

 PARTNERSHIP ON
MEASURING ICT
FOR DEVELOPMENT

CORE LIST OF ICT INDICATORS

March 2016 version



Introduction

The [Partnership on Measuring ICT for Development](#) is an international, multi-stakeholder initiative that was launched in 2004 to improve the availability and quality of ICT data and indicators, particularly in developing countries. The Partnership has guided policy makers by producing ICT statistics that are crucial to informed decision-making. Its [membership](#) includes 14 regional and international organisations involved in the collection and dissemination of ICT statistics.

One of the key achievements of the Partnership on Measuring ICT for Development has been the identification of a core list of ICT indicators. The list has evolved over time and now includes over 60 indicators, which were agreed upon through a consultation process involving governments, international organisations, and experts in the field of information society measurement. They cover the following areas: ICT infrastructure and access; access and use of ICT by households and individuals; ICT access and use by enterprises; the ICT sector and trade in ICT goods; ICT in education; and ICT in government. The list, which has been endorsed by the UN Statistical Commission (last in 2014), was developed to help guide countries in measuring the information society.

The Partnership recommends the core list as a basis for ICT data collection in countries. The indicators included in the core list are clearly defined and associated with statistical standards, which allows comparability across countries. An increasing number of countries are integrating the core list of ICT indicators into their existing data collection mechanisms, including household and business surveys. The members of the Partnership are providing assistance in this process, including through capacity-building and hands-on training for national statistical offices.

For further information on the core list of ICT indicators, see:

<http://www.itu.int/en/ITU-D/Statistics/Pages/coreindicators/default.aspx>

Table of contents

Introduction	iii
Table of contents	v
Core list of ICT indicators.....	1
ICT infrastructure and access	1
<i>A1 Fixed-telephone subscriptions per 100 inhabitants.....</i>	<i>1</i>
<i>A2 Mobile cellular telephone subscriptions per 100 inhabitants.....</i>	<i>1</i>
<i>A3 Fixed broadband Internet subscriptions per 100 inhabitants, broken down by speed.....</i>	<i>1</i>
<i>A4 Active mobile-broadband subscriptions per 100 inhabitants.....</i>	<i>2</i>
<i>A5 International Internet bandwidth per inhabitant (bits/second/inhabitant)</i>	<i>2</i>
<i>A6 Percentage of the population covered by a at least a 3G mobile network.....</i>	<i>2</i>
<i>A7 Fixed broadband Internet prices per month.....</i>	<i>3</i>
<i>A8 Mobile cellular telephone prepaid prices per month</i>	<i>3</i>
<i>A9 Mobile broadband Internet prices per month.....</i>	<i>3</i>
<i>A10 TV broadcasting subscriptions per 100 inhabitants</i>	<i>3</i>
ICT access and use by households and individuals	5
<i>HH1 Proportion of households with a radio.....</i>	<i>5</i>
<i>HH2 Proportion of households with a TV.....</i>	<i>5</i>
<i>HH3 Proportion of households with telephone</i>	<i>5</i>
<i>HH4 Proportion of households with a computer</i>	<i>5</i>
<i>HH5 Proportion of individuals using a computer</i>	<i>6</i>
<i>HH6 Proportion of households with Internet</i>	<i>6</i>
<i>HH7 Proportion of individuals using the Internet.....</i>	<i>6</i>
<i>HH8 Proportion of individuals using the Internet, by location</i>	<i>7</i>
<i>HH9 Proportion of individuals using the Internet, by type of activity.....</i>	<i>7</i>
<i>HH10 Proportion of individuals using a mobile cellular telephone.....</i>	<i>9</i>
<i>HH11 Proportion of households with Internet, by type of service</i>	<i>9</i>
<i>HH12 Proportion of individuals using the Internet, by frequency.....</i>	<i>10</i>
<i>HH13 Proportion of households with multichannel television, by type.....</i>	<i>10</i>
<i>HH14 Barriers to household Internet access</i>	<i>11</i>
<i>HH15 Individuals with ICT skills, by type of skills</i>	<i>11</i>
<i>HH16 Household expenditure on ICT</i>	<i>11</i>
<i>HH17 Proportion of individuals using the Internet, by type of portable device and network used to access the Internet</i>	<i>12</i>
<i>HH18 Proportion of individuals who own a mobile phone</i>	<i>12</i>
<i>HH19 Proportion of individuals not using the Internet, by type of reason</i>	<i>13</i>
ICT access and use by enterprises	14
<i>B1 Proportion of businesses using computers.....</i>	<i>14</i>
<i>B2 Proportion of persons employed routinely using computers.....</i>	<i>14</i>
<i>B3 Proportion of businesses using the Internet.....</i>	<i>15</i>
<i>B4 Proportion of persons employed routinely using the Internet.....</i>	<i>15</i>

<i>B5 Proportion of businesses with a web presence</i>	<i>15</i>
<i>B6 Proportion of businesses with an intranet</i>	<i>15</i>
<i>B7 Proportion of businesses receiving orders over the Internet.....</i>	<i>16</i>
<i>B8 Proportion of businesses placing orders over the Internet.....</i>	<i>16</i>
<i>B9 Proportion of businesses using the Internet by type of access</i>	<i>16</i>
<i>B10 Proportion of businesses with a Local Area Network.....</i>	<i>17</i>
<i>B11 Proportion of businesses with an extranet.....</i>	<i>17</i>
<i>B12 Proportion of businesses using the Internet by type of activity.....</i>	<i>17</i>
ICT sector and trade in ICT goods.....	18
<i>ICT1 Proportion of total business sector workforce involved in the ICT sector</i>	<i>18</i>
<i>ICT2 ICT sector share of gross value added.....</i>	<i>18</i>
<i>ICT3 ICT goods imports as a percentage of total imports</i>	<i>19</i>
<i>ICT4 ICT goods exports as a percentage of total export.....</i>	<i>19</i>
ICT in education.....	20
<i>ED1 Proportion of schools with a radio used for educational purposes</i>	<i>20</i>
<i>ED2 Proportion of schools with a television used for educational purposes</i>	<i>20</i>
<i>ED3 Proportion of schools with a telephone communication facility</i>	<i>20</i>
<i>ED4 Learners-to-computer ratio in schools with computer-assisted instruction</i>	<i>21</i>
<i>ED5 Proportion of schools with Internet access by type of access.....</i>	<i>21</i>
<i>ED6 Proportion of learners who have access to the Internet at school</i>	<i>22</i>
<i>ED7 Proportion of learners enrolled at the post-secondary level in ICT-related fields</i>	<i>22</i>
<i>ED8 Proportion of ICT-qualified teachers in schools</i>	<i>23</i>
<i>EDR1 Proportion of schools with electricity</i>	<i>23</i>
ICT in government	24
<i>EG1 Proportion of persons employed in central government organizations routinely using computers.....</i>	<i>24</i>
<i>EG2 Proportion of persons employed in central government organizations routinely using the Internet.....</i>	<i>24</i>
<i>EG3 Proportion of central government organizations with a local area network.....</i>	<i>24</i>
<i>EG4 Proportion of central government organizations with an intranet</i>	<i>25</i>
<i>EG5 Proportion of central government organizations with Internet access, by type of access.....</i>	<i>25</i>
<i>EG6 Proportion of central government organizations with a web presence</i>	<i>25</i>
<i>EG7 Selected Internet-based online services available to citizens, by level of sophistication of service</i>	<i>26</i>
Reference list.....	28

Core list of ICT indicators

ICT infrastructure and access

A1 Fixed-telephone subscriptions per 100 inhabitants

Definition Fixed-telephone subscriptions refers to the sum of active number of analogue fixed-telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents and fixed public payphones. This indicator was previously called Main telephone lines in operation. This indicator is divided by the population and multiplied by 100.

Source ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT, p.19. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

A2 Mobile cellular telephone subscriptions per 100 inhabitants

Definition Mobile-cellular telephone subscriptions refers to the number of subscriptions to a public mobile-telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months). The indicator applies to all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging, M2M and telemetry services. The indicator is divided by the population and multiplied by 100.

Source ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT, p.33. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

A3 Fixed broadband Internet subscriptions per 100 inhabitants, broken down by speed

Definition Fixed-broadband subscriptions refers to fixed subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fibre-to-the-home/building, other fixed (wired)-broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband. This total is measured irrespective of the method of payment. It excludes subscriptions that have access to data communications (including the Internet) via mobile-cellular networks. It should include fixed WiMAX and any other fixed wireless technologies. It includes both residential subscriptions and subscriptions for organizations. The indicator is divided by the population and multiplied by 100.

This indicator is split into the following speed tiers:

Fixed-broadband subscriptions with speeds of 256 kbit/s to less than 2 Mbit/s: Refers to all fixed-broadband Internet subscriptions with advertised downstream speeds equal to, or greater than, 256 kbit/s and less than 2 Mbit/s.

Fixed-broadband subscriptions with speed of 2 Mbit/s to less than 10 Mbit/s: Refers to all fixed-broadband Internet subscriptions with advertised downstream speeds equal to, or greater than, 2 Mbit/s and less than 10 Mbit/s.

Fixed-broadband subscriptions with speeds of equal to or above 10 Mbit/s: Refers to all fixed-broadband Internet subscriptions with advertised downstream speeds equal to, or greater than, 10 Mbit/s.

Source ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT, p.48. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

A4 Active mobile-broadband subscriptions per 100 inhabitants

Definition Active mobile-broadband subscriptions refers to the sum of active handset-based and computer-based (USB/dongles) mobile-broadband subscriptions to the public Internet. It covers actual subscribers, not potential subscribers, even though the latter may have broadband-enabled handsets. Subscriptions must include a recurring subscription fee or pass a usage requirement – users must have accessed the Internet in the last three months. It includes subscriptions to mobile-broadband networks that provide download speeds of at least 256 kbit/s (e.g. WCDMA, HSPA, CDMA2000 1x EV-DO, WiMAX IEEE 802.16e and LTE) and excludes subscriptions that only have access to GPRS, EDGE and CDMA 1xRTT. The indicator is divided by the population and multiplied by 100.

Source ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT, p.54. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

A5 International Internet bandwidth per inhabitant (bits/second/inhabitant)

Definition International Internet bandwidth refers to the average traffic load (expressed in Mbit/s) of international fibre-optic cables and radio links for carrying Internet traffic. The average should be calculated over the 12-month period of the reference year, and should take into consideration the traffic of all international Internet links. If the traffic is asymmetric (i.e. more incoming (downlink) than outgoing (uplink) traffic), then the average incoming (downlink) traffic load should be provided. The combined average traffic load of different international Internet links can be reported as the addition of the average traffic load of each link. International Internet bandwidth per inhabitant is calculated by dividing the amount of bandwidth (in bits/s) by the total population.

Source ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT, p.41. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

A6 Percentage of the population covered by a at least a 3G mobile network

Definition Percentage of the population covered by at least a 3G mobile network refers to the percentage of inhabitants that are within range of at least a 3G mobile-cellular signal, irrespective of whether or not they are subscribers. This is calculated by dividing the number of inhabitants that are covered by at least a 3G mobile-cellular signal by the total population and multiplying by 100. It excludes people covered only by GPRS, EDGE or CDMA 1xRTT.

Source ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT, p.38. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

A7 Fixed broadband Internet prices per month

Definition The fixed-broadband sub-basket refers to the price of a monthly subscription to an entry level fixed-broadband plan. It is calculated as a percentage of a country's average monthly GNI p.c., and is also presented in USD and PPP\$. For comparability reasons, the fixed-broadband sub-basket is based on a monthly data usage of (a minimum of) 1 GB. For plans that limit the monthly amount of data transferred by including data volume caps below 1 GB, the cost for the additional bytes is added to the sub-basket. The minimum speed of a broadband connection is 256 kbit/s.

Source ITU (2015) Measuring the Information Society Report, p.210. <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx>

A8 Mobile cellular telephone prepaid prices per month

Definition The mobile-cellular sub-basket refers to the price of a standard basket of mobile monthly usage for 30 outgoing calls per month (on-net/off-net to a fixed line and for peak and off-peak times) in predetermined ratios, plus 100 SMS messages. It is calculated as a percentage of a country's average monthly GNI p.c. and is also presented in USD and PPP\$. The mobile-cellular sub-basket is based on prepaid prices.

Source ITU (2015) Measuring the Information Society Report, p.209. <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx>

A9 Mobile broadband Internet prices per month

Definition This indicator refers to the following two calculated baskets:

Prepaid handset-based 500MB: This basket refers to the price of a plan for a mobile-broadband handset-based prepaid usage of 500 MB of data per month. It is calculated as a percentage of a country's average monthly GNI p.c. and is also presented in USD and PPP\$.

Postpaid computer-based (USB/dongle) 1GB: This basket refers to the price of a plan for a mobile-broadband computer-based postpaid usage of 1GB of data per month. It is calculated as a percentage of a country's average monthly GNI p.c. and is also presented in USD and PPP\$.

Source ITU (2015) Measuring the Information Society Report, p.210. <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx>

A10 TV broadcasting subscriptions per 100 inhabitants

Definition TV broadcasting subscriptions refer to IPTV, satellite-TV, cable-TV, and other TV subscriptions. It is divided by the population and multiplied by 100.

IPTV subscriptions: IPTV subscriptions refers to the number of subscriptions to Internet protocol television (IPTV), i.e. TV delivered over an IP-based network managed to support the required level of quality of service, quality of experience, security, interactivity and reliability. This does not include video accessed over the public Internet – for example, by streaming – and subscriptions to over-the-top audiovisual content providers.

Satellite-TV subscriptions: Satellite-TV subscriptions refers to the number of pay direct-to-home (DTH) satellite subscriptions, i.e. pay TV received via a satellite dish capable of receiving satellite television broadcasts. This does not include free-to-air satellite TV.

Cable-TV subscriptions: Cable-TV subscriptions refers to multichannel TV programming delivered over coaxial cable networks. It includes both analogue and digital cable-TV subscriptions. If the breakdown of analogue/digital cable-TV subscriptions is available, data for each type of cable-TV subscriptions should be specified in a note. It excludes IPTV delivered over cable-TV networks.

Other TV subscriptions: Other TV subscriptions refers to pay-TV subscriptions other than IPTV, satellite TV and cable TV. This includes subscriptions to TV platforms such as microwave multipoint distribution systems (MMDS) and pay digital terrestrial television (pay DTT). Free-to-air TV should not be included. The TV platforms corresponding to the data reported should be indicated in a note.

Source

ITU (2014) New telecommunication/ICT indicators from administrative data sources, 2011-2013, p.3. http://www.itu.int/pub/D-IND-ITC_IND_HBK-2011

ICT access and use by households and individuals

HH1 Proportion of households with a radio

Definition This is the proportion of households that have a radio. A radio is defined as a device capable of receiving broadcast radio signals, using common frequencies, such as FM, AM, LW and SW. A radio may be a stand-alone device, or it may be integrated with another device, such as an alarm clock, an audio player, a mobile telephone or a computer.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.45.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH2 Proportion of households with a TV

Definition This is the proportion of households that have a television (TV). A television (TV) is a device capable of receiving broadcast television signals, using popular access means such as over-the-air, cable and satellite. A television set is typically a stand-alone device, but it may also be integrated with another device, such as a computer or a mobile telephone.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.46.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH3 Proportion of households with telephone

Definition This is the proportion of households that have a telephone. A fixed telephone line refers to a telephone line connecting a customer's terminal equipment (e.g. telephone set, facsimile machine) to the public switched telephone network (PSTN) and which has a dedicated port on a telephone exchange. This term is synonymous with the terms main station or Direct Exchange Line (DEL) that are commonly used in telecommunication documents. It may not be the same as an access line or a subscription.

A mobile (cellular) telephone refers to a portable telephone subscribing to a public mobile telephone service using cellular technology, which provides access to the PSTN. This includes analogue and digital cellular systems and technologies such as IMT-2000 (3G) and IMT-Advanced. Users of both postpaid subscriptions and prepaid accounts are included.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.47.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH4 Proportion of households with a computer

Definition This is the proportion of households that have a computer. A computer refers to a desktop computer, a laptop (portable) computer or a tablet (or similar handheld computer).

- Desktop: a computer that usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard.
- Laptop (portable) computer: a computer that is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks

and netbooks but does not include tablets and similar handheld computers.

- Tablet (or similar handheld computer): a tablet is a computer that is integrated into a flat touch screen, operated by touching the screen rather than (or as well as) using a physical keyboard.

It does not include equipment with some embedded computing abilities, such as smart TV sets, and devices with telephony as their primary function, such as smartphones.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.49.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH5 Proportion of individuals using a computer

Definition This is the proportion of individuals who used a computer from any location in the last three months. A computer refers to a desktop computer, a laptop (portable) computer or a tablet (or similar handheld computer).

- Desktop: a computer that usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard.
- Laptop (portable) computer: a computer that is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks and netbooks but does not include tablets and similar handheld computers.
- Tablet (or similar handheld computer): a tablet is a computer that is integrated into a flat touch screen, operated by touching the screen rather than (or as well as) using a physical keyboard.

It does not include equipment with some embedded computing abilities, such as smart TV sets, and devices with telephony as their primary function, such as smartphones.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.51.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH6 Proportion of households with Internet

Definition This is the proportion of households with Internet access at home. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.53.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH7 Proportion of individuals using the Internet

Definition This is the proportion of individuals who used the Internet from any location in the last three months. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA,

games machine, digital TV etc.). Access can be via a fixed or mobile network.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.54.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH8 Proportion of individuals using the Internet, by location

Definition This is the proportion of individuals who used the Internet from specified locations in the last three months. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network, including wireless access at a WiFi ‘hotspot’.

Access via a mobile device should be classified to the appropriate location or to ‘in mobility’, that is while mobile.

Locations of Internet use are defined as follows:

- Home
- Work: where a person’s workplace is located at his/her home, then he/she would answer yes to the home category only
- Place of education: applies only to students – teachers and others who work at a place of education would report ‘work’ as the place of Internet use; where a place of education is also made available as a location for general community Internet use, such use should be reported in the Community Internet access facility category
- Another person’s home: the home of a friend, relative or neighbour
- Community Internet access facility (typically free of charge): Internet use at community facilities such as public libraries, publicly provided Internet kiosks, non-commercial telecentres, digital community centres, post offices, other government agencies; access is typically free and available to the general public
- Commercial Internet access facility (typically not free of charge): Internet use at publicly available commercial facilities such as Internet or cybercafés, hotels, airports etc., where access is typically paid for
- In mobility: Use of the Internet while mobile, via a mobile cellular telephone (including devices with mobile telephone functionality) or other mobile access devices, for example, a laptop computer, tablet or other handheld device connected to a mobile phone network.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.55.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH9 Proportion of individuals using the Internet, by type of activity

Definition This is the proportion of individuals who undertook one or more activities using the Internet for private (defined as non-work) purposes from any location in the last three months. Internet activities are defined as follows:

- Getting information about goods or services
- Seeking health information (on injury, disease, nutrition etc.).

- Making an appointment with a health practitioner via a website
- Getting information from general government organizations
- Interacting with general government organizations (downloading/requesting forms, completing/lodging forms online, making online payments and purchasing from government organizations etc.)

General government organizations should be consistent with the SNA93 (2008 revision) concept of general government. According to the SNA "... the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes; to redistribute income and wealth by means of transfers; and to engage in non-market production." (General) government organizations include central, state and local government units.

- Sending or receiving e-mail
- Telephoning over the Internet/VoIP (using Skype, iTalk, etc.; includes video calls via webcam)
- Participating in social networks (creating user profile, posting messages or other contributions to Facebook, Twitter etc.)
- Accessing chat sites, blogs, newsgroups or online discussions
- Purchasing or ordering goods or services (purchase orders placed via the Internet whether or not payment was made online; excludes orders that were cancelled or not completed; includes purchasing of products such as music, travel and accommodation via the Internet)
- Selling goods or services (via eBay, Mercado libre, Facebook etc.)
- Using services related to travel or travel-related accommodation
- Internet banking (includes electronic transactions with a bank for payment, transfers, etc. or for looking up account information; excludes electronic transactions via the Internet for other types of financial services such as share purchases, financial services and insurance)
- Doing a formal online course (in any subject)
- Consulting wikis (Wikipedia etc.), online encyclopaedias or other websites for formal learning purposes
- Listening to web radio (either paid or free of charge)
- Watching web television (either paid or free of charge)
- Streaming or downloading images, movies, videos or music; playing or downloading games (either paid or free of charge)
- Downloading software or applications (includes patches and upgrades, either paid or free of charge)
- Reading or downloading online newspapers or magazines, electronic books (includes accessing news websites, either paid or free of charge; includes subscriptions to online news services)
- Looking for a job or sending/submitting a job application (includes searching specific web sites for a job; sending/submitting an application online)
- Participating in professional networks (professional networks are also seen in the broader context of social networking and have the same requirement of profile creation, contributing through messaging or chat, or uploading text or audio-visual content files; examples of professional or business networks are LinkedIn and Xing)
- Managing personal/own homepage

- Uploading self/user-created content to a website to be shared (text, images, photos, videos, music, software, etc.)
- Blogging: maintaining or adding contents to a blog
- Posting opinions on civic or political issues via websites (blogs, social networks, etc.) that may be created by any individual or organization
- Taking part in online consultations or voting to define civic or political issues (urban planning, signing a petition etc.)
- Using storage space on the Internet to save documents, pictures, music, video or other files (e.g. Google Drive, Dropbox, Windows Skydrive, iCloud, Amazon Cloud Drive)
- Using software run over the Internet for editing text documents, spreadsheets or presentations

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.57.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH10 Proportion of individuals using a mobile cellular telephone

Definition This is the proportion of individuals who used a mobile telephone in the last three months.

A mobile (cellular) telephone refers to a portable telephone subscribing to a public mobile telephone service using cellular technology, which provides access to the PSTN. This includes analogue and digital cellular systems and technologies such as IMT-2000 (3G) and IMT-Advanced. Users of both postpaid subscriptions and prepaid accounts are included.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.60.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH11 Proportion of households with Internet, by type of service

Definition This is the proportion of households with access to the Internet, by type of service.

The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.

The broad types of Internet services to be identified are the following:

- Fixed (wired) narrowband network: includes analogue modem (dial-up via standard telephone line), ISDN (Integrated Services Digital Network), DSL (Digital Subscriber Line) at advertised download speeds below 256 kbit/s, and other forms of access with an advertised download speed of less than 256 kbit/s
- Fixed (wired) broadband network: refers to technologies at advertised download speeds of at least 256 kbit/s, such as DSL, cable modem, high speed leased lines, fibre-to-the-home/building, powerline and other fixed (wired) broadband
- Terrestrial fixed (wireless) broadband network: refers to technologies at advertised download speeds of at least 256 kbit/s, such as WiMAX, fixed CDMA

- Satellite broadband network (via a satellite connection), at advertised download speeds of at least 256 kbit/s
- Mobile broadband network (at least 3G, e.g. UMTS) via a handset
- Mobile broadband network (at least 3G, e.g. UMTS) via a card (e.g. integrated SIM card in a computer) or USB modem

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.62.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH12 Proportion of individuals using the Internet, by frequency

Definition This is the frequency of Internet use by individuals who used the Internet from any location in the last three months. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.

Frequency of use categories are as follows:

- At least once a day: once a working day for respondents who only (or most frequently) use the Internet from work or school etc.
- At least once a week but not every day
- Less than once a week.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.64.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH13 Proportion of households with multichannel television, by type

Definition This is the proportion of households with multichannel television (TV) and by type of multichannel service. Multichannel TV services are as follows:

- Cable TV (CATV): multichannel programming delivered over a coaxial cable for viewing on television sets
- Direct-to-home (DTH) satellite services: TV services received via a satellite dish capable of receiving satellite television broadcasts
- Internet-protocol TV (IPTV): multimedia services such as television/video/audio/text/graphics/data delivered over an IP-based network managed to support the required level of quality of service, quality of experience, security, interactivity and reliability; it does not include video accessed over the public Internet, for example, by streaming. IPTV services are also generally aimed at viewing over a television set rather than a personal computer.
- Digital terrestrial TV (DTT): the technologic

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.66.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH14 Barriers to household Internet access

Definition This measures the barriers to Internet access for households without Internet access. It is expressed as a proportion of households without Internet access. Barriers (that is, reasons for not having Internet) are:

- Do not need the Internet (not useful, not interesting, lack of local content)
- Have access to the Internet elsewhere
- Lack of confidence, knowledge or skills to use the Internet
- Cost of the equipment is too high
- Cost of the service is too high
- Privacy or security concerns
- Internet service is not available in the area
- Internet service is available but it does not correspond to household needs (e.g. quality, speed)
- Cultural reasons (e.g. exposure to harmful content)

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.68.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH15 Individuals with ICT skills, by type of skills

Definition This refers to ICT skills, defined for the purpose of this indicator as having undertaken certain computer-related activities in the last three months. Computer-related activities to measure ICT skills are as follows:

- Copying or moving a file or folder
- Using copy and paste tools to duplicate or move information within a document
- Sending e-mails with attached files (e.g. document, picture, video)
- Using basic arithmetic formulae in a spreadsheet
- Connecting and installing new devices (e.g. a modem, camera, printer)
- Finding, downloading, installing and configuring software
- Creating electronic presentations with presentation software (including text, images, sound, video or charts)
- Transferring files between a computer and other devices
- Writing a computer program using a specialized programming language

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.69.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH16 Household expenditure on ICT

Definition This measures the percentage of total household expenditure that is expended on ICT goods and services as follows:

- Telephone and telefax equipment (COICOP 08.2.0): Purchases of telephones, radio-telephones, telefax machines, telephone-answering machines and telephone loudspeakers; repair of such equipment.
- Telephone and telefax services (COICOP 08.3.0): Installation and subscription costs of personal telephone equipment; includes telephone calls (from any location), information transmission services, Internet connection services, hire of telephones.
- Equipment for the reception, recording and reproduction of sound and picture (COICOP 09.1.1): Television sets, video cassette players and

recorders, television aerials of all types; radio sets, car radios, radio clocks, two-way radios, amateur radio receivers and transmitters; gramophones, tape players and recorders, cassette players and recorders, CD-players, personal stereos, stereo systems and their constituent units (turntables, tuners, amplifiers, speakers, etc.), microphones and earphones.

- Information processing equipment (COICOP 09.1.3): Personal computers, visual display units, printers and miscellaneous accessories accompanying them; computer software packages such as operating systems, applications, languages, etc.; calculators, including pocket calculators; typewriters and word processors. (Also includes laptops, tablets, e-book readers.)
- Repair of audio-visual, photographic and information processing equipment (COICOP 09.1.5)

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals, p.71.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH17 Proportion of individuals using the Internet, by type of portable device and network used to access the Internet

Definition This is the proportion of individuals who used the Internet using a portable device. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network. A portable device can be a mobile phone, tablet or a portable computer (such as laptop, notebook, netbook). The network used to access the Internet can be either via mobile cellular network or via other wireless networks (e.g. WiFi).

- a. Mobile phone
 - a1) via mobile cellular network
 - a2) via other wireless networks (e.g. WiFi)
- b. Tablet
 - b1) via mobile cellular network, using USB key/dongle or integrated data SIM card
 - b2) via other wireless networks (e.g. WiFi)
- c. Portable computer (laptop, notebook, netbook)
 - c1) via mobile cellular network, using USB key/dongle or integrated data SIM card or mobile cellular telephone as modem
 - c2) via other wireless networks (e.g. WiFi)
- d. Other portable devices (e.g. portable games consoles, watches, e-book readers etc.)

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH18 Proportion of individuals who own a mobile phone

Definition This is the proportion of individuals who own a mobile phone. An individual owns a mobile cellular phone if he/she has a mobile cellular phone device with at least one active SIM card for personal use. It includes mobile cellular phones supplied by employers that can be used for personal reasons (to make personal calls, access the

Internet, etc.) and those who have a mobile phone for personal use that is not registered under his/her name. It excludes individuals who have only active SIM card(s) and not a mobile phone device.

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

HH19 Proportion of individuals not using the Internet, by type of reason

Definition This measures the barriers to Internet use by individuals. It is expressed as a proportion of individuals who do not use the Internet. The reasons for not using the Internet are:

- Do not need the Internet (not useful, not interesting)
- Do not know how to use it
- Cost of Internet use is too high (service charges, etc.)
- Privacy or security concerns
- Internet service is not available in the area
- Cultural reasons (e.g. exposure to harmful content)
- Don't know what Internet is
- Not allowed to use the Internet
- Lack of local content
- Other reason, specify

Source ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals.
<https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

ICT access and use by enterprises

B1 Proportion of businesses using computers

Definition This refers to the number of in-scope businesses using computers during the reference period as a proportion of the total number of in-scope businesses. A computer refers to a desktop computer, a laptop (portable) computer or a tablet (or similar handheld computer).

- Desktop: a computer that usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard.
- Laptop (portable) computer: a computer that is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks and netbooks but does not include tablets and similar handheld computers.
- Tablet (or similar handheld computer): a tablet is a computer that is integrated into a flat touch screen, operated by touching the screen rather than (or as well as) using a physical keyboard.

It does not include equipment with some embedded computing abilities, such as smart TV sets, and devices with telephony as their primary function, such as smartphones.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.22. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. Computer definition as per ITU Manual, p.49

B2 Proportion of persons employed routinely using computers

Definition This refers to number of persons employed in all in-scope businesses routinely using computers as a proportion of the total number of persons employed in all in-scope businesses. A computer refers to a desktop computer, a laptop (portable) computer or a tablet (or similar handheld computer).

- Desktop: a computer that usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard.
- Laptop (portable) computer: a computer that is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks and netbooks but does not include tablets and similar handheld computers.
- Tablet (or similar handheld computer): a tablet is a computer that is integrated into a flat touch screen, operated by touching the screen rather than (or as well as) using a physical keyboard.

It does not include equipment with some embedded computing abilities, such as smart TV sets, and devices with telephony as their primary function, such as smartphones.

Persons employed refers to all persons working for the business. They include short-term and casual employees, contributing family workers and self-employed persons, who may be paid or unpaid.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.22. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. Computer definition as per ITU Manual, p.49

B3 Proportion of businesses using the Internet

Definition This refers to the number of in-scope businesses using the Internet as a proportion of the total number of in-scope businesses. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.22. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. Internet definition as per ITU Manual, p.53

B4 Proportion of persons employed routinely using the Internet

Definition This refers to the number of persons employed routinely using the Internet in all in-scope businesses as a proportion of the total number of persons employed in all in-scope businesses. The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network. Persons employed refers to all persons working for the business. They include short-term and casual employees, contributing family workers and self-employed persons, who may be paid or unpaid.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.22. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. Internet definition as per ITU Manual, p.53

B5 Proportion of businesses with a web presence

Definition This refers to the number of in-scope businesses with a web presence as a proportion of the total number of in-scope businesses. A web presence includes a website, home page or presence on another entity's website (including a related business). It excludes inclusion in an online directory and any other webpages where the business does not have control over the content of the page.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.22. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

B6 Proportion of businesses with an intranet

Definition This refers to the number of in-scope businesses with an intranet as a proportion of the total number of in-scope businesses. An intranet refers to an internal communications network using Internet protocols and allowing communication within an organization (and to other authorized persons).

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.22. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

B7 Proportion of businesses receiving orders over the Internet

Definition This refers to the number of in-scope businesses receiving orders over the Internet as a proportion of the total number of in-scope businesses. It includes orders received via the Internet whether or not payment was made online: via websites, specialized Internet marketplaces, extranets, EDI over the Internet, Internet-enabled mobile phones and email. It includes orders received on behalf of other organizations. It excludes orders that were cancelled or not completed.

The Internet is a worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed or mobile network.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.23. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. Internet definition as per ITU Manual, p.53

B8 Proportion of businesses placing orders over the Internet

Definition This refers to the number of in-scope businesses placing orders over the Internet as a proportion of the total number of in-scope businesses. It includes orders placed via the Internet whether or not payment was made online: via websites, specialized Internet marketplaces, extranets, EDI over the Internet, Internet-enabled mobile phones and email. It excludes orders that were cancelled or not completed.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.23. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

B9 Proportion of businesses using the Internet by type of access

Definition This refers to the number of in-scope businesses that use the Internet through each of these types of access: narrowband, fixed broadband and/or mobile broadband, as a proportion of the total number of in-scope businesses.

- Fixed narrowband: includes analogue modem (dial-up via standard telephone line), ISDN (Integrated Services Digital Network), DSL (Digital Subscriber Line) at advertised download speeds below 256 kbit/s, and other forms of access with an advertised download speed of less than 256 kbit/s.
- Fixed broadband: refers to technologies at advertised download speeds of at least 256 kbit/s, such as DSL, cable modem, high speed leased lines, fibre-to-the-home/building, powerline and other fixed (wired) broadband. It also refers to fixed (wireless) broadband such as WiMAX, fixed CDMA, and to satellite broadband (via a satellite connection).
- Mobile broadband: refers to a network (at least 3G, e.g. UMTS) via a handset, via a card (e.g. integrated SIM card in a computer), or USB modem.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.23. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. Narrowband and broadband definitions as per ITU Manual, p.62

B10 Proportion of businesses with a Local Area Network

Definition This refers to the number of in-scope businesses with a local area network (LAN) as a proportion of the total number of in-scope businesses. A LAN is a wired or wireless network connecting computers within a localized area such as a single building, department or site.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.24. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

B11 Proportion of businesses with an extranet

Definition This refers to the number of in-scope businesses with an extranet as a proportion of the total number of in-scope businesses. An extranet is a closed network that uses Internet protocols to securely share information with suppliers, vendors, customers, or business partners. It can take the form of a secure extension of an Intranet or a website.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.24. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

B12 Proportion of businesses using the Internet by type of activity

Definition This refers to the number of in-scope businesses that use the Internet by type of activity, as a proportion of the total number of in-scope businesses. The types of activity are:

- Sending or receiving e-mail
- Telephoning over the Internet/VoIP (voice over Internet Protocol), or using video-conferencing
- Use of instant messaging, bulletin boards
- Getting information about goods or services
- Getting information from general government organizations
- Interacting with general government organizations
- Internet banking
- Accessing other financial services
- Delivering products online
- Internal or external recruitment
- Staff training

General government organizations refer to the SNA93 concept of the general government sector, which "consists of the totality of institutional units (central, state and local government) which, in addition to fulfilling their political responsibilities and their role of economic regulation, produce principally non-market services (possibly goods) for individual or collective consumption and redistribute income and wealth."

Delivering products on line refers to products delivered over the Internet in digitized form.

Staff training includes e-learning applications available on an intranet or from the Web.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.24-25. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

ICT sector and trade in ICT goods

ICT1 Proportion of total business sector workforce involved in the ICT sector

Definition This refers to the persons employed in businesses that are classified as belonging to the ICT sector, as a proportion of the total business sector workforce. The ICT sector is defined by the production of goods and services that are primarily intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display. This is the OECD 2007 definition based on ISIC Rev. 4 that includes the following classes:

ICT manufacturing industries

- 2610 Manufacture of electronic components
- 2620 Manufacture of computers and peripheral equipment
- 2630 Manufacture of communication equipment
- 2640 Manufacture of consumer electronics
- 2680 Manufacture of magnetic and optical media

ICT trade industries

- 4651 Wholesale of computers, computer peripheral equipment and software
- 4652 Wholesale of electronic and telecommunication equipment and parts

ICT services industries

- 5820 Software publishing
- 61 Telecommunications
- 62 Computer programming, consultancy and related activities
- 631 Data processing, hosting and related activities; web portals
- 951 Repair of computers and communication equipment

The business sector workforce refers to all persons engaged in domestic production in the business sector.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.34-35. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

ICT2 ICT sector share of gross value added

Definition This refers to the value added of the ICT sector as a proportion of the total value added of the business sector. Value added represents the contribution to national GDP, estimated in a national accounts framework, usually calculated as the difference between production and intermediate inputs. The ICT sector is defined by the production of goods and services that are primarily intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display. This is the OECD 2007 definition based on ISIC Rev. 4 that includes the following classes:

ICT manufacturing industries

- 2610 Manufacture of electronic components
- 2620 Manufacture of computers and peripheral equipment
- 2630 Manufacture of communication equipment
- 2640 Manufacture of consumer electronics
- 2680 Manufacture of magnetic and optical media

ICT trade industries

- 4651 Wholesale of computers, computer peripheral equipment and software
- 4652 Wholesale of electronic and telecommunication equipment and parts

ICT services industries

- 5820 Software publishing
- 61 Telecommunications
- 62 Computer programming, consultancy and related activities
- 631 Data processing, hosting and related activities; web portals
- 951 Repair of computers and communication equipment

The business sector refers to all the sectors engaged in domestic production.

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.34-35. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf

ICT3 ICT goods imports as a percentage of total imports

Definition This refers to the value of imports of all ICT goods as a proportion of the total value of imports. ICT goods are defined as per the OECD ICT goods classification in terms of the 2012 HS classification, consisting of

- ICT01 (Computers and peripheral equipment)
- ICT02 (Communication equipment)
- ICT03 (Consumer electronic equipment)
- ICT04 (Electronic components)
- ICT05 (Miscellaneous)

Detailed composition is available at:

http://unctadstat.unctad.org/EN/Classifications/DimHS2012Products_Ict_Hierarchy.pdf

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.38. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. ICT goods classification as per the OECD Guide to Measuring the Information Society 2011, p.34-36.

ICT4 ICT goods exports as a percentage of total export

Definition This refers to the value of exports of all ICT goods as a proportion of the total value of exports. ICT goods are defined as per the OECD ICT goods classification in terms of the 2012 HS classification, consisting of

- ICT01 (Computers and peripheral equipment)
- ICT02 (Communication equipment)
- ICT03 (Consumer electronic equipment)
- ICT04 (Electronic components)
- ICT05 (Miscellaneous)

Detailed composition is available at:

http://unctadstat.unctad.org/EN/Classifications/DimHS2012Products_Ict_Hierarchy.pdf

Source UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition, p.38. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf. ICT goods classification as per the OECD Guide to Measuring the Information Society 2011, p.34-36.

ICT in education

ED1 Proportion of schools with a radio used for educational purposes

Definition ED1 measures the proportion of schools, for ISCED levels 1 to 3, offering radio-assisted instruction. It does not measure the intensity of use of radios for educational purposes.

A radio is defined as a stand-alone device capable of receiving broadcast radio signals, using popular frequencies, such as FM, AM, LW and SW. Unless they are intentionally used for educational purposes, radio sets integrated into other devices (such as a Walkman, car radio, clock radio, audio cassette or CD players/recorders) are excluded.

The proportion of schools with a radio used for educational purposes is calculated by dividing the number of schools providing radio-assisted instruction by the total number of schools. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.31.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED2 Proportion of schools with a television used for educational purposes

Definition ED2 measures the proportion of schools, for ISCED levels 1 to 3, offering television-assisted instruction. It does not measure the intensity of use of televisions for educational purposes.

A television (TV) is defined as a stand-alone device capable of receiving broadcast television signals using popular access means such as over-the-air, cable and satellite. Television broadcast receivers integrated into other devices (such as a computer, PDA, Smartphone or mobile phone) are considered only if their intended use is for educational purposes.

The proportion of schools with a television used for educational purposes is calculated by dividing the number of schools providing television-assisted instruction by the total number of schools. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.32.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED3 Proportion of schools with a telephone communication facility

Definition ED3 measures the proportion of schools, for ISCED levels 1 to 3, with a telephone communication facility.

A telephone communication facility refers to fixed telephone lines, cable connections (i.e. cable telephony) or other sustainable communication technology that connects an educational institution's terminal equipment (e.g. telephone set, facsimile machine) to the public switched telephone network (PSTN) and has a dedicated port on a telephone exchange. Access is defined by a subscription to services that allow the physical presence and use of the facilities in a given educational institution.

The proportion of schools with a with a telephone communication facility is

calculated by dividing the number of schools with a telephone communication facility by the total number of schools. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.33.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED4 Learners-to-computer ratio in schools with computer-assisted instruction

Definition ED4 measures the average number of learners entitled to use school computers (as a pedagogical aid) per computer available for pedagogical use in schools that offer computer-assisted instruction (CAI), for ISCED levels 1 to 3. It indicates the potential for the use of computers in CAI schools to promote or expand computer-assisted instruction. It is not a measure of actual use of computers in schools.

A computer refers to a programmable electronic device that can store, retrieve and process data, as well as share information in a highly structured manner. It performs high-speed mathematical or logical operations according to a set of instructions. A computer includes personal computers (PCs), laptops, notebooks, terminals connected to mainframes and mini-computers intended for shared use.

The learners-to-computer ratio in schools with CAI is calculated by dividing the number of learners entitled to use school computers (as a pedagogical aid) by the total number of computers available for pedagogical use in schools providing CAI.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.34.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED5 Proportion of schools with Internet access by type of access

Definition ED5 measures the proportion of schools with access to the Internet, as a proportion of all schools, for ISCED levels 1 to 3. The indicator is split into four parts, as follows:

- Proportion of schools with any Internet access
- Proportion of schools with access by fixed narrowband only
- Proportion of schools with access by fixed broadband only
- Proportion of schools with both fixed narrowband and broadband access

The Internet refers to worldwide interconnected networks that enable users to share information in an interactive format — referred to as hypertext — through multiple wired or wireless receivers (personal computers, laptops, PDAs, Smartphones, etc.).

Fixed narrowband Internet access refers to connectivity for public use via analogue modem (dial-up via standard phone line), ISDN (Integrated Services Digital Network), DSL at speeds below 256 kbit/s, and other forms of fixed access with a download speed of less than 256 kbit/s.

Fixed broadband Internet access refers to high-speed connectivity for public use of at least 256 kbit/s in one or both directions (downloading and uploading). It includes cable modem Internet connections, DSL Internet connections of at least 256 kbit/s, fibre and other fixed broadband technology connections (such as satellite broadband Internet, Ethernet LANs, fixed wireless access, Wireless Local Area Network and WiMAX).

Mobile broadband includes technologies at least 3G, e.g. UMTS via a handset or via a card (e.g. integrated SIM card in a computer) or USB modem; mobile broadband via privately-owned mobile phone networks is excluded.

The proportion of schools with Internet access, by type is calculated for each type of access (including any access) by dividing the number of schools with Internet access by the total number of schools. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.36.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED6 Proportion of learners who have access to the Internet at school

Definition ED6 measures the proportion of learners entitled to use Internet laboratories at school as a pedagogical aid, for ISCED levels 1 to 3. It measures the accessibility to Internet use for educational purposes by learners. It does not account for the actual use of the Internet by learners.
The Internet refers to worldwide interconnected networks that enable users to share information in an interactive format — referred to as hypertext — through multiple wired or wireless receivers (personal computers, laptops, PDAs, Smartphones, etc.).
The proportion of learners who have access to the Internet at school is calculated by dividing the number of learners entitled to use Internet laboratories at school as a pedagogical aid by the total number of learners. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2 p.37.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED7 Proportion of learners enrolled at the post-secondary level in ICT-related fields

Definition ED7 measures the proportion of learners enrolled in ICT-related fields of study in tertiary education institutions, at ISCED levels 4, or 5 and 6. The indicator has gender sub-indicators, male and female.
Enrolment in ICT-related fields may be constrained by existing capacities at educational institutions and therefore may not represent actual demand.
ICT-related fields include programmes covering any of the following four fields of education and training:
Audiovisual techniques and media production is the study of techniques and the acquisition of skills to produce books, newspapers, radio/television programmes, films/videos, recorded music and graphic reproduction with ICT.
Computer science is the study of the design and development of computer systems and computing environments. It includes the study of the design, maintenance and integration of software applications.
Computer use is the study of using computers, and computer software and applications for different purposes. These programmes are generally of short duration.
Electronics and automation (engineering and engineering trades) is the study of planning, designing, developing, maintaining and monitoring electronic equipment, machinery and systems. It includes designing computers and equipment for communication.
The proportion of learners enrolled at the post-secondary level in ICT-related fields is calculated by dividing the number of learners enrolled in ICT-related fields by the number of learners enrolled in educational institutions in any field of study. The

result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.38.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ED8 Proportion of ICT-qualified teachers in schools

Definition ED8 measures the extent to which primary and secondary school teachers have been trained to teach basic computer skills (or computing), for ISCED levels 1 to 3. ICT-qualified teachers are those who have trained specifically in pre-service or in-service schemes in ICT according to nationally defined qualification standards. The indicator only presents the skilled teaching force available to deliver ICT courses. This does not necessarily mean that the teachers recorded as qualified actually teach an ICT course, nor does it ensure that ICT course delivery is effective. The proportion of ICT-qualified teachers in schools is calculated by dividing the number of primary and secondary teachers who have been trained to teach basic computer skills (or computing) by the total number of teachers in primary and secondary schools. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.39.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

EDR1 Proportion of schools with electricity

Definition EDR1 is a reference indicator. It measures the availability of electricity – considered a minimum pre-requisite condition for most ICTs to be introduced to schools. The indicator is available for ISCED levels 1 to 3. Electricity refers to permanent sources of power (e.g. grid/mains connection, wind, water, solar and permanently fuel-powered generator) that enable the adequate and sustainable use of ICT infrastructure for educational purposes. The proportion of schools with electricity is calculated by dividing the number of schools with electricity by the total number of schools. The result is then multiplied by 100 to be expressed as a percentage.

Source UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2, p.40.
http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

ICT in government

EG1 Proportion of persons employed in central government organizations routinely using computers

Definition The proportion of persons employed in central government organizations routinely using computers is calculated by dividing the number of persons employed in central government organizations, who routinely use computers, by the total number of persons employed in central government organizations. The result is then multiplied by 100 to be expressed as a percentage. An optional indicator may be calculated separately for male and female persons employed (or other individual characteristics).

Source United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.15. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

EG2 Proportion of persons employed in central government organizations routinely using the Internet

Definition The proportion of persons employed in central government organizations routinely using the Internet is calculated by dividing the number of persons employed in central government organizations, who routinely use the Internet, by the number of persons employed in central government organizations. The result is then multiplied by 100 to be expressed as a percentage. An optional indicator may be calculated separately for male and female persons employed (or other individual characteristics).

Source United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.17. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

EG3 Proportion of central government organizations with a local area network

Definition The proportion of central government organizations with a LAN is calculated by dividing the number of central government organizations with a LAN by the number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.
An employment-weighted version of the indicator is calculated by weighting responses by the number of employees in responding central government organizations. The resulting indicator is expressed as follows: central government organizations with a LAN account for x per cent of the total number of persons employed in government organizations. Note that this is different from the employment weighting used in EG1 and EG2. However, like those indicators, it requires that total employment be collected in surveys of central government organizations.

Source United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.18. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

EG4 Proportion of central government organizations with an intranet

Definition The proportion of central government organizations with an intranet is calculated by dividing the number of central government organizations with an intranet by the number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.

An employment-weighted version of the indicator is calculated by weighting responses by the number of persons employed in responding central government organizations. The resulting indicator is expressed as follows: central government organizations with an intranet account for x per cent of the total number of persons employed in central government organizations. Note that this is different from the employment weighting used in EG1 and EG2. However, like those indicators, it requires that total employment be collected in surveys of central government organizations.

Source United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.19. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

EG5 Proportion of central government organizations with Internet access, by type of access

Definition The proportion of government organizations with Internet access, by type of access is calculated by dividing the total number of central government organizations with Internet access (by each type of access and any access) by the total number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.

Note that the sum of percentages of each type of access is likely to exceed 100, as many central government organizations will have more than one type of access service.

An employment-weighted version of the indicator for any Internet access is calculated by weighting responses by the number of persons employed in responding central government organizations. The resulting indicator is expressed as follows: central government organizations with Internet access account for x per cent of the total number of persons employed in central government organizations. Note that this is different from the employment weighting used in EG1 and EG2. However, like those indicators, it requires that total employment be collected in surveys of central government organizations.

Source United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.21. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

EG6 Proportion of central government organizations with a web presence

Definition The proportion of central government organizations with a web presence is calculated by dividing the number of central government organizations with a web presence by the number of central government organizations. The result is then multiplied by 100 to be expressed as a percentage.

An employment-weighted version of the indicator is calculated by weighting responses by the number of persons employed in responding central government organizations. The resulting indicator is expressed as follows: central government organizations with a web presence account for x per cent of the total number of persons employed in central government organizations. Note that this is different

from the employment weighting used in EG1 and EG2. However, like those indicators, it requires that total employment be collected in surveys of central government organizations.

Source United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.23. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

EG7 Selected Internet-based online services available to citizens, by level of sophistication of service

Definition Unlike indicators EG1 to EG6, this indicator refers to both central and state/provincial levels of government. This is necessary to ensure international comparability as the services selected may be offered by different levels of government across countries. As the approach taken to measuring Internet-based services is relatively untested and because responses may be somewhat subjective, the indicator is initially considered to be experimental.

The main indicator is weighted by population in order to show the significance of government Internet-based services at the national level. It is expressed in terms of the percentage of a country's citizens who are theoretically able to access each Internet-based service. Note that this does not refer to whether a citizen has the equipment or knowledge necessary to access those services, whether he or she needs to access those services nor whether he or she directly benefits (e.g. most of the services are not relevant to children but they are assumed to indirectly benefit if their parent or guardian accesses services electronically). The ability to access each service will usually be linked to the relevant jurisdiction. For example, a citizen residing in a particular state will theoretically be able to access Internet-based services offered by that state government, though may not need to, wish to, or be technically capable of doing so.

A supplementary indicator presented by jurisdiction is also provided. A Yes-No-Not relevant tick box is completed for each jurisdiction, service and level. This presentation may also be used as an input to the computation of the main indicator, where countries have a state/provincial level of government.

The Internet-based services are classified by level of sophistication, as follows:

- Level 1 – obtain the necessary information from publicly accessible websites
- Level 2 – request the necessary printed forms or download forms (e.g. in pdf format) from publicly accessible websites
- Level 3 – fill in the necessary forms online on (or via) publicly accessible websites
- Level 4 – undertake the complete process, via publicly accessible websites.

The Internet-based services for which information is sought are¹:

- Enrol to vote for the first time in government elections.
- Complete and lodge personal income tax return, least complex situation.
- Obtain unemployment income benefits, least complex situation.
- Obtain child support allowance, least complex situation.
- Renew an international passport, least complex situation.
- Renew a driver's licence, least complex situation.

¹ This list is a minimal list of services for comparison purposes. Countries may wish to add other services to the list.

Make an official declaration of theft of personal goods (excluding motor vehicle and burglary) to the relevant police.
Obtain a copy of a birth certificate for self.
Obtain a copy of a marriage certificate for self.
Renew registration for a motor vehicle, least complex situation.

Source

United Nations Economic Commission for Africa (2014) Manual for measuring e-government, p.24. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

Reference list

ITU (2011) Handbook for the Collection of Administrative Data on Telecommunications/ICT. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx>

ITU (2014) Manual for Measuring ICT Access and Use by Households and Individuals. <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual2014.aspx>

ITU (2015) Measuring the Information Society Report. <http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx>

ITU (2014) New telecommunication/ICT indicators from administrative data sources, 2011-2013. http://www.itu.int/pub/D-IND-ITC_IND_HBK-2011

UIS (2009) Guide to measuring information and communication technologies (ICT) in education -Technical Paper No. 2. http://www.uis.unesco.org/Library/Documents/ICT_Guide_EN_v19_reprintwc.pdf

United Nations Economic Commission for Africa (2014) Manual for measuring e-government. http://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf

UNCTAD (2009) Manual for the Production of Statistics on the Information Economy, 2009 Revised Edition. http://unctad.org/en/PublicationsLibrary/sdteecb20072rev1_en.pdf