

Appendix A: Composition of the Europe 2020 Competitiveness Index

This appendix provides details about the construction of the Europe 2020 Competitiveness Index.

The Index is composed of seven pillars: Enterprise environment, Digital agenda, Innovative Europe, Education and training, Labour market and Employment, Social inclusion and Environmental sustainability. Each pillar has the same weight (1/7) in the overall Europe 2020 Competitiveness Index score.

The pillars are organized also across three sub-indexes:

- Smart growth: Composed of the Enterprise environment, Digital agenda, Innovative Europe, Education and training pillars
- Inclusive growth: Composed of the Labour market and Employment and Social inclusion pillars
- Sustainable growth: Environmental sustainability pillar

The calculation of scores for each of the three sub-indexes provides additional insight for the analysis. However, these scores are not directly used as components of the overall Europe 2020 Competitiveness Index score, which is an aggregate of the pillar level results.

The Europe 2020 Competitiveness Index is based on both survey and external quantitative data. The survey data are mainly derived from the responses to the World Economic Forum's Executive Opinion Survey and range from 1 to 7. The external quantitative data are collected from various recognized sources, such as the World Bank, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Telecommunication Union (ITU) and the International Labour Organization (ILO). All datasets used are described in detail in appendix B: Technical Notes and Sources at the end of this Report. All of the data used in the calculation of the Europe 2020 Competitiveness Index can be found on the website of the Report (www.weforum.org/Europe2020).

In order to aggregate survey data and other quantitative indicators, the latter are normalized to a 1-to-7 scale using a max-min methodology. Each of the pillars has been calculated as an unweighted average of the individual component variables. In the case of the Enterprise environment, Digital agenda, Education and training and Labour market and Employment pillars, the indicators are first aggregated in sub-pillars using simple averages, and in a second step, the sub-pillars are averaged to obtain the pillar scores.

The variables and the composition of pillars are described below. An asterisk (*) identifies the indicators obtained from external sources.

The Europe 2020 Competitiveness Index

Pillar 1: Enterprise environment	14%
A.01.01 Competition	25%
1.01 Intensity of local competition	
1.02 Effectiveness of antitrust policy	
1.03 Extent of market dominance	
1.04 Agricultural policy cost	
1.05 Impacts of rules on FDI	
1.06 Distortive effects on competition of taxes and subsidies	
1.07 Burden of government regulation	
A.01.02 Clusters	25%
1.08 State of cluster development	
1.09 Value chain breadth	
A.01.03 Entrepreneurship	25%
1.10 Number of procedures to start a business*	
1.11 Time required to start a business*	
1.12 Extent and effect of taxation	
1.13 Attitude towards entrepreneurial failure	
A.01.04 Availability of financing	25%
1.14 Ease of access to loans	
1.15 Venture capital availability	
1.16 Financing through local equity market	
Pillar 2: Digital agenda	14%
A.02.01 ICT readiness	33%
2.01 Government prioritization of ICT	
2.02 Mobile phone subscriptions*	
2.03 Internet bandwidth*	
2.04 Laws relating to ICT	
A.02.02 ICT usage	33%
2.05 Government online service index*	
2.06 Individual using Internet*	
2.07 Extent of Internet use by business	
A.02.03 ICT impact	33%
2.08 ICT access for all to basic services	
2.09 ICT and business model creation	
2.10 E-participation index	

Pillar 3: Innovative Europe	14%
3.01 R&D expenditure*	
3.02 Researchers in R&D*	
3.03 Availability of scientists and engineers	
3.04 Highly cited scientific articles*	
3.05 PCT patent applications*	
3.06 Firm-level technology absorption	
3.07 University-industry collaboration in R&D	
3.08 Capacity for innovation	
3.09 Government procurement of advanced technology products	
3.10 Availability of latest technologies	
3.11 Extent of marketing	
3.12 Willingness to delegate authority	
3.13 Industrial design application*	
3.14 Nature of competitive advantage	
Pillar 4: Education and training	14%
A.04.01 Education.....	50%
4.01 Quality of overall education	
4.02 PISA scores on education quality*	
4.03 Tertiary education enrolment rate*	
4.04 Secondary education enrolment rate*	
A.04.02 Training	50%
4.05 Local availability of specialized research and training services	
4.06 Quality of management schools	
4.07 Extent of staff training	
Pillar 5: Labour market and employment	14%
B.05.01 Labour market.....	50%
5.01 Hiring and firing practices	
5.02 Cooperation in labour-employment relations	
5.03 Pay and productivity	
B.05.02 Labour participation.....	50%
5.04 Labour participation activity rate*	
5.05 Women's participation in labour force*	
5.06 Private sector employment of women	
5.07 Youth unemployment rate*	
Pillar 6: Social inclusion	14%
6.01 Accessibility of healthcare services	
6.02 Gini coefficient*	
6.03 Government effort to reduce poverty and inequality	
6.04 Social safety net	
Pillar 7: Environmental sustainability.....	14%
7.01 Renewable electricity production*	
7.02 Terrestrial Biome protection*	
7.03 Environmental treaty ratification*	
7.04 Enforcement of environmental regulations	
7.05 Quality of natural environment	
7.06 CO2 emission per energy use*	
7.07 Particulate matter (PM25) concentration*	

The composition of the three sub-indexes

Smart growth

Enterprise environment	25%
Digital agenda.....	25%
Innovative Europe.....	25%
Education and training.....	25%

Inclusive growth

Labour market and employment.....	50%
Social inclusion.....	50%

Sustainable growth

Environmental sustainability	100%
---	-------------

Appendix B: 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 the sources 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 Appendix A

Below is a description of each indicator or, in the case of Executive Opinion Survey data, the full question and associated answers. If necessary, additional information is provided underneath.

1st Pillar: Enterprise environment

1.01 Intensity of local competition

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) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.02 Effectiveness of anti-monopoly policy

To what extent does anti-monopoly policy promote competition in your country? (1 = does not promote competition; 7 = effectively promotes competition) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.03 Extent of market dominance

How would you characterize corporate activity in your country? (1 = dominated by a few business groups; 7 = spread among many firms) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.04 Agricultural policy costs

How would you assess the agricultural policy in your country? (1 = excessively burdensome for the economy; 7 = balances the interests of taxpayers, consumers, and producers) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.05 Business impact of rules on FDI

To what extent do rules governing foreign direct investment (FDI) encourage or discourage it? (1 = strongly discourage FDI; 7 = strongly encourage FDI) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.06 Distortive effect on competition of taxes and subsidies

In your country, to what extent do government subsidies and tax breaks distort competition? (1 = significantly distort competition; 7 = Do not distort competition) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.07 Burden of government regulation

How burdensome is it for businesses in your country to comply with governmental administrative requirements (e.g. permits, regulations, reporting)? (1 = extremely burdensome; 7 = not burdensome at all) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.08 State of cluster development

In your country's economy, how prevalent are well-developed and deep clusters? (1 = nonexistent; 7 = widespread in many fields) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.09 Value chain breadth

In your country, do exporting 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 (i.e. do not only produce but also perform product design, marketing sales, logistics, and after-sales services)) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.10 Number of procedures required to start a business

Number of procedures required to start a business | 2011

A *procedure* is defined as any interaction of the company founders with external parties (e.g. government agencies, lawyers, auditors, or 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, [i]Doing Business 2012: Doing Business in a More Transparent World[i]

1.11 Time required to start a business

Number of days required to start a business | 2011

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/International Finance Corporation, [i]Doing Business 2012: Doing Business in a More Transparent World[i]

1.12 Extent and effect of taxation

What impact does the level of taxes in your country have on incentives to work or invest? (1 = significantly limits incentives to work or invest; 7 = has no impact on incentives to work or invest) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.13 Attitudes towards entrepreneurial failure

In your country, how is a failed entrepreneurial project regarded? (1 = An embarrassment; 7 = A valuable learning experience) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.14 Ease of access to loans

How easy is it to obtain a bank loan in your country with only a good business plan and no collateral? (1 = very difficult; 7 = very easy) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 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 = very difficult; 7 = very easy) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

1.16 Financing through local equity market

How easy is it to raise money by issuing shares on the stock market in your country? (1 = very difficult; 7 = very easy) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

2nd Pillar: Digital agenda

2.01 Government prioritization of ICT

How much priority does the government in your country place on information and communication technologies? (1 = Weak priority; 7 = High priority) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

2.02 Mobile phone subscriptions

Mobile telephone subscriptions (post-paid and pre-paid) per 100 population | 2010

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 number of pre-paid 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 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 World Telecommunication/ICT Indicators Database 2011* (December 2011 edition)

2.03 International Internet bandwidth per internet user

International Internet bandwidth (kb/s) per Internet user | 2010

International Internet bandwidth is the sum of capacity of all Internet exchanges offering international bandwidth measured in kilobits per second (kb/s).

Source: International Telecommunication Union, *[World Telecommunication/ICT Indicators 2011]* (retrieved February 13, 2012 edition)

2.04 Laws relating to ICT

How would you assess your country's laws relating to the use of information technology (e.g. electronic commerce, digital signatures, consumer protection)? (1 = non-existent; 7 = well-developed) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

2.05 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

This 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 performance of the government 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 details about the methodology, visit the UN's Global E-Government Survey 2012's page at http://www2.unpan.org/egovkb/global_reports/12report.htm.

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

2.06 Internet users

Percentage of individuals using the internet | 2010

Internet users are people with access to the worldwide network.

Source: International Telecommunication Union, *ITU World Telecommunication/ICT Indicators Database 2011* (December 2011 edition)

2.07 Extent of business Internet use

To what extent do companies within your country use the Internet in their business activities (e.g. buying and selling goods, interacting with customers and suppliers)? (1 = Not at all; 7 = Extensively) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

2.08 ICT access for all to basic services

To what extent do information and communication technologies enable access for all citizens to basic services (health, education, financial services etc.) in your country? (1 = Do not enable access at all; 7 = Enable access significantly) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

2.09 ICT and business model creation

To what extent are information and communication technologies creating new business models, services and products in your country? (1 = Not at all; 7 = A significant extent) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

2.10 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

The E-Participation Index captures the extent to which governments create an environment in which citizens can be more active and support their governments. The index takes into account e-participation in all its aspects ranging from e-information to e-consultation and e-decision making. For more details about the methodology, visit the UN's Global E-Government Survey 2012's page at http://www2.unpan.org/egovkb/global_reports/12report.htm.

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

3rd Pillar: Innovative Europe

3.01 R&D Expenditure

R&D Expenditure, % GDP | 2008 or most recent year available

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.

Source: The World Bank, *World Development Indicators Online* (retrieved February 10, 2012);

3.02 Researchers in R&D

Researchers in R&D, per million people | 2008 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 (ISCED97 level 6) engaged in R&D are included.

Source: The World Bank, *World Development Indicators Online* (retrieved February 10, 2012);

3.03 Availability of scientists and engineers

To what extent are scientists and engineers available in your country? (1 = not at all; 7 = widely available) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey

3.04 Highly cited scientific articles

Scientific publications within the 10% most cited scientific publications worldwide as % of total scientific publications of the country | 2007 (Eurostat) and 2009 (US, Japan, China and Korea)

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 like France and Germany, where researchers publish relatively more in their own language, are more likely to underperform on this indicator as compared to their real academic excellence.

Source: DG Research and Innovation

3.05 PCT patent applications

Number of applications for patents filed under the Patent Cooperation Treaty (PCT) per million population | 2008–09 average

This measures the total count of applications filed under the Patent Cooperation Treaty (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 2008 and 2009 is divided by population, using figures from the United Nations Division of Economic and Social Affairs (retrieved November 10, 2011).

Source: Organisation for Economic Co-operation and Development (OECD), *Patent Database*, December 2011

3.06 Firm-level technology absorption

To what extent do businesses in your country absorb new technology? (1 = not at all; 7 = aggressively absorb) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.07 University-industry collaboration in R&D

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) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.08 Capacity for innovation

In your country, how do companies obtain technology? (1 = exclusively from licensing or imitating foreign companies; 7 = by conducting formal research and pioneering their own new products and processes) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.09 Government procurement of advanced technology products

Do government procurement decisions foster technological innovation in your country? (1 = no, not at all; 7 = yes, extremely effectively) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.10 Availability of latest technologies

To what extent are the latest technologies available in your country? (1 = not available; 7 = widely available) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.11 Extent of marketing

In your country, to what extent do companies use sophisticated marketing tools and techniques? (1 = very little; 7 = extensively) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.12 Willingness to delegate authority

In your country, how do you assess the willingness to delegate authority to subordinates? (1 = low – top management controls all important decisions; 7 = high – authority is mostly delegated to business unit heads and other lower-level managers) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

3.13 Industrial design counts in applications

Industrial design counts in applications per million population | 2010

This measures the total industrial design counts in applications by residents at domestic offices and abroad, while taking into account the multiplying effect for regional offices, for example, the EU's Office for Harmonization in the Internal Market (OHIM) and Benelux's BOIP. 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 27 to take into account that this application is equivalent to filing for protection in all 27 EU member states. The industrial design counts are divided by population, using figures from the United Nations Division of Economic and Social Affairs (retrieved November 10, 2011).

Source: World Intellectual Property Organization (WIPO), Statistics Database (2010)

3.14 Nature of competitive advantage

What is the competitive advantage of your country's companies in international markets based upon? (1 = Low-cost or natural resources; 7 = Unique products and processes) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

4th Pillar: 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 = Very well) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

4.02 PISA scores on education quality

Average performance for combined reading, mathematical and scientific literacy performance | 2009

The reported value corresponds to the average performance of pupils (age 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 competences, with equal weight given to all OECD countries, has mean 500 and standard deviation 100.

Source: Organisation for Economic Co-operation and Development (OECD), 2009

4.03 Tertiary education enrolment rate

Gross tertiary education enrolment rate | 2011 or most recent year available

The reported value corresponds to the ratio of total tertiary enrolment, regardless of age, to the population of the age group that officially corresponds to the tertiary education level. Tertiary education (ISCED levels 5 and 6), whether or not leading to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

Source: UNESCO Institute for Statistics (accessed February 17, 2012)

4.04 Secondary education enrolment rate

Gross secondary education enrolment rate | 2011 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 Institute for Statistics (accessed February 21, 2012)

4.05 Local availability of specialized research and training services

In your country, to what extent are high-quality, specialized training services available? (1 = not available; 7 = widely available) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

4.06 Quality of management schools

How would you assess the quality of management or business schools in your country? (1 = poor; 7 = excellent – among the best in the world) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

4.07 Extent of staff training

To what extent do companies in your country invest in training and employee development? (1 = hardly at all; 7 = to a great extent) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

5th Pillar: Labour market & employment

5.01 Hiring and firing practices

How would you characterize the hiring and firing of workers in your country? (1 = impeded by regulations; 7 = flexibly determined by employers) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

5.02 Cooperation in labour-employer relations

How would you characterize labour-employer relations in your country? (1 = generally confrontational; 7 = generally cooperative) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

5.03 Pay and productivity

To what extent is pay in your country related to productivity? (1 = not related to worker productivity; 7 = strongly related to worker productivity) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

5.04 Labour participation activity rate

Ratio of the population ages 15 and older to the working-age population (ages 15+) | 2010

This measures the percentage of the population ages 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.

Source: International Labour Organization, *Key Indicators of the Labour Markets Net* (retrieved March 5, 2012)

5.05 Female participation in labour force

Ratio of female participation in the labour force (%) to male participation in the labour force (%) | 2010

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: International Labour Organization, *Key Indicators of the Labour Markets Net* (retrieved March 5, 2012)

5.06 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 for positions of leadership) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

5.07 Youth unemployment, %

Youth unemployment (% of total labour force ages 15-24) | 2010 or most recent year available

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

Source: International Labour Organization, *Key Indicators of the Labour Markets Net* (retrieved March 5, 2012)

6th Pillar: 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) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

6.02 Gini coefficient

Income inequality measure (0=perfect equality; 1=perfect inequality) | 2010 or most recent year available

This indicator is defined as the relationship of cumulative shares of the population arranged according to the level of equivalised disposable income, to the cumulative share of the equivalised 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 & Global Development Finance Catalog (September 2011 edition); European Commission, Eurostat (retrieved March 5, 2012)

6.03 Government effectiveness in reducing poverty and inequality

In your country, how effective are the government's efforts to reduce poverty and address income inequality? (1 = Very ineffective; 7 = Very effective) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

6.04 Social safety net protection

In your country, does a formal social safety net provide protection from economic insecurity due to job loss or disability? (1 = Not at all; 7 = Fully) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

7th Pillar: Environmental Sustainability

7.01 Share of renewable energy production

Share of electricity produced from renewable sources (% of KWh) | 2010 or most recent year available

This indicator is the ratio of the 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: Author's calculation based on The World Bank, *World Development Indicators Online* (retrieved February 10, 2012); International Energy Agency (IEA)

7.02 Terrestrial biome protection

The weighted percentage of terrestrial biomes under protected status, where the weight is determined by the relative size of biomes within a country. (Biomes are climatically and geographically defined

as similar climatic conditions on the Earth, such as communities of plants, animals, and soil organisms, and are often referred to as ecosystems). | 2010 or most recent year available

This indicator is calculated by CIESIN (Columbia University's Center for International Earth Science Information Network) by overlaying the protected area mask on terrestrial biome data developed by WWF's Terrestrial Ecoregions of the World for each country. 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 (WDPA) developed by UNEP World Conservation Monitoring Centre in 2011, which provides a spatial time series of protected area (PA) coverage from 1990 to 2010. WCMC considers all nationally designated protected areas whose location and extent is 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 PA size. WCMC removed all overlaps between different protected areas by dissolving the boundaries to create a protected areas mask.

Source: Yale University and Columbia University, Environmental Performance Index (EPI) 2012 edition based on WWF World Wildlife Fund USA and UNEP World Conservation Centre data

7.03 Environmental Treaty ratification

Total number of ratified environmental treaties | 2010

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 are here 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 the 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: The International Union for Conservation of Nature (IUCN) Environmental Law Centre ELIS Treaty Database

7.04 Enforcement of environmental regulations

How would you assess the enforcement of environmental regulations in your country? (1 = Very lax ; 7 = Among the world's most rigorous) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

7.05 Quality of natural environment

How would you assess the quality of the natural environment in your country? (1 = Extremely poor; 7 = Among the world's most pristine) | 2010–11 weighted average

Source: World Economic Forum, Executive Opinion Survey, 2010 and 2011 editions

7.06 CO2 intensity

(kg of CO2 per kg of oil equivalent energy use) | 2008 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, World Development Indicators & Global Development Finance Catalogue (December 2011 edition);

7.07 PM25 emission

Annual average PM2.5 (particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers) concentration for 2001–05, population weighted by country | 2010 or most recent year available

This indicator is based on satellite data that are then converted to ground-level concentrations using the GEOS-Chem global chemical transport model to account for the meteorological and chemical factors that influence the spatially and temporally varying relationship between column and surface concentrations. The 0.1 x 0.1° resolution aerosol optical depth (AOD) values for 2001–05 are derived from the NASA Terra MODIS and MISR sensors, averaged to get a 6-year mean AOD for each grid cell, and then population-weighted to better represent human exposure by country. PM2.5 concentrations were averaged over the period 2001–2005 and the grid was re-sampled to match the Global Rural Urban Mapping Project 1km population grid. The weighted average of the values in each grid cell was used to derive a country total exposure to PM2.5 in micrograms per cubic meter.

Source: Yale University and Columbia University, Environmental Performance Index (EPI) 2012 edition based on NASA MODIS and MISR data, processed by Dalhousie University (van Donkelaar et al. [2010]), Battelle



COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

The World Economic Forum is an independent international organization committed to improving the state of the world by engaging business, political, academic and other leaders of society to shape global, regional and industry agendas.

Incorporated as a not-for-profit foundation in 1971 and headquartered in Geneva, Switzerland, the Forum is tied to no political, partisan or national interests

World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel +41 (0) 22 869 1212
Fax +41 (0) 22 786 2744

contact@weforum.org
www.weforum.org