

# Technical Notes and Sources

The present section complements the data tables by providing additional information for all 53 indicators that enter the composition of the Networked Readiness Index 2012.

The number next to the indicator corresponds to the number of the data table that reports ranks and scores for all economies on this particular indicator.

The data used in this *Report* represent the most recent available figures from various international agencies and national authorities at the time when the data collection took place. It is possible that some data have been updated or revised since then.

## 1st pillar: Political and regulatory environment

### 1.01 Effectiveness of law-making bodies

How effective is your national parliament/congress as a law-making institution? [1 = very ineffective; 7 = very effective—among the best in the world] | 2010–2011 weighted average

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

### 1.02 Laws relating to ICT

How would you assess your country's laws relating to the use of information and communication technologies (e.g., electronic commerce, digital signatures, consumer protection)? [1 = nonexistent; 7 = well developed] | 2010–2011 weighted average

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

### 1.03 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] | 2010–2011 weighted average

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

### 1.04 Efficiency of legal framework in settling disputes

How efficient is the legal framework in your country for private businesses to settle disputes? [1 = extremely inefficient; 7 = highly efficient] | 2010–2011 weighted average

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

### 1.05 Efficiency of legal framework in challenging regulations

How efficient is the legal framework in your country for private businesses to challenge the legality of government actions and/or regulations? [1 = extremely inefficient; 7 = highly efficient] | 2010–2011 weighted average

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

### 1.06 Intellectual property protection

How would you rate intellectual property protection, including anti-counterfeiting measures, in your country? [1 = very weak; 7 = very strong] | 2010–2011 weighted average

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

### 1.07 Software piracy rate

Unlicensed software units as a percentage of total software units installed | 2010

This measure covers piracy of all packaged software that runs on personal computers (PCs), including desktops, laptops, and ultraportables, including netbooks. This includes operating systems; systems software such as databases and security packages; business applications; and consumer applications such as games, personal finance, and reference software. The study does not include software that runs on servers or mainframes. For more information about the methodology, refer to the study available at <http://portal.bsa.org/globalpiracy2010/>.

Source: Business Software Alliance/International Data Corporation, *Eighth Annual BSA Global Software Piracy Study* (May 2011)

### 1.08 Number of procedures to enforce a contract

Number of procedures to resolve a dispute, counted from the moment the plaintiff files a lawsuit in court until payment | 2011

The list of procedural steps compiled for each economy traces the chronology of a commercial dispute before the relevant court. A procedure is defined as any interaction, required by law or commonly used in practice, between the parties or between them and the judge or court officer. This includes steps to file and serve the case, steps for trial and judgment, and steps necessary to enforce the judgment. 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*

### 1.09 Time to enforce a contract

Number of days to resolve a dispute, counted from the moment the plaintiff decides to file the lawsuit in court until payment | 2011

Time is recorded in calendar days, counted from the moment the plaintiff decides to file the lawsuit in court until payment. This includes both the days when actions take place and the waiting periods between. 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: Business and innovation environment

### 2.01 Availability of latest technologies

To what extent are the latest technologies available in your country? [1 = not available; 7 = widely available] | 2010–2011 weighted average

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

### 2.02 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] | 2010–2011 weighted average

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

### 2.03 Total tax rate

Sum of profit tax, labor tax and social contributions, property taxes, turnover taxes, and other taxes, as a share (%) of commercial profits | 2011

The total tax rate measures the amount of taxes and mandatory contributions borne by the business in the second year of operation, expressed as a share of commercial profit. *Doing Business 2012* reports the total tax rate for calendar year 2010. The total amount of taxes borne is the sum of all the different taxes and contributions payable after accounting for allowable deductions and exemptions. The taxes withheld (such as personal income tax) or collected by the company and remitted to the tax authorities (such as value-added tax, sales tax, or goods and service tax) but not borne by the company are excluded. The taxes included can be divided into 5 categories: profit or corporate income tax, social contributions and labor taxes paid by the employer (in respect of which all mandatory contributions are included, even if paid to a private entity such as a required pension fund), property taxes, turnover taxes, and other taxes (such as municipal fees and vehicle and fuel taxes). 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*

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

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

### 2.06 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] | 2008–2009 weighted average

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

### 2.07 Tertiary education enrollment rate

Gross tertiary education enrollment rate (%) | 2009

*Tertiary enrollment rate* is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the tertiary education level. Tertiary education, 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: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 11, 2011); World Bank, *World Development Indicators 2009*; national sources

### 2.08 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] | 2010–2011 weighted average

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

### 2.09 Government procurement of advanced technology products

Do government procurement decisions foster technology innovation in your country? [1 = no, not at all; 7 = yes, extremely effectively] | 2010–2011 weighted average

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

## 3rd pillar: Infrastructure and digital content

### 3.01 Electricity production

Electricity production (kWh) per capita | 2008

*Electricity production* is measured at the terminals of all alternator sets in a station. In addition to hydropower, coal, oil, gas, and nuclear power generation, it covers generation by geothermal, solar, wind, and tide and wave energy as well as that from combustible renewables and waste. Production includes the output of electricity plants designed to produce electricity only, as well as that of combined heat and power plants. Total electricity production is then divided by total population. Population figures are from the United Nations Division of Economic and Social Affairs (retrieved November 10, 2011).

Sources: The World Bank, *World Development Indicators Online* (accessed October 10, 2011); US Central Intelligence Agency (CIA), *The World Factbook* (accessed October 11, 2011)

### 3.02 Mobile network coverage rate

Percentage of total population covered by a mobile network signal | 2010

This indicator measures the percentage of inhabitants who are within range of a mobile cellular signal, irrespective of whether or not they are subscribers. This is calculated by dividing the number of inhabitants within range of a mobile cellular signal by the total population. Note that this is not the same as the mobile subscription density or penetration.

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

### 3.03 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, *ITU World Telecommunication/ICT Indicators Database 2011* (December 2011 edition)

### 3.04 Secure Internet servers

#### Secure Internet servers per million population | 2010

Secure Internet servers are servers using encryption technology in Internet transactions.

Source: The World Bank, *World Development Indicators Online* (accessed October 10, 2011); national sources

### 3.05 Accessibility of digital content

In your country, how accessible is digital content (e.g., text and audiovisual content, software products) via multiple platforms (e.g., fixed-line Internet, wireless Internet, mobile network, satellite, etc.)? [1 = not accessible at all; 7 = widely accessible] | 2010–2011 weighted average

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

## 4th pillar: Affordability

### 4.01 Mobile cellular tariffs

#### Average per-minute cost of different types of mobile cellular calls (PPP \$) | 2010

This measure is constructed by first taking the average per-minute cost of a local call to another mobile cellular phone on the same network (on-net) and on another network (off-net). This amount is then averaged with the per-minute cost of a local call to a fixed telephone line. All the tariffs are for calls placed during peak hours and based on a basic, representative mobile cellular pre-paid subscription service. The amount is adjusted for purchasing power parity (PPP) and expressed in current international dollars. PPP figures were sourced from the World Bank's *World Development Indicators Online* (retrieved November 13, 2011) and the International Monetary Fund's *World Economic Outlook* (September 2011 edition).

Sources: Authors' calculations based on International Telecommunication Union, *ITU World Telecommunication/ICT Indicators Database 2011* (December 2011 edition); national sources

### 4.02 Fixed broadband Internet tariffs

#### Monthly subscription charge for fixed (wired) broadband Internet service (PPP \$) | 2010

Fixed (wired) broadband is considered any dedicated connection to the Internet at downstream speeds equal to, or greater than, 256 kilobits per second, using DSL. The amount is adjusted for purchasing power parity (PPP) and expressed in current international dollars. PPP figures were sourced from the World Bank's *World Development Indicators Online* (retrieved November 13, 2011) and the International Monetary Fund's *World Economic Outlook* (September 2011 edition).

Sources: Authors' calculations based on International Telecommunication Union, *ITU World Telecommunication/ICT Indicators Database 2011* (December 2011 edition); national sources

### 4.03 Internet and telephony sectors competition index

#### Level of competition index for Internet services, international long distance services, and mobile telephone services on a 0-to-2 (best) scale | As of October 2011

This variable measures the degree of liberalization in 19 categories of ICT services, including 3G telephony, retail Internet access services, international long distance calls, and international gateways. For each economy, the level of competition in each of the categories is assessed as follows: monopoly, partial competition, and full competition. The results reflect the situation as of 2010. The index is calculated as the average of points obtained in each of the 19 categories. Full liberalization across all categories yields a score of 2, the best possible score.

Source: Authors' calculations based on International Telecommunication Union (ITU), *ITU World Telecommunication Regulatory Database* (accessed October 10, 2011)

## 5th pillar: Skills

### 5.01 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] | 2010–2011 weighted average

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

### 5.02 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] | 2010–2011 weighted average

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

### 5.03 Secondary enrollment rate

#### Gross secondary education enrollment rate | 2009

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: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed November 11, 2011); national sources; UNICEF ChildInfo.org Country Profiles (accessed January 23, 2012)

### 5.04 Adult literacy rate

#### Adult literacy rate (%) | 2009

Adult literacy is defined as the percentage of the population aged 15 years and over who can both read and write with understanding a short, simple statement on his/her everyday life. Whenever data come from economies classified by the World Bank as *high income*, we assume a rate of 99 percent, in accordance with the approach adopted by the United Nations Development Programme (UNDP) in calculating the 2009 edition of the Human Development Index.

Sources: United Nations Education, Science and Culture Organization (UNESCO), UNESCO Institute for Statistics Data Centre (accessed October 11, 2011); The World Bank, *EdStats Database* (accessed October 11, 2011); national sources

## 6th pillar: Individual usage

### 6.01 Mobile telephone 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 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 2011* (December 2011 edition)

## 6.02 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)

## 6.03 Households with a personal computer

### Percentage of households equipped with a personal computer | 2010

The proportion of households with a computer is calculated by dividing the number of households with a computer by the total number of households. A *computer* refers to a desktop or a laptop computer. It does not include equipment with some embedded computing abilities such as mobile cellular phones, personal digital assistants (PDAs), or television sets.

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

## 6.04 Households with Internet access

### Percentage of households with Internet access at home | 2010

The share of households with Internet access at home is calculated by dividing the number of in-scope households with Internet access by the total number of in-scope households.

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

## 6.05 Fixed broadband Internet subscriptions

### Fixed broadband Internet subscriptions per 100 population | 2010

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, *The World Telecommunication/ICT Indicators Database 2010* (December 2010 edition)

## 6.06 Mobile broadband Internet subscriptions

### Mobile broadband Internet subscriptions per 100 population | 2010

*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, which includes 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, or other mobile-broadband connected devices.

Source: Informa Telecoms & Media

## 6.07 Use of virtual social networks

### How widely used are virtual social networks (e.g., Facebook, Twitter, LinkedIn) for professional and personal communication in your country? [1 = not used at all; 7 = used widely] | 2010–2011 weighted average

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

## 7th pillar: Business usage

### 7.01 Firm-level technology absorption

To what extent do businesses in your country absorb new technology? [1 = not at all; 7 = aggressively absorb] | 2010–2011 weighted average

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

### 7.02 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] | 2010–2011 weighted average

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

### 7.03 PCT patent applications

#### Number of applications 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 country of residence of the inventor(s), using fractional count if an application is filed by inventors residing in different countries. 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

### 7.04 Extent of business Internet use

To what extent do companies within your country use the Internet for their business activities? (e.g., buying and selling goods, interacting with customers and suppliers) [1 = not at all; 7 = extensively] | 2010–2011 weighted average

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

### 7.05 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] | 2010–2011 weighted average

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

## 8th pillar: Government usage

### 8.01 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] | 2010–2011 weighted average

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

### 8.02 Importance of ICT to government vision of the future

To what extent does the government have a clear implementation plan for utilizing information and communication technologies to improve your country's overall competitiveness? [1 = no plan; 7 = clear plan] | 2010–2011 weighted average

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

### 8.03 Government Online Service Index

The Government Online Service Index assesses the quality of government's delivery of online services on a 0-to-1 (best) scale | 2010

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 2010's page at [http://www2.unpan.org/egovkb/global\\_reports/10report.htm](http://www2.unpan.org/egovkb/global_reports/10report.htm).

Source: United Nations, *UN E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*

## 9th pillar: Economic impacts

### 9.01 Impact of ICT on new services and products

To what extent are information and communication technologies creating new business models, services, and products in your country? [1 = not at all; 7 = significantly] | 2010–2011 weighted average

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

### 9.02 PCT ICT patent applications

Number of applications for information and communication technology-related patents filed under the Patent Cooperation Treaty (PCT) per million population | 2008–09 average

This measures the number of applications in the technology domain of information and communication technologies (ICT) filed under the Patent Cooperation Treaty (PCT), by priority date and country of residence of the inventor(s), using fractional count if an application is filed by inventors residing in different countries. 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

### 9.03 Impact of ICT on new organizational models

To what extent are information and communication technologies creating new organizational models (virtual teams, remote working, tele-commuting, etc.) within businesses in your country? [1 = not at all; 7 = significantly] | 2010–2011 weighted average

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

### 9.04 Employment in knowledge-intensive activities

Share of workforce employed in knowledge intensive activities (%) | 2008

Count of people employed in categories 0 to 3 as a percentage of total people employed, according to ISCO-1968, ISCO-88, and NSCO (excluding 0 Armed forces in ISCO-88). Categories included: ISCO-1968: (0/1) Professional, technical and related workers; (2) Administrative and managerial workers; and (3) Clerical and related workers. ISCO-88: (1) Legislators, senior officials, and managers; (2) Professionals, and (3) Technicians and associate professionals.

Source: Authors' calculations based on International Labour Organization Laborsta database (access December 15th, 2011)

## 10th pillar: Social impacts

### 10.01 Impact of ICT on access to basic services

To what extent are information and communication technologies enabling 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] | 2010–2011 weighted average

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

### 10.02 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] | 2010–2011 weighted average

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

### 10.03 ICT use and government efficiency

To what extent has the use of information and communication technologies by the government improved the efficiency of government services in your country? [1 = no effect; 7 = has generated considerable improvements] | 2010–2011 weighted average

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

### 10.04 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 | 2010

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 2010's page at [http://www2.unpan.org/egovkb/global\\_reports/10report.htm](http://www2.unpan.org/egovkb/global_reports/10report.htm).

Source: United Nations, *UN E-Government Survey 2010: Leveraging e-Government at a Time of Financial and Economic Crisis*