



# ITU Asia-Pacific ICT Indicators Workshop

Manila, Philippines

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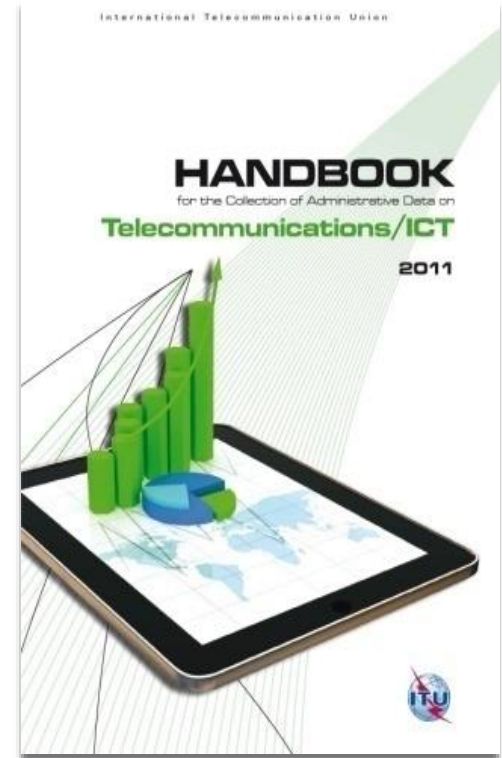
## Session 6: Fixed-telephone network, mobile-cellular network and international bandwidth indicators

ICT Data and Statistics Division  
Telecommunication Development Bureau  
International Telecommunication Union

# ITU Handbook



- Covers **81 indicators** on telecommunication/ICT services
- Covers data collected from **administrative sources** (e.g. telecom operators)
- Discussed in the ITU Expert Group on Telecom/ICT Indicators (**EGTI**)
- Available at:  
[http://www.itu.int/pub/D-IND-ITC\\_IND\\_HBK-2011](http://www.itu.int/pub/D-IND-ITC_IND_HBK-2011)





# Main ITU indicators from administrative sources

## Fixed-telephone network

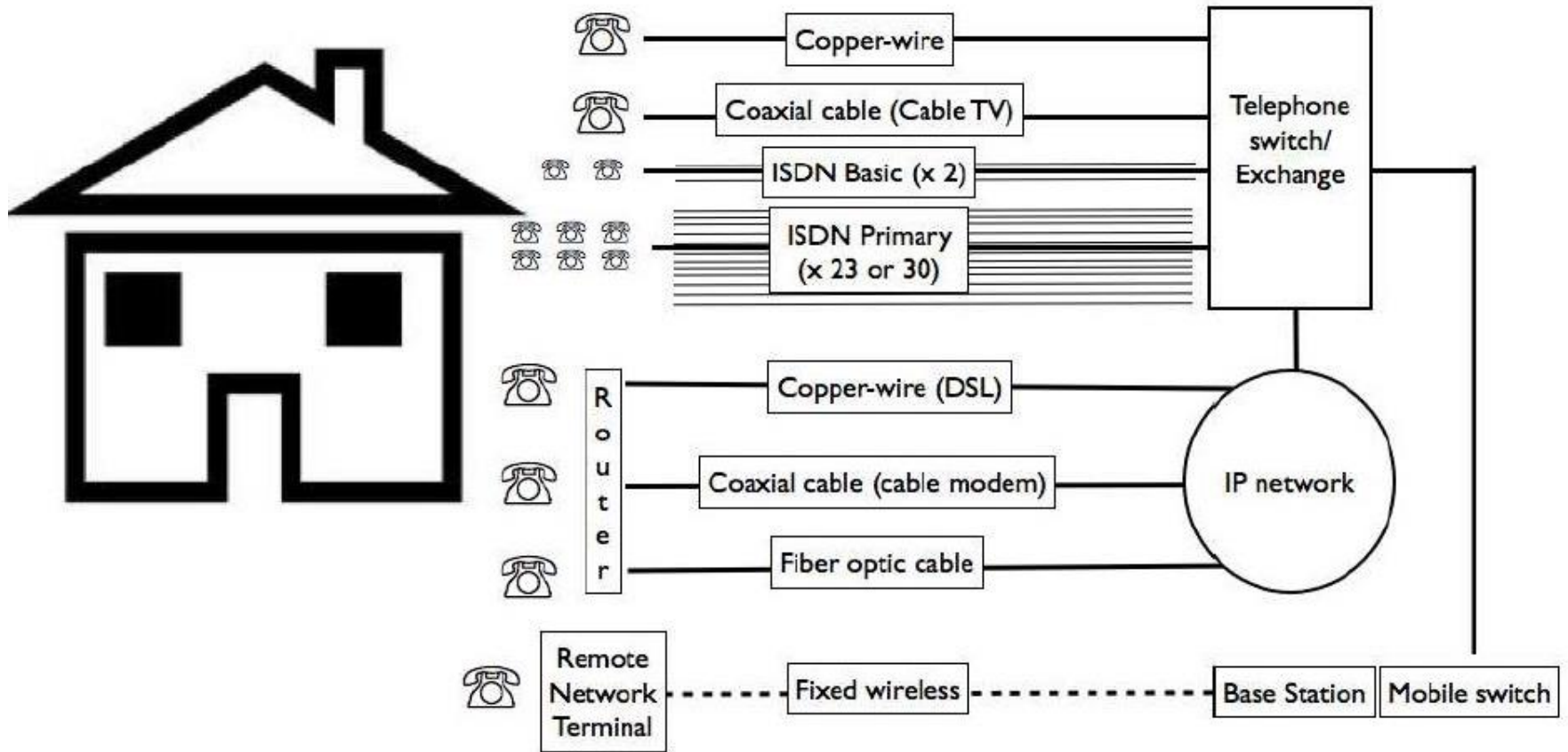
## **i112: Fixed-telephone subscriptions**

The sum of (active) number of:

- (i)analogue fixed-telephone** lines
- (ii)Voice-over-IP (**VoIP**) subscriptions
- (iii) fixed wireless local loop (**WLL**) subscriptions
- (iv) integrated services digital network (**ISDN**) voice channel equivalents
- (v)fixed **public payphones**

This indicator was previously called Main telephone lines in operation.

# Fixed-telephone subscriptions





# Main ITU indicators from administrative sources

## Mobile-cellular network

## **i1271: Mobile-cellular telephone subscriptions**

Number of subscriptions to a public mobile telephone service that provide **access to the PSTN using cellular technology**.

The indicator includes:















- (i) postpaid subscriptions**; and
- (ii) prepaid accounts that are active**, i.e. 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 and telemetry services.

# What do we actually measure?

## Mobile-cellular...

- Subscriptions    operator data
- Users    household survey data
- Handsets   
- Subscribers     



## **i1271pop: Percentage of a population covered by a mobile-cellular network**

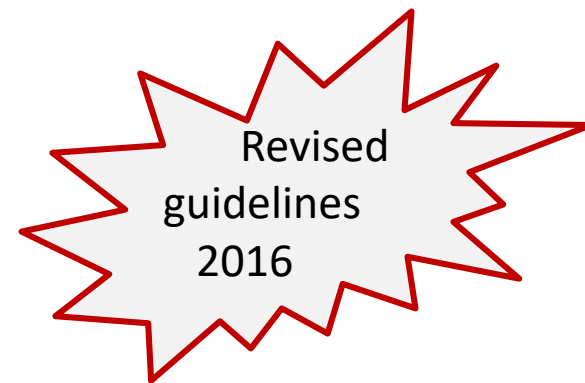
Percentage of inhabitants within range of a mobile-cellular network, **irrespective** of whether or not they are subscribers or users.

Calculation: Divide number of inhabitants within range of a mobile-cellular signal by the total population and multiply by 100.

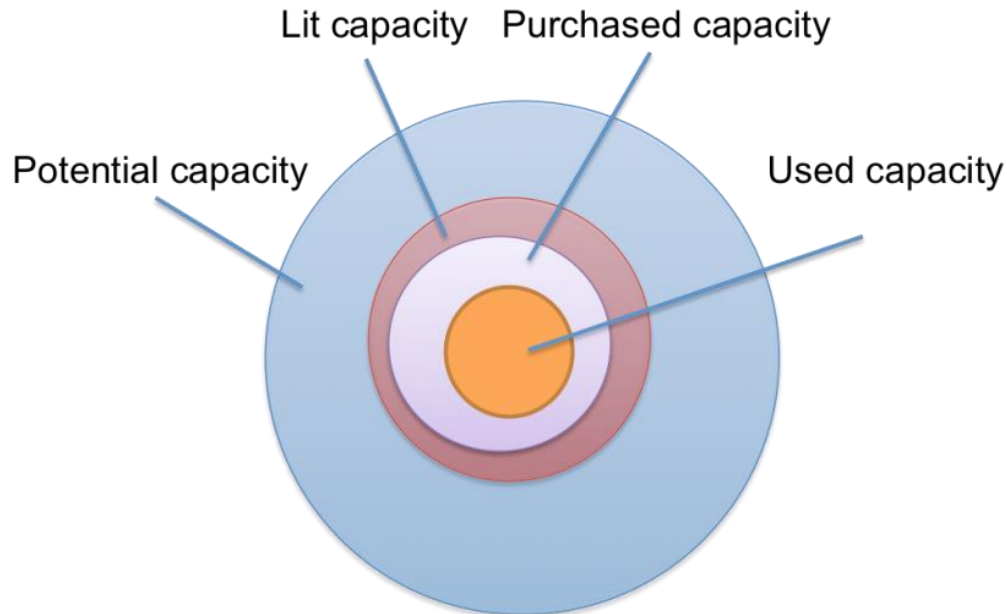


# Main ITU indicators from administrative sources

## International bandwidth indicators



# International Internet bandwidth



ITU collects data on two indicators:

**1. Lit/equipped capacity**

**2. Used capacity**

## **i4214u: Used international bandwidth (traffic), in Mbit/s**

**Average usage** of all international links including fiber-optic cables, radio links and traffic processed by satellite ground stations and teleports to orbital satellites (expressed in Mbit/s).

All international links used by all types of operators, namely fixed, mobile and satellite operators should be taken into account. The average should be calculated over the 12-month period of the reference year.

For each individual international link, **if the traffic is asymmetric, i.e. incoming traffic is not equal to outgoing traffic, then the higher value out of the two should be provided.** The combined average usage of all international links can be reported as the sum of the average usage of each individual link.

# What is counted as usage?

- Self-supply and leased international links.



- Clients, subsidiaries and own usage.



- Transit and Peering agreements.



- Content providers or OTT's.



- All IP based services (IPLC, IPVPN, VoIP, ...)



- National traffic not included !



*Source: ANACOM Portugal & EGTI sub-group on international Internet Bandwidth*

# Methods of data collection

## Method 1

Collect data from facilities-based carriers that provide **wholesale** international connectivity.

## Method 2

Collect data from all operators that lease or self-supply international bandwidth, namely fixed, mobile and satellite operators.

Strive to collect data from OTT's and content-providers who use direct international connections



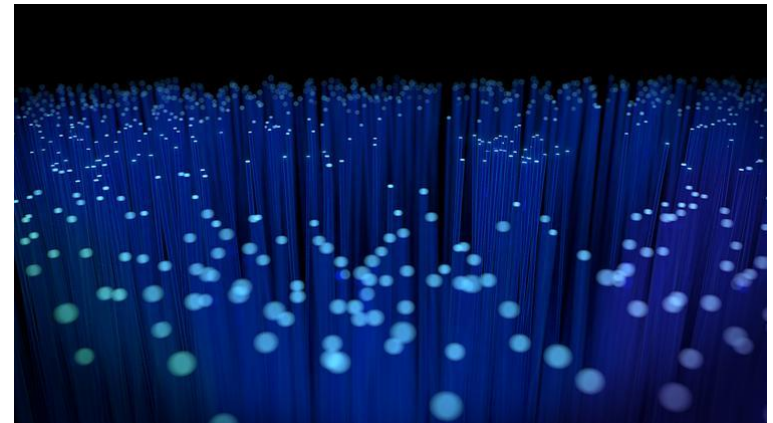
**BEWARE OF DOUBLE COUNTING**

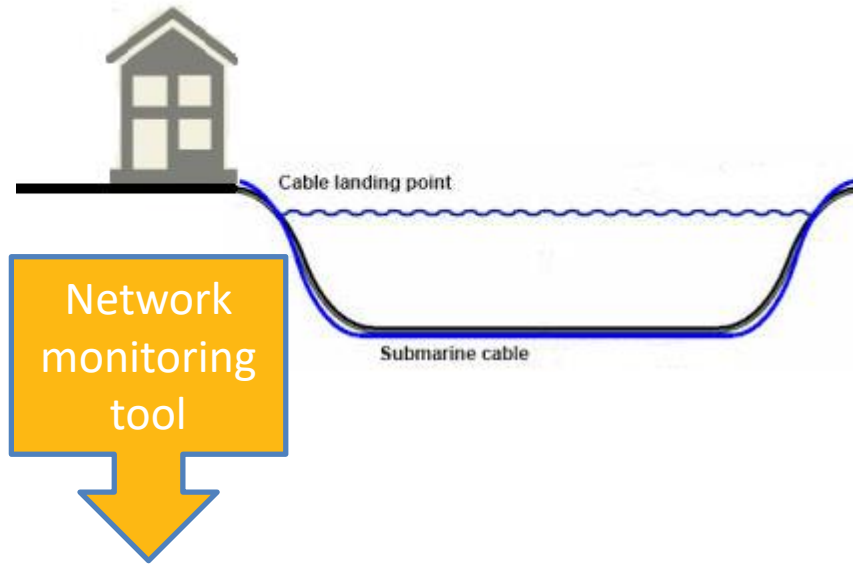
Double counting can occur if data are collected from both service providers and facilities-based carriers.

*Source: ANACOM Portugal & EGTI sub-group on international Internet Bandwidth*

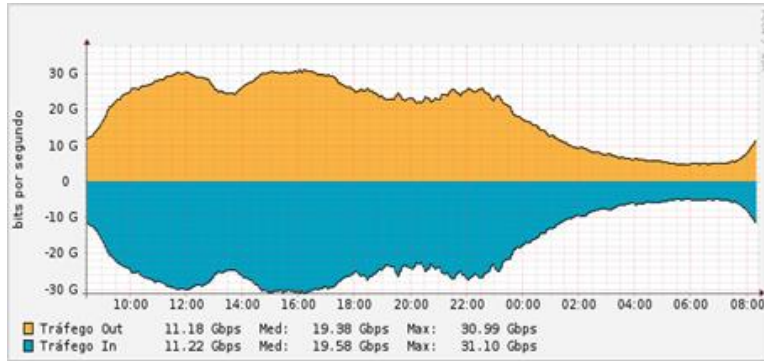
## Lit/equipped international Internet bandwidth, in Mbit/s

Total lit/equipped international bandwidth capacity refers to the **total lit/equipped capacity of international links**, namely fiber-optic cables, international radio links and satellite uplinks to orbital satellites in the end of the reference year (expressed in Mbit/s). **If the traffic is asymmetric (i.e. incoming traffic and outgoing traffic is not equal), then the higher value out of the two should be provided.**





**Bandwidth usage in Gbps**



Source: Gigapix

# Examples of network monitoring tools

- MRTG-Multi Router Traffic Grapher
- PRTG
- Cacti ([www.cacti.net](http://www.cacti.net))
- OpenNMS ([www.opennms.com](http://www.opennms.com))

Source: ANACOM Portugal & EGTI sub-group on international Internet Bandwidth



Thank you



For more information  
<http://www.itu.int/ict>  
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