

ITU Telecommunication/ICT Indicators: Infrastructure and access

6 November 2007

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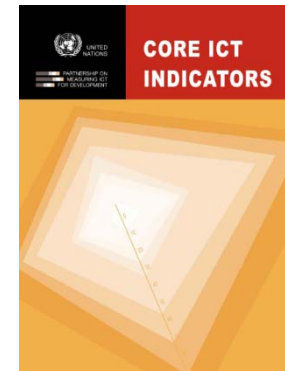
Market Information and Statistics (STAT)
Policy and Strategies (POL)
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International Telecommunication Union

Introduction

Helping the world communicate



- This presentation is based on the work of the *Partnership on Measuring ICT for Development*



- Publication *Core ICT indicators*
- It presents the *Core Indicators on Infrastructure and Access*
- *Based on the work of ITU on telecommunication Indicators* – Handbook of Telecommunication Indicators, agreed during WTI 2006

Overview

- Main Infrastructure and access Indicators:
 - List of indicators
 - Categorization
 - Description of the 10 core indicators

Infrastructure and access core indicators

A-1	Main (fixed) telephone lines per 100 inhabitants
A-2	Mobile cellular subscribers per 100 inhabitants
A-3	Computers per 100 inhabitants
A-4	Internet subscribers per 100 inhabitants
A-5	Broadband (fixed and mobile) Internet subscribers per 100 inhabitants
A-6	International Internet bandwidth per inhabitant
A-7	Percentage of population covered by mobile cellular telephony
A-8	Internet access tariffs (20 hours per month), in US\$, and as a percentage of per capita income
A-9	Mobile cellular tariffs (100 minutes of usage per month), in US\$, and as percentage of per capita income
A-10	Percentage of localities with Public Internet Access Centres (PIACs) by number of inhabitants (rural/urban)

Core indicators by category

- Availability of infrastructure to use ICTs
 - Telephone (mobile, fixed)
 - Computer
- Affordability
 - Mobile cellular tariffs
 - Internet access tariffs
- Quality of service
 - International Internet bandwidth
 - Broadband Internet subscribers
- Universal access
 - Percentage of population covered by mobile telephony
 - Percentage of localities with Public Internet Access Centres (PIACs) by number of inhabitants (rural/urban)

Availability of infrastructure to use ICTs (1)

A1. Fixed telephone lines per 100 inhabitants

Fixed telephone lines refer to telephone lines connecting a customer's terminal equipment (e.g., telephone set, facsimile machine) to the Public Switched Telephone Network (PSTN) and which have a dedicated port on a telephone exchange.

Fixed telephone lines per 100 inhabitants is calculated by dividing the number of fixed telephone lines by the population and multiplying by 100.

- In order to enhance comparability, countries should provide a breakdown of how their main telephone line figure is computed.

Availability of infrastructure to use ICTs (2)

A2. Mobile cellular subscribers per 100 inhabitants

Mobile cellular subscribers refer to users of portable telephones subscribing to an automatic public mobile telephone service using cellular technology.

Users of both post-paid subscriptions and pre-paid accounts are included.

Mobile cellular subscribers per 100 inhabitants is obtained by dividing the number of mobile cellular subscribers by the population and multiplying by 100.

Availability of infrastructure to use ICTs (3)

A3. Computers per 100 inhabitants

Computers measures the number of computers installed in a country. The statistic includes PCs, laptops, notebooks etc, but excludes terminals connected to mainframe and mini-computers that are primarily intended for shared use, and devices such as smart-phones that have only some, but not all, of the functions of a PC (e.g., they may lack a full-sized keyboard, a large screen, an Internet connection, drives etc). Computers per 100 inhabitants is obtained by dividing the estimated number computers in use by the population and multiplying by 100.

- ❖ An overall country figure for the number of PCs could be estimated by adding up the last five years sales.
- ❖ A surrogate for sales is PC import figures, data that is sometimes available from customs departments of national governments. of import data has limitations. Often, However, use only value rather than volume data is available. Also, if PCs were assembled in the country from imported parts, they would not be counted. Customs data would also not include undeclared imports. Additionally, some of the imported PCs may be later exported.

Availability of infrastructure to use ICTs (4)

A4. Internet subscribers per 100 inhabitants

An Internet subscriber is someone who pays for access to the public Internet (a TCP/IP connection).

The statistic is measured irrespective of the type or speed of access, or the type of device used to access the Internet, or the method of payment.

Internet subscribers per 100 inhabitants is obtained by dividing the number of Internet subscribers by the population and multiplying by 100.

- The number of subscribers measures all those who are paying for Internet use, including those who pay via the cost of their telephone call (sometimes referred to as “free Internet”), those who pay in advance for a given amount of time (pre-paid) and those who pay for a subscription (either flat-rate or volume/usage based).

Quality of service (1)

A5. Broadband Internet subscribers per 100 inhabitants

A Broadband Internet subscriber is someone who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions.

The statistic is measured irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.

Broadband Internet subscribers per 100 inhabitants is obtained by dividing the number of *Broadband Internet subscribers* by the *population* and multiplying by 100.

- The number of subscribers measures all those who are paying for Internet use, including those who pay via the cost of their telephone call (sometimes referred to as “free Internet”), those who pay in advance for a given amount of time (pre-paid) and those who pay for a subscription (either flat-rate or volume/usage based).

Quality of service (2)

A6. International Internet bandwidth per inhabitant

International Internet bandwidth refers to the capacity which backbone operators provision to carry IP traffic measured in bits per second. International Internet bandwidth per inhabitant is obtained by dividing the amount of bandwidth by the population.

- A useful derivative of this indicator is *International Internet bandwidth per Internet subscriber*, which takes out of the equation the differing levels of Internet usage in different countries.
- One weakness of this indicator is that countries with a large domestic market (like China), or which are major generators of local content (like USA), or which have languages that are not widely used outside the country (like Japan), may have relatively lower than expected levels of International Internet bandwidth, in that domestic bandwidth fulfils most of their needs.

Universal access

A7. Percentage of population covered by mobile cellular telephony

Percentage of population covered by mobile cellular telephony refers to the percentage of a country's inhabitants that live within areas served by a mobile cellular signal, irrespective of whether or not they choose to use it. This should not be confused with the percentage of the land area covered by a mobile cellular signal or the percentage of the population that subscribe to mobile cellular service. Note that this measures the theoretical ability to use mobile cellular services if one has a handset and a subscription.

- ❖ A very useful indicator of universal access.
- ❖ Inhabitants who are covered by a mobile cellular signal have the potential to subscribe to the network, irrespective of whether or not they actually do so. Where there is a large gap between population coverage and penetration, it suggests that bottlenecks in access are more due to affordability than to infrastructure shortcomings.

Affordability of infrastructure to use ICTs (1)

A8. Internet access tariff (20 hours per month), in US\$, and as a percentage of per capita income

- Includes the tariff components of monthly line rental, line usage charge and Internet access charge, plus any tax that may be levied (as this is a service used by both residential and business consumers).
- The tariff chosen for a particular country would be the package for 20 hours per month that is the cheapest, that is widely available (or, in the case of regional service providers, is available in the capital city) and is available to the general public without restriction (e.g., excluding in-company or limited time offers, and excluding offers that are bundled with some other service).
- The price comparison is expressed in a commonly used currency (such as US\$), which could be converted either at the average exchange rate, or at Purchasing Power Parity (PPP) rates.
- The indicator should be compared, as far as possible, for the same date between countries.
- As a percentage of per capita income involves dividing the Internet access tariff by the average monthly Gross National Income per capita of the country.

Affordability of infrastructure to use ICTs (2)

A9. Mobile cellular tariffs (100 minutes of use per month), in US\$, and as a percentage of per capita income

- The Mobile cellular tariff includes the tariff components of monthly service rental (if relevant), 50 minutes of peak time calling and 50 minutes of off-peak calling, plus tax.
- Differences in the distance of calls, which may be applicable in some countries are not taken into account, nor are international calls or SMS messages.
- The possible one-time charge for connection is not taken into account, excepting where this is bundled into the costs of a pre-paid account.
- The price comparison is expressed in a commonly used currency (such as US\$), which could be converted either at the average an exchange rate, or at Purchasing Power Parity (PPP) rates.
- The indicator should be compared, as far as possible, for the same date between countries.
- As a percentage of per capita income involves dividing the mobile cellular tariff by the average monthly Gross National Income per capita of the country.

Universal access

A10. Percentage of localities with public Internet access centres (PIACs) by number of inhabitants (rural/urban)

A public Internet access centre (PIAC) is a site, location, centre of instruction at which Internet access is made available to the public, on a full-time or part-time basis. This may include digital community centres, Internet cafés, libraries, education centres and other similar establishments, whenever they offer Internet access to the general public. All such centres should have at least one public computer for Internet access. Localities refer to a country's villages, towns and cities.

The percentage of localities with public Internet access centres (PIACs) is computed by dividing the number of localities with at least one PIAC by the total number of the country's localities and multiplying by 100. The indicator should be broken down by range of inhabitants.

Extended Core (1)

A11. Radio sets per 100 inhabitants

A radio set is a device capable of receiving broadcast radio signals, using popular frequencies, such as FM, AM, LW and SW. A radio set may be a standalone device, or it may be integrated into another device, such as a Walkman, a car, or an alarm clock. *Radio sets per 100 inhabitants* is obtained by dividing the number of radio sets in use by the population and multiplying by 100.

- Broadcast technologies also have a role to play as a development tool particularly in developing countries. Radio is being combined with Internet technologies to overcome literacy and language barriers. In some situations, radio stations download information from the Internet and re-disseminate it orally to the surrounding community, in local languages.

Extended Core (2)

A12. Television sets per 100 inhabitants

A television set is a device capable of receiving broadcast television signals, using popular access means such as over-the-air, cable and satellite. A television set may be a standalone device, or it may be integrated into another device, such as a computer or a mobile phone.

It may be useful to distinguish between digital and analogue signal delivery and between TV sets receiving only a limited number of signals (usually over-the-air) and those that have multiple channels available (e.g., by satellite or cable).

Television sets per 100 inhabitants is obtained by dividing the number of sets in use by the population and multiplying by 100.

Details

Type of Source:	<ul style="list-style-type: none"> ■ Administrative records (operator data, regulatory /ministry data collection)
Frequency/ Data collection:	<ul style="list-style-type: none"> ■ Annual ■ Through ITU World Telecommunication Indicators questionnaire
Source:	<ul style="list-style-type: none"> ■ Sector-specific ministry or regulatory agency
Definition:	<ul style="list-style-type: none"> ■ ITU Telecommunication Indicators Handbook ■ ITU World Telecommunication Indicators (WTI) meeting
Dissemination:	<ul style="list-style-type: none"> ■ ITU statistical publications (Yearbook of Statistics, World Telecommunication Development Report, Regional publications) ■ ITU World Telecommunication Indicators database

For further information

- ITU STAT Website <http://www.itu.int/ITU-D/ict/>
- The Partnership's *Core ICT Indicators* publication
- ITU Telecommunication/ICT Indicators Handbook, 2006



Thank you.



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