	16.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>26.4</b>	<b>106</b>
Innovation Output Sub-Index .....	22.9	91
Innovation Input Sub-Index.....	29.9	112
Innovation Efficiency Index.....	0.8	42
Global Innovation Index 2010.....		108
Global Innovation Index 2009.....		100

## 1 Institutions 54.0 88

<b>1.1 Political environment</b>	<b>40.6</b>	<b>89</b>
1.1.1 Political stability*.....	15.1	105
1.1.2 Government effectiveness*.....	33.8	94
1.1.3 Press freedom*.....	73.0	74
<b>1.2 Regulatory environment</b>	<b>62.4</b>	<b>58</b>
1.2.1 Regulatory quality*.....	46.7	82
1.2.2 Rule of law*.....	40.6	79
1.2.3 Rigidity of employment*.....	100.0	1
<b>1.3 Business environment</b>	<b>59.0</b>	<b>110</b>
1.3.1 Time to start a business, days.....	76.9	83
1.3.2 Cost to start a business, % income/cap.....	26.4	117
1.3.3 Total tax rate, % profits.....	73.5	52

## 2 Human capital & research 22.6 117

<b>2.1 Education</b>	<b>43.9</b>	<b>105</b>
2.1.1 Education expenditure, % GNI.....	28.2	98
2.1.2 Public expenditure/pupil, % GDP/cap.....	9.8	96
2.1.3 School life expectancy, years.....	39.4	96
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	73.3	81
<b>2.2 Tertiary education</b>	<b>10.2</b>	<b>117</b>
2.2.1 Tertiary enrolment, % gross.....	3.7	111
2.2.2 Graduates in science, %.....	8.5	84
2.2.3 Graduates in engineering, %.....	17.6	75
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	21.3	69
2.2.6 Gross tertiary outbound enrolment, %.....	0.5	106
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>13.9</b>	<b>103</b>
2.3.1 Researchers headcount/million pop.....	0.1	96
2.3.2 Gross expenditure on R&D, % GDP.....	7.5	57
2.3.3 Quality research institutions†.....	34.0	92

## 3 Infrastructure 20.8 108

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>8.0</b>	<b>121</b>
3.1.1 ICT access*.....	12.4	123
3.1.2 ICT use*.....	2.9	102
3.1.3 Government's Online Service*.....	10.2	114
3.1.4 E-Participation*.....	7.1	97
<b>3.2 Energy</b>	<b>n/a</b>	<b>n/a</b>
3.2.1 Electricity output, kWh/cap.....	n/a	n/a
3.2.2 Electricity consumption, kWh/capita.....	n/a	n/a
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	n/a	n/a
3.2.4 Share of renewables in energy use, %.....	n/a	n/a
<b>3.3 General infrastructure</b>	<b>33.7</b>	<b>77</b>
3.3.1 Quality of trade & transport infrastructure*.....	33.8	83
3.3.2 Gross capital formation, % GDP.....	32.2	44
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.1	60

## 4 Market sophistication 28.0 113

<b>4.1 Credit</b>	<b>33.7</b>	<b>83</b>
4.1.1 Strength of legal rights for credit*.....	70.0	37
4.1.2 Depth of credit information*.....	66.7	66
4.1.3 Domestic credit to private sector, % GDP.....	3.1	105
4.1.4 Microfinance gross loans, % GDP.....	25.4	21
<b>4.2 Investment</b>	<b>11.5</b>	<b>123</b>
4.2.1 Strength of investor protection*.....	40.0	103
4.2.2 Market capitalization, % GDP.....	0.2	101
4.2.3 Total value of stocks traded, % GDP.....	0.0	98
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>38.7</b>	<b>110</b>
4.3.1 Applied tariff rate weighted mean, %.....	63.3	97
4.3.2 Market access trade restrictiveness*, %.....	23.9	81
4.3.3 Imports of goods & services, % GDP.....	18.7	74
4.3.4 Exports of goods & services, % GDP.....	15.9	98
4.3.5 Intensity local competition†.....	64.5	64

## 5 Business sophistication 23.9 111

<b>5.1 Knowledge workers</b>	<b>16.8</b>	<b>118</b>
5.1.1 Knowledge-intensive employment, %.....	4.0	99
5.1.2 Firms offering formal training, % firms.....	37.8	44
5.1.3 R&D performed by business, %.....	8.9	74
5.1.4 R&D financed by business, %.....	8.6	67
<b>5.2 Innovation linkages</b>	<b>29.9</b>	<b>74</b>
5.2.1 University/industry collaboration†.....	40.0	71
5.2.2 State of cluster development†.....	29.5	108
5.2.3 R&D financed by abroad, %.....	100.0	2
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>24.9</b>	<b>104</b>
5.3.1 Royalty & license fees payments, % GDP.....	3.7	92
5.3.2 High-tech imports less re-imports, %.....	24.1	49
5.3.3 Computer & comm. service imports, %.....	19.8	101
5.3.4 FDI net inflows, % GDP.....	52.0	39

## 6 Scientific outputs 18.5 92

<b>6.1 Knowledge creation</b>	<b>5.1</b>	<b>79</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.1	88
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	14.1	57
<b>6.2 Knowledge impact</b>	<b>33.3</b>	<b>56</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	61.1	13
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	5.6	66
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>17.1</b>	<b>116</b>
6.3.1 Royalty & license fees receipts, % GDP.....	2.5	59
6.3.2 High-tech exports less re-exports, %.....	0.9	89
6.3.3 Computer & comm service exports, %.....	17.5	97
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 27.3 80

<b>7.1 Creative intangibles</b>	<b>50.2</b>	<b>46</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	56.9	68
7.1.4 ICT & organizational models†.....	43.5	95
<b>7.2 Creative goods &amp; services</b>	<b>4.3</b>	<b>108</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	4.3	88
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	45.4
GDP per capita, PPP (current international \$)	6,317.8
GDP (US\$ billions)	113.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>35.0</b>	<b>60</b>
Innovation Output Sub-Index .....	30.4	52
Innovation Input Sub-Index.....	39.6	67
Innovation Efficiency Index.....	0.8	40
Global Innovation Index 2010.....		61
Global Innovation Index 2009.....		79

## 1 Institutions 51.0 103

<b>1.1 Political environment</b>	<b>36.2</b>	<b>103</b>
1.1.1 Political stability*.....	34.4	75
1.1.2 Government effectiveness*.....	23.8	110
1.1.3 Press freedom*.....	50.5	94
<b>1.2 Regulatory environment</b>	<b>42.3</b>	<b>104</b>
1.2.1 Regulatory quality*.....	31.4	107
1.2.2 Rule of law*.....	26.4	101
1.2.3 Rigidity of employment*.....	69.0	73
<b>1.3 Business environment</b>	<b>74.6</b>	<b>81</b>
1.3.1 Time to start a business, days.....	75.0	85
1.3.2 Cost to start a business, % income/cap.....	95.2	50
1.3.3 Total tax rate, % profits.....	53.4	107

## 2 Human capital & research 44.3 40

<b>2.1 Education</b>	<b>70.7</b>	<b>15</b>
2.1.1 Education expenditure, % GNI.....	66.8	17
2.1.2 Public expenditure/pupil, % GDP/cap.....	47.3	17
2.1.3 School life expectancy, years.....	63.2	38
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	91.8	31
<b>2.2 Tertiary education</b>	<b>37.8</b>	<b>39</b>
2.2.1 Tertiary enrolment, % gross.....	80.9	6
2.2.2 Graduates in science, %.....	10.8	82
2.2.3 Graduates in engineering, %.....	66.1	7
2.2.4 Tertiary inbound mobility, %.....	2.6	69
2.2.5 Tertiary outbound mobility, %.....	11.2	104
2.2.6 Gross tertiary outbound enrolment, %.....	11.2	60
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>24.5</b>	<b>59</b>
2.3.1 Researchers headcount/million pop.....	12.9	39
2.3.2 Gross expenditure on R&D, % GDP.....	17.1	36
2.3.3 Quality research institutions†.....	43.5	64

## 3 Infrastructure 21.5 101

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>27.1</b>	<b>62</b>
3.1.1 ICT access*.....	45.0	53
3.1.2 ICT use*.....	6.1	81
3.1.3 Government's Online Service*.....	34.6	58
3.1.4 E-Participation*.....	25.7	47
<b>3.2 Energy</b>	<b>9.2</b>	<b>109</b>
3.2.1 Electricity output, kWh/cap.....	21.5	48
3.2.2 Electricity consumption, kWh/capita.....	14.7	51
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	8.5	100
3.2.4 Share of renewables in energy use, %.....	0.8	100
<b>3.3 General infrastructure</b>	<b>28.2</b>	<b>106</b>
3.3.1 Quality of trade & transport infrastructure*.....	36.0	72
3.3.2 Gross capital formation, % GDP.....	15.1	97
3.3.3 Ecological footprint & biocapacity, ha/cap.....	33.5	73

## 4 Market sophistication 39.6 64

<b>4.1 Credit</b>	<b>41.2</b>	<b>57</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	50.0	89
4.1.3 Domestic credit to private sector, % GDP.....	31.5	33
4.1.4 Microfinance gross loans, % GDP.....	3.1	49
<b>4.2 Investment</b>	<b>23.1</b>	<b>84</b>
4.2.1 Strength of investor protection*.....	47.0	86
4.2.2 Market capitalization, % GDP.....	5.7	80
4.2.3 Total value of stocks traded, % GDP.....	0.3	84
4.2.4 Venture capital deals/tr GDP PPP\$.....	55.9	38
<b>4.3 Trade &amp; competition</b>	<b>54.3</b>	<b>47</b>
4.3.1 Applied tariff rate weighted mean, %.....	81.6	63
4.3.2 Market access trade restrictiveness*, %.....	81.2	29
4.3.3 Imports of goods & services, % GDP.....	29.4	43
4.3.4 Exports of goods & services, % GDP.....	41.2	44
4.3.5 Intensity local competition†.....	51.7	110

## 5 Business sophistication 41.5 45

<b>5.1 Knowledge workers</b>	<b>45.5</b>	<b>51</b>
5.1.1 Knowledge-intensive employment, %.....	61.1	35
5.1.2 Firms offering formal training, % firms.....	25.1	69
5.1.3 R&D performed by business, %.....	65.2	25
5.1.4 R&D financed by business, %.....	35.4	46
<b>5.2 Innovation linkages</b>	<b>31.8</b>	<b>69</b>
5.2.1 University/industry collaboration†.....	41.1	65
5.2.2 State of cluster development†.....	30.2	105
5.2.3 R&D financed by abroad, %.....	56.0	10
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	6.6	59
5.2.5 PCT patent filings with foreign inventor, %.....	24.4	42
<b>5.3 Knowledge absorption</b>	<b>47.3</b>	<b>20</b>
5.3.1 Royalty & license fees payments, % GDP.....	55.6	14
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	32.2	76
5.3.4 FDI net inflows, % GDP.....	54.1	33

## 6 Scientific outputs 29.9 40

<b>6.1 Knowledge creation</b>	<b>34.9</b>	<b>22</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	50.9	13
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	4.9	40
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	100.0	2
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	16.3	51
<b>6.2 Knowledge impact</b>	<b>24.5</b>	<b>84</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	44.9	45
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	4.7	70
6.2.3 Computer software spending, % GDP.....	23.4	29
<b>6.3 Knowledge diffusion</b>	<b>30.2</b>	<b>52</b>
6.3.1 Royalty & license fees receipts, % GDP.....	13.2	29
6.3.2 High-tech exports less re-exports, %.....	n/a	n/a
6.3.3 Computer & comm service exports, %.....	29.8	72
6.3.4 FDI net outflows, % GDP.....	47.7	75

## 7 Creative outputs 31.0 70

<b>7.1 Creative intangibles</b>	<b>40.6</b>	<b>82</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	34.0	22
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	24.6	22
7.1.3 ICT & business models†.....	51.9	89
7.1.4 ICT & organizational models†.....	44.1	89
<b>7.2 Creative goods &amp; services</b>	<b>21.4</b>	<b>59</b>
7.2.1 Recreation & culture consumption, %.....	32.2	47
7.2.2 National feature films/mn pop.....	1.0	76
7.2.3 Daily newspapers/1,000 literate pop.....	23.7	26
7.2.4 Creative goods exports, %.....	9.0	75
7.2.5 Creative services exports, %.....	37.4	18

# United Arab Emirates

## Key indicators

Population (millions)	4.7
GDP per capita, PPP (current international \$)	57,743.7
GDP (US\$ billions)	230.3

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>42.0</b>	<b>34</b>
Innovation Output Sub-Index .....	29.6	56
Innovation Input Sub-Index.....	54.4	25
Innovation Efficiency Index.....	0.5	109
Global Innovation Index 2010.....		24
Global Innovation Index 2009.....		26

## 1 Institutions 81.8 26

<b>1.1 Political environment</b>	<b>77.6</b>	<b>32</b>
1.1.1 Political stability*.....	80.7	19
1.1.2 Government effectiveness*.....	77.1	33
1.1.3 Press freedom*.....	74.9	71
<b>1.2 Regulatory environment</b>	<b>75.4</b>	<b>32</b>
1.2.1 Regulatory quality*.....	68.6	48
1.2.2 Rule of law*.....	64.6	46
1.2.3 Rigidity of employment*.....	93.0	10
<b>1.3 Business environment</b>	<b>92.3</b>	<b>9</b>
1.3.1 Time to start a business, days.....	86.5	59
1.3.2 Cost to start a business, % income/cap.....	95.0	52
1.3.3 Total tax rate, % profits.....	95.4	4

## 2 Human capital & research 52.5 24

<b>2.1 Education</b>	<b>56.8</b>	<b>65</b>
2.1.1 Education expenditure, % GNI.....	n/a	n/a
2.1.2 Public expenditure/pupil, % GDP/cap.....	0.3	103
2.1.3 School life expectancy, years.....	55.1	58
2.1.4 PISA scales in reading, maths, & science.....	53.4	38
2.1.5 Pupil-teacher ratio, secondary.....	88.4	42
<b>2.2 Tertiary education</b>	<b>48.3</b>	<b>15</b>
2.2.1 Tertiary enrolment, % gross.....	30.6	67
2.2.2 Graduates in science, %.....	67.1	4
2.2.3 Graduates in engineering, %.....	34.9	44
2.2.4 Tertiary inbound mobility, %.....	100.0	2
2.2.5 Tertiary outbound mobility, %.....	40.8	29
2.2.6 Gross tertiary outbound enrolment, %.....	29.1	27
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>52.3</b>	<b>18</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	52.3	42

## 3 Infrastructure 35.8 31

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>45.6</b>	<b>32</b>
3.1.1 ICT access*.....	75.8	16
3.1.2 ICT use*.....	42.0	24
3.1.3 Government's Online Service*.....	25.1	90
3.1.4 E-Participation*.....	12.9	76
<b>3.2 Energy</b>	<b>30.5</b>	<b>17</b>
3.2.1 Electricity output, kWh/cap.....	100.0	3
3.2.2 Electricity consumption, kWh/capita.....	71.2	3
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	6.0	107
3.2.4 Share of renewables in energy use, %.....	0.0	108
<b>3.3 General infrastructure</b>	<b>31.3</b>	<b>90</b>
3.3.1 Quality of trade & transport infrastructure*.....	70.3	17
3.3.2 Gross capital formation, % GDP.....	23.7	69
3.3.3 Ecological footprint & biocapacity, ha/cap.....	0.0	119

## 4 Market sophistication 52.4 31

<b>4.1 Credit</b>	<b>51.1</b>	<b>34</b>
4.1.1 Strength of legal rights for credit*.....	40.0	83
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	40.6	23
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>31.8</b>	<b>52</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	15.0	49
4.2.3 Total value of stocks traded, % GDP.....	30.9	21
4.2.4 Venture capital deals/tr GDP PPP\$.....	45.0	48
<b>4.3 Trade &amp; competition</b>	<b>74.3</b>	<b>9</b>
4.3.1 Applied tariff rate weighted mean, %.....	82.0	62
4.3.2 Market access trade restrictiveness*, %.....	91.9	15
4.3.3 Imports of goods & services, % GDP.....	42.0	20
4.3.4 Exports of goods & services, % GDP.....	86.4	8
4.3.5 Intensity local competition†.....	77.8	11

## 5 Business sophistication 49.5 28

<b>5.1 Knowledge workers</b>	<b>69.3</b>	<b>22</b>
5.1.1 Knowledge-intensive employment, %.....	69.3	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
<b>5.2 Innovation linkages</b>	<b>63.4</b>	<b>5</b>
5.2.1 University/industry collaboration†.....	50.9	40
5.2.2 State of cluster development†.....	56.2	24
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	45.1	16
5.2.5 PCT patent filings with foreign inventor, %.....	92.3	7
<b>5.3 Knowledge absorption</b>	<b>15.6</b>	<b>124</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	15.6	78
5.3.3 Computer & comm. service imports, %.....	n/a	n/a
5.3.4 FDI net inflows, % GDP.....	n/a	n/a

## 6 Scientific outputs 12.6 119

<b>6.1 Knowledge creation</b>	<b>1.8</b>	<b>111</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	1.5	56
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	2.2	108
<b>6.2 Knowledge impact</b>	<b>35.7</b>	<b>39</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	49.1	32
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	8.9	58
<b>6.3 Knowledge diffusion</b>	<b>0.3</b>	<b>122</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.3	94
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 46.6 14

<b>7.1 Creative intangibles</b>	<b>71.5</b>	<b>3</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	75.1	13
7.1.4 ICT & organizational models†.....	67.9	21
<b>7.2 Creative goods &amp; services</b>	<b>21.7</b>	<b>58</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	21.7	44
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	61.9
GDP per capita, PPP (current international \$)	36,495.8
GDP (US\$ billions)	2,174.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>56.0</b>	<b>10</b>
Innovation Output Sub-Index .....	48.3	9
Innovation Input Sub-Index.....	63.7	10
Innovation Efficiency Index.....	0.8	50
Global Innovation Index 2010.....		14
Global Innovation Index 2009.....		4

## 1 Institutions 86.4 16

<b>1.1 Political environment</b>	<b>79.8</b>	<b>29</b>
1.1.1 Political stability*.....	54.7	50
1.1.2 Government effectiveness*.....	91.0	16
1.1.3 Press freedom*.....	93.7	18
<b>1.2 Regulatory environment</b>	<b>92.7</b>	<b>10</b>
1.2.1 Regulatory quality*.....	94.3	13
1.2.2 Rule of law*.....	93.9	14
1.2.3 Rigidity of employment*.....	90.0	18
<b>1.3 Business environment</b>	<b>86.6</b>	<b>27</b>
1.3.1 Time to start a business, days.....	88.5	48
1.3.2 Cost to start a business, % income/cap.....	99.5	7
1.3.3 Total tax rate, % profits.....	71.9	55

## 2 Human capital & research 56.1 16

<b>2.1 Education</b>	<b>68.8</b>	<b>27</b>
2.1.1 Education expenditure, % GNI.....	56.0	35
2.1.2 Public expenditure/pupil, % GDP/cap.....	45.6	21
2.1.3 School life expectancy, years.....	72.4	15
2.1.4 PISA scales in reading, maths, & science.....	69.5	18
2.1.5 Pupil-teacher ratio, secondary.....	82.8	59
<b>2.2 Tertiary education</b>	<b>42.8</b>	<b>21</b>
2.2.1 Tertiary enrolment, % gross.....	58.3	33
2.2.2 Graduates in science, %.....	54.1	13
2.2.3 Graduates in engineering, %.....	24.7	62
2.2.4 Tertiary inbound mobility, %.....	60.0	9
2.2.5 Tertiary outbound mobility, %.....	8.5	109
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>56.6</b>	<b>16</b>
2.3.1 Researchers headcount/million pop.....	47.1	10
2.3.2 Gross expenditure on R&D, % GDP.....	38.4	16
2.3.3 Quality research institutions†.....	84.1	3

## 3 Infrastructure 43.6 17

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>70.6</b>	<b>2</b>
3.1.1 ICT access*.....	82.3	9
3.1.2 ICT use*.....	52.3	12
3.1.3 Government's Online Service*.....	77.5	4
3.1.4 E-Participation*.....	77.1	4
<b>3.2 Energy</b>	<b>25.7</b>	<b>34</b>
3.2.1 Electricity output, kWh/cap.....	30.9	35
3.2.2 Electricity consumption, kWh/capita.....	23.5	36
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	47.7	19
3.2.4 Share of renewables in energy use, %.....	2.0	92
<b>3.3 General infrastructure</b>	<b>34.6</b>	<b>70</b>
3.3.1 Quality of trade & transport infrastructure*.....	73.8	16
3.3.2 Gross capital formation, % GDP.....	6.1	118
3.3.3 Ecological footprint & biocapacity, ha/cap.....	24.1	101

## 4 Market sophistication 74.4 3

<b>4.1 Credit</b>	<b>96.4</b>	<b>1</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	97.7	3
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>74.4</b>	<b>5</b>
4.2.1 Strength of investor protection*.....	80.0	10
4.2.2 Market capitalization, % GDP.....	52.1	10
4.2.3 Total value of stocks traded, % GDP.....	87.1	6
4.2.4 Venture capital deals/tr GDP PPP\$.....	82.2	11
<b>4.3 Trade &amp; competition</b>	<b>52.6</b>	<b>57</b>
4.3.1 Applied tariff rate weighted mean, %.....	94.3	12
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	15.0	87
4.3.4 Exports of goods & services, % GDP.....	20.6	84
4.3.5 Intensity local competition†.....	80.6	7

## 5 Business sophistication 57.8 12

<b>5.1 Knowledge workers</b>	<b>74.1</b>	<b>17</b>
5.1.1 Knowledge-intensive employment, %.....	82.6	12
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	75.6	18
5.1.4 R&D financed by business, %.....	55.6	27
<b>5.2 Innovation linkages</b>	<b>53.1</b>	<b>18</b>
5.2.1 University/industry collaboration†.....	76.5	4
5.2.2 State of cluster development†.....	59.6	16
5.2.3 R&D financed by abroad, %.....	61.8	9
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	29.7	27
5.2.5 PCT patent filings with foreign inventor, %.....	30.7	30
<b>5.3 Knowledge absorption</b>	<b>46.1</b>	<b>23</b>
5.3.1 Royalty & license fees payments, % GDP.....	41.4	22
5.3.2 High-tech imports less re-imports, %.....	36.7	25
5.3.3 Computer & comm. service imports, %.....	56.1	27
5.3.4 FDI net inflows, % GDP.....	50.3	43

## 6 Scientific outputs 52.3 10

<b>6.1 Knowledge creation</b>	<b>45.0</b>	<b>14</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	44.4	18
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	29.0	21
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	61.6	11
<b>6.2 Knowledge impact</b>	<b>55.3</b>	<b>8</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	40.9	61
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	62.7	7
6.2.3 Computer software spending, % GDP.....	69.1	6
<b>6.3 Knowledge diffusion</b>	<b>56.6</b>	<b>15</b>
6.3.1 Royalty & license fees receipts, % GDP.....	73.2	11
6.3.2 High-tech exports less re-exports, %.....	43.5	15
6.3.3 Computer & comm service exports, %.....	56.7	28
6.3.4 FDI net outflows, % GDP.....	52.8	26

## 7 Creative outputs 44.3 18

<b>7.1 Creative intangibles</b>	<b>49.2</b>	<b>48</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	10.0	83
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	12.7	34
7.1.3 ICT & business models†.....	80.3	5
7.1.4 ICT & organizational models†.....	75.5	3
<b>7.2 Creative goods &amp; services</b>	<b>39.4</b>	<b>16</b>
7.2.1 Recreation & culture consumption, %.....	80.4	6
7.2.2 National feature films/mn pop.....	23.6	31
7.2.3 Daily newspapers/1,000 literate pop.....	54.5	9
7.2.4 Creative goods exports, %.....	47.4	10
7.2.5 Creative services exports, %.....	11.2	43

# United States of America

## Key indicators

Population (millions)	317.6
GDP per capita, PPP (current international \$)	45,989.2
GDP (US\$ billions)	14,119.0

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>56.6</b>	<b>7</b>
Innovation Output Sub-Index .....	50.3	5
Innovation Input Sub-Index.....	62.8	11
Innovation Efficiency Index.....	0.8	26
Global Innovation Index 2010.....		11
Global Innovation Index 2009.....		1

## 1 Institutions 86.5 15

<b>1.1 Political environment</b>	<b>80.3</b>	<b>27</b>
1.1.1 Political stability*.....	59.0	46
1.1.2 Government effectiveness*.....	89.0	19
1.1.3 Press freedom*.....	92.9	19
<b>1.2 Regulatory environment</b>	<b>93.7</b>	<b>8</b>
1.2.1 Regulatory quality*.....	89.5	19
1.2.2 Rule of law*.....	91.5	17
1.2.3 Rigidity of employment*.....	100.0	1
<b>1.3 Business environment</b>	<b>85.5</b>	<b>35</b>
1.3.1 Time to start a business, days.....	95.2	13
1.3.2 Cost to start a business, % income/cap.....	98.9	16
1.3.3 Total tax rate, % profits.....	62.3	87

## 2 Human capital & research 57.4 13

<b>2.1 Education</b>	<b>66.2</b>	<b>36</b>
2.1.1 Education expenditure, % GNI.....	52.5	39
2.1.2 Public expenditure/pupil, % GDP/cap.....	36.9	38
2.1.3 School life expectancy, years.....	70.6	19
2.1.4 PISA scales in reading, maths, & science.....	68.1	23
2.1.5 Pupil-teacher ratio, secondary.....	82.5	60
<b>2.2 Tertiary education</b>	<b>35.7</b>	<b>46</b>
2.2.1 Tertiary enrolment, % gross.....	84.5	5
2.2.2 Graduates in science, %.....	32.5	45
2.2.3 Graduates in engineering, %.....	19.6	73
2.2.4 Tertiary inbound mobility, %.....	12.3	38
2.2.5 Tertiary outbound mobility, %.....	0.0	121
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>70.2</b>	<b>5</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	57.8	7
2.3.3 Quality research institutions†.....	82.5	4

## 3 Infrastructure 44.6 14

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>67.4</b>	<b>9</b>
3.1.1 ICT access*.....	71.1	26
3.1.2 ICT use*.....	46.4	18
3.1.3 Government's Online Service*.....	93.7	2
3.1.4 E-Participation*.....	75.7	6
<b>3.2 Energy</b>	<b>30.5</b>	<b>18</b>
3.2.1 Electricity output, kWh/cap.....	70.3	9
3.2.2 Electricity consumption, kWh/capita.....	54.4	11
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	25.6	64
3.2.4 Share of renewables in energy use, %.....	3.5	78
<b>3.3 General infrastructure</b>	<b>36.0</b>	<b>63</b>
3.3.1 Quality of trade & transport infrastructure*.....	78.8	7
3.3.2 Gross capital formation, % GDP.....	7.5	115
3.3.3 Ecological footprint & biocapacity, ha/cap.....	21.9	108

## 4 Market sophistication 70.9 4

<b>4.1 Credit</b>	<b>88.3</b>	<b>4</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	86.6	4
4.1.4 Microfinance gross loans, % GDP.....	n/a	n/a
<b>4.2 Investment</b>	<b>77.8</b>	<b>3</b>
4.2.1 Strength of investor protection*.....	83.0	5
4.2.2 Market capitalization, % GDP.....	42.8	14
4.2.3 Total value of stocks traded, % GDP.....	100.0	2
4.2.4 Venture capital deals/tr GDP PPP\$.....	93.2	3
<b>4.3 Trade &amp; competition</b>	<b>46.6</b>	<b>83</b>
4.3.1 Applied tariff rate weighted mean, %.....	92.6	39
4.3.2 Market access trade restrictiveness*, %.....	70.6	50
4.3.3 Imports of goods & services, % GDP.....	2.1	123
4.3.4 Exports of goods & services, % GDP.....	2.4	123
4.3.5 Intensity local competition†.....	77.4	14

## 5 Business sophistication 54.8 15

<b>5.1 Knowledge workers</b>	<b>76.1</b>	<b>12</b>
5.1.1 Knowledge-intensive employment, %.....	69.7	28
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 R&D performed by business, %.....	85.5	8
5.1.4 R&D financed by business, %.....	79.3	10
<b>5.2 Innovation linkages</b>	<b>50.5</b>	<b>22</b>
5.2.1 University/industry collaboration†.....	79.8	1
5.2.2 State of cluster development†.....	63.4	10
5.2.3 R&D financed by abroad, %.....	0.0	75
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	28.0	28
5.2.5 PCT patent filings with foreign inventor, %.....	44.9	22
<b>5.3 Knowledge absorption</b>	<b>37.8</b>	<b>47</b>
5.3.1 Royalty & license fees payments, % GDP.....	18.7	50
5.3.2 High-tech imports less re-imports, %.....	47.7	12
5.3.3 Computer & comm. service imports, %.....	45.1	51
5.3.4 FDI net inflows, % GDP.....	39.9	98

## 6 Scientific outputs 57.4 5

<b>6.1 Knowledge creation</b>	<b>60.4</b>	<b>9</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	96.8	5
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	41.2	14
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	43.2	22
<b>6.2 Knowledge impact</b>	<b>52.5</b>	<b>11</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	46.4	36
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	64.8	7
<b>6.3 Knowledge diffusion</b>	<b>59.4</b>	<b>12</b>
6.3.1 Royalty & license fees receipts, % GDP.....	85.1	9
6.3.2 High-tech exports less re-exports, %.....	39.4	18
6.3.3 Computer & comm service exports, %.....	60.4	25
6.3.4 FDI net outflows, % GDP.....	52.6	27

## 7 Creative outputs 43.2 24

<b>7.1 Creative intangibles</b>	<b>48.0</b>	<b>51</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	10.6	80
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	4.8	45
7.1.3 ICT & business models†.....	77.8	9
7.1.4 ICT & organizational models†.....	77.3	2
<b>7.2 Creative goods &amp; services</b>	<b>38.3</b>	<b>18</b>
7.2.1 Recreation & culture consumption, %.....	74.7	11
7.2.2 National feature films/mn pop.....	19.9	33
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	29.3	27
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	3.4
GDP per capita, PPP (current international \$)	13,189.1
GDP (US\$ billions)	31.5

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>34.2</b>	<b>64</b>
Innovation Output Sub-Index .....	28.7	61
Innovation Input Sub-Index.....	39.7	66
Innovation Efficiency Index.....	0.7	58
Global Innovation Index 2010.....		53
Global Innovation Index 2009.....		80

## 1 Institutions 69.5 54

<b>1.1 Political environment</b>	<b>79.3</b>	<b>30</b>
1.1.1 Political stability*.....	78.3	23
1.1.2 Government effectiveness*.....	71.9	39
1.1.3 Press freedom*.....	87.6	34
<b>1.2 Regulatory environment</b>	<b>71.7</b>	<b>41</b>
1.2.1 Regulatory quality*.....	62.4	55
1.2.2 Rule of law*.....	70.8	37
1.2.3 Rigidity of employment*.....	82.0	39
<b>1.3 Business environment</b>	<b>57.6</b>	<b>112</b>
1.3.1 Time to start a business, days.....	38.5	119
1.3.2 Cost to start a business, % income/cap.....	67.2	103
1.3.3 Total tax rate, % profits.....	67.1	71

## 2 Human capital & research 35.0 70

<b>2.1 Education</b>	<b>54.9</b>	<b>71</b>
2.1.1 Education expenditure, % GNI.....	23.9	105
2.1.2 Public expenditure/pupil, % GDP/cap.....	9.3	98
2.1.3 School life expectancy, years.....	68.5	25
2.1.4 PISA scales in reading, maths, & science.....	40.4	44
2.1.5 Pupil-teacher ratio, secondary.....	86.8	49
<b>2.2 Tertiary education</b>	<b>29.0</b>	<b>67</b>
2.2.1 Tertiary enrolment, % gross.....	66.0	23
2.2.2 Graduates in science, %.....	22.8	67
2.2.3 Graduates in engineering, %.....	15.3	80
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	13.0	96
2.2.6 Gross tertiary outbound enrolment, %.....	10.8	61
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>21.2</b>	<b>73</b>
2.3.1 Researchers headcount/million pop.....	4.8	62
2.3.2 Gross expenditure on R&D, % GDP.....	12.7	44
2.3.3 Quality research institutions†.....	46.2	58

## 3 Infrastructure 33.4 41

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>34.1</b>	<b>47</b>
3.1.1 ICT access*.....	47.6	51
3.1.2 ICT use*.....	17.8	47
3.1.3 Government's Online Service*.....	47.9	31
3.1.4 E-Participation*.....	25.7	47
<b>3.2 Energy</b>	<b>28.5</b>	<b>23</b>
3.2.1 Electricity output, kWh/cap.....	13.6	63
3.2.2 Electricity consumption, kWh/capita.....	9.9	62
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	53.3	11
3.2.4 Share of renewables in energy use, %.....	20.3	32
<b>3.3 General infrastructure</b>	<b>37.6</b>	<b>54</b>
3.3.1 Quality of trade & transport infrastructure*.....	39.5	61
3.3.2 Gross capital formation, % GDP.....	17.2	95
3.3.3 Ecological footprint & biocapacity, ha/cap.....	56.0	11

## 4 Market sophistication 30.4 103

<b>4.1 Credit</b>	<b>33.8</b>	<b>82</b>
4.1.1 Strength of legal rights for credit*.....	50.0	71
4.1.2 Depth of credit information*.....	100.0	1
4.1.3 Domestic credit to private sector, % GDP.....	9.4	80
4.1.4 Microfinance gross loans, % GDP.....	0.1	72
<b>4.2 Investment</b>	<b>14.3</b>	<b>115</b>
4.2.1 Strength of investor protection*.....	50.0	70
4.2.2 Market capitalization, % GDP.....	0.0	102
4.2.3 Total value of stocks traded, % GDP.....	0.0	96
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>43.1</b>	<b>96</b>
4.3.1 Applied tariff rate weighted mean, %.....	82.1	61
4.3.2 Market access trade restrictiveness*, %.....	53.2	66
4.3.3 Imports of goods & services, % GDP.....	11.4	104
4.3.4 Exports of goods & services, % GDP.....	19.3	89
4.3.5 Intensity local competition†.....	54.6	99

## 5 Business sophistication 30.1 88

<b>5.1 Knowledge workers</b>	<b>29.7</b>	<b>89</b>
5.1.1 Knowledge-intensive employment, %.....	39.1	62
5.1.2 Firms offering formal training, % firms.....	24.8	72
5.1.3 R&D performed by business, %.....	21.4	64
5.1.4 R&D financed by business, %.....	28.8	52
<b>5.2 Innovation linkages</b>	<b>32.6</b>	<b>63</b>
5.2.1 University/industry collaboration†.....	45.9	51
5.2.2 State of cluster development†.....	40.8	69
5.2.3 R&D financed by abroad, %.....	8.0	61
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	14.6	43
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>28.0</b>	<b>85</b>
5.3.1 Royalty & license fees payments, % GDP.....	6.7	85
5.3.2 High-tech imports less re-imports, %.....	25.0	47
5.3.3 Computer & comm. service imports, %.....	27.3	88
5.3.4 FDI net inflows, % GDP.....	53.1	37

## 6 Scientific outputs 21.5 80

<b>6.1 Knowledge creation</b>	<b>10.7</b>	<b>61</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	4.7	68
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	12.3	22
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	16.1	53
<b>6.2 Knowledge impact</b>	<b>35.2</b>	<b>44</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	68.7	5
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	16.2	42
6.2.3 Computer software spending, % GDP.....	6.1	64
<b>6.3 Knowledge diffusion</b>	<b>18.7</b>	<b>107</b>
6.3.1 Royalty & license fees receipts, % GDP.....	0.0	90
6.3.2 High-tech exports less re-exports, %.....	4.1	64
6.3.3 Computer & comm service exports, %.....	23.2	88
6.3.4 FDI net outflows, % GDP.....	47.3	89

## 7 Creative outputs 35.8 55

<b>7.1 Creative intangibles</b>	<b>66.6</b>	<b>7</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	68.8	4
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	66.9	38
7.1.4 ICT & organizational models†.....	64.0	28
<b>7.2 Creative goods &amp; services</b>	<b>5.0</b>	<b>105</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	7.3	53
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	8.8	76
7.2.5 Creative services exports, %.....	0.1	95

# Venezuela

## Key indicators

Population (millions)	29.0
GDP per capita, PPP (current international \$)	12,322.9
GDP (US\$ billions)	326.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>27.4</b>	<b>102</b>
Innovation Output Sub-Index .....	25.4	74
Innovation Input Sub-Index.....	29.5	115
Innovation Efficiency Index.....	0.9	14
Global Innovation Index 2010.....		124
Global Innovation Index 2009.....		101

## 1 Institutions 27.8 124

<b>1.1 Political environment</b>	<b>26.6</b>	<b>115</b>
1.1.1 Political stability*.....	11.3	112
1.1.2 Government effectiveness*.....	18.6	116
1.1.3 Press freedom*.....	49.9	95
<b>1.2 Regulatory environment</b>	<b>12.5</b>	<b>125</b>
1.2.1 Regulatory quality*.....	3.8	123
1.2.2 Rule of law*.....	2.8	124
1.2.3 Rigidity of employment*.....	31.0	124
<b>1.3 Business environment</b>	<b>44.3</b>	<b>119</b>
1.3.1 Time to start a business, days.....	0.0	125
1.3.2 Cost to start a business, % income/cap.....	76.5	94
1.3.3 Total tax rate, % profits.....	56.4	103

## 2 Human capital & research 45.6 37

<b>2.1 Education</b>	<b>70.1</b>	<b>17</b>
2.1.1 Education expenditure, % GNI.....	35.7	81
2.1.2 Public expenditure/pupil, % GDP/cap.....	n/a	n/a
2.1.3 School life expectancy, years.....	60.4	40
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	97.2	8
<b>2.2 Tertiary education</b>	<b>49.1</b>	<b>12</b>
2.2.1 Tertiary enrolment, % gross.....	80.1	7
2.2.2 Graduates in science, %.....	25.9	58
2.2.3 Graduates in engineering, %.....	63.5	10
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	4.7	115
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>17.6</b>	<b>90</b>
2.3.1 Researchers headcount/million pop.....	1.6	73
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	33.7	94

## 3 Infrastructure 24.4 84

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>24.8</b>	<b>68</b>
3.1.1 ICT access*.....	38.2	64
3.1.2 ICT use*.....	13.9	57
3.1.3 Government's Online Service*.....	30.5	73
3.1.4 E-Participation*.....	14.3	74
<b>3.2 Energy</b>	<b>12.4</b>	<b>100</b>
3.2.1 Electricity output, kWh/cap.....	22.1	47
3.2.2 Electricity consumption, kWh/capita.....	12.8	55
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	12.2	92
3.2.4 Share of renewables in energy use, %.....	7.7	55
<b>3.3 General infrastructure</b>	<b>36.0</b>	<b>62</b>
3.3.1 Quality of trade & transport infrastructure*.....	36.0	72
3.3.2 Gross capital formation, % GDP.....	34.8	35
3.3.3 Ecological footprint & biocapacity, ha/cap.....	37.4	36

## 4 Market sophistication 15.5 125

<b>4.1 Credit</b>	<b>6.8</b>	<b>124</b>
4.1.1 Strength of legal rights for credit*.....	20.0	121
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	6.8	91
4.1.4 Microfinance gross loans, % GDP.....	0.4	64
<b>4.2 Investment</b>	<b>7.1</b>	<b>125</b>
4.2.1 Strength of investor protection*.....	23.0	125
4.2.2 Market capitalization, % GDP.....	1.6	97
4.2.3 Total value of stocks traded, % GDP.....	0.2	88
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>32.5</b>	<b>119</b>
4.3.1 Applied tariff rate weighted mean, %.....	43.4	117
4.3.2 Market access trade restrictiveness*, %.....	98.2	2
4.3.3 Imports of goods & services, % GDP.....	7.3	117
4.3.4 Exports of goods & services, % GDP.....	10.2	112
4.3.5 Intensity local competition†.....	36.5	122

## 5 Business sophistication 34.0 69

<b>5.1 Knowledge workers</b>	<b>45.6</b>	<b>50</b>
5.1.1 Knowledge-intensive employment, %.....	44.2	53
5.1.2 Firms offering formal training, % firms.....	46.9	32
5.1.3 R&D performed by business, %.....	n/a	n/a
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>27.6</b>	<b>84</b>
5.2.1 University/industry collaboration†.....	40.6	69
5.2.2 State of cluster development†.....	21.6	122
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	13.5	46
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>29.0</b>	<b>81</b>
5.3.1 Royalty & license fees payments, % GDP.....	12.0	63
5.3.2 High-tech imports less re-imports, %.....	n/a	n/a
5.3.3 Computer & comm. service imports, %.....	43.4	58
5.3.4 FDI net inflows, % GDP.....	31.6	120

## 6 Scientific outputs 22.4 73

<b>6.1 Knowledge creation</b>	<b>2.4</b>	<b>102</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.3	85
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.2	47
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	4.0	92
<b>6.2 Knowledge impact</b>	<b>29.1</b>	<b>69</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	40.6	63
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	6.1	63
<b>6.3 Knowledge diffusion</b>	<b>35.8</b>	<b>42</b>
6.3.1 Royalty & license fees receipts, % 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, %.....	22.8	89
6.3.4 FDI net outflows, % GDP.....	48.9	51

## 7 Creative outputs 28.3 77

<b>7.1 Creative intangibles</b>	<b>40.7</b>	<b>80</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	34.8	20
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	47.9	100
7.1.4 ICT & organizational models†.....	39.5	109
<b>7.2 Creative goods &amp; services</b>	<b>15.8</b>	<b>68</b>
7.2.1 Recreation & culture consumption, %.....	45.4	41
7.2.2 National feature films/mn pop.....	6.2	55
7.2.3 Daily newspapers/1,000 literate pop.....	22.5	28
7.2.4 Creative goods exports, %.....	0.2	117
7.2.5 Creative services exports, %.....	18.2	34



## Key indicators

Population (millions)	89.0
GDP per capita, PPP (current international \$)	2,953.1
GDP (US\$ billions)	90.1

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>36.7</b>	<b>51</b>
Innovation Output Sub-Index .....	33.3	42
Innovation Input Sub-Index.....	40.1	63
Innovation Efficiency Index.....	0.8	20
Global Innovation Index 2010.....	71	
Global Innovation Index 2009.....	64	

## 1 Institutions 54.9 84

<b>1.1 Political environment</b>	<b>39.2</b>	<b>96</b>
1.1.1 Political stability*.....	51.4	54
1.1.2 Government effectiveness*.....	46.2	81
1.1.3 Press freedom*.....	19.9	119
<b>1.2 Regulatory environment</b>	<b>50.5</b>	<b>88</b>
1.2.1 Regulatory quality*.....	31.0	108
1.2.2 Rule of law*.....	41.5	78
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>75.1</b>	<b>78</b>
1.3.1 Time to start a business, days.....	58.7	110
1.3.2 Cost to start a business, % income/cap.....	90.6	68
1.3.3 Total tax rate, % profits.....	76.2	42

## 2 Human capital & research 31.7 85

<b>2.1 Education</b>	<b>45.1</b>	<b>100</b>
2.1.1 Education expenditure, % GNI.....	26.2	102
2.1.2 Public expenditure/pupil, % GDP/cap.....	36.8	39
2.1.3 School life expectancy, years.....	36.9	102
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	67.0	89
<b>2.2 Tertiary education</b>	<b>32.1</b>	<b>54</b>
2.2.1 Tertiary enrolment, % gross.....	9.4	97
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	64.4	8
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	12.8	97
2.2.6 Gross tertiary outbound enrolment, %.....	n/a	n/a
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>17.8</b>	<b>89</b>
2.3.1 Researchers headcount/million pop.....	3.8	64
2.3.2 Gross expenditure on R&D, % GDP.....	3.4	73
2.3.3 Quality research institutions†.....	46.2	59

## 3 Infrastructure 29.3 56

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>22.1</b>	<b>79</b>
3.1.1 ICT access*.....	37.6	65
3.1.2 ICT use*.....	9.3	75
3.1.3 Government's Online Service*.....	30.5	73
3.1.4 E-Participation*.....	8.6	92
<b>3.2 Energy</b>	<b>18.0</b>	<b>73</b>
3.2.1 Electricity output, kWh/cap.....	4.3	90
3.2.2 Electricity consumption, kWh/capita.....	3.2	91
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	22.2	75
3.2.4 Share of renewables in energy use, %.....	27.9	23
<b>3.3 General infrastructure</b>	<b>47.9</b>	<b>12</b>
3.3.1 Quality of trade & transport infrastructure*.....	39.0	63
3.3.2 Gross capital formation, % GDP.....	69.0	6
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.6	54

## 4 Market sophistication 47.0 39

<b>4.1 Credit</b>	<b>64.3</b>	<b>22</b>
4.1.1 Strength of legal rights for credit*.....	80.0	19
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	50.4	16
4.1.4 Microfinance gross loans, % GDP.....	57.4	8
<b>4.2 Investment</b>	<b>19.2</b>	<b>101</b>
4.2.1 Strength of investor protection*.....	27.0	124
4.2.2 Market capitalization, % GDP.....	9.1	64
4.2.3 Total value of stocks traded, % GDP.....	4.0	53
4.2.4 Venture capital deals/tr GDP PPP\$.....	53.9	40
<b>4.3 Trade &amp; competition</b>	<b>57.5</b>	<b>37</b>
4.3.1 Applied tariff rate weighted mean, %.....	47.5	115
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	53.9	8
4.3.4 Exports of goods & services, % GDP.....	65.5	17
4.3.5 Intensity local competition†.....	63.0	72

## 5 Business sophistication 37.5 58

<b>5.1 Knowledge workers</b>	<b>26.0</b>	<b>98</b>
5.1.1 Knowledge-intensive employment, %.....	10.4	94
5.1.2 Firms offering formal training, % firms.....	48.5	30
5.1.3 R&D performed by business, %.....	17.1	67
5.1.4 R&D financed by business, %.....	21.0	59
<b>5.2 Innovation linkages</b>	<b>37.7</b>	<b>40</b>
5.2.1 University/industry collaboration†.....	44.3	56
5.2.2 State of cluster development†.....	62.3	12
5.2.3 R&D financed by abroad, %.....	22.3	41
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	16.2	40
5.2.5 PCT patent filings with foreign inventor, %.....	25.0	38
<b>5.3 Knowledge absorption</b>	<b>48.8</b>	<b>18</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	28.1	39
5.3.3 Computer & comm. service imports, %.....	n/a	n/a
5.3.4 FDI net inflows, % GDP.....	69.6	15

## 6 Scientific outputs 25.3 56

<b>6.1 Knowledge creation</b>	<b>2.9</b>	<b>97</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	5.6	66
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.5	77
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.5	44
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	3.4	100
<b>6.2 Knowledge impact</b>	<b>40.2</b>	<b>23</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	52.3	25
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	15.8	40
<b>6.3 Knowledge diffusion</b>	<b>32.9</b>	<b>46</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	16.5	34
6.3.3 Computer & comm service exports, %.....	n/a	n/a
6.3.4 FDI net outflows, % GDP.....	49.3	44

## 7 Creative outputs 41.3 31

<b>7.1 Creative intangibles</b>	<b>46.0</b>	<b>59</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	44.0	15
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	5.8	43
7.1.3 ICT & business models†.....	65.1	44
7.1.4 ICT & organizational models†.....	48.9	72
<b>7.2 Creative goods &amp; services</b>	<b>36.7</b>	<b>21</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	0.9	77
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	54.6	7
7.2.5 Creative services exports, %.....	n/a	n/a

## Yemen

## Key indicators

Population (millions)	24.3
GDP per capita, PPP (current international \$)	2,469.6
GDP (US\$ billions)	26.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>20.7</b>	<b>123</b>
Innovation Output Sub-Index .....	14.4	123
Innovation Input Sub-Index.....	27.0	121
Innovation Efficiency Index.....	0.5	111
Global Innovation Index 2010.....	n/a	
Global Innovation Index 2009.....	n/a	

## 1 Institutions 36.9 119

<b>1.1 Political environment</b>	<b>9.0</b>	<b>124</b>
1.1.1 Political stability*.....	2.4	123
1.1.2 Government effectiveness*.....	11.4	121
1.1.3 Press freedom*.....	13.1	121
<b>1.2 Regulatory environment</b>	<b>39.6</b>	<b>109</b>
1.2.1 Regulatory quality*.....	29.5	109
1.2.2 Rule of law*.....	13.2	116
1.2.3 Rigidity of employment*.....	76.0	56
<b>1.3 Business environment</b>	<b>62.2</b>	<b>109</b>
1.3.1 Time to start a business, days.....	89.4	43
1.3.2 Cost to start a business, % income/cap.....	36.0	116
1.3.3 Total tax rate, % profits.....	61.3	89

## 2 Human capital & research 30.7 89

<b>2.1 Education</b>	<b>50.3</b>	<b>88</b>
2.1.1 Education expenditure, % GNI.....	44.0	60
2.1.2 Public expenditure/pupil, % GDP/cap.....	90.2	2
2.1.3 School life expectancy, years.....	26.3	110
2.1.4 PISA scales in reading, maths, & science.....	n/a	n/a
2.1.5 Pupil-teacher ratio, secondary.....	57.4	103
<b>2.2 Tertiary education</b>	<b>11.2</b>	<b>115</b>
2.2.1 Tertiary enrolment, % gross.....	10.0	93
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	9.3	45
2.2.5 Tertiary outbound mobility, %.....	23.4	65
2.2.6 Gross tertiary outbound enrolment, %.....	3.3	88
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>n/a</b>	<b>n/a</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	n/a	n/a

## 3 Infrastructure 15.4 125

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>7.9</b>	<b>122</b>
3.1.1 ICT access*.....	18.5	109
3.1.2 ICT use*.....	0.5	120
3.1.3 Government's Online Service*.....	4.8	119
3.1.4 E-Participation*.....	4.3	106
<b>3.2 Energy</b>	<b>3.8</b>	<b>115</b>
3.2.1 Electricity output, kWh/cap.....	1.4	105
3.2.2 Electricity consumption, kWh/capita.....	0.7	105
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	9.7	99
3.2.4 Share of renewables in energy use, %.....	0.6	103
<b>3.3 General infrastructure</b>	<b>34.6</b>	<b>71</b>
3.3.1 Quality of trade & transport infrastructure*.....	33.8	83
3.3.2 Gross capital formation, % GDP.....	33.7	39
3.3.3 Ecological footprint & biocapacity, ha/cap.....	36.4	43

## 4 Market sophistication 26.0 118

<b>4.1 Credit</b>	<b>10.7</b>	<b>121</b>
4.1.1 Strength of legal rights for credit*.....	20.0	121
4.1.2 Depth of credit information*.....	33.3	95
4.1.3 Domestic credit to private sector, % GDP.....	0.0	114
4.1.4 Microfinance gross loans, % GDP.....	0.2	67
<b>4.2 Investment</b>	<b>26.7</b>	<b>70</b>
4.2.1 Strength of investor protection*.....	40.0	103
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 GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>40.6</b>	<b>104</b>
4.3.1 Applied tariff rate weighted mean, %.....	65.6	93
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	24.1	56
4.3.4 Exports of goods & services, % GDP.....	32.1	57
4.3.5 Intensity local competition†.....	n/a	n/a

## 5 Business sophistication 25.9 105

<b>5.1 Knowledge workers</b>	<b>30.0</b>	<b>88</b>
5.1.1 Knowledge-intensive employment, %.....	30.0	80
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
<b>5.2 Innovation linkages</b>	<b>n/a</b>	<b>n/a</b>
5.2.1 University/industry 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 GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	n/a	n/a
<b>5.3 Knowledge absorption</b>	<b>21.8</b>	<b>113</b>
5.3.1 Royalty & license fees payments, % GDP.....	0.0	107
5.3.2 High-tech imports less re-imports, %.....	4.3	106
5.3.3 Computer & comm. service imports, %.....	45.1	50
5.3.4 FDI net inflows, % GDP.....	37.8	110

## 6 Scientific outputs 18.2 95

<b>6.1 Knowledge creation</b>	<b>1.0</b>	<b>120</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	1.2	86
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	0.7	121
<b>6.2 Knowledge impact</b>	<b>33.4</b>	<b>55</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	33.4	88
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>20.2</b>	<b>97</b>
6.3.1 Royalty & license fees receipts, % GDP.....	17.0	25
6.3.2 High-tech exports less re-exports, %.....	0.0	108
6.3.3 Computer & comm service exports, %.....	16.7	99
6.3.4 FDI net outflows, % GDP.....	47.3	91

## 7 Creative outputs 10.7 122

<b>7.1 Creative intangibles</b>	<b>20.8</b>	<b>122</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	20.8	49
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	n/a	n/a
7.1.4 ICT & organizational models†.....	n/a	n/a
<b>7.2 Creative goods &amp; services</b>	<b>0.6</b>	<b>122</b>
7.2.1 Recreation & culture consumption, %.....	0.0	67
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	2.0	57
7.2.4 Creative goods exports, %.....	0.2	116
7.2.5 Creative services exports, %.....	n/a	n/a

## Key indicators

Population (millions)	13.3
GDP per capita, PPP (current international \$)	1,428.6
GDP (US\$ billions)	12.7

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>25.3</b>	<b>114</b>
Innovation Output Sub-Index .....	16.7	120
Innovation Input Sub-Index.....	33.8	94
Innovation Efficiency Index.....	0.5	116
Global Innovation Index 2010.....		111
Global Innovation Index 2009.....		96

**1 Institutions 64.3 65**

<b>1.1 Political environment</b>	<b>57.0</b>	<b>61</b>
1.1.1 Political stability*.....	64.2	41
1.1.2 Government effectiveness*.....	30.0	101
1.1.3 Press freedom*.....	76.7	67
<b>1.2 Regulatory environment</b>	<b>50.8</b>	<b>87</b>
1.2.1 Regulatory quality*.....	35.7	100
1.2.2 Rule of law*.....	37.7	84
1.2.3 Rigidity of employment*.....	79.0	47
<b>1.3 Business environment</b>	<b>85.1</b>	<b>40</b>
1.3.1 Time to start a business, days.....	83.7	68
1.3.2 Cost to start a business, % income/cap.....	78.3	92
1.3.3 Total tax rate, % profits.....	93.4	9

**2 Human capital & research 24.7 112**

<b>2.1 Education</b>	<b>44.3</b>	<b>103</b>
2.1.1 Education expenditure, % GNI.....	6.3	119
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.....	63.3	93
<b>2.2 Tertiary education</b>	<b>15.8</b>	<b>106</b>
2.2.1 Tertiary enrolment, % gross.....	2.0	117
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	54.7	12
2.2.6 Gross tertiary outbound enrolment, %.....	4.6	81
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>13.9</b>	<b>104</b>
2.3.1 Researchers headcount/million pop.....	0.4	89
2.3.2 Gross expenditure on R&D, % GDP.....	0.1	99
2.3.3 Quality research institutions†.....	41.1	69

**3 Infrastructure 22.6 95**

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>18.3</b>	<b>90</b>
3.1.1 ICT access*.....	12.8	122
3.1.2 ICT use*.....	1.9	107
3.1.3 Government's Online Service*.....	10.5	113
3.1.4 E-Participation*.....	70.1	9
<b>3.2 Energy</b>	<b>21.2</b>	<b>60</b>
3.2.1 Electricity output, kWh/cap.....	3.9	91
3.2.2 Electricity consumption, kWh/capita.....	2.4	94
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	3.9	111
3.2.4 Share of renewables in energy use, %.....	56.6	3
<b>3.3 General infrastructure</b>	<b>28.4</b>	<b>103</b>
3.3.1 Quality of trade & transport infrastructure*.....	20.8	118
3.3.2 Gross capital formation, % GDP.....	21.6	78
3.3.3 Ecological footprint & biocapacity, ha/cap.....	42.8	16

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<b>4.1 Credit</b>	<b>36.2</b>	<b>73</b>
4.1.1 Strength of legal rights for credit*.....	90.0	7
4.1.2 Depth of credit information*.....	83.3	25
4.1.3 Domestic credit to private sector, % GDP.....	3.6	104
4.1.4 Microfinance gross loans, % GDP.....	0.7	60
<b>4.2 Investment</b>	<b>17.5</b>	<b>107</b>
4.2.1 Strength of investor protection*.....	53.0	55
4.2.2 Market capitalization, % GDP.....	8.0	67
4.2.3 Total value of stocks traded, % GDP.....	0.3	82
4.2.4 Venture capital deals/tr GDP PPP\$.....	0.0	69
<b>4.3 Trade &amp; competition</b>	<b>47.4</b>	<b>78</b>
4.3.1 Applied tariff rate weighted mean, %.....	75.0	77
4.3.2 Market access trade restrictiveness*, %.....	77.5	38
4.3.3 Imports of goods & services, % GDP.....	15.9	82
4.3.4 Exports of goods & services, % GDP.....	22.9	74
4.3.5 Intensity local competition†.....	60.7	81

**5 Business sophistication 23.8 112**

<b>5.1 Knowledge workers</b>	<b>16.9</b>	<b>117</b>
5.1.1 Knowledge-intensive employment, %.....	7.5	98
5.1.2 Firms offering formal training, % firms.....	26.6	63
5.1.3 R&D performed by business, %.....	16.3	70
5.1.4 R&D financed by business, %.....	n/a	n/a
<b>5.2 Innovation linkages</b>	<b>28.9</b>	<b>79</b>
5.2.1 University/industry collaboration†.....	42.5	60
5.2.2 State of cluster development†.....	41.5	62
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	34.7	22
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
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5.3.1 Royalty & license fees payments, % GDP.....	2.1	101
5.3.2 High-tech imports less re-imports, %.....	6.7	104
5.3.3 Computer & comm. service imports, %.....	33.5	74
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6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	n/a	n/a
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	6.2	78
<b>6.2 Knowledge impact</b>	<b>29.0</b>	<b>70</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	51.2	28
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	6.9	59
6.2.3 Computer software spending, % GDP.....	n/a	n/a
<b>6.3 Knowledge diffusion</b>	<b>19.7</b>	<b>99</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.2	100
6.3.3 Computer & comm service exports, %.....	11.8	106
6.3.4 FDI net outflows, % GDP.....	47.3	91

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<b>7.1 Creative intangibles</b>	<b>31.2</b>	<b>110</b>
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7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	0.0	54
7.1.3 ICT & business models†.....	54.0	80
7.1.4 ICT & organizational models†.....	43.6	94
<b>7.2 Creative goods &amp; services</b>	<b>0.9</b>	<b>119</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	1.8	58
7.2.4 Creative goods exports, %.....	0.5	112
7.2.5 Creative services exports, %.....	n/a	n/a

## Zimbabwe

## Key indicators

Population (millions)	12.6
GDP per capita, PPP (current international \$)	500.0
GDP (US\$ billions)	3.4

	Score 0–100	Rank
<b>Global Innovation Index</b> .....	<b>23.5</b>	<b>119</b>
Innovation Output Sub-Index .....	20.3	107
Innovation Input Sub-Index.....	26.8	122
Innovation Efficiency Index.....	0.8	53
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1.1.3 Press freedom*.....	58.2	88
<b>1.2 Regulatory environment</b>	<b>23.1</b>	<b>123</b>
1.2.1 Regulatory quality*.....	1.4	125
1.2.2 Rule of law*.....	0.9	125
1.2.3 Rigidity of employment*.....	67.0	76
<b>1.3 Business environment</b>	<b>27.8</b>	<b>125</b>
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1.3.2 Cost to start a business, % income/cap.....	0.0	125
1.3.3 Total tax rate, % profits.....	68.9	63

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<b>2.1 Education</b>	<b>68.7</b>	<b>28</b>
2.1.1 Education expenditure, % GNI.....	80.1	8
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.....	63.0	95
<b>2.2 Tertiary education</b>	<b>21.7</b>	<b>92</b>
2.2.1 Tertiary enrolment, % gross.....	2.8	116
2.2.2 Graduates in science, %.....	n/a	n/a
2.2.3 Graduates in engineering, %.....	n/a	n/a
2.2.4 Tertiary inbound mobility, %.....	n/a	n/a
2.2.5 Tertiary outbound mobility, %.....	61.9	8
2.2.6 Gross tertiary outbound enrolment, %.....	19.4	47
<b>2.3 Research &amp; development (R&amp;D)</b>	<b>32.1</b>	<b>43</b>
2.3.1 Researchers headcount/million pop.....	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP.....	n/a	n/a
2.3.3 Quality research institutions†.....	32.1	100

## 3 Infrastructure 16.4 124

<b>3.1 Info &amp; comm. technologies (ICT)</b>	<b>7.7</b>	<b>123</b>
3.1.1 ICT access*.....	11.5	124
3.1.2 ICT use*.....	3.9	95
3.1.3 Government's Online Service*.....	12.7	111
3.1.4 E-Participation*.....	2.9	113
<b>3.2 Energy</b>	<b>17.4</b>	<b>78</b>
3.2.1 Electricity output, kWh/cap.....	3.3	97
3.2.2 Electricity consumption, kWh/capita.....	4.1	86
3.2.3 GDP/unit of energy use, PPP\$/kg oil eq.....	6.2	106
3.2.4 Share of renewables in energy use, %.....	42.4	12
<b>3.3 General infrastructure</b>	<b>23.9</b>	<b>122</b>
3.3.1 Quality of trade & transport infrastructure*.....	21.8	117
3.3.2 Gross capital formation, % GDP.....	14.3	101
3.3.3 Ecological footprint & biocapacity, ha/cap.....	35.8	51

## 4 Market sophistication 30.5 101

<b>4.1 Credit</b>	<b>15.7</b>	<b>117</b>
4.1.1 Strength of legal rights for credit*.....	60.0	57
4.1.2 Depth of credit information*.....	0.0	111
4.1.3 Domestic credit to private sector, % GDP.....	9.1	82
4.1.4 Microfinance gross loans, % GDP.....	0.1	71
<b>4.2 Investment</b>	<b>34.0</b>	<b>45</b>
4.2.1 Strength of investor protection*.....	43.0	93
4.2.2 Market capitalization, % GDP.....	28.3	25
4.2.3 Total value of stocks traded, % GDP.....	5.4	49
4.2.4 Venture capital deals/tr GDP PPP\$.....	84.5	9
<b>4.3 Trade &amp; competition</b>	<b>41.8</b>	<b>101</b>
4.3.1 Applied tariff rate weighted mean, %.....	13.9	123
4.3.2 Market access trade restrictiveness*, %.....	n/a	n/a
4.3.3 Imports of goods & services, % GDP.....	49.4	14
4.3.4 Exports of goods & services, % GDP.....	52.8	26
4.3.5 Intensity local competition†.....	51.3	111

## 5 Business sophistication 21.6 119

<b>5.1 Knowledge workers</b>	<b>n/a</b>	<b>n/a</b>
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
<b>5.2 Innovation linkages</b>	<b>17.7</b>	<b>116</b>
5.2.1 University/industry collaboration†.....	34.9	96
5.2.2 State of cluster development†.....	27.0	114
5.2.3 R&D financed by abroad, %.....	n/a	n/a
5.2.4 JV/strategic alliance deals/tr GDP PPP\$.....	0.0	73
5.2.5 PCT patent filings with foreign inventor, %.....	0.0	73
<b>5.3 Knowledge absorption</b>	<b>25.6</b>	<b>98</b>
5.3.1 Royalty & license fees payments, % GDP.....	n/a	n/a
5.3.2 High-tech imports less re-imports, %.....	10.8	90
5.3.3 Computer & comm. service imports, %.....	n/a	n/a
5.3.4 FDI net inflows, % GDP.....	40.3	96

## 6 Scientific outputs 6.6 124

<b>6.1 Knowledge creation</b>	<b>19.0</b>	<b>42</b>
6.1.1 Domestic resident patent ap/bn GDP PPP\$.....	n/a	n/a
6.1.2 PCT resident patent ap/bn GDP PPP\$.....	0.0	86
6.1.3 Domestic res utility model ap/bn GDP PPP\$.....	1.1	48
6.1.4 Scientific & technical articles/bn GDP PPP\$.....	46.8	16
<b>6.2 Knowledge impact</b>	<b>0.0</b>	<b>115</b>
6.2.1 Growth rate of GDP PPP\$/worker, %.....	0.0	109
6.2.2 New businesses/1,000 pop. 15–64 yrs.....	n/a	n/a
6.2.3 Computer software spending, % GDP.....	0.1	73
<b>6.3 Knowledge diffusion</b>	<b>0.9</b>	<b>121</b>
6.3.1 Royalty & license fees receipts, % GDP.....	n/a	n/a
6.3.2 High-tech exports less re-exports, %.....	0.9	87
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 33.9 60

<b>7.1 Creative intangibles</b>	<b>25.7</b>	<b>117</b>
7.1.1 Domestic res trademark ap/bn GDP PPP\$.....	0.0	100
7.1.2 Madrid resident trademark ap/bn GDP PPP\$.....	n/a	n/a
7.1.3 ICT & business models†.....	43.2	114
7.1.4 ICT & organizational models†.....	33.8	116
<b>7.2 Creative goods &amp; services</b>	<b>42.1</b>	<b>14</b>
7.2.1 Recreation & culture consumption, %.....	n/a	n/a
7.2.2 National feature films/mn pop.....	n/a	n/a
7.2.3 Daily newspapers/1,000 literate pop.....	n/a	n/a
7.2.4 Creative goods exports, %.....	42.1	12
7.2.5 Creative services exports, %.....	n/a	n/a

# Appendix II

Data Tables



## Data Tables

This appendix provides tables for each of the 80 indicators that make up the Global Innovation Index 2011 (GII).

### 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 2000–10 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.

A total of 59 variables are hard data; 15 are composite indicators from international agencies, distin-

indicate worse outcomes (commonly known as ‘bads’) are differentiated with a ‘b’.

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.

**1.1.1 Political stability**  
Political stability and absence of violence/terrorism index\* | 2009

Country/Economy	Year	Value	Country/Economy	Year	Value
1 Luxembourg	2009	96.33	65 Malawi	2009	43.45
2 Finland	2009	95.75	66 Geneva	2009	41.98
3 Brunei Darussalam	2009	95.28	67 Albania	2009	41.57
4 Switzerland	2009	92.45	68 Bahrain	2009	40.57
5 Iceland	2009	91.98	69 Bulgaria	2009	39.62
6 Norway	2009	91.81	70 Senegal	2009	38.68
7 Singapore	2009	90.09	71 Spain	2009	38.21
8 Austria	2009	89.15	72 Macedonia	2009	37.26
9 Qatar	2009	88.68	73 Jordan	2009	36.32
10 Sweden	2009	88.31	74 Mali	2009	34.91
11 Denmark	2009	85.85	75 Ukraine	2009	34.43
12 Canada	2009	85.38	76 Honduras	2009	33.94
13 New Zealand	2009	84.91	77 Rwanda	2009	33.49
14 Ireland	2009	84.43	78 Armenia	2009	33.03
15 Japan	2009	83.49	79 Saudi Arabia	2009	32.55
16 Netherlands	2009	83.02	80 Azerbaijan	2009	32.08
17 Hong Kong (SAR), China	2009	81.60	81 Cameroon	2009	31.13
18 Czech Republic	2009	81.13	82 Morocco	2009	30.19
19 United Arab Emirates	2009	80.66	83 Chile	2009	29.72
20 Poland	2009	80.19	84 Serbia	2009	28.30
21 Botswana	2009	79.72	85 Maldives Rep.	2009	27.83
22 Slovak Republic	2009	78.77	86 Nicaragua	2009	27.36
23 Uruguay	2009	78.30	87 Guyana	2009	26.89
24 Slovenia	2009	77.36	88 Kyrgyzstan	2009	26.42
25 Germany	2009	76.89	89 Bosnia & Herzegovina	2009	25.94
26 Australia	2009	76.42	90 Cambodia	2009	25.00
27 Oman	2009	75.47	91 Egypt	2009	24.53
28 Namibia	2009	75.00	92 Indonesia	2009	24.06
29 Portugal	2009	74.53	93 Madagascar	2009	23.58
30 Belgium	2009	74.06	94 Syrian Arab Republic	2009	23.14
31 Lithuania	2009	73.59	95 Mexico	2009	22.17
32 Costa Rica	2009	73.12	96 Russian Federation	2009	21.70
33 Kazakhstan	2009	69.81	97 Guatemala	2009	21.23
34 Chile	2009	69.34	98 Ecuador	2009	20.75
35 Mauritius	2009	68.87	99 Bolivia	2009	19.81
36 Hungary	2009	67.92	100 Turkey	2009	18.87
37 Croatia	2009	67.45	101 Peru	2009	17.92
38 Estonia	2009	66.98	102 Paraguay	2009	17.45
39 France	2009	65.57	103 Georgia	2009	16.98
40 Italy	2009	64.62	104 Pakistan	2009	16.04
41 Zambia	2009	64.15	105 Uganda	2009	15.59
42 Bulgaria	2009	63.74	106 Thailand	2009	14.62
43 Barbados	2009	63.27	107 Niger	2009	14.15
44 Latvia	2009	61.32	108 Albania	2009	13.21
45 Kuwait	2009	59.43	109 Algeria	2009	12.24
46 United States of America	2009	58.96	110 Ethiopia	2009	12.26
47 Romania	2009	58.49	111 Sri Lanka	2009	11.79
48 Cyprus	2009	57.02	112 Philippines	2009	11.32
49 Mongolia	2009	55.19	113 Philippines	2009	10.85
50 United Kingdom	2009	54.72	114 Zimbabwe	2009	9.91
51 Brazil	2009	54.25	115 Israel	2009	9.43
52 Tunisia	2009	53.30	116 Indonesia	2009	8.96
53 Korea Rep.	2009	52.36	117 Iran	2009	8.49
54 Viet Nam	2009	51.42	118 Cote d'Ivoire	2009	8.02
55 Ghana	2009	50.00	119 Bangladesh	2009	7.55
56 Panama	2009	49.53	120 Colombia	2009	7.08
57 Armenia	2009	48.11	121 Ethiopia	2009	6.13
58 Tanzania	2009	47.64	122 Nigeria	2009	4.25
59 Malaysia	2009	46.70	123 Yemen	2009	2.36
60 El Salvador	2009	46.23	124 Sudan	2009	1.42
61 Trinidad and Tobago	2009	44.81	125 Pakistan	2009	0.47
62 South Africa	2009	44.34			
64 Argentina	2009	43.40			

SOURCE: World Bank, World Governance Indicators 2009

### Explanation of scores

The tables list the economies by their GII rank order, 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 sub-heading), and the normalized score in the [0, 100] range.

For some composite indicators, the original value equals the normalized score because the range for both measures is the same—[0, 100]. This happens on five occasions: 1.1.1, 1.1.2, 1.2.1,

1.2.2, and 1.2.3. In other instances, the correspondence is straightforward. For example, composite indicators 4.1.1 and 4.2.1, for which original values lie within the [0, 10] range, have normalized scores that are 10 times the original value.

Details on the computation methodology can be found in Appendix IV, Technical Notes.





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# 1.1.1

## Political stability

Political stability and absence of violence/terrorism index (0–100)\* | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg	96.23	96.23	65	Malawi	42.45	42.45
2	Finland	95.75	95.75	66	Greece	41.98	41.98
3	Brunei Darussalam	95.28	95.28	67	Albania	41.51	41.51
4	Switzerland	92.45	92.45	68	Bahrain	40.57	40.57
5	Iceland	91.98	91.98	69	Burkina Faso	39.62	39.62
6	Norway	91.51	91.51	70	Senegal	38.68	38.68
7	Singapore	90.09	90.09	71	Spain	38.21	38.21
8	Austria	89.15	89.15	72	Macedonia	37.26	37.26
9	Qatar	88.68	88.68	73	Jordan	36.32	36.32
10	Sweden	88.21	88.21	74	Mali	34.91	34.91
11	Denmark	85.85	85.85	75	Ukraine	34.43	34.43
12	Canada	85.38	85.38	76	Honduras	33.96	33.96
13	New Zealand	84.91	84.91	77	Rwanda	33.49	33.49
14	Ireland	84.43	84.43	78	Jamaica	33.02	33.02
15	Japan	83.49	83.49	79	Saudi Arabia	32.55	32.55
16	Netherlands	83.02	83.02	80	Azerbaijan	32.08	32.08
17	Hong Kong (SAR), China	81.60	81.60	81	Cameroon	31.13	31.13
18	Czech Republic	81.13	81.13	82	Morocco	30.19	30.19
19	United Arab Emirates	80.66	80.66	83	China	29.72	29.72
20	Poland	80.19	80.19	84	Serbia	28.30	28.30
21	Botswana	79.72	79.72	85	Moldova, Rep.	27.83	27.83
22	Slovak Republic	78.77	78.77	86	Nicaragua	27.36	27.36
23	Uruguay	78.30	78.30	87	Guyana	26.89	26.89
24	Slovenia	77.36	77.36	88	Kyrgyzstan	26.42	26.42
25	Germany	76.89	76.89	89	Bosnia & Herzegovina	25.94	25.94
26	Australia	76.42	76.42	90	Cambodia	25.00	25.00
27	Oman	75.47	75.47	91	Egypt	24.53	24.53
28	Namibia	75.00	75.00	92	Indonesia	24.06	24.06
29	Portugal	74.53	74.53	93	Madagascar	23.58	23.58
30	Belgium	74.06	74.06	94	Syrian Arab Republic	22.64	22.64
31	Lithuania	70.75	70.75	95	Mexico	22.17	22.17
32	Costa Rica	70.28	70.28	96	Russian Federation	21.70	21.70
33	Kazakhstan	69.81	69.81	97	Guatemala	21.23	21.23
34	Chile	69.34	69.34	98	Ecuador	20.75	20.75
35	Mauritius	68.40	68.40	99	Bolivia	19.81	19.81
36	Hungary	67.92	67.92	100	Turkey	18.87	18.87
37	Croatia	67.45	67.45	101	Peru	17.92	17.92
38	Estonia	66.98	66.98	102	Paraguay	17.45	17.45
39	France	65.57	65.57	103	Georgia	16.98	16.98
40	Italy	64.62	64.62	104	Tajikistan	16.04	16.04
41	Zambia	64.15	64.15	105	Uganda	15.09	15.09
42	Bulgaria	62.74	62.74	106	Thailand	14.62	14.62
43	Benin	61.79	61.79	107	Niger	14.15	14.15
44	Latvia	61.32	61.32	108	India	13.21	13.21
45	Kuwait	59.43	59.43	109	Algeria	12.74	12.74
46	United States of America	58.96	58.96	110	Kenya	12.26	12.26
47	Romania	58.49	58.49	111	Sri Lanka	11.79	11.79
48	Cyprus	57.55	57.55	112	Venezuela	11.32	11.32
49	Mongolia	55.19	55.19	113	Philippines	10.85	10.85
50	United Kingdom	54.72	54.72	114	Zimbabwe	9.91	9.91
51	Brazil	54.25	54.25	115	Israel	9.43	9.43
52	Tunisia	53.30	53.30	116	Lebanon	8.96	8.96
53	Korea, Rep.	52.36	52.36	117	Iran	8.49	8.49
54	Viet Nam	51.42	51.42	118	Côte d'Ivoire	8.02	8.02
55	Ghana	50.00	50.00	119	Bangladesh	7.55	7.55
56	Panama	49.53	49.53	120	Colombia	7.08	7.08
57	Armenia	48.11	48.11	121	Ethiopia	6.13	6.13
58	Tanzania	47.64	47.64	122	Nigeria	4.25	4.25
59	Malaysia	46.70	46.70	123	Yemen	2.36	2.36
60	El Salvador	46.23	46.23	124	Sudan	1.42	1.42
61	Swaziland	45.28	45.28	125	Pakistan	0.47	0.47
62	Trinidad and Tobago	44.81	44.81				
63	South Africa	44.34	44.34				
64	Argentina	43.40	43.40				

SOURCE: World Bank, *World Governance Indicators 2009*

# 1.1.2 Government effectiveness

## Government effectiveness index (0–100)\* | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore	100.00	100.00	65	Ghana	56.67	56.67
2	Denmark	99.52	99.52	66	Colombia	56.19	56.19
3	Finland	99.05	99.05	67	India	54.29	54.29
4	Sweden	98.57	98.57	68	El Salvador	52.86	52.86
5	Switzerland	98.10	98.10	69	Saudi Arabia	51.90	51.90
6	New Zealand	97.62	97.62	70	Morocco	51.43	51.43
7	Canada	96.67	96.67	71	Romania	50.95	50.95
8	Luxembourg	96.19	96.19	72	Macedonia	50.48	50.48
9	Hong Kong (SAR), China	95.71	95.71	73	Philippines	50.00	50.00
10	Australia	95.24	95.24	74	Serbia	49.52	49.52
11	Norway	94.76	94.76	75	Sri Lanka	49.05	49.05
12	Netherlands	94.29	94.29	76	Rwanda	48.57	48.57
13	Austria	93.81	93.81	77	Kazakhstan	48.10	48.10
14	Iceland	93.33	93.33	78	Albania	47.62	47.62
15	Germany	91.90	91.90	79	Guyana	47.14	47.14
16	United Kingdom	90.95	90.95	80	Indonesia	46.67	46.67
17	Belgium	90.48	90.48	81	Viet Nam	46.19	46.19
18	France	90.00	90.00	82	Russian Federation	44.76	44.76
19	United States of America	89.05	89.05	83	Egypt	44.29	44.29
20	Cyprus	88.57	88.57	84	Peru	43.33	43.33
21	Ireland	88.10	88.10	85	Senegal	40.95	40.95
22	Japan	86.67	86.67	86	Ethiopia	40.48	40.48
23	Chile	85.71	85.71	87	Argentina	39.52	39.52
24	Portugal	85.24	85.24	88	Tanzania	39.05	39.05
25	Estonia	84.76	84.76	89	Benin	38.10	38.10
26	Slovenia	84.29	84.29	90	Malawi	36.67	36.67
27	Qatar	83.81	83.81	91	Moldova, Rep.	35.71	35.71
28	Korea, Rep.	83.33	83.33	92	Algeria	34.76	34.76
29	Israel	82.38	82.38	93	Syrian Arab Republic	34.29	34.29
30	Malaysia	79.52	79.52	94	Uganda	33.81	33.81
31	Czech Republic	79.05	79.05	95	Azerbaijan	33.33	33.33
32	Spain	77.62	77.62	96	Madagascar	32.86	32.86
33	United Arab Emirates	77.14	77.14	97	Bosnia & Herzegovina	32.38	32.38
34	Slovak Republic	76.67	76.67	98	Burkina Faso	31.90	31.90
35	Brunei Darussalam	75.24	75.24	99	Kenya	30.95	30.95
36	Hungary	73.81	73.81	100	Lebanon	30.48	30.48
37	Lithuania	73.33	73.33	101	Zambia	30.00	30.00
38	Mauritius	72.86	72.86	102	Guatemala	29.05	29.05
39	Uruguay	71.90	71.90	103	Swaziland	28.57	28.57
40	Oman	71.43	71.43	104	Honduras	28.10	28.10
41	Poland	70.95	70.95	105	Bolivia	27.62	27.62
42	Croatia	70.48	70.48	106	Iran	26.19	26.19
43	Botswana	70.00	70.00	107	Cambodia	25.71	25.71
44	Latvia	69.52	69.52	108	Niger	24.76	24.76
45	Bahrain	69.05	69.05	109	Mali	24.29	24.29
46	Greece	68.57	68.57	110	Ukraine	23.81	23.81
47	Italy	68.10	68.10	111	Cameroon	23.33	23.33
48	South Africa	67.62	67.62	112	Mongolia	22.86	22.86
49	Costa Rica	65.71	65.71	113	Ecuador	21.90	21.90
50	Tunisia	65.24	65.24	114	Paraguay	19.52	19.52
51	Trinidad and Tobago	64.29	64.29	115	Pakistan	19.05	19.05
52	Turkey	63.81	63.81	116	Venezuela	18.57	18.57
53	Jordan	63.33	63.33	117	Kyrgyzstan	17.14	17.14
54	Panama	62.38	62.38	118	Bangladesh	16.67	16.67
55	Georgia	61.90	61.90	119	Nicaragua	14.29	14.29
56	Kuwait	61.43	61.43	120	Tajikistan	12.38	12.38
57	Namibia	60.95	60.95	121	Yemen	11.43	11.43
58	Mexico	60.48	60.48	122	Côte d'Ivoire	9.52	9.52
59	Thailand	59.52	59.52	123	Nigeria	8.57	8.57
60	Bulgaria	59.05	59.05	124	Sudan	7.14	7.14
61	Jamaica	58.57	58.57	125	Zimbabwe	2.38	2.38
62	China	58.10	58.10				
63	Brazil	57.62	57.62				
64	Armenia	57.14	57.14				

SOURCE: World Bank, *World Governance Indicators 2009*

# 1.1.3

## Press freedom

Press freedom index (0 = more freedom)\*<sup>b</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Finland	0.00	100.00	65	Albania	21.50	77.26
1	Sweden	0.00	100.00	66	Panama	21.83	76.91
1	Switzerland	0.00	100.00	67	Zambia	22.00	76.73
1	Norway	0.00	100.00	68	Nicaragua	22.33	76.39
1	Netherlands	0.00	100.00	69	Serbia	23.00	75.68
1	Iceland	0.00	100.00	70	Israel	23.25	75.41
7	Austria	0.50	99.47	71	United Arab Emirates	23.75	74.88
8	New Zealand	1.50	98.41	71	Kuwait	23.75	74.88
9	Ireland	2.00	97.88	73	Senegal	25.00	73.56
9	Estonia	2.00	97.88	74	Uganda	25.50	73.03
11	Denmark	2.50	97.36	75	Georgia	27.00	71.45
11	Japan	2.50	97.36	76	Armenia	27.50	70.92
11	Lithuania	2.50	97.36	76	Ecuador	27.50	70.92
14	Luxembourg	4.00	95.77	78	Bolivia	28.13	70.25
14	Belgium	4.00	95.77	79	Niger	28.50	69.86
16	Germany	4.25	95.51	80	Peru	30.00	68.27
17	Australia	5.38	94.31	81	Tajikistan	34.50	63.52
18	United Kingdom	6.00	93.65	82	Madagascar	34.88	63.11
19	United States of America	6.75	92.86	83	Indonesia	35.83	62.11
20	Canada	7.00	92.60	84	Côte d'Ivoire	36.00	61.93
20	Namibia	7.00	92.60	85	Jordan	37.00	60.87
22	Czech Republic	7.50	92.07	86	Qatar	38.00	59.81
22	Hungary	7.50	92.07	87	India	38.75	59.02
24	Jamaica	7.67	91.89	88	Zimbabwe	39.50	58.23
25	Ghana	8.00	91.54	89	Oman	40.25	57.43
25	Mali	8.00	91.54	90	Bangladesh	42.50	55.05
27	Costa Rica	8.08	91.46	91	Egypt	43.33	54.18
28	Latvia	8.50	91.01	92	Cambodia	43.83	53.65
28	Trinidad and Tobago	8.50	91.01	93	Cameroon	44.30	53.15
30	Poland	8.88	90.61	94	Ukraine	46.83	50.48
31	Chile	10.50	88.90	95	Algeria	47.33	49.95
32	Hong Kong (SAR), China	10.75	88.63	95	Venezuela	47.33	49.95
33	Slovak Republic	11.50	87.84	97	Morocco	47.40	49.87
34	Uruguay	11.75	87.57	98	Singapore	47.50	49.77
35	South Africa	12.00	87.31	98	Mexico	47.50	49.77
36	Spain	12.25	87.05	100	Turkey	49.25	47.92
37	Portugal	12.36	86.93	101	Ethiopia	49.38	47.78
38	Tanzania	13.00	86.25	102	Russian Federation	49.90	47.23
39	Korea, Rep.	13.33	85.90	103	Malaysia	50.75	46.33
40	France	13.38	85.85	104	Brunei Darussalam	51.00	46.07
41	Cyprus	13.40	85.83	105	Honduras	51.13	45.93
42	Slovenia	13.44	85.79	106	Bahrain	51.38	45.66
43	Bosnia & Herzegovina	13.50	85.72	107	Colombia	51.50	45.54
44	Italy	15.00	84.14	107	Nigeria	51.50	45.54
44	Burkina Faso	15.00	84.14	109	Pakistan	56.17	40.60
46	El Salvador	15.83	83.26	110	Azerbaijan	56.38	40.38
47	Romania	16.00	83.08	111	Thailand	56.83	39.90
48	Paraguay	16.25	82.82	112	Swaziland	57.50	39.19
49	Argentina	16.35	82.71	113	Philippines	60.00	36.55
50	Brazil	16.60	82.45	114	Saudi Arabia	61.50	34.96
51	Guyana	16.63	82.41	115	Sri Lanka	62.50	33.90
52	Croatia	17.50	81.49	116	Kyrgyzstan	63.00	33.38
52	Botswana	17.50	81.49	117	Kazakhstan	68.50	27.56
54	Mauritius	18.00	80.96	118	Tunisia	72.50	23.33
55	Macedonia	18.40	80.54	119	Viet Nam	75.75	19.89
56	Greece	19.00	79.91	120	Rwanda	81.00	14.34
56	Bulgaria	19.00	79.91	121	Yemen	82.13	13.15
56	Benin	19.00	79.91	122	China	84.67	10.46
56	Kenya	19.00	79.91	123	Sudan	85.33	9.76
60	Moldova, Rep.	19.13	79.77	124	Syrian Arab Republic	91.50	3.24
61	Mongolia	19.42	79.46	125	Iran	94.56	0.00
62	Guatemala	20.25	78.59				
63	Lebanon	20.50	78.32				
64	Malawi	21.00	77.79				

SOURCE: Reporters Without Borders, *Press Freedom Index 2010*

# 1.2.1 Regulatory quality

## Regulatory quality index (0–100)\* | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore	100.00	100.00	65	Colombia	57.14	57.14
2	Hong Kong (SAR), China	99.52	99.52	66	Saudi Arabia	56.67	56.67
3	Denmark	99.05	99.05	67	Kuwait	55.71	55.71
4	New Zealand	98.57	98.57	68	Brazil	55.24	55.24
5	Australia	98.10	98.10	69	Ghana	54.76	54.76
6	Finland	97.62	97.62	70	Tunisia	54.29	54.29
7	Netherlands	97.14	97.14	71	Namibia	53.81	53.81
8	Sweden	96.67	96.67	72	Philippines	52.38	52.38
9	Canada	96.19	96.19	73	Morocco	51.90	51.90
10	Luxembourg	95.71	95.71	74	Bosnia & Herzegovina	51.43	51.43
11	Ireland	95.24	95.24	75	Guatemala	50.95	50.95
12	Switzerland	94.76	94.76	76	Lebanon	50.48	50.48
13	United Kingdom	94.29	94.29	77	Serbia	50.00	50.00
14	Chile	93.81	93.81	78	Burkina Faso	49.05	49.05
15	Austria	92.86	92.86	79	Egypt	48.57	48.57
16	Germany	92.38	92.38	80	Moldova, Rep.	48.10	48.10
17	Estonia	91.90	91.90	81	Kenya	47.14	47.14
18	Norway	91.43	91.43	82	Uganda	46.67	46.67
19	United States of America	89.52	89.52	83	China	46.19	46.19
20	Cyprus	87.62	87.62	84	Honduras	45.71	45.71
21	Belgium	86.67	86.67	85	Senegal	44.76	44.76
22	Czech Republic	86.19	86.19	86	India	44.29	44.29
23	France	85.24	85.24	87	Azerbaijan	43.81	43.81
24	Spain	84.76	84.76	88	Sri Lanka	43.33	43.33
25	Brunei Darussalam	82.86	82.86	89	Indonesia	42.86	42.86
26	Slovak Republic	82.38	82.38	90	Rwanda	41.43	41.43
27	Hungary	81.90	81.90	91	Mongolia	40.48	40.48
28	Israel	81.43	81.43	92	Benin	40.00	40.00
29	Japan	80.95	80.95	93	Kyrgyzstan	39.52	39.52
30	Portugal	80.48	80.48	94	Cambodia	39.05	39.05
31	Latvia	80.00	80.00	95	Kazakhstan	38.57	38.57
32	Lithuania	79.52	79.52	96	Tanzania	38.10	38.10
33	Iceland	79.05	79.05	97	Nicaragua	37.62	37.62
34	Poland	78.57	78.57	98	Paraguay	36.67	36.67
35	Italy	77.62	77.62	99	Mali	36.19	36.19
36	Slovenia	77.14	77.14	100	Zambia	35.71	35.71
37	Mauritius	75.71	75.71	101	Russian Federation	35.24	35.24
38	Korea, Rep.	75.24	75.24	102	Madagascar	34.76	34.76
39	Greece	74.76	74.76	103	Niger	33.81	33.81
40	Bahrain	74.29	74.29	104	Pakistan	33.33	33.33
41	Oman	73.33	73.33	105	Swaziland	32.86	32.86
42	Bulgaria	71.43	71.43	106	Malawi	31.90	31.90
43	Qatar	70.95	70.95	107	Ukraine	31.43	31.43
44	Romania	70.48	70.48	108	Viet Nam	30.95	30.95
45	Georgia	70.00	70.00	109	Yemen	29.52	29.52
46	Trinidad and Tobago	69.52	69.52	110	Guyana	28.10	28.10
47	Botswana	69.05	69.05	111	Cameroon	26.19	26.19
48	United Arab Emirates	68.57	68.57	112	Nigeria	25.71	25.71
49	Croatia	68.10	68.10	113	Bangladesh	23.33	23.33
50	Costa Rica	67.62	67.62	114	Argentina	20.95	20.95
51	Panama	64.76	64.76	115	Algeria	20.48	20.48
52	South Africa	64.29	64.29	116	Côte d'Ivoire	19.52	19.52
53	Peru	63.81	63.81	117	Bolivia	18.10	18.10
54	El Salvador	63.33	63.33	118	Ethiopia	17.62	17.62
55	Uruguay	62.38	62.38	119	Syrian Arab Republic	13.33	13.33
56	Thailand	61.90	61.90	120	Tajikistan	12.86	12.86
57	Jordan	61.43	61.43	121	Sudan	8.57	8.57
58	Mexico	60.95	60.95	122	Ecuador	6.19	6.19
59	Armenia	60.48	60.48	123	Venezuela	3.81	3.81
60	Malaysia	60.00	60.00	124	Iran	3.33	3.33
61	Macedonia	59.52	59.52	125	Zimbabwe	1.43	1.43
62	Jamaica	59.05	59.05				
63	Turkey	58.57	58.57				
64	Albania	58.10	58.10				

SOURCE: World Bank, *World Governance Indicators 2009*

# 1.2.2 Rule of law

Rule of law index (0–100)\* | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Finland	100.00	100.00	65	Georgia	50.00	50.00
2	Sweden	99.53	99.53	66	Brazil	49.53	49.53
3	New Zealand	99.06	99.06	67	Trinidad and Tobago	49.06	49.06
4	Norway	98.58	98.58	68	Malawi	48.58	48.58
5	Denmark	98.11	98.11	69	Macedonia	47.64	47.64
6	Luxembourg	97.64	97.64	70	Burkina Faso	46.70	46.70
7	Netherlands	97.17	97.17	71	Senegal	46.23	46.23
8	Canada	96.70	96.70	72	China	45.28	45.28
9	Austria	96.23	96.23	73	Bosnia & Herzegovina	43.87	43.87
10	Switzerland	95.75	95.75	74	Mongolia	43.40	43.40
11	Australia	95.28	95.28	75	Armenia	42.92	42.92
12	Iceland	94.81	94.81	76	Serbia	42.45	42.45
13	Ireland	94.34	94.34	77	Mali	41.98	41.98
14	United Kingdom	93.87	93.87	78	Viet Nam	41.51	41.51
15	Germany	92.92	92.92	79	Uganda	40.57	40.57
16	Singapore	92.45	92.45	80	Tanzania	40.09	40.09
17	United States of America	91.51	91.51	81	Colombia	39.62	39.62
18	Hong Kong (SAR), China	90.57	90.57	82	Moldova, Rep.	39.15	39.15
19	France	89.62	89.62	83	Syrian Arab Republic	38.21	38.21
20	Belgium	88.68	88.68	84	Zambia	37.74	37.74
21	Japan	88.21	88.21	85	Jamaica	36.79	36.79
22	Chile	87.74	87.74	86	Rwanda	36.32	36.32
23	Cyprus	85.85	85.85	87	Albania	35.85	35.85
24	Spain	85.38	85.38	88	Philippines	35.38	35.38
25	Estonia	84.91	84.91	89	Kazakhstan	34.91	34.91
26	Slovenia	83.96	83.96	90	Indonesia	34.43	34.43
27	Portugal	83.49	83.49	91	Mexico	33.96	33.96
28	Korea, Rep.	82.55	82.55	92	Guyana	33.02	33.02
29	Czech Republic	81.13	81.13	93	Swaziland	32.55	32.55
30	Qatar	80.66	80.66	94	Lebanon	32.08	32.08
31	Mauritius	80.19	80.19	95	Niger	31.60	31.60
32	Israel	74.53	74.53	96	Peru	30.19	30.19
33	Latvia	74.06	74.06	97	Argentina	29.72	29.72
34	Hungary	73.58	73.58	98	Benin	28.77	28.77
35	Brunei Darussalam	72.17	72.17	99	Bangladesh	27.83	27.83
36	Lithuania	71.23	71.23	100	Algeria	26.89	26.89
37	Uruguay	70.75	70.75	101	Ukraine	26.42	26.42
38	Oman	69.34	69.34	102	Madagascar	25.94	25.94
39	Poland	68.87	68.87	103	Russian Federation	23.58	23.58
40	Slovak Republic	67.92	67.92	104	Ethiopia	23.11	23.11
41	Botswana	66.98	66.98	105	El Salvador	22.64	22.64
42	Greece	66.51	66.51	106	Azerbaijan	22.17	22.17
43	Kuwait	66.04	66.04	107	Nicaragua	21.70	21.70
44	Costa Rica	65.57	65.57	108	Honduras	20.75	20.75
45	Malaysia	65.09	65.09	109	Iran	19.81	19.81
46	United Arab Emirates	64.62	64.62	110	Pakistan	19.34	19.34
47	Bahrain	64.15	64.15	111	Paraguay	16.51	16.51
48	Italy	62.74	62.74	112	Cambodia	16.04	16.04
49	Jordan	62.26	62.26	113	Cameroon	15.57	15.57
50	Namibia	61.32	61.32	114	Kenya	15.09	15.09
51	Tunisia	60.85	60.85	115	Guatemala	13.68	13.68
52	Croatia	60.38	60.38	116	Yemen	13.21	13.21
53	Saudi Arabia	58.49	58.49	117	Tajikistan	11.32	11.32
54	Turkey	58.02	58.02	118	Nigeria	10.38	10.38
55	Romania	57.55	57.55	119	Bolivia	9.91	9.91
56	South Africa	56.13	56.13	120	Ecuador	7.55	7.55
57	India	55.66	55.66	121	Kyrgyzstan	7.08	7.08
58	Egypt	54.72	54.72	122	Côte d'Ivoire	6.13	6.13
59	Bulgaria	53.77	53.77	123	Sudan	5.19	5.19
60	Sri Lanka	53.30	53.30	124	Venezuela	2.83	2.83
61	Panama	52.36	52.36	125	Zimbabwe	0.94	0.94
62	Ghana	51.89	51.89				
63	Thailand	50.94	50.94				
64	Morocco	50.47	50.47				

SOURCE: World Bank, *World Governance Indicators 2009*

## 1.2.3 Rigidity of employment

Rigidity of employment index (0 = less rigid, 100 = more rigid)<sup>\*b</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Australia	0.00	100.00	64	Ghana	27.00	73.00
1	Brunei Darussalam	0.00	100.00	64	Nicaragua	27.00	73.00
1	Hong Kong (SAR), China	0.00	100.00	67	Bangladesh	28.00	72.00
1	Kuwait	0.00	100.00	67	Ethiopia	28.00	72.00
1	Singapore	0.00	100.00	67	Guatemala	28.00	72.00
1	Uganda	0.00	100.00	70	Iran	29.00	71.00
1	United States of America	0.00	100.00	70	Philippines	29.00	71.00
8	Canada	4.00	96.00	72	India	30.00	70.00
8	Jamaica	4.00	96.00	73	China	31.00	69.00
10	Denmark	7.00	93.00	73	Mali	31.00	69.00
10	Georgia	7.00	93.00	73	Ukraine (2009)	31.00	69.00
10	New Zealand	7.00	93.00	76	Bosnia & Herzegovina (2009)	33.00	67.00
10	Nigeria	7.00	93.00	76	Côte d'Ivoire	33.00	67.00
10	Rwanda (2009)	7.00	93.00	76	Zimbabwe	33.00	67.00
10	Switzerland	7.00	93.00	79	Serbia (2009)	35.00	65.00
10	Trinidad and Tobago	7.00	93.00	79	South Africa	35.00	65.00
10	United Arab Emirates	7.00	93.00	79	Turkey	35.00	65.00
18	Azerbaijan (2009)	10.00	90.00	82	Cambodia	36.00	64.00
18	Bahrain	10.00	90.00	82	Sudan	36.00	64.00
18	Colombia	10.00	90.00	84	Ecuador (2009)	38.00	62.00
18	Ireland	10.00	90.00	84	Italy	38.00	62.00
18	Malaysia	10.00	90.00	84	Korea, Rep.	38.00	62.00
18	Swaziland	10.00	90.00	84	Lithuania	38.00	62.00
18	United Kingdom	10.00	90.00	84	Russian Federation	38.00	62.00
25	Czech Republic	11.00	89.00	84	Sweden	38.00	62.00
25	Thailand	11.00	89.00	90	Cameroon	39.00	61.00
27	Botswana	13.00	87.00	90	Costa Rica	39.00	61.00
27	Namibia	13.00	87.00	90	Peru (2009)	39.00	61.00
27	Oman	13.00	87.00	93	Benin	40.00	60.00
27	Qatar	13.00	87.00	93	Indonesia	40.00	60.00
27	Saudi Arabia	13.00	87.00	93	Tunisia	40.00	60.00
32	Macedonia (2009)	14.00	86.00	96	Algeria	41.00	59.00
33	Japan (2009)	16.00	84.00	96	Finland	41.00	59.00
34	Belgium	17.00	83.00	96	Mexico	41.00	59.00
34	Israel	17.00	83.00	96	Moldova, Rep.	41.00	59.00
34	Kazakhstan	17.00	83.00	100	Germany	42.00	58.00
34	Kenya	17.00	83.00	100	Netherlands	42.00	58.00
34	Mongolia (2009)	17.00	83.00	102	Latvia	43.00	57.00
39	Chile	18.00	82.00	102	Pakistan	43.00	57.00
39	Kyrgyzstan (2009)	18.00	82.00	102	Portugal	43.00	57.00
39	Mauritius	18.00	82.00	105	Norway	44.00	56.00
39	Uruguay	18.00	82.00	106	Brazil	46.00	54.00
43	Bulgaria	19.00	81.00	106	Romania	46.00	54.00
43	Guyana	19.00	81.00	108	Spain	49.00	51.00
45	Sri Lanka	20.00	80.00	108	Tajikistan	49.00	51.00
45	Syrian Arab Republic	20.00	80.00	110	Croatia	50.00	50.00
47	Argentina	21.00	79.00	110	Greece (2009)	50.00	50.00
47	Armenia	21.00	79.00	112	Estonia	51.00	49.00
47	Burkina Faso	21.00	79.00	113	France	52.00	48.00
47	Iceland	21.00	79.00	114	Slovenia	54.00	46.00
47	Malawi	21.00	79.00	114	Tanzania	54.00	46.00
47	Viet Nam	21.00	79.00	116	Luxembourg	56.00	44.00
47	Zambia (2009)	21.00	79.00	116	Madagascar	56.00	44.00
54	Hungary	22.00	78.00	116	Paraguay	56.00	44.00
54	Slovak Republic	22.00	78.00	119	Honduras (2009)	57.00	43.00
56	Austria	24.00	76.00	120	Senegal	59.00	41.00
56	Cyprus	24.00	76.00	121	Morocco (2009)	60.00	40.00
56	El Salvador	24.00	76.00	122	Panama	66.00	34.00
56	Jordan	24.00	76.00	123	Niger	68.00	32.00
56	Yemen	24.00	76.00	124	Venezuela (2009)	69.00	31.00
61	Albania	25.00	75.00	125	Bolivia	77.00	23.00
61	Lebanon	25.00	75.00				
61	Poland	25.00	75.00				
64	Egypt	27.00	73.00				

SOURCE: World Bank, *Doing Business 2009 and 2010* (2008–09)



# 1.3.1 Time to start a business

Time to start a business (days)<sup>b</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	New Zealand	1.00	100.00	65	El Salvador	17.00	84.62
2	Australia	2.00	99.04	65	Malaysia	17.00	84.62
3	Georgia	3.00	98.08	65	Niger	17.00	84.62
3	Macedonia	3.00	98.08	68	Bulgaria	18.00	83.65
3	Rwanda	3.00	98.08	68	Zambia	18.00	83.65
3	Singapore	3.00	98.08	70	Bangladesh	19.00	82.69
7	Belgium	4.00	97.12	70	Cameroon	19.00	82.69
7	Hungary	4.00	97.12	70	Greece	19.00	82.69
9	Albania	5.00	96.15	70	Kazakhstan	19.00	82.69
9	Canada	5.00	96.15	70	Luxembourg	19.00	82.69
9	Iceland	5.00	96.15	75	Czech Republic	20.00	81.73
9	Saudi Arabia	5.00	96.15	75	Switzerland	20.00	81.73
13	Denmark	6.00	95.19	77	Pakistan	21.00	80.77
13	Hong Kong (SAR), China	6.00	95.19	78	Chile	22.00	79.81
13	Italy	6.00	95.19	78	Lithuania	22.00	79.81
13	Mauritius	6.00	95.19	78	South Africa	22.00	79.81
13	Portugal	6.00	95.19	81	Japan	23.00	78.85
13	Slovenia	6.00	95.19	82	Algeria	24.00	77.88
13	Turkey	6.00	95.19	83	Uganda	25.00	76.92
13	United States of America	6.00	95.19	84	Argentina	26.00	75.96
21	Croatia	7.00	94.23	85	Peru	27.00	75.00
21	Egypt	7.00	94.23	85	Tajikistan	27.00	75.00
21	Estonia	7.00	94.23	85	Ukraine	27.00	75.00
21	France	7.00	94.23	88	Austria	28.00	74.04
21	Madagascar	7.00	94.23	89	India	29.00	73.08
21	Norway	7.00	94.23	89	Tanzania	29.00	73.08
27	Azerbaijan	8.00	93.27	91	Guyana	30.00	72.12
27	Cyprus	8.00	93.27	91	Russian Federation	30.00	72.12
27	Iran	8.00	93.27	93	Benin	31.00	71.15
27	Jamaica	8.00	93.27	93	Nigeria	31.00	71.15
27	Mali	8.00	93.27	95	Poland	32.00	70.19
27	Netherlands	8.00	93.27	95	Thailand	32.00	70.19
27	Senegal	8.00	93.27	97	Kenya	33.00	69.23
34	Bahrain	9.00	92.31	98	Israel	34.00	68.27
34	Ethiopia	9.00	92.31	99	Kuwait	35.00	67.31
34	Lebanon	9.00	92.31	99	Paraguay	35.00	67.31
34	Mexico	9.00	92.31	99	Sri Lanka	35.00	67.31
34	Panama	9.00	92.31	102	Sudan	36.00	66.35
39	Kyrgyzstan	10.00	91.35	103	Guatemala	37.00	65.38
39	Moldova, Rep.	10.00	91.35	104	China	38.00	64.42
39	Romania	10.00	91.35	104	Philippines	38.00	64.42
42	Tunisia	11.00	90.38	106	Malawi	39.00	63.46
43	Ghana	12.00	89.42	106	Nicaragua	39.00	63.46
43	Morocco	12.00	89.42	108	Côte d'Ivoire	40.00	62.50
43	Oman	12.00	89.42	109	Trinidad and Tobago	43.00	59.62
43	Qatar	12.00	89.42	110	Viet Nam	44.00	58.65
43	Yemen	12.00	89.42	111	Indonesia	47.00	55.77
48	Ireland	13.00	88.46	111	Spain	47.00	55.77
48	Jordan	13.00	88.46	113	Bolivia	50.00	52.88
48	Mongolia	13.00	88.46	114	Bosnia & Herzegovina	55.00	48.08
48	Serbia	13.00	88.46	115	Ecuador	56.00	47.12
48	Syrian Arab Republic	13.00	88.46	115	Swaziland	56.00	47.12
48	United Kingdom	13.00	88.46	117	Costa Rica	60.00	43.27
54	Burkina Faso	14.00	87.50	118	Botswana	61.00	42.31
54	Colombia	14.00	87.50	119	Uruguay	65.00	38.46
54	Finland	14.00	87.50	120	Namibia	66.00	37.50
54	Honduras	14.00	87.50	121	Cambodia	85.00	19.23
54	Korea, Rep.	14.00	87.50	122	Zimbabwe	90.00	14.42
59	Armenia	15.00	86.54	123	Brunei Darussalam	105.00	0.00
59	Germany	15.00	86.54	124	Brazil	120.00	0.00
59	Sweden	15.00	86.54	125	Venezuela	141.00	0.00
59	United Arab Emirates	15.00	86.54				
63	Latvia	16.00	85.58				
63	Slovak Republic	16.00	85.58				

SOURCE: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011*

## 1.3.2 Cost to start a business

Cost to start a business (% of income per capita)<sup>b</sup> | 2010

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Denmark	0.00	100.00	65	Costa Rica	10.50	91.82
1	Slovenia	0.00	100.00	66	Pakistan	10.70	91.66
3	Canada	0.40	99.69	67	Moldova, Rep.	10.90	91.50
3	Ireland	0.40	99.69	68	Viet Nam	12.10	90.57
3	New Zealand	0.40	99.69	69	Mexico	12.30	90.41
6	Sweden	0.60	99.53	70	Cyprus	12.60	90.18
7	Australia	0.70	99.45	71	Algeria	12.90	89.95
7	Singapore	0.70	99.45	71	Madagascar	12.90	89.95
7	United Kingdom	0.70	99.45	73	Brunei Darussalam	13.50	89.48
10	Bahrain	0.80	99.38	74	Peru	13.60	89.40
10	Trinidad and Tobago	0.80	99.38	75	Ethiopia	14.10	89.01
12	France	0.90	99.30	76	Argentina	14.20	88.93
13	Kazakhstan	1.00	99.22	77	Colombia	14.70	88.54
14	Finland	1.10	99.14	77	Korea, Rep.	14.70	88.54
15	Kuwait	1.30	98.99	79	Spain	15.10	88.23
16	United States of America	1.40	98.91	80	Morocco	15.80	87.69
17	Latvia	1.50	98.83	81	Albania	16.80	86.91
18	Bulgaria	1.60	98.75	82	Turkey	17.20	86.59
19	Norway	1.80	98.60	83	Malaysia	17.50	86.36
20	Estonia	1.90	98.52	83	Poland	17.50	86.36
20	Slovak Republic	1.90	98.52	85	Bosnia & Herzegovina	17.70	86.20
22	Hong Kong (SAR), China	2.00	98.44	86	Italy	18.50	85.58
23	Luxembourg	2.10	98.36	86	Namibia	18.50	85.58
23	Switzerland	2.10	98.36	88	Guyana	18.70	85.42
25	Botswana	2.20	98.29	89	Ghana	20.30	84.18
26	Iceland	2.30	98.21	90	Greece	20.70	83.87
27	Macedonia	2.50	98.05	91	Indonesia	22.30	82.62
28	Romania	2.60	97.97	92	Zambia	27.90	78.25
29	Lithuania	2.80	97.82	93	Philippines	29.70	76.85
30	Armenia	3.10	97.58	94	Venezuela	30.20	76.46
30	Azerbaijan	3.10	97.58	95	Tanzania	30.90	75.92
32	Mongolia	3.20	97.51	96	Ecuador	32.60	74.59
33	Oman	3.30	97.43	97	Swaziland	33.00	74.28
34	Russian Federation	3.60	97.19	98	Bangladesh	33.30	74.05
35	Kyrgyzstan	3.70	97.12	99	Sudan	33.60	73.81
36	Mauritius	3.80	97.04	100	Tajikistan	36.90	71.24
37	Iran	4.00	96.88	101	Syrian Arab Republic	38.10	70.30
38	Israel	4.30	96.65	102	Kenya	38.30	70.15
39	China	4.50	96.49	103	Uruguay	42.10	67.19
40	Germany	4.80	96.26	104	Jordan	44.60	65.24
41	Georgia	5.00	96.10	105	El Salvador	45.00	64.93
41	Tunisia	5.00	96.10	106	Honduras	47.20	63.21
43	Austria	5.20	95.95	107	Guatemala	49.10	61.73
43	Jamaica	5.20	95.95	108	Burkina Faso	49.80	61.18
45	Belgium	5.40	95.79	109	Cameroon	51.20	60.09
45	Sri Lanka	5.40	95.79	110	Paraguay	55.10	57.05
47	Thailand	5.60	95.64	111	India	56.50	55.96
48	Netherlands	5.70	95.56	112	Senegal	63.10	50.82
49	South Africa	6.00	95.32	113	Lebanon	75.00	41.54
50	Ukraine	6.10	95.25	114	Nigeria	78.90	38.50
51	Egypt	6.30	95.09	115	Mali	79.70	37.88
52	United Arab Emirates	6.40	95.01	116	Yemen	82.10	36.01
53	Portugal	6.50	94.93	117	Uganda	94.40	26.42
54	Chile	6.80	94.70	118	Bolivia	100.80	21.43
55	Saudi Arabia	7.00	94.54	119	Malawi	108.40	15.51
56	Brazil	7.30	94.31	120	Nicaragua	117.90	8.11
57	Japan	7.50	94.15	121	Niger	118.60	7.56
58	Serbia	7.90	93.84	122	Cambodia	128.30	0.00
59	Hungary	8.20	93.61	123	Côte d'Ivoire	133.00	0.00
60	Croatia	8.60	93.30	124	Benin	152.60	0.00
61	Rwanda	8.80	93.14	125	Zimbabwe	182.80	0.00
62	Czech Republic	9.30	92.75				
63	Qatar	9.70	92.44				
64	Panama	10.30	91.97				

SOURCE: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011*

# 1.3.3 Total tax rate

Total tax rate (% profit)<sup>b</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Namibia	9.60	100.00	65	Albania	40.60	68.56
2	Macedonia	10.60	98.99	66	Armenia	40.70	68.46
3	Qatar	11.30	98.28	67	Azerbaijan	40.90	68.26
4	United Arab Emirates	14.10	95.44	67	Guatemala	40.90	68.26
5	Saudi Arabia	14.50	95.03	69	Norway	41.60	67.55
6	Bahrain	15.00	94.52	70	Morocco	41.70	67.44
7	Georgia	15.30	94.22	71	Uruguay	42.00	67.14
8	Kuwait	15.50	94.02	72	Poland	42.30	66.84
9	Zambia	16.10	93.41	73	Egypt	42.60	66.53
10	Botswana	19.50	89.96	74	Syrian Arab Republic	42.90	66.23
11	Luxembourg	21.10	88.34	75	Portugal	43.30	65.82
12	Oman	21.60	87.83	76	Iran	44.10	65.01
13	Cambodia	22.50	86.92	77	Côte d'Ivoire	44.40	64.71
14	Bosnia & Herzegovina	23.00	86.41	78	Turkey	44.50	64.60
14	Mongolia	23.00	86.41	79	Finland	44.60	64.50
16	Cyprus	23.20	86.21	80	Burkina Faso	44.90	64.20
17	Hong Kong (SAR), China	24.10	85.29	80	Romania	44.90	64.20
17	Mauritius	24.10	85.29	82	Tanzania	45.20	63.89
19	Chile	25.00	84.38	83	Philippines	45.80	63.29
20	Malawi	25.10	84.28	84	Senegal	46.00	63.08
21	Singapore	25.40	83.98	85	Niger	46.50	62.58
22	Ireland	26.50	82.86	85	Russian Federation	46.50	62.58
23	Iceland	26.80	82.56	87	United States of America	46.80	62.27
24	Bulgaria	29.00	80.32	88	Greece	47.20	61.87
25	Canada	29.20	80.12	89	Yemen	47.80	61.26
25	Denmark	29.20	80.12	90	Australia	47.90	61.16
27	Kazakhstan	29.60	79.72	91	Germany	48.20	60.85
28	Brunei Darussalam	29.80	79.51	92	Honduras	48.30	60.75
28	Korea, Rep.	29.80	79.51	93	Japan	48.60	60.45
30	Switzerland	30.10	79.21	94	Slovak Republic	48.70	60.34
31	Lebanon	30.20	79.11	95	Czech Republic	48.80	60.24
32	South Africa	30.50	78.80	96	Cameroon	49.10	59.94
33	Moldova, Rep.	30.90	78.40	97	Estonia	49.60	59.43
34	Ethiopia	31.10	78.19	98	Kenya	49.70	59.33
35	Jordan	31.20	78.09	99	Jamaica	50.10	58.92
36	Rwanda	31.30	77.99	99	Panama	50.10	58.92
37	Pakistan	31.60	77.69	101	Mexico	50.50	58.52
38	Israel	31.70	77.59	102	Mali	52.20	56.80
39	Nigeria	32.20	77.08	103	Venezuela	52.60	56.39
40	Croatia	32.50	76.77	104	Hungary	53.30	55.68
41	Ghana	32.70	76.57	105	Sweden	54.60	54.36
42	Trinidad and Tobago	33.10	76.17	106	Costa Rica	55.00	53.96
42	Viet Nam	33.10	76.17	107	Austria	55.50	53.45
44	Malaysia	33.70	75.56	107	Ukraine	55.50	53.45
45	Serbia	34.00	75.25	109	Spain	56.50	52.43
46	New Zealand	34.30	74.95	110	Belgium	57.00	51.93
47	Bangladesh	35.00	74.24	111	Kyrgyzstan	57.20	51.72
47	El Salvador	35.00	74.24	112	Tunisia	62.80	46.04
47	Paraguay	35.00	74.24	113	Nicaragua	63.20	45.64
50	Ecuador	35.30	73.94	114	India	63.30	45.54
51	Slovenia	35.40	73.83	115	China	63.50	45.33
52	Uganda	35.70	73.53	116	Sri Lanka	64.70	44.12
53	Sudan	36.10	73.12	117	France	65.80	43.00
54	Swaziland	36.80	72.41	118	Benin	66.00	42.80
55	Indonesia	37.30	71.91	119	Italy	68.60	40.16
55	United Kingdom	37.30	71.91	120	Brazil	69.00	39.76
57	Thailand	37.40	71.81	121	Algeria	72.00	36.71
58	Madagascar	37.70	71.50	122	Colombia	78.70	29.92
59	Latvia	38.50	70.69	123	Bolivia	80.00	28.60
60	Lithuania	38.70	70.49	124	Tajikistan	86.00	22.52
61	Guyana	38.90	70.28	125	Argentina	108.20	0.00
62	Peru	40.20	68.97				
63	Zimbabwe	40.30	68.86				
64	Netherlands	40.50	68.66				

SOURCE: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011*

# 2.1.1 Expenditure on education

Current expenditure on education (% of GNI)<sup>a</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Moldova, Rep. (2009)	8.36	100.00	65	Trinidad and Tobago	4.01	42.04
2	Botswana (2009)	7.42	87.53	66	Colombia (2009)	4.00	41.93
3	Denmark	7.41	87.38	67	Korea, Rep.	3.94	41.15
4	Iceland	7.31	86.02	68	Spain	3.90	40.66
5	Namibia	7.28	85.61	69	Oman	3.89	40.55
6	Saudi Arabia	7.19	84.39	70	Paraguay	3.87	40.26
7	Swaziland	7.18	84.26	71	Luxembourg	3.72	38.28
8	Zimbabwe	6.87	80.12	72	Ethiopia	3.71	38.16
9	Tunisia	6.66	77.43	73	Slovak Republic	3.70	37.94
10	New Zealand	6.62	76.83	74	Turkey	3.68	37.64
11	Cyprus	6.50	75.26	75	Brunei Darussalam	3.64	37.20
12	Sweden	6.41	74.03	76	Niger (2009)	3.62	36.93
13	Costa Rica (2009)	6.15	70.60	77	Chile	3.60	36.63
14	Norway	6.03	69.00	78	Honduras	3.55	35.91
15	Israel	5.91	67.34	79	Russian Federation	3.54	35.89
16	Kenya (2010)	5.91	67.34	80	Panama	3.53	35.74
17	Ukraine	5.86	66.76	81	Venezuela	3.53	35.65
18	Belgium	5.81	66.02	82	Malawi	3.51	35.40
19	Guyana	5.69	64.46	83	Mauritius	3.41	34.05
20	Jamaica (2009)	5.68	64.30	84	Romania	3.40	33.97
21	Finland	5.64	63.85	85	El Salvador	3.33	32.99
22	Jordan	5.61	63.40	86	Mali (2009)	3.31	32.78
23	Latvia	5.57	62.91	87	Benin	3.28	32.33
24	Poland	5.42	60.93	88	Burkina Faso	3.26	32.14
25	South Africa (2009)	5.41	60.74	89	Tajikistan	3.20	31.31
26	Senegal (2009)	5.40	60.55	90	Japan	3.17	30.97
27	Hungary	5.34	59.77	91	India	3.17	30.95
28	Slovenia	5.31	59.36	92	Cameroon (2009)	3.06	29.40
29	Portugal	5.30	59.30	93	Bahrain	3.03	29.01
30	Austria	5.30	59.22	94	Kuwait	3.02	28.95
31	Kyrgyzstan	5.22	58.22	95	Singapore (2010)	3.01	28.81
32	Morocco	5.22	58.20	96	Hong Kong (SAR), China (2009)	2.98	28.40
33	Ireland	5.17	57.59	97	Nicaragua	2.96	28.16
34	Australia	5.11	56.68	98	Uganda (2009)	2.96	28.16
35	United Kingdom	5.06	56.05	99	Azerbaijan (2009)	2.94	27.79
36	France	5.05	55.98	100	Guatemala	2.88	26.99
37	Macedonia	4.90	53.98	101	Albania	2.84	26.54
38	Netherlands	4.85	53.23	102	Viet Nam	2.81	26.15
39	United States of America	4.79	52.47	103	Georgia	2.78	25.77
40	Canada	4.78	52.37	104	Greece	2.75	25.36
41	Brazil	4.77	52.15	105	Uruguay	2.65	23.94
42	Mexico	4.75	51.95	106	Madagascar	2.62	23.62
43	Ghana	4.74	51.77	107	Syrian Arab Republic	2.60	23.26
44	Serbia	4.68	51.08	108	Sri Lanka	2.55	22.67
45	Côte d'Ivoire	4.67	50.91	109	Philippines	2.47	21.64
46	Bolivia	4.66	50.79	110	Peru	2.40	20.68
47	Switzerland	4.65	50.68	111	Tanzania	2.39	20.56
48	Estonia	4.61	50.12	112	Armenia	2.22	18.24
49	Mongolia	4.61	50.12	113	Bangladesh	1.97	14.85
50	Lithuania	4.59	49.79	114	Pakistan (2009)	1.91	14.12
51	Rwanda (2010)	4.56	49.44	115	China	1.80	12.66
52	Argentina	4.54	49.12	116	Cambodia	1.66	10.85
53	Italy	4.52	48.85	117	Lebanon (2009)	1.57	9.54
54	Algeria	4.47	48.18	118	Ecuador	1.38	7.00
55	Kazakhstan	4.41	47.46	119	Zambia	1.32	6.29
56	Egypt	4.41	47.43	120	Indonesia	1.15	3.95
57	Czech Republic	4.35	46.67	121	Sudan	0.87	0.25
58	Croatia	4.34	46.49	122	Nigeria	0.85	0.00
59	Germany	4.28	45.74	n/a	Bosnia & Herzegovina	n/a	n/a
60	Yemen	4.16	44.02	n/a	Qatar	n/a	n/a
61	Thailand (2009)	4.08	43.04	n/a	United Arab Emirates	n/a	n/a
62	Bulgaria	4.05	42.69				
63	Iran (2009)	4.04	42.50				
64	Malaysia	4.04	42.49				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2004–10)

# 2.1.2

## Public expenditure on education per pupil

Public expenditure on education per pupil, all levels (% of GDP per capita)<sup>a</sup> | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Moldova, Rep. (2009)	47.99	100.00	65	Bolivia (2003)	17.93	27.81
2	Yemen (2001)	43.92	90.23	66	Mongolia (2009)	17.92	27.79
3	Niger (2009)	36.98	73.57	67	Korea, Rep.	17.81	27.53
4	Burkina Faso	33.69	65.66	68	Benin (2005)	17.54	26.89
5	Denmark	31.07	59.36	69	Macedonia (2002)	16.93	25.42
6	Swaziland (2006)	29.55	55.73	70	Colombia (2009)	16.61	24.64
7	Sweden	27.98	51.96	71	Argentina	16.54	24.48
8	Portugal (2006)	27.20	50.08	72	Slovak Republic	16.11	23.45
9	Belgium	26.75	49.00	73	Australia	15.79	22.68
10	Botswana	26.74	48.98	74	Oman (2003)	15.49	21.97
11	Austria	26.73	48.96	75	Mexico	15.34	21.61
12	Slovenia (2006)	26.59	48.60	76	Georgia (2008)	15.13	21.10
13	Serbia (2008)	26.55	48.51	77	Chile (2008)	15.05	20.90
14	Côte d'Ivoire (2002)	26.29	47.90	78	Malaysia (2008)	15.04	20.87
15	Switzerland	26.24	47.76	79	Rwanda (2008)	14.83	20.36
16	Ethiopia	26.13	47.50	80	Armenia	14.26	19.00
17	Ukraine	26.04	47.30	81	Cameroon (2009)	14.23	18.94
18	Tunisia	26.01	47.21	82	Turkey (2004)	14.10	18.62
19	Senegal (2008)	25.83	46.80	83	Paraguay	13.94	18.23
20	Norway	25.76	46.61	84	Panama (2008)	13.72	17.72
21	United Kingdom	25.32	45.57	85	Bangladesh	13.64	17.51
22	Finland	25.00	44.80	86	Mauritius (2008)	13.17	16.40
23	Iceland	24.82	44.36	87	Brunei Darussalam (2000)	13.06	16.12
24	Kuwait (2004)	24.82	44.36	88	Azerbaijan (2009)	13.01	16.01
25	Hungary	24.26	43.02	89	India (2006)	12.30	14.29
26	Kenya (2006)	23.87	42.08	90	Tajikistan (2008)	12.12	13.88
27	Morocco (2006)	23.56	41.34	91	El Salvador (2008)	11.73	12.94
28	Hong Kong (SAR), China (2009)	23.50	41.19	92	Indonesia (2008)	11.48	12.34
29	Netherlands	23.41	40.99	93	Pakistan (2005)	11.38	12.09
30	France	23.31	40.74	94	Qatar (2004)	11.17	11.60
31	Bulgaria	23.11	40.26	95	Madagascar (2009)	10.52	10.02
32	Italy	22.95	39.87	96	Uganda (2009)	10.43	9.82
33	Canada (2002)	22.42	38.60	97	Nicaragua (2003)	10.27	9.43
34	Ghana (2005)	22.31	38.33	98	Uruguay (2006)	10.22	9.31
35	Croatia	22.18	38.03	99	Guatemala	10.16	9.16
36	Latvia	22.03	37.66	100	Kazakhstan	10.01	8.81
37	Spain	21.74	36.96	101	Philippines	9.76	8.21
38	United States of America	21.72	36.92	102	Peru (2006)	8.30	4.69
39	Viet Nam (2008)	21.67	36.79	103	United Arab Emirates (2009)	6.46	0.28
40	Cyprus	21.44	36.24	104	Cambodia	6.41	0.16
41	Poland	21.39	36.12	105	Lebanon (2009)	6.34	0.00
42	Kyrgyzstan (2008)	21.26	35.81	n/a	Albania	n/a	n/a
43	Guyana	21.21	35.69	n/a	Algeria	n/a	n/a
44	Czech Republic	20.95	35.08	n/a	Bahrain	n/a	n/a
45	Mali (2009)	20.73	34.53	n/a	Bosnia & Herzegovina	n/a	n/a
46	Estonia	20.60	34.24	n/a	China	n/a	n/a
47	Romania	20.55	34.12	n/a	Ecuador	n/a	n/a
48	Greece (2005)	20.49	33.97	n/a	Germany	n/a	n/a
49	Japan	20.32	33.55	n/a	Honduras	n/a	n/a
50	New Zealand	19.99	32.75	n/a	Ireland	n/a	n/a
51	Saudi Arabia (2008)	19.67	31.99	n/a	Jordan	n/a	n/a
52	Luxembourg (2001)	19.66	31.98	n/a	Malawi	n/a	n/a
53	Israel	19.47	31.51	n/a	Nigeria	n/a	n/a
54	Iran (2009)	19.39	31.31	n/a	Singapore	n/a	n/a
55	Namibia (2003)	19.16	30.77	n/a	South Africa	n/a	n/a
56	Trinidad and Tobago (2002)	18.90	30.14	n/a	Sri Lanka	n/a	n/a
57	Lithuania	18.88	30.10	n/a	Sudan	n/a	n/a
58	Costa Rica (2004)	18.79	29.88	n/a	Tanzania	n/a	n/a
59	Syrian Arab Republic	18.62	29.47	n/a	Venezuela	n/a	n/a
60	Jamaica (2008)	18.44	29.03	n/a	Zambia	n/a	n/a
61	Egypt (2004)	18.37	28.88	n/a	Zimbabwe	n/a	n/a
62	Thailand (2009)	18.34	28.80				
63	Brazil	18.15	28.34				
64	Russian Federation (2006)	18.02	28.03				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–09)

## 2.1.3 School life expectancy

### School life expectancy, primary to tertiary education (years) | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Australia	20.63	100.00	65	Peru (2006)	12.91	52.50
2	New Zealand	19.38	92.30	66	Algeria (2005)	12.77	51.69
3	Iceland	18.34	85.91	67	Iran (2009)	12.72	51.36
4	Ireland	17.88	83.08	68	Sri Lanka (2004)	12.68	51.13
5	Norway	17.32	79.66	69	Malaysia	12.59	50.54
6	Finland	17.07	78.12	70	Kyrgyzstan (2009)	12.36	49.12
7	Denmark	16.83	76.64	71	Trinidad and Tobago (2007)	12.33	48.95
8	Korea, Rep.	16.82	76.58	72	Kuwait (2004)	12.30	48.79
9	Slovenia	16.82	76.54	73	Botswana (2007)	12.17	47.95
10	Netherlands	16.71	75.90	74	Thailand (2010)	12.16	47.92
11	Greece (2007)	16.48	74.45	75	El Salvador	12.11	47.61
12	Spain	16.37	73.78	76	Armenia (2009)	12.05	47.22
13	Italy	16.33	73.54	77	Qatar (2009)	12.01	46.96
14	France	16.15	72.43	78	Guyana (2009)	11.95	46.60
15	United Kingdom	16.13	72.35	79	Moldova, Rep. (2009)	11.90	46.30
16	Belgium	15.96	71.28	80	Philippines	11.87	46.12
17	Lithuania	15.96	71.25	81	Oman (2009)	11.84	45.96
18	Canada (2002)	15.95	71.23	82	Namibia	11.84	45.92
19	United States of America	15.85	70.61	83	Turkey	11.81	45.78
20	Portugal	15.83	70.49	84	Azerbaijan (2009)	11.75	45.39
21	Hong Kong (SAR), China (2009)	15.73	69.89	85	Paraguay (2007)	11.75	45.37
22	Estonia	15.73	69.84	86	Costa Rica (2005)	11.73	45.25
23	Sweden	15.60	69.07	87	China (2009)	11.56	44.19
24	Argentina (2007)	15.55	68.78	88	Honduras	11.42	43.33
25	Uruguay	15.51	68.51	89	Tajikistan	11.36	43.01
26	Switzerland	15.47	68.25	90	Albania (2004)	11.27	42.44
27	Czech Republic	15.41	67.92	91	Syrian Arab Republic (2007)	11.27	42.43
28	Israel	15.40	67.85	92	Rwanda (2009)	11.13	41.57
29	Latvia	15.40	67.81	93	Egypt (2004)	11.04	41.01
30	Hungary	15.28	67.11	94	Kenya (2009)	10.96	40.51
31	Poland	15.23	66.77	95	Nicaragua (2003)	10.77	39.37
32	Austria	15.20	66.61	96	Uganda (2009)	10.77	39.35
33	Kazakhstan (2010)	15.10	66.00	97	Madagascar (2009)	10.75	39.22
34	Japan	15.07	65.83	98	Guatemala (2007)	10.64	38.53
35	Slovak Republic	14.86	64.53	99	Swaziland (2007)	10.56	38.04
36	Romania	14.82	64.26	100	Morocco (2007)	10.49	37.62
37	Chile	14.70	63.52	101	Ghana (2009)	10.48	37.56
38	Ukraine	14.65	63.21	102	Viet Nam (2001)	10.38	36.93
39	Tunisia	14.50	62.32	103	India (2007)	10.35	36.76
40	Venezuela	14.19	60.38	104	Cameroon (2009)	10.31	36.51
41	Cyprus	14.16	60.21	105	Cambodia (2007)	9.84	33.62
42	Mongolia (2009)	14.11	59.92	106	Benin (2005)	9.22	29.84
43	Brunei Darussalam (2009)	14.11	59.91	107	Tanzania (2007)	9.08	28.97
44	Russian Federation	14.09	59.77	108	Malawi (2007)	8.90	27.86
45	Brazil	13.97	59.04	109	Nigeria (2005)	8.86	27.64
46	Croatia	13.85	58.31	110	Yemen (2005)	8.65	26.31
47	Jamaica	13.79	57.96	111	Ethiopia	8.55	25.69
48	Lebanon (2009)	13.75	57.71	112	Mali (2009)	8.26	23.90
49	Mexico	13.75	57.67	113	Bangladesh (2007)	8.14	23.17
50	Saudi Arabia (2009)	13.73	57.58	114	Senegal	7.49	19.15
51	Serbia (2009)	13.72	57.48	115	Pakistan (2009)	6.88	15.42
52	Bolivia (2007)	13.71	57.46	116	Côte d'Ivoire (2000)	6.30	11.86
53	Colombia (2009)	13.65	57.06	117	Burkina Faso (2009)	6.28	11.71
54	Bulgaria	13.65	57.05	118	Niger (2010)	4.93	3.41
55	Mauritius	13.61	56.82	119	Sudan (2000)	4.37	0.00
56	Bosnia & Herzegovina (2009)	13.56	56.50	n/a	Bahrain	n/a	n/a
57	Ecuador (2007)	13.33	55.09	n/a	Germany	n/a	n/a
58	United Arab Emirates (2009)	13.33	55.07	n/a	Singapore	n/a	n/a
59	Macedonia	13.30	54.91	n/a	South Africa	n/a	n/a
60	Luxembourg (2006)	13.27	54.76	n/a	Zambia	n/a	n/a
61	Panama	13.24	54.55	n/a	Zimbabwe	n/a	n/a
62	Indonesia (2009)	13.18	54.20				
63	Jordan	13.11	53.73				
64	Georgia (2009)	13.10	53.72				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–10)

# 2.1.4 Assessment in reading, mathematics, and science

Programme for International Student Assessment (PISA) scales in reading, mathematics, and science (average)<sup>d</sup> | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value
1	China	576.84	100.00	n/a	Bahrain	n/a
2	Hong Kong (SAR), China	545.57	87.59	n/a	Bangladesh	n/a
3	Finland	543.49	86.76	n/a	Benin	n/a
4	Singapore	543.20	86.65	n/a	Bolivia	n/a
5	Korea, Rep.	541.16	85.84	n/a	Bosnia & Herzegovina	n/a
6	Japan	529.43	81.18	n/a	Botswana	n/a
7	Canada	526.58	80.05	n/a	Brunei Darussalam	n/a
8	New Zealand	524.06	79.05	n/a	Burkina Faso	n/a
9	Australia	518.84	76.98	n/a	Cambodia	n/a
10	Netherlands	518.82	76.97	n/a	Cameroon	n/a
11	Switzerland	517.01	76.25	n/a	Costa Rica	n/a
12	Estonia	513.63	74.91	n/a	Côte d'Ivoire	n/a
13	Germany	510.16	73.53	n/a	Cyprus	n/a
14	Belgium	509.26	73.18	n/a	Ecuador	n/a
15	Poland	501.12	69.94	n/a	Egypt	n/a
16	Iceland	500.85	69.84	n/a	El Salvador	n/a
17	Norway	500.35	69.64	n/a	Ethiopia	n/a
18	United Kingdom	500.10	69.54	n/a	Georgia	n/a
19	Denmark	499.18	69.17	n/a	Ghana	n/a
20	Slovenia	498.77	69.01	n/a	Guatemala	n/a
21	Ireland	496.92	68.28	n/a	Guyana	n/a
22	France	496.88	68.26	n/a	Honduras	n/a
23	United States of America	496.41	68.07	n/a	India	n/a
24	Hungary	495.66	67.78	n/a	Iran	n/a
25	Sweden	495.60	67.75	n/a	Jamaica	n/a
26	Czech Republic	490.50	65.73	n/a	Kenya	n/a
27	Portugal	489.72	65.42	n/a	Kuwait	n/a
28	Slovak Republic	488.13	64.79	n/a	Lebanon	n/a
29	Austria	486.84	64.28	n/a	Madagascar	n/a
30	Latvia	486.60	64.18	n/a	Malawi	n/a
31	Italy	485.93	63.91	n/a	Malaysia	n/a
32	Spain	484.26	63.25	n/a	Mali	n/a
33	Luxembourg	481.72	62.24	n/a	Mauritius	n/a
34	Lithuania	478.82	61.09	n/a	Moldova, Rep.	n/a
35	Croatia	474.02	59.19	n/a	Mongolia	n/a
36	Greece	473.00	58.78	n/a	Morocco	n/a
37	Russian Federation	468.50	57.00	n/a	Namibia	n/a
38	United Arab Emirates	459.48	53.42	n/a	Nicaragua	n/a
39	Israel	458.57	53.05	n/a	Niger	n/a
40	Turkey	454.52	51.45	n/a	Nigeria	n/a
41	Serbia	442.39	46.63	n/a	Oman	n/a
42	Chile	439.30	45.41	n/a	Pakistan	n/a
43	Bulgaria	432.15	42.57	n/a	Paraguay	n/a
44	Uruguay	426.58	40.36	n/a	Philippines	n/a
45	Romania	426.57	40.35	n/a	Rwanda	n/a
46	Thailand	421.75	38.44	n/a	Saudi Arabia	n/a
47	Mexico	419.89	37.70	n/a	Senegal	n/a
48	Trinidad and Tobago	413.56	35.19	n/a	South Africa	n/a
49	Jordan	402.35	30.74	n/a	Sri Lanka	n/a
50	Brazil	400.99	30.20	n/a	Sudan	n/a
51	Colombia	398.59	29.25	n/a	Swaziland	n/a
52	Kazakhstan	398.56	29.23	n/a	Syrian Arab Republic	n/a
53	Argentina	395.72	28.11	n/a	Tajikistan	n/a
54	Tunisia	391.93	26.60	n/a	Tanzania	n/a
55	Azerbaijan	388.56	25.27	n/a	Uganda	n/a
56	Indonesia	385.19	23.93	n/a	Ukraine	n/a
57	Macedonia (2000)	385.00	23.85	n/a	Venezuela	n/a
58	Albania	384.32	23.58	n/a	Viet Nam	n/a
59	Qatar	373.09	19.13	n/a	Yemen	n/a
60	Panama	368.79	17.42	n/a	Zambia	n/a
61	Peru	368.05	17.13	n/a	Zimbabwe	n/a
62	Kyrgyzstan	324.91	0.00			
n/a	Algeria	n/a	n/a			
n/a	Armenia	n/a	n/a			

SOURCE: OECD Programme for International Student Assessment (PISA) 2009 and 2000, UNESCO Institute for Statistics, *UIS online database* (2000–09)

## 2.1.5 Pupil-teacher ratio

### Pupil-teacher ratio, secondary<sup>b</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Portugal	7.26	100.00	65	Singapore (2009)	14.91	81.20
2	Armenia	7.42	99.60	66	Tunisia	15.18	80.54
3	Georgia (2009)	7.57	99.24	67	China (2009)	15.72	79.22
4	Syrian Arab Republic (2009)	7.76	98.77	68	Paraguay	15.81	78.97
5	Greece (2007)	7.88	98.46	69	Costa Rica (2009)	15.82	78.97
6	Azerbaijan (2009)	8.01	98.15	70	Mauritius (2009)	16.04	78.41
7	Kuwait (2009)	8.17	97.75	71	Cameroon (2006)	16.17	78.10
8	Venezuela (2009)	8.41	97.16	72	Peru	16.24	77.93
9	Russian Federation	8.53	96.89	73	Tajikistan	16.55	77.16
10	Norway (2004)	8.79	96.23	74	Guatemala	16.57	77.13
11	Croatia	9.09	95.50	75	Morocco	16.58	77.10
12	Lithuania	9.16	95.34	76	Egypt (2004)	17.08	75.86
13	Lebanon (2009)	9.20	95.22	77	Brazil	17.20	75.58
14	Slovenia	9.34	94.89	78	Turkey (2006)	17.48	74.89
15	Kazakhstan (2010)	9.35	94.86	79	Mexico	18.01	73.58
16	Estonia	9.41	94.71	80	Korea, Rep.	18.05	73.47
17	Qatar (2009)	9.62	94.20	81	Uganda (2009)	18.14	73.26
18	Israel	9.63	94.18	82	Bolivia (2007)	18.17	73.19
19	Sweden	9.68	94.06	83	Ghana (2009)	18.28	72.92
20	Latvia	9.84	93.65	84	Canada (2000)	18.40	72.61
21	Serbia (2009)	10.03	93.19	85	Mongolia	18.57	72.21
22	Finland	10.03	93.19	86	Swaziland (2007)	19.06	71.00
23	Belgium (2006)	10.04	93.16	87	Sri Lanka (2004)	19.52	69.87
24	Denmark (2001)	10.05	93.13	88	Jamaica (2007)	19.77	69.24
25	Italy (2007)	10.10	93.01	89	Viet Nam	20.67	67.04
26	Luxembourg	10.20	92.78	90	Algeria (2004)	20.85	66.60
27	Hungary	10.22	92.71	91	Thailand	21.22	65.68
28	Cyprus	10.23	92.71	92	Guyana (2009)	22.03	63.70
29	Brunei Darussalam (2009)	10.46	92.14	93	Zambia	22.18	63.33
30	Ireland (2006)	10.54	91.92	94	Sudan (2009)	22.23	63.21
31	Ukraine (2007)	10.57	91.85	95	Zimbabwe (2003)	22.32	62.97
32	Austria	10.58	91.84	96	Ecuador (2009)	22.39	62.81
33	Spain	10.80	91.29	97	Rwanda (2009)	22.61	62.28
34	Poland	11.04	90.70	98	Chile	23.33	60.51
35	Moldova, Rep. (2009)	11.19	90.34	99	Mali (2009)	23.41	60.31
36	Saudi Arabia (2009)	11.32	90.02	100	Madagascar (2009)	23.48	60.12
37	Czech Republic	11.32	90.02	101	Benin (2004)	23.93	59.02
38	Honduras	11.32	90.01	102	Namibia	24.48	57.68
39	Iceland	11.37	89.88	103	Yemen (2003)	24.58	57.42
40	Bulgaria	11.48	89.63	104	South Africa (2009)	25.05	56.28
41	Jordan	11.86	88.68	105	El Salvador	26.33	53.14
42	United Arab Emirates (2009)	11.99	88.37	106	Senegal (2005)	26.37	53.04
43	Japan	12.12	88.06	107	Colombia (2009)	26.66	52.33
44	Argentina (2007)	12.19	87.88	108	Bangladesh	27.07	51.32
45	France	12.28	87.67	109	Nigeria (2007)	28.44	47.94
46	Bahrain (2002)	12.40	87.37	110	Nicaragua	28.59	47.57
47	Slovak Republic	12.59	86.90	111	Cambodia (2007)	28.92	46.76
48	Indonesia (2009)	12.59	86.89	112	Niger (2010)	29.61	45.06
49	Uruguay	12.62	86.83	113	Kenya (2009)	29.68	44.90
50	Bosnia & Herzegovina (2009)	12.66	86.74	114	Burkina Faso (2010)	30.26	43.48
51	Romania	12.73	86.56	115	India (2004)	32.70	37.48
52	Macedonia	13.09	85.68	116	Philippines (2007)	35.13	31.49
53	Netherlands	13.18	85.44	117	Tanzania (2009)	35.23	31.25
54	Germany	13.24	85.30	118	Pakistan (2004)	41.86	14.97
55	Trinidad and Tobago	13.52	84.60	119	Ethiopia (2009)	47.95	0.00
56	Kyrgyzstan (2007)	13.56	84.51	n/a	Australia	n/a	n/a
57	Botswana (2007)	13.88	83.73	n/a	Côte d'Ivoire	n/a	n/a
58	Malaysia	14.22	82.88	n/a	Hong Kong (SAR), China	n/a	n/a
59	United Kingdom	14.27	82.77	n/a	Iran	n/a	n/a
60	United States of America	14.38	82.51	n/a	Malawi	n/a	n/a
61	New Zealand	14.49	82.22	n/a	Switzerland	n/a	n/a
62	Panama (2009)	14.66	81.82				
63	Albania (2009)	14.66	81.82				
64	Oman (2009)	14.78	81.52				

SOURCE: UNESCO Institute for Statistics, *UIS online database* and World Bank *World Development Indicators database* (2000–10)



## 2.2.1 Tertiary school enrolment

### Tertiary school enrolment (% gross) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Korea, Rep.	98.09	100.00	65	Saudi Arabia (2009)	32.78	33.08
2	Finland	94.44	96.26	66	Algeria (2009)	30.62	30.87
3	Greece (2007)	90.83	92.56	67	United Arab Emirates (2009)	30.40	30.65
4	Slovenia	86.71	88.34	68	Philippines	28.69	28.89
5	United States of America	82.92	84.45	69	Paraguay (2007)	28.55	28.75
6	Ukraine	79.44	80.89	70	Egypt	28.45	28.65
7	Venezuela	78.64	80.07	71	Mexico	27.19	27.35
8	New Zealand	78.45	79.88	72	Oman (2009)	26.44	26.58
9	Denmark	78.05	79.47	73	Mauritius	25.90	26.04
10	Lithuania	77.30	78.70	74	Georgia (2009)	25.50	25.62
11	Russian Federation	77.19	78.59	75	Costa Rica (2005)	25.34	25.46
12	Australia	77.00	78.39	76	El Salvador	24.56	24.66
13	Iceland	74.60	75.93	77	China (2009)	24.53	24.63
14	Norway	73.19	74.49	78	Jamaica	24.20	24.29
15	Sweden	71.05	72.30	79	Indonesia (2009)	23.50	23.57
16	Spain	70.58	71.81	80	Tajikistan (2009)	19.75	19.73
17	Poland	69.43	70.63	81	Albania (2004)	19.27	19.23
18	Latvia	69.20	70.40	82	Azerbaijan (2009)	19.06	19.02
19	Argentina (2007)	67.73	68.89	83	Kuwait (2004)	18.90	18.86
20	Italy	67.20	68.35	84	Honduras	18.65	18.61
21	Romania	65.56	66.66	85	Nicaragua (2003)	18.05	17.99
22	Hungary	65.02	66.11	86	Guatemala (2007)	17.71	17.64
23	Uruguay	64.91	66.00	87	Brunei Darussalam (2009)	17.15	17.06
24	Estonia	63.71	64.77	88	India (2007)	13.48	13.31
25	Belgium	62.97	64.01	89	Morocco (2009)	12.88	12.69
26	Canada (2004)	62.27	63.30	90	Trinidad and Tobago (2005)	11.57	11.35
27	Netherlands	60.60	61.59	91	Guyana (2009)	11.22	10.99
28	Portugal	60.19	61.16	92	Qatar (2009)	10.24	9.99
29	Israel	59.73	60.69	93	Yemen (2007)	10.23	9.97
30	Ireland	58.31	59.24	94	Nigeria (2005)	10.07	9.82
31	Czech Republic	58.27	59.20	95	Cambodia (2009)	10.00	9.74
32	Japan	58.03	58.95	96	Luxembourg (2006)	9.95	9.69
33	United Kingdom	57.42	58.32	97	Viet Nam (2001)	9.68	9.42
34	Hong Kong (SAR), China (2009)	56.63	57.51	98	Cameroon (2009)	9.02	8.74
35	Chile	54.79	55.64	99	Namibia	8.94	8.65
36	Austria	54.71	55.56	100	Ghana (2009)	8.63	8.34
37	France	54.58	55.42	101	Côte d'Ivoire (2007)	8.37	8.07
38	Slovak Republic	53.62	54.43	102	Senegal (2009)	8.05	7.74
39	Mongolia (2009)	52.74	53.53	103	Bangladesh (2009)	7.86	7.55
40	Lebanon (2009)	52.52	53.31	104	Botswana (2006)	7.58	7.26
41	Bahrain (2010)	51.21	51.96	105	Pakistan (2009)	6.41	6.06
42	Bulgaria	51.03	51.78	106	Mali (2009)	6.01	5.65
43	Kyrgyzstan (2009)	50.82	51.57	107	Sudan (2000)	5.93	5.57
44	Croatia (2009)	50.60	51.34	108	Benin (2006)	5.85	5.49
45	Armenia (2009)	50.15	50.88	109	Rwanda (2009)	4.82	4.43
46	Serbia (2009)	49.85	50.57	110	Swaziland (2006)	4.39	3.99
47	Switzerland	49.40	50.11	111	Uganda (2009)	4.10	3.69
48	Panama	45.11	45.71	112	Kenya (2009)	4.05	3.65
49	Thailand (2010)	45.03	45.64	113	Ethiopia	3.60	3.18
50	Cyprus	42.62	43.16	114	Madagascar (2009)	3.58	3.17
51	Ecuador	42.41	42.95	115	Burkina Faso (2009)	3.41	2.98
52	Jordan	40.65	41.15	116	Zimbabwe (2009)	3.21	2.78
53	Macedonia	40.38	40.87	117	Zambia (2000)	2.40	1.96
54	Kazakhstan (2010)	40.10	40.58	118	Tanzania (2005)	1.45	0.98
55	Turkey	38.37	38.80	119	Niger (2010)	1.43	0.96
56	Bolivia (2007)	38.32	38.76	120	Malawi (2007)	0.49	0.00
57	Moldova, Rep. (2009)	38.29	38.73	n/a	Germany	n/a	n/a
58	Brazil (2009)	37.57	37.99	n/a	Singapore	n/a	n/a
59	Bosnia & Herzegovina (2009)	37.00	37.41	n/a	South Africa	n/a	n/a
60	Colombia (2009)	36.98	37.39	n/a	Sri Lanka	n/a	n/a
61	Iran (2009)	36.49	36.88	n/a	Syrian Arab Republic	n/a	n/a
62	Malaysia	36.46	36.85				
63	Peru (2006)	34.48	34.82				
64	Tunisia	33.70	34.02				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–10)

## 2.2.2 Tertiary graduates in science

### Tertiary graduates in science (% of total tertiary graduates) | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Morocco (2009)	23.26	100.00	65	Israel (2000)	6.40	23.33
2	Saudi Arabia (2009)	20.34	86.75	66	Netherlands	6.33	23.02
3	El Salvador	17.01	71.58	67	Uruguay	6.28	22.81
4	United Arab Emirates (2009)	16.02	67.07	68	Georgia (2007)	6.23	22.56
5	Tajikistan (2009)	15.44	64.46	69	Costa Rica (2002)	5.96	21.36
6	Hong Kong (SAR), China (2006)	15.14	63.09	70	Hungary	5.80	20.62
7	Oman (2007)	15.07	62.79	71	Russian Federation (2007)	5.79	20.57
8	Malaysia	14.81	61.60	72	Belgium	5.57	19.55
9	Jordan (2007)	14.34	59.47	73	Indonesia (2009)	5.53	19.40
10	Cameroon	14.29	59.25	74	Ecuador	5.51	19.29
11	Lebanon (2009)	14.02	58.01	75	Lithuania	5.50	19.23
12	Ireland	13.88	57.38	76	Kyrgyzstan (2009)	5.49	19.21
13	United Kingdom (2007)	13.16	54.10	77	Mongolia (2009)	5.42	18.87
14	Madagascar (2009)	13.15	54.02	78	Latvia	5.07	17.29
15	Germany	13.13	53.96	79	Bolivia (2000)	4.86	16.35
16	Kenya (2001)	12.78	52.37	80	Panama	4.39	14.21
17	New Zealand	12.70	51.99	81	Slovenia	4.06	12.72
18	Finland	11.71	47.49	82	Ukraine	3.64	10.81
19	Algeria (2009)	11.23	45.29	83	Bulgaria	3.61	10.65
20	Trinidad and Tobago (2004)	11.15	44.93	84	Uganda (2004)	3.13	8.49
21	Greece	10.87	43.66	85	Japan	3.04	8.07
22	Australia	10.85	43.59	86	Tanzania (2004)	3.00	7.90
23	Mexico	10.81	43.39	87	Guatemala (2007)	2.63	6.22
24	Austria	10.73	43.02	88	Swaziland (2006)	2.39	5.10
25	Portugal (2007)	10.66	42.73	89	Albania (2003)	1.94	3.07
26	France	10.64	42.64	90	Colombia (2009)	1.91	2.94
27	Canada (2002)	10.63	42.57	91	Honduras (2003)	1.72	2.05
28	Niger (2010)	10.47	41.88	92	Armenia	1.35	0.36
29	Philippines (2004)	10.22	40.74	93	Namibia	1.27	0.00
30	Estonia	10.07	40.02	n/a	Bahrain	n/a	n/a
31	Ghana (2009)	9.91	39.32	n/a	Benin	n/a	n/a
32	Thailand (2009)	9.65	38.14	n/a	Bosnia & Herzegovina	n/a	n/a
33	Azerbaijan (2009)	9.61	37.94	n/a	Burkina Faso	n/a	n/a
34	Iran (2009)	9.60	37.91	n/a	China	n/a	n/a
35	Cambodia	9.41	37.05	n/a	Côte d'Ivoire	n/a	n/a
36	Cyprus	9.41	37.01	n/a	Egypt	n/a	n/a
37	Czech Republic	9.37	36.85	n/a	India	n/a	n/a
38	Qatar (2009)	9.33	36.67	n/a	Jamaica	n/a	n/a
39	Guyana (2009)	9.26	36.36	n/a	Kazakhstan	n/a	n/a
40	Spain	9.24	36.24	n/a	Kuwait	n/a	n/a
41	Croatia	9.19	36.02	n/a	Luxembourg	n/a	n/a
42	Switzerland	8.68	33.73	n/a	Mali	n/a	n/a
43	Ethiopia	8.54	33.07	n/a	Mauritius	n/a	n/a
44	Botswana (2002)	8.51	32.94	n/a	Moldova, Rep.	n/a	n/a
45	United States of America	8.41	32.50	n/a	Nicaragua	n/a	n/a
46	Macedonia	8.22	31.61	n/a	Nigeria	n/a	n/a
47	Turkey	8.18	31.44	n/a	Pakistan	n/a	n/a
48	Bangladesh (2009)	8.13	31.21	n/a	Paraguay	n/a	n/a
49	Poland	7.63	28.94	n/a	Peru	n/a	n/a
50	Korea, Rep.	7.59	28.77	n/a	Rwanda	n/a	n/a
51	Norway	7.50	28.35	n/a	Senegal	n/a	n/a
52	Slovak Republic	7.45	28.14	n/a	Singapore	n/a	n/a
53	Serbia (2009)	7.41	27.94	n/a	South Africa	n/a	n/a
54	Brunei Darussalam (2009)	7.25	27.21	n/a	Sri Lanka	n/a	n/a
55	Argentina (2007)	7.16	26.78	n/a	Sudan	n/a	n/a
56	Denmark	7.05	26.30	n/a	Syrian Arab Republic	n/a	n/a
57	Malawi (2007)	7.01	26.10	n/a	Tunisia	n/a	n/a
58	Venezuela (2000)	6.96	25.89	n/a	Viet Nam	n/a	n/a
59	Sweden	6.95	25.86	n/a	Yemen	n/a	n/a
60	Brazil	6.77	25.03	n/a	Zambia	n/a	n/a
61	Chile	6.69	24.68	n/a	Zimbabwe	n/a	n/a
62	Italy (2007)	6.64	24.42				
63	Iceland	6.53	23.94				
64	Romania	6.43	23.50				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–10)

## 2.2.3 Tertiary graduates in engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Iran (2009)	29.92	100.00	65	Madagascar (2009)	7.77	22.39
2	Malaysia	25.43	84.28	66	Norway	7.66	22.03
3	Korea, Rep.	24.81	82.10	67	Netherlands	7.66	22.00
4	Israel (2000)	23.42	77.23	68	Australia	7.59	21.78
5	Colombia (2009)	22.27	73.19	69	Latvia	7.59	21.77
6	Russian Federation (2007)	21.53	70.62	70	Hungary	7.51	21.48
7	Ukraine	20.24	66.10	71	Ecuador	7.30	20.75
8	Viet Nam (2009)	19.76	64.40	72	Iceland	7.00	19.70
9	Hong Kong (SAR), China (2006)	19.53	63.61	73	United States of America	6.98	19.63
10	Venezuela (2000)	19.49	63.46	74	Ghana (2009)	6.76	18.88
11	Trinidad and Tobago (2004)	19.24	62.58	75	Uganda (2004)	6.40	17.60
12	Tanzania (2004)	18.05	58.42	76	Ethiopia	6.35	17.44
13	Austria	17.72	57.25	77	Azerbaijan (2009)	6.23	17.01
14	Japan	17.69	57.17	78	New Zealand	6.06	16.40
15	Kenya (2001)	17.45	56.34	79	Costa Rica (2002)	5.97	16.09
16	Portugal (2007)	16.78	53.98	80	Uruguay	5.73	15.27
17	Sweden	16.67	53.59	81	Armenia	5.73	15.26
18	Spain	16.42	52.72	82	Malawi (2007)	5.70	15.14
19	Indonesia (2009)	16.15	51.77	83	Argentina (2007)	5.45	14.28
20	Czech Republic	15.96	51.09	84	Brazil	5.17	13.30
21	France	15.61	49.86	85	Botswana (2002)	4.44	10.75
22	Chile	15.56	49.68	86	Saudi Arabia (2009)	4.26	10.11
23	Lithuania	15.55	49.65	87	Albania (2003)	4.19	9.86
24	Mexico	15.43	49.24	88	Cameroon	4.19	9.85
25	Finland	15.11	48.14	89	Swaziland (2005)	3.48	7.37
26	Panama	14.71	46.73	90	Cyprus	3.20	6.39
27	Bulgaria	14.30	45.29	91	Cambodia	3.08	5.96
28	Guatemala (2007)	14.13	44.68	92	Bangladesh (2009)	2.45	3.75
29	Philippines (2004)	14.09	44.54	93	Namibia	1.38	0.00
30	Serbia (2009)	14.08	44.51	n/a	Bahrain	n/a	n/a
31	Greece	13.99	44.21	n/a	Benin	n/a	n/a
32	Italy (2007)	13.84	43.67	n/a	Bosnia & Herzegovina	n/a	n/a
33	Turkey	13.74	43.33	n/a	Burkina Faso	n/a	n/a
34	Croatia	13.69	43.16	n/a	China	n/a	n/a
35	Slovenia	13.57	42.73	n/a	Côte d'Ivoire	n/a	n/a
36	Slovak Republic	13.31	41.83	n/a	Egypt	n/a	n/a
37	Germany	13.17	41.31	n/a	India	n/a	n/a
38	Oman (2007)	12.60	39.32	n/a	Jamaica	n/a	n/a
39	Morocco (2009)	12.41	38.66	n/a	Kazakhstan	n/a	n/a
40	Denmark	12.37	38.52	n/a	Kuwait	n/a	n/a
41	Algeria (2009)	12.17	37.81	n/a	Luxembourg	n/a	n/a
42	Switzerland	11.86	36.73	n/a	Mali	n/a	n/a
43	Mongolia (2009)	11.70	36.18	n/a	Mauritius	n/a	n/a
44	United Arab Emirates (2009)	11.33	34.86	n/a	Moldova, Rep.	n/a	n/a
45	Qatar (2009)	11.30	34.76	n/a	Nicaragua	n/a	n/a
46	Lebanon (2009)	11.09	34.04	n/a	Niger	n/a	n/a
47	Honduras (2003)	10.84	33.17	n/a	Nigeria	n/a	n/a
48	Bolivia (2000)	10.77	32.92	n/a	Pakistan	n/a	n/a
49	Jordan (2007)	10.77	32.91	n/a	Paraguay	n/a	n/a
50	El Salvador	10.76	32.88	n/a	Peru	n/a	n/a
51	Estonia	10.47	31.87	n/a	Rwanda	n/a	n/a
52	Ireland	10.45	31.81	n/a	Senegal	n/a	n/a
53	Canada (2002)	10.43	31.73	n/a	Singapore	n/a	n/a
54	Belgium	10.24	31.05	n/a	South Africa	n/a	n/a
55	Romania	10.08	30.51	n/a	Sri Lanka	n/a	n/a
56	Kyrgyzstan (2009)	9.69	29.13	n/a	Sudan	n/a	n/a
57	Georgia (2007)	9.46	28.33	n/a	Syrian Arab Republic	n/a	n/a
58	Macedonia	9.46	28.32	n/a	Tunisia	n/a	n/a
59	Thailand (2009)	8.81	26.06	n/a	Yemen	n/a	n/a
60	Tajikistan (2009)	8.49	24.94	n/a	Zambia	n/a	n/a
61	Poland	8.44	24.75	n/a	Zimbabwe	n/a	n/a
62	United Kingdom (2007)	8.43	24.72				
63	Guyana (2009)	7.87	22.75				
64	Brunei Darussalam (2009)	7.84	22.66				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–09)

## 2.2.4 Tertiary inbound mobility

Tertiary inbound mobility ratio (%)<sup>a</sup> | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg (2006)	42.24	100.00	65	Romania	1.31	3.36
2	United Arab Emirates (2009)	39.22	100.00	66	Korea, Rep.	1.26	3.13
3	Qatar (2009)	28.29	100.00	67	Slovenia	1.18	2.80
4	Cyprus	27.94	100.00	68	Latvia	1.15	2.69
5	Bahrain (2010)	24.10	100.00	69	Ukraine	1.14	2.65
6	Singapore (2010)	22.78	94.40	70	Moldova, Rep. (2009)	1.08	2.38
7	Australia	20.63	85.29	71	Cameroon (2007)	1.07	2.35
8	Austria	18.75	77.30	72	Albania (2004)	0.91	1.66
9	United Kingdom	14.67	60.01	73	Turkey	0.80	1.18
10	Switzerland	14.12	57.69	74	Thailand (2010)	0.79	1.13
11	New Zealand	12.92	52.57	75	Rwanda (2001)	0.72	0.84
12	Lebanon (2007)	12.12	49.20	76	Tunisia	0.71	0.80
13	France	11.25	45.49	77	Poland	0.69	0.73
14	Jordan	10.46	42.14	78	Honduras (2003)	0.68	0.69
15	Namibia	10.17	40.92	79	Mongolia (2009)	0.68	0.69
16	Kyrgyzstan	8.64	34.44	80	Tanzania (2004)	0.64	0.51
17	Norway	7.57	29.91	81	El Salvador	0.63	0.46
18	Belgium	7.43	29.31	82	Algeria (2009)	0.53	0.04
19	Ireland	7.17	28.19	83	Georgia (2009)	0.52	0.02
20	Czech Republic	7.11	27.94	84	Guyana (2009)	0.52	0.00
21	Niger (2010)	6.58	25.70	n/a	Argentina	n/a	n/a
22	Mali (2000)	6.54	25.54	n/a	Bangladesh	n/a	n/a
23	Trinidad and Tobago (2004)	5.78	22.33	n/a	Benin	n/a	n/a
24	Sweden	5.57	21.41	n/a	Bolivia	n/a	n/a
25	Netherlands	4.99	18.96	n/a	Bosnia & Herzegovina	n/a	n/a
26	Malaysia	4.92	18.66	n/a	Brazil	n/a	n/a
27	Canada (2004)	4.90	18.57	n/a	Cambodia	n/a	n/a
28	Brunei Darussalam (2009)	4.83	18.28	n/a	China	n/a	n/a
29	Serbia (2009)	4.41	16.50	n/a	Colombia	n/a	n/a
30	Iceland	4.33	16.16	n/a	Côte d'Ivoire	n/a	n/a
31	Botswana (2005)	4.16	15.45	n/a	Ecuador	n/a	n/a
32	Hungary	3.74	13.64	n/a	Ethiopia	n/a	n/a
33	Finland	3.65	13.28	n/a	Germany	n/a	n/a
34	Hong Kong (SAR), China (2009)	3.64	13.22	n/a	Guatemala	n/a	n/a
35	Greece (2007)	3.51	12.68	n/a	India	n/a	n/a
36	Bulgaria	3.50	12.66	n/a	Indonesia	n/a	n/a
37	Azerbaijan (2009)	3.50	12.65	n/a	Iran	n/a	n/a
38	United States of America	3.42	12.31	n/a	Israel	n/a	n/a
39	Italy	3.39	12.18	n/a	Kenya	n/a	n/a
40	Croatia	3.30	11.78	n/a	Kuwait	n/a	n/a
41	Japan	3.21	11.42	n/a	Malawi	n/a	n/a
42	Armenia (2009)	3.21	11.39	n/a	Mauritius	n/a	n/a
43	Burkina Faso (2005)	3.15	11.15	n/a	Mexico	n/a	n/a
44	Denmark	2.77	9.54	n/a	Nicaragua	n/a	n/a
45	Yemen (2007)	2.71	9.29	n/a	Nigeria	n/a	n/a
46	Saudi Arabia (2009)	2.63	8.94	n/a	Pakistan	n/a	n/a
47	Oman (2009)	2.32	7.62	n/a	Panama	n/a	n/a
48	Slovak Republic	2.26	7.40	n/a	Paraguay	n/a	n/a
49	Jamaica (2000)	2.21	7.19	n/a	Peru	n/a	n/a
50	Portugal	2.15	6.91	n/a	Philippines	n/a	n/a
51	Swaziland (2006)	2.14	6.89	n/a	Senegal	n/a	n/a
52	Spain	2.12	6.78	n/a	South Africa	n/a	n/a
53	Macedonia	2.04	6.46	n/a	Sri Lanka	n/a	n/a
54	Tajikistan (2009)	2.04	6.45	n/a	Sudan	n/a	n/a
55	Kazakhstan (2010)	1.96	6.12	n/a	Syrian Arab Republic	n/a	n/a
56	Morocco (2009)	1.89	5.82	n/a	Uganda	n/a	n/a
57	Madagascar (2009)	1.81	5.46	n/a	Uruguay	n/a	n/a
58	Estonia	1.51	4.22	n/a	Venezuela	n/a	n/a
59	Chile	1.51	4.20	n/a	Viet Nam	n/a	n/a
60	Russian Federation	1.45	3.94	n/a	Zambia	n/a	n/a
61	Lithuania	1.44	3.92	n/a	Zimbabwe	n/a	n/a
62	Costa Rica (2004)	1.43	3.88				
63	Egypt (2007)	1.40	3.74				
64	Ghana (2007)	1.36	3.55				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–10)

## 2.2.5 Tertiary outbound mobility

Tertiary outbound mobility ratio (%)<sup>a</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg (2006)	261.63	100.00	65	Yemen (2007)	2.95	23.35
2	Cyprus	92.77	81.47	66	Portugal	2.87	22.95
3	Swaziland (2006)	53.95	71.83	67	Pakistan	2.76	22.39
4	Botswana (2006)	49.90	70.45	68	Algeria (2007)	2.57	21.36
5	Brunei Darussalam	48.69	70.01	69	Uganda	2.56	21.31
6	Namibia	42.47	67.59	70	Bolivia (2007)	2.48	20.88
7	Trinidad and Tobago (2005)	30.82	61.95	71	Belgium	2.45	20.69
8	Zimbabwe (2003)	30.72	61.89	72	Czech Republic	2.40	20.44
9	Mauritius	29.58	61.23	73	Cambodia	2.39	20.40
10	Malawi (2007)	29.31	61.07	74	Romania	2.19	19.16
11	Albania (2004)	25.65	58.74	75	Denmark	2.14	18.85
12	Zambia (2000)	20.31	54.67	76	Finland	2.10	18.61
13	Guyana (2009)	20.24	54.61	77	France	2.05	18.29
14	Bahrain (2006)	16.24	50.81	78	Slovenia	2.03	18.18
15	Niger	16.16	50.72	79	El Salvador	1.92	17.42
16	Qatar	15.46	49.96	80	Panama	1.77	16.40
17	Kuwait (2006)	15.02	49.46	81	Italy	1.76	16.30
18	Bosnia & Herzegovina (2007)	14.84	49.27	82	Nicaragua (2003)	1.74	16.20
19	Iceland	14.34	48.68	83	Honduras	1.71	15.92
20	Hong Kong (SAR), China	13.11	47.15	84	Hungary	1.70	15.87
21	Senegal	12.80	46.74	85	China	1.69	15.81
22	Cameroon	12.26	46.00	86	New Zealand	1.68	15.73
23	Kenya (2005)	12.23	45.96	87	Turkey	1.64	15.43
24	Slovak Republic	11.50	44.92	88	Ecuador	1.63	15.32
25	Morocco	10.54	43.46	89	Sudan (2000)	1.58	14.96
26	Moldova, Rep.	10.43	43.28	90	Ethiopia	1.51	14.40
27	Ireland	10.06	42.67	91	Poland	1.50	14.36
28	Jamaica	9.76	42.16	92	Costa Rica (2005)	1.48	14.14
29	United Arab Emirates	9.00	40.81	93	Nigeria (2005)	1.46	14.05
30	Macedonia	8.96	40.73	94	Kyrgyzstan	1.39	13.41
31	Benin (2006)	8.83	40.50	95	Netherlands	1.36	13.13
32	Bulgaria	8.83	40.50	96	Uruguay	1.35	13.05
33	Tanzania (2007)	7.74	38.33	97	Viet Nam (2001)	1.31	12.76
34	Oman	7.66	38.15	98	Bangladesh (2007)	1.30	12.60
35	Lebanon	6.76	36.13	99	Japan	1.27	12.42
36	Madagascar	6.60	35.72	100	Colombia	1.24	12.12
37	Kazakhstan	6.41	35.26	101	Paraguay (2007)	1.20	11.73
38	Georgia	6.39	35.22	102	Spain	1.19	11.62
39	Burkina Faso	5.99	34.16	103	Peru (2006)	1.17	11.46
40	Malaysia (2007)	5.70	33.38	104	Ukraine	1.14	11.15
41	Mongolia	5.58	33.05	105	Guatemala (2007)	1.12	11.00
42	Greece (2007)	5.42	32.56	106	India (2007)	1.03	10.10
43	Ghana (2007)	5.37	32.42	107	Thailand	1.00	9.77
44	Norway	5.26	32.10	108	Mexico	0.97	9.48
45	Tunisia	5.22	31.97	109	United Kingdom	0.88	8.49
46	Estonia	5.14	31.75	110	Australia	0.86	8.20
47	Azerbaijan	5.04	31.42	111	Chile	0.83	7.86
48	Mali	4.72	30.40	112	Iran	0.80	7.61
49	Switzerland	4.54	29.79	113	Indonesia	0.68	6.14
50	Croatia	4.54	29.79	114	South Africa	0.67	5.98
51	Rwanda	4.54	29.78	115	Venezuela	0.57	4.68
52	Serbia	4.11	28.26	116	Russian Federation	0.47	3.14
53	Israel	4.08	28.14	117	Brazil	0.39	1.89
54	Jordan	3.85	27.26	118	Argentina (2007)	0.37	1.55
55	Côte d'Ivoire (2007)	3.69	26.64	119	Egypt	0.36	1.45
56	Austria	3.57	26.15	120	Philippines	0.32	0.76
57	Armenia	3.56	26.08	121	United States of America	0.28	0.00
58	Korea, Rep.	3.52	25.94	n/a	Germany	n/a	n/a
59	Lithuania	3.48	25.75	n/a	Singapore	n/a	n/a
60	Sweden	3.38	25.32	n/a	Sri Lanka	n/a	n/a
61	Tajikistan	3.24	24.71	n/a	Syrian Arab Republic	n/a	n/a
62	Latvia	3.18	24.44				
63	Saudi Arabia	3.04	23.80				
64	Canada (2004)	2.97	23.44				

SOURCE: UNESCO Institute for Statistics, United Nations database *UNdata* (2000–09)

## 2.2.6 Gross tertiary outbound enrolment

Gross tertiary outbound enrolment ratio (%)<sup>a</sup> | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Cyprus	39.54	100.00	65	Panama	0.80	9.79
2	Luxembourg	22.26	100.00	66	Azerbaijan	0.79	9.72
3	Iceland	10.70	100.00	67	Japan	0.74	9.01
4	Mauritius	7.66	100.00	68	Kyrgyzstan	0.72	8.77
5	Albania	6.84	89.24	69	Ecuador	0.69	8.35
6	Slovak Republic	6.16	80.31	70	Australia	0.66	7.94
7	Ireland	5.86	76.38	71	Tajikistan	0.65	7.87
8	Bahrain	5.17	67.30	72	Turkey	0.63	7.56
9	Greece	4.56	59.24	73	Algeria	0.58	6.89
10	Bulgaria	4.51	58.51	74	Peru	0.54	6.38
11	Moldova, Rep.	4.17	54.14	75	El Salvador	0.47	5.48
12	Norway	3.85	49.92	76	Benin	0.46	5.39
13	Namibia	3.79	49.17	77	Chile	0.45	5.24
14	Trinidad and Tobago	3.55	46.00	78	Thailand	0.45	5.16
15	Lebanon	3.49	45.11	79	Colombia	0.44	5.06
16	Botswana	3.37	43.65	80	Costa Rica	0.42	4.76
17	Estonia	3.28	42.37	81	Zambia	0.40	4.59
18	Kuwait	3.08	39.81	82	China	0.38	4.33
19	Kazakhstan	3.01	38.84	83	Nicaragua	0.38	4.26
20	Mongolia	2.78	35.88	84	Paraguay	0.35	3.92
21	Lithuania	2.69	34.64	85	Ghana	0.32	3.53
22	Swaziland	2.63	33.87	86	Honduras	0.32	3.47
23	Israel	2.43	31.29	87	Kenya	0.32	3.44
24	Sweden	2.40	30.83	88	Yemen (2009)	0.31	3.35
25	Jamaica	2.36	30.33	89	Argentina	0.27	2.86
26	Guyana (2009)	2.27	29.13	90	Mexico	0.26	2.76
27	United Arab Emirates	2.27	29.09	91	Mali	0.26	2.66
28	Switzerland	2.24	28.76	92	Madagascar	0.22	2.23
29	Croatia	2.23	28.67	93	Guatemala	0.21	2.01
30	Latvia	2.20	28.24	94	Niger	0.19	1.75
31	Georgia	2.19	28.11	95	Burkina Faso	0.18	1.70
32	Oman	2.06	26.35	96	Rwanda	0.18	1.65
33	Canada	2.01	25.73	97	Nigeria	0.18	1.59
34	Serbia	2.00	25.57	98	Cambodia	0.17	1.50
35	Finland	1.98	25.34	99	India	0.16	1.34
36	Malaysia	1.97	25.22	100	Malawi	0.15	1.23
37	Austria	1.95	24.98	101	Indonesia	0.15	1.20
38	Slovenia	1.76	22.44	102	Pakistan	0.14	1.17
39	Tunisia	1.76	22.40	103	Brazil	0.13	1.04
40	Portugal	1.73	22.00	104	South Africa	0.11	0.68
41	Armenia	1.70	21.60	105	Egypt	0.10	0.63
42	Qatar	1.70	21.59	106	Uganda	0.09	0.53
43	Germany	1.67	21.27	107	Bangladesh	0.09	0.52
44	Denmark	1.67	21.20	108	Philippines	0.09	0.49
45	Jordan	1.56	19.84	109	Sudan	0.07	0.21
46	Belgium	1.54	19.53	110	Ethiopia	0.05	0.00
47	Zimbabwe	1.53	19.41	n/a	Bosnia & Herzegovina	n/a	n/a
48	Romania	1.43	18.13	n/a	Brunei Darussalam	n/a	n/a
49	Czech Republic	1.40	17.68	n/a	Côte d'Ivoire	n/a	n/a
50	New Zealand	1.32	16.62	n/a	Hong Kong (SAR), China	n/a	n/a
51	Morocco	1.30	16.32	n/a	Iran	n/a	n/a
52	Italy	1.18	14.81	n/a	Korea, Rep.	n/a	n/a
53	France	1.12	13.99	n/a	Macedonia	n/a	n/a
54	Hungary	1.10	13.81	n/a	Russian Federation	n/a	n/a
55	Poland	1.04	13.01	n/a	Singapore	n/a	n/a
56	Senegal	1.02	12.75	n/a	Syrian Arab Republic	n/a	n/a
57	Bolivia (2009)	1.00	12.48	n/a	Tanzania	n/a	n/a
58	Saudi Arabia	0.97	12.10	n/a	United Kingdom	n/a	n/a
59	Cameroon	0.96	11.88	n/a	United States of America	n/a	n/a
60	Ukraine	0.90	11.18	n/a	Venezuela	n/a	n/a
61	Uruguay	0.87	10.77	n/a	Viet Nam	n/a	n/a
62	Spain	0.84	10.30				
63	Netherlands	0.82	10.08				
64	Sri Lanka	0.82	10.05				

SOURCE: UNESCO Institute for Statistics, United Nations database *UNdata* (2001–09)

## 2.3.1 Researchers

### Researchers, headcounts (per million people) | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Iceland (2008)	13,180.61	100.00	65	Trinidad and Tobago	477.33	3.55
2	Finland	10,111.15	76.69	66	Mexico (2003)	432.09	3.21
3	Norway	8,845.12	67.08	67	Algeria (2005)	420.19	3.12
4	Sweden	7,982.41	60.53	68	Kyrgyzstan	380.46	2.81
5	Denmark	7,895.37	59.87	69	Pakistan	310.25	2.28
6	New Zealand	7,083.54	53.71	70	Sudan (2005)	289.62	2.12
7	Singapore	7,059.12	53.52	71	Colombia	270.90	1.98
8	Japan	6,934.18	52.57	72	Sri Lanka (2006)	229.40	1.67
9	Austria	6,451.19	48.91	73	Venezuela (2008)	214.72	1.56
10	United Kingdom	6,218.64	47.14	74	Nigeria (2005)	202.54	1.46
11	Korea, Rep.	6,027.64	45.69	75	Tajikistan	191.16	1.38
12	Switzerland (2004)	5,845.87	44.31	76	Peru (2004)	180.63	1.30
13	Germany	5,316.57	40.29	77	Panama	171.09	1.22
14	Luxembourg	5,199.55	39.40	78	Kuwait	165.55	1.18
15	Estonia (2008)	5,173.74	39.21	79	Indonesia (2005)	162.24	1.16
16	Belgium	4,869.35	36.90	80	Bolivia (2001)	147.25	1.04
17	Portugal	4,834.40	36.63	81	Paraguay (2005)	133.30	0.94
18	Spain	4,680.68	35.46	82	Philippines (2005)	125.04	0.87
19	Ireland	4,450.14	33.71	83	Côte d'Ivoire (2005)	124.55	0.87
20	France	4,432.41	33.58	84	Ecuador	121.05	0.84
21	Slovenia	4,348.98	32.95	85	Benin	119.15	0.83
22	Czech Republic (2008)	4,287.12	32.48	86	Mali (2006)	102.00	0.70
23	Lithuania	3,990.59	30.22	87	Madagascar	99.55	0.68
24	Slovak Republic (2008)	3,669.39	27.79	88	Honduras (2003)	81.40	0.54
25	Latvia	3,448.03	26.10	89	Zambia (2005)	67.47	0.44
26	Hungary	3,295.21	24.94	90	El Salvador (2008)	65.37	0.42
27	Jordan (2003)	3,029.76	22.93	91	Nicaragua (2004)	60.52	0.38
28	Greece (2005)	3,018.53	22.84	92	Cambodia (2002)	56.29	0.35
29	Hong Kong (SAR), China (2006)	2,983.71	22.58	93	Guatemala	47.48	0.29
30	Netherlands (2003)	2,818.31	21.32	94	Saudi Arabia	41.49	0.24
31	Tunisia (2006)	2,760.83	20.89	95	Ethiopia	30.22	0.15
32	Russian Federation (2008)	2,657.84	20.11	96	Uganda	29.08	0.15
33	Poland	2,551.36	19.30	97	Cameroon (2005)	25.92	0.12
34	Croatia	2,508.30	18.97	98	Burkina Faso	12.70	0.02
35	Italy (2006)	2,325.51	17.58	99	Niger (2005)	9.85	0.00
36	Cyprus	1,941.06	14.66	n/a	Albania	n/a	n/a
37	Georgia (2005)	1,816.98	13.72	n/a	Australia	n/a	n/a
38	Bulgaria	1,713.12	12.93	n/a	Bahrain	n/a	n/a
39	Ukraine	1,703.02	12.86	n/a	Bangladesh	n/a	n/a
40	Argentina	1,495.35	11.28	n/a	Canada	n/a	n/a
41	Serbia	1,436.43	10.83	n/a	China	n/a	n/a
42	Romania	1,433.10	10.81	n/a	Ghana	n/a	n/a
43	Turkey	1,396.66	10.53	n/a	Guyana	n/a	n/a
44	Azerbaijan	1,357.97	10.24	n/a	India	n/a	n/a
45	Armenia	1,339.00	10.09	n/a	Israel	n/a	n/a
46	Egypt	1,198.43	9.02	n/a	Jamaica	n/a	n/a
47	Chile (2004)	1,138.79	8.57	n/a	Kenya	n/a	n/a
48	Brazil (2008)	1,097.64	8.26	n/a	Lebanon	n/a	n/a
49	Macedonia (2006)	1,088.40	8.19	n/a	Malawi	n/a	n/a
50	Iran (2006)	947.06	7.12	n/a	Mauritius	n/a	n/a
51	Botswana (2005)	941.79	7.08	n/a	Namibia	n/a	n/a
52	Morocco (2006)	910.41	6.84	n/a	Oman	n/a	n/a
53	South Africa	815.16	6.11	n/a	Qatar	n/a	n/a
54	Costa Rica	789.68	5.92	n/a	Rwanda	n/a	n/a
55	Bosnia & Herzegovina	781.55	5.86	n/a	Swaziland	n/a	n/a
56	Senegal	732.26	5.48	n/a	Syrian Arab Republic	n/a	n/a
57	Malaysia (2006)	728.92	5.46	n/a	Tanzania	n/a	n/a
58	Moldova, Rep.	725.50	5.43	n/a	United Arab Emirates	n/a	n/a
59	Brunei Darussalam (2004)	672.60	5.03	n/a	United States of America	n/a	n/a
60	Mongolia	666.30	4.98	n/a	Yemen	n/a	n/a
61	Kazakhstan (2009)	645.58	4.83	n/a	Zimbabwe	n/a	n/a
62	Uruguay (2008)	642.81	4.81				
63	Thailand (2005)	516.85	3.85				
64	Viet Nam (2002)	508.48	3.79				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2000–09)

## 2.3.2 Gross expenditure on R&D (GERD)

### Gross expenditure on R&D (% of GDP) | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Israel (2008)	4.86	100.00	65	Thailand (2006)	0.25	4.61
2	Sweden (2008)	3.75	76.98	66	Kyrgyzstan	0.23	4.24
3	Finland (2008)	3.46	71.03	67	Mongolia	0.23	4.14
4	Japan	3.44	70.61	68	Egypt	0.23	4.12
5	Korea, Rep.	3.21	65.81	69	Kazakhstan (2008)	0.22	3.94
6	Switzerland (2004)	2.90	59.44	70	Armenia	0.21	3.82
7	United States of America (2008)	2.82	57.84	71	Macedonia (2006)	0.21	3.77
8	Denmark (2008)	2.72	55.60	72	Panama (2008)	0.21	3.73
9	Iceland (2008)	2.67	54.72	73	Viet Nam (2002)	0.19	3.44
10	Austria (2008)	2.66	54.49	74	Georgia (2005)	0.18	3.11
11	Germany	2.54	51.91	75	Sri Lanka (2006)	0.17	3.06
12	Singapore	2.52	51.53	76	Ethiopia	0.17	3.02
13	Australia (2006)	2.06	41.98	77	Azerbaijan	0.17	2.97
14	France (2008)	2.02	41.24	78	Colombia	0.16	2.74
15	Belgium (2008)	1.92	39.22	79	Peru (2004)	0.15	2.54
16	United Kingdom (2008)	1.88	38.40	80	Ecuador	0.15	2.50
17	Canada (2008)	1.84	37.50	81	Madagascar	0.14	2.36
18	Luxembourg (2008)	1.74	35.43	82	Philippines (2005)	0.12	1.86
19	Slovenia (2008)	1.66	33.81	83	Burkina Faso	0.11	1.75
20	Netherlands (2008)	1.63	33.13	84	Senegal (2005)	0.09	1.30
21	Norway (2008)	1.62	32.85	85	El Salvador	0.09	1.28
22	Portugal (2008)	1.51	30.71	86	Paraguay (2005)	0.09	1.27
23	Czech Republic (2008)	1.47	29.78	87	Kuwait	0.09	1.23
24	China	1.44	29.26	88	Algeria (2005)	0.07	0.84
25	Ireland (2008)	1.42	28.88	89	Tajikistan	0.06	0.79
26	Spain (2008)	1.34	27.21	90	Jamaica (2002)	0.06	0.73
27	Estonia (2008)	1.29	26.21	91	Trinidad and Tobago	0.06	0.68
28	New Zealand	1.21	24.38	92	Guatemala	0.06	0.65
29	Italy (2008)	1.18	23.89	93	Cambodia (2002)	0.05	0.49
30	Brazil	1.10	22.16	94	Indonesia (2005)	0.05	0.48
31	Russian Federation (2008)	1.03	20.84	95	Saudi Arabia	0.05	0.47
32	Tunisia (2005)	1.02	20.58	96	Nicaragua (2002)	0.05	0.40
33	Hungary	0.96	19.39	97	Honduras (2004)	0.04	0.32
34	South Africa	0.93	18.72	98	Brunei Darussalam (2004)	0.04	0.23
35	Croatia (2008)	0.90	18.03	99	Zambia (2005)	0.03	0.06
36	Ukraine	0.85	17.09	100	Bosnia & Herzegovina	0.03	0.00
37	Hong Kong (SAR), China (2006)	0.81	16.20	n/a	Albania	n/a	n/a
38	India	0.80	15.99	n/a	Bahrain	n/a	n/a
39	Lithuania (2008)	0.80	15.96	n/a	Bangladesh	n/a	n/a
40	Turkey	0.72	14.39	n/a	Benin	n/a	n/a
41	Chile (2004)	0.68	13.41	n/a	Cameroon	n/a	n/a
42	Pakistan	0.67	13.39	n/a	Côte d'Ivoire	n/a	n/a
43	Iran (2006)	0.67	13.27	n/a	Ghana	n/a	n/a
44	Uruguay (2008)	0.64	12.70	n/a	Guyana	n/a	n/a
45	Morocco (2006)	0.64	12.60	n/a	Kenya	n/a	n/a
46	Malaysia (2006)	0.64	12.60	n/a	Lebanon	n/a	n/a
47	Latvia (2008)	0.61	12.12	n/a	Malawi	n/a	n/a
48	Poland (2008)	0.61	11.98	n/a	Mali	n/a	n/a
49	Romania (2008)	0.59	11.68	n/a	Namibia	n/a	n/a
50	Greece	0.57	11.34	n/a	Niger	n/a	n/a
51	Moldova, Rep.	0.55	10.74	n/a	Nigeria	n/a	n/a
52	Argentina	0.51	9.96	n/a	Oman	n/a	n/a
53	Botswana (2005)	0.50	9.86	n/a	Qatar	n/a	n/a
54	Bulgaria (2008)	0.49	9.55	n/a	Rwanda	n/a	n/a
55	Slovak Republic (2008)	0.47	9.19	n/a	Swaziland	n/a	n/a
56	Cyprus (2008)	0.47	9.14	n/a	Syrian Arab Republic	n/a	n/a
57	Uganda	0.39	7.49	n/a	Tanzania	n/a	n/a
58	Mexico	0.37	7.21	n/a	United Arab Emirates	n/a	n/a
59	Mauritius (2005)	0.37	7.15	n/a	Venezuela	n/a	n/a
60	Serbia	0.35	6.73	n/a	Yemen	n/a	n/a
61	Jordan (2002)	0.34	6.42	n/a	Zimbabwe	n/a	n/a
62	Costa Rica	0.32	6.07				
63	Sudan (2005)	0.29	5.43				
64	Bolivia (2002)	0.28	5.18				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2002–08)



## 2.3.3 Quality of 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<sup>†</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Israel	6.24	87.36	65	Trinidad and Tobago	3.55	42.58
2	Switzerland	6.20	86.70	66	Macedonia	3.52	42.05
3	United Kingdom	6.05	84.15	67	Mali	3.51	41.89
4	United States of America	5.95	82.53	68	Bulgaria	3.51	41.88
5	Sweden	5.92	82.04	69	Zambia	3.47	41.12
6	Germany	5.87	81.13	70	Kuwait	3.47	41.12
7	Belgium	5.74	78.93	71	Malawi	3.45	40.77
8	Canada	5.71	78.56	72	Azerbaijan	3.43	40.57
9	Netherlands	5.63	77.18	73	Pakistan	3.41	40.24
10	Australia	5.57	76.09	74	Namibia	3.41	40.20
11	Singapore	5.54	75.61	75	Colombia	3.34	39.00
12	Denmark	5.52	75.32	76	Botswana	3.34	38.93
13	Finland	5.37	72.79	77	Romania	3.32	38.71
14	New Zealand	5.33	72.11	78	Benin	3.31	38.50
15	Japan	5.32	72.03	79	Mauritius	3.30	38.40
16	Ireland	5.29	71.46	80	Tanzania	3.30	38.34
17	Hungary	5.22	70.33	81	Greece	3.30	38.26
18	France	5.18	69.69	82	Turkey	3.26	37.75
19	Austria	5.12	68.74	83	Slovak Republic	3.25	37.57
20	Czech Republic	5.09	68.10	84	Brunei Darussalam	3.21	36.88
21	Qatar	5.08	68.06	85	Côte d'Ivoire	3.16	36.02
22	Norway	5.00	66.66	86	Morocco	3.14	35.58
23	Iceland	4.95	65.85	87	Guatemala	3.13	35.49
24	Korea, Rep.	4.82	63.74	88	Rwanda	3.12	35.32
25	Estonia	4.75	62.49	89	Algeria	3.09	34.88
26	Slovenia	4.71	61.90	90	Cameroon	3.09	34.84
27	Portugal	4.70	61.72	91	Jordan	3.08	34.69
28	South Africa	4.70	61.65	92	Uganda	3.04	34.02
29	India	4.70	61.60	93	Tajikistan	3.03	33.77
30	Costa Rica	4.69	61.54	94	Venezuela	3.02	33.69
31	Malaysia	4.67	61.10	95	Ethiopia	3.01	33.49
32	Luxembourg	4.56	59.26	96	Armenia	3.00	33.30
33	Hong Kong (SAR), China	4.46	57.66	97	Bosnia & Herzegovina	2.97	32.91
34	Saudi Arabia	4.35	55.89	98	Moldova, Rep.	2.97	32.84
35	Tunisia	4.34	55.65	99	Cambodia	2.93	32.21
36	China	4.32	55.37	100	Zimbabwe	2.92	32.07
37	Lithuania	4.23	53.90	101	Philippines	2.90	31.73
38	Cyprus	4.21	53.58	102	Peru	2.89	31.54
39	Brazil	4.19	53.14	103	Egypt	2.88	31.27
40	Spain	4.16	52.63	104	Mongolia	2.86	31.08
41	Indonesia	4.16	52.61	105	Kazakhstan	2.85	30.88
42	United Arab Emirates	4.14	52.28	106	Nigeria	2.82	30.41
43	Argentina	4.11	51.91	107	Honduras	2.81	30.16
44	Poland	4.09	51.45	108	Madagascar	2.81	30.15
45	Senegal	4.08	51.27	109	Bangladesh	2.80	29.94
46	Sri Lanka	4.07	51.22	110	Bahrain	2.78	29.75
47	Croatia	4.01	50.21	111	Georgia	2.69	28.17
48	Iran	3.95	49.22	112	Guyana	2.62	27.07
49	Russian Federation	3.94	48.93	113	Bolivia	2.58	26.31
50	Kenya	3.93	48.90	114	Nicaragua	2.54	25.74
51	Chile	3.93	48.87	115	Syrian Arab Republic	2.47	24.51
52	Serbia	3.89	48.18	116	Albania	2.47	24.45
53	Oman	3.88	48.04	117	Lebanon	2.42	23.59
54	Burkina Faso	3.84	47.40	118	Swaziland	2.40	23.34
55	Thailand	3.83	47.08	119	Ecuador	2.39	23.09
56	Mexico	3.80	46.69	120	El Salvador	2.34	22.30
57	Latvia	3.79	46.58	121	Kyrgyzstan	2.18	19.60
58	Uruguay	3.77	46.20	122	Paraguay	1.82	13.60
59	Viet Nam	3.77	46.16	n/a	Niger	n/a	n/a
60	Ghana	3.76	46.05	n/a	Sudan	n/a	n/a
61	Italy	3.75	45.87	n/a	Yemen	n/a	n/a
62	Panama	3.74	45.62				
63	Jamaica	3.72	45.31				
64	Ukraine	3.61	43.55				

SOURCE: World Economic Forum, *Executive Opinion Survey 2010*

# 3.1.1 ICT access

Information and Communication Technologies (ICT) access index (0–10)\* | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China	8.82	88.18	65	Viet Nam	3.76	37.64
2	Luxembourg	8.80	87.97	66	China	3.75	37.48
3	Sweden	8.75	87.51	67	Jordan	3.74	37.35
4	Germany	8.54	85.40	68	Moldova, Rep.	3.60	36.01
5	Iceland	8.51	85.13	69	Mexico	3.48	34.77
6	Switzerland	8.50	85.03	70	Syrian Arab Republic	3.46	34.62
7	Netherlands	8.42	84.20	71	Peru	3.46	34.62
8	Denmark	8.34	83.38	72	Jamaica	3.45	34.47
9	United Kingdom	8.23	82.32	73	Thailand	3.41	34.08
10	Singapore	8.02	80.16	74	Armenia	3.41	34.07
11	Norway	7.91	79.06	75	Azerbaijan	3.40	34.02
12	Austria	7.69	76.89	76	Iran	3.36	33.60
13	Ireland	7.66	76.57	77	Ecuador	3.35	33.51
14	Korea, Rep.	7.60	76.05	78	Morocco	3.33	33.31
15	Estonia	7.59	75.92	79	Philippines	3.30	33.03
16	United Arab Emirates	7.58	75.79	80	Albania	3.27	32.72
17	France	7.52	75.19	81	Guatemala	3.27	32.70
18	Canada	7.51	75.09	82	El Salvador	3.22	32.15
19	Finland	7.40	73.98	83	Tunisia	3.21	32.09
20	Belgium	7.28	72.84	84	Lebanon	3.20	31.98
21	Bahrain	7.26	72.64	85	Paraguay	3.19	31.90
22	New Zealand	7.25	72.46	86	South Africa	3.14	31.36
23	Israel	7.22	72.16	87	Georgia	3.09	30.91
24	Australia	7.16	71.61	88	Algeria	3.05	30.53
25	Japan	7.16	71.57	89	Honduras	3.04	30.40
26	United States of America	7.11	71.07	90	Egypt	2.92	29.25
27	Slovenia	7.06	70.61	91	Sri Lanka	2.88	28.79
28	Spain	6.92	69.20	92	Botswana	2.69	26.94
29	Italy	6.83	68.26	93	Bolivia	2.65	26.45
30	Croatia	6.74	67.43	94	Indonesia	2.60	26.01
31	Portugal	6.64	66.41	95	Nicaragua	2.54	25.42
32	Qatar	6.58	65.78	96	Kyrgyzstan	2.27	22.71
33	Cyprus	6.47	64.70	97	Namibia	2.22	22.20
34	Greece	6.45	64.54	98	Mongolia	2.19	21.90
35	Lithuania	6.33	63.28	99	Swaziland	2.12	21.22
36	Hungary	6.21	62.14	100	Senegal	2.08	20.76
37	Slovak Republic	6.16	61.63	101	Ghana	2.06	20.59
38	Czech Republic	6.09	60.86	102	Cambodia	2.06	20.58
39	Latvia	5.99	59.92	103	Côte d'Ivoire	1.98	19.75
40	Poland	5.92	59.24	104	Pakistan	1.96	19.62
41	Brunei Darussalam	5.92	59.16	105	Tajikistan	1.90	19.00
42	Bulgaria	5.67	56.66	106	Benin	1.90	18.97
43	Russian Federation	5.59	55.88	107	Sudan	1.89	18.87
44	Saudi Arabia	5.44	54.44	108	India	1.88	18.78
45	Romania	5.30	52.97	109	Yemen	1.85	18.49
46	Argentina	5.27	52.74	110	Mali	1.81	18.13
47	Macedonia	5.26	52.59	111	Bangladesh	1.78	17.82
48	Serbia	5.06	50.64	112	Kenya	1.65	16.47
49	Trinidad and Tobago	4.93	49.34	113	Nigeria	1.60	16.04
50	Chile	4.84	48.36	114	Burkina Faso	1.58	15.81
51	Uruguay	4.76	47.55	115	Niger	1.56	15.57
52	Turkey	4.66	46.63	116	Tanzania	1.54	15.37
53	Ukraine	4.50	45.04	117	Madagascar	1.47	14.72
54	Kuwait	4.50	44.99	118	Cameroon	1.46	14.63
55	Panama	4.42	44.16	119	Malawi	1.44	14.40
56	Malaysia	4.38	43.84	120	Rwanda	1.35	13.54
57	Oman	4.37	43.72	121	Ethiopia	1.33	13.33
58	Brazil	4.24	42.37	122	Zambia	1.28	12.85
59	Mauritius	4.19	41.88	123	Uganda	1.24	12.40
60	Kazakhstan	4.10	41.04	124	Zimbabwe	1.15	11.51
61	Bosnia & Herzegovina	4.02	40.20	n/a	Guyana	n/a	n/a
62	Colombia	3.95	39.48				
63	Costa Rica	3.91	39.06				
64	Venezuela	3.82	38.18				

SOURCE: International Telecommunication Union, *ICT Development Index Report 2010* (with data from 2008)

# 3.1.2

## ICT use

Information and Communication Technologies (ICT) use index (0–10)\* | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg	7.09	70.86	65	Mexico	1.17	11.69
2	Korea, Rep.	6.69	66.87	66	Moldova, Rep.	1.13	11.28
3	Sweden	6.39	63.93	67	China	1.09	10.88
4	Japan	6.34	63.37	68	Iran	1.07	10.68
5	Singapore	5.81	58.13	69	Tunisia	1.04	10.41
6	Denmark	5.76	57.61	70	Lebanon	1.03	10.30
7	Netherlands	5.66	56.65	71	Jordan	0.99	9.90
8	Australia	5.54	55.39	72	Ecuador	0.98	9.82
9	Switzerland	5.40	54.02	73	Azerbaijan	0.97	9.71
10	Norway	5.29	52.93	74	Peru	0.96	9.63
11	Finland	5.25	52.55	75	Viet Nam	0.93	9.27
12	United Kingdom	5.23	52.32	76	Albania	0.91	9.08
13	Hong Kong (SAR), China	5.22	52.17	77	Oman	0.90	9.05
14	New Zealand	5.11	51.06	78	Thailand	0.89	8.91
15	Austria	4.94	49.44	79	Egypt	0.77	7.70
16	Iceland	4.84	48.40	80	Nigeria	0.61	6.11
17	Germany	4.76	47.58	81	Ukraine	0.61	6.07
18	United States of America	4.64	46.41	82	Kazakhstan	0.60	6.03
19	France	4.64	46.39	83	Paraguay	0.57	5.67
20	Spain	4.31	43.08	84	Syrian Arab Republic	0.56	5.62
21	Canada	4.31	43.06	85	Mongolia	0.55	5.49
22	Ireland	4.28	42.77	86	Guatemala	0.53	5.31
23	Belgium	4.25	42.46	87	Kyrgyzstan	0.53	5.28
24	United Arab Emirates	4.20	42.01	88	Philippines	0.51	5.05
25	Israel	4.12	41.25	89	South Africa	0.49	4.94
26	Italy	4.07	40.72	90	El Salvador	0.48	4.78
27	Estonia	4.02	40.17	91	Algeria	0.48	4.76
28	Slovenia	3.91	39.10	92	Honduras	0.44	4.36
29	Greece	3.72	37.21	93	Bolivia	0.40	4.01
30	Portugal	3.59	35.93	94	Indonesia	0.39	3.90
31	Hungary	3.44	34.40	95	Zimbabwe	0.39	3.87
32	Bahrain	3.36	33.55	96	Sudan	0.36	3.57
33	Czech Republic	3.33	33.27	97	Pakistan	0.35	3.54
34	Brunei Darussalam	3.29	32.93	98	Kenya	0.32	3.23
35	Slovak Republic	3.17	31.71	99	Tajikistan	0.32	3.20
36	Cyprus	3.05	30.54	100	Senegal	0.30	3.00
37	Croatia	3.03	30.33	101	Sri Lanka	0.30	3.00
38	Lithuania	2.93	29.34	102	Uganda	0.29	2.86
39	Poland	2.86	28.58	103	Botswana	0.23	2.34
40	Latvia	2.72	27.22	104	Swaziland	0.23	2.32
41	Malaysia	2.43	24.31	105	Armenia	0.22	2.16
42	Bulgaria	2.34	23.38	106	Ghana	0.21	2.08
43	Romania	2.33	23.35	107	Zambia	0.19	1.87
44	Jamaica	2.12	21.25	108	Namibia	0.18	1.78
45	Macedonia	1.89	18.92	109	India	0.17	1.71
46	Qatar	1.83	18.33	110	Nicaragua	0.16	1.58
47	Uruguay	1.78	17.84	111	Cameroon	0.13	1.33
48	Chile	1.63	16.33	112	Côte d'Ivoire	0.11	1.10
49	Serbia	1.63	16.25	113	Rwanda	0.11	1.05
50	Brazil	1.60	16.02	114	Malawi	0.07	0.72
51	Turkey	1.58	15.76	115	Benin	0.06	0.63
52	Saudi Arabia	1.57	15.70	116	Cambodia	0.06	0.58
53	Colombia	1.55	15.50	117	Madagascar	0.06	0.57
54	Russian Federation	1.45	14.50	118	Tanzania	0.06	0.55
55	Argentina	1.44	14.42	119	Mali	0.05	0.55
56	Bosnia & Herzegovina	1.43	14.31	120	Yemen	0.05	0.54
57	Venezuela	1.39	13.93	121	Burkina Faso	0.03	0.32
58	Kuwait	1.29	12.85	122	Niger	0.02	0.18
59	Trinidad and Tobago	1.28	12.82	123	Ethiopia	0.01	0.15
60	Mauritius	1.27	12.65	124	Bangladesh	0.01	0.13
61	Morocco	1.26	12.60	n/a	Guyana	n/a	n/a
62	Panama	1.24	12.35				
63	Georgia	1.23	12.32				
64	Costa Rica	1.21	12.08				

SOURCE: International Telecommunication Union, *ICT Development Index Report 2010* (with data from 2008)

## 3.1.3 Government's online service

### Government's online service index (0–1)\*<sup>a</sup> | 2010

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Korea, Rep.	1.00	100.00	64	Côte d'Ivoire	0.32	32.38
2	United States of America	0.94	93.65	66	Macedonia	0.32	32.06
3	Canada	0.88	88.25	67	Ecuador	0.32	31.75
4	United Kingdom	0.77	77.46	67	Kyrgyzstan	0.32	31.75
5	Australia	0.77	76.51	69	Albania	0.31	31.11
5	Spain	0.77	76.51	69	Saudi Arabia	0.31	31.11
7	Norway	0.74	73.65	71	Guatemala	0.31	30.79
8	Bahrain	0.73	73.02	71	South Africa	0.31	30.79
9	Colombia	0.71	71.11	73	Bolivia	0.30	30.48
10	Singapore	0.69	68.57	73	Costa Rica	0.30	30.48
11	France	0.68	68.25	73	Venezuela	0.30	30.48
12	Netherlands	0.68	67.94	73	Viet Nam	0.30	30.48
13	Denmark	0.67	67.30	77	Honduras	0.30	29.52
13	Japan	0.67	67.30	77	Mauritius	0.30	29.52
15	New Zealand	0.64	63.81	77	Moldova, Rep.	0.30	29.52
16	Malaysia	0.63	63.17	80	Italy	0.29	28.89
17	Belgium	0.63	62.54	81	Brunei Darussalam	0.28	28.25
18	Chile	0.61	60.95	81	Panama	0.28	28.25
19	Israel	0.58	58.41	83	Qatar	0.28	27.94
20	Mongolia	0.56	55.56	84	Bosnia & Herzegovina	0.28	27.62
21	Germany	0.55	54.92	85	Iran	0.27	26.67
22	Jordan	0.53	53.33	85	Lebanon	0.27	26.67
23	Egypt	0.53	53.02	87	Paraguay	0.26	26.35
24	Kazakhstan	0.53	52.70	88	Sri Lanka	0.26	26.03
24	Sweden	0.53	52.70	89	Nicaragua	0.25	25.40
26	Hungary	0.50	50.48	90	United Arab Emirates	0.25	25.08
27	Estonia	0.50	50.16	91	Georgia	0.25	24.76
28	Ireland	0.50	49.84	91	Pakistan	0.25	24.76
29	Lithuania	0.48	48.25	93	Indonesia	0.24	24.44
29	Tunisia	0.48	48.25	94	Kenya	0.24	23.81
31	Finland	0.48	47.94	94	Morocco	0.24	23.81
31	Uruguay	0.48	47.94	96	Jamaica	0.23	22.86
33	Austria	0.48	47.62	97	Serbia	0.22	22.22
34	Kuwait	0.46	46.03	98	Botswana	0.20	20.00
35	Czech Republic	0.45	45.40	98	Ethiopia	0.20	20.00
36	Switzerland	0.44	44.44	100	Mali	0.18	18.41
37	Mexico	0.44	44.13	101	Guyana	0.18	18.10
38	El Salvador	0.43	42.54	102	Senegal	0.18	17.78
39	Croatia	0.42	42.22	103	Rwanda	0.17	17.46
40	Latvia	0.42	41.59	103	Tanzania	0.17	17.46
40	Romania	0.42	41.59	105	Madagascar	0.17	16.51
42	Argentina	0.41	41.27	106	Burkina Faso	0.16	15.56
43	Bulgaria	0.41	40.95	106	Sudan	0.16	15.56
43	Peru	0.41	40.95	108	Cameroon	0.15	15.24
45	Slovenia	0.40	40.00	109	Ghana	0.15	14.92
46	Iceland	0.40	39.68	110	Cambodia	0.14	13.65
47	Philippines	0.39	39.37	111	Zimbabwe	0.13	12.70
48	Poland	0.39	38.73	112	Benin	0.12	11.75
48	Portugal	0.39	38.73	113	Zambia	0.10	10.48
50	Luxembourg	0.38	38.10	114	Uganda	0.10	10.16
51	Cyprus	0.37	37.14	115	Algeria	0.10	9.84
52	Brazil	0.37	36.83	116	Nigeria	0.10	9.52
52	China	0.37	36.83	117	Tajikistan	0.09	8.89
52	India	0.37	36.83	118	Namibia	0.07	6.67
52	Oman	0.37	36.83	119	Yemen	0.05	4.76
56	Bangladesh	0.36	35.56	120	Syrian Arab Republic	0.04	4.13
56	Greece	0.36	35.56	121	Niger	0.04	3.81
58	Slovak Republic	0.35	34.60	122	Malawi	0.02	1.59
58	Turkey	0.35	34.60	n/a	Armenia	n/a	n/a
58	Ukraine	0.35	34.60	n/a	Hong Kong (SAR), China	n/a	n/a
61	Trinidad and Tobago	0.34	33.97	n/a	Swaziland	n/a	n/a
62	Thailand	0.33	33.33				
63	Russian Federation	0.33	33.02				
64	Azerbaijan	0.32	32.38				

SOURCE: United Nations Public Administration Network, *e-Government Development Database* (UNeGovDD)

## 3.1.4 Online participation

E-participation index (0–1)\*a | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Korea, Rep.	1.00	100.00	65	Azerbaijan	0.17	17.14
2	Australia	0.91	91.43	65	Brunei Darussalam	0.17	17.14
3	Spain	0.83	82.86	65	Côte d'Ivoire	0.17	17.14
4	New Zealand	0.77	77.14	65	Luxembourg	0.17	17.14
4	United Kingdom	0.77	77.14	65	Pakistan	0.17	17.14
6	Japan	0.76	75.71	65	Peru	0.17	17.14
6	United States of America	0.76	75.71	71	Cameroon	0.16	15.71
8	Canada	0.73	72.86	71	Ecuador	0.16	15.71
9	Zambia	0.70	70.08	71	Oman	0.16	15.71
10	Estonia	0.69	68.57	74	Sri Lanka	0.14	14.29
10	Singapore	0.69	68.57	74	Venezuela	0.14	14.29
12	Bahrain	0.67	67.14	76	Albania	0.13	12.86
13	Malaysia	0.66	65.71	76	Czech Republic	0.13	12.86
14	Denmark	0.64	64.29	76	Honduras	0.13	12.86
15	Germany	0.61	61.43	76	Indonesia	0.13	12.86
16	France	0.60	60.00	76	Morocco	0.13	12.86
16	Netherlands	0.60	60.00	76	Qatar	0.13	12.86
18	Belgium	0.59	58.57	76	Russian Federation	0.13	12.86
19	Kazakhstan	0.56	55.71	76	Trinidad and Tobago	0.13	12.86
20	Lithuania	0.53	52.86	76	United Arab Emirates	0.13	12.86
21	Slovenia	0.51	51.43	85	Cambodia	0.11	11.43
22	Austria	0.50	50.00	85	Mali	0.11	11.43
22	Norway	0.50	50.00	87	Bangladesh	0.10	10.00
24	Cyprus	0.49	48.57	87	Botswana	0.10	10.00
24	Sweden	0.49	48.57	87	Niger	0.10	10.00
26	Croatia	0.46	45.71	87	Saudi Arabia	0.10	10.00
27	Colombia	0.44	44.29	87	Sudan	0.10	10.00
27	Ireland	0.44	44.29	92	Ghana	0.09	8.57
29	Kyrgyzstan	0.43	42.86	92	Guyana	0.09	8.57
29	Mongolia	0.43	42.86	92	Jamaica	0.09	8.57
31	Finland	0.41	41.43	92	Thailand	0.09	8.57
31	Israel	0.41	41.43	92	Viet Nam	0.09	8.57
33	China	0.37	37.14	97	Benin	0.07	7.14
33	Mexico	0.37	37.14	97	El Salvador	0.07	7.14
35	Chile	0.34	34.29	97	Iran	0.07	7.14
36	Guatemala	0.31	31.43	97	Slovak Republic	0.07	7.14
36	Hungary	0.31	31.43	97	Uganda	0.07	7.14
38	Bulgaria	0.30	30.00	102	Burkina Faso	0.06	5.71
38	Nicaragua	0.30	30.00	102	Georgia	0.06	5.71
38	Tunisia	0.30	30.00	102	Madagascar	0.06	5.71
41	Brazil	0.29	28.57	102	Mauritius	0.06	5.71
41	Egypt	0.29	28.57	106	Armenia	0.04	4.29
41	Jordan	0.29	28.57	106	Bosnia & Herzegovina	0.04	4.29
44	Latvia	0.27	27.14	106	Ethiopia	0.04	4.29
44	Lebanon	0.27	27.14	106	Iceland	0.04	4.29
44	Portugal	0.27	27.14	106	Serbia	0.04	4.29
47	Greece	0.26	25.71	106	Tanzania	0.04	4.29
47	Ukraine	0.26	25.71	106	Yemen	0.04	4.29
47	Uruguay	0.26	25.71	113	Rwanda	0.03	2.86
50	Poland	0.24	24.29	113	Tajikistan	0.03	2.86
51	Kenya	0.23	22.86	113	Zimbabwe	0.03	2.86
51	Kuwait	0.23	22.86	116	Algeria	0.01	1.43
53	Italy	0.21	21.43	116	Namibia	0.01	1.43
53	Macedonia	0.21	21.43	116	Nigeria	0.01	1.43
53	Turkey	0.21	21.43	116	Paraguay	0.01	1.43
56	Argentina	0.20	20.00	116	Senegal	0.01	1.43
56	Bolivia	0.20	20.00	116	Syrian Arab Republic	0.01	1.43
56	Costa Rica	0.20	20.00	n/a	Hong Kong (SAR), China	n/a	n/a
56	India	0.20	20.00	n/a	Malawi	n/a	n/a
56	Moldova, Rep.	0.20	20.00	n/a	Panama	n/a	n/a
56	Switzerland	0.20	20.00	n/a	Swaziland	n/a	n/a
62	Philippines	0.19	18.57				
62	Romania	0.19	18.57				
62	South Africa	0.19	18.57				

SOURCE: United Nations Public Administration Network, *e-Government Development Database* (UNeGovDD)

## 3.2.1 Electricity output

Electricity output (kWh per capita)<sup>a</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Iceland (2009)	52,609.38	100.00	65	Lebanon	2,566.67	13.26
2	Norway (2009)	27,549.69	100.00	66	Brazil	2,413.76	12.46
3	United Arab Emirates	19,254.46	100.00	67	Tajikistan	2,360.67	12.19
4	Kuwait	18,955.68	98.45	68	Mexico (2009)	2,352.03	12.14
5	Canada (2009)	18,566.03	96.42	69	Jordan	2,341.46	12.09
6	Qatar	16,887.50	87.70	70	Latvia	2,323.35	11.99
7	Bahrain	15,497.40	80.47	71	Kyrgyzstan	2,249.43	11.61
8	Sweden (2009)	14,374.49	74.63	72	Thailand	2,187.67	11.29
9	United States of America (2009)	13,531.10	70.25	73	Costa Rica	2,091.61	10.79
10	Finland (2009)	13,427.20	69.71	74	Georgia	1,936.01	9.98
11	Australia (2009)	11,382.11	59.08	75	Syrian Arab Republic	1,932.31	9.96
12	New Zealand (2009)	9,995.39	51.87	76	Panama	1,891.18	9.75
13	Korea, Rep. (2009)	9,105.69	47.25	77	Armenia	1,874.03	9.66
14	Paraguay	8,902.73	46.19	78	Egypt	1,607.26	8.27
15	Switzerland (2009)	8,699.22	45.14	79	Mongolia	1,576.05	8.11
16	Singapore	8,619.21	44.72	80	Tunisia	1,482.19	7.62
17	Brunei Darussalam	8,557.50	44.40	81	Ecuador	1,380.49	7.09
18	France (2009)	8,350.60	43.32	82	Colombia	1,258.12	6.46
19	Belgium (2009)	8,319.20	43.16	83	Albania	1,209.24	6.20
20	Saudi Arabia	8,283.98	42.98	84	Algeria	1,171.01	6.01
21	Japan (2009)	8,168.77	42.38	85	Peru	1,124.48	5.76
22	Slovenia	8,118.32	42.12	86	Moldova, Rep.	998.90	5.11
23	Estonia	7,896.27	40.96	87	Namibia	993.84	5.08
24	Austria (2009)	7,868.19	40.82	88	El Salvador	972.27	4.97
25	Czech Republic (2009)	7,840.69	40.67	89	Honduras	902.90	4.61
26	Israel	7,718.19	40.04	90	Viet Nam	847.34	4.32
27	Russian Federation	7,323.73	37.99	91	Zambia	768.30	3.91
28	Germany (2009)	7,199.79	37.34	92	India	728.20	3.70
29	Netherlands (2009)	6,777.23	35.15	93	Philippines	673.17	3.42
30	Denmark (2009)	6,583.27	34.14	94	Morocco	666.79	3.38
31	Cyprus	6,347.50	32.91	95	Indonesia	654.71	3.32
32	Spain (2009)	6,320.29	32.77	96	Bolivia	644.63	3.27
33	Luxembourg (2009)	6,264.00	32.48	97	Zimbabwe	641.25	3.25
34	Ireland (2009)	6,054.32	31.39	98	Guatemala	637.21	3.23
35	United Kingdom (2009)	5,958.09	30.89	99	Nicaragua	591.73	2.99
36	Trinidad and Tobago	5,889.55	30.53	100	Pakistan	551.83	2.79
37	Bulgaria	5,850.92	30.33	101	Sri Lanka	458.43	2.30
38	Oman	5,634.77	29.21	102	Ghana	357.99	1.78
39	Hong Kong (SAR), China	5,443.27	28.21	103	Botswana	330.37	1.64
40	South Africa	5,247.87	27.20	104	Cameroon	293.70	1.44
41	Kazakhstan	5,122.83	26.55	105	Yemen	283.99	1.39
42	Serbia	5,003.13	25.92	106	Côte d'Ivoire	281.69	1.38
43	Greece (2009)	4,881.42	25.29	107	Bangladesh	218.48	1.05
44	Slovak Republic (2009)	4,810.93	24.92	108	Senegal	196.64	0.94
45	Italy (2009)	4,782.47	24.78	109	Kenya	183.10	0.87
46	Portugal (2009)	4,634.02	24.01	110	Nigeria	139.51	0.64
47	Venezuela	4,269.76	22.11	111	Sudan	109.36	0.49
48	Ukraine	4,160.31	21.54	112	Tanzania	103.91	0.46
49	Lithuania	3,966.07	20.53	113	Cambodia	99.39	0.43
50	Poland (2009)	3,964.90	20.53	114	Ethiopia	46.80	0.16
51	Malaysia	3,608.45	18.67	115	Benin	15.70	0.00
52	Hungary (2009)	3,587.21	18.56	n/a	Burkina Faso	n/a	n/a
53	Chile	3,562.29	18.43	n/a	Guyana	n/a	n/a
54	Bosnia & Herzegovina	3,517.51	18.20	n/a	Madagascar	n/a	n/a
55	Macedonia	3,093.63	16.00	n/a	Malawi	n/a	n/a
56	Argentina	3,044.73	15.74	n/a	Mali	n/a	n/a
57	Romania	3,019.80	15.61	n/a	Mauritius	n/a	n/a
58	Iran	2,981.25	15.41	n/a	Niger	n/a	n/a
59	Jamaica	2,892.57	14.95	n/a	Rwanda	n/a	n/a
60	Croatia	2,757.56	14.25	n/a	Swaziland	n/a	n/a
61	Azerbaijan	2,750.58	14.22	n/a	Uganda	n/a	n/a
62	Turkey (2009)	2,693.41	13.92				
63	Uruguay	2,633.33	13.61				
64	China	2,607.73	13.47				

SOURCE: International Energy Agency, *World Energy Balances* online data service (2008–09)

## 3.2.2 Electricity consumption

Electricity consumption (kWh per capita)<sup>a</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Iceland (2009)	50,969.00	100.00	65	Lebanon	2,297.00	9.52
2	Norway (2009)	23,726.00	100.00	66	Brazil	2,232.00	9.25
3	United Arab Emirates	16,895.00	71.16	67	Thailand	2,079.00	8.60
4	Kuwait	16,747.00	70.53	68	Tajikistan	2,072.00	8.57
5	Canada (2009)	16,003.00	67.39	69	Jordan	2,054.00	8.50
6	Qatar	15,680.00	66.03	70	Mexico (2009)	1,944.00	8.03
7	Finland (2009)	15,063.00	63.42	71	Costa Rica	1,863.00	7.69
8	Luxembourg (2009)	14,357.00	60.44	72	Namibia	1,811.00	7.47
9	Sweden (2009)	13,707.00	57.70	73	Georgia	1,657.00	6.82
10	Bahrain	13,291.00	55.94	74	Panama	1,648.00	6.78
11	United States of America (2009)	12,917.00	54.36	75	Armenia	1,578.00	6.49
12	Australia (2009)	10,608.00	44.61	76	Botswana	1,516.00	6.22
13	New Zealand (2009)	9,248.00	38.87	77	Mongolia	1,478.00	6.06
14	Korea, Rep. (2009)	8,833.00	37.12	78	Syrian Arab Republic	1,475.00	6.05
15	Brunei Darussalam	8,209.00	34.48	79	Kyrgyzstan	1,449.00	5.94
16	Singapore	8,186.00	34.39	80	Egypt	1,425.00	5.84
17	Switzerland (2009)	8,084.00	33.96	81	Albania	1,373.00	5.62
18	Austria (2009)	7,943.00	33.36	82	Tunisia	1,298.00	5.30
19	Belgium (2009)	7,882.00	33.10	83	Moldova, Rep.	1,287.00	5.26
20	Japan (2009)	7,818.00	32.83	84	Ecuador	1,138.00	4.63
21	Saudi Arabia	7,576.00	31.81	85	Peru	1,032.00	4.18
22	France (2009)	7,512.00	31.54	86	Zimbabwe	1,022.00	4.14
23	Israel	7,053.00	29.60	87	Paraguay	1,004.00	4.06
24	Slovenia	6,918.00	29.03	88	Colombia	984.00	3.98
25	Netherlands (2009)	6,793.00	28.50	89	Algeria	958.00	3.87
26	Germany (2009)	6,757.00	28.35	90	El Salvador	953.00	3.85
27	Russian Federation	6,443.00	27.03	91	Viet Nam	799.00	3.20
28	Estonia	6,346.00	26.62	92	Morocco	744.00	2.96
29	Denmark (2009)	6,212.00	26.05	93	Honduras	715.00	2.84
30	Cyprus	6,172.00	25.88	94	Zambia	602.00	2.36
31	Czech Republic (2009)	6,137.00	25.73	95	Indonesia	589.00	2.31
32	Spain (2009)	5,880.00	24.65	96	Philippines	588.00	2.31
33	Hong Kong (SAR), China	5,866.00	24.59	97	India	566.00	2.21
34	Ireland (2009)	5,799.00	24.31	98	Bolivia	561.00	2.19
35	Trinidad and Tobago	5,769.00	24.18	99	Guatemala	543.00	2.12
36	United Kingdom (2009)	5,607.00	23.50	100	Nicaragua	456.00	1.75
37	Italy (2009)	5,255.00	22.01	101	Pakistan	436.00	1.66
38	Slovak Republic (2009)	4,914.00	20.57	102	Sri Lanka	409.00	1.55
39	Greece (2009)	4,903.00	20.52	103	Ghana	268.00	0.95
40	Oman	4,895.00	20.49	104	Cameroon	265.00	0.94
41	South Africa	4,770.00	19.96	105	Yemen	219.00	0.75
42	Portugal (2009)	4,758.00	19.91	106	Bangladesh	208.00	0.70
43	Kazakhstan	4,689.00	19.62	107	Côte d'Ivoire	186.00	0.61
44	Bulgaria	4,595.00	19.22	108	Senegal	158.00	0.49
45	Serbia	4,284.00	17.91	109	Kenya	156.00	0.48
46	Croatia	3,878.00	16.20	110	Nigeria	126.00	0.35
47	Hungary (2009)	3,751.00	15.66	111	Cambodia	112.00	0.30
48	Macedonia	3,729.00	15.57	112	Sudan	96.00	0.23
49	Poland (2009)	3,590.00	14.98	113	Tanzania	84.00	0.18
50	Lithuania	3,557.00	14.84	114	Benin	76.00	0.14
51	Ukraine	3,534.00	14.74	115	Ethiopia	42.00	0.00
52	Malaysia	3,493.00	14.57	n/a	Burkina Faso	n/a	n/a
53	Chile	3,327.00	13.87	n/a	Guyana	n/a	n/a
54	Latvia	3,087.00	12.86	n/a	Madagascar	n/a	n/a
55	Venezuela	3,074.00	12.80	n/a	Malawi	n/a	n/a
56	Argentina	2,789.00	11.60	n/a	Mali	n/a	n/a
57	Jamaica	2,550.00	10.59	n/a	Mauritius	n/a	n/a
58	Romania	2,488.00	10.33	n/a	Niger	n/a	n/a
59	Bosnia & Herzegovina	2,467.00	10.24	n/a	Rwanda	n/a	n/a
60	China	2,453.00	10.18	n/a	Swaziland	n/a	n/a
61	Iran	2,423.00	10.05	n/a	Uganda	n/a	n/a
62	Uruguay	2,394.00	9.93				
63	Azerbaijan	2,318.00	9.61				
64	Turkey (2009)	2,302.00	9.54				

SOURCE: International Energy Agency, *World Energy Balances* online data service (2008–09)

## 3.2.3 GDP per unit of energy use

GDP per unit of energy use (2000 PPP\$ per kg of oil equivalent) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China	17.67	100.00	65	Australia (2009)	5.33	25.59
2	Peru	13.18	72.91	66	Thailand	5.26	25.20
3	Colombia	12.99	71.77	67	Cameroon	5.23	25.02
4	Bangladesh	11.19	60.91	68	Azerbaijan	5.23	25.00
5	Morocco	11.15	60.69	69	China	5.10	24.24
6	Sri Lanka	11.04	60.02	70	Korea, Rep. (2009)	5.08	24.09
7	Philippines	10.85	58.86	71	Egypt	4.89	22.95
8	Namibia	10.53	56.94	72	Macedonia	4.86	22.76
9	Ireland (2009)	10.42	56.28	73	Pakistan	4.81	22.48
10	Panama	10.04	54.01	74	Czech Republic (2009)	4.78	22.29
11	Uruguay	9.92	53.28	75	Viet Nam	4.77	22.23
12	Switzerland (2009)	9.85	52.87	76	Finland (2009)	4.73	21.97
13	Costa Rica	9.66	51.72	77	Bolivia	4.72	21.95
14	Tunisia	9.59	51.28	77	Jordan	4.72	21.95
15	Botswana	9.48	50.62	79	Indonesia	4.52	20.71
16	Greece (2009)	9.31	49.61	80	Lebanon	4.36	19.76
17	Denmark (2009)	9.30	49.56	81	Malaysia	4.18	18.64
18	Italy (2009)	9.21	48.99	82	Estonia	4.17	18.63
19	United Kingdom (2009)	9.00	47.74	83	Canada (2009)	4.14	18.41
20	Cambodia	8.77	46.36	84	South Africa	3.95	17.31
21	Israel	8.61	45.36	85	Bulgaria	3.84	16.65
22	Turkey (2009)	8.58	45.18	86	Syrian Arab Republic	3.82	16.51
23	Albania	8.36	43.88	87	Kyrgyzstan	3.72	15.90
24	Spain (2009)	8.33	43.71	88	Tajikistan	3.42	14.11
25	Austria (2009)	8.31	43.55	89	Benin	3.22	12.89
26	Argentina	8.13	42.49	90	Ethiopia	3.20	12.78
27	Luxembourg (2009)	7.92	41.24	91	Serbia	3.19	12.68
28	Portugal (2009)	7.82	40.61	92	Venezuela	3.11	12.20
29	Senegal	7.65	39.56	93	Moldova, Rep.	2.92	11.07
30	Guatemala	7.58	39.15	94	Oman	2.90	10.98
31	Singapore	7.48	38.56	95	Iran	2.90	10.92
32	Croatia	7.40	38.06	95	Kuwait	2.90	10.92
33	El Salvador	7.39	38.03	97	Côte d'Ivoire	2.71	9.79
34	Latvia	7.36	37.87	98	Jamaica	2.70	9.73
35	Norway (2009)	7.25	37.19	99	Yemen	2.69	9.66
36	Japan (2009)	7.22	37.00	100	Ukraine	2.49	8.50
37	Germany (2009)	7.14	36.50	101	Kenya	2.47	8.38
38	Honduras	7.03	35.87	102	Russian Federation	2.40	7.96
39	India	6.94	35.31	103	Mongolia	2.39	7.88
40	Cyprus	6.91	35.14	104	Saudi Arabia	2.33	7.48
41	Netherlands (2009)	6.88	34.94	105	Brunei Darussalam	2.26	7.11
42	France (2009)	6.84	34.68	106	Zimbabwe	2.11	6.19
43	Paraguay	6.83	34.62	107	United Arab Emirates	2.09	6.05
44	Brazil	6.63	33.45	108	Iceland (2009)	1.92	5.04
45	Sweden (2009)	6.58	33.13	109	Kazakhstan	1.86	4.67
46	Chile	6.30	31.46	110	Bahrain	1.85	4.64
47	Slovenia	6.30	31.44	111	Zambia	1.73	3.87
48	Hungary (2009)	6.29	31.41	112	Tanzania	1.58	2.97
49	Mexico (2009)	6.25	31.17	113	Nigeria	1.52	2.64
50	Ghana	6.19	30.78	114	Qatar	1.40	1.91
51	Poland (2009)	6.18	30.75	115	Trinidad and Tobago	1.08	0.00
52	Armenia	6.09	30.21	n/a	Burkina Faso	n/a	n/a
53	Algeria	6.01	29.72	n/a	Guyana	n/a	n/a
54	Lithuania	5.86	28.81	n/a	Madagascar	n/a	n/a
55	Belgium (2009)	5.75	28.16	n/a	Malawi	n/a	n/a
56	Sudan	5.74	28.06	n/a	Mali	n/a	n/a
57	Bosnia & Herzegovina	5.73	28.00	n/a	Mauritius	n/a	n/a
58	Nicaragua	5.70	27.86	n/a	Niger	n/a	n/a
59	Ecuador	5.67	27.67	n/a	Rwanda	n/a	n/a
60	Georgia	5.64	27.47	n/a	Swaziland	n/a	n/a
61	New Zealand (2009)	5.57	27.08	n/a	Uganda	n/a	n/a
62	Romania	5.54	26.85				
63	Slovak Republic (2009)	5.40	26.04				
64	United States of America (2009)	5.34	25.64				

SOURCE: International Energy Agency, *World Energy Balances* online data service (2008–09)



## 3.2.4 Share of renewables in energy use

### Share of renewables in energy use (% of total energy use) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Paraguay	163.14	100.00	65	Bosnia & Herzegovina	9.58	5.87
2	Ethiopia	93.30	57.19	66	Mexico (2009)	9.52	5.83
3	Zambia	92.30	56.58	67	Spain (2009)	9.47	5.80
4	Tanzania	89.44	54.82	68	Lithuania	9.26	5.68
5	Kenya	83.84	51.39	69	Croatia	8.66	5.31
6	Iceland (2009)	83.43	51.14	70	Macedonia	8.19	5.02
7	Nigeria	81.68	50.07	71	France (2009)	8.08	4.95
8	Cameroon	76.08	46.63	72	Hungary (2009)	7.67	4.70
9	Côte d'Ivoire	75.55	46.31	73	Argentina	7.07	4.34
10	Ghana	72.48	44.43	74	Poland (2009)	6.72	4.12
11	Cambodia	69.69	42.72	75	Czech Republic (2009)	6.38	3.91
12	Zimbabwe	69.16	42.39	76	Greece (2009)	6.03	3.70
13	Sudan	68.83	42.19	77	Slovak Republic (2009)	5.83	3.57
14	El Salvador	61.57	37.74	78	United States of America (2009)	5.65	3.47
15	Nicaragua	61.48	37.68	79	Bulgaria	5.28	3.24
16	Benin	61.00	37.39	80	Armenia	5.21	3.19
17	Guatemala	57.22	35.08	81	Australia (2009)	5.20	3.19
18	Sri Lanka	56.64	34.72	82	Malaysia	4.97	3.05
19	Tajikistan	54.67	33.51	83	Netherlands (2009)	4.97	3.05
20	Costa Rica	54.52	33.42	84	Israel	4.88	2.99
21	Norway (2009)	46.23	28.34	85	Belgium (2009)	4.81	2.95
22	Honduras	45.93	28.16	86	Ireland (2009)	4.37	2.68
23	Viet Nam	45.55	27.92	87	Egypt	4.05	2.48
24	Brazil	44.47	27.26	88	Cyprus	3.98	2.44
25	Philippines	43.08	26.41	89	Morocco	3.91	2.40
26	Senegal	42.36	25.96	90	Lebanon	3.72	2.28
27	Pakistan	37.69	23.10	91	Japan (2009)	3.42	2.10
28	New Zealand (2009)	36.47	22.36	92	United Kingdom (2009)	3.33	2.04
29	Sweden (2009)	35.25	21.60	93	Mongolia	3.27	2.00
30	Indonesia	34.35	21.06	94	Russian Federation	3.03	1.86
31	Georgia	33.73	20.68	95	Luxembourg (2009)	2.95	1.81
32	Uruguay	33.13	20.31	96	Moldova, Rep.	2.76	1.69
33	Kyrgyzstan	32.45	19.89	97	Jordan	1.71	1.05
34	Bangladesh	31.56	19.34	98	Korea, Rep. (2009)	1.58	0.97
35	Latvia	30.82	18.89	99	Azerbaijan	1.47	0.90
36	India	28.14	17.25	100	Ukraine	1.38	0.85
37	Austria (2009)	28.11	17.23	101	Syrian Arab Republic	1.28	0.79
38	Colombia	27.65	16.95	102	Kazakhstan	1.14	0.70
39	Albania	26.25	16.09	103	Yemen	1.03	0.63
40	Finland (2009)	24.48	15.01	104	Iran	0.69	0.42
41	Panama	24.08	14.76	105	Hong Kong (SAR), China	0.40	0.25
42	Peru	23.94	14.68	106	Algeria	0.20	0.12
43	Botswana	22.34	13.70	107	Trinidad and Tobago	0.06	0.04
44	Chile	22.08	13.54	108	United Arab Emirates	0.03	0.02
45	Portugal (2009)	21.22	13.01	109	Qatar	0.00	0.00
46	Switzerland (2009)	20.42	12.52	110	Saudi Arabia	0.00	0.00
47	Denmark (2009)	20.15	12.35	111	Bahrain	0.00	0.00
48	Thailand	19.26	11.80	111	Brunei Darussalam	0.00	0.00
49	Namibia	18.15	11.13	111	Kuwait	0.00	0.00
50	Bolivia	17.88	10.96	111	Oman	0.00	0.00
51	Canada (2009)	16.98	10.41	111	Singapore	0.00	0.00
52	Ecuador	15.71	9.63	n/a	Burkina Faso	n/a	n/a
53	Romania	14.11	8.65	n/a	Guyana	n/a	n/a
54	Tunisia	13.66	8.37	n/a	Madagascar	n/a	n/a
55	Venezuela	12.50	7.66	n/a	Malawi	n/a	n/a
56	China	12.30	7.54	n/a	Mali	n/a	n/a
57	Estonia	11.95	7.32	n/a	Mauritius	n/a	n/a
58	Jamaica	11.51	7.06	n/a	Niger	n/a	n/a
59	Slovenia	11.22	6.88	n/a	Rwanda	n/a	n/a
60	Turkey (2009)	10.57	6.48	n/a	Swaziland	n/a	n/a
61	South Africa	10.52	6.45	n/a	Uganda	n/a	n/a
62	Serbia	10.45	6.40				
63	Germany (2009)	10.01	6.13				
64	Italy (2009)	9.70	5.95				

SOURCE: International Energy Agency, *World Energy Balances* online data service (2008–09)

## 3.3.1 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)	Rank	Country/Economy	Value	Score (0–100)
1	Germany	4.34	83.50	63	Viet Nam	2.56	39.00
2	Netherlands	4.25	81.25	66	Macedonia	2.55	38.75
3	Norway	4.22	80.50	67	Indonesia	2.54	38.50
3	Singapore	4.22	80.50	68	Ghana	2.52	38.00
5	Japan	4.19	79.75	69	Bangladesh	2.49	37.25
6	Switzerland	4.17	79.25	70	Benin	2.48	37.00
7	United States of America	4.15	78.75	71	Syrian Arab Republic	2.45	36.25
8	Finland	4.08	77.00	72	El Salvador	2.44	36.00
9	Luxembourg	4.06	76.50	72	Paraguay	2.44	36.00
10	Canada	4.03	75.75	72	Ukraine	2.44	36.00
10	Sweden	4.03	75.75	72	Venezuela	2.44	36.00
12	Belgium	4.01	75.25	76	Nigeria	2.43	35.75
13	France	4.00	75.00	77	Ecuador	2.38	34.50
13	Hong Kong (SAR), China	4.00	75.00	77	Russian Federation	2.38	34.50
15	Denmark	3.99	74.75	79	Côte d'Ivoire	2.37	34.25
16	United Kingdom	3.95	73.75	79	Guatemala	2.37	34.25
17	United Arab Emirates	3.81	70.25	81	Croatia	2.36	34.00
18	Australia	3.78	69.50	81	Iran	2.36	34.00
19	Ireland	3.76	69.00	83	Uganda	2.35	33.75
20	Italy	3.72	68.00	83	Yemen	2.35	33.75
21	Austria	3.68	67.00	85	Morocco (2006)	2.33	33.25
22	Korea, Rep.	3.62	65.50	86	Armenia	2.32	33.00
23	Israel	3.60	65.00	87	Honduras	2.31	32.75
24	Spain	3.58	64.50	88	Bulgaria	2.30	32.50
25	China	3.54	63.50	88	Serbia	2.30	32.50
25	New Zealand	3.54	63.50	90	Mauritius	2.29	32.25
27	Malaysia	3.50	62.50	91	Niger	2.28	32.00
28	South Africa	3.42	60.50	92	Romania	2.25	31.25
29	Bahrain	3.36	59.00	93	Bolivia	2.24	31.00
30	Iceland	3.33	58.25	94	Azerbaijan	2.23	30.75
30	Kuwait	3.33	58.25	94	Nicaragua	2.23	30.75
32	Saudi Arabia	3.27	56.75	96	Bosnia & Herzegovina	2.22	30.50
33	Czech Republic	3.25	56.25	96	Egypt	2.22	30.50
34	Portugal	3.17	54.25	98	Georgia	2.17	29.25
35	Thailand	3.16	54.00	99	Albania	2.14	28.50
36	Brazil	3.10	52.50	99	Kenya	2.14	28.50
37	Hungary	3.08	52.00	101	Malawi (2006)	2.13	28.25
37	Turkey	3.08	52.00	102	Cambodia	2.12	28.00
39	Oman	3.06	51.50	103	Cameroon	2.10	27.50
40	Lebanon	3.05	51.25	104	Botswana	2.09	27.25
41	Slovak Republic	3.00	50.00	104	Kyrgyzstan	2.09	27.25
42	Poland	2.98	49.50	106	Pakistan	2.08	27.00
43	Mexico	2.95	48.75	107	Jamaica	2.07	26.75
44	Cyprus	2.94	48.50	108	Algeria	2.06	26.50
44	Greece	2.94	48.50	109	Moldova, Rep.	2.05	26.25
46	India	2.91	47.75	110	Mali	2.00	25.00
47	Latvia	2.88	47.00	110	Tajikistan	2.00	25.00
48	Chile	2.86	46.50	110	Tanzania	2.00	25.00
49	Argentina	2.75	43.75	113	Guyana	1.99	24.75
49	Estonia	2.75	43.75	114	Mongolia	1.94	23.50
49	Qatar	2.75	43.75	115	Burkina Faso	1.89	22.25
52	Lithuania	2.72	43.00	116	Sri Lanka	1.88	22.00
53	Jordan	2.69	42.25	117	Zimbabwe (2006)	1.87	21.75
54	Kazakhstan	2.66	41.50	118	Zambia	1.83	20.75
54	Peru	2.66	41.50	119	Sudan	1.78	19.50
56	Slovenia	2.65	41.25	120	Ethiopia	1.77	19.25
57	Senegal	2.64	41.00	121	Namibia	1.71	17.75
58	Madagascar	2.63	40.75	122	Rwanda	1.63	15.75
58	Panama	2.63	40.75	n/a	Brunei Darussalam	n/a	n/a
60	Colombia	2.59	39.75	n/a	Swaziland	n/a	n/a
61	Uruguay	2.58	39.50	n/a	Trinidad and Tobago	n/a	n/a
62	Philippines	2.57	39.25				
63	Costa Rica	2.56	39.00				
63	Tunisia	2.56	39.00				

SOURCE: World Bank and Turku School of Economics, *Logistic Performance Index Surveys 2009*, World Bank *World Development Indicators* database (2006–09)

## 3.3.2 Gross capital formation

### Gross capital formation (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Mongolia	50.20	100.00	65	Austria	21.29	25.82
2	China	47.66	93.48	66	Canada	20.97	24.99
3	Algeria	41.18	76.85	67	Argentina	20.92	24.86
4	Guyana (2008)	39.71	73.08	68	Kenya	20.89	24.77
5	Qatar	38.93	71.07	69	United Arab Emirates (2007)	20.45	23.66
6	Viet Nam	38.13	69.02	70	Japan	20.37	23.44
7	Slovak Republic	37.67	67.83	71	Hong Kong (SAR), China (2008)	20.36	23.44
8	Morocco	35.97	63.49	72	Poland	20.20	23.00
9	India	35.04	61.09	73	Belgium	20.17	22.93
10	Madagascar	34.32	59.25	74	Norway	20.00	22.49
11	Bahrain (2008)	33.23	56.44	75	Portugal	19.79	21.96
12	Iran (2007)	33.16	56.27	76	Switzerland	19.73	21.80
13	Ecuador	32.21	53.83	77	Costa Rica	19.67	21.66
14	Armenia	31.33	51.57	78	Zambia	19.65	21.61
15	Indonesia	30.97	50.64	79	Honduras	19.64	21.57
16	Romania	30.54	49.55	80	Ghana	19.57	21.41
17	Kazakhstan	30.44	49.30	81	South Africa	19.43	21.05
18	Lebanon	30.18	48.63	82	Estonia	19.37	20.89
19	Oman (2008)	29.72	47.43	83	Egypt	19.26	20.59
20	Singapore (2008)	29.07	45.78	84	Chile	19.04	20.04
21	Albania	29.04	45.70	85	France	18.96	19.84
22	Senegal	27.90	42.77	86	Pakistan	18.96	19.82
23	Australia (2008)	27.51	41.78	87	Latvia	18.95	19.81
24	Namibia	27.14	40.83	88	Kuwait (2008)	18.93	19.76
25	Moldova, Rep.	27.14	40.82	89	Italy	18.91	19.70
26	Lithuania (2008)	27.01	40.50	90	Russian Federation	18.73	19.24
27	Tunisia	26.81	39.99	91	Netherlands	18.48	18.60
28	Croatia	26.67	39.62	92	Finland	18.32	18.19
29	Korea, Rep.	25.92	37.69	93	New Zealand	18.12	17.69
30	Bulgaria	25.62	36.93	94	Burkina Faso (2006)	18.11	17.66
31	Saudi Arabia	25.46	36.50	95	Uruguay	17.93	17.19
32	Sudan	25.19	35.82	96	Cameroon (2007)	17.72	16.65
33	Benin	24.98	35.29	97	Ukraine	17.11	15.08
34	Panama	24.80	34.81	98	Denmark	17.05	14.94
35	Venezuela	24.77	34.75	99	Bolivia	16.97	14.73
36	Sri Lanka	24.53	34.13	100	Swaziland	16.90	14.55
37	Spain	24.48	34.01	101	Zimbabwe (2005)	16.80	14.30
38	Bangladesh	24.37	33.72	102	Sweden	16.57	13.69
39	Yemen (2003)	24.36	33.69	103	Tanzania (2006)	16.55	13.65
40	Cyprus (2008)	24.30	33.54	104	Luxembourg	16.54	13.62
41	Macedonia	24.29	33.51	105	Brazil	16.51	13.55
42	Botswana	24.05	32.88	106	Germany	16.50	13.51
43	Serbia	23.90	32.51	107	Israel	16.39	13.23
44	Uganda	23.77	32.17	108	Syrian Arab Republic	16.31	13.04
45	Nicaragua	23.48	31.44	109	Greece	16.18	12.70
46	Slovenia	23.44	31.32	110	Paraguay	15.52	11.01
47	Niger (2005)	23.10	30.46	111	Turkey	14.92	9.48
48	Rwanda	22.57	29.09	112	Jordan	14.78	9.11
49	Colombia	22.54	29.03	113	Philippines	14.65	8.76
50	Peru	22.47	28.83	114	Malaysia	14.49	8.36
51	Ethiopia	22.43	28.73	115	United States of America	14.16	7.51
52	Mali (2007)	22.36	28.55	116	Iceland	13.79	6.55
53	Mexico	22.36	28.55	117	Ireland	13.73	6.40
54	Malawi	22.28	28.35	118	United Kingdom	13.60	6.09
55	Bosnia & Herzegovina	22.10	27.89	119	El Salvador	13.12	4.84
56	Kyrgyzstan	22.06	27.79	120	Guatemala	13.06	4.70
57	Hungary (2008)	22.00	27.62	121	Brunei Darussalam (2007)	12.95	4.40
58	Azerbaijan	21.94	27.49	122	Georgia	12.12	2.29
59	Thailand	21.85	27.24	123	Trinidad and Tobago (2008)	11.89	1.69
60	Tajikistan	21.66	26.76	124	Côte d'Ivoire	11.23	0.00
61	Czech Republic	21.53	26.43	n/a	Nigeria	n/a	n/a
62	Mauritius	21.41	26.11				
63	Cambodia	21.34	25.93				
64	Jamaica	21.33	25.91				

SOURCE: World Bank and OECD, World Bank World Development Indicators database (2000–09)

### 3.3.3 Ecological footprint and biocapacity

Ecological footprint and biocapacity (deficit) or reserve (global hectares per capita) | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Bolivia	16.26	100.00	65	Costa Rica	-0.79	34.66
2	Mongolia	9.60	74.49	66	Syrian Arab Republic	-0.82	34.53
3	Paraguay	8.05	68.52	67	Tunisia	-0.91	34.18
4	Canada	7.91	67.98	68	Serbia (2005)	-0.98	33.94
5	Australia	7.87	67.85	69	Algeria	-1.00	33.85
6	Finland	6.31	61.84	70	Albania	-1.04	33.70
7	Brazil	6.08	60.97	71	Armenia	-1.04	33.70
8	New Zealand	5.88	60.19	72	Egypt	-1.04	33.69
9	Namibia	5.41	58.39	73	Ukraine	-1.08	33.54
10	Argentina	4.90	56.46	74	Azerbaijan	-1.11	33.44
11	Uruguay	4.78	55.99	75	Bosnia & Herzegovina	-1.15	33.28
12	Sweden	3.86	52.48	76	South Africa	-1.18	33.17
13	Peru	2.32	46.58	77	Thailand	-1.22	33.01
14	Colombia	2.11	45.77	78	China	-1.24	32.94
15	Latvia	1.43	43.16	79	Croatia	-1.24	32.92
16	Zambia	1.35	42.84	80	El Salvador	-1.36	32.47
17	Russian Federation	1.34	42.81	81	Turkey	-1.38	32.40
18	Madagascar	1.28	42.57	82	Slovak Republic	-1.38	32.38
19	Nicaragua	1.26	42.52	83	Trinidad and Tobago	-1.53	31.83
20	Botswana	1.15	42.09	84	Mexico	-1.53	31.83
21	Estonia	1.08	41.80	85	Jamaica	-1.54	31.77
22	Cameroon	0.81	40.77	86	Jordan	-1.81	30.74
23	Sudan	0.69	40.31	87	Iran	-1.87	30.51
24	Côte d'Ivoire	0.66	40.22	88	Bulgaria	-1.94	30.23
25	Chile	0.60	39.96	89	Austria	-1.99	30.06
26	Mali	0.56	39.81	90	France	-2.01	29.97
27	Ecuador	0.45	39.38	91	Malaysia	-2.26	29.02
28	Panama	0.27	38.73	92	Poland	-2.26	29.02
29	Indonesia	0.14	38.21	93	Lebanon	-2.50	28.10
30	Senegal	0.11	38.08	94	Slovenia	-2.70	27.35
31	Kyrgyzstan	0.10	38.05	95	Ireland	-2.82	26.88
32	Burkina Faso	-0.01	37.62	96	Oman	-2.85	26.77
33	Malawi	-0.03	37.58	97	Czech Republic	-3.07	25.93
34	Honduras	-0.07	37.40	98	Germany	-3.16	25.58
35	Norway	-0.08	37.38	99	Portugal	-3.21	25.37
36	Venezuela	-0.08	37.37	100	Denmark	-3.41	24.61
37	Cambodia	-0.09	37.31	101	United Kingdom	-3.55	24.06
38	Tanzania	-0.16	37.05	102	Luxembourg (2001)	-3.70	23.50
39	Bangladesh	-0.25	36.74	103	Mauritius	-3.70	23.48
40	Niger	-0.26	36.68	104	Greece	-3.77	23.23
41	Lithuania	-0.31	36.50	105	Switzerland	-3.78	23.20
42	Nigeria	-0.32	36.45	106	Spain	-3.81	23.09
43	Yemen	-0.32	36.43	107	Italy	-3.85	22.93
44	Pakistan	-0.34	36.38	108	United States	-4.13	21.86
45	India	-0.40	36.13	109	Japan	-4.13	21.85
46	Tajikistan	-0.44	35.99	110	Macedonia	-4.23	21.47
47	Ethiopia	-0.44	35.99	111	Saudi Arabia	-4.30	21.22
48	Benin	-0.45	35.96	112	Israel	-4.50	20.43
49	Rwanda	-0.46	35.93	113	Korea, Rep.	-4.53	20.30
50	Swaziland	-0.49	35.79	114	Netherlands	-5.17	17.88
51	Zimbabwe	-0.50	35.77	115	Singapore	-5.32	17.30
52	Kenya	-0.52	35.69	116	Kuwait	-5.93	14.95
53	Kazakhstan	-0.53	35.63	117	Belgium	-6.66	12.17
54	Viet Nam	-0.54	35.61	118	Qatar	-8.00	7.02
55	Ghana	-0.56	35.53	119	United Arab Emirates	-9.83	0.00
56	Morocco	-0.61	35.34	n/a	Bahrain	n/a	n/a
57	Georgia	-0.61	35.32	n/a	Brunei Darussalam	n/a	n/a
58	Guatemala	-0.65	35.19	n/a	Cyprus	n/a	n/a
59	Philippines	-0.68	35.08	n/a	Guyana	n/a	n/a
60	Uganda	-0.68	35.06	n/a	Hong Kong (SAR), China	n/a	n/a
61	Moldova, Rep.	-0.72	34.90	n/a	Iceland	n/a	n/a
62	Hungary	-0.76	34.77				
63	Romania	-0.76	34.77				
64	Sri Lanka	-0.77	34.74				

SOURCE: Global Footprint Network (2001–07)

# 4.1.1

## Legal rights strength to get credit

Getting credit: Strength of legal rights index (0–10)\*<sup>a</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China	10.00	100.00	57	Netherlands	6.00	60.00
1	Kenya	10.00	100.00	57	Pakistan	6.00	60.00
1	Kyrgyzstan	10.00	100.00	57	Panama	6.00	60.00
1	Malaysia	10.00	100.00	57	Spain	6.00	60.00
1	New Zealand	10.00	100.00	57	Swaziland	6.00	60.00
1	Singapore	10.00	100.00	57	Zimbabwe	6.00	60.00
7	Albania	9.00	90.00	71	Bosnia & Herzegovina	5.00	50.00
7	Australia	9.00	90.00	71	Colombia	5.00	50.00
7	Cyprus	9.00	90.00	71	Costa Rica	5.00	50.00
7	Denmark	9.00	90.00	71	El Salvador	5.00	50.00
7	Israel	9.00	90.00	71	Lithuania	5.00	50.00
7	Latvia	9.00	90.00	71	Mauritius	5.00	50.00
7	Poland	9.00	90.00	71	Mexico	5.00	50.00
7	Slovak Republic	9.00	90.00	71	Saudi Arabia	5.00	50.00
7	South Africa	9.00	90.00	71	Slovenia	5.00	50.00
7	Ukraine	9.00	90.00	71	Sudan	5.00	50.00
7	United Kingdom	9.00	90.00	71	Sweden	5.00	50.00
7	Zambia	9.00	90.00	71	Uruguay	5.00	50.00
19	Bulgaria	8.00	80.00	83	Argentina	4.00	40.00
19	Cambodia	8.00	80.00	83	Bahrain	4.00	40.00
19	Ghana	8.00	80.00	83	Chile	4.00	40.00
19	Guatemala	8.00	80.00	83	Ethiopia	4.00	40.00
19	India	8.00	80.00	83	Guyana	4.00	40.00
19	Ireland	8.00	80.00	83	Iran	4.00	40.00
19	Jamaica	8.00	80.00	83	Jordan	4.00	40.00
19	Moldova, Rep.	8.00	80.00	83	Kazakhstan	4.00	40.00
19	Namibia	8.00	80.00	83	Kuwait	4.00	40.00
19	Nigeria	8.00	80.00	83	Oman	4.00	40.00
19	Romania	8.00	80.00	83	Sri Lanka	4.00	40.00
19	Rwanda	8.00	80.00	83	Thailand	4.00	40.00
19	Serbia	8.00	80.00	83	Turkey	4.00	40.00
19	Switzerland	8.00	80.00	83	United Arab Emirates	4.00	40.00
19	Tanzania	8.00	80.00	97	Algeria	3.00	30.00
19	Trinidad and Tobago	8.00	80.00	97	Benin	3.00	30.00
19	United States of America	8.00	80.00	97	Brazil	3.00	30.00
19	Viet Nam	8.00	80.00	97	Burkina Faso	3.00	30.00
37	Austria	7.00	70.00	97	Cameroon	3.00	30.00
37	Bangladesh	7.00	70.00	97	Côte d'Ivoire	3.00	30.00
37	Belgium	7.00	70.00	97	Ecuador	3.00	30.00
37	Botswana	7.00	70.00	97	Egypt	3.00	30.00
37	Brunei Darussalam	7.00	70.00	97	Greece	3.00	30.00
37	Estonia	7.00	70.00	97	Indonesia	3.00	30.00
37	Finland	7.00	70.00	97	Italy	3.00	30.00
37	France	7.00	70.00	97	Lebanon	3.00	30.00
37	Georgia	7.00	70.00	97	Mali	3.00	30.00
37	Germany	7.00	70.00	97	Morocco	3.00	30.00
37	Hungary	7.00	70.00	97	Nicaragua	3.00	30.00
37	Iceland	7.00	70.00	97	Niger	3.00	30.00
37	Japan	7.00	70.00	97	Paraguay	3.00	30.00
37	Korea, Rep.	7.00	70.00	97	Philippines	3.00	30.00
37	Luxembourg	7.00	70.00	97	Portugal	3.00	30.00
37	Macedonia	7.00	70.00	97	Qatar	3.00	30.00
37	Malawi	7.00	70.00	97	Russian Federation	3.00	30.00
37	Norway	7.00	70.00	97	Senegal	3.00	30.00
37	Peru	7.00	70.00	97	Tajikistan	3.00	30.00
37	Uganda	7.00	70.00	97	Tunisia	3.00	30.00
57	Armenia	6.00	60.00	121	Madagascar	2.00	20.00
57	Azerbaijan	6.00	60.00	121	Venezuela	2.00	20.00
57	Canada	6.00	60.00	121	Yemen	2.00	20.00
57	China	6.00	60.00	124	Bolivia	1.00	10.00
57	Croatia	6.00	60.00	124	Syrian Arab Republic	1.00	10.00
57	Czech Republic	6.00	60.00				
57	Honduras	6.00	60.00				
57	Mongolia	6.00	60.00				

SOURCE: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011*

## 4.1.2 Depth of credit information

Getting credit: Depth of credit information index (0–6)\*<sup>a</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Argentina	6.00	100.00	25	Zambia	5.00	83.33
1	Austria	6.00	100.00	66	Albania	4.00	66.67
1	Bolivia	6.00	100.00	66	Bahrain	4.00	66.67
1	Bulgaria	6.00	100.00	66	Belgium	4.00	66.67
1	Canada	6.00	100.00	66	Botswana	4.00	66.67
1	Egypt	6.00	100.00	66	China	4.00	66.67
1	El Salvador	6.00	100.00	66	Croatia	4.00	66.67
1	Georgia	6.00	100.00	66	Denmark	4.00	66.67
1	Germany	6.00	100.00	66	France	4.00	66.67
1	Guatemala	6.00	100.00	66	India	4.00	66.67
1	Honduras	6.00	100.00	66	Indonesia	4.00	66.67
1	Japan	6.00	100.00	66	Iran	4.00	66.67
1	Korea, Rep.	6.00	100.00	66	Kenya	4.00	66.67
1	Lithuania	6.00	100.00	66	Kuwait	4.00	66.67
1	Malaysia	6.00	100.00	66	Macedonia	4.00	66.67
1	Mexico	6.00	100.00	66	Norway	4.00	66.67
1	Panama	6.00	100.00	66	Pakistan	4.00	66.67
1	Paraguay	6.00	100.00	66	Poland	4.00	66.67
1	Peru	6.00	100.00	66	Rwanda	4.00	66.67
1	Saudi Arabia	6.00	100.00	66	Singapore	4.00	66.67
1	South Africa	6.00	100.00	66	Slovak Republic	4.00	66.67
1	United Kingdom	6.00	100.00	66	Sweden	4.00	66.67
1	United States of America	6.00	100.00	66	Trinidad and Tobago	4.00	66.67
1	Uruguay	6.00	100.00	66	Uganda	4.00	66.67
25	Armenia	5.00	83.33	89	Ghana	3.00	50.00
25	Australia	5.00	83.33	89	Kyrgyzstan	3.00	50.00
25	Azerbaijan	5.00	83.33	89	Mauritius	3.00	50.00
25	Bosnia & Herzegovina	5.00	83.33	89	Mongolia	3.00	50.00
25	Brazil	5.00	83.33	89	Philippines	3.00	50.00
25	Chile	5.00	83.33	89	Ukraine	3.00	50.00
25	Colombia	5.00	83.33	95	Algeria	2.00	33.33
25	Costa Rica	5.00	83.33	95	Bangladesh	2.00	33.33
25	Czech Republic	5.00	83.33	95	Cameroon	2.00	33.33
25	Ecuador	5.00	83.33	95	Ethiopia	2.00	33.33
25	Estonia	5.00	83.33	95	Jordan	2.00	33.33
25	Finland	5.00	83.33	95	Oman	2.00	33.33
25	Greece	5.00	83.33	95	Qatar	2.00	33.33
25	Hong Kong (SAR), China	5.00	83.33	95	Slovenia	2.00	33.33
25	Hungary	5.00	83.33	95	Syrian Arab Republic	2.00	33.33
25	Iceland	5.00	83.33	95	Yemen	2.00	33.33
25	Ireland	5.00	83.33	105	Benin	1.00	16.67
25	Israel	5.00	83.33	105	Burkina Faso	1.00	16.67
25	Italy	5.00	83.33	105	Côte d'Ivoire	1.00	16.67
25	Kazakhstan	5.00	83.33	105	Mali	1.00	16.67
25	Latvia	5.00	83.33	105	Niger	1.00	16.67
25	Lebanon	5.00	83.33	105	Senegal	1.00	16.67
25	Morocco	5.00	83.33	111	Brunei Darussalam	0.00	0.00
25	Namibia	5.00	83.33	111	Cambodia	0.00	0.00
25	Netherlands	5.00	83.33	111	Cyprus	0.00	0.00
25	New Zealand	5.00	83.33	111	Guyana	0.00	0.00
25	Nicaragua	5.00	83.33	111	Jamaica	0.00	0.00
25	Portugal	5.00	83.33	111	Luxembourg	0.00	0.00
25	Romania	5.00	83.33	111	Madagascar	0.00	0.00
25	Russian Federation	5.00	83.33	111	Malawi	0.00	0.00
25	Serbia	5.00	83.33	111	Moldova, Rep.	0.00	0.00
25	Spain	5.00	83.33	111	Nigeria	0.00	0.00
25	Sri Lanka	5.00	83.33	111	Sudan	0.00	0.00
25	Swaziland	5.00	83.33	111	Tajikistan	0.00	0.00
25	Switzerland	5.00	83.33	111	Tanzania	0.00	0.00
25	Thailand	5.00	83.33	111	Venezuela	0.00	0.00
25	Tunisia	5.00	83.33	111	Zimbabwe	0.00	0.00
25	Turkey	5.00	83.33				
25	United Arab Emirates	5.00	83.33				
25	Viet Nam	5.00	83.33				

SOURCE: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011*

# 4.1.3 Domestic credit to private sector

## Domestic credit to private sector (% of GDP) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Iceland (2006)	319.48	100.00	65	Moldova, Rep.	36.46	13.79
2	Denmark	218.27	100.00	66	Albania	35.64	13.40
3	United Kingdom (2009)	213.43	97.70	67	Oman	35.48	13.33
4	United States of America	190.00	86.60	68	Bolivia	34.69	12.95
5	Switzerland	165.40	74.93	69	Colombia	34.26	12.75
6	Japan	164.27	74.39	70	Nigeria	33.91	12.58
7	Cyprus (2007)	149.04	67.17	71	Georgia	33.26	12.27
8	New Zealand (2009)	148.40	66.87	72	Turkey	32.59	11.96
9	South Africa	145.15	65.33	73	Kenya	30.01	10.73
10	Hong Kong (SAR), China	142.84	64.23	74	Pakistan (2007)	29.55	10.52
11	Canada	128.55	57.46	75	Tajikistan (2007)	28.99	10.25
12	Australia (2009)	127.70	57.06	76	Sri Lanka	28.94	10.23
13	China (2009)	127.33	56.88	77	Philippines (2007)	28.81	10.16
14	Sweden	127.27	56.85	78	Jamaica	28.32	9.93
15	Bahrain	119.23	53.04	79	Guatemala	27.20	9.40
16	Viet Nam (2009)	113.60	50.37	80	Uruguay	27.12	9.36
17	Thailand	113.11	50.14	81	Trinidad and Tobago	26.95	9.28
18	Korea, Rep. (2009)	107.55	47.50	82	Zimbabwe (2005)	26.59	9.11
19	Singapore (2009)	106.24	46.88	83	Indonesia	26.54	9.09
20	Malaysia	100.84	44.32	84	Ecuador	26.07	8.87
21	Estonia	97.37	42.67	85	Peru (2009)	24.77	8.25
22	Chile	96.93	42.46	86	Senegal (2009)	24.20	7.98
23	United Arab Emirates (2009)	93.02	40.61	87	Swaziland	23.58	7.69
24	Latvia	90.02	39.19	88	Cambodia	23.45	7.63
25	Panama	89.38	38.88	89	Paraguay	23.19	7.50
26	Norway (2003)	87.90	38.18	90	Benin (2009)	22.23	7.04
27	Mauritius	87.78	38.12	91	Venezuela	21.70	6.79
28	Israel (2009)	84.78	36.71	92	Mexico	21.05	6.49
29	Morocco (2009)	79.68	34.29	93	Botswana	21.02	6.47
30	Jordan (2009)	78.95	33.94	94	Ethiopia	17.82	4.96
31	Bulgaria	74.49	31.83	95	Ghana (2006)	17.78	4.93
32	Lebanon (2009)	74.03	31.61	96	Burkina Faso (2009)	17.46	4.78
33	Ukraine	73.88	31.53	97	Mali (2009)	17.44	4.77
34	Hungary	69.60	29.51	98	Armenia	17.39	4.75
35	Tunisia (2009)	68.37	28.92	99	Côte d'Ivoire (2009)	17.31	4.71
36	Kuwait	66.37	27.97	100	Azerbaijan	16.47	4.31
37	Slovenia (2006)	65.87	27.74	101	Tanzania	16.04	4.11
38	Croatia	64.94	27.30	102	Syrian Arab Republic	15.82	4.01
39	Lithuania	62.89	26.32	103	Kyrgyzstan (2007)	15.05	3.64
40	Bosnia & Herzegovina (2009)	57.04	23.55	104	Zambia	14.89	3.57
41	Guyana	56.99	23.53	105	Uganda	13.95	3.12
42	Brazil	53.58	21.91	106	Argentina (2009)	13.54	2.92
43	Saudi Arabia (2009)	53.04	21.65	107	Malawi (2009)	13.53	2.92
44	Czech Republic	52.77	21.52	108	Algeria	13.16	2.74
45	Honduras	51.87	21.10	109	Niger (2009)	12.23	2.30
46	Costa Rica	50.76	20.57	110	Rwanda (2005)	12.11	2.24
47	Iran (2009)	50.39	20.40	111	Cameroon (2009)	11.52	1.97
48	Poland	49.74	20.09	112	Madagascar (2009)	10.88	1.66
49	Kazakhstan	49.65	20.04	113	Sudan	10.48	1.47
50	India (2009)	49.17	19.82	114	Yemen (2009)	7.37	0.00
51	Greece (2000)	46.97	18.78	n/a	Austria	n/a	n/a
52	Qatar (2007)	46.65	18.62	n/a	Belgium	n/a	n/a
53	Namibia	45.62	18.14	n/a	Finland	n/a	n/a
54	Slovak Republic	44.74	17.72	n/a	France	n/a	n/a
55	Macedonia	43.83	17.28	n/a	Germany	n/a	n/a
56	Mongolia	43.62	17.19	n/a	Ireland	n/a	n/a
57	Egypt	42.80	16.80	n/a	Italy	n/a	n/a
58	El Salvador	41.30	16.09	n/a	Luxembourg	n/a	n/a
59	Russian Federation	41.26	16.07	n/a	Netherlands	n/a	n/a
60	Serbia	39.36	15.17	n/a	Portugal	n/a	n/a
61	Bangladesh	39.21	15.10	n/a	Spain	n/a	n/a
62	Romania	38.47	14.75				
63	Nicaragua	37.66	14.36				
64	Brunei Darussalam (2007)	37.18	14.13				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09)

## 4.1.4 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP)<sup>a</sup> | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Mongolia	13.17	100.00	65	Trinidad and Tobago (2008)	0.02	0.22
2	Bolivia	10.69	100.00	66	Indonesia	0.02	0.22
3	Cambodia	8.39	100.00	67	Yemen	0.02	0.21
4	Nicaragua	7.69	100.00	68	Russian Federation	0.01	0.18
5	Kyrgyzstan	5.39	70.03	69	Poland	0.01	0.16
6	Bosnia & Herzegovina	4.88	63.47	70	Croatia (2007)	0.01	0.15
7	Armenia	4.49	58.36	71	Zimbabwe (2004)	0.01	0.13
8	Viet Nam	4.42	57.40	72	Uruguay	0.01	0.11
9	Peru	4.20	54.63	73	Sudan	0.01	0.09
10	Kenya	3.79	49.25	74	Argentina	0.01	0.09
11	Georgia	3.75	48.74	75	Namibia (2008)	0.00	0.05
12	Paraguay	3.63	47.19	76	Turkey	0.00	0.02
13	Albania	3.05	39.68	77	Hungary (2005)	0.00	0.01
14	Tanzania	2.73	35.55	78	Thailand	0.00	0.01
15	Macedonia	2.73	35.54	79	Slovak Republic (2001)	0.00	0.00
16	Bangladesh	2.63	34.15	n/a	Algeria	n/a	n/a
17	Senegal	2.28	29.67	n/a	Australia	n/a	n/a
18	Ecuador	2.24	29.09	n/a	Austria	n/a	n/a
19	Tajikistan	2.21	28.74	n/a	Bahrain	n/a	n/a
20	Azerbaijan	1.97	25.56	n/a	Belgium	n/a	n/a
21	Uganda	1.95	25.40	n/a	Botswana	n/a	n/a
22	Serbia	1.78	23.11	n/a	Brunei Darussalam	n/a	n/a
23	Benin	1.77	23.01	n/a	Canada	n/a	n/a
24	El Salvador	1.76	22.83	n/a	Cyprus	n/a	n/a
25	Burkina Faso	1.71	22.24	n/a	Czech Republic	n/a	n/a
26	Colombia	1.68	21.87	n/a	Denmark	n/a	n/a
27	Honduras	1.52	19.72	n/a	Estonia	n/a	n/a
28	Ethiopia	1.44	18.67	n/a	Finland	n/a	n/a
29	Swaziland	1.40	18.23	n/a	France	n/a	n/a
30	Bulgaria	1.31	17.08	n/a	Germany	n/a	n/a
31	Cameroon	0.99	12.92	n/a	Greece	n/a	n/a
32	Mali	0.97	12.66	n/a	Guyana	n/a	n/a
33	Moldova, Rep.	0.95	12.33	n/a	Hong Kong (SAR), China	n/a	n/a
34	Chile	0.79	10.24	n/a	Iceland	n/a	n/a
35	Malawi	0.73	9.45	n/a	Iran	n/a	n/a
36	Morocco	0.67	8.70	n/a	Ireland	n/a	n/a
37	Sri Lanka	0.64	8.35	n/a	Israel	n/a	n/a
38	Ghana	0.50	6.52	n/a	Italy	n/a	n/a
39	Madagascar	0.48	6.22	n/a	Jamaica	n/a	n/a
40	Jordan	0.47	6.08	n/a	Japan	n/a	n/a
41	Rwanda	0.41	5.27	n/a	Korea, Rep.	n/a	n/a
42	China	0.37	4.84	n/a	Kuwait	n/a	n/a
43	Philippines	0.37	4.76	n/a	Latvia	n/a	n/a
44	India	0.34	4.46	n/a	Lithuania	n/a	n/a
45	Guatemala	0.31	4.04	n/a	Luxembourg	n/a	n/a
46	Mexico	0.31	4.01	n/a	Mauritius	n/a	n/a
47	Côte d'Ivoire	0.27	3.50	n/a	Netherlands	n/a	n/a
48	South Africa	0.26	3.33	n/a	New Zealand	n/a	n/a
49	Ukraine	0.24	3.08	n/a	Norway	n/a	n/a
50	Romania	0.21	2.78	n/a	Oman	n/a	n/a
51	Costa Rica	0.20	2.64	n/a	Portugal	n/a	n/a
52	Niger	0.20	2.55	n/a	Qatar	n/a	n/a
53	Pakistan	0.13	1.68	n/a	Saudi Arabia	n/a	n/a
54	Kazakhstan	0.13	1.64	n/a	Singapore	n/a	n/a
55	Egypt	0.12	1.50	n/a	Slovenia	n/a	n/a
56	Tunisia	0.10	1.36	n/a	Spain	n/a	n/a
57	Malaysia	0.10	1.25	n/a	Sweden	n/a	n/a
58	Panama	0.07	0.91	n/a	Switzerland	n/a	n/a
59	Brazil	0.06	0.77	n/a	United Arab Emirates	n/a	n/a
60	Zambia	0.05	0.66	n/a	United Kingdom	n/a	n/a
61	Lebanon	0.04	0.56	n/a	United States of America	n/a	n/a
62	Nigeria	0.04	0.48				
63	Syrian Arab Republic	0.03	0.45				
64	Venezuela	0.03	0.38				

SOURCE: Microfinance Information Exchange, *Mix Market database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators database* (2001–09)



## 4.2.1 Strength of investor protection

Protecting investors: Strength of investor protection index (0–10)\* | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	New Zealand	9.70	97.00	55	Namibia	5.30	53.00
2	Singapore	9.30	93.00	55	Serbia	5.30	53.00
3	Hong Kong (SAR), China	9.00	90.00	55	Sri Lanka	5.30	53.00
4	Malaysia	8.70	87.00	55	Tunisia	5.30	53.00
5	Canada	8.30	83.00	55	Zambia	5.30	53.00
5	Colombia	8.30	83.00	70	Armenia	5.00	50.00
5	Ireland	8.30	83.00	70	Bosnia & Herzegovina	5.00	50.00
5	Israel	8.30	83.00	70	China	5.00	50.00
5	United States of America	8.30	83.00	70	Cyprus	5.00	50.00
10	South Africa	8.00	80.00	70	Czech Republic	5.00	50.00
10	United Kingdom	8.00	80.00	70	Germany	5.00	50.00
12	Kyrgyzstan	7.70	77.00	70	Kenya	5.00	50.00
12	Mauritius	7.70	77.00	70	Lebanon	5.00	50.00
12	Thailand	7.70	77.00	70	Lithuania	5.00	50.00
15	Albania	7.30	73.00	70	Nicaragua	5.00	50.00
16	Belgium	7.00	70.00	70	Oman	5.00	50.00
16	Japan	7.00	70.00	70	Qatar	5.00	50.00
16	Saudi Arabia	7.00	70.00	70	Russian Federation	5.00	50.00
19	Azerbaijan	6.70	67.00	70	Spain	5.00	50.00
19	Bangladesh	6.70	67.00	70	Tanzania	5.00	50.00
19	Georgia	6.70	67.00	70	Uruguay	5.00	50.00
19	Macedonia	6.70	67.00	86	Argentina	4.70	47.00
19	Norway	6.70	67.00	86	Moldova, Rep.	4.70	47.00
19	Peru	6.70	67.00	86	Netherlands	4.70	47.00
19	Slovenia	6.70	67.00	86	Panama	4.70	47.00
19	Trinidad and Tobago	6.70	67.00	86	Slovak Republic	4.70	47.00
27	Chile	6.30	63.00	86	Syrian Arab Republic	4.70	47.00
27	Denmark	6.30	63.00	86	Ukraine	4.70	47.00
27	Kuwait	6.30	63.00	93	Brunei Darussalam	4.30	43.00
27	Mongolia	6.30	63.00	93	Cameroon	4.30	43.00
27	Pakistan	6.30	63.00	93	El Salvador	4.30	43.00
27	Rwanda	6.30	63.00	93	Ethiopia	4.30	43.00
27	Sweden	6.30	63.00	93	Hungary	4.30	43.00
34	Botswana	6.00	60.00	93	Jordan	4.30	43.00
34	Bulgaria	6.00	60.00	93	Luxembourg	4.30	43.00
34	Ghana	6.00	60.00	93	Swaziland	4.30	43.00
34	India	6.00	60.00	93	United Arab Emirates	4.30	43.00
34	Indonesia	6.00	60.00	93	Zimbabwe	4.30	43.00
34	Kazakhstan	6.00	60.00	103	Austria	4.00	40.00
34	Mexico	6.00	60.00	103	Bolivia	4.00	40.00
34	Poland	6.00	60.00	103	Croatia	4.00	40.00
34	Portugal	6.00	60.00	103	Ecuador	4.00	40.00
34	Romania	6.00	60.00	103	Guatemala	4.00	40.00
44	Australia	5.70	57.00	103	Philippines	4.00	40.00
44	Bahrain	5.70	57.00	103	Uganda	4.00	40.00
44	Estonia	5.70	57.00	103	Yemen	4.00	40.00
44	Finland	5.70	57.00	111	Burkina Faso	3.70	37.00
44	Italy	5.70	57.00	111	Mali	3.70	37.00
44	Latvia	5.70	57.00	113	Benin	3.30	33.00
44	Madagascar	5.70	57.00	113	Côte d'Ivoire	3.30	33.00
44	Nigeria	5.70	57.00	113	Greece	3.30	33.00
44	Paraguay	5.70	57.00	113	Morocco	3.30	33.00
44	Tajikistan	5.70	57.00	113	Niger	3.30	33.00
44	Turkey	5.70	57.00	113	Sudan	3.30	33.00
55	Algeria	5.30	53.00	119	Costa Rica	3.00	30.00
55	Brazil	5.30	53.00	119	Honduras	3.00	30.00
55	Cambodia	5.30	53.00	119	Iran	3.00	30.00
55	Egypt	5.30	53.00	119	Senegal	3.00	30.00
55	France	5.30	53.00	119	Switzerland	3.00	30.00
55	Guyana	5.30	53.00	124	Viet Nam	2.70	27.00
55	Iceland	5.30	53.00	125	Venezuela	2.30	23.00
55	Jamaica	5.30	53.00				
55	Korea, Rep.	5.30	53.00				
55	Malawi	5.30	53.00				

SOURCE: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011*

## 4.2.2 Market capitalization

### Market capitalization of listed companies (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China (2008)	617.05	100.00	65	Tunisia	23.05	9.11
2	South Africa	246.46	100.00	66	Hungary	21.93	8.65
3	Luxembourg	201.26	81.61	67	Zambia (2007)	20.33	8.00
4	Switzerland (2008)	172.44	69.89	68	El Salvador	19.99	7.86
5	Singapore	170.53	69.11	69	Pakistan	19.96	7.85
6	Jordan	139.83	56.62	70	Nigeria	19.72	7.75
7	Australia	136.07	55.09	71	Sri Lanka	19.37	7.61
8	Qatar (2007)	134.41	54.41	72	Iran	19.12	7.51
9	Malaysia	133.59	54.08	73	Romania	18.82	7.39
10	United Kingdom	128.60	52.05	74	Greece	16.58	6.48
11	Chile	127.99	51.80	75	Bolivia	16.10	6.28
12	Canada	125.81	50.92	76	Ghana	16.05	6.26
13	Sweden	106.46	43.04	77	Argentina	15.85	6.18
14	United States of America	105.76	42.76	78	Bulgaria	15.08	5.87
15	Korea, Rep.	100.47	40.61	79	Italy	15.02	5.84
16	China	100.46	40.60	80	Ukraine	14.79	5.75
17	Bahrain (2008)	96.68	39.07	81	Austria	13.92	5.39
18	Israel	93.48	37.76	82	Estonia	13.91	5.39
19	India	90.01	36.35	83	Ireland	13.15	5.08
20	Spain	88.84	35.87	84	Lithuania	12.03	4.62
21	Saudi Arabia	86.34	34.86	85	Mongolia	10.24	3.89
22	France	74.43	30.01	86	Macedonia	10.00	3.80
23	Brazil	74.26	29.94	87	Iceland	9.30	3.51
24	Kuwait (2008)	72.40	29.19	88	Namibia	8.99	3.39
25	Zimbabwe (2005)	70.26	28.32	89	Bangladesh	7.91	2.95
26	Russian Federation	69.99	28.21	90	Ecuador	7.42	2.75
27	Morocco	69.24	27.90	91	Latvia	6.96	2.56
28	Netherlands	68.49	27.60	92	Swaziland (2007)	6.88	2.53
29	Japan	66.66	26.85	93	Georgia	6.83	2.51
30	Denmark	60.35	24.28	94	Tanzania (2008)	6.23	2.26
31	Norway	59.52	23.95	95	Slovak Republic	5.33	1.90
32	Colombia	57.75	23.22	96	Costa Rica	4.97	1.75
33	Belgium	55.80	22.43	97	Venezuela (2006)	4.49	1.56
34	Mauritius	55.12	22.16	98	Paraguay (2006)	4.41	1.52
35	Peru	55.04	22.12	99	Armenia	1.61	0.39
36	New Zealand	53.58	21.53	100	Kyrgyzstan	1.57	0.37
37	Trinidad and Tobago	52.85	21.23	101	Uganda (2006)	1.17	0.21
38	Kazakhstan	52.82	21.22	102	Uruguay (2007)	0.66	0.00
39	Thailand	52.37	21.04	n/a	Albania	n/a	n/a
40	Philippines	49.93	20.05	n/a	Algeria	n/a	n/a
41	Egypt	47.76	19.16	n/a	Azerbaijan	n/a	n/a
42	Portugal	43.33	17.36	n/a	Benin	n/a	n/a
43	Jamaica	42.24	16.91	n/a	Bosnia & Herzegovina	n/a	n/a
44	Malawi (2008)	41.45	16.59	n/a	Brunei Darussalam	n/a	n/a
45	Croatia	40.67	16.28	n/a	Burkina Faso	n/a	n/a
46	Mexico	38.93	15.57	n/a	Cambodia	n/a	n/a
47	Germany	38.77	15.50	n/a	Cameroon	n/a	n/a
48	Finland	38.32	15.32	n/a	Ethiopia	n/a	n/a
49	United Arab Emirates (2008)	37.44	14.96	n/a	Guatemala	n/a	n/a
50	Lebanon	37.43	14.96	n/a	Honduras	n/a	n/a
51	Turkey	36.58	14.61	n/a	Madagascar	n/a	n/a
52	Kenya	35.62	14.22	n/a	Mali	n/a	n/a
53	Botswana	34.32	13.69	n/a	Moldova, Rep.	n/a	n/a
54	Indonesia	32.98	13.15	n/a	Nicaragua	n/a	n/a
55	Panama	32.57	12.98	n/a	Niger	n/a	n/a
56	Cyprus (2008)	31.93	12.72	n/a	Rwanda	n/a	n/a
57	Poland	31.45	12.53	n/a	Senegal	n/a	n/a
58	Czech Republic	27.69	11.00	n/a	Sudan	n/a	n/a
59	Serbia	27.05	10.74	n/a	Syrian Arab Republic	n/a	n/a
60	Côte d'Ivoire	26.65	10.57	n/a	Tajikistan	n/a	n/a
61	Guyana (2008)	25.01	9.90	n/a	Yemen	n/a	n/a
62	Oman (2008)	24.73	9.79				
63	Slovenia	24.27	9.60				
64	Viet Nam	23.08	9.12				

SOURCE: Standard and Poor's and World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2005–09)

## 4.2.3 Total value of stocks trade

### Total value of stocks traded (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China (2008)	755.10	100.00	65	Croatia	2.25	1.25
2	United States of America	327.83	100.00	66	Sri Lanka	2.11	1.17
3	Switzerland (2008)	300.90	100.00	67	Slovenia	2.11	1.17
4	Korea, Rep.	189.97	100.00	68	Estonia	1.96	1.09
5	China	179.67	100.00	69	Kenya	1.65	0.92
6	United Kingdom	156.47	87.09	70	Kyrgyzstan	1.47	0.82
7	Singapore	138.43	77.05	71	Malawi (2008)	1.40	0.78
8	South Africa	119.76	66.66	72	Serbia	1.32	0.73
9	Spain	109.52	60.95	73	Romania	1.17	0.65
10	Sweden	96.12	53.50	74	Trinidad and Tobago	1.11	0.62
11	Canada	92.78	51.64	75	El Salvador (2006)	0.90	0.50
12	Saudi Arabia	91.28	50.80	76	Botswana	0.89	0.49
13	India	83.11	46.26	77	Argentina	0.88	0.49
14	Kuwait (2008)	82.92	46.15	78	Jamaica	0.86	0.48
15	Japan	82.74	46.05	79	Bulgaria	0.85	0.47
16	Australia	82.37	45.85	80	Lithuania	0.81	0.45
17	Netherlands	76.27	42.45	81	Macedonia	0.66	0.37
18	Norway	64.90	36.12	82	Zambia (2007)	0.62	0.35
19	Jordan	59.88	33.33	83	Côte d'Ivoire	0.58	0.32
20	Russian Federation	55.46	30.87	84	Ukraine	0.52	0.29
21	United Arab Emirates (2008)	55.44	30.86	85	Luxembourg	0.52	0.29
22	France	51.55	28.69	86	Mongolia	0.38	0.21
23	Thailand	51.14	28.46	87	Ghana	0.37	0.20
24	Denmark	47.91	26.66	88	Venezuela (2006)	0.36	0.20
25	Israel	45.33	25.23	89	Moldova, Rep.	0.24	0.13
26	Qatar (2007)	42.11	23.44	90	Namibia	0.24	0.13
27	Brazil	41.30	22.98	91	Panama	0.22	0.12
28	Turkey	39.46	21.96	92	Slovak Republic	0.20	0.11
29	Germany	38.51	21.43	93	Costa Rica	0.11	0.06
30	Finland	38.38	21.36	94	Tanzania (2006)	0.08	0.04
31	Malaysia	38.08	21.20	95	Latvia	0.08	0.04
32	Morocco	32.38	18.02	96	Uruguay (2007)	0.07	0.04
33	New Zealand	29.73	16.54	97	Guyana (2008)	0.06	0.03
34	Egypt	28.04	15.61	98	Uganda (2006)	0.06	0.03
35	Belgium	27.27	15.18	99	Paraguay (2006)	0.02	0.01
36	Chile	22.95	12.77	100	Georgia	0.02	0.01
37	Italy	21.76	12.11	101	Bolivia (2006)	0.01	0.00
38	Indonesia	21.34	11.88	102	Armenia	0.00	0.00
39	Hungary	20.11	11.19	103	Swaziland (2006)	0.00	0.00
40	Portugal	20.11	11.19	n/a	Albania	n/a	n/a
41	Bangladesh	16.34	9.09	n/a	Algeria	n/a	n/a
42	Greece	15.68	8.72	n/a	Azerbaijan	n/a	n/a
43	Pakistan	14.13	7.86	n/a	Benin	n/a	n/a
44	Oman (2008)	13.93	7.75	n/a	Bosnia & Herzegovina	n/a	n/a
45	Bahrain (2008)	13.51	7.52	n/a	Brunei Darussalam	n/a	n/a
46	Poland	12.97	7.22	n/a	Burkina Faso	n/a	n/a
47	Czech Republic	10.83	6.03	n/a	Cambodia	n/a	n/a
48	Philippines	10.72	5.96	n/a	Cameroon	n/a	n/a
49	Zimbabwe (2005)	9.70	5.40	n/a	Ethiopia	n/a	n/a
50	Cyprus (2008)	9.11	5.07	n/a	Guatemala	n/a	n/a
51	Mexico	8.81	4.90	n/a	Honduras	n/a	n/a
52	Ireland	8.13	4.52	n/a	Madagascar	n/a	n/a
53	Viet Nam	7.24	4.03	n/a	Mali	n/a	n/a
54	Austria	6.63	3.69	n/a	Nicaragua	n/a	n/a
55	Colombia	5.61	3.12	n/a	Niger	n/a	n/a
56	Iran	5.15	2.87	n/a	Rwanda	n/a	n/a
57	Mauritius	3.83	2.13	n/a	Senegal	n/a	n/a
58	Kazakhstan	3.70	2.06	n/a	Sudan	n/a	n/a
59	Iceland	3.30	1.84	n/a	Syrian Arab Republic	n/a	n/a
60	Tunisia	3.18	1.77	n/a	Tajikistan	n/a	n/a
61	Lebanon	3.03	1.68	n/a	Yemen	n/a	n/a
62	Nigeria	2.71	1.51				
63	Peru	2.47	1.38				
64	Ecuador	2.36	1.31				

SOURCE: Standard and Poor's and World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2005–09)

## 4.2.4 Venture capital deals

Venture capital per investment location: number of deals (per trillion GDP, 2005 PPP\$)<sup>a</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Israel	580.26	100.00	65	Saudi Arabia	3.69	24.28
2	Canada	497.30	97.58	66	Indonesia	2.28	18.65
3	United States of America	376.81	93.23	67	Thailand	2.03	17.42
4	Mongolia	351.17	92.13	68	Argentina	1.88	16.61
5	Sweden	299.41	89.63	69	Albania	0.00	0.00
6	Ireland	284.91	88.85	69	Algeria	0.00	0.00
7	Estonia	277.48	88.44	69	Armenia	0.00	0.00
8	Norway	238.99	86.10	69	Azerbaijan	0.00	0.00
9	Zimbabwe	215.33	84.47	69	Bangladesh	0.00	0.00
10	Denmark	196.27	83.02	69	Benin	0.00	0.00
11	United Kingdom	186.63	82.23	69	Bolivia	0.00	0.00
12	Kenya	175.94	81.31	69	Bosnia & Herzegovina	0.00	0.00
13	France	173.92	81.13	69	Botswana	0.00	0.00
14	Finland	170.38	80.81	69	Bulgaria	0.00	0.00
15	Luxembourg	116.69	74.90	69	Burkina Faso	0.00	0.00
16	Switzerland	115.51	74.74	69	Cambodia	0.00	0.00
17	Moldova, Rep.	108.21	73.73	69	Cameroon	0.00	0.00
18	Cyprus	97.00	72.02	69	Costa Rica	0.00	0.00
19	Iceland	92.24	71.24	69	Côte d'Ivoire	0.00	0.00
20	Singapore	91.58	71.13	69	Croatia	0.00	0.00
21	Malawi	90.83	71.00	69	Ecuador	0.00	0.00
22	Netherlands	84.85	69.94	69	El Salvador	0.00	0.00
23	Spain	77.98	68.63	69	Ethiopia	0.00	0.00
24	New Zealand	75.03	68.04	69	Georgia	0.00	0.00
25	Australia	72.06	67.41	69	Greece	0.00	0.00
26	Germany	71.94	67.38	69	Guatemala	0.00	0.00
27	Jordan	66.13	66.08	69	Guyana	0.00	0.00
28	Belgium	60.09	64.60	69	Honduras	0.00	0.00
29	Lebanon	59.85	64.54	69	Iran	0.00	0.00
30	China	58.39	64.15	69	Jamaica	0.00	0.00
31	Brunei Darussalam	54.19	63.00	69	Kazakhstan	0.00	0.00
32	India	54.07	62.97	69	Kyrgyzstan	0.00	0.00
33	Hong Kong (SAR), China	43.65	59.67	69	Lithuania	0.00	0.00
34	Bahrain	40.00	58.33	69	Macedonia	0.00	0.00
35	Tanzania	38.04	57.56	69	Madagascar	0.00	0.00
36	Austria	37.93	57.52	69	Mali	0.00	0.00
37	Latvia	34.52	56.08	69	Mauritius	0.00	0.00
38	Ukraine	34.10	55.89	69	Morocco	0.00	0.00
39	Trinidad and Tobago	32.17	55.00	69	Namibia	0.00	0.00
40	Viet Nam	29.91	53.89	69	Nicaragua	0.00	0.00
41	Ghana	29.76	53.82	69	Niger	0.00	0.00
42	Korea, Rep.	26.55	52.09	69	Oman	0.00	0.00
43	Czech Republic	21.57	48.95	69	Pakistan	0.00	0.00
44	South Africa	19.55	47.48	69	Panama	0.00	0.00
45	Brazil	19.19	47.20	69	Paraguay	0.00	0.00
46	Hungary	17.72	46.01	69	Qatar	0.00	0.00
47	Romania	17.25	45.61	69	Rwanda	0.00	0.00
48	United Arab Emirates	16.59	45.03	69	Senegal	0.00	0.00
49	Chile	13.54	42.04	69	Serbia	0.00	0.00
50	Philippines	13.52	42.02	69	Slovak Republic	0.00	0.00
51	Portugal	13.20	41.67	69	Slovenia	0.00	0.00
52	Nigeria	12.92	41.36	69	Sri Lanka	0.00	0.00
53	Tunisia	12.76	41.18	69	Sudan	0.00	0.00
54	Turkey	11.92	40.19	69	Swaziland	0.00	0.00
55	Malaysia	11.45	39.60	69	Syrian Arab Republic	0.00	0.00
56	Peru	8.75	35.76	69	Tajikistan	0.00	0.00
57	Russian Federation	8.29	35.00	69	Uganda	0.00	0.00
58	Kuwait	8.25	34.93	69	Uruguay	0.00	0.00
59	Poland	7.85	34.23	69	Venezuela	0.00	0.00
60	Japan	7.39	33.41	69	Yemen	0.00	0.00
61	Egypt	7.02	32.69	69	Zambia	0.00	0.00
62	Italy	6.25	31.10				
63	Mexico	5.99	30.54				
64	Colombia	5.38	29.11				

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

Applied tariff rate, weighted mean, all products (%)<sup>b</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China	0.00	100.00	65	Saudi Arabia	3.75	81.36
1	Singapore	0.00	100.00	65	Tajikistan (2006)	3.75	81.36
1	Switzerland	0.00	100.00	67	Costa Rica (2007)	3.76	81.31
4	Norway	0.42	97.91	68	China	3.92	80.52
5	Georgia	0.47	97.66	69	Azerbaijan	3.93	80.47
6	Canada	0.95	95.28	70	Kuwait	4.03	79.97
7	Chile	1.00	95.03	71	Bolivia	4.07	79.77
8	Iceland	1.05	94.78	72	Trinidad and Tobago	4.16	79.32
9	Croatia	1.09	94.58	73	South Africa	4.48	77.73
9	Israel	1.09	94.58	74	Thailand (2006)	4.56	77.34
11	Namibia	1.11	94.48	75	Bosnia & Herzegovina	4.67	76.79
12	Austria	1.15	94.28	76	Lebanon (2007)	4.75	76.39
12	Belgium	1.15	94.28	77	Zambia	5.03	75.00
12	Bulgaria	1.15	94.28	78	Mongolia	5.10	74.65
12	Cyprus	1.15	94.28	79	Swaziland	5.20	74.16
12	Czech Republic	1.15	94.28	80	Argentina	5.27	73.81
12	Denmark	1.15	94.28	81	Ecuador	5.38	73.26
12	Estonia	1.15	94.28	82	Jordan (2007)	5.61	72.12
12	Finland	1.15	94.28	83	Russian Federation	5.79	71.22
12	France	1.15	94.28	84	Malawi	5.96	70.38
12	Germany	1.15	94.28	85	Serbia (2005)	6.03	70.03
12	Greece	1.15	94.28	86	India	6.09	69.73
12	Hungary	1.15	94.28	87	Brunei Darussalam (2007)	6.12	69.58
12	Ireland	1.15	94.28	88	Kenya	6.29	68.74
12	Italy	1.15	94.28	89	Côte d'Ivoire	6.56	67.40
12	Latvia	1.15	94.28	90	Brazil	6.74	66.50
12	Lithuania	1.15	94.28	91	Guyana	6.87	65.85
12	Luxembourg	1.15	94.28	92	Burkina Faso	6.89	65.76
12	Netherlands	1.15	94.28	93	Yemen (2006)	6.93	65.56
12	Poland	1.15	94.28	94	Panama	7.08	64.81
12	Portugal	1.15	94.28	95	Korea, Rep. (2007)	7.10	64.71
12	Romania	1.15	94.28	96	Sri Lanka (2006)	7.14	64.51
12	Slovak Republic	1.15	94.28	97	Uganda	7.38	63.32
12	Slovenia	1.15	94.28	98	Egypt	8.01	60.19
12	Spain	1.15	94.28	99	Madagascar	8.39	58.30
12	Sweden	1.15	94.28	100	Mali	8.44	58.05
12	United Kingdom	1.15	94.28	101	Senegal	8.49	57.80
38	Japan	1.31	93.49	102	Kyrgyzstan	8.51	57.70
39	United States of America	1.49	92.59	103	Botswana	8.66	56.96
40	Turkey	1.78	91.15	104	Colombia	8.73	56.61
41	Mexico	1.88	90.66	105	Nigeria	8.90	55.77
42	New Zealand	1.98	90.16	106	Jamaica (2006)	8.91	55.72
43	Mauritius	2.05	89.81	107	Pakistan	8.99	55.32
44	Albania	2.08	89.66	108	Niger	9.16	54.47
45	Peru	2.10	89.56	109	Morocco	9.42	53.18
46	Kazakhstan	2.13	89.41	110	Algeria	9.66	51.99
47	Armenia	2.25	88.82	111	Ghana	9.84	51.09
48	Moldova, Rep.	2.44	87.87	112	Cambodia (2007)	9.99	50.35
49	Australia	2.47	87.72	113	Ethiopia	10.05	50.05
50	Guatemala	3.02	84.99	114	Tanzania	10.21	49.25
51	El Salvador	3.08	84.69	115	Viet Nam (2007)	10.57	47.47
52	Malaysia (2007)	3.13	84.44	116	Bangladesh (2007)	10.98	45.43
53	Honduras	3.17	84.24	117	Venezuela	11.39	43.39
54	Paraguay	3.27	83.75	118	Sudan	11.44	43.14
55	Oman	3.29	83.65	119	Rwanda	11.97	40.51
56	Macedonia	3.33	83.45	120	Cameroon (2007)	12.67	37.03
57	Indonesia (2007)	3.55	82.36	121	Benin	15.50	22.96
58	Bahrain	3.56	82.31	121	Syrian Arab Republic (2002)	15.50	22.96
59	Nicaragua (2007)	3.59	82.16	123	Zimbabwe (2003)	17.33	13.87
60	Philippines (2007)	3.60	82.11	124	Tunisia (2006)	18.26	9.24
61	Uruguay	3.61	82.06	125	Iran	20.12	0.00
62	United Arab Emirates	3.62	82.01				
63	Qatar	3.71	81.56				
63	Ukraine	3.71	81.56				

SOURCE: World Bank, based on WITS, UNCTAD TRAINS, and UN COMTRADE, World Bank World Development Indicators database (2002–08)

## 4.3.2 Market access trade restrictiveness

### Market access overall trade restrictiveness index (%)<sup>a,b</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Azerbaijan	0.80	100.00	65	Iceland	15.76	55.03
2	Venezuela	1.41	98.17	66	Uruguay	16.37	53.18
3	Algeria	1.46	98.02	67	Argentina	16.82	51.82
4	Niger	1.74	97.19	68	Côte d'Ivoire	17.70	49.18
5	Sudan	1.78	97.04	69	Sri Lanka	18.55	46.64
6	Nigeria	1.83	96.90	70	Albania	18.91	45.55
7	Botswana	2.41	95.17	71	Ethiopia	19.93	42.47
8	Brunei Darussalam	2.54	94.78	72	Malawi	19.94	42.45
9	Saudi Arabia	2.64	94.48	73	El Salvador	20.88	39.63
10	Iran	2.69	94.33	74	Nicaragua	21.31	38.35
11	Georgia	2.89	93.72	75	Burkina Faso	21.31	38.33
12	Oman	3.12	93.03	76	New Zealand	21.79	36.89
13	Norway	3.18	92.83	77	Honduras	22.69	34.19
14	Bahrain	3.33	92.39	78	Kenya	23.26	32.47
15	United Arab Emirates	3.48	91.94	79	Ghana	24.68	28.20
16	Russian Federation	3.64	91.47	80	Madagascar	25.43	25.95
17	South Africa	3.78	91.05	81	Uganda	26.13	23.86
18	Armenia	3.86	90.81	82	Guyana	26.71	22.09
19	Israel	3.92	90.62	83	Bolivia	31.36	8.10
20	Switzerland	4.03	90.30	84	Swaziland	33.82	0.72
21	Croatia	4.15	89.92	85	Mauritius	34.06	0.00
22	Mexico	4.20	89.77	n/a	Austria	n/a	n/a
23	Lebanon	4.53	88.79	n/a	Belgium	n/a	n/a
24	Namibia	4.94	87.56	n/a	Bosnia & Herzegovina	n/a	n/a
25	Peru	5.06	87.19	n/a	Bulgaria	n/a	n/a
26	Colombia	5.21	86.75	n/a	Cambodia	n/a	n/a
27	Singapore	6.07	84.16	n/a	Cyprus	n/a	n/a
28	Kazakhstan	6.50	82.86	n/a	Czech Republic	n/a	n/a
29	Ukraine	7.06	81.19	n/a	Denmark	n/a	n/a
30	Malaysia	7.61	79.54	n/a	Ecuador	n/a	n/a
31	Senegal	7.66	79.37	n/a	Estonia	n/a	n/a
32	India	7.81	78.91	n/a	Finland	n/a	n/a
33	Japan	7.87	78.75	n/a	France	n/a	n/a
34	Macedonia	8.09	78.07	n/a	Germany	n/a	n/a
35	Turkey	8.16	77.88	n/a	Greece	n/a	n/a
36	Hong Kong (SAR), China	8.18	77.82	n/a	Hungary	n/a	n/a
37	Moldova, Rep.	8.24	77.65	n/a	Ireland	n/a	n/a
38	Zambia	8.29	77.49	n/a	Italy	n/a	n/a
39	Cameroon	8.46	76.96	n/a	Jamaica	n/a	n/a
40	Australia	8.58	76.62	n/a	Kuwait	n/a	n/a
41	Korea, Rep.	8.66	76.36	n/a	Latvia	n/a	n/a
42	China	8.90	75.65	n/a	Lithuania	n/a	n/a
43	Rwanda	9.00	75.35	n/a	Luxembourg	n/a	n/a
44	Philippines	9.35	74.30	n/a	Netherlands	n/a	n/a
45	Mongolia	9.45	73.98	n/a	Pakistan	n/a	n/a
46	Trinidad and Tobago	9.60	73.54	n/a	Poland	n/a	n/a
47	Egypt	9.99	72.38	n/a	Portugal	n/a	n/a
48	Canada	10.13	71.94	n/a	Qatar	n/a	n/a
49	Benin	10.28	71.49	n/a	Romania	n/a	n/a
50	United States of America	10.58	70.59	n/a	Serbia	n/a	n/a
51	Indonesia	10.59	70.57	n/a	Slovak Republic	n/a	n/a
52	Brazil	10.60	70.53	n/a	Slovenia	n/a	n/a
53	Panama	10.81	69.90	n/a	Spain	n/a	n/a
54	Jordan	11.28	68.48	n/a	Sweden	n/a	n/a
55	Chile	11.34	68.30	n/a	Syrian Arab Republic	n/a	n/a
56	Thailand	11.54	67.71	n/a	Tajikistan	n/a	n/a
57	Tunisia	11.66	67.36	n/a	Tanzania	n/a	n/a
58	Paraguay	12.91	63.58	n/a	United Kingdom	n/a	n/a
59	Kyrgyzstan	13.11	62.99	n/a	Viet Nam	n/a	n/a
60	Costa Rica	13.49	61.84	n/a	Yemen	n/a	n/a
61	Mali	14.12	59.95	n/a	Zimbabwe	n/a	n/a
62	Morocco	14.14	59.89				
63	Bangladesh	15.06	57.14				
64	Guatemala	15.16	56.84				

SOURCE: World Bank Overall Trade Restrictiveness Indices, World Bank and International Monetary Fund *Global Monitoring Report 2010*

## 4.3.3 Imports of goods and services

### Imports of goods and services (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore (2008)	202.58	100.00	65	Oman (2008)	37.96	21.32
2	Hong Kong (SAR), China (2008)	201.63	100.00	66	El Salvador	37.75	21.16
3	Luxembourg	136.17	100.00	67	Armenia	36.45	20.11
4	Slovak Republic	103.74	74.02	68	Algeria	36.12	19.84
5	Guyana (2008)	102.43	72.97	69	Germany	35.89	19.66
6	Kyrgyzstan	80.76	55.61	70	Syrian Arab Republic	35.72	19.52
7	Hungary (2008)	80.22	55.18	71	Portugal	35.64	19.46
8	Viet Nam	78.65	53.92	72	Mali (2007)	35.58	19.41
9	Swaziland	76.47	52.18	73	Finland	34.91	18.88
10	Malaysia	74.88	50.90	74	Uganda	34.64	18.66
11	Bahrain (2008)	74.31	50.44	75	Kazakhstan	33.79	17.98
12	Ireland	73.61	49.88	76	Côte d'Ivoire	33.75	17.95
13	Moldova, Rep.	73.40	49.71	77	Guatemala	33.13	17.45
14	Zimbabwe (2005)	72.98	49.38	78	Bolivia	32.90	17.27
15	Lithuania (2008)	71.67	48.33	79	Israel	32.21	16.72
16	Belgium	70.22	47.17	80	Egypt	31.87	16.44
17	Macedonia	67.27	44.80	81	Qatar	31.22	15.92
18	Estonia	65.23	43.17	82	Zambia	31.14	15.86
19	Jordan	64.96	42.95	83	Cameroon	30.90	15.66
20	United Arab Emirates (2007)	63.83	42.05	84	Philippines	30.80	15.58
21	Czech Republic	63.80	42.02	85	Canada	30.43	15.29
22	Cambodia	62.66	41.11	86	Chile	30.36	15.23
23	Mongolia	62.63	41.08	87	United Kingdom	30.04	14.97
24	Netherlands	62.19	40.73	88	Mexico	29.28	14.37
25	Nicaragua	61.22	39.95	89	Greece	29.26	14.35
26	Panama	61.11	39.87	90	Ethiopia	28.85	14.02
27	Honduras	60.77	39.60	91	Benin	28.17	13.48
28	Namibia	59.89	38.89	92	South Africa	28.15	13.46
29	Mauritius	59.07	38.24	93	Sri Lanka	27.87	13.24
30	Cyprus (2008)	58.49	37.77	94	Brunei Darussalam (2007)	27.82	13.19
31	Bosnia & Herzegovina	57.98	37.36	95	Tanzania (2006)	27.50	12.94
32	Thailand	57.85	37.25	96	Norway	27.34	12.81
33	Slovenia	57.39	36.89	97	Nigeria	27.17	12.67
34	Tajikistan	56.34	36.05	98	Rwanda	27.05	12.58
35	Bulgaria	55.76	35.58	99	Burkina Faso (2006)	26.81	12.39
36	Tunisia	55.34	35.25	100	Bangladesh	26.55	12.18
37	Albania	54.38	34.47	101	New Zealand	26.53	12.16
38	Jamaica	53.32	33.63	102	Kuwait (2008)	25.64	11.45
39	Madagascar	51.83	32.43	103	Spain	25.59	11.41
40	Paraguay	51.60	32.25	104	Uruguay	25.54	11.37
41	Georgia	49.02	30.18	105	India	25.25	11.14
42	Ecuador	48.09	29.44	106	France	24.99	10.93
43	Ukraine	48.04	29.39	107	Azerbaijan	24.77	10.76
44	Lebanon	47.02	28.58	108	Niger (2005)	24.77	10.75
45	Austria	45.99	27.76	109	Turkey	24.42	10.47
46	Korea, Rep.	45.98	27.75	110	Italy	24.37	10.43
47	Botswana	44.60	26.64	111	Malawi	23.13	9.44
48	Iceland	44.21	26.33	112	China	22.33	8.80
49	Senegal	43.97	26.13	113	Australia (2008)	21.61	8.22
50	Denmark	43.96	26.13	114	Iran (2007)	21.54	8.16
51	Serbia	43.94	26.11	115	Indonesia	21.33	7.99
52	Latvia	43.11	25.45	116	Sudan	20.83	7.60
53	Saudi Arabia	42.62	25.05	117	Venezuela	20.47	7.31
54	Costa Rica	42.10	24.63	118	Pakistan	20.37	7.23
55	Sweden	41.63	24.26	119	Russian Federation	20.37	7.23
56	Yemen (2003)	41.44	24.11	120	Peru	19.72	6.71
57	Ghana	41.35	24.03	121	Colombia	18.32	5.59
58	Switzerland	40.74	23.55	122	Argentina	16.00	3.73
59	Romania	40.24	23.15	123	United States of America	13.92	2.06
60	Morocco	39.49	22.55	124	Japan	12.25	0.72
61	Croatia	39.41	22.48	125	Brazil	11.35	0.00
62	Trinidad and Tobago (2008)	39.38	22.46				
63	Poland	38.78	21.98				
64	Kenya	38.31	21.60				

SOURCE: World Bank and OECD, World Bank World Development Indicators database (2001–09)

## 4.3.4 Exports of goods and services

### Exports of goods and services (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore (2008)	220.53	100.00	65	Jamaica	34.71	28.41
2	Hong Kong (SAR), China (2008)	212.46	100.00	66	Israel	34.65	28.35
3	Luxembourg	169.41	100.00	67	Syrian Arab Republic	33.88	27.50
4	Slovak Republic	99.46	100.00	68	Botswana	33.59	27.17
5	Bahrain (2008)	96.85	97.11	69	Bosnia & Herzegovina	33.44	27.01
6	Malaysia	96.42	96.63	70	Romania	33.32	26.88
7	Ireland	88.53	87.91	71	Iran (2007)	32.18	25.61
8	United Arab Emirates (2007)	87.14	86.38	72	Philippines	31.66	25.04
9	Hungary (2008)	81.45	80.09	73	Ghana	30.50	23.76
10	Panama	77.04	75.21	74	Zambia	29.76	22.94
11	Belgium	72.96	70.70	75	Georgia	29.53	22.68
12	Estonia	70.60	68.09	76	Canada	28.72	21.78
13	Czech Republic	69.52	66.90	77	Albania	28.65	21.71
14	Netherlands	69.44	66.81	78	Morocco	28.59	21.64
15	Trinidad and Tobago (2008)	68.38	65.64	79	Madagascar	28.22	21.23
16	Thailand	68.37	65.62	80	New Zealand	28.20	21.22
17	Viet Nam	68.30	65.55	81	Portugal	27.96	20.95
18	Guyana (2008)	68.29	65.54	82	Mexico	27.84	20.82
19	Brunei Darussalam (2007)	67.66	64.84	83	Russian Federation	27.73	20.70
20	Kuwait (2008)	66.44	63.49	84	United Kingdom	27.67	20.63
21	Lithuania (2008)	60.23	56.63	85	Serbia	27.45	20.39
22	Swaziland	59.79	56.14	86	South Africa	27.29	20.21
23	Cambodia	59.61	55.94	87	China	26.74	19.61
24	Oman (2008)	59.29	55.59	88	Cameroon	26.58	19.42
25	Slovenia	58.92	55.17	89	Uruguay	26.49	19.32
26	Zimbabwe (2005)	56.80	52.84	90	Mali (2007)	26.18	18.98
27	Mongolia	55.84	51.77	91	Kenya	25.24	17.94
28	Iceland	52.98	48.61	92	Egypt	25.04	17.73
29	Saudi Arabia	52.65	48.25	93	Indonesia	24.12	16.71
30	Azerbaijan	52.49	48.07	94	Senegal	24.04	16.62
31	Tunisia	51.99	47.52	95	Italy	23.97	16.54
32	Switzerland	51.68	47.17	96	Peru	23.55	16.08
33	Austria	50.53	45.90	97	Spain	23.44	15.95
34	Korea, Rep.	49.90	45.21	98	Uganda	23.39	15.90
35	Kyrgyzstan	49.87	45.18	99	Guatemala	23.37	15.87
36	Sweden	48.50	43.66	100	Turkey	23.24	15.73
37	Mauritius	48.45	43.60	101	France	23.05	15.52
38	Bulgaria	47.83	42.92	102	Lebanon	22.27	14.66
39	Denmark	47.77	42.85	103	El Salvador	22.26	14.64
40	Cyprus (2008)	47.11	42.13	104	Tanzania (2006)	21.68	14.00
41	Qatar	46.75	41.72	105	Sri Lanka	21.36	13.66
42	Namibia	46.62	41.58	106	Argentina	21.35	13.64
43	Paraguay	46.53	41.48	107	India	20.59	12.80
44	Ukraine	46.31	41.23	108	Malawi	20.11	12.27
45	Macedonia	44.30	39.01	109	Australia (2008)	19.79	11.91
46	Jordan	43.50	38.13	110	Bangladesh	19.43	11.52
47	Costa Rica	43.29	37.90	111	Greece	18.65	10.65
48	Latvia	42.17	36.67	112	Venezuela	18.25	10.22
49	Honduras	42.10	36.58	113	Colombia	16.26	8.01
50	Norway	42.02	36.49	114	Niger (2005)	15.38	7.04
51	Kazakhstan	42.01	36.49	115	Sudan	15.05	6.68
52	Côte d'Ivoire	41.72	36.16	116	Benin	13.85	5.35
53	Germany	40.83	35.18	117	Tajikistan	13.41	4.86
54	Algeria	40.40	34.71	118	Pakistan	12.84	4.24
55	Poland	38.88	33.02	119	Japan	12.55	3.91
56	Chile	38.14	32.20	120	Armenia	11.99	3.30
57	Yemen (2003)	38.00	32.05	121	Burkina Faso (2006)	11.53	2.78
58	Finland	37.37	31.35	122	Brazil	11.27	2.50
59	Ecuador	37.14	31.10	123	United States of America	11.18	2.40
60	Moldova, Rep.	36.83	30.76	124	Ethiopia	10.56	1.71
61	Croatia	36.09	29.94	125	Rwanda	9.01	0.00
62	Nigeria	35.87	29.69				
63	Bolivia	35.72	29.53				
64	Nicaragua	35.13	28.87				

SOURCE: World Bank and OECD, World Bank World Development Indicators database (2001–09)



## 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<sup>†</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Germany	6.10	85.00	65	Peru	4.87	64.45
2	Qatar	6.07	84.44	66	Morocco	4.85	64.20
3	Belgium	5.91	81.76	67	Syrian Arab Republic	4.85	64.17
4	Sweden	5.86	81.06	68	Ghana	4.84	64.07
5	Austria	5.85	80.89	69	Jamaica	4.84	64.03
6	Japan	5.85	80.78	70	Mali	4.84	63.98
7	United Kingdom	5.84	80.61	71	Benin	4.79	63.22
8	Netherlands	5.77	79.53	72	Viet Nam	4.78	63.03
9	Australia	5.68	77.97	73	Côte d'Ivoire	4.75	62.52
10	Czech Republic	5.67	77.80	74	Greece	4.75	62.45
11	United Arab Emirates	5.67	77.76	75	Lithuania	4.73	62.17
12	Korea, Rep.	5.66	77.75	76	Romania	4.72	61.93
13	Turkey	5.66	77.72	77	Bangladesh	4.67	61.20
14	United States of America	5.64	77.37	78	Colombia	4.67	61.15
15	France	5.63	77.24	79	Malawi	4.66	61.00
16	Cyprus	5.63	77.20	80	Italy	4.66	60.99
17	China	5.62	76.95	81	Zambia	4.64	60.72
18	Canada	5.59	76.50	82	Pakistan	4.63	60.51
19	Lebanon	5.58	76.27	83	Namibia	4.62	60.40
20	Israel	5.57	76.19	84	Botswana	4.60	60.08
21	Denmark	5.57	76.13	85	Egypt	4.59	59.90
22	Saudi Arabia	5.57	76.10	86	Latvia	4.59	59.87
23	Chile	5.53	75.57	87	Algeria	4.53	58.91
24	Spain	5.51	75.11	88	Bulgaria	4.53	58.89
25	Norway	5.49	74.90	89	Mongolia	4.53	58.87
26	Singapore	5.46	74.31	90	Macedonia	4.50	58.39
27	India	5.45	74.10	91	Honduras	4.49	58.11
28	Estonia	5.44	73.96	92	Mexico	4.48	57.93
29	Hong Kong (SAR), China	5.41	73.57	93	Guyana	4.46	57.74
30	Slovak Republic	5.39	73.24	94	Rwanda	4.34	55.63
31	Tunisia	5.39	73.16	95	Moldova, Rep.	4.32	55.39
32	Poland	5.37	72.87	96	Swaziland	4.32	55.39
33	Switzerland	5.37	72.77	97	Madagascar	4.30	55.05
34	Thailand	5.32	72.05	98	Tanzania	4.30	54.98
35	Malaysia	5.31	71.80	99	Uruguay	4.28	54.64
36	Hungary	5.28	71.33	100	Cambodia	4.26	54.38
37	Bahrain	5.25	70.83	101	Argentina	4.25	54.22
38	El Salvador	5.25	70.82	102	Kazakhstan	4.22	53.72
39	Sri Lanka	5.21	70.18	103	Ethiopia	4.21	53.55
40	Slovenia	5.19	69.80	104	Iran	4.20	53.37
41	Luxembourg	5.19	69.78	105	Albania	4.18	52.92
42	Portugal	5.17	69.57	106	Croatia	4.16	52.69
43	Jordan	5.16	69.36	107	Russian Federation	4.14	52.32
44	Trinidad and Tobago	5.16	69.28	108	Ecuador	4.13	52.17
45	Guatemala	5.16	69.26	109	Paraguay	4.11	51.80
46	Senegal	5.11	68.52	110	Ukraine	4.10	51.70
47	Brazil	5.11	68.45	111	Zimbabwe	4.08	51.26
48	Ireland	5.10	68.35	112	Tajikistan	4.01	50.16
49	Finland	5.10	68.27	113	Georgia	3.95	49.09
50	Oman	5.08	68.07	114	Nicaragua	3.93	48.77
51	Indonesia	5.07	67.80	115	Bolivia	3.90	48.30
52	Kenya	5.07	67.76	116	Burkina Faso	3.86	47.63
53	Mauritius	5.06	67.75	117	Kyrgyzstan	3.85	47.43
54	Cameroon	5.04	67.26	118	Serbia	3.79	46.55
55	Panama	5.02	66.96	119	Bosnia & Herzegovina	3.74	45.67
56	Costa Rica	5.01	66.77	120	Azerbaijan	3.72	45.41
57	Kuwait	5.00	66.73	121	Armenia	3.51	41.91
58	Brunei Darussalam	5.00	66.65	122	Venezuela	3.19	36.47
59	Nigeria	4.98	66.26	n/a	Niger	n/a	n/a
60	South Africa	4.97	66.18	n/a	Sudan	n/a	n/a
61	New Zealand	4.97	66.17	n/a	Yemen	n/a	n/a
62	Philippines	4.94	65.61				
63	Iceland	4.93	65.51				
64	Uganda	4.87	64.52				

SOURCE: World Economic Forum, *Executive Opinion Survey 2010*

# 5.1.1 Employment in knowledge-intensive services

## Employment in knowledge-intensive services (% of workforce) | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore	51.02	100.00	65	Mongolia	20.21	36.68
2	Netherlands	47.20	92.16	66	Jamaica	20.11	36.49
3	Switzerland	47.13	92.00	67	Philippines	19.74	35.72
4	Iceland	46.02	89.73	68	Sri Lanka	19.69	35.63
5	Denmark	45.15	87.93	69	Pakistan	19.48	35.19
6	Sweden	44.46	86.52	70	Brazil (2007)	19.31	34.84
7	Finland	43.82	85.19	71	Algeria (2004)	19.10	34.41
8	Norway	43.46	84.47	72	Kuwait (2005)	18.70	33.58
9	Belgium	43.42	84.39	73	Peru	18.55	33.27
10	New Zealand	42.92	83.36	74	Mexico	18.44	33.05
11	Australia	42.87	83.25	75	Kyrgyzstan (2006)	18.31	32.78
12	United Kingdom	42.53	82.56	76	Ecuador (2006)	18.08	32.32
13	Canada	42.39	82.26	77	Argentina (2006)	17.71	31.56
14	Germany	41.91	81.29	78	Panama	17.66	31.46
15	Israel	41.26	79.95	79	Botswana (2006)	17.10	30.31
16	France	40.77	78.93	80	Yemen (2005)	16.97	30.03
17	Russian Federation	40.69	78.77	81	Namibia (2004)	16.91	29.91
18	Czech Republic	40.48	78.34	82	Mauritius	15.80	27.63
19	Latvia	40.19	77.74	83	Syrian Arab Republic (2007)	15.52	27.05
20	Lithuania	39.65	76.63	84	Iran	15.04	26.06
21	Italy	39.65	76.63	85	Nicaragua (2006)	14.82	25.62
22	Ireland	38.82	74.93	86	Bolivia (2007)	14.32	24.59
23	Estonia	38.80	74.88	87	Paraguay	14.01	23.94
24	Slovenia	37.98	73.20	88	Honduras (2005)	12.83	21.53
25	Japan	37.81	72.85	89	Guyana (2002)	12.68	21.21
26	Austria	36.74	70.65	90	El Salvador (2007)	12.49	20.83
27	Hungary	36.67	70.50	91	Ethiopia (2006)	12.38	20.60
28	United States of America	36.30	69.74	92	Thailand	10.77	17.28
29	United Arab Emirates	36.09	69.32	93	Indonesia	7.41	10.38
30	Hong Kong (SAR), China	35.95	69.04	94	Viet Nam (2004)	7.41	10.38
31	Slovak Republic	34.56	66.17	95	China (2005)	7.37	10.31
32	Greece	33.49	63.98	96	Bangladesh (2005)	7.33	10.21
33	Poland	32.79	62.54	97	Morocco	6.79	9.10
34	Spain	32.44	61.83	98	Zambia (2000)	6.02	7.53
35	Ukraine	32.07	61.07	99	Uganda (2003)	4.30	3.99
36	Lebanon (2007)	31.85	60.61	100	Tanzania (2006)	2.57	0.44
37	Cyprus	31.43	59.75	101	Cambodia (2004)	2.52	0.33
38	Chile	30.63	58.10	102	Madagascar (2005)	2.36	0.00
39	Egypt (2007)	30.26	57.35	n/a	Albania	n/a	n/a
40	Croatia	30.09	56.98	n/a	Benin	n/a	n/a
41	Serbia	28.72	54.18	n/a	Bosnia & Herzegovina	n/a	n/a
42	Bulgaria	28.59	53.91	n/a	Burkina Faso	n/a	n/a
43	Brunei Darussalam (2003)	28.35	53.42	n/a	Cameroon	n/a	n/a
44	Kazakhstan	28.33	53.38	n/a	Côte d'Ivoire	n/a	n/a
45	Moldova, Rep.	28.18	53.06	n/a	Ghana	n/a	n/a
46	Costa Rica	27.43	51.52	n/a	Guatemala	n/a	n/a
47	Malaysia	26.82	50.27	n/a	India	n/a	n/a
48	Macedonia	25.52	47.60	n/a	Jordan	n/a	n/a
49	Portugal	24.37	45.24	n/a	Kenya	n/a	n/a
50	Oman (2000)	24.25	44.99	n/a	Luxembourg	n/a	n/a
51	Qatar (2007)	24.20	44.89	n/a	Malawi	n/a	n/a
52	Armenia (2001)	24.14	44.77	n/a	Mali	n/a	n/a
53	Venezuela	23.87	44.22	n/a	Niger	n/a	n/a
54	South Africa	23.67	43.80	n/a	Nigeria	n/a	n/a
55	Saudi Arabia	22.88	42.18	n/a	Rwanda	n/a	n/a
56	Trinidad and Tobago (2005)	22.75	41.91	n/a	Senegal	n/a	n/a
57	Korea, Rep.	22.44	41.26	n/a	Sudan	n/a	n/a
58	Georgia (2007)	22.25	40.88	n/a	Swaziland	n/a	n/a
59	Turkey	22.12	40.61	n/a	Tajikistan	n/a	n/a
60	Romania	21.80	39.96	n/a	Tunisia	n/a	n/a
61	Colombia	21.58	39.50	n/a	Zimbabwe	n/a	n/a
62	Uruguay (2007)	21.40	39.12				
63	Bahrain	20.73	37.76				
64	Azerbaijan	20.26	36.80				

SOURCE: International Labour Organization, LABORSTA Database of Labor Statistics (2000–08)

## 5.1.2 Firms offering formal training

Firms offering formal training (% of firms) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	China (2003)	84.78	100.00	65	Mauritius	25.58	26.05
2	Thailand (2006)	75.34	88.21	66	Cameroon	25.51	25.96
3	Ireland (2005)	73.16	85.48	67	Guyana (2004)	25.32	25.72
4	Czech Republic	70.72	82.44	68	Burkina Faso	24.83	25.11
5	Estonia	69.26	80.61	69	Ukraine (2008)	24.82	25.10
6	Bosnia & Herzegovina	66.45	77.10	70	Morocco (2007)	24.68	24.92
7	Ecuador (2006)	61.61	71.06	71	Mexico (2006)	24.61	24.83
8	Mongolia	61.22	70.57	72	Uruguay (2006)	24.55	24.76
9	Poland	60.92	70.19	73	Jordan (2006)	23.93	23.99
10	Peru (2006)	57.68	66.15	74	Mali (2007)	22.54	22.25
11	Bolivia (2006)	53.86	61.37	75	Egypt (2008)	21.70	21.20
12	Jamaica (2005)	53.49	60.91	76	Tajikistan (2008)	21.11	20.46
13	Brazil	52.94	60.22	77	Oman (2003)	20.92	20.22
14	Lebanon	52.36	59.50	78	Greece (2005)	19.96	19.03
15	Russian Federation	52.17	59.26	79	Albania (2007)	19.94	19.00
16	Argentina (2006)	52.15	59.24	80	Côte d'Ivoire	19.11	17.96
17	Spain (2005)	51.26	58.13	81	Macedonia	18.95	17.76
18	Swaziland (2006)	50.95	57.74	82	Algeria (2007)	17.30	15.70
19	Malaysia (2007)	50.14	56.73	83	Senegal (2007)	16.30	14.45
20	El Salvador (2006)	49.61	56.06	84	Bangladesh (2007)	16.19	14.32
21	Malawi	48.42	54.58	85	India (2006)	15.93	13.99
22	Cambodia (2007)	48.35	54.49	86	Hungary	14.80	12.58
23	Slovenia	47.46	53.38	87	Georgia (2008)	14.53	12.24
24	Chile (2006)	46.89	52.67	88	Azerbaijan	10.54	7.26
25	Paraguay (2006)	46.85	52.62	89	Pakistan (2007)	6.70	2.46
26	Costa Rica (2005)	46.36	52.00	90	Indonesia	4.73	0.00
27	Lithuania	45.98	51.53	n/a	Australia	n/a	n/a
28	Namibia (2006)	44.51	49.69	n/a	Austria	n/a	n/a
29	Panama (2006)	43.91	48.94	n/a	Bahrain	n/a	n/a
30	Viet Nam	43.55	48.49	n/a	Belgium	n/a	n/a
31	Latvia	43.44	48.36	n/a	Brunei Darussalam	n/a	n/a
32	Venezuela (2006)	42.26	46.88	n/a	Canada	n/a	n/a
33	Kazakhstan	40.87	45.15	n/a	Cyprus	n/a	n/a
34	Kenya (2007)	40.65	44.87	n/a	Denmark	n/a	n/a
35	Colombia (2006)	39.48	43.41	n/a	Finland	n/a	n/a
36	Korea, Rep. (2005)	39.45	43.37	n/a	France	n/a	n/a
37	Syrian Arab Republic	38.29	41.92	n/a	Hong Kong (SAR), China	n/a	n/a
38	Ethiopia (2006)	38.20	41.81	n/a	Iceland	n/a	n/a
39	Botswana (2006)	37.66	41.14	n/a	Iran	n/a	n/a
40	South Africa (2007)	36.76	40.01	n/a	Israel	n/a	n/a
41	Serbia	36.53	39.73	n/a	Italy	n/a	n/a
42	Tanzania (2006)	36.48	39.66	n/a	Japan	n/a	n/a
43	Germany (2005)	35.38	38.29	n/a	Kuwait	n/a	n/a
44	Uganda (2006)	34.95	37.75	n/a	Luxembourg	n/a	n/a
45	Honduras (2006)	33.29	35.68	n/a	Netherlands	n/a	n/a
46	Moldova, Rep.	33.11	35.45	n/a	New Zealand	n/a	n/a
47	Slovak Republic	33.05	35.38	n/a	Norway	n/a	n/a
48	Ghana (2007)	32.99	35.30	n/a	Qatar	n/a	n/a
49	Sri Lanka (2004)	32.55	34.75	n/a	Romania	n/a	n/a
50	Benin	32.41	34.58	n/a	Saudi Arabia	n/a	n/a
51	Niger	32.09	34.18	n/a	Singapore	n/a	n/a
52	Portugal (2005)	31.89	33.93	n/a	Sudan	n/a	n/a
53	Philippines	31.11	32.95	n/a	Sweden	n/a	n/a
54	Bulgaria	30.65	32.38	n/a	Switzerland	n/a	n/a
55	Armenia	30.35	32.00	n/a	Trinidad and Tobago	n/a	n/a
56	Kyrgyzstan	29.67	31.16	n/a	Tunisia	n/a	n/a
57	Nicaragua (2006)	28.86	30.14	n/a	United Arab Emirates	n/a	n/a
58	Turkey (2008)	28.75	30.01	n/a	United Kingdom	n/a	n/a
59	Guatemala (2006)	28.11	29.21	n/a	United States of America	n/a	n/a
60	Croatia (2007)	28.02	29.09	n/a	Yemen	n/a	n/a
61	Rwanda (2006)	27.58	28.54	n/a	Zimbabwe	n/a	n/a
62	Madagascar	27.03	27.86				
63	Zambia (2007)	26.02	26.60				
64	Nigeria (2007)	25.73	26.23				

SOURCE: World Bank Enterprise Surveys, World Bank *World Development Indicators* database (2003–09)

## 5.1.3

## GERD performed by business enterprise

Gross expenditure on R&D (GERD) performed by business enterprise (% of total)<sup>a</sup> | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Malaysia (2006)	84.91	100.00	65	Botswana (2005)	15.57	18.33
2	Luxembourg	81.50	95.99	66	Moldova, Rep. (2007)	15.47	18.22
3	Israel	80.85	95.22	67	Viet Nam (2002)	14.55	17.13
4	Japan (2007)	77.89	91.73	68	Tunisia (2005)	14.45	17.02
5	Korea, Rep. (2007)	76.24	89.79	69	Iran (2006)	14.21	16.74
6	Sweden	74.05	87.21	70	Zambia (2005)	13.80	16.25
7	Switzerland (2004)	73.74	86.85	71	Kazakhstan (2009)	13.55	15.95
8	United States of America	72.62	85.53	72	Macedonia (2006)	12.27	14.45
9	Finland	72.31	85.17	73	Cambodia (2002)	12.08	14.23
10	China (2007)	72.28	85.13	74	Uganda (2007)	7.54	8.88
11	Austria (2007)	70.56	83.10	75	Indonesia (2005)	3.74	4.40
12	Denmark	70.13	82.59	76	Mongolia (2007)	3.06	3.61
13	Germany (2007)	69.99	82.43	77	Serbia (2007)	2.50	2.94
14	Belgium	68.87	81.11	78	Brunei Darussalam (2003)	2.34	2.75
15	Singapore (2007)	66.81	78.68	79	Guatemala (2007)	1.00	1.17
16	Ireland	64.87	76.40	80	Panama (2005)	0.00	0.00
17	Slovenia	64.56	76.03	n/a	Albania	n/a	n/a
18	United Kingdom	64.23	75.65	n/a	Algeria	n/a	n/a
19	France	63.00	74.20	n/a	Armenia	n/a	n/a
20	Russian Federation	62.91	74.10	n/a	Bahrain	n/a	n/a
21	Czech Republic	61.89	72.88	n/a	Bangladesh	n/a	n/a
22	Philippines (2005)	58.56	68.97	n/a	Benin	n/a	n/a
23	Australia (2006)	58.33	68.70	n/a	Bosnia & Herzegovina	n/a	n/a
24	South Africa (2007)	57.66	67.91	n/a	Burkina Faso	n/a	n/a
25	Ukraine (2007)	55.40	65.25	n/a	Cameroon	n/a	n/a
26	Netherlands	54.98	64.75	n/a	Côte d'Ivoire	n/a	n/a
27	Spain	54.92	64.68	n/a	Egypt	n/a	n/a
28	Iceland	54.56	64.26	n/a	El Salvador	n/a	n/a
29	Canada (2009)	54.08	63.70	n/a	Ethiopia	n/a	n/a
30	Norway	53.84	63.40	n/a	Georgia	n/a	n/a
31	Hong Kong (SAR), China (2006)	52.63	61.98	n/a	Ghana	n/a	n/a
32	Italy	50.86	59.90	n/a	Guyana	n/a	n/a
33	Hungary (2007)	50.33	59.28	n/a	Honduras	n/a	n/a
34	Portugal	50.03	58.93	n/a	Jamaica	n/a	n/a
35	Mexico (2007)	47.37	55.79	n/a	Jordan	n/a	n/a
36	Chile (2004)	46.18	54.38	n/a	Kenya	n/a	n/a
37	Croatia	44.29	52.16	n/a	Kuwait	n/a	n/a
38	Estonia	43.20	50.88	n/a	Lebanon	n/a	n/a
39	Slovak Republic	42.88	50.50	n/a	Madagascar	n/a	n/a
40	New Zealand (2007)	42.66	50.25	n/a	Malawi	n/a	n/a
41	Turkey (2007)	41.26	48.60	n/a	Mali	n/a	n/a
42	Thailand (2006)	40.92	48.19	n/a	Mauritius	n/a	n/a
43	Brazil (2004)	40.20	47.35	n/a	Namibia	n/a	n/a
44	Sudan (2005)	33.71	39.70	n/a	Nicaragua	n/a	n/a
45	Costa Rica (2007)	32.99	38.85	n/a	Niger	n/a	n/a
46	Bulgaria	31.03	36.54	n/a	Nigeria	n/a	n/a
47	Poland	30.93	36.43	n/a	Oman	n/a	n/a
48	Argentina (2007)	30.35	35.74	n/a	Pakistan	n/a	n/a
49	Romania	29.96	35.28	n/a	Paraguay	n/a	n/a
50	India (2007)	29.63	34.89	n/a	Qatar	n/a	n/a
51	Peru (2004)	29.17	34.36	n/a	Rwanda	n/a	n/a
52	Kyrgyzstan (2007)	28.38	33.43	n/a	Saudi Arabia	n/a	n/a
53	Greece (2007)	26.94	31.73	n/a	Senegal	n/a	n/a
54	Trinidad and Tobago (2006)	25.14	29.60	n/a	Swaziland	n/a	n/a
55	Latvia	25.03	29.47	n/a	Syrian Arab Republic	n/a	n/a
56	Bolivia (2002)	25.00	29.44	n/a	Tajikistan	n/a	n/a
57	Lithuania	23.75	27.97	n/a	Tanzania	n/a	n/a
58	Cyprus	22.70	26.73	n/a	United Arab Emirates	n/a	n/a
59	Colombia (2007)	22.66	26.68	n/a	Venezuela	n/a	n/a
60	Morocco (2006)	22.05	25.97	n/a	Yemen	n/a	n/a
61	Ecuador (2007)	21.55	25.37	n/a	Zimbabwe	n/a	n/a
62	Azerbaijan (2007)	20.38	24.00				
63	Sri Lanka (2006)	19.11	22.51				
64	Uruguay	18.15	21.38				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2002–09)

# 5.1.4 GERD financed by business enterprise

Gross expenditure on R&D (GERD) financed by business enterprise (% of total)<sup>a</sup> | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Malaysia (2006)	84.73	100.00	65	Kazakhstan (2009)	13.55	15.68
2	Japan	77.71	91.68	66	Macedonia (2002)	7.79	8.86
3	Israel (2006)	77.24	91.13	67	Uganda	7.54	8.56
4	Luxembourg	76.01	89.67	68	Mongolia	3.07	3.27
5	Korea, Rep.	73.65	86.88	69	Kuwait	2.36	2.43
6	China	70.37	82.99	70	Tajikistan (2005)	2.24	2.29
7	Switzerland (2004)	69.73	82.23	71	El Salvador	1.80	1.76
8	Finland	68.20	80.42	72	Brunei Darussalam (2004)	1.58	1.51
9	Germany	67.92	80.09	73	Panama (2005)	0.42	0.13
10	United States of America (2008)	67.28	79.33	74	Paraguay (2005)	0.31	0.00
11	Sweden	63.95	75.39	n/a	Albania	n/a	n/a
12	Slovenia (2008)	62.81	74.03	n/a	Algeria	n/a	n/a
13	Philippines (2005)	62.62	73.81	n/a	Armenia	n/a	n/a
14	Belgium	61.38	72.34	n/a	Bahrain	n/a	n/a
15	Denmark (2008)	61.15	72.07	n/a	Bangladesh	n/a	n/a
16	Singapore	59.84	70.52	n/a	Benin	n/a	n/a
17	Australia (2006)	58.34	68.74	n/a	Bosnia & Herzegovina	n/a	n/a
18	Hong Kong (SAR), China (2006)	52.79	62.16	n/a	Botswana	n/a	n/a
19	Czech Republic (2008)	52.20	61.46	n/a	Burkina Faso	n/a	n/a
20	Netherlands (2003)	51.06	60.12	n/a	Cambodia	n/a	n/a
21	France (2008)	50.48	59.43	n/a	Cameroon	n/a	n/a
22	Iceland (2008)	50.35	59.27	n/a	Costa Rica	n/a	n/a
23	Ireland	49.59	58.38	n/a	Côte d'Ivoire	n/a	n/a
24	Thailand (2005)	48.65	57.26	n/a	Egypt	n/a	n/a
25	Turkey	48.45	57.02	n/a	Ethiopia	n/a	n/a
26	Canada (2009)	47.47	55.86	n/a	Georgia	n/a	n/a
27	United Kingdom (2008)	47.21	55.56	n/a	Ghana	n/a	n/a
28	Portugal	47.03	55.34	n/a	Guatemala	n/a	n/a
29	Chile (2004)	45.77	53.85	n/a	Guyana	n/a	n/a
30	Spain	45.46	53.48	n/a	Honduras	n/a	n/a
31	Norway	45.25	53.24	n/a	Jamaica	n/a	n/a
32	Mexico	45.13	53.09	n/a	Jordan	n/a	n/a
33	Austria (2009)	44.95	52.88	n/a	Kenya	n/a	n/a
34	South Africa (2006)	44.79	52.69	n/a	Lebanon	n/a	n/a
35	Brazil	44.70	52.58	n/a	Madagascar	n/a	n/a
36	Hungary	43.86	51.59	n/a	Malawi	n/a	n/a
37	Italy	42.02	49.41	n/a	Mali	n/a	n/a
38	Croatia (2008)	40.83	48.00	n/a	Mauritius	n/a	n/a
39	New Zealand	40.14	47.18	n/a	Moldova, Rep.	n/a	n/a
40	Kyrgyzstan (2005)	36.38	42.72	n/a	Namibia	n/a	n/a
41	Slovak Republic (2008)	34.68	40.72	n/a	Nicaragua	n/a	n/a
42	Bulgaria	34.16	40.09	n/a	Niger	n/a	n/a
43	Estonia (2008)	33.64	39.48	n/a	Nigeria	n/a	n/a
44	Greece (2005)	31.06	36.43	n/a	Oman	n/a	n/a
45	Poland (2008)	30.46	35.71	n/a	Pakistan	n/a	n/a
46	Ukraine	30.22	35.43	n/a	Peru	n/a	n/a
47	India	29.63	34.73	n/a	Qatar	n/a	n/a
48	Argentina	29.28	34.31	n/a	Rwanda	n/a	n/a
49	Russian Federation (2008)	28.69	33.62	n/a	Saudi Arabia	n/a	n/a
50	Colombia	27.19	31.84	n/a	Senegal	n/a	n/a
51	Latvia (2008)	27.04	31.66	n/a	Serbia	n/a	n/a
52	Uruguay (2008)	24.65	28.83	n/a	Sudan	n/a	n/a
53	Romania (2008)	23.26	27.19	n/a	Swaziland	n/a	n/a
54	Morocco (2006)	22.70	26.52	n/a	Syrian Arab Republic	n/a	n/a
55	Ecuador	21.55	25.15	n/a	Tanzania	n/a	n/a
56	Lithuania (2008)	21.44	25.02	n/a	Trinidad and Tobago	n/a	n/a
57	Azerbaijan	20.77	24.23	n/a	United Arab Emirates	n/a	n/a
58	Sri Lanka (2006)	19.05	22.19	n/a	Venezuela	n/a	n/a
59	Viet Nam (2002)	18.06	21.03	n/a	Yemen	n/a	n/a
60	Cyprus	16.43	19.09	n/a	Zambia	n/a	n/a
61	Bolivia (2002)	16.00	18.59	n/a	Zimbabwe	n/a	n/a
62	Indonesia (2001)	14.69	17.03				
63	Iran (2006)	14.21	16.47				
64	Tunisia (2005)	14.06	16.29				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–09)

## 5.2.1 University/industry collaboration on R&D

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<sup>†</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	United States of America	5.79	79.82	65	Ukraine	3.47	41.14
2	Switzerland	5.71	78.45	66	Latvia	3.46	41.02
3	Finland	5.64	77.36	67	Macedonia	3.46	40.98
4	United Kingdom	5.59	76.55	68	Croatia	3.44	40.72
5	Sweden	5.54	75.74	69	Venezuela	3.43	40.57
6	Singapore	5.44	73.97	70	Tanzania	3.43	40.55
7	Canada	5.40	73.40	71	Uganda	3.40	39.98
8	Denmark	5.34	72.36	72	Malawi	3.39	39.85
9	Germany	5.24	70.61	73	Namibia	3.39	39.78
10	Belgium	5.23	70.44	74	Pakistan	3.37	39.57
11	Netherlands	5.19	69.76	75	Turkey	3.37	39.52
12	Australia	5.13	68.91	76	Burkina Faso	3.33	38.87
13	Israel	5.08	67.96	77	Panama	3.31	38.50
14	Luxembourg	5.06	67.70	78	Philippines	3.27	37.81
15	Iceland	4.97	66.23	79	Mongolia	3.26	37.66
16	Ireland	4.97	66.21	80	Slovak Republic	3.26	37.65
17	Austria	4.92	65.27	81	Bahrain	3.26	37.61
18	Japan	4.86	64.32	82	Mali	3.24	37.37
19	Norway	4.85	64.23	83	Honduras	3.21	36.88
20	New Zealand	4.78	63.03	84	Azerbaijan	3.20	36.66
21	Malaysia	4.70	61.69	85	Mauritius	3.19	36.46
22	Korea, Rep.	4.68	61.35	86	Peru	3.18	36.38
23	South Africa	4.60	60.08	87	Kuwait	3.18	36.35
24	China	4.59	59.78	88	Iran	3.18	36.29
25	Hong Kong (SAR), China	4.57	59.46	89	Ghana	3.15	35.83
26	Qatar	4.52	58.71	90	Jordan	3.13	35.58
27	Costa Rica	4.51	58.48	91	Madagascar	3.11	35.19
28	Czech Republic	4.50	58.26	92	Ethiopia	3.11	35.13
29	Portugal	4.48	57.99	93	Nigeria	3.09	34.89
30	Hungary	4.35	55.82	94	Romania	3.09	34.88
31	Saudi Arabia	4.31	55.11	95	Morocco	3.09	34.88
32	Brazil	4.29	54.91	96	Zimbabwe	3.09	34.87
33	Lithuania	4.25	54.09	97	Benin	3.09	34.84
34	Estonia	4.19	53.20	98	Tajikistan	3.08	34.60
35	Slovenia	4.17	52.89	99	Lebanon	3.05	34.20
36	Indonesia	4.16	52.71	100	Bulgaria	3.04	34.05
37	Chile	4.16	52.59	101	Kazakhstan	3.03	33.78
38	Tunisia	4.08	51.30	102	Greece	3.03	33.77
39	Thailand	4.07	51.09	103	Cameroon	3.00	33.34
40	United Arab Emirates	4.05	50.87	104	El Salvador	2.99	33.20
41	France	4.04	50.59	105	Cambodia	2.98	33.01
42	Cyprus	4.03	50.56	106	Bosnia & Herzegovina	2.95	32.56
43	Spain	3.98	49.65	107	Nicaragua	2.93	32.22
44	Colombia	3.97	49.53	108	Algeria	2.88	31.31
45	Sri Lanka	3.91	48.49	109	Egypt	2.85	30.82
46	Oman	3.87	47.86	110	Guyana	2.84	30.69
47	Senegal	3.86	47.61	111	Ecuador	2.84	30.64
48	Argentina	3.82	47.08	112	Swaziland	2.78	29.71
49	Guatemala	3.79	46.52	113	Armenia	2.77	29.45
50	Kenya	3.79	46.43	114	Moldova, Rep.	2.77	29.43
51	Uruguay	3.75	45.86	115	Bolivia	2.76	29.31
52	India	3.74	45.63	116	Bangladesh	2.73	28.79
53	Mexico	3.72	45.40	117	Paraguay	2.66	27.72
54	Brunei Darussalam	3.70	45.04	118	Côte d'Ivoire	2.62	27.01
55	Russian Federation	3.67	44.48	119	Georgia	2.53	25.46
56	Viet Nam	3.66	44.31	120	Syrian Arab Republic	2.30	21.66
57	Poland	3.63	43.75	121	Albania	2.22	20.31
58	Rwanda	3.59	43.18	122	Kyrgyzstan	2.18	19.70
59	Jamaica	3.59	43.18	n/a	Niger	n/a	n/a
60	Zambia	3.55	42.47	n/a	Sudan	n/a	n/a
61	Trinidad and Tobago	3.50	41.71	n/a	Yemen	n/a	n/a
62	Botswana	3.49	41.43				
63	Italy	3.48	41.37				
64	Serbia	3.47	41.16				

SOURCE: World Economic Forum, *Executive Opinion Survey 2010*

## 5.2.2 State of cluster development

Mean of the average responses to three survey questions: (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.<sup>1</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore	5.14	68.95	65	Turkey	3.46	41.04
2	Finland	5.11	68.56	66	Tanzania	3.46	40.96
3	Japan	5.08	68.01	67	Kazakhstan	3.45	40.89
4	Sweden	4.92	65.34	68	Kuwait	3.45	40.82
5	Luxembourg	4.92	65.26	69	Uruguay	3.45	40.79
6	Italy	4.91	65.15	70	Slovak Republic	3.42	40.32
7	China	4.88	64.62	71	Azerbaijan	3.36	39.25
8	Germany	4.86	64.28	72	Honduras	3.34	39.06
9	Hong Kong (SAR), China	4.81	63.46	73	Estonia	3.32	38.59
10	United States of America	4.80	63.40	74	Argentina	3.29	38.24
11	Switzerland	4.74	62.37	75	Peru	3.26	37.70
12	Viet Nam	4.74	62.25	76	Namibia	3.24	37.39
13	Malaysia	4.73	62.11	77	El Salvador	3.24	37.35
14	Netherlands	4.68	61.35	78	Bosnia & Herzegovina	3.22	37.03
15	Canada	4.60	59.93	79	Iran	3.18	36.40
16	United Kingdom	4.58	59.61	80	Hungary	3.17	36.23
17	Denmark	4.58	59.59	81	Jamaica	3.17	36.22
18	Austria	4.57	59.45	82	Russian Federation	3.15	35.76
19	Qatar	4.51	58.51	83	Trinidad and Tobago	3.14	35.64
20	Indonesia	4.50	58.25	84	Botswana	3.14	35.62
21	Norway	4.48	57.93	85	Nicaragua	3.13	35.57
22	Saudi Arabia	4.42	56.99	86	Croatia	3.13	35.50
23	Bahrain	4.38	56.39	87	Latvia	3.09	34.78
24	United Arab Emirates	4.37	56.24	88	Greece	3.07	34.49
25	Korea, Rep.	4.28	54.69	89	Bulgaria	3.03	33.76
26	France	4.28	54.66	90	Guyana	3.02	33.64
27	Thailand	4.20	53.30	91	Ghana	3.00	33.41
28	Oman	4.19	53.15	92	Senegal	2.99	33.15
29	Belgium	4.16	52.62	93	Macedonia	2.98	33.07
30	Brazil	4.14	52.27	94	Mali	2.98	32.99
31	India	4.11	51.78	95	Lebanon	2.97	32.86
32	Sri Lanka	4.08	51.36	96	Ethiopia	2.97	32.81
33	Ireland	4.07	51.17	97	Georgia	2.95	32.57
34	Cyprus	4.00	50.03	98	Poland	2.92	32.00
35	Panama	4.00	49.97	99	Romania	2.90	31.75
36	Australia	3.97	49.50	100	Lithuania	2.85	30.88
37	Colombia	3.93	48.89	101	Bolivia	2.83	30.58
38	Mauritius	3.90	48.28	102	Armenia	2.83	30.45
39	Czech Republic	3.88	47.94	103	Albania	2.82	30.29
40	Spain	3.88	47.92	104	Syrian Arab Republic	2.81	30.22
41	South Africa	3.87	47.85	105	Ukraine	2.81	30.22
42	Slovenia	3.85	47.43	106	Ecuador	2.79	29.82
43	Cambodia	3.84	47.35	107	Serbia	2.78	29.65
44	Chile	3.84	47.34	108	Uganda	2.77	29.46
45	Kenya	3.83	47.20	109	Swaziland	2.76	29.34
46	Pakistan	3.82	47.06	110	Paraguay	2.74	28.92
47	Costa Rica	3.79	46.44	111	Madagascar	2.73	28.79
48	Iceland	3.78	46.42	112	Benin	2.72	28.70
49	Guatemala	3.76	45.95	113	Tajikistan	2.65	27.45
50	Nigeria	3.74	45.69	114	Zimbabwe	2.62	26.97
51	Malawi	3.71	45.11	115	Algeria	2.52	25.38
52	New Zealand	3.63	43.86	116	Kyrgyzstan	2.49	24.78
53	Rwanda	3.63	43.81	117	Cameroon	2.47	24.52
54	Mexico	3.62	43.67	118	Moldova, Rep.	2.45	24.23
55	Portugal	3.62	43.66	119	Mongolia	2.39	23.21
56	Tunisia	3.60	43.35	120	Côte d'Ivoire	2.33	22.10
57	Philippines	3.57	42.85	121	Burkina Faso	2.30	21.69
58	Egypt	3.57	42.84	122	Venezuela	2.30	21.61
59	Brunei Darussalam	3.55	42.43	n/a	Niger	n/a	n/a
60	Bangladesh	3.53	42.14	n/a	Sudan	n/a	n/a
61	Morocco	3.52	41.98	n/a	Yemen	n/a	n/a
62	Zambia	3.49	41.50				
63	Israel	3.49	41.42				
64	Jordan	3.47	41.18				

SOURCE: World Economic Forum, *Executive Opinion Survey 2010*

## 5.2.3 GERD financed by abroad

Gross expenditure on R&D (GERD) financed by abroad (% of total)<sup>a</sup> | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Panama (2005)	58.94	100.00	65	China	1.35	4.74
2	Uganda	50.72	100.00	66	Pakistan	0.95	3.34
3	Guatemala	50.47	100.00	67	Kuwait (2004)	0.78	2.73
4	Cambodia (2002)	28.44	100.00	68	Argentina	0.65	2.27
5	Ethiopia	27.00	94.91	69	Turkey	0.51	1.79
6	Burkina Faso	24.52	86.20	70	Japan	0.33	1.17
7	Latvia (2008)	23.12	81.26	71	Korea, Rep.	0.22	0.78
8	Greece (2005)	18.99	66.75	72	Tajikistan (2001)	0.20	0.69
9	United Kingdom (2008)	17.57	61.75	73	Malaysia (2006)	0.19	0.68
10	Ukraine	15.92	55.95	74	Azerbaijan	0.10	0.36
11	Ireland	15.89	55.86	75	Brunei Darussalam (2004)	0.00	0.00
12	Estonia (2008)	15.51	54.53	75	Kazakhstan (2009)	0.00	0.00
13	Lithuania (2008)	15.50	54.51	75	Kyrgyzstan (2005)	0.00	0.00
14	Austria (2009)	14.80	52.02	75	United States of America (2008)	0.00	0.00
15	Cyprus	14.55	51.14	n/a	Albania	n/a	n/a
16	Paraguay (2005)	14.17	49.80	n/a	Algeria	n/a	n/a
17	Bolivia (2002)	14.00	49.22	n/a	Bahrain	n/a	n/a
18	Belgium	13.00	45.72	n/a	Bangladesh	n/a	n/a
19	Slovak Republic (2008)	12.29	43.20	n/a	Benin	n/a	n/a
20	Armenia	11.28	39.67	n/a	Bosnia & Herzegovina	n/a	n/a
21	Netherlands (2003)	11.28	39.66	n/a	Botswana	n/a	n/a
22	Hungary	11.08	38.97	n/a	Brazil	n/a	n/a
23	South Africa (2006)	10.57	37.17	n/a	Cameroon	n/a	n/a
24	Tunisia (2005)	10.42	36.62	n/a	Costa Rica	n/a	n/a
25	Iceland (2008)	10.04	35.30	n/a	Côte d'Ivoire	n/a	n/a
26	Denmark (2008)	9.71	34.13	n/a	Egypt	n/a	n/a
27	Italy	9.52	33.49	n/a	Georgia	n/a	n/a
28	Canada (2009)	9.32	32.77	n/a	Ghana	n/a	n/a
29	Sweden	9.32	32.75	n/a	Guyana	n/a	n/a
30	Chile (2004)	8.65	30.42	n/a	Honduras	n/a	n/a
31	Macedonia (2002)	8.55	30.07	n/a	India	n/a	n/a
32	Madagascar	8.36	29.39	n/a	Indonesia	n/a	n/a
33	Norway	8.31	29.22	n/a	Iran	n/a	n/a
34	France (2008)	7.99	28.09	n/a	Jamaica	n/a	n/a
35	Croatia (2008)	7.86	27.62	n/a	Jordan	n/a	n/a
36	Bulgaria	7.60	26.74	n/a	Kenya	n/a	n/a
37	El Salvador	7.38	25.96	n/a	Lebanon	n/a	n/a
38	Spain	7.01	24.65	n/a	Malawi	n/a	n/a
39	Ecuador	6.98	24.55	n/a	Mali	n/a	n/a
40	Finland	6.52	22.91	n/a	Mauritius	n/a	n/a
41	Viet Nam (2002)	6.33	22.25	n/a	Namibia	n/a	n/a
42	Russian Federation (2008)	5.94	20.90	n/a	Nicaragua	n/a	n/a
43	Luxembourg	5.66	19.91	n/a	Niger	n/a	n/a
44	Slovenia (2008)	5.59	19.65	n/a	Nigeria	n/a	n/a
45	Portugal	5.44	19.11	n/a	Oman	n/a	n/a
46	Poland (2008)	5.42	19.05	n/a	Peru	n/a	n/a
47	Czech Republic (2008)	5.35	18.80	n/a	Qatar	n/a	n/a
48	Switzerland (2004)	5.23	18.38	n/a	Rwanda	n/a	n/a
49	Sri Lanka (2006)	4.82	16.96	n/a	Saudi Arabia	n/a	n/a
50	New Zealand	4.81	16.92	n/a	Senegal	n/a	n/a
51	Philippines (2005)	4.77	16.75	75	Serbia	n/a	n/a
52	Singapore	4.33	15.21	n/a	Sudan	n/a	n/a
53	Colombia	4.09	14.39	n/a	Swaziland	n/a	n/a
54	Germany	4.01	14.11	n/a	Syrian Arab Republic	n/a	n/a
55	Romania (2008)	3.97	13.95	n/a	Tanzania	n/a	n/a
56	Hong Kong (SAR), China (2006)	3.88	13.65	n/a	Trinidad and Tobago	n/a	n/a
57	Israel (2006)	3.02	10.62	n/a	United Arab Emirates	n/a	n/a
58	Moldova, Rep.	2.68	9.41	n/a	Venezuela	n/a	n/a
59	Morocco (2006)	2.61	9.19	n/a	Yemen	n/a	n/a
60	Australia (2006)	2.41	8.47	n/a	Zambia	n/a	n/a
61	Uruguay (2008)	2.28	8.00	n/a	Zimbabwe	n/a	n/a
62	Thailand (2005)	1.84	6.45				
63	Mongolia	1.63	5.71				
64	Mexico	1.38	4.84				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–09)



## 5.2.4 Joint ventures / strategic alliances deals

Joint ventures / strategic alliances: number of deals, fractional counting (per trillion GDP, 2005 PPP\$)<sup>a</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Australia	119.78	100.00	65	Turkey	4.17	4.87
2	Canada	97.03	100.00	66	Egypt	3.51	4.09
3	Singapore	85.76	100.00	67	Austria	3.45	4.02
4	Hong Kong (SAR), China	82.14	95.78	68	Mexico	3.37	3.93
5	Mongolia	58.53	68.25	69	Nigeria	1.62	1.88
6	Luxembourg	58.34	68.03	70	Colombia	1.35	1.57
7	Cambodia	58.26	67.94	71	Pakistan	1.24	1.45
8	Malaysia	49.60	57.83	72	Iran	0.65	0.76
9	Finland	48.68	56.76	73	Albania	0.00	0.00
10	Philippines	48.45	56.50	73	Algeria	0.00	0.00
11	Denmark	47.66	55.58	73	Armenia	0.00	0.00
12	New Zealand	46.89	54.68	73	Benin	0.00	0.00
13	Bahrain	46.67	54.42	73	Bolivia	0.00	0.00
14	Iceland	46.12	53.77	73	Bosnia & Herzegovina	0.00	0.00
15	Israel	41.32	48.18	73	Botswana	0.00	0.00
16	United Arab Emirates	38.71	45.13	73	Brunei Darussalam	0.00	0.00
17	Oman	38.47	44.85	73	Cameroon	0.00	0.00
18	Mali	35.70	41.63	73	Costa Rica	0.00	0.00
19	Jordan	33.06	38.55	73	Côte d'Ivoire	0.00	0.00
20	Norway	31.87	37.16	73	Croatia	0.00	0.00
21	Qatar	31.35	36.56	73	Cyprus	0.00	0.00
22	Zambia	29.76	34.70	73	Ecuador	0.00	0.00
23	Switzerland	29.75	34.69	73	El Salvador	0.00	0.00
24	Slovenia	29.59	34.51	73	Ethiopia	0.00	0.00
25	Sweden	27.72	32.33	73	Georgia	0.00	0.00
26	Serbia	27.41	7.99	73	Guatemala	0.00	0.00
27	United Kingdom	25.45	29.67	73	Guyana	0.00	0.00
28	United States of America	24.00	27.98	73	Honduras	0.00	0.00
29	Estonia	23.12	26.96	73	Hungary	0.00	0.00
30	Ireland	21.68	25.28	73	Jamaica	0.00	0.00
31	Burkina Faso	19.63	22.89	73	Kenya	0.00	0.00
32	India	18.91	22.05	73	Kyrgyzstan	0.00	0.00
33	Chile	17.30	20.17	73	Latvia	0.00	0.00
34	Russian Federation	16.23	18.92	73	Lebanon	0.00	0.00
35	Japan	16.13	18.80	73	Lithuania	0.00	0.00
36	Ghana	14.88	17.35	73	Macedonia	0.00	0.00
37	China	14.63	17.06	73	Madagascar	0.00	0.00
38	Korea, Rep.	14.62	17.05	73	Malawi	0.00	0.00
39	France	14.19	16.54	73	Mauritius	0.00	0.00
40	Viet Nam	13.89	16.19	73	Moldova, Rep.	0.00	0.00
41	Thailand	13.21	15.41	73	Morocco	0.00	0.00
42	Netherlands	12.62	14.71	73	Namibia	0.00	0.00
43	Uruguay	12.48	14.55	73	Nicaragua	0.00	0.00
44	Indonesia	11.98	13.96	73	Niger	0.00	0.00
45	Germany	11.86	13.83	73	Panama	0.00	0.00
46	Venezuela	11.54	13.46	73	Paraguay	0.00	0.00
47	Spain	10.59	12.34	73	Peru	0.00	0.00
48	Bangladesh	9.59	11.18	73	Romania	0.00	0.00
49	Tanzania	9.51	11.09	73	Rwanda	0.00	0.00
50	Italy	9.06	10.56	73	Senegal	0.00	0.00
51	Kazakhstan	9.03	10.53	73	Slovak Republic	0.00	0.00
52	South Africa	8.69	10.13	73	Sri Lanka	0.00	0.00
53	Saudi Arabia	8.31	9.69	73	Sudan	0.00	0.00
54	Brazil	8.04	9.38	73	Swaziland	0.00	0.00
55	Poland	7.58	8.84	73	Syrian Arab Republic	0.00	0.00
56	Kuwait	6.87	8.01	73	Tajikistan	0.00	0.00
57	Portugal	6.60	7.70	73	Trinidad and Tobago	0.00	0.00
58	Bulgaria	5.75	6.71	73	Tunisia	0.00	0.00
59	Ukraine	5.68	6.63	73	Uganda	0.00	0.00
60	Greece	5.02	5.85	73	Yemen	0.00	0.00
61	Belgium	4.77	5.56	73	Zimbabwe	0.00	0.00
62	Argentina	4.70	5.48				
63	Azerbaijan	4.34	5.06				
64	Czech Republic	4.31	5.03				

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 PCT published patents with at least one foreign inventor

Percentage of published patents with at least one foreign inventor at the Patent of Cooperation Treaty (PCT), Contracting Parties only (% of total) | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Kyrgyzstan	100.00	100.00	65	Italy	9.04	9.04
1	Namibia	100.00	100.00	66	Korea, Rep.	8.93	8.93
1	Niger	100.00	100.00	67	Brazil	8.48	8.48
1	Oman	100.00	100.00	68	China	8.02	8.02
5	Ecuador	94.12	94.12	69	Philippines	6.25	6.25
6	Luxembourg	93.48	93.48	70	Morocco	5.26	5.26
7	United Arab Emirates	92.31	92.31	70	Serbia	5.26	5.26
8	Costa Rica	83.33	83.33	72	Turkey	3.47	3.47
9	Cyprus	78.79	78.79	73	Albania	0.00	0.00
10	Switzerland	78.69	78.69	73	Armenia	0.00	0.00
11	Singapore	72.87	72.87	73	Bahrain	0.00	0.00
12	Kenya	66.67	66.67	73	Benin	0.00	0.00
13	Iceland	65.15	65.15	73	Botswana	0.00	0.00
14	Ireland	64.34	64.34	73	Burkina Faso	0.00	0.00
15	Netherlands	55.76	55.76	73	Cameroon	0.00	0.00
16	Belgium	54.87	54.87	73	Côte d'Ivoire	0.00	0.00
17	Thailand	51.72	51.72	73	El Salvador	0.00	0.00
18	Azerbaijan	50.00	50.00	73	Ghana	0.00	0.00
18	Peru	50.00	50.00	73	Guatemala	0.00	0.00
18	Trinidad and Tobago	50.00	50.00	73	Honduras	0.00	0.00
21	Finland	44.97	44.97	73	Lithuania	0.00	0.00
22	United States of America	44.89	44.89	73	Macedonia	0.00	0.00
23	Sweden	42.60	42.60	73	Madagascar	0.00	0.00
24	Bosnia & Herzegovina	41.67	41.67	73	Malawi	0.00	0.00
25	Canada	39.60	39.60	73	Mali	0.00	0.00
26	Denmark	36.52	36.52	73	Moldova, Rep.	0.00	0.00
27	Estonia	34.78	34.78	73	Mongolia	0.00	0.00
28	Tunisia	33.33	33.33	73	Nicaragua	0.00	0.00
29	Austria	32.21	32.21	73	Nigeria	0.00	0.00
30	United Kingdom	30.65	30.65	73	Senegal	0.00	0.00
31	New Zealand	30.07	30.07	73	Sudan	0.00	0.00
32	Slovak Republic	30.00	30.00	73	Swaziland	0.00	0.00
32	Sri Lanka	30.00	30.00	73	Syrian Arab Republic	0.00	0.00
34	Norway	26.80	26.80	73	Tajikistan	0.00	0.00
35	Malaysia	26.42	26.42	73	Tanzania	0.00	0.00
36	Australia	25.78	25.78	73	Uganda	0.00	0.00
37	France	25.74	25.74	73	Zambia	0.00	0.00
38	Georgia	25.00	25.00	73	Zimbabwe	0.00	0.00
38	Indonesia	25.00	25.00	n/a	Argentina	n/a	n/a
38	Viet Nam	25.00	25.00	n/a	Bangladesh	n/a	n/a
41	Germany	24.49	24.49	n/a	Bolivia	n/a	n/a
42	Ukraine	24.36	24.36	n/a	Brunei Darussalam	n/a	n/a
43	Japan	22.53	22.53	n/a	Cambodia	n/a	n/a
44	Portugal	21.36	21.36	n/a	Ethiopia	n/a	n/a
45	Spain	18.37	18.37	n/a	Guyana	n/a	n/a
46	Greece	16.90	16.90	n/a	Hong Kong (SAR), China	n/a	n/a
47	Chile	16.13	16.13	n/a	Iran	n/a	n/a
48	Czech Republic	15.86	15.86	n/a	Jamaica	n/a	n/a
49	Kazakhstan	15.79	15.79	n/a	Jordan	n/a	n/a
50	Hungary	15.65	15.65	n/a	Kuwait	n/a	n/a
51	Egypt	14.63	14.63	n/a	Lebanon	n/a	n/a
52	Colombia	14.29	14.29	n/a	Mauritius	n/a	n/a
52	Latvia	14.29	14.29	n/a	Pakistan	n/a	n/a
54	Slovenia	13.93	13.93	n/a	Panama	n/a	n/a
55	South Africa	13.85	13.85	n/a	Paraguay	n/a	n/a
56	India	13.33	13.33	n/a	Qatar	n/a	n/a
56	Romania	13.33	13.33	n/a	Rwanda	n/a	n/a
58	Poland	13.02	13.02	n/a	Saudi Arabia	n/a	n/a
59	Bulgaria	12.00	12.00	n/a	Uruguay	n/a	n/a
60	Mexico	10.87	10.87	n/a	Venezuela	n/a	n/a
61	Croatia	10.81	10.81	n/a	Yemen	n/a	n/a
62	Russian Federation	10.26	10.26				
63	Israel	9.90	9.90				
64	Algeria	9.09	9.09				

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*

## 5.3.1 Royalty and license fees' payments

### Royalty and license fees, payments (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Ireland	15.35	100.00	65	Turkey	0.11	11.74
2	Singapore	6.41	100.00	66	Panama	0.10	11.34
3	Swaziland	3.88	100.00	67	Botswana	0.10	11.05
4	Guyana (2008)	1.94	100.00	68	Latvia	0.10	10.98
5	Hungary	1.03	100.00	69	Côte d'Ivoire (2008)	0.09	10.31
6	Luxembourg	0.89	86.05	70	Italy	0.09	10.27
7	Thailand	0.85	82.75	71	Cambodia	0.09	9.83
8	Korea, Rep.	0.85	82.15	72	Ecuador	0.08	9.60
9	Hong Kong (SAR), China (2008)	0.75	72.76	73	Georgia	0.08	9.30
10	Slovenia	0.60	58.49	74	Lithuania	0.08	9.15
11	Malaysia	0.59	57.47	75	Kenya	0.07	8.67
12	South Africa	0.58	56.91	76	Brunei Darussalam	0.07	8.49
13	Canada	0.58	56.58	77	Senegal (2008)	0.07	8.24
14	Ukraine	0.57	55.60	78	Cameroon (2008)	0.07	8.18
15	Finland	0.54	52.87	79	Namibia	0.06	7.64
16	Netherlands	0.51	50.57	80	Mauritius	0.06	7.46
17	Israel	0.46	45.32	81	Kazakhstan	0.06	7.03
18	Belgium	0.46	44.95	82	Pakistan	0.06	7.01
19	Sweden	0.45	44.58	83	Syrian Arab Republic (2008)	0.06	6.96
20	Argentina	0.43	42.88	84	Morocco	0.05	6.81
21	Germany	0.42	41.96	85	Uruguay	0.05	6.74
22	United Kingdom	0.42	41.39	86	Mexico (2006)	0.05	6.74
23	New Zealand	0.39	39.03	87	Azerbaijan	0.04	5.97
24	Czech Republic	0.38	37.98	88	Benin (2008)	0.04	5.65
25	Jamaica	0.37	37.00	89	Bosnia & Herzegovina	0.04	5.06
26	Poland	0.36	35.69	90	Tunisia	0.03	5.04
27	Croatia	0.34	33.76	91	Iceland (2008)	0.03	4.24
28	Austria	0.34	33.63	92	Uganda	0.02	3.66
29	Serbia	0.33	33.50	93	Rwanda	0.02	3.59
30	Russian Federation	0.33	33.39	94	Mongolia	0.02	3.52
31	Japan	0.33	33.27	95	Mali (2008)	0.02	3.48
32	Australia (2008)	0.29	29.38	96	Bangladesh	0.01	2.95
33	Indonesia	0.28	28.63	97	Paraguay	0.01	2.86
34	Chile	0.28	28.45	98	Ethiopia	0.01	2.67
35	Kyrgyzstan	0.27	26.93	99	Malawi (2002)	0.01	2.56
36	Philippines	0.26	26.54	100	Niger (2008)	0.01	2.23
37	Guatemala	0.25	25.32	101	Zambia	0.00	2.06
38	Bulgaria	0.24	24.58	102	Lebanon	0.00	1.99
39	Estonia	0.24	24.52	103	Burkina Faso (2008)	0.00	1.95
40	Spain	0.24	24.16	104	Tajikistan	0.00	1.89
41	China	0.22	22.81	105	Tanzania (2008)	0.00	1.78
42	Costa Rica	0.22	22.72	106	Sudan (2008)	0.00	1.74
43	Macedonia	0.22	22.54	107	Yemen	-0.02	0.00
44	Portugal	0.22	22.40	n/a	Algeria	n/a	n/a
45	Romania	0.21	21.71	n/a	Armenia	n/a	n/a
46	France	0.20	20.64	n/a	Bahrain	n/a	n/a
47	Greece	0.20	20.56	n/a	Denmark	n/a	n/a
48	Moldova, Rep.	0.20	20.41	n/a	Ghana	n/a	n/a
49	Madagascar (2005)	0.18	18.87	n/a	Iran	n/a	n/a
50	United States of America	0.18	18.70	n/a	Jordan	n/a	n/a
51	Slovak Republic	0.18	18.49	n/a	Kuwait	n/a	n/a
52	Cyprus	0.17	17.74	n/a	Nicaragua	n/a	n/a
53	Brazil	0.16	16.89	n/a	Oman	n/a	n/a
54	Egypt	0.15	16.07	n/a	Qatar	n/a	n/a
55	Norway	0.14	15.47	n/a	Saudi Arabia	n/a	n/a
56	India	0.14	15.22	n/a	Sri Lanka	n/a	n/a
57	Honduras	0.13	13.94	n/a	Switzerland	n/a	n/a
58	El Salvador	0.12	13.45	n/a	Trinidad and Tobago	n/a	n/a
59	Nigeria	0.12	13.17	n/a	United Arab Emirates	n/a	n/a
60	Albania	0.12	13.14	n/a	Viet Nam	n/a	n/a
61	Peru	0.11	12.42	n/a	Zimbabwe	n/a	n/a
62	Colombia	0.11	12.19				
63	Venezuela	0.11	11.98				
64	Bolivia	0.11	11.94				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09)

## 5.3.2 High-tech imports

### High-tech imports net of re-exports (% of total imports net of re-exports) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China	43.05	100.00	65	Kazakhstan	8.16	18.41
2	Malaysia	33.65	100.00	66	Chile	8.08	18.16
3	Singapore	32.33	95.79	67	Guatemala	8.07	18.13
4	China	26.76	77.94	68	Iceland (2010)	7.93	17.67
5	Ireland	26.24	76.29	69	Portugal (2010)	7.92	17.63
6	Paraguay (2010)	22.77	65.18	70	Bahrain (2010)	7.90	17.57
7	Hungary (2010)	19.93	56.09	71	El Salvador	7.77	17.15
8	Mexico	19.28	54.00	72	Nicaragua	7.50	16.30
9	Colombia (2010)	18.27	50.76	73	Slovenia (2010)	7.49	16.27
10	Korea, Rep.	18.15	50.40	74	Trinidad and Tobago	7.46	16.18
11	Thailand (2010)	17.49	48.29	75	Lebanon	7.46	16.18
12	United States of America (2010)	17.31	47.72	76	Moldova, Rep. (2010)	7.32	15.73
13	Czech Republic	17.30	47.67	77	Bulgaria	7.32	15.71
14	Costa Rica (2010)	17.25	47.51	78	United Arab Emirates (2008)	7.28	15.61
15	Argentina	16.77	45.96	79	Côte d'Ivoire	7.27	15.56
16	Rwanda	16.36	44.67	80	Latvia	7.18	15.28
17	Netherlands	16.24	44.29	81	Cyprus	7.08	14.96
18	Switzerland	15.76	42.74	82	Serbia (2010)	6.94	14.50
19	Brazil (2010)	15.67	42.46	83	Pakistan	6.93	14.47
20	Japan (2010)	15.47	41.80	84	Armenia (2010)	6.79	14.03
21	France (2010)	14.77	39.57	85	Jordan (2010)	6.73	13.84
22	Sweden	14.60	39.03	86	Macedonia	6.72	13.81
23	Germany	14.44	38.53	87	Tanzania (2010)	6.52	13.15
24	Australia (2010)	13.92	36.86	88	Nigeria	6.49	13.08
25	United Kingdom (2010)	13.88	36.71	89	Mongolia (2007)	5.82	10.93
26	South Africa (2010)	13.39	35.16	90	Zimbabwe	5.77	10.77
27	Israel	12.98	33.85	91	Egypt (2010)	5.39	9.53
28	Canada (2010)	12.84	33.39	92	Oman (2010)	5.36	9.44
29	New Zealand (2010)	12.68	32.87	93	Bosnia & Herzegovina (2010)	5.31	9.30
30	Azerbaijan	12.56	32.51	94	Sri Lanka (2010)	4.97	8.18
31	Russian Federation (2010)	12.24	31.47	95	Lithuania (2010)	4.96	8.16
32	Romania (2010)	12.19	31.32	96	Jamaica	4.96	8.15
33	Kenya	12.00	30.69	97	Namibia (2008)	4.95	8.14
34	Norway (2010)	11.99	30.68	98	Mali (2008)	4.93	8.07
35	Estonia (2010)	11.69	29.71	99	Madagascar	4.84	7.79
36	Denmark	11.65	29.59	100	Guyana	4.77	7.56
37	Poland	11.62	29.47	101	Cambodia (2008)	4.75	7.49
38	Finland (2010)	11.37	28.69	102	Albania (2010)	4.71	7.36
39	Viet Nam	11.19	28.10	103	Kyrgyzstan (2010)	4.67	7.24
40	Austria	11.16	28.01	104	Zambia (2010)	4.50	6.70
41	Bolivia	10.81	26.90	105	Senegal (2010)	3.82	4.52
42	Peru	10.79	26.84	106	Yemen	3.76	4.32
43	India	10.49	25.88	107	Burkina Faso	3.57	3.73
44	Ecuador	10.44	25.70	108	Syrian Arab Republic (2008)	2.41	0.00
45	Slovak Republic	10.25	25.10	n/a	Bangladesh	n/a	n/a
46	Ethiopia (2010)	10.25	25.10	n/a	Benin	n/a	n/a
47	Uruguay	10.21	24.97	n/a	Botswana	n/a	n/a
48	Malawi (2010)	9.95	24.14	n/a	Brunei Darussalam	n/a	n/a
49	Uganda	9.93	24.06	n/a	Cameroon	n/a	n/a
50	Italy	9.79	23.63	n/a	Georgia	n/a	n/a
51	Turkey	9.78	23.61	n/a	Ghana	n/a	n/a
52	Spain	9.68	23.28	n/a	Indonesia	n/a	n/a
53	Luxembourg (2010)	9.68	23.27	n/a	Iran	n/a	n/a
54	Tunisia	9.46	22.57	n/a	Kuwait	n/a	n/a
55	Saudi Arabia	9.12	21.47	n/a	Morocco	n/a	n/a
56	Mauritius	9.05	21.25	n/a	Philippines	n/a	n/a
57	Greece (2010)	8.85	20.62	n/a	Qatar	n/a	n/a
58	Honduras	8.82	20.52	n/a	Swaziland	n/a	n/a
59	Panama	8.81	20.49	n/a	Tajikistan	n/a	n/a
60	Belgium	8.81	20.48	n/a	Ukraine	n/a	n/a
61	Niger (2008)	8.77	20.38	n/a	Venezuela	n/a	n/a
62	Croatia (2010)	8.52	19.55				
63	Sudan	8.25	18.71				
64	Algeria	8.18	18.47				

SOURCE: United Nations, COMTRADE database (2007–10)

# 5.3.3

## Computer and communications service imports

Computer, communications, and other services imports (% of commercial service imports) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Ireland	75.53	100.00	65	Costa Rica	28.67	37.06
2	Sudan	67.65	89.41	66	Peru	27.94	36.07
3	Kazakhstan	63.49	83.83	67	Ghana	27.70	35.75
4	Finland	62.40	82.36	68	Saudi Arabia	27.59	35.60
5	Azerbaijan	61.66	81.37	69	Côte d'Ivoire	27.21	35.09
6	Sweden	56.19	74.02	70	Australia (2008)	26.70	34.41
7	Hungary	55.91	73.64	71	Cambodia	26.52	34.17
8	Lebanon	54.88	72.27	72	Kenya	26.34	33.93
9	Czech Republic	53.88	70.92	73	South Africa	26.10	33.60
10	Spain	52.46	69.01	74	Zambia	26.04	33.53
11	Netherlands	51.43	67.63	75	Bosnia & Herzegovina	25.34	32.58
12	Romania	50.92	66.94	76	Ukraine	25.02	32.16
13	Croatia	50.57	66.47	77	Honduras	24.89	31.98
14	Italy	50.33	66.15	78	Egypt	24.13	30.97
15	Japan	49.68	65.28	79	Greece	23.82	30.54
16	Brazil	49.42	64.93	80	Moldova, Rep.	23.74	30.44
17	Korea, Rep.	49.13	64.54	81	Hong Kong (SAR), China (2008)	23.73	30.42
18	Israel	48.26	63.37	82	Philippines	23.15	29.65
19	Swaziland	47.69	62.60	83	Tunisia	22.62	28.94
20	Belgium	46.53	61.05	84	Brunei Darussalam	22.39	28.62
21	Switzerland	45.84	60.12	85	Trinidad and Tobago (2008)	22.14	28.29
22	Cameroon	45.18	59.23	86	Ethiopia	21.79	27.82
23	Macedonia	45.03	59.03	87	Rwanda	21.71	27.71
24	Russian Federation	44.76	58.67	88	Uruguay	21.43	27.33
25	Slovenia	44.65	58.52	89	Senegal (2008)	20.98	26.73
26	Germany	43.41	56.86	90	Mongolia	20.76	26.43
27	United Kingdom	42.88	56.14	91	Chile	20.37	25.92
28	Singapore	42.26	55.31	92	Benin (2008)	20.37	25.91
29	Poland	41.47	54.25	93	Lithuania	19.87	25.24
30	Estonia	41.43	54.20	94	Bolivia	19.27	24.44
31	Namibia	40.87	53.44	95	Kyrgyzstan	19.16	24.29
32	France	40.80	53.34	96	Turkey	18.51	23.41
33	Serbia	40.39	52.80	97	Cyprus	18.51	23.41
34	Guyana (2008)	40.20	52.54	98	Ecuador	18.47	23.36
35	Portugal	40.05	52.34	99	Niger (2008)	18.30	23.13
36	Mauritius	39.90	52.14	100	Mali (2008)	17.87	22.55
37	Malaysia	38.31	50.00	101	Uganda	15.84	19.82
38	Tajikistan	38.15	49.79	102	Sri Lanka	15.22	19.00
39	Thailand	37.90	49.46	103	Tanzania	14.79	18.42
40	Austria	37.67	49.15	104	Malawi (2002)	14.74	18.35
41	Slovak Republic	37.36	48.72	105	El Salvador	13.13	16.18
42	Iceland	36.95	48.18	106	Burkina Faso (2008)	12.88	15.85
43	Norway	36.64	47.77	107	Nicaragua	12.76	15.68
44	Oman	35.91	46.78	108	Georgia	12.32	15.10
45	China	35.29	45.95	109	Bahrain	11.53	14.04
46	Bulgaria	34.91	45.44	110	Panama	11.43	13.90
47	Denmark (2004)	34.84	45.35	111	Jordan	10.41	12.53
48	Canada	34.74	45.22	112	Guatemala	9.81	11.72
49	Madagascar (2005)	34.66	45.10	113	Albania	8.88	10.48
50	Yemen	34.65	45.09	114	Armenia	8.34	9.75
51	United States of America	34.65	45.09	115	Bangladesh	7.61	8.78
52	India	34.55	44.96	116	Syrian Arab Republic (2008)	7.39	8.48
53	Nigeria	34.40	44.75	117	Paraguay	2.51	1.93
54	Latvia	34.34	44.68	118	Kuwait	2.09	1.36
55	Jamaica	34.09	44.33	119	Mexico	1.64	0.75
56	New Zealand	33.82	43.97	120	Iran (2000)	1.08	0.00
57	Botswana	33.76	43.90	n/a	Algeria	n/a	n/a
58	Venezuela	33.43	43.45	n/a	Qatar	n/a	n/a
59	Argentina	32.73	42.52	n/a	United Arab Emirates	n/a	n/a
60	Colombia	32.45	42.13	n/a	Viet Nam	n/a	n/a
61	Indonesia	32.22	41.83	n/a	Zimbabwe	n/a	n/a
62	Morocco	30.36	39.33				
63	Pakistan	29.62	38.33				
64	Luxembourg	28.91	37.37				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09)

## 5.3.4 Foreign direct investment net inflows

Foreign direct investment, net inflows (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg	372.58	100.00	65	Botswana	2.13	44.94
2	Hong Kong (SAR), China	24.88	100.00	66	Burkina Faso	2.11	44.84
3	Cyprus	23.59	100.00	67	El Salvador	2.04	44.57
4	Mongolia	14.84	100.00	68	Algeria	2.02	44.50
5	Lebanon	13.91	95.99	69	Israel	1.99	44.36
6	Niger	13.73	95.18	70	Tanzania	1.94	44.13
7	Kazakhstan	11.81	86.89	71	Thailand	1.89	43.90
8	Ireland	11.11	83.83	72	South Africa	1.88	43.85
9	Jordan	9.49	76.84	73	Mexico	1.65	42.89
10	Bulgaria	9.43	76.57	74	Côte d'Ivoire	1.63	42.80
11	Singapore	9.22	75.68	75	Brazil	1.63	42.77
12	Estonia	9.18	75.47	76	Senegal	1.62	42.74
13	Armenia	8.92	74.37	77	Guatemala	1.61	42.69
14	Albania	8.14	70.98	78	China	1.57	42.52
15	Viet Nam	7.82	69.60	79	Cameroon	1.53	42.37
16	Chile	7.76	69.34	80	Canada	1.49	42.18
17	Panama	7.17	66.80	81	Pakistan	1.47	42.11
18	Guyana	7.12	66.58	82	Paraguay	1.44	41.95
19	Nicaragua	7.07	66.36	83	Czech Republic	1.40	41.79
20	Ghana	6.44	63.61	84	Benin	1.39	41.75
21	Madagascar	6.33	63.13	85	Bosnia & Herzegovina	1.38	41.69
22	Georgia	6.13	62.27	86	Italy	1.37	41.67
23	Switzerland	5.61	60.02	87	Turkey	1.37	41.65
24	Zambia	5.46	59.37	88	Malawi	1.28	41.26
25	Namibia	5.29	58.64	89	Argentina	1.27	41.23
26	Cambodia	5.07	57.70	90	Bahrain	1.25	41.13
27	Sudan	4.91	56.97	91	Mali	1.21	40.98
28	Oman	4.79	56.49	92	Philippines	1.21	40.96
29	Croatia	4.68	56.01	93	Portugal	1.21	40.95
30	Costa Rica	4.61	55.67	94	Germany	1.18	40.82
31	Jamaica	4.48	55.13	95	Azerbaijan	1.10	40.49
32	Serbia	4.47	55.09	96	Zimbabwe	1.07	40.34
33	Ukraine	4.24	54.10	97	Sri Lanka	0.96	39.89
34	Netherlands	4.20	53.93	98	United States of America	0.95	39.86
35	Kyrgyzstan	4.14	53.64	99	Denmark	0.94	39.79
36	Tunisia	4.03	53.19	100	Iran	0.91	39.67
37	Uruguay	4.00	53.07	101	Indonesia	0.90	39.63
38	Romania	3.92	52.69	102	Ethiopia	0.78	39.09
39	Uganda	3.76	52.03	103	Brunei Darussalam (2006)	0.77	39.04
40	Peru	3.65	51.54	104	Bangladesh	0.75	38.99
41	Egypt	3.56	51.15	105	Greece	0.73	38.90
42	Honduras	3.49	50.86	106	Malaysia	0.72	38.84
43	United Kingdom	3.35	50.25	107	Lithuania	0.62	38.40
44	Nigeria	3.34	50.21	108	Ecuador	0.55	38.12
45	Trinidad and Tobago	3.34	50.21	109	Iceland	0.50	37.89
46	Poland	3.21	49.62	110	Yemen	0.49	37.85
47	Colombia	3.08	49.06	111	Kenya	0.48	37.80
48	Mauritius	2.99	48.67	112	Spain	0.44	37.64
49	Russian Federation	2.98	48.65	113	Latvia	0.36	37.27
50	Norway	2.95	48.51	114	Tajikistan	0.32	37.10
51	Sweden	2.84	48.03	115	Japan	0.23	36.74
52	Saudi Arabia	2.79	47.83	116	Korea, Rep.	0.18	36.51
53	Syrian Arab Republic	2.75	47.63	117	Finland	0.03	35.83
54	Macedonia	2.69	47.37	118	Kuwait (2008)	0.00	35.71
55	India	2.51	46.60	119	Slovak Republic	-0.04	35.57
56	Australia	2.44	46.30	120	Venezuela	-0.95	31.60
57	Bolivia	2.44	46.29	121	New Zealand	-0.99	31.42
58	Moldova, Rep.	2.37	45.97	122	Slovenia	-1.19	30.55
59	Austria	2.29	45.63	123	Belgium	-8.25	0.00
60	Rwanda	2.28	45.58	n/a	Qatar	n/a	n/a
61	France	2.26	45.53	n/a	United Arab Emirates	n/a	n/a
62	Swaziland	2.19	45.21				
63	Hungary	2.16	45.07				
64	Morocco	2.16	45.06				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2000–09)

# 6.1.1

## Patent applications filed at the national office

Number of patent applications filed by residents at the national office (per billion GDP, 2005 PPP\$) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Korea, Rep.	102.45	100.00	65	Jamaica (2006)	1.10	6.06
2	Japan	77.97	100.00	66	Viet Nam (2005)	1.01	5.58
3	China	27.75	100.00	67	Tajikistan	0.88	4.88
4	Germany	18.12	100.00	68	Uruguay (2008)	0.85	4.68
5	United States of America	17.54	96.81	69	Tunisia (2006)	0.81	4.49
6	New Zealand	14.58	80.48	70	Kenya (2006)	0.75	4.11
7	Moldova, Rep.	14.50	80.01	71	Mexico	0.62	3.40
8	Mongolia (2006)	14.24	78.59	72	Philippines	0.58	3.21
9	Russian Federation	13.26	73.16	73	Zambia (2001)	0.55	3.01
10	Georgia	13.14	72.54	74	Hong Kong (SAR), China	0.54	2.99
11	Kyrgyzstan (2008)	12.52	69.10	75	Pakistan (2008)	0.44	2.42
12	Finland	10.99	60.64	76	Malawi (2000)	0.40	2.21
13	Ukraine	9.22	50.89	77	Indonesia (2006)	0.38	2.09
14	Kazakhstan	9.11	50.28	78	Honduras (2002)	0.37	2.02
15	Iran (2006)	8.76	48.35	79	Algeria (2007)	0.34	1.87
16	Denmark	8.51	46.97	80	Colombia (2007)	0.34	1.86
17	Latvia	8.28	45.72	81	Panama (2000)	0.29	1.61
18	United Kingdom	8.04	44.37	82	Cyprus	0.29	1.61
19	Armenia	7.85	43.32	83	Bangladesh	0.26	1.45
20	Austria	7.80	43.06	84	Saudi Arabia (2007)	0.25	1.37
21	France	7.49	41.32	85	Venezuela (2000)	0.24	1.33
22	Slovenia	7.36	40.61	86	Yemen (2007)	0.22	1.23
23	Israel	7.32	40.38	87	Ethiopia (2007)	0.21	1.13
24	Sweden	7.31	40.31	88	Uganda (2007)	0.19	1.07
25	Iceland	5.90	32.58	89	Peru	0.16	0.89
26	Switzerland	5.89	32.53	90	Mauritius (2008)	0.14	0.76
27	Ireland	5.62	31.03	91	Ecuador (2005)	0.13	0.69
28	Italy	5.51	30.39	92	Guatemala	0.12	0.64
29	Norway	5.41	29.88	93	Trinidad and Tobago (2002)	0.10	0.55
30	Poland	4.55	25.10	94	Burkina Faso (2005)	0.07	0.39
31	Romania	4.55	25.08	95	Madagascar	0.06	0.31
32	Hungary	4.47	24.67	96	Sudan (2007)	0.04	0.22
33	Serbia	4.37	24.13	97	Brunei Darussalam (2010)	0.00	0.00
34	Canada	4.34	23.97	n/a	Albania	n/a	n/a
35	Netherlands	4.28	23.64	n/a	Argentina	n/a	n/a
36	Estonia	3.51	19.40	n/a	Bahrain	n/a	n/a
37	Australia	3.48	19.18	n/a	Benin	n/a	n/a
38	Croatia	3.45	19.05	n/a	Bolivia	n/a	n/a
39	Czech Republic	3.40	18.78	n/a	Botswana	n/a	n/a
40	Singapore	3.27	18.05	n/a	Cambodia	n/a	n/a
41	Azerbaijan (2008)	3.16	17.42	n/a	Cameroon	n/a	n/a
42	Turkey	3.05	16.81	n/a	Costa Rica	n/a	n/a
43	Spain	2.89	15.95	n/a	Côte d'Ivoire	n/a	n/a
44	South Africa	2.82	15.56	n/a	El Salvador	n/a	n/a
45	Bulgaria	2.79	15.37	n/a	Ghana	n/a	n/a
46	Sri Lanka (2008)	2.37	13.05	n/a	Guyana	n/a	n/a
47	Chile (2008)	2.36	13.02	n/a	Kuwait	n/a	n/a
48	Greece	2.34	12.89	n/a	Lebanon	n/a	n/a
49	Brazil (2007)	2.30	12.72	n/a	Mali	n/a	n/a
50	Malaysia (2008)	2.30	12.69	n/a	Namibia	n/a	n/a
51	Macedonia	2.18	12.06	n/a	Niger	n/a	n/a
52	Bosnia & Herzegovina (2008)	2.09	11.55	n/a	Nigeria	n/a	n/a
53	Jordan	1.98	10.95	n/a	Oman	n/a	n/a
54	India (2008)	1.94	10.73	n/a	Paraguay	n/a	n/a
55	Belgium	1.91	10.56	n/a	Qatar	n/a	n/a
56	Lithuania	1.82	10.02	n/a	Rwanda	n/a	n/a
57	Luxembourg	1.75	9.66	n/a	Senegal	n/a	n/a
58	Slovak Republic	1.69	9.33	n/a	Swaziland	n/a	n/a
59	Portugal (2008)	1.63	9.01	n/a	Tanzania	n/a	n/a
60	Thailand (2008)	1.59	8.79	n/a	United Arab Emirates	n/a	n/a
61	Syrian Arab Republic (2006)	1.56	8.61	n/a	Zimbabwe	n/a	n/a
62	Morocco (2008)	1.40	7.73				
63	Nicaragua (2000)	1.29	7.12				
64	Egypt	1.15	6.32				

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–10)

## 6.1.2 Patent applications filed through the PCT

Number of international patent applications filed by residents through the Patent Cooperation Treaty (PCT), Contracting Parties only (per billion GDP, 2005 PPP\$) | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Switzerland	13.04	100.00	65	Kyrgyzstan	0.09	1.07
2	Finland	13.02	100.00	66	Nicaragua	0.07	0.86
3	Sweden	11.02	100.00	67	Kenya	0.07	0.83
4	Japan	8.49	100.00	68	Costa Rica	0.06	0.77
5	Israel	7.79	91.73	69	Oman	0.06	0.73
6	Korea, Rep.	7.78	91.66	70	Zambia	0.06	0.70
7	Luxembourg	7.32	86.27	71	Cameroon	0.05	0.60
8	Netherlands	6.75	79.58	72	Philippines	0.05	0.56
9	Germany	6.65	78.36	73	Romania	0.04	0.51
10	Denmark	6.58	77.56	74	Albania	0.04	0.50
11	Iceland	5.26	61.94	75	Botswana	0.04	0.50
12	Austria	3.93	46.31	76	Bahrain	0.04	0.47
13	France	3.79	44.70	77	Viet Nam	0.04	0.45
14	United States of America	3.50	41.24	78	Guatemala	0.03	0.39
15	Norway	3.08	36.25	79	Trinidad and Tobago	0.03	0.38
16	Belgium	3.02	35.60	80	Côte d'Ivoire	0.03	0.36
17	New Zealand	2.88	33.92	81	Peru	0.03	0.36
18	Singapore	2.80	32.93	82	Azerbaijan	0.03	0.31
19	Ireland	2.74	32.33	83	Indonesia	0.02	0.21
20	Slovenia	2.49	29.29	84	Algeria	0.01	0.14
21	United Kingdom	2.46	28.99	85	Nigeria	0.01	0.08
22	Australia	2.36	27.84	86	Benin	0.00	0.00
23	Canada	2.31	27.21	86	Burkina Faso	0.00	0.00
24	Namibia	2.29	27.04	86	El Salvador	0.00	0.00
25	Cyprus	2.09	24.57	86	Ghana	0.00	0.00
26	Estonia	2.08	24.52	86	Honduras	0.00	0.00
27	Italy	1.66	19.57	86	Madagascar	0.00	0.00
28	China	1.49	17.55	86	Malawi	0.00	0.00
29	Spain	1.41	16.61	86	Mali	0.00	0.00
30	Hungary	1.02	11.97	86	Mongolia	0.00	0.00
31	Malaysia	1.00	11.80	86	Niger	0.00	0.00
32	Latvia	0.90	10.57	86	Senegal	0.00	0.00
33	Croatia	0.69	8.14	86	Sudan	0.00	0.00
34	South Africa	0.64	7.55	86	Swaziland	0.00	0.00
35	Czech Republic	0.59	6.96	86	Tajikistan	0.00	0.00
36	Turkey	0.57	6.74	86	Tanzania	0.00	0.00
37	Portugal	0.51	6.02	86	Uganda	0.00	0.00
38	Bosnia & Herzegovina	0.48	5.60	86	Zimbabwe	0.00	0.00
39	Slovak Republic	0.42	4.98	n/a	Argentina	n/a	n/a
40	Ukraine	0.41	4.87	n/a	Bangladesh	n/a	n/a
41	Chile	0.40	4.68	n/a	Bolivia	n/a	n/a
42	Russian Federation	0.38	4.48	n/a	Brunei Darussalam	n/a	n/a
43	Bulgaria	0.38	4.47	n/a	Cambodia	n/a	n/a
44	India	0.37	4.37	n/a	Ethiopia	n/a	n/a
45	Armenia	0.34	3.99	n/a	Guyana	n/a	n/a
46	Ecuador	0.32	3.80	n/a	Hong Kong (SAR), China	n/a	n/a
47	Poland	0.31	3.68	n/a	Iran	n/a	n/a
48	Greece	0.30	3.59	n/a	Jamaica	n/a	n/a
49	Brazil	0.27	3.15	n/a	Jordan	n/a	n/a
50	Georgia	0.26	3.10	n/a	Kuwait	n/a	n/a
51	Serbia	0.26	3.07	n/a	Lebanon	n/a	n/a
52	Lithuania	0.22	2.59	n/a	Mauritius	n/a	n/a
53	Thailand	0.15	1.72	n/a	Pakistan	n/a	n/a
54	Mexico	0.14	1.69	n/a	Panama	n/a	n/a
55	Syrian Arab Republic	0.13	1.56	n/a	Paraguay	n/a	n/a
56	United Arab Emirates	0.12	1.47	n/a	Qatar	n/a	n/a
57	Colombia	0.12	1.46	n/a	Rwanda	n/a	n/a
58	Morocco	0.12	1.42	n/a	Saudi Arabia	n/a	n/a
59	Tunisia	0.11	1.35	n/a	Uruguay	n/a	n/a
60	Kazakhstan	0.11	1.35	n/a	Venezuela	n/a	n/a
61	Sri Lanka	0.11	1.34	n/a	Yemen	n/a	n/a
62	Egypt	0.11	1.32				
63	Macedonia	0.11	1.32				
64	Moldova, Rep.	0.11	1.27				

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database



# 6.1.3

## Utility model applications filed at the national office

Number of utility model applications filed by residents at the national office (per billion GDP, 2005 PPP\$)<sup>a</sup> | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	China	37.41	100.00	n/a	Botswana	n/a	n/a
2	Ukraine	34.34	100.00	n/a	Brunei Darussalam	n/a	n/a
3	Mongolia (2006)	26.69	100.00	n/a	Burkina Faso	n/a	n/a
4	Moldova, Rep.	25.32	100.00	n/a	Cambodia	n/a	n/a
5	Korea, Rep.	13.52	100.00	n/a	Cameroon	n/a	n/a
6	Tajikistan	10.36	76.53	n/a	Canada	n/a	n/a
7	Estonia	5.92	43.53	n/a	Costa Rica	n/a	n/a
8	Georgia	5.89	43.30	n/a	Côte d'Ivoire	n/a	n/a
9	Czech Republic	5.72	42.01	n/a	Cyprus	n/a	n/a
10	Russian Federation	5.56	40.83	n/a	Egypt	n/a	n/a
11	Germany	5.39	39.61	n/a	El Salvador	n/a	n/a
12	Turkey	3.39	24.71	n/a	Ghana	n/a	n/a
13	Finland (2006)	2.93	21.34	n/a	Guyana	n/a	n/a
14	Thailand (2008)	2.83	20.55	n/a	Iceland	n/a	n/a
15	Armenia	2.77	20.16	n/a	India	n/a	n/a
16	Austria	2.47	17.91	n/a	Iran	n/a	n/a
17	Slovak Republic	2.28	16.47	n/a	Ireland	n/a	n/a
18	Japan	2.06	14.84	n/a	Israel	n/a	n/a
19	Spain	1.97	14.16	n/a	Jamaica	n/a	n/a
20	Bulgaria	1.96	14.08	n/a	Jordan	n/a	n/a
21	Philippines (2008)	1.75	12.54	n/a	Kuwait	n/a	n/a
22	Uruguay (2004)	1.71	12.26	n/a	Latvia	n/a	n/a
23	Croatia	1.68	12.06	n/a	Lebanon	n/a	n/a
24	Brazil (2008)	1.63	11.62	n/a	Lithuania	n/a	n/a
25	Australia (2008)	1.38	9.82	n/a	Luxembourg	n/a	n/a
26	Hungary	1.35	9.59	n/a	Macedonia	n/a	n/a
27	Italy	1.32	9.33	n/a	Madagascar	n/a	n/a
28	Hong Kong (SAR), China	1.32	9.32	n/a	Malawi	n/a	n/a
29	Ethiopia (2007)	1.23	8.71	n/a	Mali	n/a	n/a
30	Denmark (2008)	1.16	8.18	n/a	Mauritius	n/a	n/a
31	Poland	1.15	8.10	n/a	Morocco	n/a	n/a
32	Serbia	0.88	6.06	n/a	Namibia	n/a	n/a
33	Kyrgyzstan (2008)	0.56	3.68	n/a	Netherlands	n/a	n/a
34	Colombia (2007)	0.44	2.79	n/a	New Zealand	n/a	n/a
35	Chile (2008)	0.43	2.74	n/a	Nicaragua	n/a	n/a
36	Portugal (2008)	0.36	2.18	n/a	Niger	n/a	n/a
37	Bosnia & Herzegovina (2003)	0.33	2.00	n/a	Nigeria	n/a	n/a
38	Kazakhstan (2008)	0.33	1.99	n/a	Norway	n/a	n/a
39	Indonesia (2006)	0.33	1.96	n/a	Oman	n/a	n/a
40	Peru	0.32	1.91	n/a	Pakistan	n/a	n/a
41	Romania	0.31	1.88	n/a	Paraguay	n/a	n/a
42	Mexico (2007)	0.29	1.72	n/a	Qatar	n/a	n/a
43	Slovenia	0.28	1.59	n/a	Rwanda	n/a	n/a
44	Viet Nam (2000)	0.27	1.52	n/a	Saudi Arabia	n/a	n/a
45	Kenya (2004)	0.27	1.51	n/a	Senegal	n/a	n/a
46	Guatemala	0.23	1.27	n/a	Singapore	n/a	n/a
47	Venezuela (2000)	0.22	1.17	n/a	South Africa	n/a	n/a
48	Zimbabwe (2008)	0.22	1.14	n/a	Sri Lanka	n/a	n/a
49	Panama (2008)	0.20	1.03	n/a	Sudan	n/a	n/a
50	Honduras (2003)	0.20	1.03	n/a	Swaziland	n/a	n/a
51	Azerbaijan (2008)	0.13	0.49	n/a	Sweden	n/a	n/a
52	Ecuador (2007)	0.11	0.32	n/a	Switzerland	n/a	n/a
53	Malaysia (2008)	0.09	0.23	n/a	Syrian Arab Republic	n/a	n/a
54	Trinidad and Tobago (2003)	0.09	0.18	n/a	Tanzania	n/a	n/a
55	Greece	0.07	0.06	n/a	Tunisia	n/a	n/a
56	France (2007)	0.06	0.00	n/a	Uganda	n/a	n/a
n/a	Albania	n/a	n/a	n/a	United Arab Emirates	n/a	n/a
n/a	Algeria	n/a	n/a	n/a	United Kingdom	n/a	n/a
n/a	Argentina	n/a	n/a	n/a	United States of America	n/a	n/a
n/a	Bahrain	n/a	n/a	n/a	Yemen	n/a	n/a
n/a	Bangladesh	n/a	n/a	n/a	Zambia	n/a	n/a
n/a	Belgium	n/a	n/a	n/a			
n/a	Benin	n/a	n/a	n/a			
n/a	Bolivia	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 (2000–09)

## 6.1.4 Scientific and technical journal articles

Number of scientific and technical journal articles (per billion GDP, 2005 PPP\$) | 2007

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Israel	36.70	100.00	65	Senegal	3.49	9.22
2	Switzerland	32.15	87.56	66	Macedonia	3.35	8.83
3	Sweden	31.16	84.85	67	Morocco	3.15	8.29
4	New Zealand	29.21	79.53	68	Guyana	3.01	7.89
5	Finland	28.18	76.70	69	Mexico	3.00	7.87
6	Denmark	27.68	75.34	70	Madagascar	2.76	7.23
7	Australia	25.00	68.01	71	Burkina Faso	2.75	7.18
8	Slovenia	24.09	65.53	72	Mongolia	2.68	7.01
9	Canada	23.37	63.55	73	Tanzania	2.66	6.95
10	Netherlands	23.15	62.96	74	Niger	2.59	6.74
11	United Kingdom	22.66	61.62	75	Botswana	2.58	6.73
12	Iceland	20.20	54.89	76	Jamaica	2.55	6.63
13	Belgium	19.87	54.00	77	Ethiopia	2.54	6.63
14	Estonia	18.93	51.43	78	Zambia	2.41	6.25
15	Norway	17.75	48.19	79	Malaysia	2.38	6.18
16	Zimbabwe	17.25	46.82	80	Oman	2.25	5.81
17	Greece	16.67	45.24	81	Costa Rica	2.19	5.67
18	Singapore	16.62	45.09	82	Panama	2.15	5.55
19	Spain	16.39	44.48	83	Trinidad and Tobago	2.14	5.52
20	Austria	16.34	44.34	84	Luxembourg	2.05	5.29
21	Germany	16.18	43.90	85	Bahrain	2.05	5.29
22	United States of America	15.93	43.20	86	Bosnia & Herzegovina	2.01	5.16
23	France	15.71	42.63	87	Kuwait	2.00	5.13
24	Czech Republic	15.61	42.35	88	Tajikistan	1.94	4.99
25	Italy	15.54	42.16	89	Pakistan	1.94	4.98
26	Korea, Rep.	15.23	41.31	90	Algeria	1.94	4.98
27	Serbia	14.83	40.21	91	Kyrgyzstan	1.62	4.10
28	Portugal	14.68	39.79	92	Venezuela	1.59	4.01
29	Croatia	14.68	39.79	93	Sri Lanka	1.55	3.92
30	Ireland	13.88	37.61	94	Nigeria	1.55	3.90
31	Hungary	13.65	36.98	95	Azerbaijan	1.53	3.84
32	Japan	13.08	35.42	96	Mali	1.52	3.82
33	Jordan	12.53	33.92	97	Bolivia	1.40	3.51
34	Poland	11.96	32.36	98	Rwanda	1.38	3.45
35	Armenia	10.81	29.23	99	Colombia	1.36	3.40
36	Tunisia	10.43	28.17	100	Viet Nam	1.35	3.38
37	Turkey	9.88	26.69	101	Mauritius	1.29	3.19
38	Bulgaria	9.31	25.13	102	Bangladesh	1.27	3.13
39	Slovak Republic	9.29	25.07	103	Côte d'Ivoire	1.22	3.00
40	China	8.23	22.16	104	Namibia	1.15	2.83
41	Chile	8.02	21.59	105	Saudi Arabia	1.14	2.79
42	Lithuania	7.94	21.39	106	Cambodia	1.04	2.51
43	Moldova, Rep.	7.61	20.48	107	Syrian Arab Republic	0.96	2.30
44	Russian Federation	7.01	18.82	108	United Arab Emirates	0.93	2.20
45	Cyprus	6.92	18.58	109	Brunei Darussalam	0.88	2.07
46	Brazil	6.81	18.29	110	Swaziland	0.83	1.94
47	Argentina	6.81	18.28	111	Nicaragua	0.78	1.81
48	Georgia	6.69	17.95	112	Peru	0.74	1.70
49	Malawi	6.68	17.92	113	Ecuador	0.69	1.57
50	South Africa	6.20	16.63	114	Philippines	0.69	1.56
51	Ukraine	6.07	16.25	115	Kazakhstan	0.66	1.49
52	India	6.02	16.14	116	Albania	0.58	1.25
53	Uruguay	5.99	16.06	117	Qatar	0.56	1.21
54	Iran	5.94	15.92	118	Paraguay	0.48	1.00
55	Lebanon	5.66	15.14	119	Sudan	0.47	0.96
56	Romania	5.41	14.45	120	Guatemala	0.39	0.73
57	Uganda	5.29	14.13	121	Yemen	0.37	0.68
58	Egypt	5.07	13.54	122	Indonesia	0.25	0.35
59	Kenya	4.80	12.79	123	Honduras	0.23	0.29
60	Cameroon	4.14	10.99	124	El Salvador	0.12	0.00
61	Latvia	3.97	10.51	n/a	Hong Kong (SAR), China	n/a	n/a
62	Benin	3.84	10.18				
63	Ghana	3.69	9.77				
64	Thailand	3.52	9.29				

SOURCE: National Science Foundation and 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, 2007 to 2008 (1990 PPP\$) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Qatar	15.13	100.00	65	Peru	1.22	40.21
2	Azerbaijan	9.67	76.53	66	Cameroon	1.08	39.62
3	China	8.40	71.07	67	Cyprus	1.04	39.43
4	Moldova, Rep.	8.08	69.71	68	Thailand	1.01	39.30
5	Uruguay	7.84	68.67	69	Switzerland	0.92	38.93
6	Ethiopia	7.53	67.36	70	Poland	0.74	38.15
7	Armenia	7.50	67.21	71	Slovenia	0.72	38.06
8	Sri Lanka	6.95	64.84	72	Syrian Arab Republic	0.68	37.88
9	Tajikistan	6.94	64.82	73	Netherlands	0.60	37.55
10	Malawi	6.87	64.50	74	France	0.22	35.92
11	Romania	6.80	64.21	75	Iran	0.18	35.75
12	Albania	6.77	64.06	76	Hong Kong (SAR), China	0.15	35.62
13	Uganda	6.07	61.07	77	Côte d'Ivoire	0.11	35.46
14	Niger	5.81	59.93	78	Kazakhstan	0.09	35.36
15	Oman	5.15	57.12	79	Senegal	0.03	35.10
16	Tanzania	4.85	55.82	80	Austria	0.01	35.01
17	Russian Federation	4.78	55.51	81	Mexico	-0.01	34.92
18	Kyrgyzstan	4.75	55.40	82	Australia	-0.06	34.72
19	Bahrain	4.73	55.30	83	Colombia	-0.08	34.64
20	Georgia	4.65	54.97	84	Guatemala	-0.10	34.53
21	India	4.51	54.36	85	Germany	-0.12	34.47
22	Egypt	4.48	54.22	86	Japan	-0.22	34.03
23	Ghana	4.36	53.73	87	Israel	-0.27	33.81
24	Pakistan	4.19	53.00	88	Yemen	-0.38	33.35
25	Viet Nam	4.04	52.33	89	Algeria	-0.40	33.27
26	Brazil	3.90	51.74	90	Portugal	-0.43	33.14
27	Cambodia	3.81	51.33	91	Belgium	-0.45	33.03
28	Zambia	3.78	51.22	92	Finland	-0.55	32.63
29	Bangladesh	3.76	51.15	93	Bosnia & Herzegovina	-0.62	32.33
30	Lithuania	3.49	49.98	94	Kenya	-0.65	32.17
31	Indonesia	3.48	49.95	95	Turkey	-0.71	31.93
32	United Arab Emirates	3.29	49.12	96	Canada	-0.94	30.93
33	Slovak Republic	3.26	49.00	97	Norway	-1.02	30.58
34	Morocco	3.21	48.77	98	Sweden	-1.13	30.11
35	Ecuador	2.81	47.05	99	Italy	-1.35	29.16
36	United States of America	2.66	46.41	100	Ireland	-1.37	29.09
37	Bulgaria	2.64	46.33	101	Costa Rica	-1.84	27.08
38	Sudan	2.62	46.22	102	New Zealand	-1.85	27.02
39	Bolivia	2.60	46.14	103	Denmark	-2.19	25.58
40	Kuwait	2.59	46.10	104	Jamaica	-3.35	20.59
41	Nigeria	2.55	45.95	105	Estonia	-3.79	18.71
42	Argentina	2.53	45.83	106	Singapore	-5.15	12.83
43	Philippines	2.40	45.28	107	Latvia	-5.26	12.35
44	Iceland	2.33	44.98	108	Luxembourg	-5.64	10.73
45	Ukraine	2.30	44.88	109	Zimbabwe	-8.14	0.00
46	South Africa	2.21	44.49	n/a	Benin	n/a	n/a
47	Trinidad and Tobago	2.15	44.24	n/a	Botswana	n/a	n/a
48	Saudi Arabia	2.08	43.90	n/a	Brunei Darussalam	n/a	n/a
49	Mali	2.06	43.84	n/a	El Salvador	n/a	n/a
50	Czech Republic	2.05	43.78	n/a	Guyana	n/a	n/a
51	Malaysia	1.99	43.53	n/a	Honduras	n/a	n/a
52	Madagascar	1.76	42.53	n/a	Lebanon	n/a	n/a
53	Jordan	1.74	42.47	n/a	Mauritius	n/a	n/a
54	Greece	1.71	42.34	n/a	Mongolia	n/a	n/a
55	Tunisia	1.70	42.28	n/a	Namibia	n/a	n/a
56	Burkina Faso	1.69	42.25	n/a	Nicaragua	n/a	n/a
57	Hungary	1.66	42.09	n/a	Panama	n/a	n/a
58	Spain	1.62	41.94	n/a	Paraguay	n/a	n/a
59	Korea, Rep.	1.60	41.85	n/a	Rwanda	n/a	n/a
60	Macedonia	1.48	41.33	n/a	Serbia	n/a	n/a
61	United Kingdom	1.39	40.94	n/a	Swaziland	n/a	n/a
62	Chile	1.35	40.77				
63	Venezuela	1.31	40.60				
64	Croatia	1.29	40.54				

SOURCE: International Labour Organization, LABORSTA Database of Labor Statistics

## 6.2.2 New business density

New registrations of businesses (per 1,000 people ages 15–64) | 2009

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Cyprus	20.30	100.00	65	Jordan	0.74	5.70
2	Hong Kong (SAR), China	19.19	100.00	66	Uganda	0.72	5.58
3	New Zealand	17.08	100.00	67	Ghana (2007)	0.72	5.55
4	Iceland	12.84	100.00	68	Guatemala	0.68	5.28
5	Costa Rica	8.78	68.34	69	Mexico	0.61	4.75
6	Estonia (2007)	8.10	63.09	70	Ukraine	0.60	4.65
7	United Kingdom	8.05	62.66	71	Thailand	0.59	4.58
8	Canada	7.56	58.86	72	Austria	0.58	4.51
9	Singapore	7.40	57.59	73	Bosnia & Herzegovina	0.58	4.50
10	Luxembourg (2007)	7.38	57.45	74	Poland	0.52	4.05
11	Mauritius	7.33	57.05	75	Rwanda	0.51	3.98
12	Bulgaria	7.20	56.08	76	Tajikistan	0.48	3.68
13	Australia (2007)	6.38	49.70	77	Argentina	0.46	3.55
14	Hungary	6.26	48.74	78	Algeria	0.44	3.43
15	Macedonia	5.63	43.84	79	Bolivia	0.43	3.30
16	Switzerland	4.88	37.97	80	Sri Lanka	0.29	2.24
17	Ireland	4.67	36.39	81	Panama	0.26	1.96
18	Latvia	4.62	35.94	82	Senegal	0.22	1.67
19	Denmark	4.57	35.55	83	Cambodia	0.22	1.66
20	Norway (2008)	4.49	34.93	84	Philippines	0.19	1.47
21	Israel (2008)	4.46	34.74	85	Indonesia	0.18	1.40
22	Belgium	4.28	33.33	86	Egypt (2008)	0.13	0.99
23	Slovenia	4.16	32.38	87	India (2008)	0.12	0.88
24	Sweden	4.09	31.80	88	Malawi	0.08	0.59
25	Slovak Republic	4.04	31.43	89	Burkina Faso	0.08	0.56
26	Portugal	3.92	30.51	90	Madagascar	0.07	0.49
27	Romania	3.66	28.48	91	Ethiopia	0.03	0.21
28	Finland	3.37	26.23	92	Pakistan	0.03	0.18
29	Netherlands	3.10	24.12	93	Niger	0.00	0.00
30	France	3.08	23.94	n/a	Bahrain	n/a	n/a
31	Czech Republic	3.00	23.32	n/a	Bangladesh	n/a	n/a
32	Spain	2.92	22.73	n/a	Benin	n/a	n/a
33	Peru	2.65	20.65	n/a	Botswana	n/a	n/a
34	Russian Federation	2.61	20.32	n/a	Brunei Darussalam	n/a	n/a
35	Kazakhstan	2.59	20.13	n/a	Cameroon	n/a	n/a
36	Croatia	2.57	20.03	n/a	China	n/a	n/a
37	Malaysia	2.55	19.81	n/a	Côte d'Ivoire	n/a	n/a
38	Brazil	2.38	18.48	n/a	Ecuador	n/a	n/a
39	Georgia	2.32	18.02	n/a	Guyana	n/a	n/a
40	Lithuania	2.18	16.96	n/a	Honduras	n/a	n/a
41	Chile (2008)	2.12	16.46	n/a	Iran	n/a	n/a
42	Uruguay	2.08	16.15	n/a	Kuwait	n/a	n/a
43	Serbia	1.94	15.09	n/a	Lebanon	n/a	n/a
44	Italy	1.78	13.83	n/a	Mali	n/a	n/a
45	Korea, Rep. (2008)	1.72	13.39	n/a	Mongolia	n/a	n/a
46	Oman	1.67	13.02	n/a	Namibia	n/a	n/a
47	Moldova, Rep.	1.32	10.26	n/a	Nicaragua	n/a	n/a
48	Japan (2008)	1.28	9.97	n/a	Paraguay	n/a	n/a
49	Morocco	1.28	9.94	n/a	Qatar	n/a	n/a
50	Armenia	1.28	9.93	n/a	Saudi Arabia	n/a	n/a
51	Kyrgyzstan	1.26	9.78	n/a	Sudan	n/a	n/a
52	Tunisia	1.23	9.59	n/a	Swaziland	n/a	n/a
53	Germany (2008)	1.19	9.24	n/a	Syrian Arab Republic	n/a	n/a
54	El Salvador	1.19	9.22	n/a	Tanzania	n/a	n/a
55	Greece (2007)	1.18	9.17	n/a	Trinidad and Tobago	n/a	n/a
56	Jamaica	1.16	9.01	n/a	United Arab Emirates	n/a	n/a
57	Colombia	1.07	8.33	n/a	United States of America	n/a	n/a
58	Azerbaijan	0.93	7.22	n/a	Venezuela	n/a	n/a
59	Zambia	0.88	6.85	n/a	Viet Nam	n/a	n/a
60	Turkey	0.87	6.74	n/a	Yemen	n/a	n/a
61	Kenya (2008)	0.85	6.63	n/a	Zimbabwe	n/a	n/a
62	Albania	0.84	6.50				
63	Nigeria	0.79	6.10				
64	South Africa	0.77	5.94				

SOURCE: International Finance Corporation, World Bank *World Development Indicators* database (2007–09)

## 6.2.3 Computer software spending

Total computer software spending (% of GDP)<sup>a</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Switzerland	1.42	100.00	65	Algeria	0.09	5.89
2	Czech Republic	1.36	96.13	66	Ecuador	0.09	5.81
3	Netherlands	1.06	74.92	67	Cameroon	0.08	5.09
4	Sweden	1.03	72.50	68	Bolivia	0.08	5.07
5	Hungary	0.99	69.89	69	Bangladesh	0.08	4.97
6	United Kingdom	0.98	69.08	70	Philippines	0.07	4.69
7	United States of America	0.92	64.75	71	Panama	0.05	3.14
8	South Africa	0.87	61.41	72	Nigeria	0.03	1.63
9	Finland	0.86	60.31	73	Zimbabwe	0.01	0.12
10	Ireland	0.82	57.47	74	Sri Lanka	0.01	0.00
11	Denmark	0.80	56.46	n/a	Albania	n/a	n/a
12	Austria	0.77	53.81	n/a	Armenia	n/a	n/a
13	Belgium	0.76	53.35	n/a	Azerbaijan	n/a	n/a
14	Canada	0.73	51.55	n/a	Bahrain	n/a	n/a
15	Thailand	0.67	47.05	n/a	Benin	n/a	n/a
16	Germany	0.65	45.43	n/a	Bosnia & Herzegovina	n/a	n/a
17	Norway	0.63	44.45	n/a	Botswana	n/a	n/a
18	Spain	0.62	43.69	n/a	Brunei Darussalam	n/a	n/a
19	Singapore	0.61	43.03	n/a	Burkina Faso	n/a	n/a
20	France	0.58	40.73	n/a	Cambodia	n/a	n/a
21	Portugal	0.52	36.10	n/a	Côte d'Ivoire	n/a	n/a
22	Slovenia	0.48	33.66	n/a	Croatia	n/a	n/a
23	Italy	0.47	33.18	n/a	Cyprus	n/a	n/a
24	Poland	0.46	31.86	n/a	El Salvador	n/a	n/a
25	Australia	0.43	30.23	n/a	Estonia	n/a	n/a
26	Slovak Republic	0.43	29.99	n/a	Ethiopia	n/a	n/a
27	Israel	0.41	28.45	n/a	Georgia	n/a	n/a
28	Malaysia	0.36	25.19	n/a	Ghana	n/a	n/a
29	Ukraine	0.34	23.37	n/a	Guatemala	n/a	n/a
30	China	0.34	23.27	n/a	Guyana	n/a	n/a
31	Kenya	0.33	22.98	n/a	Iceland	n/a	n/a
32	Korea, Rep.	0.32	22.17	n/a	Kazakhstan	n/a	n/a
33	Russian Federation	0.30	20.74	n/a	Kyrgyzstan	n/a	n/a
34	Greece	0.28	19.68	n/a	Latvia	n/a	n/a
35	Japan	0.28	19.42	n/a	Lebanon	n/a	n/a
36	New Zealand	0.28	19.40	n/a	Lithuania	n/a	n/a
37	Saudi Arabia	0.26	17.88	n/a	Luxembourg	n/a	n/a
38	Bulgaria	0.25	16.99	n/a	Macedonia	n/a	n/a
39	Hong Kong (SAR), China	0.24	16.42	n/a	Madagascar	n/a	n/a
40	Viet Nam	0.23	15.81	n/a	Malawi	n/a	n/a
41	Romania	0.22	15.23	n/a	Mali	n/a	n/a
42	Tunisia	0.21	14.66	n/a	Mauritius	n/a	n/a
43	Chile	0.20	13.50	n/a	Moldova, Rep.	n/a	n/a
44	Indonesia	0.20	13.48	n/a	Mongolia	n/a	n/a
45	Senegal	0.19	13.13	n/a	Namibia	n/a	n/a
46	Brazil	0.18	12.16	n/a	Nicaragua	n/a	n/a
47	Honduras	0.17	11.55	n/a	Niger	n/a	n/a
48	Turkey	0.16	11.12	n/a	Oman	n/a	n/a
49	Kuwait	0.16	10.72	n/a	Paraguay	n/a	n/a
50	India	0.16	10.58	n/a	Qatar	n/a	n/a
51	Morocco	0.16	10.53	n/a	Rwanda	n/a	n/a
52	Mexico	0.15	10.46	n/a	Serbia	n/a	n/a
53	Pakistan	0.15	10.39	n/a	Sudan	n/a	n/a
54	Argentina	0.14	9.19	n/a	Swaziland	n/a	n/a
55	Iran	0.14	9.16	n/a	Syrian Arab Republic	n/a	n/a
56	Jordan	0.13	9.07	n/a	Tajikistan	n/a	n/a
57	Costa Rica	0.13	9.05	n/a	Tanzania	n/a	n/a
58	United Arab Emirates	0.13	8.86	n/a	Trinidad and Tobago	n/a	n/a
59	Jamaica	0.13	8.81	n/a	Uganda	n/a	n/a
60	Egypt	0.12	8.20	n/a	Yemen	n/a	n/a
61	Peru	0.12	8.16	n/a	Zambia	n/a	n/a
62	Colombia	0.11	7.20				
63	Venezuela	0.09	6.14				
64	Uruguay	0.09	6.12				

SOURCE: World Information Technology and Services Alliance (WITSA); World Bank and OECD GDP estimates, World Bank *World Development Indicators* database

## 6.3.1 Royalty and license fees' receipts

### Royalty and license fees, receipts (% of GDP) | 2009

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Guyana (2008)	3.67	100.00	65	Tajikistan	0.01	1.68
2	Paraguay	2.07	100.00	66	Honduras (2003)	0.01	1.32
3	Sweden	1.16	100.00	67	China	0.01	1.15
4	Ireland	0.75	100.00	68	Ethiopia	0.01	1.01
5	Luxembourg	0.74	99.22	69	Indonesia	0.01	0.94
6	Singapore	0.74	98.43	70	Mongolia	0.00	0.62
7	Finland	0.73	97.77	71	Botswana	0.00	0.60
8	Netherlands	0.69	92.51	72	Azerbaijan	0.00	0.56
9	United States of America	0.64	85.15	73	Pakistan	0.00	0.50
10	Hungary	0.62	82.91	74	Rwanda	0.00	0.37
11	United Kingdom	0.55	73.16	75	Mali (2008)	0.00	0.34
12	Belgium	0.50	67.53	76	Morocco	0.00	0.28
13	Japan	0.43	57.31	77	Costa Rica	0.00	0.27
14	Germany	0.41	55.43	78	Senegal (2008)	0.00	0.25
15	Israel	0.39	52.12	79	El Salvador	0.00	0.25
16	Korea, Rep.	0.38	51.22	80	Cameroon (2008)	0.00	0.23
17	France	0.35	47.49	81	Peru	0.00	0.22
18	Canada	0.24	32.27	82	Côte d'Ivoire (2008)	0.00	0.17
19	Austria	0.20	26.43	83	Philippines	0.00	0.17
20	Hong Kong (SAR), China (2008)	0.18	23.61	84	Swaziland	0.00	0.15
21	Norway	0.17	22.35	85	Lithuania	0.00	0.13
22	Serbia	0.15	19.67	86	Mauritius	0.00	0.06
23	Malaysia	0.14	18.42	87	Burkina Faso (2008)	0.00	0.06
24	Estonia	0.13	17.17	88	Cambodia	0.00	0.05
25	Yemen	0.13	16.97	89	Bangladesh	0.00	0.05
26	New Zealand	0.12	16.25	90	Uruguay	0.00	0.04
27	Romania	0.12	16.04	91	Benin (2008)	0.00	0.04
28	Slovak Republic	0.10	14.02	92	Iceland (2008)	0.00	0.02
29	Ukraine	0.10	13.21	93	Niger (2007)	0.00	0.01
30	Egypt (2007)	0.09	12.52	94	Kazakhstan (2005)	0.00	0.00
31	Kyrgyzstan	0.08	10.87	95	Namibia	0.00	0.00
32	Moldova, Rep.	0.08	10.75	96	Tanzania (2007)	0.00	0.00
33	Jamaica	0.08	10.13	n/a	Algeria	n/a	n/a
34	Mexico	0.07	10.04	n/a	Armenia	n/a	n/a
35	Slovenia	0.07	9.82	n/a	Bahrain	n/a	n/a
36	Bosnia & Herzegovina	0.07	9.73	n/a	Brunei Darussalam	n/a	n/a
37	Spain	0.07	9.55	n/a	Denmark	n/a	n/a
38	Georgia	0.07	9.30	n/a	Ecuador	n/a	n/a
39	Australia (2008)	0.07	9.06	n/a	Ghana	n/a	n/a
40	Macedonia	0.07	8.95	n/a	Iran	n/a	n/a
41	Kenya	0.07	8.76	n/a	Jordan	n/a	n/a
42	Portugal	0.06	8.52	n/a	Kuwait	n/a	n/a
43	Tunisia	0.06	8.47	n/a	Lebanon	n/a	n/a
44	Thailand	0.06	7.37	n/a	Malawi	n/a	n/a
45	Italy	0.05	7.07	n/a	Nicaragua	n/a	n/a
46	Cyprus	0.05	6.94	n/a	Nigeria	n/a	n/a
47	Croatia	0.05	6.86	n/a	Oman	n/a	n/a
48	Czech Republic	0.05	6.78	n/a	Panama	n/a	n/a
49	Albania	0.05	6.36	n/a	Qatar	n/a	n/a
50	Madagascar (2005)	0.05	6.17	n/a	Saudi Arabia	n/a	n/a
51	Russian Federation	0.04	5.37	n/a	Sri Lanka	n/a	n/a
52	Chile	0.04	4.84	n/a	Sudan	n/a	n/a
53	Argentina	0.03	4.61	n/a	Switzerland	n/a	n/a
54	Guatemala	0.03	4.16	n/a	Syrian Arab Republic	n/a	n/a
55	Brazil	0.03	3.69	n/a	Trinidad and Tobago	n/a	n/a
56	Latvia	0.03	3.58	n/a	Turkey	n/a	n/a
57	Poland	0.02	3.18	n/a	United Arab Emirates	n/a	n/a
58	Colombia	0.02	2.76	n/a	Venezuela	n/a	n/a
59	Uganda	0.02	2.54	n/a	Viet Nam	n/a	n/a
60	Bulgaria	0.02	2.54	n/a	Zambia	n/a	n/a
61	South Africa	0.02	2.24	n/a	Zimbabwe	n/a	n/a
62	India	0.01	1.97				
63	Greece	0.01	1.95				
64	Bolivia	0.01	1.93				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2000–09)

## 6.3.2 High-tech exports

High-tech exports net of re-exports (% of total exports net of re-exports) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Singapore	37.37	100.00	65	Russian Federation (2010)	1.45	3.85
2	Malaysia	35.44	94.85	66	Pakistan	1.34	3.58
3	China	29.94	80.11	67	Mauritius	1.29	3.42
4	Korea, Rep.	28.43	76.08	68	Colombia (2010)	1.14	3.04
5	Costa Rica (2010)	24.37	65.22	69	Madagascar	0.98	2.60
6	Switzerland	23.63	63.22	70	Paraguay (2010)	0.92	2.45
7	Ireland	22.62	60.52	71	Albania (2010)	0.91	2.41
8	Israel	22.00	58.88	72	Sri Lanka (2010)	0.75	2.00
9	Hungary (2010)	21.34	57.11	73	Tanzania (2010)	0.70	1.86
10	France (2010)	20.55	55.00	74	Senegal (2010)	0.68	1.80
11	Thailand (2010)	19.07	51.01	75	Syrian Arab Republic (2008)	0.60	1.59
12	Mexico	16.92	45.28	76	Armenia (2010)	0.55	1.44
13	Japan (2010)	16.85	45.09	77	Nicaragua	0.54	1.42
14	Cyprus	16.42	43.94	78	Chile	0.51	1.34
15	United Kingdom (2010)	16.26	43.50	79	Namibia (2008)	0.50	1.33
16	Netherlands	15.70	42.01	80	Niger (2008)	0.50	1.33
17	Czech Republic	15.10	40.39	81	Peru	0.45	1.20
18	United States of America (2010)	14.72	39.38	82	Honduras	0.44	1.17
19	Sweden	14.19	37.97	83	Ethiopia (2010)	0.40	1.07
20	Germany	13.68	36.60	84	Egypt (2010)	0.40	1.05
21	Hong Kong (SAR), China	12.50	33.44	85	Ecuador	0.38	1.00
22	Denmark	12.33	32.98	86	Mongolia (2007)	0.38	0.99
23	Austria	10.81	28.92	87	Zimbabwe	0.35	0.92
24	Finland (2010)	10.04	26.86	88	Jamaica	0.35	0.91
25	Romania (2010)	9.83	26.30	89	Uganda	0.33	0.88
26	Estonia (2010)	9.65	25.82	90	Bolivia	0.28	0.73
27	Belgium	8.67	23.18	91	Kyrgyzstan (2010)	0.23	0.60
28	Canada (2010)	7.35	19.65	92	Malawi (2010)	0.20	0.51
29	Croatia (2010)	6.92	18.52	93	Mali (2008)	0.18	0.45
30	Luxembourg (2010)	6.89	18.42	94	United Arab Emirates (2008)	0.13	0.32
31	Italy	6.81	18.22	95	Panama	0.12	0.32
32	India	6.34	16.94	96	Sudan	0.12	0.30
33	Rwanda	6.26	16.73	97	Nigeria	0.09	0.24
34	Viet Nam	6.19	16.55	98	Cambodia (2008)	0.09	0.22
35	Lithuania (2010)	6.07	16.24	99	Oman (2010)	0.07	0.18
36	Greece (2010)	5.76	15.41	100	Zambia (2010)	0.07	0.16
37	Poland	5.62	15.02	101	Burkina Faso	0.05	0.11
38	Slovak Republic	5.50	14.71	102	Trinidad and Tobago	0.04	0.09
39	Latvia	5.24	14.02	103	Azerbaijan	0.03	0.07
40	Tunisia	5.17	13.82	104	Bahrain (2010)	0.02	0.05
41	Slovenia (2010)	4.94	13.22	105	Saudi Arabia	0.02	0.04
42	Spain	4.89	13.07	106	Algeria	0.01	0.01
43	Lebanon	4.65	12.43	107	Guyana	0.01	0.00
44	El Salvador	4.63	12.39	108	Yemen	0.01	0.00
45	Bulgaria	4.57	12.22	n/a	Bangladesh	n/a	n/a
46	Brazil (2010)	4.36	11.67	n/a	Benin	n/a	n/a
47	Kazakhstan	4.20	11.21	n/a	Botswana	n/a	n/a
48	Norway (2010)	3.75	10.03	n/a	Brunei Darussalam	n/a	n/a
49	Serbia (2010)	3.16	8.44	n/a	Cameroon	n/a	n/a
50	Iceland (2010)	3.08	8.22	n/a	Georgia	n/a	n/a
51	Portugal (2010)	2.92	7.79	n/a	Ghana	n/a	n/a
52	Argentina	2.88	7.70	n/a	Indonesia	n/a	n/a
53	Kenya	2.21	5.89	n/a	Iran	n/a	n/a
54	Moldova, Rep. (2010)	2.20	5.86	n/a	Kuwait	n/a	n/a
55	South Africa (2010)	2.16	5.76	n/a	Morocco	n/a	n/a
56	Australia (2010)	2.15	5.74	n/a	Philippines	n/a	n/a
57	Guatemala	2.08	5.54	n/a	Qatar	n/a	n/a
58	Jordan (2010)	2.06	5.51	n/a	Swaziland	n/a	n/a
59	New Zealand (2010)	2.04	5.45	n/a	Tajikistan	n/a	n/a
60	Côte d'Ivoire	1.90	5.08	n/a	Ukraine	n/a	n/a
61	Macedonia	1.61	4.29	n/a	Venezuela	n/a	n/a
62	Bosnia & Herzegovina (2010)	1.55	4.13				
63	Turkey	1.54	4.10				
64	Uruguay	1.52	4.06				

SOURCE: United Nations, COMTRADE database (2007–10)

## 6.3.3 Computer and communications service exports

Computer, communications, and other services exports (% of commercial service exports) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Finland	77.58	100.00	65	Slovak Republic	26.47	34.11
2	Bangladesh	71.78	92.52	66	Bahrain	25.41	32.75
3	Ireland	70.44	90.79	67	Morocco	24.84	32.02
4	India	70.03	90.26	68	Guatemala	24.38	31.42
5	Israel	68.44	88.22	69	Ghana	24.21	31.21
6	Paraguay	66.74	86.02	70	Sudan	23.82	30.70
7	Kuwait	66.24	85.38	71	Luxembourg	23.30	30.03
8	Philippines	64.68	83.36	72	Ukraine	23.10	29.78
9	Swaziland	64.17	82.72	73	Latvia	22.86	29.47
10	Guyana (2008)	63.80	82.23	74	El Salvador	22.83	29.42
11	Japan	62.19	80.16	75	Colombia	22.50	29.00
12	Sweden	62.12	80.07	76	Australia (2008)	22.47	28.96
13	Côte d'Ivoire	57.40	73.98	77	Bulgaria	22.18	28.59
14	Netherlands	57.18	73.70	78	Chile	22.03	28.39
15	Brazil	56.99	73.46	79	Benin (2008)	22.02	28.38
16	Lebanon	55.59	71.65	80	Niger (2008)	21.39	27.58
17	Romania	55.52	71.56	81	Brunei Darussalam	21.39	27.57
18	Belgium	55.46	71.48	82	Burkina Faso (2008)	21.20	27.33
19	Germany	54.32	70.02	83	Armenia	20.98	27.05
20	Serbia	52.74	67.98	84	New Zealand	20.65	26.61
21	Canada	49.99	64.44	85	Kenya	20.10	25.91
22	China	49.24	63.47	86	Ethiopia	19.83	25.57
23	Argentina	48.41	62.40	87	Tunisia	18.46	23.80
24	Hungary	48.39	62.36	88	Uruguay	18.03	23.24
25	United States of America	46.83	60.37	89	Venezuela	17.67	22.78
26	Singapore	44.19	56.96	90	Bolivia	17.26	22.24
27	Norway	44.12	56.86	91	Egypt	16.79	21.65
28	United Kingdom	44.01	56.73	92	Tanzania	15.56	20.06
29	Tajikistan	43.80	56.45	93	Croatia	14.75	19.01
30	Russian Federation	43.62	56.22	94	South Africa	14.64	18.87
31	Switzerland	43.28	55.78	95	Kazakhstan	13.69	17.64
32	Costa Rica	43.03	55.46	96	Lithuania	13.67	17.62
33	Macedonia	42.90	55.29	97	Uganda	13.61	17.54
34	France	40.75	52.52	98	Cambodia	13.15	16.95
35	Senegal (2008)	40.23	51.85	99	Yemen	12.93	16.67
36	Czech Republic	40.03	51.60	100	Peru	12.01	15.48
37	Pakistan	39.38	50.76	101	Jordan	11.70	15.08
38	Azerbaijan	39.09	50.38	102	Albania	10.97	14.15
39	Hong Kong (SAR), China (2008)	38.56	49.70	103	Jamaica	10.89	14.04
40	Austria	38.22	49.26	104	Ecuador	10.13	13.05
41	Italy	38.07	49.07	105	Greece	9.35	12.05
42	Cameroon	37.51	48.35	106	Zambia	9.17	11.82
43	Denmark (2004)	37.36	48.15	107	Panama	9.12	11.75
44	Poland	37.07	47.78	108	Mongolia	8.94	11.53
45	Spain	36.42	46.94	109	Turkey	8.55	11.02
46	Estonia	35.88	46.24	110	Trinidad and Tobago (2008)	8.44	10.87
47	Moldova, Rep.	34.02	43.84	111	Georgia	8.09	10.42
48	Botswana	32.92	42.43	112	Nicaragua	7.86	10.13
49	Indonesia	32.34	41.69	113	Rwanda	7.73	9.96
50	Iceland	31.40	40.47	114	Syrian Arab Republic (2008)	7.45	9.61
51	Slovenia	31.30	40.34	115	Mexico	6.08	7.84
52	Sri Lanka	31.16	40.16	116	Namibia	3.85	4.96
53	Bosnia & Herzegovina	30.04	38.72	117	Iran (2000)	2.95	3.80
54	Mauritius	30.01	38.68	118	Saudi Arabia	2.80	3.61
55	Mali (2008)	29.87	38.50	119	Nigeria	2.70	3.48
56	Portugal	29.73	38.32	120	Malawi (2002)	0.00	0.00
57	Kyrgyzstan	28.40	36.61	n/a	Algeria	n/a	n/a
58	Korea, Rep.	28.18	36.33	n/a	Qatar	n/a	n/a
59	Madagascar (2005)	28.12	36.25	n/a	United Arab Emirates	n/a	n/a
60	Malaysia	28.03	36.13	n/a	Viet Nam	n/a	n/a
61	Oman	28.01	36.10	n/a	Zimbabwe	n/a	n/a
62	Honduras	27.71	35.72				
63	Thailand	27.09	34.92				
64	Cyprus	26.74	34.46				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank World Development Indicators database (2000–09)



## 6.3.4 Foreign direct investment net outflows

Foreign direct investment, net outflows (% of GDP) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg	428.12	100.00	65	Albania	0.30	48.11
2	Hong Kong (SAR), China	30.39	100.00	66	Jordan	0.29	48.08
3	Cyprus	21.17	100.00	67	Turkey	0.25	47.98
4	Iceland	18.64	100.00	68	Swaziland	0.23	47.92
5	Ireland	10.64	77.36	69	Argentina	0.23	47.91
6	Estonia	8.23	70.54	70	Philippines	0.22	47.89
7	Sweden	7.86	69.50	71	Cambodia	0.18	47.77
8	Norway	7.06	67.23	72	Tunisia	0.18	47.76
9	Switzerland	6.83	66.60	73	Kenya	0.16	47.70
10	Kuwait (2008)	6.14	64.64	74	Brunei Darussalam (2006)	0.15	47.69
11	France	5.55	62.97	75	Ukraine	0.14	47.66
12	Chile	4.88	61.06	76	Macedonia	0.14	47.66
13	Malaysia	4.15	59.01	77	Romania	0.14	47.65
14	Australia (2008)	3.67	57.64	78	Serbia	0.13	47.62
15	Russian Federation	3.61	57.48	79	Moldova, Rep.	0.13	47.61
16	Netherlands	3.55	57.30	80	Nigeria	0.08	47.49
17	Singapore	3.28	56.55	81	Guatemala	0.07	47.46
18	Lebanon	3.26	56.49	82	Paraguay	0.06	47.42
19	Canada	3.02	55.81	83	Sri Lanka	0.05	47.40
20	Kazakhstan	2.70	54.91	84	Ghana	0.03	47.34
21	Trinidad and Tobago (2008)	2.70	54.90	85	Costa Rica	0.03	47.33
22	Hungary	2.13	53.29	86	Bolivia	0.02	47.31
23	Denmark	2.08	53.14	87	Mali (2008)	0.01	47.28
24	Croatia	2.07	53.13	88	Honduras	0.00	47.27
25	Italy	2.07	53.12	89	Uruguay	0.00	47.27
26	United Kingdom	1.97	52.84	90	Botswana	0.00	47.27
27	United States of America	1.90	52.65	91	Bangladesh	0.00	47.26
28	Germany	1.80	52.36	91	Côte d'Ivoire	0.00	47.26
29	Cameroon	1.76	52.24	91	Ecuador	0.00	47.26
30	Finland	1.61	51.80	91	Ethiopia	0.00	47.26
31	Thailand	1.56	51.67	91	Iran (2000)	0.00	47.26
32	Japan	1.47	51.43	91	Madagascar (2002)	0.00	47.26
33	Austria	1.43	51.30	91	Nicaragua	0.00	47.26
34	Colombia	1.32	50.99	91	Panama	0.00	47.26
35	Mongolia	1.28	50.88	91	Rwanda	0.00	47.26
36	Korea, Rep.	1.27	50.85	91	Sudan	0.00	47.26
37	Poland	1.19	50.62	91	Syrian Arab Republic (2008)	0.00	47.26
38	India	1.08	50.31	91	Tajikistan	0.00	47.26
39	Senegal (2008)	0.96	49.97	91	Tanzania	0.00	47.26
40	China	0.88	49.75	91	Uganda	0.00	47.26
41	Oman	0.88	49.74	91	Yemen	0.00	47.26
42	Mexico	0.87	49.72	91	Zambia	0.00	47.26
43	Azerbaijan	0.76	49.41	107	Kyrgyzstan	-0.01	47.24
44	Viet Nam	0.72	49.30	108	Pakistan	-0.01	47.24
45	Czech Republic	0.67	49.17	109	Georgia	-0.01	47.23
46	Greece	0.64	49.06	110	Namibia	-0.03	47.17
47	Armenia	0.61	48.97	111	Bosnia & Herzegovina	-0.06	47.09
48	Burkina Faso (2008)	0.60	48.97	112	Benin (2008)	-0.06	47.09
49	Israel	0.60	48.96	113	Latvia	-0.22	46.65
50	Saudi Arabia	0.57	48.88	114	Bulgaria	-0.29	46.43
51	Venezuela	0.56	48.85	115	New Zealand	-0.48	45.89
52	Indonesia	0.55	48.81	116	El Salvador	-0.62	45.50
53	Lithuania	0.54	48.79	117	Brazil	-0.63	45.47
54	Portugal	0.53	48.77	118	Bahrain	-8.70	22.64
55	Spain	0.53	48.75	119	Belgium	-16.70	0.00
56	Morocco	0.52	48.74	n/a	Algeria	n/a	n/a
57	Jamaica	0.51	48.69	n/a	Guyana	n/a	n/a
58	Slovak Republic	0.47	48.59	n/a	Malawi	n/a	n/a
59	South Africa	0.46	48.56	n/a	Qatar	n/a	n/a
60	Niger (2008)	0.45	48.55	n/a	United Arab Emirates	n/a	n/a
61	Mauritius	0.44	48.51	n/a	Zimbabwe	n/a	n/a
62	Slovenia	0.35	48.24				
63	Peru	0.30	48.12				
64	Egypt	0.30	48.12				

SOURCE: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09)

## 7.1.1

## Trademark registrations filed at the national office

Number of trademark registrations filed by residents at the national office (per billion GDP, 2005 PPP\$) | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Jordan (2007)	164.26	100.00	65	Sudan (2007)	24.38	14.77
2	Costa Rica (2007)	128.52	78.22	66	Denmark	24.11	14.61
3	Moldova, Rep.	113.62	69.14	67	Finland	24.02	14.55
4	Uruguay (2008)	113.10	68.83	68	Japan	23.88	14.47
5	Argentina (2007)	111.88	68.08	69	Croatia (2008)	23.43	14.19
6	Chile (2008)	104.47	63.57	70	Poland	23.18	14.04
7	Guatemala (2007)	102.92	62.62	71	Slovak Republic	22.47	13.61
8	Honduras (2007)	92.76	56.44	72	Greece (2008)	22.42	13.58
9	China	89.85	54.66	73	Kyrgyzstan (2008)	22.17	13.42
10	Nicaragua (2007)	88.01	53.54	74	Cambodia (2007)	22.12	13.39
11	Panama	87.20	53.05	75	Hungary	20.92	12.66
12	Korea, Rep.	87.04	52.95	76	Zambia (2001)	19.38	11.73
13	New Zealand	79.14	48.13	77	Belgium	19.28	11.66
14	Armenia	75.45	45.89	78	Serbia	18.82	11.38
15	Viet Nam (2005)	72.35	44.00	79	Singapore	17.90	10.82
16	Portugal	72.11	43.85	80	United States of America	17.55	10.61
17	Turkey	71.33	43.38	81	Israel (2008)	17.00	10.27
18	Peru (2008)	66.10	40.19	82	Trinidad and Tobago (2002)	16.83	10.17
19	Ecuador (2007)	63.95	38.88	83	United Kingdom	16.50	9.97
20	Venezuela (2000)	57.25	34.80	84	Tajikistan	16.47	9.95
21	Bulgaria	56.16	34.13	85	Canada	16.00	9.67
22	Ukraine	55.86	33.95	86	Norway	14.96	9.03
23	Brazil (2008)	53.32	32.40	87	Bosnia & Herzegovina (2008)	14.76	8.91
24	Estonia	52.77	32.07	88	Ireland	14.63	8.83
25	Bolivia (2007)	51.92	31.55	89	Bahrain	13.72	8.28
26	Australia (2008)	51.88	31.52	90	Russian Federation	13.70	8.26
27	Thailand	50.28	30.55	91	Azerbaijan (2008)	12.91	7.78
28	Indonesia (2006)	49.26	29.93	92	Kazakhstan (2008)	11.28	6.79
29	Morocco (2006)	48.36	29.38	93	Albania (2008)	9.42	5.66
30	Mongolia (2006)	46.87	28.48	94	Algeria (2006)	9.29	5.58
31	Iceland	44.83	27.23	95	Ethiopia (2007)	7.30	4.36
32	France	43.54	26.45	96	Burkina Faso (2005)	2.10	1.19
33	Switzerland	41.45	25.17	97	Brunei Darussalam	1.90	1.07
34	Macedonia (2004)	41.35	25.11	98	Rwanda (2007)	1.57	0.87
35	Romania	40.45	24.56	99	Tanzania (2007)	1.02	0.54
36	Latvia	40.32	24.48	100	Zimbabwe (2001)	0.22	0.05
37	Mexico	40.00	24.29	101	Mauritius (2008)	0.14	0.00
38	Colombia (2007)	39.37	23.90	n/a	Benin	n/a	n/a
39	Sri Lanka (2008)	39.09	23.73	n/a	Botswana	n/a	n/a
40	Lithuania	38.84	23.58	n/a	Cameroon	n/a	n/a
41	Spain	38.41	23.32	n/a	Côte d'Ivoire	n/a	n/a
42	Sweden	38.17	23.18	n/a	Egypt	n/a	n/a
43	Cyprus (2008)	37.78	22.93	n/a	El Salvador	n/a	n/a
44	India (2008)	37.66	22.86	n/a	Ghana	n/a	n/a
45	Malaysia	36.65	22.25	n/a	Guyana	n/a	n/a
46	South Africa	35.05	21.27	n/a	Kuwait	n/a	n/a
47	Iran (2006)	34.97	21.22	n/a	Lebanon	n/a	n/a
48	Hong Kong (SAR), China	34.39	20.87	n/a	Mali	n/a	n/a
49	Yemen (2008)	34.26	20.79	n/a	Namibia	n/a	n/a
50	Luxembourg	33.78	20.50	n/a	Niger	n/a	n/a
51	Czech Republic	33.30	20.21	n/a	Nigeria	n/a	n/a
52	Georgia	32.65	19.81	n/a	Oman	n/a	n/a
53	Madagascar	31.91	19.36	n/a	Paraguay	n/a	n/a
54	Germany	31.05	18.83	n/a	Qatar	n/a	n/a
55	Slovenia	30.86	18.72	n/a	Saudi Arabia	n/a	n/a
56	Jamaica (2007)	30.61	18.57	n/a	Senegal	n/a	n/a
57	Austria	29.94	18.16	n/a	Swaziland	n/a	n/a
58	Philippines	29.86	18.11	n/a	Syrian Arab Republic	n/a	n/a
59	Netherlands	29.26	17.75	n/a	Tunisia	n/a	n/a
60	Kenya (2006)	28.46	17.26	n/a	Uganda	n/a	n/a
61	Bangladesh (2007)	26.92	16.32	n/a	United Arab Emirates	n/a	n/a
62	Pakistan (2008)	26.26	15.92				
63	Italy	26.14	15.84				
64	Malawi (2006)	24.93	15.11				

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09)

# 7.1.2

## Trademark registrations filed through the Madrid System

Number of international trademark registrations filed by residents through the Madrid System, Contracting Parties only (per billion GDP, 2005 PPPs)<sup>a</sup> | 2009

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Switzerland	98.44	100.00	54	Swaziland	0.00	0.00
2	Slovenia	72.47	100.00	54	Tajikistan	0.00	0.00
3	Austria	30.49	100.00	54	Zambia	0.00	0.00
4	Latvia	29.72	97.49	n/a	Argentina	n/a	n/a
5	Serbia	28.76	94.33	n/a	Bangladesh	n/a	n/a
6	Moldova, Rep.	24.56	80.57	n/a	Benin	n/a	n/a
7	Bulgaria	24.20	79.39	n/a	Bolivia	n/a	n/a
8	Hungary	23.30	76.44	n/a	Brazil	n/a	n/a
9	Croatia	20.00	65.60	n/a	Brunei Darussalam	n/a	n/a
10	Czech Republic	19.08	62.58	n/a	Burkina Faso	n/a	n/a
11	Germany	18.80	61.67	n/a	Cambodia	n/a	n/a
12	Denmark	17.20	56.43	n/a	Cameroon	n/a	n/a
13	France	15.75	51.68	n/a	Canada	n/a	n/a
14	Italy	13.78	45.19	n/a	Chile	n/a	n/a
15	Slovak Republic	13.61	44.64	n/a	Colombia	n/a	n/a
16	Iceland	12.91	42.36	n/a	Costa Rica	n/a	n/a
17	Turkey	11.02	36.16	n/a	Côte d'Ivoire	n/a	n/a
18	Finland	9.66	31.70	n/a	Ecuador	n/a	n/a
19	Estonia	9.62	31.55	n/a	El Salvador	n/a	n/a
20	Cyprus	9.21	30.23	n/a	Ethiopia	n/a	n/a
21	Norway	8.63	28.31	n/a	Guatemala	n/a	n/a
22	Ukraine	7.49	24.57	n/a	Guyana	n/a	n/a
23	Macedonia	7.39	24.25	n/a	Honduras	n/a	n/a
24	Sweden	7.27	23.86	n/a	Hong Kong (SAR), China	n/a	n/a
25	Poland	7.16	23.50	n/a	India	n/a	n/a
26	Bosnia & Herzegovina	6.50	21.34	n/a	Indonesia	n/a	n/a
27	Russian Federation	6.20	20.34	n/a	Israel	n/a	n/a
28	Singapore	5.97	19.58	n/a	Jamaica	n/a	n/a
29	Australia	5.67	18.61	n/a	Jordan	n/a	n/a
30	Lithuania	5.55	18.19	n/a	Kuwait	n/a	n/a
31	Portugal	5.13	16.82	n/a	Lebanon	n/a	n/a
32	Spain	4.62	15.16	n/a	Malawi	n/a	n/a
33	Georgia	4.31	14.14	n/a	Malaysia	n/a	n/a
34	United Kingdom	3.87	12.68	n/a	Mali	n/a	n/a
35	Armenia	2.84	9.32	n/a	Mauritius	n/a	n/a
36	Morocco	2.83	9.27	n/a	Mexico	n/a	n/a
37	China	2.24	7.33	n/a	New Zealand	n/a	n/a
38	Romania	2.16	7.07	n/a	Nicaragua	n/a	n/a
39	Mongolia	2.11	6.91	n/a	Niger	n/a	n/a
40	Greece	2.08	6.83	n/a	Nigeria	n/a	n/a
41	Ireland	2.01	6.60	n/a	Pakistan	n/a	n/a
42	Japan	1.91	6.26	n/a	Panama	n/a	n/a
43	Viet Nam	1.76	5.79	n/a	Paraguay	n/a	n/a
44	Korea, Rep.	1.68	5.50	n/a	Peru	n/a	n/a
45	United States of America	1.47	4.81	n/a	Philippines	n/a	n/a
46	Syrian Arab Republic	1.14	3.73	n/a	Qatar	n/a	n/a
47	Kazakhstan	1.09	3.58	n/a	Rwanda	n/a	n/a
48	Egypt	0.94	3.09	n/a	Saudi Arabia	n/a	n/a
49	Iran	0.58	1.90	n/a	Senegal	n/a	n/a
50	Kenya	0.48	1.56	n/a	South Africa	n/a	n/a
51	Azerbaijan	0.38	1.24	n/a	Sri Lanka	n/a	n/a
52	Madagascar	0.34	1.10	n/a	Tanzania	n/a	n/a
53	Sudan	0.07	0.23	n/a	Thailand	n/a	n/a
54	Albania	0.00	0.00	n/a	Trinidad and Tobago	n/a	n/a
54	Algeria	0.00	0.00	n/a	Tunisia	n/a	n/a
54	Bahrain	0.00	0.00	n/a	Uganda	n/a	n/a
54	Belgium	0.00	0.00	n/a	United Arab Emirates	n/a	n/a
54	Botswana	0.00	0.00	n/a	Uruguay	n/a	n/a
54	Ghana	0.00	0.00	n/a	Venezuela	n/a	n/a
54	Kyrgyzstan	0.00	0.00	n/a	Yemen	n/a	n/a
54	Luxembourg	0.00	0.00	n/a	Zimbabwe	n/a	n/a
54	Namibia	0.00	0.00				
54	Netherlands	0.00	0.00				
54	Oman	0.00	0.00				

SOURCE: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2003–09)

## 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<sup>†</sup> | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Sweden	6.33	88.84	65	Mexico	4.45	57.55
2	Korea, Rep.	5.88	81.28	66	Egypt	4.45	57.54
3	Singapore	5.83	80.52	67	Jordan	4.43	57.11
4	France	5.83	80.45	68	Uganda	4.42	56.93
5	United Kingdom	5.82	80.25	69	Mongolia	4.40	56.75
6	Norway	5.76	79.40	70	Azerbaijan	4.38	56.38
7	Iceland	5.74	79.07	71	Hungary	4.33	55.53
8	Canada	5.69	78.08	72	Macedonia	4.33	55.45
9	United States of America	5.67	77.78	73	Philippines	4.32	55.29
10	Switzerland	5.65	77.55	74	Bulgaria	4.30	55.05
11	Germany	5.65	77.42	75	Cameroon	4.28	54.70
12	Estonia	5.56	75.99	76	Pakistan	4.27	54.56
13	United Arab Emirates	5.51	75.11	77	Brunei Darussalam	4.27	54.51
14	Tunisia	5.49	74.81	78	Malawi	4.27	54.49
15	Netherlands	5.45	74.10	79	Argentina	4.26	54.27
16	Portugal	5.43	73.91	80	Zambia	4.24	54.04
17	Finland	5.43	73.86	81	Italy	4.23	53.76
18	Hong Kong (SAR), China	5.41	73.51	82	Trinidad and Tobago	4.22	53.66
19	Qatar	5.41	73.47	83	El Salvador	4.21	53.56
20	Austria	5.39	73.22	84	Cambodia	4.21	53.55
21	Israel	5.36	72.70	85	Poland	4.19	53.11
22	Malaysia	5.35	72.46	86	Benin	4.18	53.01
23	Brazil	5.29	71.57	87	Romania	4.16	52.59
24	Japan	5.26	71.06	88	Slovak Republic	4.15	52.56
25	Chile	5.25	70.79	89	Ukraine	4.11	51.88
26	Rwanda	5.23	70.45	90	Greece	4.10	51.70
27	Australia	5.21	70.24	91	Latvia	4.10	51.61
28	Lithuania	5.19	69.87	92	Russian Federation	4.03	50.54
29	Panama	5.18	69.62	93	Croatia	3.97	49.53
30	Costa Rica	5.17	69.55	94	Bangladesh	3.96	49.37
31	New Zealand	5.11	68.46	95	Guyana	3.94	49.08
32	Saudi Arabia	5.10	68.35	96	Georgia	3.94	49.01
33	Luxembourg	5.09	68.17	97	Ecuador	3.94	49.00
34	China	5.08	68.07	98	Kazakhstan	3.92	48.63
35	India	5.08	68.02	99	Iran	3.90	48.34
36	Denmark	5.05	67.54	100	Venezuela	3.87	47.90
37	Oman	5.03	67.16	101	Namibia	3.84	47.40
38	Uruguay	5.02	66.93	102	Botswana	3.84	47.39
39	Bahrain	5.00	66.67	103	Mali	3.84	47.38
40	Ireland	4.96	66.06	104	Madagascar	3.82	47.02
41	Belgium	4.96	66.05	105	Morocco	3.81	46.81
42	Guatemala	4.94	65.63	106	Lebanon	3.79	46.56
43	Spain	4.91	65.15	107	Bolivia	3.79	46.51
44	Viet Nam	4.91	65.14	108	Kuwait	3.75	45.86
45	Nigeria	4.86	64.28	109	Tajikistan	3.75	45.82
46	Colombia	4.80	63.39	110	Paraguay	3.73	45.56
47	Thailand	4.80	63.25	111	Tanzania	3.72	45.36
48	Turkey	4.78	63.00	112	Armenia	3.68	44.72
49	Peru	4.77	62.87	113	Bosnia & Herzegovina	3.63	43.88
50	Senegal	4.76	62.73	114	Zimbabwe	3.59	43.21
51	Kenya	4.73	62.20	115	Moldova, Rep.	3.56	42.74
52	Mauritius	4.71	61.89	116	Nicaragua	3.50	41.64
53	Sri Lanka	4.71	61.79	117	Ethiopia	3.36	39.39
54	Burkina Faso	4.68	61.35	118	Serbia	3.15	35.75
55	Czech Republic	4.67	61.20	119	Kyrgyzstan	3.11	35.14
56	Cyprus	4.66	60.98	120	Algeria	2.88	31.29
57	Jamaica	4.62	60.41	121	Syrian Arab Republic	2.80	30.06
58	Slovenia	4.61	60.11	122	Swaziland	2.80	30.04
59	South Africa	4.55	59.20	n/a	Niger	n/a	n/a
60	Indonesia	4.55	59.10	n/a	Sudan	n/a	n/a
61	Ghana	4.54	58.99	n/a	Yemen	n/a	n/a
62	Albania	4.52	58.63				
63	Honduras	4.51	58.54				
64	Côte d'Ivoire	4.47	57.89				

SOURCE: World Economic Forum, *Executive Opinion Survey 2010*

# 7.1.4

## ICT and organizational model 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† | 2010

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Sweden	6.03	83.78	65	Azerbaijan	4.04	50.74
2	United States of America	5.64	77.29	66	Egypt	4.04	50.66
3	United Kingdom	5.53	75.51	67	Trinidad and Tobago	4.03	50.42
4	Norway	5.53	75.50	68	Cyprus	4.03	50.42
5	Singapore	5.52	75.28	69	El Salvador	4.02	50.37
6	Canada	5.48	74.71	70	Nigeria	4.01	50.18
7	Qatar	5.43	73.76	71	Philippines	3.99	49.90
8	Finland	5.39	73.24	72	Viet Nam	3.94	48.94
9	Israel	5.35	72.53	73	Malawi	3.93	48.82
10	Netherlands	5.30	71.63	74	Namibia	3.91	48.54
11	Iceland	5.30	71.62	75	Poland	3.89	48.14
12	Malaysia	5.25	70.82	76	Latvia	3.83	47.15
13	France	5.21	70.21	77	Kazakhstan	3.83	47.10
14	Hong Kong (SAR), China	5.19	69.90	78	Ghana	3.80	46.60
15	Germany	5.17	69.42	79	Croatia	3.79	46.57
16	Estonia	5.16	69.41	80	Russian Federation	3.79	46.56
17	Switzerland	5.16	69.38	81	Kuwait	3.79	46.48
18	Saudi Arabia	5.16	69.31	82	Italy	3.79	46.44
19	Korea, Rep.	5.12	68.60	83	Macedonia	3.78	46.29
20	Tunisia	5.11	68.57	84	Slovak Republic	3.72	45.27
21	United Arab Emirates	5.08	67.94	85	Ecuador	3.70	44.99
22	Australia	5.07	67.87	86	Hungary	3.69	44.88
23	Denmark	5.03	67.16	87	Mongolia	3.66	44.30
24	Lithuania	4.92	65.38	88	Morocco	3.64	44.06
25	Brazil	4.89	64.77	89	Ukraine	3.64	44.06
26	Portugal	4.88	64.60	90	Bolivia	3.64	44.04
27	Belgium	4.85	64.24	91	Côte d'Ivoire	3.64	44.01
28	Uruguay	4.84	64.05	92	Iran	3.62	43.69
29	New Zealand	4.82	63.68	93	Nicaragua	3.62	43.66
30	Oman	4.81	63.45	94	Zambia	3.62	43.61
31	Chile	4.80	63.33	95	Uganda	3.61	43.54
32	Rwanda	4.77	62.82	96	Paraguay	3.60	43.27
33	India	4.73	62.12	97	Romania	3.59	43.24
34	Ireland	4.73	62.12	98	Armenia	3.58	43.04
35	Colombia	4.72	62.07	99	Georgia	3.58	43.03
36	China	4.70	61.64	100	Burkina Faso	3.58	42.97
37	Austria	4.70	61.61	101	Mali	3.57	42.83
38	Guatemala	4.69	61.53	102	Bosnia & Herzegovina	3.56	42.67
39	Panama	4.69	61.47	103	Tanzania	3.52	42.05
40	Luxembourg	4.66	60.96	104	Guyana	3.52	42.01
41	Costa Rica	4.65	60.82	105	Moldova, Rep.	3.51	41.89
42	Senegal	4.63	60.48	106	Botswana	3.51	41.84
43	Japan	4.56	59.33	107	Bangladesh	3.50	41.65
44	Spain	4.53	58.84	108	Benin	3.37	39.55
45	Thailand	4.51	58.43	109	Venezuela	3.37	39.53
46	Sri Lanka	4.46	57.66	110	Tajikistan	3.33	38.89
47	Bahrain	4.44	57.25	111	Greece	3.28	37.96
48	Indonesia	4.41	56.80	112	Madagascar	3.27	37.84
49	Albania	4.40	56.75	113	Cambodia	3.27	37.79
50	Peru	4.40	56.59	114	Lebanon	3.26	37.74
51	Honduras	4.39	56.44	115	Cameroon	3.08	34.61
52	Mauritius	4.33	55.48	116	Zimbabwe	3.03	33.84
53	South Africa	4.28	54.69	117	Serbia	3.01	33.49
54	Turkey	4.18	53.07	118	Ethiopia	2.92	31.92
55	Kenya	4.18	53.06	119	Kyrgyzstan	2.79	29.90
56	Jordan	4.18	53.06	120	Syrian Arab Republic	2.71	28.56
57	Brunei Darussalam	4.15	52.50	121	Swaziland	2.60	26.66
58	Pakistan	4.15	52.42	122	Algeria	2.56	25.98
59	Bulgaria	4.14	52.39	n/a	Niger	n/a	n/a
60	Czech Republic	4.14	52.26	n/a	Sudan	n/a	n/a
61	Slovenia	4.07	51.24	n/a	Yemen	n/a	n/a
62	Jamaica	4.06	50.99				
63	Argentina	4.06	50.95				
64	Mexico	4.05	50.86				

SOURCE: World Economic Forum, *Executive Opinion Survey 2010*

# 7.2.1 Recreation and culture

## Recreation and culture (% total individual consumption)<sup>a</sup> | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	New Zealand (2006)	11.23	100.00	65	Moldova, Rep. (2007)	0.53	2.27
2	Austria (2007)	9.85	87.41	66	Armenia	0.37	0.76
3	Singapore (2009)	9.67	85.74	67	Yemen	0.28	0.00
4	Australia	9.35	82.80	n/a	Albania	n/a	n/a
5	Norway (2006)	9.15	80.96	n/a	Algeria	n/a	n/a
6	United Kingdom	9.08	80.37	n/a	Argentina	n/a	n/a
7	Czech Republic	9.07	80.29	n/a	Bahrain	n/a	n/a
8	Finland	8.88	78.51	n/a	Bangladesh	n/a	n/a
9	Japan (2007)	8.55	75.49	n/a	Benin	n/a	n/a
10	Slovenia	8.48	74.87	n/a	Bolivia	n/a	n/a
11	United States of America	8.46	74.68	n/a	Bosnia & Herzegovina	n/a	n/a
12	Estonia	8.33	73.49	n/a	Botswana	n/a	n/a
13	Slovak Republic	8.31	73.29	n/a	Brazil	n/a	n/a
14	Latvia	8.30	73.18	n/a	Brunei Darussalam	n/a	n/a
15	Cyprus	8.24	72.64	n/a	Burkina Faso	n/a	n/a
16	Croatia (2006)	8.19	72.18	n/a	Cambodia	n/a	n/a
17	Greece (2007)	8.06	70.98	n/a	China	n/a	n/a
18	Canada	7.95	69.99	n/a	Costa Rica	n/a	n/a
19	Sweden (2009)	7.86	69.20	n/a	Côte d'Ivoire	n/a	n/a
20	Denmark	7.84	68.98	n/a	Ecuador	n/a	n/a
21	Korea, Rep. (2009)	7.80	68.64	n/a	Egypt	n/a	n/a
22	Lithuania	7.78	68.46	n/a	El Salvador	n/a	n/a
23	Netherlands	7.74	68.08	n/a	Ethiopia	n/a	n/a
24	Spain (2007)	7.56	66.48	n/a	Georgia	n/a	n/a
25	Germany	7.49	65.84	n/a	Guyana	n/a	n/a
26	Luxembourg	7.18	63.03	n/a	Indonesia	n/a	n/a
27	Belgium	7.15	62.69	n/a	Jamaica	n/a	n/a
28	Switzerland (2007)	7.05	61.77	n/a	Jordan	n/a	n/a
29	France (2009)	6.97	61.10	n/a	Kenya	n/a	n/a
30	Hong Kong (SAR), China	6.78	59.36	n/a	Kuwait	n/a	n/a
31	Iceland (2009)	6.69	58.53	n/a	Lebanon	n/a	n/a
32	Poland	6.39	55.78	n/a	Madagascar	n/a	n/a
33	Bulgaria	6.06	52.72	n/a	Mali	n/a	n/a
34	Hungary	6.03	52.47	n/a	Mauritius	n/a	n/a
35	Israel	5.99	52.12	n/a	Morocco	n/a	n/a
36	Serbia	5.87	51.07	n/a	Namibia	n/a	n/a
37	Italy	5.75	49.89	n/a	Nigeria	n/a	n/a
38	Portugal (2006)	5.73	49.71	n/a	Oman	n/a	n/a
39	Chile	5.33	46.09	n/a	Pakistan	n/a	n/a
40	Ireland	5.32	45.98	n/a	Panama	n/a	n/a
41	Venezuela (2006)	5.25	45.38	n/a	Paraguay	n/a	n/a
42	Thailand	5.18	44.71	n/a	Peru	n/a	n/a
43	Malaysia	4.83	41.49	n/a	Philippines	n/a	n/a
44	Mexico	4.78	41.11	n/a	Qatar	n/a	n/a
45	Colombia (2005)	4.66	39.99	n/a	Romania	n/a	n/a
46	Turkey (2009)	3.99	33.88	n/a	Rwanda	n/a	n/a
47	Ukraine (2009)	3.81	32.17	n/a	Saudi Arabia	n/a	n/a
48	Honduras (2006)	3.73	31.51	n/a	Senegal	n/a	n/a
49	Iran (2007)	3.60	30.31	n/a	Sudan	n/a	n/a
50	Sri Lanka	3.58	30.10	n/a	Swaziland	n/a	n/a
51	South Africa (2009)	3.55	29.86	n/a	Syrian Arab Republic	n/a	n/a
52	Guatemala (2007)	3.50	29.37	n/a	Tajikistan	n/a	n/a
53	Ghana (2005)	3.10	25.75	n/a	Tanzania	n/a	n/a
54	Mongolia	2.68	21.91	n/a	Trinidad and Tobago	n/a	n/a
55	Nicaragua (2005)	2.64	21.53	n/a	Tunisia	n/a	n/a
56	Niger (2009)	2.63	21.41	n/a	Uganda	n/a	n/a
57	Macedonia	2.62	21.33	n/a	United Arab Emirates	n/a	n/a
58	Cameroon	1.74	13.33	n/a	Uruguay	n/a	n/a
59	Malawi	1.49	11.04	n/a	Viet Nam	n/a	n/a
60	India	1.34	9.67	n/a	Zambia	n/a	n/a
61	Russian Federation (2009)	1.18	8.22	n/a	Zimbabwe	n/a	n/a
62	Kazakhstan (2009)	1.03	6.87				
63	Azerbaijan (2009)	0.91	5.72				
64	Kyrgyzstan (2009)	0.66	3.49				

SOURCE: United Nations Statistics Division, National Accounts Official Country Data, United Nations database *UNdata* (2003–09)

# 7.2.2

## National feature films produced

Number of national feature films produced (per million people)<sup>a</sup> | 2006

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Luxembourg	25.39	100.00	65	Azerbaijan	0.35	3.85
2	Iceland	19.75	100.00	66	Burkina Faso	0.35	3.82
3	Hong Kong (SAR), China (2007)	7.22	100.00	67	Indonesia (2007)	0.34	3.70
4	Belgium	6.35	87.85	68	Brazil	0.32	3.36
5	Nigeria (2005)	6.19	85.58	69	Panama (2005)	0.31	3.23
6	Estonia	5.21	71.86	70	China (2007)	0.31	3.17
7	Switzerland	5.08	70.01	71	Lithuania	0.29	3.02
8	Sweden	5.07	69.84	72	Peru	0.21	1.88
9	Cyprus	4.73	65.19	73	South Africa	0.21	1.83
10	Hungary	4.57	62.86	74	Kyrgyzstan	0.19	1.60
11	Norway	4.51	62.00	75	Colombia	0.18	1.46
12	Ireland	4.46	61.35	76	Ukraine	0.15	0.99
13	Cambodia	4.40	60.51	77	Viet Nam (2005)	0.14	0.92
14	Austria	3.98	54.70	78	Pakistan (2005)	0.12	0.52
15	Denmark	3.68	50.41	79	Guatemala (2005)	0.08	0.00
16	Finland	3.61	49.42	n/a	Albania	n/a	n/a
17	Czech Republic	3.41	46.63	n/a	Algeria	n/a	n/a
18	Spain	3.40	46.51	n/a	Bahrain	n/a	n/a
19	France	3.31	45.24	n/a	Benin	n/a	n/a
20	Japan (2007)	3.19	43.51	n/a	Bosnia & Herzegovina	n/a	n/a
21	Israel	3.12	42.58	n/a	Botswana	n/a	n/a
22	Portugal	3.02	41.24	n/a	Brunei Darussalam	n/a	n/a
23	Armenia	2.61	35.41	n/a	Costa Rica	n/a	n/a
24	Korea, Rep. (2007)	2.56	34.74	n/a	Côte d'Ivoire	n/a	n/a
25	Singapore	2.27	30.72	n/a	Ecuador	n/a	n/a
26	Canada	2.27	30.64	n/a	El Salvador	n/a	n/a
27	Germany	2.11	28.48	n/a	Ethiopia	n/a	n/a
28	Greece	1.97	26.53	n/a	Georgia	n/a	n/a
29	Italy	1.97	26.46	n/a	Ghana	n/a	n/a
30	Lebanon	1.94	26.05	n/a	Guyana	n/a	n/a
31	United Kingdom	1.77	23.62	n/a	Honduras	n/a	n/a
32	Argentina	1.61	21.46	n/a	Jamaica	n/a	n/a
33	United States of America (2007)	1.50	19.93	n/a	Jordan	n/a	n/a
34	Slovenia	1.49	19.83	n/a	Kazakhstan	n/a	n/a
35	New Zealand	1.43	18.98	n/a	Kenya	n/a	n/a
36	Australia	1.35	17.84	n/a	Kuwait	n/a	n/a
37	Bulgaria	1.30	17.09	n/a	Macedonia	n/a	n/a
38	Netherlands	1.28	16.89	n/a	Madagascar	n/a	n/a
39	India	0.98	12.67	n/a	Malawi	n/a	n/a
40	Poland	0.97	12.48	n/a	Mali	n/a	n/a
41	Malaysia (2008)	0.93	11.86	n/a	Mauritius	n/a	n/a
42	Latvia	0.87	11.14	n/a	Nicaragua	n/a	n/a
43	Romania	0.83	10.58	n/a	Niger	n/a	n/a
44	Moldova, Rep.	0.81	10.23	n/a	Qatar	n/a	n/a
45	Egypt	0.75	9.41	n/a	Rwanda	n/a	n/a
46	Bolivia	0.75	9.38	n/a	Saudi Arabia	n/a	n/a
47	Philippines	0.75	9.35	n/a	Senegal	n/a	n/a
48	Chile	0.67	8.25	n/a	Serbia	n/a	n/a
49	Bangladesh (2005)	0.67	8.23	n/a	Sri Lanka	n/a	n/a
50	Paraguay	0.66	8.21	n/a	Sudan	n/a	n/a
51	Thailand	0.63	7.74	n/a	Swaziland	n/a	n/a
52	Mexico	0.61	7.50	n/a	Syrian Arab Republic	n/a	n/a
53	Uruguay	0.60	7.35	n/a	Tajikistan	n/a	n/a
54	Slovak Republic	0.56	6.69	n/a	Tanzania	n/a	n/a
55	Venezuela	0.52	6.15	n/a	Trinidad and Tobago	n/a	n/a
56	Namibia (2005)	0.50	5.87	n/a	Tunisia	n/a	n/a
57	Turkey	0.49	5.70	n/a	Uganda	n/a	n/a
58	Russian Federation	0.47	5.48	n/a	United Arab Emirates	n/a	n/a
59	Croatia	0.45	5.21	n/a	Yemen	n/a	n/a
60	Morocco	0.39	4.35	n/a	Zambia	n/a	n/a
61	Mongolia	0.39	4.32	n/a	Zimbabwe	n/a	n/a
62	Cameroon	0.38	4.27				
63	Iran (2005)	0.38	4.17				
64	Oman	0.37	4.14				

SOURCE: UNESCO Institute for Statistics, *UIS online database*; World Bank population estimates, *World Development Indicators database* (2005–08)

## 7.2.3 Daily newspapers circulation

Daily newspapers: Total average circulation (per 1,000 literate people)<sup>a</sup> | 2004

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Norway	650.06	100.00	n/a	Algeria	n/a	n/a
2	Sweden	583.56	89.75	n/a	Australia	n/a	n/a
3	Finland	522.71	80.37	n/a	Bahrain	n/a	n/a
4	Switzerland	505.71	77.75	n/a	Bangladesh	n/a	n/a
5	Singapore	488.33	75.07	n/a	Bolivia	n/a	n/a
6	Denmark	456.43	70.15	n/a	Bosnia & Herzegovina	n/a	n/a
7	Netherlands (2001)	392.47	60.30	n/a	Burkina Faso	n/a	n/a
8	Austria	370.58	56.92	n/a	Cambodia	n/a	n/a
9	United Kingdom	354.77	54.48	n/a	Cameroon	n/a	n/a
10	Luxembourg	326.66	50.15	n/a	Canada	n/a	n/a
11	Germany	313.20	48.08	n/a	Côte d'Ivoire	n/a	n/a
12	Hungary	258.40	39.63	n/a	Croatia	n/a	n/a
13	Ireland	231.79	35.53	n/a	Cyprus	n/a	n/a
14	Estonia	226.42	34.70	n/a	Ecuador	n/a	n/a
15	Czech Republic	215.22	32.97	n/a	Egypt	n/a	n/a
16	Slovenia (2002)	204.19	31.27	n/a	Georgia	n/a	n/a
17	France (2005)	202.89	31.07	n/a	Ghana	n/a	n/a
18	Belgium	198.76	30.44	n/a	Greece	n/a	n/a
19	Trinidad and Tobago (2002)	191.85	29.37	n/a	Guatemala	n/a	n/a
20	Latvia	181.68	27.80	n/a	Guyana	n/a	n/a
21	Malaysia	180.70	27.65	n/a	Honduras	n/a	n/a
22	India	174.61	26.71	n/a	Hong Kong (SAR), China	n/a	n/a
23	Spain	173.54	26.55	n/a	Iceland	n/a	n/a
24	Pakistan	162.93	24.91	n/a	Indonesia	n/a	n/a
25	Italy	162.04	24.78	n/a	Iran	n/a	n/a
26	Ukraine	155.19	23.72	n/a	Israel	n/a	n/a
27	Slovak Republic	152.58	23.32	n/a	Jamaica	n/a	n/a
28	Venezuela	147.06	22.47	n/a	Japan	n/a	n/a
29	Poland	139.21	21.26	n/a	Jordan	n/a	n/a
30	Philippines	133.66	20.40	n/a	Kazakhstan	n/a	n/a
31	Lithuania	130.99	19.99	n/a	Kenya	n/a	n/a
32	Mauritius	121.53	18.53	n/a	Korea, Rep.	n/a	n/a
33	Macedonia	115.70	17.63	n/a	Kuwait	n/a	n/a
34	Russian Federation	109.24	16.64	n/a	Madagascar	n/a	n/a
35	Brunei Darussalam	105.31	16.03	n/a	Malawi	n/a	n/a
36	China	104.81	15.95	n/a	Mali	n/a	n/a
37	Panama	102.16	15.55	n/a	Mexico	n/a	n/a
38	Costa Rica	96.06	14.61	n/a	Moldova, Rep.	n/a	n/a
39	Bulgaria	93.59	14.22	n/a	Morocco	n/a	n/a
40	Lebanon	86.50	13.13	n/a	New Zealand	n/a	n/a
41	Romania	86.14	13.08	n/a	Nicaragua	n/a	n/a
42	Botswana	79.94	12.12	n/a	Nigeria	n/a	n/a
43	El Salvador	71.46	10.81	n/a	Oman	n/a	n/a
44	Chile	70.95	10.73	n/a	Paraguay	n/a	n/a
45	Brazil	55.79	8.40	n/a	Peru	n/a	n/a
46	Namibia	54.70	8.23	n/a	Portugal	n/a	n/a
47	South Africa	53.08	7.98	n/a	Qatar	n/a	n/a
48	Swaziland	51.07	7.67	n/a	Rwanda	n/a	n/a
49	Argentina	49.88	7.49	n/a	Saudi Arabia	n/a	n/a
50	Tunisia (2001)	43.94	6.57	n/a	Serbia	n/a	n/a
51	Sri Lanka (2002)	38.89	5.79	n/a	Sudan	n/a	n/a
52	Senegal	38.58	5.75	n/a	Syrian Arab Republic	n/a	n/a
53	Colombia	35.27	5.24	n/a	Tajikistan	n/a	n/a
54	Mongolia	28.54	4.20	n/a	Thailand	n/a	n/a
55	Azerbaijan (2001)	23.64	3.44	n/a	Turkey	n/a	n/a
56	Ethiopia	18.63	2.67	n/a	Uganda	n/a	n/a
57	Yemen	14.31	2.00	n/a	United Arab Emirates	n/a	n/a
58	Zambia	13.22	1.84	n/a	United States of America	n/a	n/a
59	Armenia	9.77	1.30	n/a	Uruguay	n/a	n/a
60	Tanzania	4.15	0.44	n/a	Viet Nam	n/a	n/a
61	Benin	1.90	0.09	n/a	Zimbabwe	n/a	n/a
62	Kyrgyzstan	1.42	0.02				
63	Niger	1.31	0.00				
n/a	Albania	n/a	n/a				

SOURCE: UNESCO Institute for Statistics, *UIS online database* (2001–05)



## 7.2.4 Creative goods exports

Creative goods exports (% of total goods exports) | 2008

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Hong Kong (SAR), China	9.17	100.00	65	Namibia	1.12	12.14
2	Pakistan	6.64	72.36	66	Iran (2006)	1.11	12.06
3	Lebanon	6.24	68.06	67	Hungary	1.01	11.03
4	China	5.94	64.73	68	Korea, Rep.	1.01	11.01
5	Moldova, Rep.	5.78	63.07	69	Israel	0.96	10.47
6	Italy	5.14	56.06	70	Malawi	0.96	10.40
7	Viet Nam	5.01	54.60	71	Rwanda	0.91	9.94
8	Switzerland	4.94	53.89	72	New Zealand	0.89	9.67
9	India	4.86	52.96	73	Japan	0.89	9.66
10	United Kingdom	4.35	47.39	74	Peru	0.83	9.05
11	Turkey	4.07	44.33	75	Ukraine	0.83	8.97
12	Zimbabwe	3.86	42.06	76	Uruguay	0.81	8.81
13	Denmark	3.72	40.55	77	Macedonia (2007)	0.76	8.26
14	Greece	3.69	40.27	78	Nicaragua	0.75	8.16
15	Austria	3.50	38.11	79	Brazil	0.62	6.70
16	Mauritius	3.40	37.09	80	Burkina Faso (2005)	0.58	6.26
17	Czech Republic	3.35	36.47	81	Australia	0.55	5.93
18	Lithuania	3.25	35.44	82	Panama	0.54	5.81
19	Poland	3.09	33.70	83	Paraguay	0.53	5.74
20	Estonia	3.08	33.58	84	South Africa	0.47	5.13
21	Madagascar	2.99	32.61	85	Senegal	0.46	4.99
22	Romania	2.98	32.49	86	Kyrgyzstan (2007)	0.44	4.80
23	Thailand	2.94	32.01	87	Argentina	0.42	4.53
24	Croatia	2.92	31.78	88	Uganda	0.40	4.30
25	France	2.88	31.43	89	Honduras (2007)	0.38	4.16
26	Slovenia	2.88	31.34	90	Russian Federation	0.37	3.98
27	United States of America	2.69	29.31	91	Chile	0.34	3.70
28	Sweden	2.68	29.23	92	Georgia	0.34	3.67
29	Egypt	2.68	29.19	93	Cambodia	0.30	3.26
30	Latvia	2.58	28.11	94	Mongolia (2007)	0.27	2.92
31	Bosnia & Herzegovina	2.56	27.93	95	Norway	0.26	2.79
32	Jordan	2.55	27.74	96	Ethiopia	0.26	2.79
33	Armenia	2.52	27.45	97	Ecuador	0.26	2.76
34	Tanzania	2.50	27.26	98	Nigeria	0.24	2.64
35	Germany	2.39	26.03	99	Bahrain (2007)	0.24	2.60
36	Portugal	2.24	24.45	100	Guyana	0.23	2.46
37	Spain	2.24	24.43	101	Saudi Arabia (2007)	0.22	2.37
38	Albania	2.20	23.92	102	Jamaica	0.15	1.60
39	El Salvador	2.15	23.44	103	Côte d'Ivoire	0.15	1.58
40	Sri Lanka	2.12	23.10	104	Oman	0.12	1.28
41	Syrian Arab Republic (2007)	2.09	22.77	105	Iceland	0.10	1.05
42	Serbia	2.04	22.23	106	Trinidad and Tobago	0.09	0.97
43	Canada	2.04	22.20	107	Kuwait (2007)	0.09	0.92
44	United Arab Emirates	1.99	21.68	108	Niger	0.08	0.88
45	Belgium	1.96	21.37	109	Mali	0.08	0.84
46	Colombia	1.96	21.30	110	Ghana	0.06	0.66
47	Slovak Republic	1.78	19.43	111	Benin (2006)	0.06	0.62
48	Cyprus	1.78	19.37	112	Zambia	0.05	0.47
49	Mexico	1.77	19.28	113	Cameroon (2006)	0.04	0.36
50	Ireland	1.75	19.07	114	Azerbaijan	0.04	0.36
51	Bulgaria	1.69	18.41	115	Qatar	0.03	0.27
52	Malaysia	1.68	18.30	116	Yemen	0.03	0.25
53	Netherlands	1.66	18.04	117	Venezuela	0.02	0.15
54	Singapore	1.49	16.25	118	Kazakhstan	0.02	0.15
55	Bangladesh (2007)	1.44	15.72	119	Algeria	0.00	0.01
56	Bolivia	1.38	14.98	120	Sudan	0.00	0.00
57	Guatemala	1.36	14.78	n/a	Botswana	n/a	n/a
58	Tunisia	1.36	14.77	n/a	Brunei Darussalam	n/a	n/a
59	Luxembourg	1.30	14.11	n/a	Indonesia	n/a	n/a
60	Philippines	1.18	12.82	n/a	Swaziland	n/a	n/a
61	Morocco	1.17	12.73	n/a	Tajikistan	n/a	n/a
62	Kenya	1.17	12.69				
63	Finland	1.16	12.60				
64	Costa Rica	1.14	12.38				

SOURCE: UNCTAD *Creative Economy Report*, UNCTADStat (2003–08)

## 7.2.5 Creative services exports

Creative services exports (% of total services exports) | 2008

II: Data Tables

Rank	Country/Economy	Value	Score (0–100)	Rank	Country/Economy	Value	Score (0–100)
1	Netherlands	29.89	100.00	65	Côte d'Ivoire (2007)	0.63	3.01
2	Brazil	20.88	100.00	66	Philippines	0.63	3.01
3	Canada	18.60	89.10	67	Tajikistan	0.62	2.97
4	Serbia	16.22	77.71	68	Iceland	0.57	2.73
5	Kyrgyzstan	16.07	76.96	69	Burkina Faso (2001)	0.54	2.59
6	Hungary	15.49	74.18	70	Azerbaijan	0.54	2.59
7	Germany	14.23	68.13	71	Indonesia	0.51	2.42
8	Russian Federation	14.18	67.93	72	Namibia	0.50	2.37
9	Argentina	14.17	67.87	73	Austria	0.48	2.32
10	Norway	10.88	52.11	74	Senegal (2007)	0.44	2.09
11	Romania	9.89	47.35	75	Rwanda (2007)	0.40	1.93
12	Czech Republic	9.66	46.25	76	Mali (2007)	0.40	1.92
13	Sweden	9.56	45.77	77	Ethiopia	0.39	1.89
14	Poland	9.44	45.20	78	Madagascar (2005)	0.37	1.78
15	Colombia	9.40	45.00	79	Singapore	0.32	1.54
16	Belgium	8.78	42.05	80	Benin (2007)	0.32	1.51
17	Spain	7.86	37.66	81	Bosnia & Herzegovina	0.30	1.44
18	Ukraine	7.80	37.36	82	Hong Kong (SAR), China	0.29	1.38
19	Australia	7.14	34.22	83	Mauritius	0.24	1.17
20	Ecuador	7.12	34.12	84	Guatemala	0.23	1.12
21	Turkey	7.00	33.50	85	Peru	0.21	1.03
22	Slovenia	6.74	32.29	86	Tunisia	0.19	0.93
23	Portugal	6.52	31.23	87	Japan	0.18	0.88
24	Latvia	6.45	30.88	88	Cambodia	0.12	0.58
25	Italy	6.07	29.09	89	Sudan	0.09	0.43
26	Malaysia	5.75	27.54	90	Costa Rica	0.09	0.42
27	Croatia	5.71	27.35	91	Kenya	0.06	0.28
28	Slovak Republic	5.64	27.00	92	El Salvador	0.04	0.18
29	India	5.44	26.06	93	Finland	0.04	0.18
30	Estonia	5.31	25.41	94	Mongolia (2005)	0.03	0.13
31	Bulgaria	5.17	24.76	95	Uruguay	0.02	0.09
32	New Zealand	5.04	24.13	96	Panama (2006)	0.02	0.08
33	Kazakhstan	4.75	22.74	97	Switzerland	0.00	0.02
34	Venezuela	3.79	18.17	98	Lebanon (2005)	0.00	0.00
35	Guyana	3.51	16.82	n/a	Algeria	n/a	n/a
36	Albania	3.33	15.96	n/a	Bahrain	n/a	n/a
37	Bangladesh	2.98	14.27	n/a	Bolivia	n/a	n/a
38	Korea, Rep.	2.97	14.22	n/a	Brunei Darussalam	n/a	n/a
39	Botswana	2.87	13.75	n/a	Denmark	n/a	n/a
40	Armenia	2.54	12.17	n/a	Ghana	n/a	n/a
41	Jamaica	2.40	11.51	n/a	Iran	n/a	n/a
42	Lithuania	2.37	11.36	n/a	Israel	n/a	n/a
43	United Kingdom	2.33	11.17	n/a	Jordan	n/a	n/a
44	Moldova, Rep.	2.23	10.70	n/a	Kuwait	n/a	n/a
45	Pakistan	2.11	10.11	n/a	Macedonia	n/a	n/a
46	China	2.07	9.89	n/a	Malawi	n/a	n/a
47	France	2.03	9.73	n/a	Nicaragua	n/a	n/a
48	Ireland	1.75	8.37	n/a	Nigeria	n/a	n/a
49	Paraguay	1.72	8.22	n/a	Oman	n/a	n/a
50	Cyprus	1.64	7.87	n/a	Qatar	n/a	n/a
51	Georgia	1.61	7.69	n/a	Saudi Arabia	n/a	n/a
52	Cameroon	1.53	7.32	n/a	Sri Lanka	n/a	n/a
53	Greece	1.39	6.66	n/a	Thailand	n/a	n/a
54	Morocco	1.39	6.64	n/a	Trinidad and Tobago	n/a	n/a
55	Honduras	1.33	6.37	n/a	Uganda	n/a	n/a
56	Luxembourg	1.26	6.06	n/a	United Arab Emirates	n/a	n/a
57	Chile	1.03	4.91	n/a	United States of America	n/a	n/a
58	Tanzania	0.96	4.60	n/a	Viet Nam	n/a	n/a
59	Mexico	0.94	4.51	n/a	Yemen	n/a	n/a
60	Niger (2007)	0.84	4.00	n/a	Zambia	n/a	n/a
61	Swaziland (2007)	0.83	3.98	n/a	Zimbabwe	n/a	n/a
62	Egypt	0.78	3.76				
63	Syrian Arab Republic (2007)	0.78	3.72				
64	South Africa	0.77	3.70				

SOURCE: UNCTAD *Creative Economy Report*, UNCTADStat (2001–08)

# Appendix III

Sources and Definitions



## Sources and Definitions

This appendix complements the data tables by providing, for each of the 80 indicators included in the Global Innovation Index model (GII), a title, a description, a definition, and the source. For each indicator for each country the most recent value within the period 2000–10 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 are considered, the period is indicated at the end of the indicator's source in parenthesis.

Some indicators received special treatment in the computation. A total of 19 variables required scaling by some other indicator to be comparable across countries (division by GDP in current US dollars, GDP in constant PPP dollars, 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, 25 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; 15 are composite indicators from international agencies, distinguished with an asterisk (\*); 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 2010 edition of the EOS included 148 questions; 13,607 surveys were retained for tabulation, completed by business executives from 139 economies between January and May 2010.

# 1 Institutions

## 1.1 Political environment

### 1.1.1 Political stability

Political stability and absence of violence/terrorism index\* | 2009

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. It ranges from 0 to 100 (higher values indicating better outcomes).

Source: World Bank, *World Governance Indicators 2009*  
(<http://info.worldbank.org/governance/wgi/index.asp>)

### 1.1.2 Government effectiveness

Government effectiveness index\* | 2009

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. It ranges from 0 to 100 (higher values indicating better outcomes).

Source: World Bank, *World Governance Indicators 2009*  
(<http://info.worldbank.org/governance/wgi/index.asp>)

### 1.1.3 Press freedom

Press freedom index<sup>b</sup> | 2010

Index that captures perceptions on violations of press freedom in the world. It reflects the degree of freedom that journalists and news organizations 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 September 2009 and 1 September 2010. The lower the index the better, with a lower bound of 0 and no upper bound.

Source: Reporters Without Borders, *Press Freedom Index 2010*  
(<http://en.rsf.org/press-freedom-index-2010,1034.html>)

## 1.2 Regulatory environment

### 1.2.1 Regulatory quality

Regulatory quality index\* | 2009

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. It ranges from 0 to 100 (higher values indicating better outcomes).

Source: World Bank, *World Governance Indicators 2009*  
(<http://info.worldbank.org/governance/wgi/index.asp>)

### 1.2.2 Rule of law

Rule of law index\* | 2009

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. It ranges from 0 to 100 (higher values indicating better outcomes).

Source: World Bank, *World Governance Indicators 2009*  
(<http://info.worldbank.org/governance/wgi/index.asp>)

### 1.2.3 Rigidity of employment

Rigidity of employment index (0 = less rigid, 100 = more rigid)\*<sup>b</sup> | 2008

Rigidity of employment index that measures the regulation of employment, specifically the hiring and firing of workers and the rigidity of working hours. It is calculated as the average of three sub-indexes: a difficulty of hiring index, a rigidity of hours index, and a difficulty of firing index. It ranges from 0 to 100 (higher values indicating more rigid regulations).

Source: World Bank, *Doing Business 2009 and 2010 (2008–09)*  
(<http://www.doingbusiness.org/>)

## 1.3 Business environment

### 1.3.1 Time to start a business

Time to start a business (days)<sup>b</sup> | 2010

Measure that captures the median duration that incorporation lawyers indicate is necessary to complete a procedure with minimum follow-up with government agencies and no extra payments.

Source: World Bank, *Ease of Doing Business Index 2011, Doing Business 2011*  
(<http://www.doingbusiness.org/>)

### 1.3.2 Cost to start a business

Cost to start a business (% of income per capita)<sup>b</sup> | 2010

The company law, the commercial code, and specific regulations and fee schedules used as sources for calculating costs. Costs include all official fees and fees for legal or professional services if such services are required by law. Fees for purchasing and legalizing company books are included if these transactions are required by law. In the absence of fee schedules, a government officer's estimate is taken as an official source. In the absence of a government officer's estimate, estimates of incorporation lawyers are used. If several incorporation lawyers provide different estimates, the median reported value is applied. In all cases the cost excludes bribes.

Source: World Bank, *Ease of Doing Business Index 2011, Doing Business 2011*  
(<http://www.doingbusiness.org/>)

### 1.3.3 Total tax rate

Total tax rate (% profit)<sup>b</sup> | 2010

Amount of taxes and mandatory contributions borne by business case in the second year of operation, expressed as a share of commercial profit. *Doing Business 2011* reports the total tax rate for 2009. The total amount of taxes borne is the sum of all the different taxes and contributions payable after accounting for allowable deductions and exemptions. The taxes withheld or collected by the company and remitted to the tax authorities but not borne by the company are excluded. The taxes included can be divided into 5 categories: profit or corporate income tax, social contributions and labour taxes paid by the employer, property taxes, turnover taxes and other taxes (such as municipal fees and vehicle and fuel taxes).

Source: World Bank, *Ease of Doing Business Index 2011, Doing Business 2011*  
(<http://www.doingbusiness.org/>)

## 2 Human capital and research

### 2.1 Education

#### 2.1.1 Expenditure on education

Current expenditure on education (% of GNI)<sup>a</sup> | 2008

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 World Bank estimates based on UN and UNESCO data (same year).

Source: UNESCO Institute for Statistics, *UIS online database* (2004–10) (<http://stats.uis.unesco.org>)

#### 2.1.2 Public expenditure on education per pupil

Public expenditure on education per pupil, all levels (% of GDP per capita)<sup>a</sup> | 2007

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* (2000–09) (<http://stats.uis.unesco.org>)

#### 2.1.3 School life expectancy

School life expectancy, primary to tertiary education (years) | 2008

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* (2000–10) (<http://stats.uis.unesco.org>)

#### 2.1.4 Assessment in reading, mathematics, and science

Programme for International Student Assessment (PISA) scales in reading, mathematics, and science (average)<sup>a</sup> | 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. In 2009, 65 countries participated; Macedonia participated in 2000. The scores for China come from Shanghai; those of the United Arab Emirates from Dubai.

Source: OECD Programme for International Student Assessment (PISA) 2009 and 2000, UNESCO Institute for Statistics, *UIS online database* (2000–09) (<http://stats.uis.unesco.org>)

#### 2.1.5 Pupil-teacher ratio

Pupil-teacher ratio, secondary<sup>b</sup> | 2008

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 ratio for upper-secondary is reported instead.

Source: UNESCO Institute for Statistics, *UIS online database* and World Bank *World Development Indicators* database (2000–10) (<http://stats.uis.unesco.org>)

### 2.2 Tertiary education

#### 2.2.1 Tertiary school enrolment

Tertiary school enrolment (% gross) | 2008

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 (same source).

Source: UNESCO Institute for Statistics, *UIS online database* (2000–10) (<http://stats.uis.unesco.org>)

#### 2.2.2 Tertiary graduates in science

Tertiary graduates in science (% of total tertiary graduates) | 2008

The share of all tertiary graduates in science over all tertiary graduates.

Source: UNESCO Institute for Statistics, *UIS online database* (2000–10) (<http://stats.uis.unesco.org>)

#### 2.2.3 Tertiary graduates in engineering

Tertiary graduates in engineering, manufacturing, and construction (% of total tertiary graduates) | 2008

The share of all tertiary graduates in manufacturing, engineering, and construction over all tertiary graduates.

Source: UNESCO Institute for Statistics, *UIS online database* (2000–09) (<http://stats.uis.unesco.org>)

#### 2.2.4 Tertiary inbound mobility

Tertiary inbound mobility ratio (%)<sup>a</sup> | 2008

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* (2000–10) (<http://stats.uis.unesco.org>)

#### 2.2.5 Tertiary outbound mobility

Tertiary outbound mobility ratio (%)<sup>a</sup> | 2008

The number of students from a given country studying abroad as a percentage of the total tertiary enrolment in that country.

Source: UNESCO Institute for Statistics, United Nations database *UNdata* (2000–09) (<http://data.un.org/>)

#### 2.2.6 Gross tertiary outbound enrolment

Gross tertiary outbound enrolment ratio (%)<sup>a</sup> | 2008

Mobile students coming from a country/region as a percentage of the population of tertiary student age in their home country.

Source: UNESCO Institute for Statistics, United Nations database *UNdata* (2001–09) (<http://data.un.org/>)

### 2.3 Research and development (R&D)

#### 2.3.1 Researchers

Researchers, headcounts (per million people) | 2007

Researchers per million people, headcounts. 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. UNESCO series supplemented by World Bank data (same source).

Source: UNESCO Institute for Statistics, *UIS online database* (2000–09) (<http://stats.uis.unesco.org>)

#### 2.3.2 Gross expenditure on R&D (GERD)

Gross expenditure on R&D (% of GDP) | 2007

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 (same source).

Source: UNESCO Institute for Statistics, *UIS online database* (2002–08) (<http://stats.uis.unesco.org>)

#### 2.3.3 Quality of 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<sup>1</sup> | 2010

Source: World Economic Forum, *Executive Opinion Survey 2010* (<https://wefsurvey.org>)

## 3 Infrastructure

### 3.1 Information and communication technologies (ICT)

#### 3.1.1 ICT access

Information and Communication Technologies (ICT) access index\* | 2008

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, *ICT Development Index Report 2010* (with data from 2008)

#### 3.1.2 ICT use

Information and Communication Technologies (ICT) use index\* | 2008

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, *ICT Development Index Report 2010* (with data from 2008)

#### 3.1.3 Government's online service

Government's online service index\*<sup>a</sup> | 2010

Research teams assessed each country's national website and the websites of the ministries of education, labour, social services, health and finance, along with 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 Development Database* (UNeGovDD) (<http://www2.unpan.org/egovkb/>)

#### 3.1.4 Online participation

E-participation index\*<sup>a</sup> | 2010

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 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 Development Database* (UNeGovDD) (<http://www2.unpan.org/egovkb/>)

## 3.2 Energy

#### 3.2.1 Electricity output

Electricity output (kWh per capita)<sup>a</sup> | 2008

Electricity production, measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, it 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 (2008–09) (<http://www.iea.org/stats/>)

#### 3.2.2 Electricity consumption

Electricity consumption (kWh per capita)<sup>a</sup> | 2008

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 (2008–09) (<http://www.iea.org/stats/>)

#### 3.2.3 GDP per unit of energy use

GDP per unit of energy use (2000 PPP\$ per kg of oil equivalent) | 2008

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 (2008–09) (<http://www.iea.org/stats/>)

#### 3.2.4 Share of renewables in energy use

Share of renewables in energy use (% of total energy use) | 2008

Share of energy from renewable sources over energy use or TPES (definition provided under indicator 3.2.3). Renewable sources include: hydro, geothermal, solar, wind, tide, renewable combustibles, and waste.

Source: International Energy Agency, *World Energy Balances* online data service (2008–09) (<http://www.iea.org/stats/>)



## 3 Infrastructure

### 3.3 General infrastructure

#### 3.3.1 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, *Logistic Performance Index Surveys 2009*, World Bank *World Development Indicators* database (2006–09) (<http://data.worldbank.org/>)

#### 3.3.2 Gross capital formation

Gross capital formation (% of GDP) | 2009

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 'works in progress'. Net acquisitions of valuables are also considered capital formation.

Source: World Bank and OECD, World Bank *World Development Indicators* database (2000–09) (<http://data.worldbank.org/>)

#### 3.3.3 Ecological footprint and biocapacity

Ecological footprint and biocapacity (deficit) or reserve (global hectares per capita) | 2007

The Global Footprint Network provides estimates of the ecological biocapacity (EB) and of the ecological footprint of consumption (EF) of countries, in global hectares per capita. The difference between the two (EB – EF) corresponds to the ecological deficit (negative values) or reserve (positive values) of each country. EB includes five sub-categories: cropland, grazing, forest, fishing, and built land. EC includes the same five, with the addition of carbon footprint.

Source: Global Footprint Network (2001–07) (<http://www.footprintnetwork.org>)

## 4 Market sophistication

### 4.1 Credit

#### 4.1.1 Legal rights strength to get credit

Getting credit: Strength of legal rights index (0–10)\*<sup>a</sup> | 2010

Index that measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders, and thus facilitate lending. It ranges from 0 to 10, with higher scores indicating that collateral and bankruptcy laws are better designed to expand access to credit.

Source: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011* (<http://www.doingbusiness.org/>)

#### 4.1.2 Depth of credit information

Getting credit: Depth of credit information index (0–6)\*<sup>a</sup> | 2010

Index that measures rules and practices affecting the coverage, scope, and accessibility of credit information available through either a public credit registry or a private credit bureau. It ranges from 0 to 6, with higher values indicating the availability of more credit information.

Source: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011* (<http://www.doingbusiness.org/>)

#### 4.1.3 Domestic credit to private sector

Domestic credit to private sector (% of GDP) | 2008

Financial resources provided to the private sector, such as through loans, purchases of non-equity 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 (2000–09) (<http://data.worldbank.org/>)

#### 4.1.4 Microfinance institutions' gross loan portfolio

Microfinance institutions: Gross loan portfolio (% of GDP)<sup>d</sup> | 2009

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 (2001–09) (<http://www.mixmarket.org/data-center>)

### 4.2 Investment

#### 4.2.1 Strength of investor protection

Protecting investors: Strength of investor protection index (0–10)\* | 2010

Index that is the average of the extent of disclosure index, the extent of director liability index, and the ease of shareholder suits index. It ranges from 0 to 10, with higher values indicating more investor protection.

Source: World Bank, Ease of Doing Business Index 2011, *Doing Business 2011* (<http://www.doingbusiness.org/>)

#### 4.2.2 Market capitalization

Market capitalization of listed companies (% of GDP) | 2009

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 (2005–09) (<http://data.worldbank.org/>)

#### 4.2.3 Total value of stocks trade

Total value of stocks traded (% of GDP) | 2009

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 (2005–09) (<http://data.worldbank.org/>)

#### 4.2.4 Venture capital deals

Venture capital per investment location: number of deals (per trillion GDP, 2005 PPP\$)<sup>d</sup> | 2010

Thomson Reuters data on private equity deals, per deal, with details on, among others, the location of investment, investment company, and investor firms and funds. The series corresponds to a query on venture capital deals from 1 January 2010 to 31 December 2010, with the data collected by investment location, for a total of 7,937 deals in 81 countries in 2010.

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>)

### 4.3 Trade and competition

#### 4.3.1 Applied tariff rate

Applied tariff rate, weighted mean, all products (%)<sup>b</sup> | 2008

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 (2002–08) (<http://data.worldbank.org/>)

#### 4.3.2 Market access trade restrictiveness

Market access overall trade restrictiveness index (%)<sup>d,b</sup> | 2008

The Market Access Overall Trade Restrictiveness Index (MA\_OTRI) is a measure of applied tariffs and ad-valorem equivalent non-tariff measures faced by exports, taking into account tariff preferences. It captures the trade distortions that the rest of the world trade policies impose on the export bundle of each country. The MA\_OTRI answers the question: What is the uniform tariff that if imposed by all trading partners on exports of country *c* instead of their current structure of protection would leave exports of country *c* at their current level? ? Based on H. L. Kee, A. Nicita, and M. Olarreaga (2008), 'Import Demand Elasticities and Trade Distortions', *Review of Economics and Statistics* 90 (4): 666–82; and H. L. Kee, A. Nicita, and M. Olarreaga (2009), 'Estimating Trade Restrictiveness Indices', *Economic Journal* 119: 172–99.

Source: World Bank Overall Trade Restrictiveness Indices, World Bank and International Monetary Fund *Global Monitoring Report 2010* (<http://go.worldbank.org/FG1KHXP30>)

## 4 Market sophistication

### 4.3.3 Imports of goods and services

Imports of goods and services (% of GDP) | 2009

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. 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 (2001–09)  
(<http://data.worldbank.org/>)

### 4.3.4 Exports of goods and services

Exports of goods and services (% of GDP) | 2009

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 (2001–09)  
(<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<sup>†</sup> | 2010

Source: World Economic Forum, *Executive Opinion Survey 2010*  
(<https://wefsurvey.org>)

## 5 Business sophistication

### 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; and (3) Clerical and related workers. ISCO-88: (1) Legislators, senior officials and managers; (2) Professionals, and (3) Technicians and associate professionals.

Source: International Labour Organization, *LABORSTA Database of Labor Statistics (2000–08)* (<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: World Bank Enterprise Surveys, World Bank *World Development Indicators* database (2003–09) (<http://data.worldbank.org/>)

#### 5.1.3 GERD performed by business enterprise

Gross expenditure on R&D (GERD) performed by business enterprise (% of total)<sup>3</sup> | 2008

Percentage of gross expenditure on R&D performed by business enterprise.

Source: UNESCO Institute for Statistics, *UIS online database (2002–09)* (<http://stats.uis.unesco.org>)

#### 5.1.4 GERD financed by business enterprise

Gross expenditure on R&D (GERD) financed by business enterprise (% of total)<sup>3</sup> | 2007

Percentage of gross expenditure on R&D financed by business enterprise.

Source: UNESCO Institute for Statistics, *UIS online database (2001–09)* (<http://stats.uis.unesco.org>)

### 5.2 Innovation linkages

#### 5.2.1 University/industry collaboration on R&D

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<sup>†</sup> | 2010

Source: World Economic Forum, *Executive Opinion Survey 2010* (<https://wefsurvey.org>)

#### 5.2.2 State of cluster development

Mean of the average responses to three survey questions: (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<sup>†</sup> | 2010

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).

Source: World Economic Forum, *Executive Opinion Survey 2010* (<https://wefsurvey.org>)

#### 5.2.3 GERD financed by abroad

Gross expenditure on R&D (GERD) financed by abroad (% of total)<sup>3</sup> | 2007

Percentage of gross expenditure on R&D financed by abroad, i.e., with foreign financing.

Source: UNESCO Institute for Statistics, *UIS online database (2001–09)* (<http://stats.uis.unesco.org>)

#### 5.2.4 Joint ventures / strategic alliances deals

Joint ventures / strategic alliances: number of deals, fractional counting (per trillion GDP, 2005 PPP\$)<sup>3</sup> | 2010

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 2010 to 31 December 2010, for a total of 1,247 deals announced, of which 920 were joint ventures and 327 strategic alliances. Of these, an assessment of value was available for only 184 deals, which is why a count variable was created. Each participating nation (out of a total of 94) of each company in a deal ( $n$  countries per deal,  $n$  ranging from 1 to 7) gets, per deal, a score equivalent to  $1/n$  (with the effect that all country scores add up to 1,247).

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>)

#### 5.2.5 PCT published patents with at least one foreign inventor

Percentage of published patents with at least one foreign inventor at the Patent Cooperation Treaty (% of total) | 2010

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* (<http://www.wipo.int/ipstats/>)

### 5.3 Knowledge absorption

#### 5.3.1 Royalty and license fees' payments

Royalty and license fees, payments (% of GDP) | 2009

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\$. Zeros in the original World Bank series were replaced by the last record available.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09) (<http://data.worldbank.org/>)

## 5 Business sophistication

### 5.3.2 High-tech imports

High-tech imports net of re-imports (% of total imports net of re-imports) | 2009

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 ([http://epp.eurostat.ec.europa.eu/cache/ITY\\_SDDS/Annexes/htec\\_esms\\_an5.pdf](http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)).

Source: United Nations, *COMTRADE* database (2007–10)  
(<http://comtrade.un.org/>)

### 5.3.3 Computer and communications service imports

Computer, communications, and other services imports (% of commercial service imports) | 2009

Computer, communications, and other services imports (% 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 (2000–09)  
(<http://data.worldbank.org/>)

### 5.3.4 Foreign direct investment net inflows

Foreign direct investment, net inflows (% of GDP) | 2009

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 (2000–09)  
(<http://data.worldbank.org/>)

## 6 Scientific outputs

### 6.1 Knowledge creation

#### 6.1.1 Patent applications filed at the national office

Number of patent applications filed by residents at the national office (per billion GDP, 2005 PPPs) | 2009

Number of patent applications filed by residents at the national patent office. 'Patent' is defined in the description of indicator 5.2.5.

Source: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–10) (<http://www.wipo.int/ipstats/>)

#### 6.1.2 Patent applications filed through the PCT

Number of international patent applications filed by residents through the Patent Cooperation Treaty (PCT) (per billion GDP, 2005 PPPs) | 2010

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.

Source: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (<http://www.wipo.int/ipstats/>)

#### 6.1.3 Utility model applications filed at the national office

Number of utility model applications filed by residents at the national office (per billion GDP, 2005 PPPs)<sup>a</sup> | 2009

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.

Source: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09) (<http://www.wipo.int/ipstats/>)

#### 6.1.4 Scientific and technical journal articles

Number of scientific and technical journal articles (per billion GDP, 2005 PPPs) | 2007

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.

Source: National Science Foundation and World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (<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, 2007 to 2008 (1990 PPPs) | 2008

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. Purchasing power parity (PPP) GDP is GDP 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 Labor Statistics* (<http://laborsta.ilo.org/>)

#### 6.2.2 New business density

New registrations of businesses (per 1,000 people ages 15–64) | 2009

Number of new firms, defined as firms registered in the current year of reporting, per 1,000 working-age people (those aged 15–64).

Source: International Finance Corporation, World Bank *World Development Indicators* database (2007–09) (<http://data.worldbank.org/>)

#### 6.2.3 Computer software spending

Total computer software spending (% of GDP)<sup>a</sup> | 2010

Total computer software spending (US\$) divided by GDP (current US\$).

Source: World Information Technology and Services Alliance (WITSA); World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (<http://www.witsa.org/>)

### 6.3 Knowledge diffusion

#### 6.3.1 Royalty and license fees' receipts

Royalty and license fees, receipts (% of GDP) | 2009

Receipts 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). Zeros in the original World Bank series were replaced by the last record available.

Source: International Monetary Fund; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09) (<http://data.worldbank.org/>)

#### 6.3.2 High-tech exports

High-tech exports net of re-exports (% of total exports net of re-exports) | 2009

High-technology exports minus re-exports over total exports minus re-exports. 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 and office machines; electronics, telecommunications; pharmacy; scientific instruments; electrical machinery; chemistry; non-electrical machinery; and armament ([http://epp.eurostat.ec.europa.eu/cache/ITY\\_SDDS/Annexes/htec\\_esms\\_an5.pdf](http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an5.pdf)).

Source: United Nations, *COMTRADE* database (2007–10) (<http://comtrade.un.org/>)

#### 6.3.3 Computer and communications service exports

Computer, communications, and other services exports (% of commercial service exports) | 2009

Computer, communications, and other services exports (% 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 (2000–09) (<http://data.worldbank.org/>)

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## 6 Scientific outputs

### 6.3.4 Foreign direct investment net outflows

Foreign direct investment, net outflows (% of GDP) | 2009

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 (2000–09) (<http://data.worldbank.org/>)

## 7 Creative outputs

### 7.1 Creative intangibles

#### 7.1.1 Trademark registrations filed at the national office

Number of trademark registrations filed by residents at the national office (per billion GDP, 2005 PPPs) | 2009

A trademark is a distinctive sign, which 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 registrations can potentially be maintained indefinitely as long as the trademark holder pays the renewal fees and actually uses the trademark.

Source: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2000–09) (<http://www.wipo.int/ipstats/>)

#### 7.1.2 Trademark registrations filed through the Madrid System

Number of international trademark registrations filed by residents through the Madrid System (per billion GDP, 2005 PPPs)<sup>a</sup> | 2009

Number of international trademark registrations filed by residents under the WIPO-administered Madrid System. The statistic is given 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. Definition of trademark under 7.1.1.

Source: World Intellectual Property Organization, *WIPO Statistics Database*; World Bank and OECD GDP estimates, World Bank *World Development Indicators* database (2003–09) (<http://www.wipo.int/ipstats/>)

#### 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<sup>†</sup> | 2010

Source: World Economic Forum, *Executive Opinion Survey 2010* (<https://wefsurvey.org>)

#### 7.1.4 ICT and organizational model 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<sup>†</sup> | 2010

Source: World Economic Forum, *Executive Opinion Survey 2010* (<https://wefsurvey.org>)

### 7.2 Creative goods and services

#### 7.2.1 Recreation and culture

Recreation and culture (% total individual consumption)<sup>a</sup> | 2008

Expenditure on category (9) recreation and culture as a percentage of individual consumption expenditure of households, non-profit 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.

Source: United Nations Statistics Division, National Accounts Official Country Data, United Nations database *UNdata* (2003–09) (<http://data.un.org/>)

#### 7.2.2 National feature films produced

Number of national feature films produced (per million people)<sup>a</sup> | 2006

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.

Source: UNESCO Institute for Statistics, *UIS online database*; World Bank population estimates, *World Development Indicators* database (2005–08) (<http://stats.uis.unesco.org>)

#### 7.2.3 Daily newspapers circulation

Daily newspapers: Total average circulation (per 1,000 literate people)<sup>a</sup> | 2004

Daily newspapers are periodic publications mainly reporting events that have occurred in the 24-hour period before going to press (issued at least 4 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.

Source: UNESCO Institute for Statistics, *UIS online database* (2001–05) (<http://stats.uis.unesco.org>)

#### 7.2.4 Creative goods exports

Creative goods exports (% of total goods exports) | 2008

Total export values of creative goods (current US\$) over total goods exports (current US\$).

Source: UNCTAD *Creative Economy Report, UNCTADStat* (2003–08) (<http://unctadstat.unctad.org/>)

#### 7.2.5 Creative services exports

Creative services exports (% of total services exports) | 2008

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* (2001–08) (<http://unctadstat.unctad.org/>)



# 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 countries' performances along policy lines. For the 2011 edition, the JRC agreed to perform a thorough robustness and sensitivity analysis of the Global Innovation Index.

A previous version of the GII model was submitted to the JRC in April 2011. The recommendations and flexibilities allowed on the basis of the JRC preliminary audit were taken into account in the final version of the Global Innovation Index 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 appendix to Chapter 1.

### Composite indicators

The Global Innovation Index (GII) relies on seven pillars. Each pillar is divided into three sub-pillars, except for pillar 7, which has only two sub-pillars. Each sub-pillar is composed of individual indicators. Each sub-pillar score is calculated as the weighted average of individual indicators. Each pillar score is the simple average of its sub-pillar scores.

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 (GII)* 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.

Country rankings are provided for indicator, sub-pillar, pillar, and index scores.

The rationale behind the Innovation Efficiency Index is to highlight those countries 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 Global Innovation Index by providing an insight that should be neutral to the development stages of countries.<sup>1</sup>

### Individual indicators

The model includes 80 indicators, which fall within the following three categories:

1. quantitative/objective/hard data (59 indicators),
2. composite indicators/index data (15 indicators), and
3. survey/qualitative/subjective/soft data (6 indicators).

### Hard data

Hard data series (59 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, GDP, or some other size-related factor; they require scaling by some relevant size indicator for country comparisons to be valid. Most indicators are scaled at the source (32) or do not need to be scaled (29); for the rest, the scaling factor was chosen to represent a fair picture of country differences. This affected 19 indicators, which can be broadly divided into five groups:

1. Indicators 4.1.4, 5.3.1, 6.2.3, and 6.3.1, which come in current US dollars, were given as a percentage of GDP in current US dollars.<sup>2</sup>
2. The count variables 4.2.4, 5.2.4, 6.1.1, 6.1.2, 6.1.3, 6.1.4, 7.1.1, and 7.1.2 were scaled by GDP in PPP terms, constant 2005 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 countries with large young or ageing populations.<sup>3</sup>
3. The variable 7.2.2, National feature films produced, was scaled by population.
4. Variable 3.2.1, Electricity output in kWh per capita, was scaled by population to be averaged out, with half weight each, 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, 7.3.1, and 7.3.2 were scaled by the total corresponding to the particular statistic.<sup>4</sup>

### 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 in 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, acknowledgment 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 indexes: 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 questions are drawn from the World Economic Forum's Executive Opinion Survey (EOS). Survey questions are drafted to capture subjective perceptions on specific topics. An effort was made in this year's edition to replace soft data by hard or index data, when possible. The GII gained in objectivity, consistency

over multiple periods, comparability, and transparency. Nonetheless, 6 EOS questions were kept or added in this year's GII to capture phenomena strongly linked to innovative activities for which either there are no hard data or existing statistics have low country coverage.

### Country coverage and missing data

This year's Global Innovation Index (GII) covers 125 countries, which were selected on the basis of the availability of data. The criteria used were to keep those countries with a minimum indicator-coverage of 50 indicators (63%) and with scores for at least two sub-pillars per pillar, or one of the two pillars for pillar 7. This flexibility was allowed by the JRC after the first audit, on the basis of the high correlations between sub-pillars within each pillar; after the second audit, five countries with unreliable rankings were dropped from the rankings (see the appendix to Chapter 1). The last record available for each country was considered, with a cut-off at year 2000. 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.

In addition, indicators with country coverage below 70% (16 cases) or that were combined with other indicators (9 cases) were assigned half weight, to arrive at aggregate numbers balanced in the underlying components.

### Treatment of series with outliers

Potentially problematic indicators with outliers that could polarize

results and unduly bias the rankings were treated following the recommendations of the JRC. This affected 28 hard data indicators.

### First rule: Selection

The 28 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.<sup>5</sup>

### Second rule: Treatment

Series with one to four outliers (26 cases) were winsorised: The country 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.<sup>6</sup>

For series with five or more outliers (2 cases), skewness and/or kurtosis entered within the ranges specified above with transformation by natural logs.<sup>7</sup> Since only ‘goods’ were affected (i.e., indicators for which higher values indicate better outcomes, as opposed to ‘bads’), the formula used was:

$$\text{Natural log of } \left[ \frac{(\max - 1) \times (\text{country value} - \min)}{(\max - \min)} + 1 \right]^8$$

where ‘min’ and ‘max’ are the minimum and maximum indicator sample values.

### Normalization

The 80 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.). 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 To account for differences in development, other composite indicators have resorted to weighting schemes differentiated by income level.
- 2 Gross loan portfolio of microfinance Institutions; royalty and license fees’ payments and receipts, and total computer software spending.
- 3 These count variables are mainly indicators that increase disproportionately with economic growth, and include: venture capital, joint venture, strategic alliance deals; and resident patent, utility model, and trademark applications.
- 4 Creative exports of goods (services) were 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.
- 5 Based on Groeneveld, R. A. and G. Meeden, 1984, ‘Measuring Skewness and Kurtosis’. *The Statistician* 33: 391–99, 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 (125 countries).

- 6 This affected the following variables: 3.2.2, 4.1.3, 4.2.2, 5.3.2, 7.2.5 and 7.3.1 (1 outlier); 1.3.1, 3.2.1, 4.3.3, 5.2.4, 7.1.2, and 7.3.2 (2 outliers); 1.3.2, 2.2.6, 4.1.4, 4.3.4, 5.3.4, 6.1.1, 6.2.2, and 6.3.4 (3 outliers); and 2.2.4, 4.2.3, 5.2.3, 5.3.1, 6.1.3, and 6.3.1 (4 outliers).
- 7 This affected variables 2.2.5 (6 outliers) and 4.2.4 (7 outliers).
- 8 The corresponding formula for ‘bads’ is: natural log of  $[-(\max - 1) \times (\text{country value} - \min) / (\max - \min) + \max]$ . 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.

### Reference

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



# Appendix **v**

About the Authors





## About the Authors

**Daniela Benavente** joined INSEAD eLab in November 2010 as Senior Research Fellow responsible for the Global Innovation Index, 2011 edition. Her previous professional experience includes working as an Economic Advisor at the cabinet office of the President of Chile, and as 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.

**Lourdes Casanova** specializes in international business with a focus on Latin America and multinationals from emerging markets. A Fulbright Scholar with a Master's degree from the University of Southern California and a PhD from the University of Barcelona, she is a Lecturer at INSEAD and a Visiting Professor at the University of California at Berkeley, the University of San Diego, and the Latin American Center at the University of Oxford. She has published case studies and articles in journals and is the author of the book *Global Latinas: Latin America's Emerging Multinationals* (Palgrave Macmillan, 2009).

**Jibak Dasgupta** is currently with the Confederation of Indian Industry (CII) as Deputy Director in the Technology and Innovation Department, working in innovation clusters and on an innovation index for Indian industry. He has also worked as a Management Consultant for quality certifications such as ISO and CMMI for a short period. He has been associated with Swedish start-ups in the field of cashless micropayments, and with creating a strategic roadmap for their pan-European expansion. Mr Dasgupta has an MSc degree in Management and Economics of Innovation from Chalmers University of Technology, Gothenburgh, Sweden. Prior to that he completed his BE in Instrumentation Technology from VTU, Belgaum and then worked for Infosys, a major IT player in the Indian market.

**Soumitra Dutta** is the Roland Berger Chaired Professor of Business and Technology and the Founder and Faculty Director of INSEAD, eLab, the business school's centre of excellence in teaching and research on the digital economy. His current research is on technology strategy and innovation at both corporate and national policy levels. His latest co-authored books are *Throwing Sheep in the Boardroom* (Wiley, 2008) and *Innovating at the Top* (Palgrave, 2009). Professor Dutta is actively involved in policy development at national and European levels. He has taught in and consulted with international corporations across the world. Professor Dutta's research has been showcased in the international media such as CNN, CNBC, BBC, and international publications. He is a Fellow of the World Economic Forum. He obtained his PhD in Computer Science and his MSc in Business Administration from the University of California at Berkeley.

**Nils Olaya Fonstad** is Associate Director of INSEAD eLab, a research centre focused on learning how public and private institutions throughout the world create value from the knowledge economy. He conducts research on innovation and on how organizations and countries define and foster skills critical for competing in a global knowledge economy. Dr Fonstad earned a PhD degree from the MIT Sloan School of Management; an MS from the MIT Technology and Policy Program; and a BS in Mechanical Engineering and a BA in Film Studies from Cornell University, Ithaca, New York.

**Anuraj Gambhir** is Chief Dreamer at Xpert Media. He has worked in the mobile telecommunications industry for over two decades across several areas of the mobile value web and devices ecosystem, including leading mobile network operators, device manufacturers, R&D centres, international trade bodies, consultancy firms, value-added service developers/providers, and wireless technology retail and network solution vendors in Australasia, North America, Europe, and Asia. He has spearheaded several innovations in the advanced as well as grassroots-level mobile domain in mature and emerging markets. He has an honours degree in Electrical and Electronics Engineering with a specialization in Telecommunications from the University of NSW (Australia), a micro-eMBA from Oxford (UK), and he completed an executive leadership excellence program from ISB (India). He is a valued advisory board member of several organizations globally and is actively involved in the evolution of key mobile standards.

**Barry Jaruzelski** is a Partner with Booz & Company and leads the firm's Global Technology Practice. He specializes in corporate and product strategy and the transformation of core innovation processes for high technology and industrial clients. A recognized thought leader, Mr Jaruzelski is frequently quoted in publications such as *The Wall Street Journal*, *The Economist*, the *Financial Times*, and *The New York Times* on the technology industry and the challenges of innovation. He often appears as an expert commentator on ABC News, CNBC, CNN, NPR, and the BBC. 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*. In addition, he has written articles published in *Forbes*, *Ivey Journal*, *Strategic Finance*, *PDMA Visions*, *Optimize*, and *Linux World* magazines and the *Boston Globe* newspaper. He is a member of the panel of judges for *The Wall Street Journal's* annual Technology Innovation Awards. Mr Jaruzelski holds a Bachelor of Science in Economics from the University of Pennsylvania and an MBA from Columbia Business School in New York.

**Jeff Dayton-Johnson** is the Head of the Development Centre's Americas Desk at the Organisation for Economic Co-operation and Development (OECD), the principal activity of which is the OECD *Latin American Economic Outlook*. Prior to joining the OECD, he was a Professor of Economics and International Development Studies at Dalhousie University in Canada. Dr Dayton-Johnson received his PhD in Economics from the University of California, Berkeley, and his undergraduate education at Berkeley and the Universidad Nacional Autónoma de México.

**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.

**Revital Maron** has more than 20 years of hands-on international experience in the telecommunications and IT sectors. She currently leads the Market and Consumer Insight group helping Alcatel-Lucent and its customers anticipate and profit from technological and market changes with a specific focus on global and local consumer behaviour. Prior to joining Alcatel-Lucent, Ms Marom was the Director of the Ericsson ConsumerLab North America, where she led LTE and UMTS Market Research initiatives for AT&T, Verizon, Sprint, Teliasonora, Telenor, Cable and Wireless, Digicel, and others. Her experience includes being a Lecturer/Fellow at INSEAD in the area of Technology Management, heading the research group at Thesus, France Telecom business school, and developing and implementing research and e-business strategies for clients such as AMD, ABB, 3M, and British Telecom. Ms Marom is a frequent guest speaker on telecommunication trends and consumer behaviour at many telecommunication, IT, and international marketing events.

**Chadi N. Moujaes** is a Principal at Booz & Company. He specializes in public policy strategy and implementation of economic and human capital development policies. He has authored numerous national development agendas for countries in the Middle East, linking education reform strategies with socioeconomic development goals. His current work focuses on assisting universities and local industries in the Middle East to develop innovation clusters to drive economic growth and job creation opportunities. Mr Moujaes has co-authored numerous Booz & Company publications and articles on socioeconomic development. He holds an MBA from INSEAD and a Bachelor of Engineering from the American University of Beirut.

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**Michaela Saisana** has been a Scientific Officer at the Joint Research Centre (JRC) of the European Commission (Italy) since 1998. Her main activities involve auditing composite indicators by means of multivariate analysis, uncertainty, and global sensitivity analysis. She has provided numerous courses on the development and robustness assessment of composite indicators for academia, international organizations, and European Commission officials. In 2004 she won the European Commission – JRC Young Scientist Prize in Statistics and Econometrics, awarded by the Commissioner for Research Janez Potočnik. She is a co-author of the book *Global Sensitivity Analysis: The Primer* (2008), a principal author of the 2008 *OECD/JRC Handbook on Composite Indicators*, and developer and moderator of the JRC Information server on composite indicators. Her publications deal with sensitivity analysis, composite indicators, multi-criteria analysis, multi-objective optimization, and air quality modelling and forecasting. She has a PhD and an MSc in Engineering from the National Technical University of Athens, received with Awards from the Technical Chambers of Greece.

**Hatem Abdul-Mohsin Samman** is the Director and Lead Economist of the Booz & Company Ideation Center. Previously, Dr Samman held the position of Vice President at a major Saudi Bank and was Director of Regulatory Affairs and Strategic Planning at a major regional telecommunications company. He was Senior Fellow at the University of Minnesota and Consultant at the World Bank, among other positions. Dr Samman has published several academic articles in the *International Journal of Applied Economics* and the *Journal of International Trade & Economic Development*, among others. He is frequently quoted in regional and international magazines and newspapers such as the *Financial Times*, and often appears as an expert on BBC, AlArabiya, and CNBC Arabia. Dr Samman has co-authored numerous Booz & Company and Ideation Center publications, including *How to Succeed at Education Reform: The Case for Saudi Arabia and the Broader GCC Region* (2008), *The Vital Role of Sovereign Wealth Funds in the GCC's Future* (2009), and *Meeting the Employment Challenge in the GCC: The Need for a Holistic Strategy* (2010). Dr Samman holds a Bachelor's degree in Social Sciences from the University of California, San Diego and a PhD in Political Economy & Public Policy from the University of Southern California.

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**Kurt Steinert** has more than 20 years of experience in corporate public relations, advocacy communications, and non-profit management with a focus on high-tech, international security, and global environmental issues. Over the past decade, Mr Steinert has held a number of senior communications roles in Alcatel-Lucent, most recently serving as Head of Communications for the company's Solutions Organization, where he was responsible for external and internal communications in support of the company's initiatives in a variety of emerging technology sectors. Prior to this, Mr Steinert helped manage a program that brought together leading members of the Washington, D.C. press corps with senior government officials in defence and foreign policy for frank discussions on the most pressing issues of the day. Mr Steinert received his Bachelor's degree in Journalism and Environmental Public Policy from Rutgers University, The State University of New Jersey, USA.

**Gaspar Veiga** has more than 30 years of industry knowledge and extensive experience in international sales, helping drive company growth in a highly competitive market. Over the past 20 years, Mr Veiga has held a variety of managerial positions at Alcatel-Lucent. His responsibilities include exploring and developing new opportunities in smart cities, public safety, and e-government solutions — analysing the global market, leading sales team strategies, and assisting customers. He holds a Master of Science in Computer Science and Software Engineering from French High Schools (Grandes Écoles) and is the co-author of the book *WINS – Wireless In-House Network Studies: Esprit Project 5631*.

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**Louis Witters** is part of the Market and Consumer Insight team at Alcatel-Lucent, where he has responsibilities in the areas of market analysis, market sizing, and growth and core programs initiatives. Previously, Mr Witters held a variety of roles in product and consumer segments in Alcatel-Lucent. His responsibilities have included commercial activities in the transmission and public switching field, market analysis and market sizing of key markets and key product segments, product rationalization, and strategy definition for regional markets. Mr Witters graduated from the Catholic University of Leuven (Belgium) in Criminology, Sociology, and Law. He also graduated from the University of Nanjing (China) in Chinese Economy.

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With the global economic recovery strengthening in most parts of the world and the global economy forecasted to grow at a rate of more than 4% in 2011, innovation is coming into its own as economies aim to sustain their growth while creating new jobs for their citizens.

Since 2007, INSEAD eLab has been producing the Global Innovation Index (GII), recognizing the key role of innovation as a driver of economic growth and prosperity and acknowledging the need for a broad horizontal vision of innovation that is applicable to both developed and emerging economies. A key goal of the GI has been to find metrics and approaches to better capture the richness of innovation in society and go beyond the traditional measures of innovation such as the number of PhDs, research articles produced, research centres created, patents issued, and R&D expenditures.

In this edition of the GI, Alcatel-Lucent, Booz & Company, the Confederation of Indian Industry (CII), and the World Intellectual Property Organization (WIPO, a specialized UN agency) have joined INSEAD as Knowledge Partners in the elaboration of the GI. These Knowledge Partners share a common belief in the growing importance of innovation for enabling economic growth in both developed and emerging nations. They have provided valuable input to the research underlying the GI, contributed analytical chapters to the GI Report, and will participate actively in the dissemination of its results. In addition, for the 2011 edition, the Joint Research Centre (JRC) of the European Commission performed a thorough robustness and sensitivity analysis of the GI. Last but certainly not least, an Advisory Board was set up, comprising a select group of international practitioners and experts who bring unique knowledge and skills in the realm of innovation.

This year the GI Report covers 125 countries that represent 93.2% of the world's population and 98.0% of the world's GDP (in current US dollars). The emphasis this year is on general trends and includes details of the results for the global leaders and the best performers within each income category (high, upper-middle, lower-middle, and low-income groups). A discussion of the rankings at the regional level along with additional information on regional leaders by income group is also provided. This is complemented by five chapter contributions on specific aspects of global innovation including regionally focused contributions on Latin America and India and in-depth treatments of specific issues such as the measurement of creativity, innovation in smart cities, and the emerging global footprint of R&D.

Written in a nontechnical language and style, the GI appeals to diverse groups including policy makers, business leaders, academics, and different organizations of civil society.

The full report can be downloaded at [www.globalinnovationindex.org](http://www.globalinnovationindex.org).

