

How to Read the Competitiveness Profiles

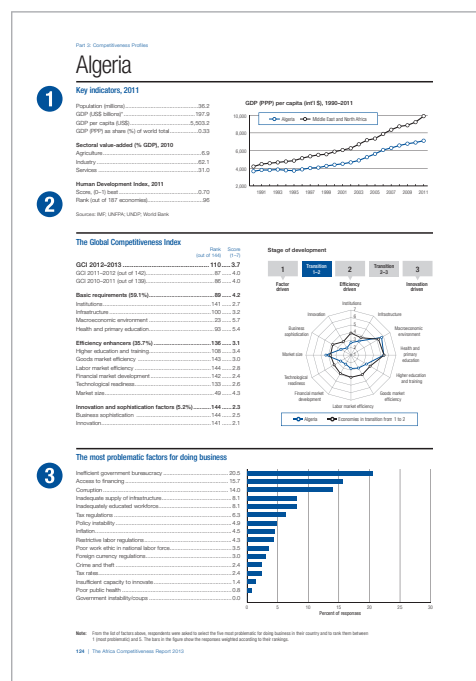
The Competitiveness Profiles section of *The Africa Competitiveness Report 2013* presents a two-page profile of the performance in the Global Competitiveness Index (GCI) discussed in Chapter 1.1 of each of the 38 African economies covered in *The Global Competitiveness Report 2012–2013*.

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1 Key indicators

The first section presents a selection of key indicators for the economy under review:

- Population figures are from the *World Population Prospects: The 2010 Revision*, (CD-ROM edition) published by the United Nations' Department of Economic and Social Affairs, Population Division.
- Gross domestic product (GDP) data come from the October 2012 edition of the International Monetary Fund (IMF)'s *World Economic Outlook (WEO) Database*. Reported GDP and GDP per capita are valued at current prices.
- The sectoral value-added (% of GDP) data are from the World Bank's *World Development Indicators Online Database* (retrieved on November 20, 2012).
- The Human Development Index (HDI) ranking is computed by the United Nations Development Programme (UNDP), available from the *Human Development Indices: Statistical Update 2011*.
- The graph on the upper right-hand side displays the evolution of GDP per capita at purchasing power parity (PPP) from 1990 through 2011 (or the period for which data are available) for the economy under review (blue line). The black line plots the GDP-weighted average of GDP per capita of the group of economies to which the economy under review belongs. We draw on the IMF country classification, which divides the world into six regions: *Central and Eastern Europe; Commonwealth of Independent States (CIS)*, which includes Georgia and Mongolia although they are not members; *Developing Asia; the Middle East and North Africa; sub-Saharan Africa*; and *Latin America and the Caribbean*. The last group comprises *advanced economies*. GDP



figures come from the WEO database. For more information regarding the classification and the data, see www.imf.org/weo.

2 The Global Competitiveness Index

This section of the profile details the economy's performance on the various components of the GCI. The first column shows the country's rank among the 144 economies covered by the GCI, while the second column presents the score. The percentage contribution to the overall GCI score of each subindex is reported next to the subindex name. These weights vary depending on the country's stage of development. For more information on the methodology of the GCI, refer to Chapter 1.1. On the right-hand side, a spider chart shows the country's performance on the 12 pillars of the GCI (blue line) measured against the average scores across all the economies in the GCI sample at the same stage of development (black line).

3 The most problematic factors for doing business

The bar chart at the bottom of the page summarizes those factors seen by business executives as the most problematic for doing business in their economy. The information is drawn from the 2012 edition of the World Economic Forum's Executive Opinion Survey (the Survey). From a list of 16 factors, respondents were asked to select the five most problematic and rank them from 1 (most problematic) to 5. The results were then tabulated and weighted according to the ranking assigned by respondents. For Rwanda, we use data from the 2011 edition of the Survey, so for that country the list comprises only 15 factors—one less than in the 2012 edition.¹

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4 The Global Competitiveness Index in detail

This page details the country's performance on each of the indicators entering the composition of the Global Competitiveness Index 2012–2013 (GCI). Indicators are organized by pillar. For indicators entering at the GCI in two different pillars, only the first instance is shown on this page.

- INDICATOR, UNITS:** This column contains the title of each indicator and, where relevant, the units in which it is measured—for example, “days” or “% GDP.” Indicators that are not derived from the Survey are identified by an asterisk (*). Indicators derived from the Survey are always expressed as scores on a 1–7 scale, with 7 being the most desirable outcome.
- VALUE:** This column reports the country's score on each of the variables that compose the GCI.
- RANK/144:** This column reports the country's position among the 144 economies covered by the GCI 2012–2013.

The following sections provide additional information and definitions on each of these indicators.

1 For more information regarding the Executive Opinion Survey, see World Economic Forum, *The Global Competitiveness Report 2012–2013*. Geneva: World Economic Forum.

The screenshot shows the 'Global Competitiveness Index in detail' for Algeria. It features a table with columns for 'INDICATOR', 'UNITS', 'VALUE', and 'RANK/144'. The indicators are grouped into pillars. The 1st pillar includes indicators like 'Government budget balance, % GDP' and 'Gross national energy, % GDP'. The 2nd pillar includes 'Quality of road infrastructure' and 'Quality of rail infrastructure'. The 3rd pillar includes 'Government budget balance, % GDP' and 'Gross national energy, % GDP'. The 4th pillar includes 'Business impact of malaria' and 'Malaria incidence (1000 pop.)'. The 5th pillar includes 'Science, research and development, gross %' and 'Quality of the educational system'. The 6th pillar includes 'Capacity for innovation' and 'Quality of scientific research institutions'. The 7th pillar includes 'Attractability of financial services' and 'Financial strength (total credit to private)'. The 8th pillar includes 'FDI and technology transfer' and 'Innovation in product development'. The 9th pillar includes 'Market size (total population)' and 'Market size (total population)'. The 10th pillar includes 'Local supplier quality' and 'Local supplier quality'. The 12th pillar includes 'Capacity for innovation' and 'Quality of scientific research institutions'.

TECHNICAL NOTES AND SOURCES FOR THE GLOBAL COMPETITIVENESS INDEX

This section provides detailed definitions and sources for all the indicators that enter the Global Competitiveness Index 2012–2013 (GCI); the next section provides details for the indicators of the sustainability-adjusted GCI (the SCI). For further information, see *The Global Competitiveness Report 2012–2013*.

Two types of data are used in the GCI: Executive Opinion Survey data and data from sources other than the World Economic Forum (national authorities, international agencies, and private sources). The latter were updated at the time *The Global Competitiveness Report 2012–2013* was prepared.

For each indicator, the title appears on the first line, preceded by its number to allow for quick reference. The numbering refers to the data tables section in *The Global Competitiveness Report 2012–2013*. Underneath is a description of the indicator or, in the case of the Executive Opinion Survey data, the full question and the associated response. The data used represent the best available estimates at the time *The Global Competitiveness Report 2012–2013* was prepared. It is possible that some data will have been updated or revised after publication.

1st Pillar: Institutions

1.01 Property rights

How would you rate the protection of property rights, including financial assets, in your country? [1 = very weak; 7 = very strong] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.02 Intellectual property protection

How would you rate intellectual property protection, including anti-counterfeiting measures, in your country? [1 = very weak; 7 = very strong] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.03 Diversion of public funds

In your country, how common is diversion of public funds to companies, individuals, or groups due to corruption? [1 = very common; 7 = never occurs] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.04 Public trust in politicians

How would you rate the level of public trust in the ethical standards of politicians in your country? [1 = very low; 7 = very high] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.05 Irregular payments and bribes

Average score across the five components of the following Executive Opinion Survey question: In your country, how common is it for firms to make undocumented extra payments or bribes connected with (a) imports and exports; (b) public utilities; (c) annual tax payments; (d) awarding of public contracts and licenses; (e) obtaining favorable judicial decisions. In each case, the answer ranges from 1 (very common) to 7 (never occurs). | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.06 Judicial independence

To what extent is the judiciary in your country independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.07 Favoritism in decisions of government officials

To what extent do government officials in your country show favoritism to well-connected firms and individuals when deciding upon policies and contracts? [1 = always show favoritism; 7 = never show favoritism] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.08 Wastefulness of government spending

How would you rate the composition of public spending in your country? [1 = extremely wasteful; 7 = highly efficient in providing necessary goods and services] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.09 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.10 Efficiency of legal framework in settling disputes

How efficient is the legal framework in your country for private businesses in settling disputes? [1 = extremely inefficient; 7 = highly efficient] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.11 Efficiency of legal framework in challenging regulations

How efficient is the legal framework in your country for private businesses in challenging the legality of government actions and/or regulations? [1 = extremely inefficient; 7 = highly efficient] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.12 Transparency of government policymaking

How easy is it for businesses in your country to obtain information about changes in government policies and regulations affecting their activities? [1 = impossible; 7 = extremely easy] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.13 Government provision of services for improved business performance

To what extent does the government in your country continuously improve its provision of services to help businesses in your country boost their economic performance? [1 = not at all; 7 = extensively] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.14 Business costs of terrorism

To what extent does the threat of terrorism impose costs on businesses in your country? [1 = to a great extent; 7 = not at all] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.15 Business costs of crime and violence

To what extent does the incidence of crime and violence impose costs on businesses in your country? [1 = to a great extent; 7 = not at all] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.16 Organized crime

To what extent does organized crime (mafia-oriented racketeering, extortion) impose costs on businesses in your country? [1 = to a great extent; 7 = not at all] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.17 Reliability of police services

To what extent can police services be relied upon to enforce law and order in your country? [1 = cannot be relied upon at all; 7 = can be completely relied upon] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.18 Ethical behavior of firms

How would you compare the corporate ethics (ethical behavior in interactions with public officials, politicians, and other enterprises) of firms in your country with those of other countries in the world? [1 = among the worst in the world; 7 = among the best in the world] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.19 Strength of auditing and reporting standards

In your country, how would you assess financial auditing and reporting standards regarding company financial performance? [1 = extremely weak; 7 = extremely strong] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.20 Efficacy of corporate boards

How would you characterize corporate governance by investors and boards of directors in your country? [1 = management has little accountability to investors and boards; 7 = investors and boards exert strong supervision of management decisions] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.21 Protection of minority shareholders' interests

In your country, to what extent are the interests of minority shareholders protected by the legal system? [1 = not protected at all; 7 = fully protected] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

1.22 Strength of investor protection

Strength of Investor Protection Index on a 0–10 (best) scale | 2011

This variable is a combination of the Extent of disclosure index (transparency of transactions), the Extent of director liability index (liability for self-dealing), and the Ease of shareholder suit index (shareholders' ability to sue officers and directors for misconduct). 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, *Doing Business 2012: Doing Business in a More Transparent World*

2nd Pillar: Infrastructure**2.01 Quality of overall infrastructure**

How would you assess general infrastructure (e.g., transport, telephony, and energy) in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

2.02 Quality of roads

How would you assess the roads in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

2.03 Quality of railroad infrastructure

How would you assess the railroad system in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

Note: *N/Appl.* is used for economies where the railroad network totals less than 50 km.

2.04 Quality of port infrastructure

How would you assess the port facilities in your country? [1 = extremely underdeveloped; 7 = well developed and efficient by international standards] For landlocked countries, the question is as follows: How accessible are port facilities? [1 = extremely inaccessible; 7 = extremely accessible] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

2.05 Quality of air transport infrastructure

How would you assess passenger air transport infrastructure in your country? [1 = extremely underdeveloped; 7 = extensive and efficient by international standards] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

2.06 Available airline seat kilometers

Scheduled available airline seat kilometers per week originating in country (in millions) | Jan2012-Jul2012

This variable measures the total passenger-carrying capacity of all scheduled flights, including domestic flights, originating in a country. It is computed by taking the number of seats available on each flight multiplied by the flight distance in kilometers, summing the result across all scheduled flights in a week during January (winter schedule) and July (summer schedule) 2012, and taking the average capacity of the two weeks.

Source: International Air Transport Association, SRS Analyser

2.07 Quality of electricity supply

How would you assess the quality of the electricity supply in your country (lack of interruptions and lack of voltage fluctuations)? [1 = insufficient and suffers frequent interruptions; 7 = sufficient and reliable] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

2.08 Mobile telephone subscriptions

Number of mobile telephone subscriptions per 100 population | 2011

A *mobile telephone subscription* refers to a subscription to a public mobile telephone service that provides access to the public switched telephone network (PSTN) using cellular technology, including the number of pre-paid SIM cards active during the past three months. This includes both analog 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 2012* (June 2012 edition)

2.09 Fixed telephone lines**Number of active fixed telephone lines per 100 population | 2011**

A *fixed telephone line* is an active line connecting the subscriber's terminal equipment to the public switched telephone network (PSTN) and that has a dedicated port in the telephone exchange equipment. Active lines are those that have registered an activity in the past three months.

Source: International Telecommunication Union, *ITU World Telecommunication/ICT Indicators Database 2012* (June 2012 edition)

3rd Pillar: Macroeconomic environment**3.01 Government budget balance****General government budget balance as a percentage of GDP | 2011**

Net lending (+)/ borrowing (-) is calculated as general government revenue minus total expenditure. This is a core Government Finance Statistics (GFS) balance that measures the extent to which the general government is either putting financial resources at the disposal of other sectors in the economy and nonresidents (net lending), or utilizing the financial resources generated by other sectors and nonresidents (net borrowing). This balance may be viewed as an indicator of the financial impact of general government activity on the rest of the economy and nonresidents. Revenue consists of taxes, social contributions, grants receivable, and other revenue. Revenue increases a government's net worth, which is the difference between its assets and liabilities. General government total expenditure consists of total expenses and the net acquisition of nonfinancial assets.

Sources: International Monetary Fund, *World Economic Outlook Database* (April 2012 edition) and *Public Information Notices* (various issues); national sources

3.02 Gross national savings**Gross national savings as a percentage of GDP | 2011**

Aggregate national savings is defined as public- and private-sector savings as a percentage of nominal GDP. National savings equals gross domestic investment plus the current-account balance.

Sources: International Monetary Fund, *World Economic Outlook Database* (April 2012 edition) and *Public Information Notices* (various issues); national sources

3.03 Inflation**Annual percent change in consumer price index (year average) | 2011**

Annual percent change in year average consumer price index.

Sources: International Monetary Fund, *World Economic Outlook Database* (April 2012 edition); national sources

Note: For inflation rates between 0.5 and 2.9 percent, a country received the highest possible score of 7. Outside this range, scores decrease linearly as they move away from these values.

3.04 Government debt**Gross general government debt as a percentage of GDP | 2011**

Gross debt consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. This includes debt liabilities in the form of special drawing rights, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable. Thus, all liabilities in the *Government Finance Statistics Manual 2001* system are debt, except for equity and investment fund shares and financial derivatives and employee stock options.

Sources: International Monetary Fund, *World Economic Outlook Database* (April 2012 edition) and *Public Information Notices* (various issues); national sources

3.05 Country credit rating**Expert assessment of the probability of sovereign debt default on a 0–100 (lowest probability) scale | March 2012**

Institutional Investor's Country Credit ratings developed by Institutional Investor are based on information provided by senior economists and sovereign-debt analysts at leading global banks and money management and security firms. Twice a year, the respondents grade each country on a scale of 0 to 100, with 100 representing the least chance of default. For more information, visit <http://www.institutionalinvestor.com/Research/3633/Global-Rankings.html>.

Source: Institutional Investor

4th Pillar: Health and primary education**4.01 Business impact of malaria**

How serious an impact do you consider malaria will have on your company in the next five years (e.g., death, disability, medical and funeral expenses, productivity and absenteeism, recruitment and training expenses, revenues)? [1 = a serious impact; 7 = no impact at all] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

Note: This indicator does not apply to economies where malaria is not endemic (n/appl.).

4.02 Malaria incidence**Number of malaria cases per 100,000 population | 2009**

Data are estimates and are provided only for economies in which malaria is considered to be endemic. In the corresponding data table, "NE" denotes an economy where malaria is not endemic.

Source: Cibulskis, R.E., M. Aregawi, R. Williams, M. Otten, and C. Dye. 2011. "Worldwide Incidence of Malaria in 2009: Estimates, Time Trends, and a Critique of Methods." *PLoS Med* 8 (12): e1001142. doi: 10.1271/journal.pmed.1001142.

4.03 Business impact of tuberculosis

How serious an impact do you consider tuberculosis will have on your company in the next five years (e.g., death, disability, medical and funeral expenses, productivity and absenteeism, recruitment and training expenses, revenues)? [1 = a serious impact; 7 = no impact at all] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

4.04 Tuberculosis incidence**Number of tuberculosis cases per 100,000 population | 2010**

Incidence of tuberculosis is the estimated number of new pulmonary, smear positive, and extra-pulmonary tuberculosis cases.

Sources: The World Bank, *World Development Indicators & Global Development Finance Catalog* (April 2012 edition); national sources

4.05 Business impact of HIV/AIDS

How serious an impact do you consider HIV/AIDS will have on your company in the next five years (e.g., death, disability, medical and funeral expenses, productivity and absenteeism, recruitment and training expenses, revenues)? [1 = a serious impact; 7 = no impact at all] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

4.06 HIV prevalence

[HIV prevalence as a percentage of adults aged 15–49 years | 2009](#)

HIV prevalence refers to the number of infections at a particular point in time, no matter when infection occurred.

Sources: The World Bank, *World Development Indicators & Global Development Finance Catalog* (April 2012 edition); UNAIDS, *Global Report on the Global AIDS Epidemic* (2008 edition); national sources

4.07 Infant mortality

[Infant \(children aged 0–12 months\) mortality per 1,000 live births | 2010](#)

Infant mortality rate is the number of infants dying before reaching one year of age per 1,000 live births in a given year.

Sources: The World Bank, *World Development Indicators & Global Development Finance Catalog* (April 2012 edition); national sources

4.08 Life expectancy

[Life expectancy at birth \(years\) | 2010](#)

Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.

Sources: The World Bank, *World Development Indicators & Global Development Finance Catalog* (April 2012 edition); national sources

4.09 Quality of primary education

[How would you assess the quality of primary schools in your country? \[1 = poor; 7 = excellent – among the best in the world\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

4.10 Primary education enrollment rate

[Net primary education enrollment rate | 2010](#)

The reported value corresponds to the ratio of children of official school age (as defined by the national education system) who are enrolled in school to the population of the corresponding official school age. Primary education (ISCED level 1) provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.

Sources: UNESCO Institute for Statistics (accessed May 10, 2012); The World Bank, *EdStats Database* (accessed June 27, 2012); Organisation for Economic Co-operation and Development (OECD), *Education at a Glance 2011*; national sources

5th Pillar: Higher education and training**5.01 Secondary education enrollment rate**

[Gross secondary education enrollment rate | 2010](#)

The reported value corresponds to the ratio of total secondary enrollment, 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.

Sources: UNESCO Institute for Statistics (accessed May 10, 2012); UNICEF ChildInfo.org Country Profiles; The World Bank, *EdStats Database* (accessed June 25, 2012); national sources

5.02 Tertiary education enrollment rate

[Gross tertiary education enrollment rate | 2010](#)

The reported value corresponds to the ratio of total tertiary enrollment, 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.

Sources: UNESCO Institute for Statistics (accessed May 10, 2012); national sources

5.03 Quality of the educational system

[How well does the educational system in your country meet the needs of a competitive economy? \[1 = not well at all; 7 = very well\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

5.04 Quality of math and science education

[How would you assess the quality of math and science education in your country's schools? \[1 = poor; 7 = excellent – among the best in the world\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

5.05 Quality of management schools

[How would you assess the quality of management or business schools in your country? \[1 = poor; 7 = excellent – among the best in the world\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

5.06 Internet access in schools

[How would you rate the level of access to the Internet in schools in your country? \[1 = very limited; 7 = extensive\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

5.07 Local availability of specialized research and training services

[In your country, to what extent are high-quality, specialized training services available? \[1 = not available; 7 = widely available\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

5.08 Extent of staff training

[To what extent do companies in your country invest in training and employee development? \[1 = hardly at all; 7 = to a great extent\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6th Pillar: Goods market efficiency**6.01 Intensity of local competition**

[How would you assess the intensity of competition in the local markets in your country? \[1 = limited in most industries; 7 = intense in most industries\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.02 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.03 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.04 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.05 Total tax rate

This variable is a combination of profit tax (% of profits), labor tax and contribution (% of profits), and other taxes (% of profits) | 2011

The total tax rate measures the amount of taxes and mandatory contributions payable by a business in the second year of operation, expressed as a share of commercial profits. The total amount of taxes is the sum of five different types of taxes and contributions payable after accounting for deductions and exemptions: profit or corporate income tax, social contributions and labor taxes paid by the employer, property taxes, turnover taxes, and other small taxes. For more details about the methodology employed and the assumptions made to compute this indicator, please visit <http://www.doingbusiness.org/methodologysurveys/>.

Source: World Bank/International Finance Corporation, *Doing Business 2012: Doing Business in a More Transparent World*

6.06 Number of procedures required to start a business

Number of procedures required to start a business | 2011

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, *Doing Business 2012: Doing Business in a More Transparent World*

6.07 Time required to start a business

Number of days required to start a business | 2011

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, *Doing Business 2012: Doing Business in a More Transparent World*

6.08 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.09 Prevalence of trade barriers

In your country, to what extent do tariff and non-tariff barriers limit the ability of imported goods to compete in the domestic market? [1 = strongly limit; 7 = do not limit] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.10 Trade tariffs

Trade-weighted average tariff rate | 2011

This indicator is calculated as a weighted average of all the applied tariff rates, including preferential rates that a country applies to the rest of the world. The weights are the trade patterns of the importing country's reference group (2010 data). An *applied tariff* is a customs duty that is levied on imports of merchandise goods.

Source: International Trade Centre

6.11 Prevalence of foreign ownership

How prevalent is foreign ownership of companies in your country? [1 = very rare; 7 = highly prevalent] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.12 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.13 Burden of customs procedures

How would you rate the level of efficiency of customs procedures (related to the entry and exit of merchandise) in your country? [1 = extremely inefficient; 7 = extremely efficient] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.14 Imports as a percentage of GDP

Imports of goods and services as a percentage of gross domestic product | 2011

Total imports is the sum of total imports of merchandise and commercial services.

Sources: World Trade Organization, Statistical Database: Time Series on merchandise and commercial services (accessed June 4, 2012); International Monetary Fund, *World Economic Outlook Database* (April 2012 edition); national sources

6.15 Degree of customer orientation

How do companies in your country treat customers? [1 = generally treat their customers badly; 7 = are highly responsive to customers and customer retention] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

6.16 Buyer sophistication

In your country, how do buyers make purchasing decisions? [1 = based solely on the lowest price; 7 = based on a sophisticated analysis of performance attributes] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7th Pillar: Labor market efficiency

7.01 Cooperation in labor-employer relations

How would you characterize labor-employer relations in your country? [1 = generally confrontational; 7 = generally cooperative] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7.02 Flexibility of wage determination

How are wages generally set in your country? [1 = by a centralized bargaining process; 7 = up to each individual company] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7.03 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7.04 Redundancy costs

Redundancy costs in weeks of salary | 2011

This variable estimates the cost of advance notice requirements, severance payments, and penalties due when terminating a redundant worker, expressed in weekly wages. For more details about the methodology employed and the assumptions made to compute this indicator, visit <http://www.doingbusiness.org/methodologysurveys/>.

Sources: World Bank/International Finance Corporation, *Doing Business 2012: Doing Business in a More Transparent World*; authors' calculations

7.05 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7.06 Reliance on professional management

In your country, who holds senior management positions? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7.07 Brain drain

Does your country retain and attract talented people? [1 = no, the best and brightest normally leave to pursue opportunities in other countries; 7 = yes, there are many opportunities for talented people within the country] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

7.08 Female participation in labor force

Ratio of women to men in the labor force | 2010

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

Sources: International Labour Organization, *Key Indicators of the Labor Markets Net* (accessed June 5, 2012); national sources

8th Pillar: Financial market development

8.01 Availability of financial services

Does the financial sector in your country provide a wide variety of financial products and services to businesses? [1 = not at all; 7 = provides a wide variety] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.02 Affordability of financial services

To what extent does competition among providers of financial services in your country ensure the provision of financial services at affordable prices? [1 = not at all; 7 = extremely well] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.03 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.04 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.05 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.06 Soundness of banks

How would you assess the soundness of banks in your country? [1 = insolvent and may require a government bailout; 7 = generally healthy with sound balance sheets] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.07 Regulation of securities exchanges

How would you assess the regulation and supervision of securities exchanges in your country? [1 = ineffective; 7 = effective] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

8.08 Legal rights index

Degree of legal protection of borrowers and lenders' rights on a 0–10 (best) scale | 2011

This index measures the degree to which collateral and bankruptcy laws protect borrowers' and lenders' rights and thus facilitate lending. 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, *Doing Business 2012: Doing Business in a More Transparent World*

9th Pillar: Technological readiness

9.01 Availability of latest technologies

To what extent are the latest technologies available in your country? [1 = not available; 7 = widely available] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

9.02 Firm-level technology absorption

To what extent do businesses in your country absorb new technology? [1 = not at all; 7 = aggressively absorb] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

9.03 FDI and technology transfer

To what extent does foreign direct investment (FDI) bring new technology into your country? [1 = not at all; 7 = FDI is a key source of new technology] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

9.04 Internet users

Percentage of individuals using the Internet | 2011

Internet users refers to people using the Internet from any device (including mobile phones) in the last 12 months. Data are based on surveys generally carried out by national statistical offices or estimated based on the number of Internet subscriptions.

Source: International Telecommunication Union, *World Telecommunication/ICT Indicators 2012* (June 2012 edition)

9.05 Fixed broadband Internet subscriptions

Fixed broadband Internet subscriptions per 100 population | 2011

This refers to total fixed (wired) broadband Internet subscriptions (that is, subscriptions to high-speed access to the public Internet—a TCP/IP connection—at downstream speeds equal to or greater than 256 kb/s).

Source: International Telecommunication Union, *World Telecommunication/ICT Indicators 2012* (June 2012 edition)

9.06 Internet bandwidth

International Internet bandwidth (kb/s) per Internet user | 2011

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 2012* (June 2012 edition)

9.07 Mobile broadband subscriptions

Mobile broadband subscriptions per 100 population | 2011

Mobile broadband subscriptions refers to active SIM cards or, on CDMA networks, connections accessing the Internet at consistent broadband speeds of over 512 kb/s, including cellular technologies such as HSPA, EV-DO, 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.

Sources: International Telecommunication Union, *ITU World Telecommunication/ICT Indicators Database 2012* (June 2012 edition); Informa Telecoms & Media; national sources

10th Pillar: Market size

10.01 Domestic market size index

Sum of gross domestic product plus value of imports of goods and services, minus value of exports of goods and services, normalized on a 1–7 (best) scale | 2011

The size of the domestic market is calculated as the natural log of the sum of the gross domestic product valued at PPP plus the total value (PPP estimates) of imports of goods and services, minus the total value (PPP estimates) of exports of goods and services. Data are then normalized on a 1–7 scale. PPP estimates of imports and exports are obtained by taking the product of exports as a percentage of GDP and GDP valued at PPP.

Source: Authors' calculations. For more details, refer to Appendix A in Chapter 1.1 of this *Report*.

10.02 Foreign market size index

Value of exports of goods and services, normalized on a 1–7 (best) scale | 2011

The size of the foreign market is estimated as the natural log of the total value (PPP estimates) of exports of goods and services, normalized on a 1–7 scale. PPP estimates of exports are obtained by taking the product of exports as a percentage of GDP and GDP valued at PPP.

Source: Authors' calculations. For more details refer to Appendix A in Chapter 1.1 of this *Report*.

10.03 GDP (PPP)

Gross domestic product valued at purchasing power parity in billions of international dollars | 2011

Sources: International Monetary Fund, *World Economic Outlook Database* (April 2012 edition); national sources

10.04 Exports as a percentage of GDP

Exports of goods and services as a percentage of gross domestic product | 2011 or most recent year available

Total exports is the sum of total exports of merchandise and commercial services.

Sources: World Trade Organization, Online statistics database (accessed June 4, 2012); International Monetary Fund, *World Economic Outlook Database* (April 2012 edition); national sources

11th Pillar: Business sophistication

11.01 Local supplier quantity

How numerous are local suppliers in your country? [1 = largely nonexistent; 7 = very numerous] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.02 Local supplier quality

How would you assess the quality of local suppliers in your country? [1 = very poor; 7 = very good] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.03 State of cluster development

In your country's economy, how prevalent are well-developed and deep clusters? [1 = nonexistent; 7 = widespread in many fields] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.04 Nature of competitive advantage

What is the nature of competitive advantage of your country's companies in international markets based upon? [1 = low-cost or natural resources; 7 = unique products and processes] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.05 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)] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.06 Control of international distribution

To what extent are international distribution and marketing from your country owned and controlled by domestic companies? [1 = not at all, they take place through foreign companies; 7 = extensively, they are primarily owned and controlled by domestic companies] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.07 Production process sophistication

In your country, how sophisticated are production processes? [1 = not at all – labor-intensive methods or previous generations of process technology prevail; 7 = highly – the world's best and most efficient process technology prevails] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.08 Extent of marketing

In your country, to what extent do companies use sophisticated marketing tools and techniques? [1 = very little; 7 = extensively] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

11.09 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12th Pillar: Innovation**12.01 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12.02 Quality of scientific research institutions

How would you assess the quality of scientific research institutions in your country? [1 = very poor; 7 = the best in their field internationally] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12.03 Company spending on R&D

To what extent do companies in your country spend on R&D? [1 = do not spend on R&D; 7 = spend heavily on R&D] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12.04 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12.05 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12.06 Availability of scientists and engineers

To what extent are scientists and engineers available in your country? [1 = not at all; 7 = widely available] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

12.07 PCT patent applications

Number of applications filed under the Patent Cooperation Treaty (PCT) per million population | 2008-2009

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 figures for 2009.

Sources: Organisation for Economic Co-operation and Development (OECD), *Patent Database*, June 2012; United Nations, Department of Economic and Social Affairs, Population Division, 2011; *World Population Prospects: The 2010 Revision*, CD-ROM Edition; authors' calculations

TECHNICAL NOTES AND SOURCES FOR THE SUSTAINABILITY-ADJUSTED GCI

The data used in Chapter 1.1 of 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. 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 numbering used in Appendix B of Chapter 1.1. 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.

S01 Income Gini index

Measure of income inequality [0 = perfect equality; 100 = perfect inequality] | 2010 or most recent year available

This indicator measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. 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 a value of 100 implies perfect inequality.

Sources: The World Bank, *World Development Indicators Online* (retrieved June 1, 2012); CIA World Factbook (retrieved June 6, 2012); national sources

S02 Youth unemployment

Youth unemployment measured as the ratio of total unemployed youth to total labor force aged 15–24 | 2010 or most recent year available

Youth unemployment refers to the share of the labor force ages 15–24 without work but available for and seeking employment.

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

S03.01 Access to sanitation

Percent of total population with access to improved sanitation facilities | 2010 or most recent year available

Percent of the population with at least adequate access to excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Improved facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained.

Source: World Health Organization, *World Health Statistics 2012* online database (retrieved June 5, 2012)

S03.02 Access to improved drinking water

Percent of total population with access to improved drinking water | 2010 or most recent year available

Percent of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, or rainwater collection. Unimproved sources include vendors, tanker trucks, and unprotected wells and springs. *Reasonable access* is defined as the availability of at least 20 liters per person per day from a source within 1 kilometer of the dwelling.

Source: World Health Organization, *World Health Statistics 2012* online database (retrieved June 5, 2012)

S03.03 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

S04 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] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

S05 Extent of informal economy

How much economic activity in your country would you estimate to be undeclared or unregistered? [1 = most economic activity is undeclared or unregistered; 7 = most economic activity is declared or registered] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

S06 Social mobility

To what extent do individuals in your country have the opportunity to improve their economic situation through their personal efforts regardless of the socioeconomic status of their parents? [1 = little opportunity exists to improve one's economic situation; 7 = significant opportunity exists to improve one's economic situation] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

S07 Vulnerable employment

Proportion of own-account and contributing family workers in total employment | 2010 or most recent year available

Vulnerable employment refers to the proportion of unpaid contributing family workers and own-account workers in total employment. *Own-account workers* are those workers who, working on their own account or with one or more partners, hold the type of job defined as a self-employed job and have not engaged on a continuous basis any employees to work for them during the reference period. A *contributing family worker* is a person who holds a job in a market-oriented establishment operated by a related person living in the same household and who cannot be regarded as a partner because the degree of his or her commitment to the operation of the establishment, in terms of the working time or other factors to be determined by national circumstances, is not at a level comparable with that of the head of the establishment.

Source: The World Bank, *World Development Indicators Online* (retrieved June 1, 2012)

S08.01 Stringency of environmental regulation

How would you assess the stringency of your country's environmental regulations? [1 = very lax; 7 = among the world's most stringent] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

S08.02 Enforcement of environmental regulation

How would you assess the enforcement of environmental regulations in your country? [1 = very lax; 7 = among the world's most rigorous] | 2011–12 weighted average

Source: World Economic Forum, Executive Opinion Survey 2011, 2012

S09 Terrestrial biome protection

Degree to which a country achieves the target of protecting 17 percent of each terrestrial biome within its borders | 2010 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 by the World Wildlife Fund (WWF)'s Terrestrial Ecoregions of the World for each country. Scores are capped at 17 percent 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 percent. CIESIN uses time series of the World Database on Protected Areas (WDPA) developed by the United Nations Environment Programme (UNEP) World Conservation Monitoring Centre (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 is known. Boundaries were defined by polygons where available; 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, Environmental Performance Index (EPI) 2012 edition, based on WWF World Wildlife Fund USA and UNEP WCMC data.

S10 No. of ratified international environmental treaties

Total number of ratified environmental treaties | 2010

This indicator provides the total number of environmental treaties ratified by a country. It 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*

S11 Agricultural water intensity

Agricultural water withdrawal as a percent of total renewable water resources | 2006 or most recent year available

Agricultural water withdrawal as a percent of total renewable water resources is calculated as: $100 \times \text{agricultural water withdrawal} / \text{total renewable water resources}$. In turn, $\text{total renewable water resources} = \text{surface renewable water} + \text{renewable groundwater} - \text{overlap between surface and groundwater}$. Where available, this indicator includes water resources coming from desalination used for agriculture (as in Kuwait, Saudi Arabia, the United Arab Emirates, Qatar, Bahrain, and Spain).

Source: FAO AQUASTAT database, available at <http://www.fao.org/nr/water/aquastat/main/index.stm> (retrieved May 31, 2012)

S12 CO₂ intensity

[CO₂ intensity \(kilograms of CO₂ per kilogram of oil equivalent energy use\) | 2008](#)

Carbon dioxide (CO₂) emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring. *Energy use* refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport. A logarithm transformation is applied to the ratio of these statistics in order to spread the data distribution.

Source: The World Bank, *World Development Indicators Online* (retrieved June 1, 2012)

S13 Fish stocks overexploited

[Fraction of country's exclusive economic zone with overexploited and collapsed stocks | 2006](#)

The Sea Around Us (SAU) project's Stock Status Plots (SSPs) are created in four steps (Kleisner and Pauly, 2011). The first step is to define a stock. SAU defines a stock to be a taxon (either at the species, genus, or family level of taxonomic assignment) that occurs in the catch records for at least 5 consecutive years, over a minimum of 10 years, and which has a total catch in an area of at least 1,000 tonnes over the time span. In the second step, SAU assesses the status of the stock for every year relative to the peak catch. SAU defines five states of stock status for a catch time series. This definition is assigned to every taxon meeting the definition of a stock for a particular spatial area considered (e.g., exclusive economic zones, or EEZs). Stock status states are: (1) Developing—before the year of peak catch and less than 50 percent of the peak catch; (2) Exploited—before or after the year of peak catch and more than 50 percent of the peak catch; (3) Overexploited—after the year of peak catch and less than 50 percent but more than 10 percent of the peak catch; (4) Collapsed—after the year of peak catch and less than 10 percent of the peak catch; (5) Rebuilding—occurs after the year of peak catch and after the stock has collapsed, when catch has recovered to between 10 and 50 percent of the peak. In the third step, SAU graphs the number of stocks by status by tallying the number of stocks in a particular state in a given year and presenting these as percentages. In the fourth step, the cumulative catch of stock by status in a given year is summed over all stocks and presented as a percentage in the catch by stock status graph. The combination of these two figures represents the complete Stock Status Plot. The numbers for this indicator are taken from the overexploited and collapsed numbers of stocks over total numbers of stocks per EEZ. A logarithm transformation is applied to these statistics in order to spread the data distribution.

Source: Yale University and Columbia University, Environmental Performance Index (EPI) 2012 edition based on Sea Around Us data

S14.01 Forest cover change

[Percent change in forest area over the period 1990–10 | 2010](#)

This measure represents the percent change in forest area, applying a 10 percent crown cover as the definition of forested areas, between time periods. We used total forest extent rather than the extent of primary forest only. The change measure is calculated from forest area data in 1995, 2000, 2005, and 2010. The data are reported by national governments, and therefore methods and data sources may vary from country to country. Positive values indicate afforestation or reforestation, and negative values represent deforestation.

Source: Yale University and Columbia University, Environmental Performance Index (EPI) 2012 edition based on Sea Around Us data

S14.02 Forest loss

[Forest cover lost over the period 2000–10 based on satellite data | 2010](#)

This indicator represents the loss of forest area owing to deforestation from either human or natural causes, such as forest fires. The University of Maryland researchers used Moderate Resolution Imaging Spectroradiometer (MODIS) 500-meter resolution satellite data to identify areas of forest disturbance, then used Landsat data to quantify the area of forest loss. This indicator uses a baseline forest cover layer (forest cover fraction with a 30 percent forest cover threshold) to measure the area under forest cover in the year 2000. It then combines forest loss estimates from Landsat for the periods 2000–05 and 2005–10 to arrive at a total forest cover change amount for the decade. This total is then divided by the forest area estimate for 2000 to come up with a percent change in forest cover over the decade. Further details on the methods used are found in Hansen, M., S. V. Stehman, and P. V. Potapov. 2010. "Quantification of Global Gross Forest Cover Loss." *Proceedings of the National Academies of Science*, available at www.pnas.org/cgi/doi/10.1073/pnas.0912668107. A logarithm transformation is applied to these statistics in order to spread the data distribution.

Source: Yale University and Columbia University, Environmental Performance Index (EPI) 2012 edition, based on University of Maryland data

S15 Particulate matter (2.5) concentration

[Population-weighted exposure to PM_{2.5} in micrograms per cubic meter, based on satellite data | 2009](#)

This indicator was developed by the Battelle Memorial Institute in collaboration with Columbia University's Center for International Earth Science Information Network (CIESIN) and funding from the NASA Applied Sciences Program. Using relationships between the Moderate Resolution Imaging Spectroradiometer (MODIS) Aerosol Optical Depth (AOD) and surface PM_{2.5} concentrations that were modeled by van Donkelaar et al. (2010), annual average MODIS AOD retrievals were used to estimate surface PM_{2.5} concentrations from 2001 to 2010. These were averaged into three-year moving averages from 2002 to 2009 to generate global grids of PM_{2.5} concentrations. The grids were resampled to match CIESIN's Global Rural-Urban Mapping Project (GRUMP) 1 kilometer population grid. The population-weighted average of the PM_{2.5} values was used to calculate the country's annual average exposure to PM_{2.5} in micrograms per cubic meter. A logarithm transformation is applied to these statistics in order to spread the data distribution.

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

S16 Quality of the natural environment

[How would you assess the quality of the natural environment in your country? \[1 = extremely poor; 7 = among the world's most pristine\] | 2011–12 weighted average](#)

Source: World Economic Forum, Executive Opinion Survey 2011, 2012