Appendix C:
Technical Notes and Sources

The data in this Report represent the best-available estimates from various national authorities, international agencies and private sources at the time the Report was prepared. It is possible that some data will have been revised or updated by them after publication. The following notes provide sources for all the indicators listed in the Country Profiles. Throughout the Report, "n/a" denotes that the value is not available, or that the available data are unreasonably outdated or do not come from a reliable source. For each indicator, the title appears on the first line, preceded by its number to allow for quick reference. The numbering is the same as the one used in the Appendix B.

A description of each indicator follows, or, in the case of Executive Opinion Survey (EOS) data, the full question and associated answers. If necessary, additional information is provided underneath the respective description or question/associated answers.

Pillar 1: Enterprise environment

1.01 Intensity of local competition

In your country, how intense is competition in the local markets? (1 = not intense at all; 7 = extremely intense) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.02 Effectiveness of antitrust policy

In your country, to what extent does anti-monopoly policy promote competition? (1 = does not promote competition; 7 = effectively promotes competition) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.03 Extent of market dominance

In your country, how would you characterize corporate activity? (1 = dominated by a few business groups; 7 = spread among many firms) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.04 Agricultural policy costs

In your country, how would you assess the agricultural policy? (1 = excessively burdensome for the economy; 7 = balances well the interests of taxpayers, consumers and producers) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.05 Impact of rules on FDI

In your country, to what extent do rules and regulations encourage or discourage foreign direct investment (FDI)? (1 = strongly discourage FDI; 7 = strongly encourage FDI) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.06 Distortive effect on competition of taxes and subsidies

In your country, to what extent do government subsidies and/or tax breaks distort competition? (1 = significantly distort competition; 7 = do not distort competition) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.07 Burden of government regulation

In your country, how burdensome is it for businesses to comply with governmental administrative requirements (e.g. permits, regulations, reporting)? (1 = extremely burdensome; 7 = not burdensome at all) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.08 State of cluster development

In your country, how widespread are well-developed and deep clusters (geographic concentrations of firms, suppliers, producers of related products and services, and specialized institutions in a particular field)? (1 = non-existent; 7 = widespread in many fields) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.09 Value chain breadth

In your country, do companies have a narrow or broad presence in the value chain? (1 = narrow, primarily involved in individual steps of the value chain [e.g. resource extraction or production]; 7 = broad, present across the entire value chain [e.g. production and marketing, distribution, design]) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.10 Number of procedures required to start a business

Number of procedures required to start a business | 2013

A *procedure* is defined as any interaction of the company founders with external parties (e.g. government agencies, lawyers, auditors, notaries). For details about the methodology employed and the assumptions made to compute this indicator, visit: http://www.doingbusiness.org/methodologysurveys/.

Source: World Bank; International Finance Corporation (IFC), 2013. *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

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1.11 Time required to start a business

Number of days required to start a business | 2013

Time is recorded in calendar days. The measure captures the median duration that incorporation lawyers indicate is necessary in practice to complete a procedure with minimum follow-up with government agencies and no extra payments. For more details about the methodology employed and the assumptions made to compute this indicator, visit: http://www.doingbusiness.org/methodologysurveys/.

Source: World Bank; IFC, 2013. *Doing Business 2014: Understanding Regulations for Small and Medium-Size Enterprises*

1.12 Extent and effect of taxation on incentives to invest

In your country, to what extent do taxes reduce the incentive to invest? (1 = significantly reduce the incentive to invest; 7 = do not reduce the incentive to invest at all) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.13 Attitudes towards entrepreneurial failure

In your country, how is a failed entrepreneurial project regarded? (1 = as an embarrassment; 7 = as a valuable learning experience) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.14 Ease of access to loans

In your country, how easy is it to obtain a bank loan with only a good business plan and no collateral? (1 = extremely difficult; 7 = extremely easy) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.15 Venture capital availability

In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital? (1 = extremely difficult; 7 = extremely easy) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

1.16 Local equity market access

In your country, how easy is it for companies to raise money by issuing shares on the stock market? (1 = extremely difficult; 7 = extremely easy) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

Pillar 2: Digital agenda

2.01 Government strategy for ICT

To what extent does the government have a clear implementation plan for utilizing ICTs to improve your country's overall competitiveness? (1 = no plan; 7 = clear plan) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

2.02 Mobile phone subscriptions

Mobile telephone subscriptions (post-paid and pre-paid) per 100 population | 2012

A *mobile telephone subscription* refers to a subscription to a public mobile telephone service that provides access to the public switched telephone network using cellular technology, including the number of pre-paid Subscriber Identity Module (SIM) cards active during the past three months. This includes both analogue and digital cellular systems (IMT-2000, Third Generation [3G]) and 4G subscriptions, but excludes mobile broadband subscriptions via data cards or Universal Serial Bus (USB) modems. Subscriptions to public mobile data services, private trunked mobile radio, telepoint or radio paging, and telemetry services are also excluded. It includes all mobile cellular subscriptions that offer voice communications.

Source: International Telecommunication Union (ITU), December 2013. *ITU World Telecommunication/ICT Indicators Database 2013*

2.03 International internet bandwidth per internet user

International internet bandwidth (kb/s) per internet user | 2012

International internet bandwidth is the sum of capacity of all internet exchanges offering international bandwidth measured in kb/s.

Source: ITU, December 2013. *ITU World Telecommunication/ICT Indicators Database 2013*

2.04 Fixed broadband internet subscriptions

Fixed broadband internet subscriptions per 100 population | 2012

This refers to total fixed (wired) broadband internet subscriptions (i.e. subscriptions to high-speed access to the public internet—a Transition Control Protocol/Internet Protocol connection—at downstream speeds equal to or greater than 256 kb/s).

Source: ITU, December 2013. *ITU World Telecommunication/ICT Indicators Database 2013*

2.05 Mobile broadband subscriptions

Mobile broadband subscriptions per 100 population | 2012

Mobile broadband subscriptions refer to active SIM cards or, on code division multiple access networks, connections accessing the internet at consistent broadband speeds of over 512 kb/s, including cellular technologies such as High Speed Packet Access, evolution-data optimized and above. This includes connections being used in any type of device able to access mobile broadband networks, including smartphones, USB modems, mobile hotspots and other mobile-broadband-connected devices.

Source: ITU, December 2013. *ITU World Telecommunication/ICT Indicators Database 2013*

2.06 Laws related to ICT

How developed are your country's laws related to the use of ICTs (e.g. electronic commerce, digital signatures, consumer protection)? (1 = not developed at all; 7 = extremely well developed) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

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2.07 Government Online Service Index

The Government Online Service Index assesses the quality of government's delivery of online services on a 0-1 (best) scale | 2012

According to the United Nations' Public Administration Network, the Government Online Service Index captures a government's performance in delivering online services to the citizens. There are four stages of service delivery: *emerging*, *enhanced*, *transactional* and *connected*. Online services are assigned to each stage according to their degree of sophistication, from the more basic to the more sophisticated. In each country, the government's performance in each of the four stages is measured as the number of services provided as a percentage of the maximum services in the corresponding stage. Examples of services include online presence, deployment of multimedia content, governments' solicitation of citizen input, widespread data sharing, and use of social networking. For more information about the methodology, consult: www2.unpan.org/egovkb/datacenter/CountryView.aspx.

Source: United Nations, 2012. *UN E-Government Survey 2012: E-Government for the People*

2.08 Internet users

Percentage of individuals using the internet | 2012

Internet users are people with access to the worldwide network.

Source: ITU, December 2013. *ITU World Telecommunication/ICT Indicators Database 2013*

2.09 ICT use for business-to-business transactions

In your country, to what extent do businesses use ICTs for transactions with other businesses? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

2.10 Internet use for business-to-consumer transactions

In your country, to what extent do businesses use the internet for selling their goods and services to consumers? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

2.11 ICT and access to basic services

In your country, to what extent do ICTs enable access for all citizens to basic services (e.g. health, education, financial services)? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

2.12 ICT and business model creations

In your country, to what extent do ICTs enable new business models? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

2.13 E-participation Index

The e-participation index assesses, on a 0-to-1 (best) scale, the quality, relevance, usefulness and willingness of government websites for providing online information and participatory tools and services to their citizens. | 2012

According to the United Nations, the *e-participation index* assesses the quality and usefulness of information and services provided by a country for the purpose of engaging its citizens in public policy-making through the use of e-government programmes. As such, it is indicative of both the capacity and the willingness of the state to encourage citizens in promoting deliberative, participatory decision-making in public policy, and of the reach of its own socially inclusive governance programme. For more information about the methodology, consult: www2.unpan.org/egovkb/datacenter/CountryView.aspx.

Source: United Nations, 2012. *UN E-Government Survey 20102: E-Government for the People*

2.14 Patent Cooperation Treaty (PCT) ICT patent applications

Number of applications for ICT-related patents filed under the PCT, per million population | 2010-2011 average

This measures the count of applications filed under the PCT in the technology domain of ICTs by priority date and inventor nationality, using fractional count if an application is filed by multiple inventors. For more information, consult: www.oecd.org/sti/innovationinsciencetechnologyandindustry/oecdpatentdatabases.htm. The average count of applications filed in 2010 and 2011 is divided by population, using figures from the World Bank's *World Development Indicators Online* (retrieved 20 December 2013).

Source: Organisation for Economic Co-operation and Development (OECD), January 2014. *Patent Database*; World Bank, *World Development Indicators Online* (retrieved 20 December 2013)

Pillar 3: Innovative Europe

3.01 R&D expenditure

R&D expenditure, % of GDP | 2011 or most recent year available

Expenditures for R&D are current and capital expenditures (both public and private sectors) on creative work undertaken systematically to increase knowledge, including knowledge of humanity, culture and society, and the use of knowledge for new applications. R&D covers basic research, applied research and experimental development.

Source: The World Bank, *World Development Indicators Online* (retrieved 14 February 2014)

3.02 Researchers in R&D

Researchers in R&D, per million people | 2010 or most recent year available

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 (ISCED-97 level 6) engaged in R&D are included.

Source: The World Bank, *World Development Indicators Online* (retrieved 14 February 2014)

3.03 Availability of scientists and engineers

In your country, to what extent are scientists and engineers available? (1 = not at all; 7 = widely available) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.04 Highly cited scientific articles

Scientific publications within the 10% most cited scientific publications worldwide, as % of total scientific publications of the country | 2009

Number of scientific publications with at least one co-author based abroad (where abroad is non-EU for the EU28) divided by the total number of scientific publications. The indicator is a proxy for the efficiency of the research system, as highly cited publications are assumed to be of higher quality. There could be a bias towards small or English-speaking countries given the coverage of Scopus' publication data. Countries such as France and Germany, where researchers publish relatively more in their own language, are more likely to underperform on this indicator compared to their real academic excellence. For more information, see: http://ec.europa.eu/enterprise/policies/innovation/policy/innovation-scoreboard/index_en.htm.

Source: EC, Directorate-General for Research and Innovation, 2014. *Innovation Union Scoreboard 2014*

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3.05 PCT patent applications

Number of applications for patents filed under the PCT per million population | 2010–2011 average

This measures the total count of applications filed under the PCT, by priority date and inventor nationality, using fractional count if an application is filed by multiple inventors. The average count of applications filed in 2010 and 2011 is divided by population, using figures from the World Bank's *World Development Indicators Online* (retrieved 28 November 2012).

Source: OECD, January 2014. *Patent Database*; World Bank, *World Development Indicators Online* (retrieved 20 December 2013)

3.06 Firm-level technology absorption

In your country, to what extent do businesses adopt new technology? (1 = not at all; 7 = adopt extensively) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.07 University-industry collaboration in R&D

In your country, to what extent do business and universities collaborate on R&D? (1 = do not collaborate at all; 7 = collaborate extensively) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.08 Capacity for innovation

In your country, to what extent do companies have the capacity to innovate? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.09 Government procurement of advanced technology products

In your country, to what extent do government purchasing decisions foster innovation? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.10 Availability of latest technologies

In your country, to what extent are the latest technologies available? (1 = not available at all; 7 = widely available) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.11 Extent of marketing

In your country, to what extent do companies use sophisticated marketing tools and techniques? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.12 Willingness to delegate authority

In your country, how do you assess the willingness to delegate authority to subordinates? (1 = not willing at all—senior management takes all important decisions; 7 = very willing—authority is mostly delegated to business unit heads and other lower-level managers) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

3.13 Industrial design counts in applications

Industrial design counts in applications per million population | 2012

This measures the total industrial design counts in applications by residents at domestic and foreign offices, while taking into account the multiplying effect for regional offices; for example, the EU's Office for Harmonization in the Internal Market (OHIM) and the Benelux Office for Intellectual Property. Applications received by these offices are multiplied by their respective numbers of Member States. For example, an application filed by a US resident at OHIM is multiplied by 28 to take into account that the application is equivalent to filing for protection in all 28 EU Member States. The industrial design counts are divided by population, using figures from the World Bank's *World Development Indicators Online* (retrieved 20 December 2013).

Source: World Intellectual Property Organization (WIPO), 2014. WIPO Statistics Database

3.14 Nature of competitive advantage

What is the competitive advantage of your country's companies in international markets based upon? (1 = low-cost labour or natural resources; 7 = unique products and processes) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

Pillar 4: Education and training

4.01 Quality of the educational system

How well does the educational system in your country meet the needs of a competitive economy? (1 = not well at all; 7 = extremely well) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

4.02 PISA scores on education quality

Average performance for combined reading, mathematics and scientific literacy performance | 2012

The reported value corresponds to the average performance of pupils (aged 15) in the key competencies of reading, mathematics and science. PISA scores on education quality are scaled such that the a posteriori distribution of student competencies, with equal weight given to all OECD countries, has mean 500 and standard deviation 100.

Source: OECD, 2012 and 2013. *PISA*; World Bank, *World Development Indicators Online* (retrieved 20 December 2013)

4.03 Tertiary education enrolment rate

Gross tertiary education enrolment rate | 2012 or most recent year available

Tertiary enrolment rate is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the tertiary education level. Tertiary education, whether leading to an advanced research qualification or not, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

Source: United Nations Education, Science and Culture Organization (UNESCO). UNESCO Institute for Statistics Data Centre (accessed 17 February 2014)

4.04 Secondary education enrolment rate

Gross secondary education enrolment rate | 2012 or most recent year available

The reported value corresponds to the ratio of total secondary enrolment, regardless of age, to the population of the age group that officially corresponds to the secondary education level. Secondary education (ISCED levels 2 and 3) completes the provision of basic education that began at the primary level, and aims to lay the foundations for lifelong learning and human development, by offering more subject- or skills-oriented instruction using more specialized teachers.

Source: UNESCO. UNESCO Institute for Statistics Data Centre (accessed 17 February 2014)

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4.05 Availability of training services

In your country, to what extent are high-quality, specialized training services available? (1 = not available at all; 7 = widely available) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

4.06 Quality of management schools

In your country, how would you assess the quality of business schools? (1 = extremely poor—among the worst in the world; 7 = excellent—among the best in the world) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

4.07 Extent of staff training

In your country, to what extent do companies invest in training and employee development? (1 = not at all; 7 = to a great extent) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

Pillar 5: Labour market and employment

5.01 Hiring and firing practices

In your country, how would you characterize the hiring and firing of workers? (1 = heavily impeded by regulations; 7 = extremely flexible) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

5.02 Cooperation in labour-employer relations

In your country, how would you characterize labour-employer relations? (1 = generally confrontational; 7 = generally cooperative) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

5.03 Pay and productivity

In your country, to what extent is pay related to worker productivity? (1 = not related to worker productivity; 7 = strongly related to worker productivity) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

5.04 Extent and effect of taxation on incentives to work

In your country, to what extent do taxes reduce the incentive to work? (1 = significantly reduce the incentive to work; 7 = do not reduce the incentive to work at all) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

5.05 Labour participation activity rate

Ratio of the population aged 15 and older to the working-age population (aged 15+) | 2012

This measures the percentage of the population aged 15 and older that is economically active, i.e. all people who supply labour for the production of goods and services during a specified period. The labour force participation rate is a measure of the proportion of a country's working-age population that engages actively in the labour market, either by working or looking for work. It provides an indication of the relative size of the supply of labour available to engage in the production of goods and services.

Source: International Labour Organization (ILO), *Key Indicators of the Labour Market* (retrieved 18 February 2014)

5.06 Female participation in labour force

Ratio of female participation in the labour force (%) to male participation in the labour force (%) | 2012

This measure is the percentage of women aged 15–64 participating in the labour force divided by the percentage of men aged 15–64 participating in the labour force.

Source: ILO. *Key Indicators of the Labour Market Net* (retrieved 18 February 2014)

5.07 Private-sector employment of women

In your country, to what extent do businesses provide women the same opportunities as men to rise to positions of leadership? (1 = not at all, women have no opportunities to rise to positions of leadership; 7 = extensive, women have equal opportunities to rise to positions of leadership) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

5.08 Youth unemployment

Youth unemployment (% of total labour force aged 15-24) | 2013 or most recent year available

Youth unemployment refers to the share of the labour force aged 15-24 without work, but available for and seeking employment. Definitions of labour force and unemployment differ by country.

Source: ILO. *Key Indicators of the Labour Market Net*, national estimates (retrieved 18 February 2014); Eurostat, see: http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/ (retrieved 18 February 2014)

Pillar 6: Social inclusion

6.01 Accessibility of healthcare services

How accessible is healthcare in your country? (1 = limited—only the privileged have access; 7 = universal—all citizens have access to healthcare) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

6.02 Gini coefficient

Income inequality measure (0 = perfect equality; 1 = perfect inequality) | 2013 or most recent year available

This indicator is defined as the relationship of cumulative shares of the population arranged according to the level of equivalized disposable income, to the cumulative share of the equivalized total disposable income received by them. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 1 implies perfect inequality.

Source: The World Bank. *World Development Indicators Online* (retrieved 17 February 2014); Eurostat, see: http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/ (retrieved 17 February 2014)

6.03 Government effectiveness in reducing poverty and inequality

In your country, how effective are the government's efforts to address income inequality? (1 = not effective at all; 7 = extremely effective) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

6.04 Social safety net protection

In your country, to what extent does a formal social safety net provide protection from economic insecurity in the event of job loss or disability? (1 = not at all; 7 = provides full protection) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

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6.05 Social mobility

In your country, to what extent do individuals have the opportunity to improve their economic situation through their personal efforts regardless of the socio-economic status of their parents? (1 = little opportunity exists to improve one's economic situation; 7 = significant opportunity exists to improve one's economic situation) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

Pillar 7: Environmental sustainability

7.01 Share of renewable energy production

Share of electricity produced from renewable sources (% of kilowatt hours [KWh]) | 2012 or most recent year available

This indicator is the ratio of total electricity production from renewable sources (hydropower, geothermal, solar, tides, wind, biomass and biofuels) to the total electricity production from all sources (KWh). Electricity production is measured at the terminals of all alternator sets in a station. Production includes the output of electricity plants that are designed to produce electricity only as well as that of combined heat and power plants.

Source: Authors' calculation based on The World Bank, *World Development Indicators Online* (retrieved 17 February 2014)

7.02 Terrestrial biome protection

The degree to which a country achieves the target of protecting 17% of each terrestrial biome within its borders | 2012 or most recent year available

This indicator is calculated by Columbia University's Center for International Earth Science Information Network (CIESIN) by overlaying the protected area mask on terrestrial biome data developed for each country by World Wildlife Fund's Terrestrial Ecoregions of the World. A biome is defined as a major regional or global biotic community, such as a grassland or desert, characterized chiefly by the dominant forms of plant life and the prevailing climate. Scores are capped at 17% per biome, such that higher levels of protection of some biomes cannot be used to offset lower levels of protection of other biomes; hence, the maximum level of protection a country can achieve is 17%. CIESIN uses time series of the World Database on Protected Areas developed by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) in 2011, which provides a spatial time series of protected area coverage from 1990 to 2010. The WCMC considers all nationally designated protected areas whose location and extent are known. Boundaries were defined by polygons where available and, where they were not available, protected area centroids were buffered to create a circle in accordance with the protected area size. The WCMC removed all overlaps between different protected areas by dissolving the boundaries to create a protected areas mask.

Source: Yale University and Columbia University, 2014. Environmental Performance Index (EPI) 2014 edition based on International Union for Conservation of Nature (IUCN) and UNEP-WCMC (2013), The World Database on Protected Areas (WDPA) [On-line]. Cambridge, UK: UNEP-WCMC

7.03 Environmental treaty ratification

Total number of ratified environmental treaties | 2012

This variable measures the total number of international treaties from a set of 25 for which a state is a participant. A state becomes a "participant" by ratification, formal confirmation, accession, acceptance, definitive signature, approval, simplified procedure, consent to be bound, succession and provisional application (which here are grouped under the term "ratification", for reasons of convenience). The treaties included are: the International Convention for the Regulation of Whaling, 1948 Washington; the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 London, as amended in 1962 and 1969; the Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971 Ramsar; the Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972 Paris; the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 London, Mexico City, Moscow, Washington; the Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973 Washington; the International Convention for the Prevention of Pollution from Ships (MARPOL) as modified by the Protocol of 1978, 1978 London; the Convention on the Conservation of Migratory Species of Wild Animals, 1979 Bonn; the United Nations Convention on the Law of the Sea, 1982 Montego Bay; the Convention on the Protection of the Ozone Layer, 1985 Vienna; the Protocol on Substances that Deplete the Ozone Layer, 1987 Montreal; the Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989 Basel; the International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 London; the United Nations Framework Convention on Climate Change, 1992 New York; the Convention on Biological Diversity, 1992 Rio de Janeiro; the International Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly Africa, 1994 Paris; the Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, 1994 New York; the Agreement relating to the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 1995 New York; the Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto 1997; the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998 Rotterdam; the Cartagena Protocol of Biosafety to the Convention on Biological Diversity, 2000 Montreal; the Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances, 2000 London; the Stockholm Convention on Persistent Organic Pollutants, 2001 Stockholm; the International Treaty on Plant Genetic Resources for Food and Agriculture, 2001 Rome; and the International Tropical Timber Agreement 206, 1994 Geneva.

Source: IUCN Environmental Law Centre ELIS Treaty Database

7.04 Enforcement of environmental regulations

In your country, how would you assess the enforcement of environmental regulations? (1 = very lax, among the worst in the world; 7 = among the world's most rigorous) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

7.05 Quality of natural environment

In your country, how would you assess the quality of the natural environment? (1 = extremely poor, among the worst in the world; 7 = among the world's most pristine) | 2012-2013 weighted average

Source: World Economic Forum, EOS, 2012 and 2013 editions

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7.06 CO_2 intensity

Kilogram (kg) of CO_2 per kg of oil-equivalent energy use | 2012 or most recent year available

Carbon dioxide emissions from solid fuel consumption refer mainly to emissions from the use of coal as an energy source.

Source: The World Bank, 2013. World Development Indicators & Global Development Finance Catalog, December 2013 edition

7.07 Particulate matter (2.5) concentration

Population-weighted exposure to PM2.5 (micrograms per cubic metre) | 2012

PM2.5, also known as fine particulate matter, refers to particles or droplets in the air that are 2.5 microns or less in width. Although invisible to the naked human eye as individual particles, PM2.5 can reduce visibility and cause the air to appear hazy when PM2.5 levels are elevated. This indicator is based on a model that was parameterized by data on aerosol optical depth (AOD) from NASA's Moderate Resolution Imaging Spectroradiometer (MODIS), Sea-viewing Wide Field-of-view Sensor (SeaWiFS), and Multi-angle Imaging SpectroRadiometer (MISR) satellite instruments, and the Goddard Earth Observing System (GEOS)-Chem chemical transport model. The model covered all areas south of 70 degrees north latitude and north of 70 degrees south latitude. Van Donkelaar et al. estimated annual global surface PM2.5 concentrations at a 10x10 kilometre spatial resolution, and then created moving three-year averages from 2000 to 2012. Population-weighted average exposure values were calculated using population data from the Global Rural Urban Mapping Project (2011) database. For additional details, see van Donkelaar, A., January 2015 (embargoed) and http://epi.yale.edu/files/2014_epi_metadata.pdf.

Source: Yale University and Columbia University, 2014. EPI 2014, based on van Donkelaar, A., 2014, http://epi.yale.edu/downloads.

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