

Fixed network services:

telephony, broadband, bandwidth, coverage

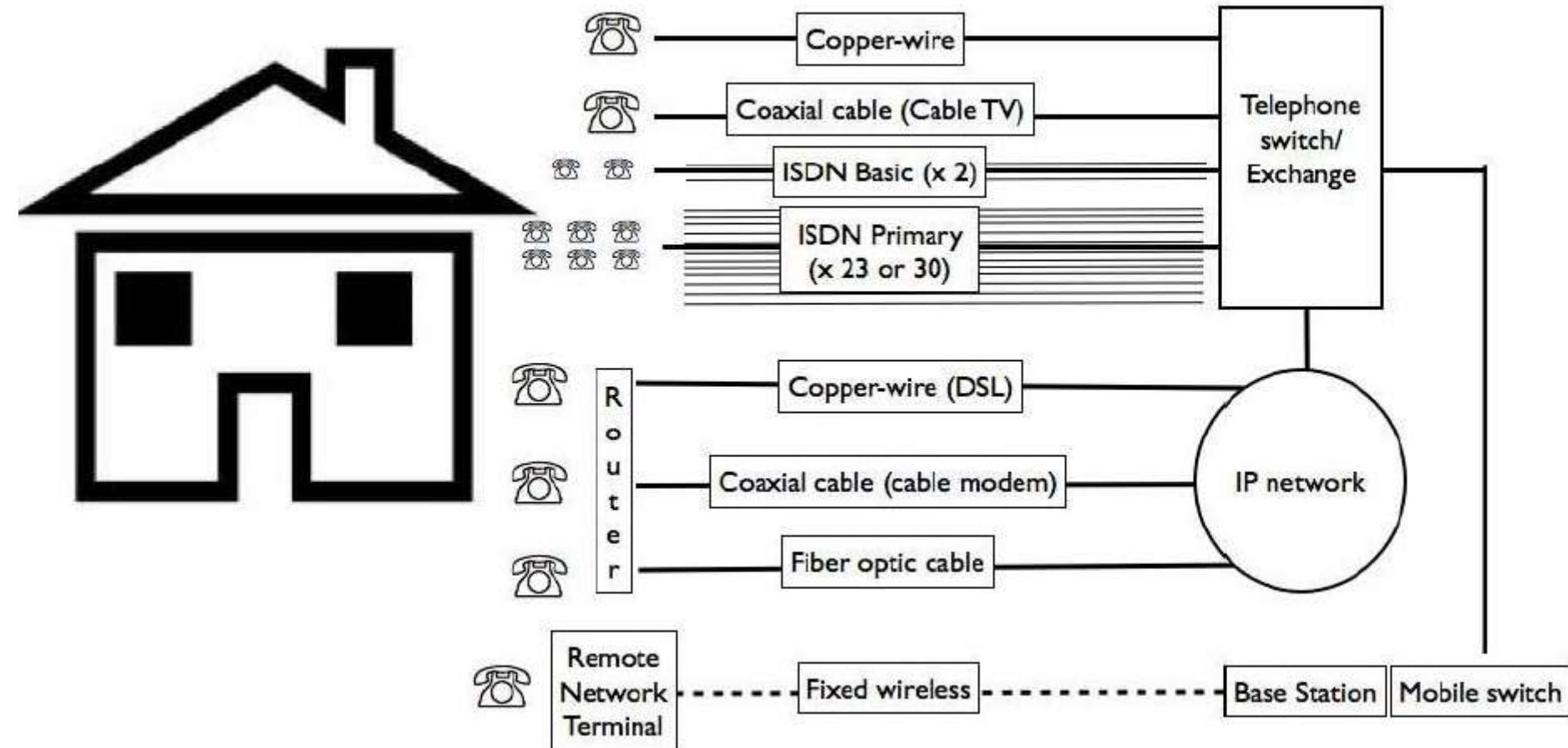
Changes introduced:

- **clarify scope** of some indicators (“wireless fixed”, voIP, wi- Fi, Residential vs Business)
- **adjust indicators to market trends** (Fixed broadband speeds)
- suggest **integration of some indicators** and **even deletion** of others (capacity of public switched exchanges)
- introduce **new indicators approved in EGTI** during last years (coverage, Fixed broadband, international bandwidth)
- **suggest new** indicators that are becoming relevant

Indicators reviewed:

- Total capacity of local public switching exchanges
- Fixed telephone subscriptions
- voIP subscriptions
- Percentage of fixed telephone subscriptions that are Residential
- Fixed broadband subscriptions
- Fixed network coverage
- International bandwidth

Fixed-telephone subscriptions



Indicator: Total capacity of local public switching exchanges

- maximum number of fixed-telephone lines that can be connected. This number includes fixed-telephone lines already connected and fixed lines available for future connection

Discussion

- This indicator makes sense in the context of a copper-based network, based on a set of many **local exchanges**
- but does not fit well with the new fibre based networks, i.e., cable HFC and FTTx. These new networks have a completely different topology



Discussion

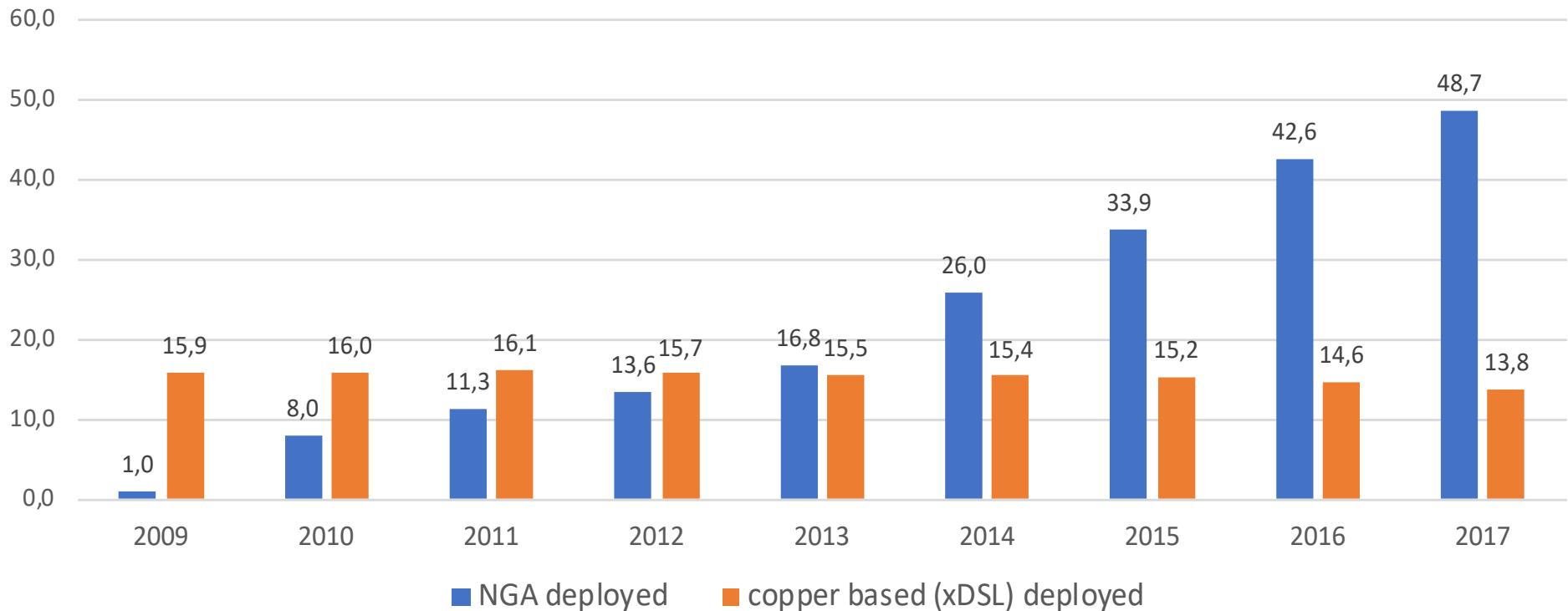
- If we want to measure "total capacity" of fixed networks we can rely on the indicator already approved: "**Fixed network coverage**" in the EGTI meeting (2017), that measures total number of ***deployed*** connections (copper based, FTTx, cable....) over population or premises
- **Do we need this indicator** (Total capacity of local public switching exchanges)????

Example



Deployed Next Generation Access connections (NGAs) and copper based (xDSL) connections in Spain

Evolution of deployed connections of NGA and copper-based (xDSL) network in Spain (millions), Source: CNMC





Indicator: Fixed-telephone subscriptions

revised EGTR 2017

The sum of (active) number of:

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

Scope



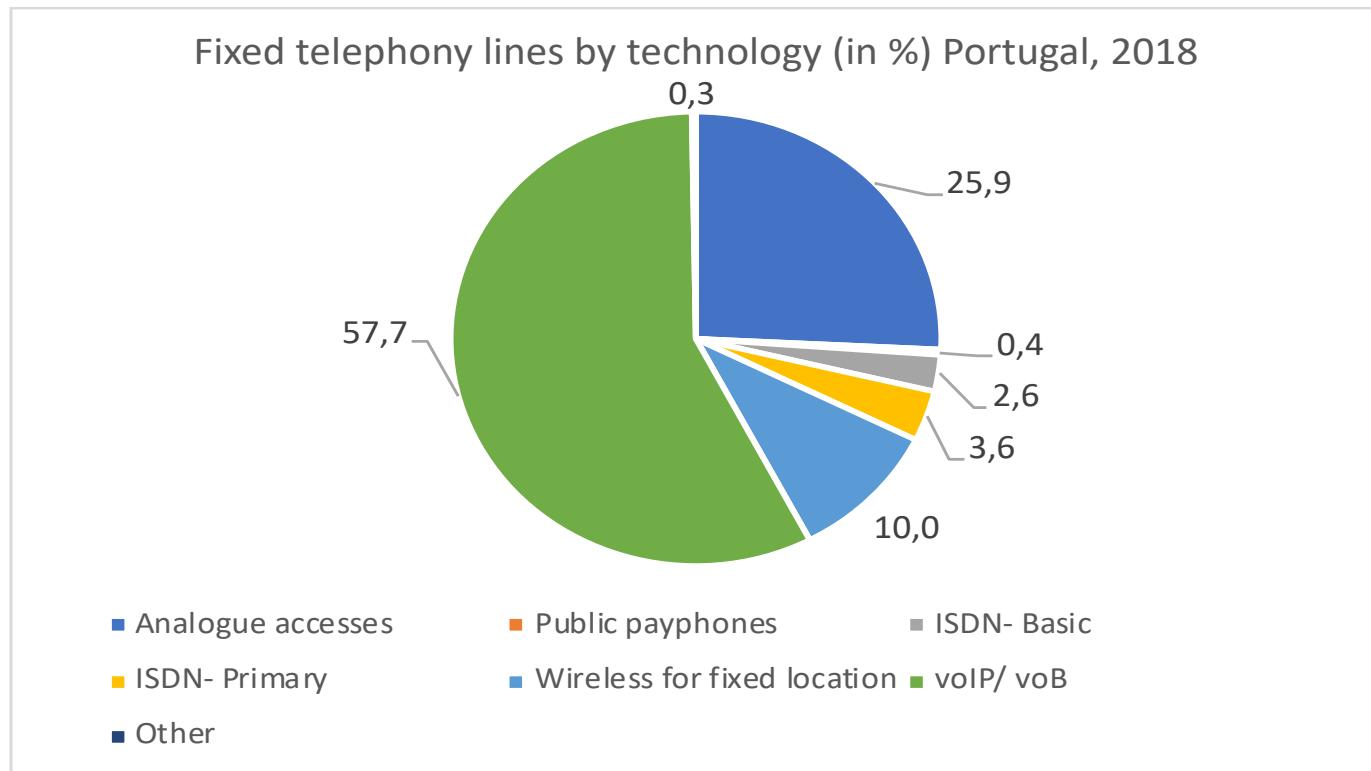
(1) inclusion of **fixed wireless subscriptions** (radio-links, Wi-Max, satellite) is based on final use (to a fixed location)

Main accesses to the telephone service at a fixed location (FTS)	
<i>(in thousands)</i>	1H2018
Total	4996
Analogue accesses	1293
Public payphones	19
ISDN- Basic	131
ISDN- Primary	181
Wireless for fixed location	501
voIP/ voB	2884
Other	13

Source: adapted from ANACOM, 2018

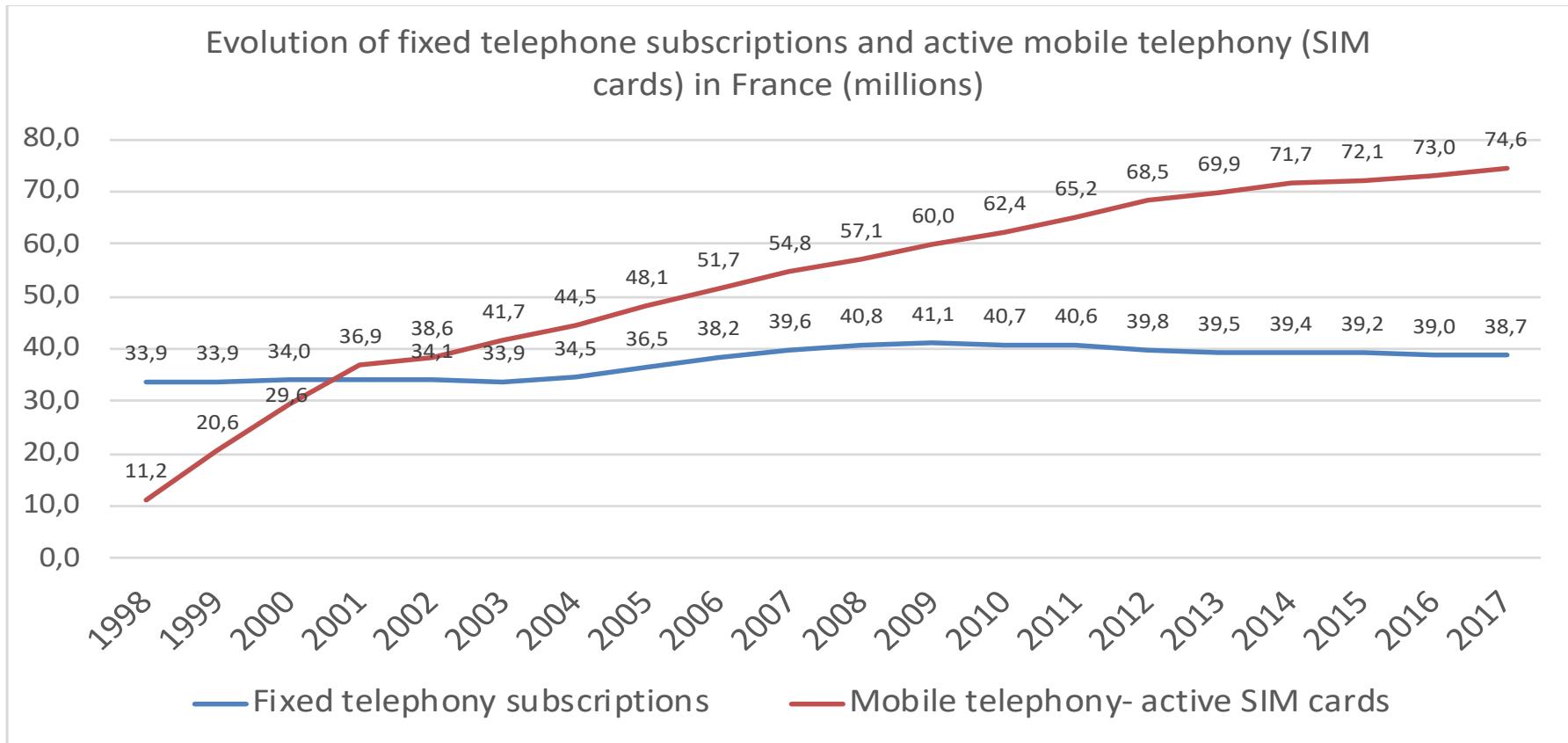
(2) includes also **wholesale line rentals** or **unbundling local loop** telephony lines obtained by new entrants thanks to regulatory instruments in place

(3) Includes as well **public payphones** (lines)



Example:

Trend: fixed telephony does not grow (or even decreases in some countries), while mobile telephony keeps rising (substitution at household/ Residential level)



Indicator: VoIP subscriptions

refers to the number of **voice-over-Internet protocol (VoIP) fixed-line subscriptions**.

Scope/ clarification

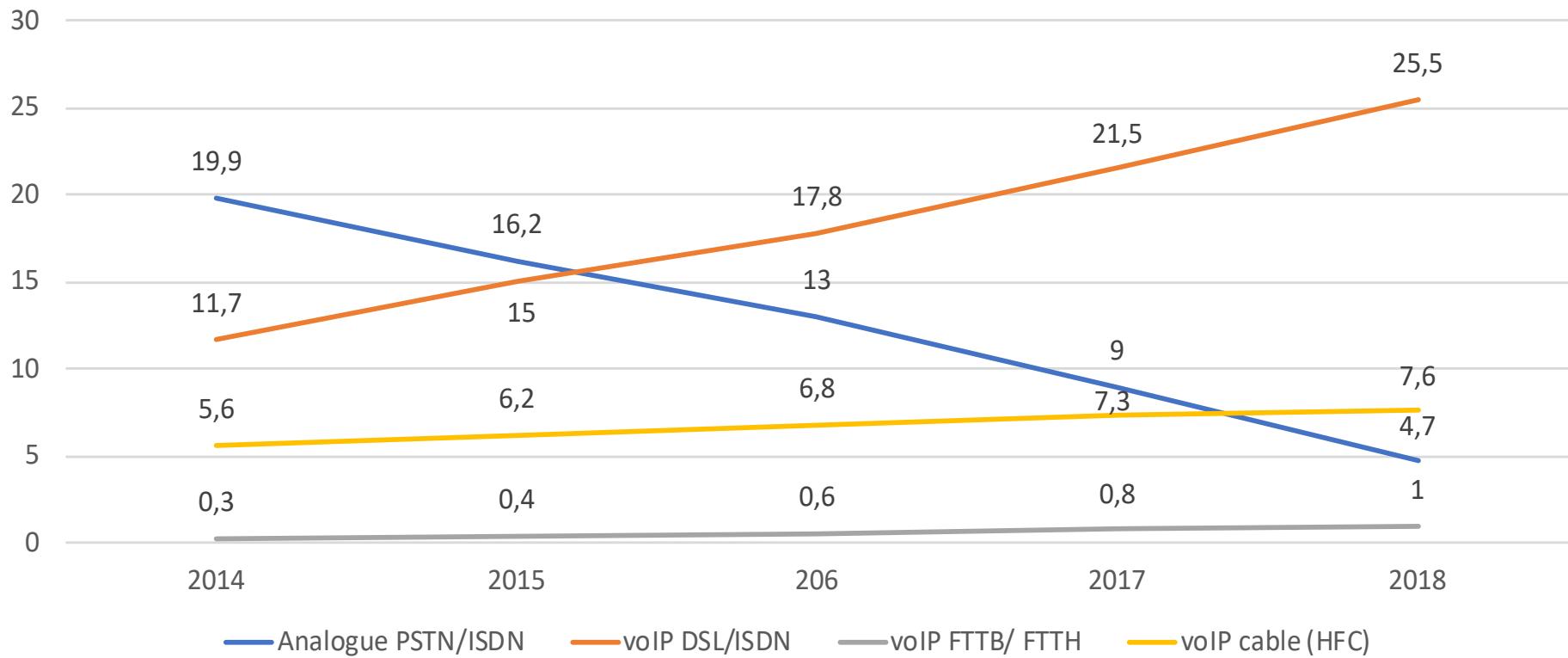
VoIP subscriptions → "managed VoIP" -operators must satisfy certain quality of service obligations (i.e, calling and location to/by emergency numbers, maximum number of calls dropped) and make use of national numbering plans.

It excludes software-based VoIP applications (e.g. voice over broadband with Skype/ Wechat/Whatsapp) → **unmanaged VoIP (excluded)**

Example:

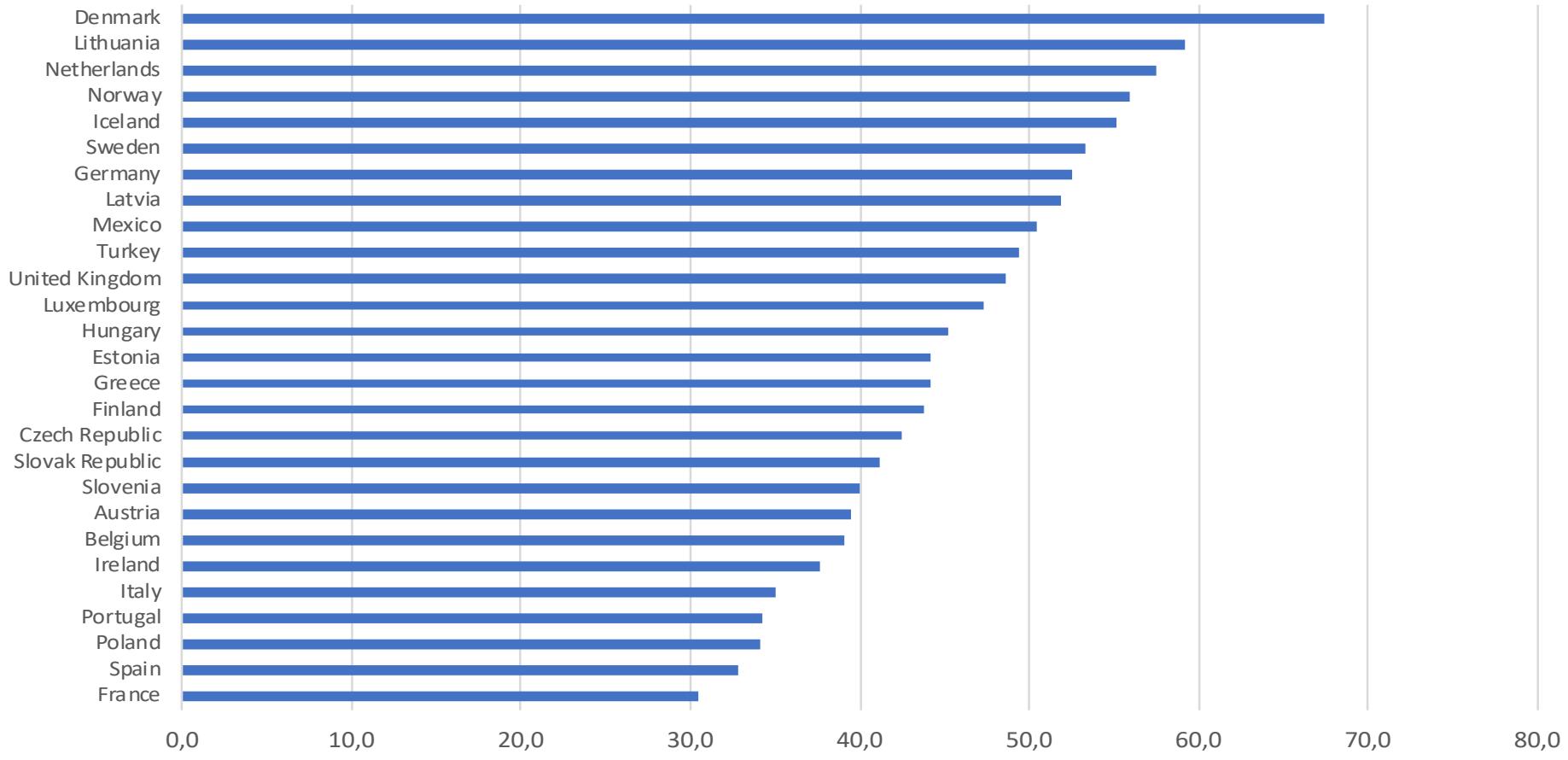
Trend: in many countries with new fixed networks being deployed, the huge majority of telephone connections are voIP based

Evolution of Fixed telephony lines by technology (millions) in Germany, Source:
BNetzA, 2019



What is not being measured: over- the top voice/ audio calls

Proportion of individuals 16- 74 y-o using internet to make telephone/ video calls in last 3 months
 2018, Source: OECD





Indicator: Percentage of fixed-telephone subscriptions that are residential

Methodological issues

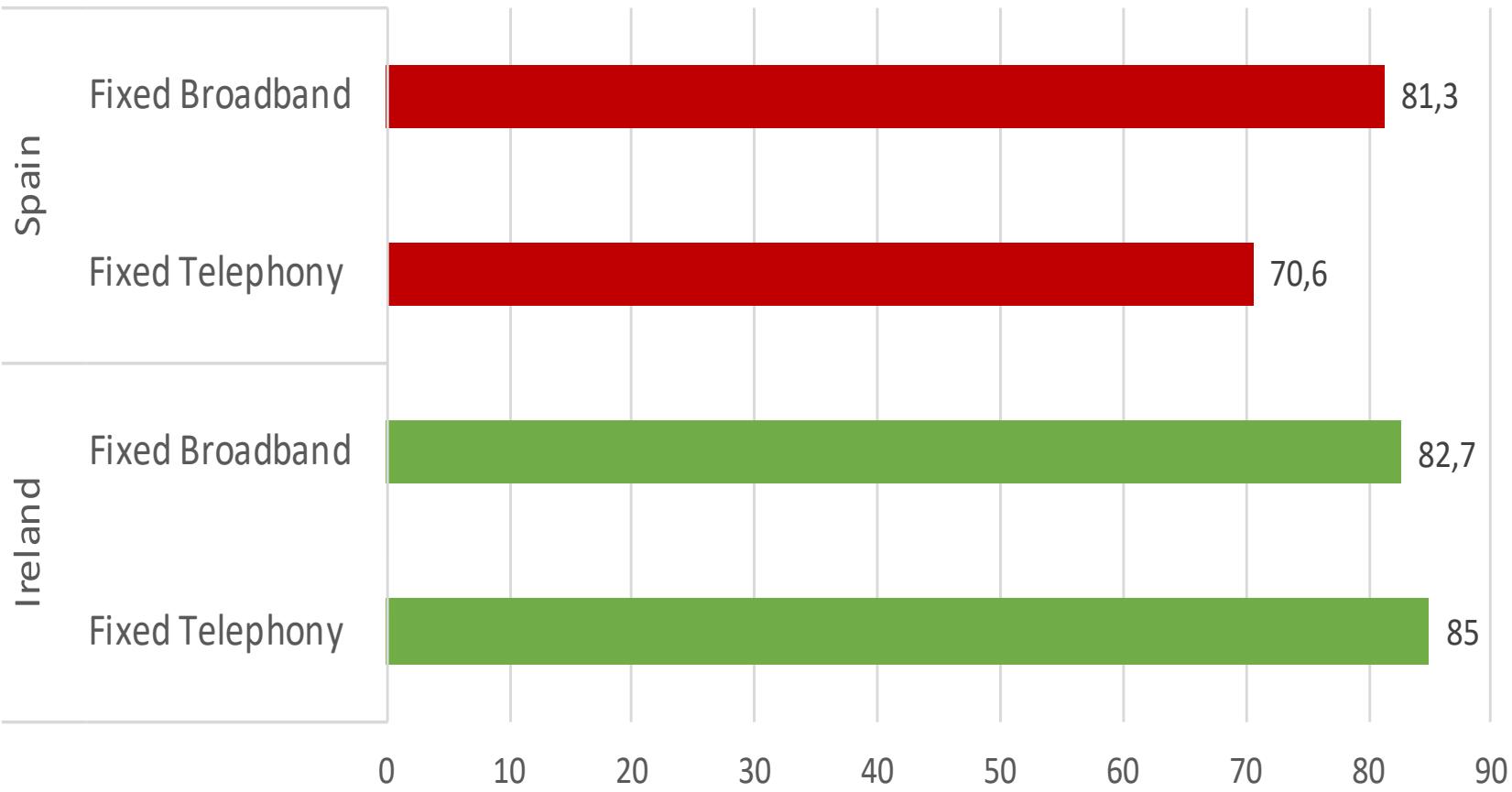
-it only refers to fixed-telephone subscriptions. It cannot be used to derive the percentage of households with any type of telephone.

The criteria used to distinguish between Residential and Non-residential subscriptions may vary. Two criteria used

- (1) fiscal identification code
- (2) the operators' practice

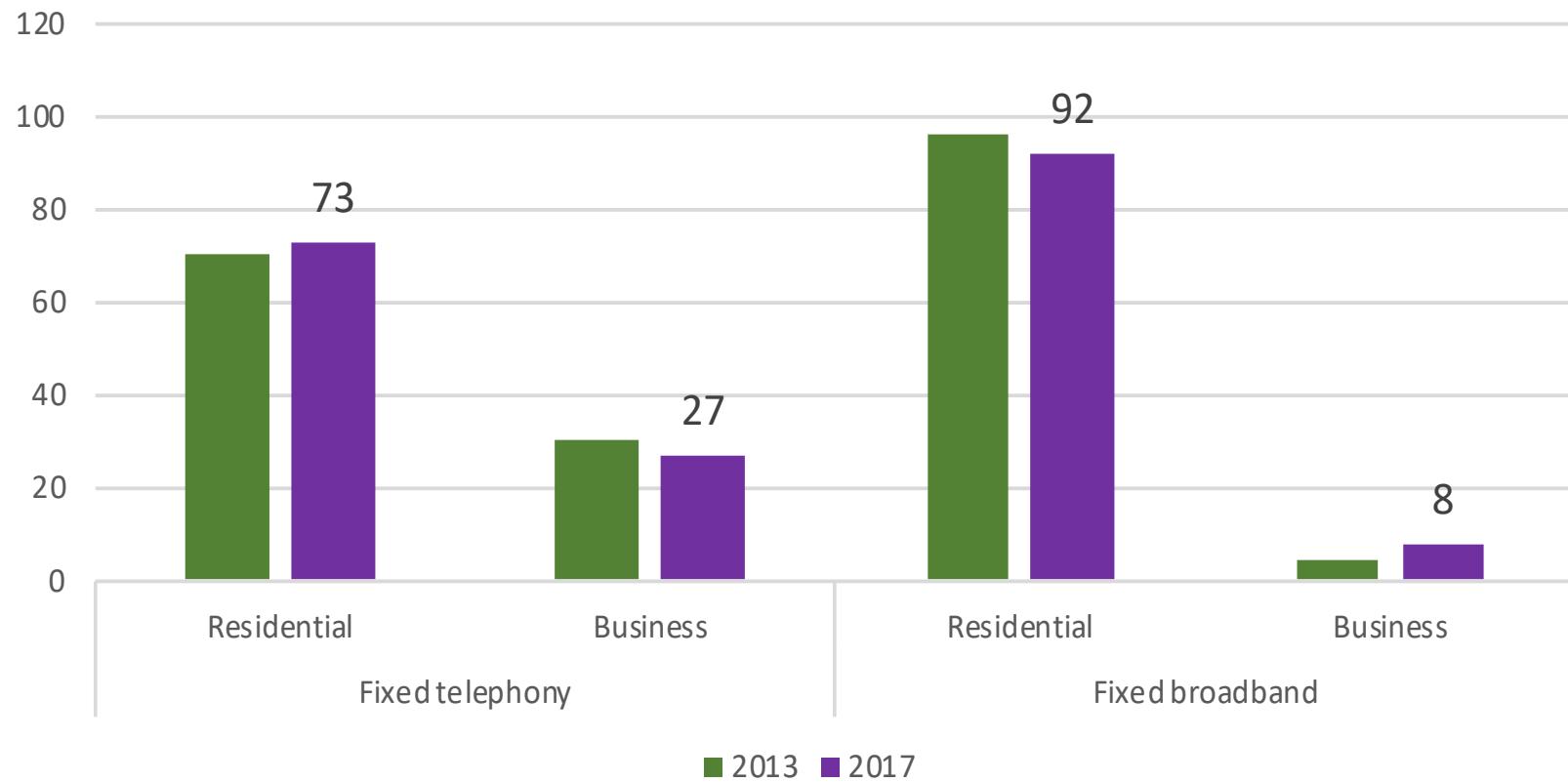
Example (1)

Residential segment lines for Fixed Telephony and Fixed Broadband in Ireland and Spain (%/total lines), 2018



Example (2)

Residential vs Business subscriptions in fixed telephony and broadband in Oman, Source: TRA





Indicator: Fixed-broadband subscriptions, by technology

revised EGTI 2017

Indicator 20a: **Cable modem** Internet subscriptions

Indicator 20b: **DSL Internet** subscriptions

Indicator 20c: **Fibre-to-the-home/building** Internet subscriptions

Indicator 20d: **Other fixed (wired)-broadband** subscriptions

Indicator 23: **Satellite** broadband subscriptions - **added in 2017**

Indicator 24: **Terrestrial fixed wireless** broadband- **added in 2017**

Classification of broadband subscriptions

Fixed broadband

- (1) xDSL
- (2) Cable modem
- (3) FTTH/FTTB
- (4) Other fixed wired

Fixed wired



Fixed wireless

- (5) Satellite broadband
- (6) Fixed wireless broadband

Active mobile broadband

- (1) Data and voice
- (2) Data only



Indicator: Terrestrial fixed wireless broadband

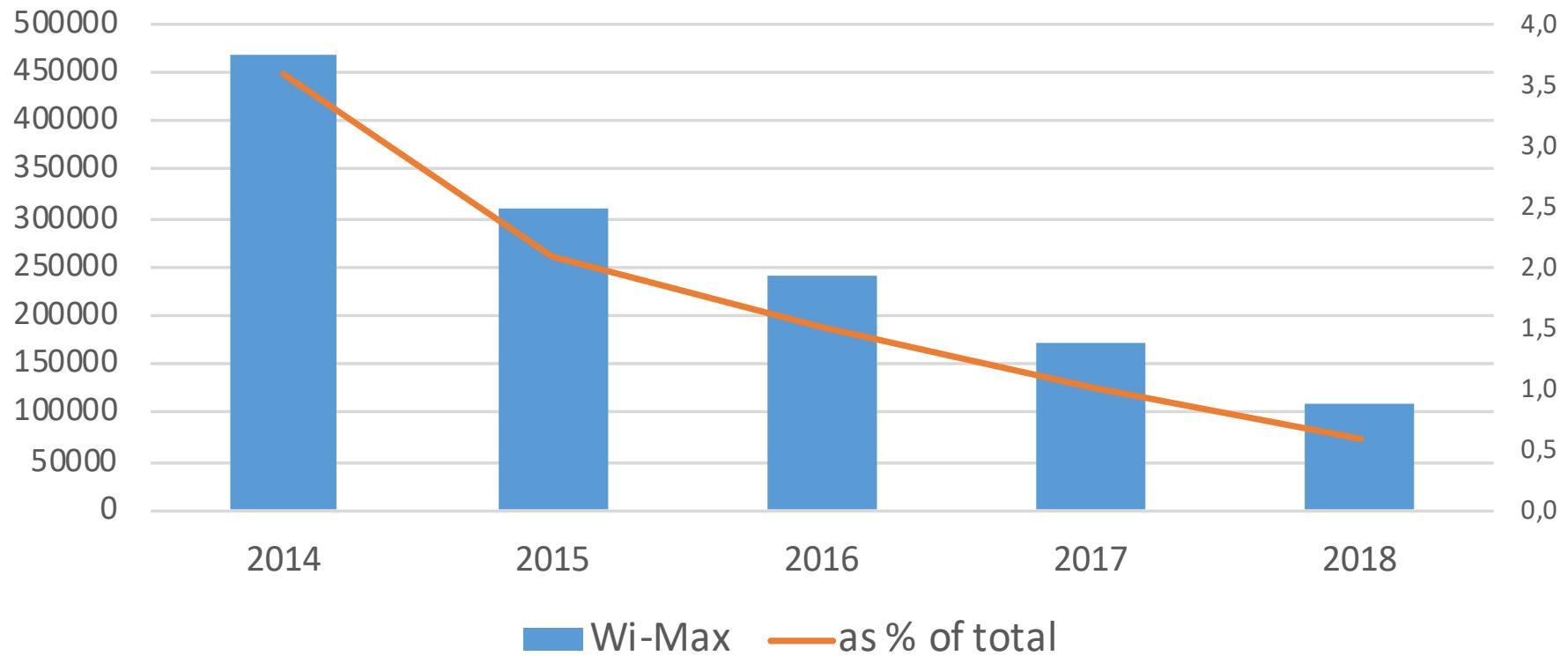
Modified EGTR 2017

- subscriptions with an advertised download speed of at least 256 kbit/s. This includes fixed Wi-MAX and fixed wireless subscriptions, but excludes occasional users at hotspots and Wi-Fi hotspot subscribers.
- the subscriber utilizes an antenna that allows connection to the ISP's network.
- both residential and business subscriptions should be included.
- users of hotspots should be excluded when reporting the data for this indicator

Example

Fixed Wireless broadband subscriptions in Mexico

Number of Wi-Max broadband subscriptions in Mexico and proportion of total (right axis), Source: IFT



Clarification: on WiFi networks

ITU Note 2017

- The 2016 EGTI meeting clarified the following use cases of WiFi networks:
 - 1) WiFi used on top of other fixed-broadband subscriptions to distribute the signal at home



fixed broadband connection
(ADSL, cable, fiber, etc.)

These connections are already counted as “**Fixed broadband subscriptions**” and should not be reported separately

2) WiFi used as a last mile technology and associated with a specific monthly fixed-broadband contract



these connections should be reported as “**Fixed wireless broadband subscriptions**”

3) WiFi hotspots (public, private, free, paid)



Individual country experiences, but in most cases out of the scope of regulators' data collections.
Will not be reflected in ITU supply-side indicators

Indicator 21: Fixed-broadband subscriptions by speed

- Enlarged high speed intervals:

revised EGTI 2017

- Before 2017: three speed intervals

(1) => 256 Kbps and < 2 Mbps,

(2) => 2 Mbps and < 10 Mbps, and

(3) => 10 Mbps

- After 2017 EGTI

(1) => 256 Kbps and < 2 Mbps,

(2) => 2 Mbps and < 10 Mbps

(4) => 10 Mbps and < 30 Mbps

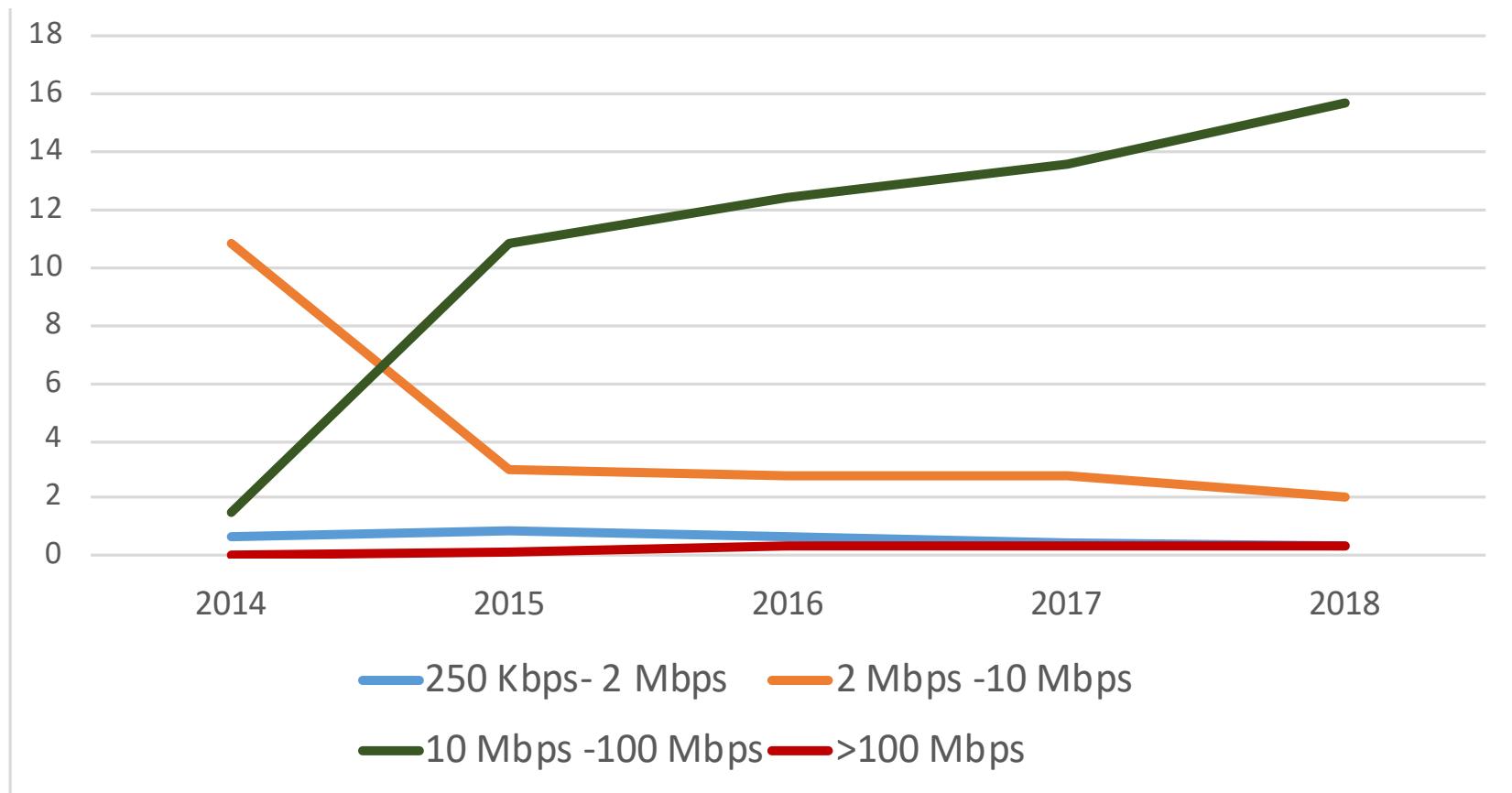
(5) => 30 Mbps and < 100 Mbps

(6) => 100 Mbps

new!!!!

Example

Fixed broadband subscriptions by advertised download speed (millions), Mexico



Indicator 7: Fixed-broadband subscriptions for organizations

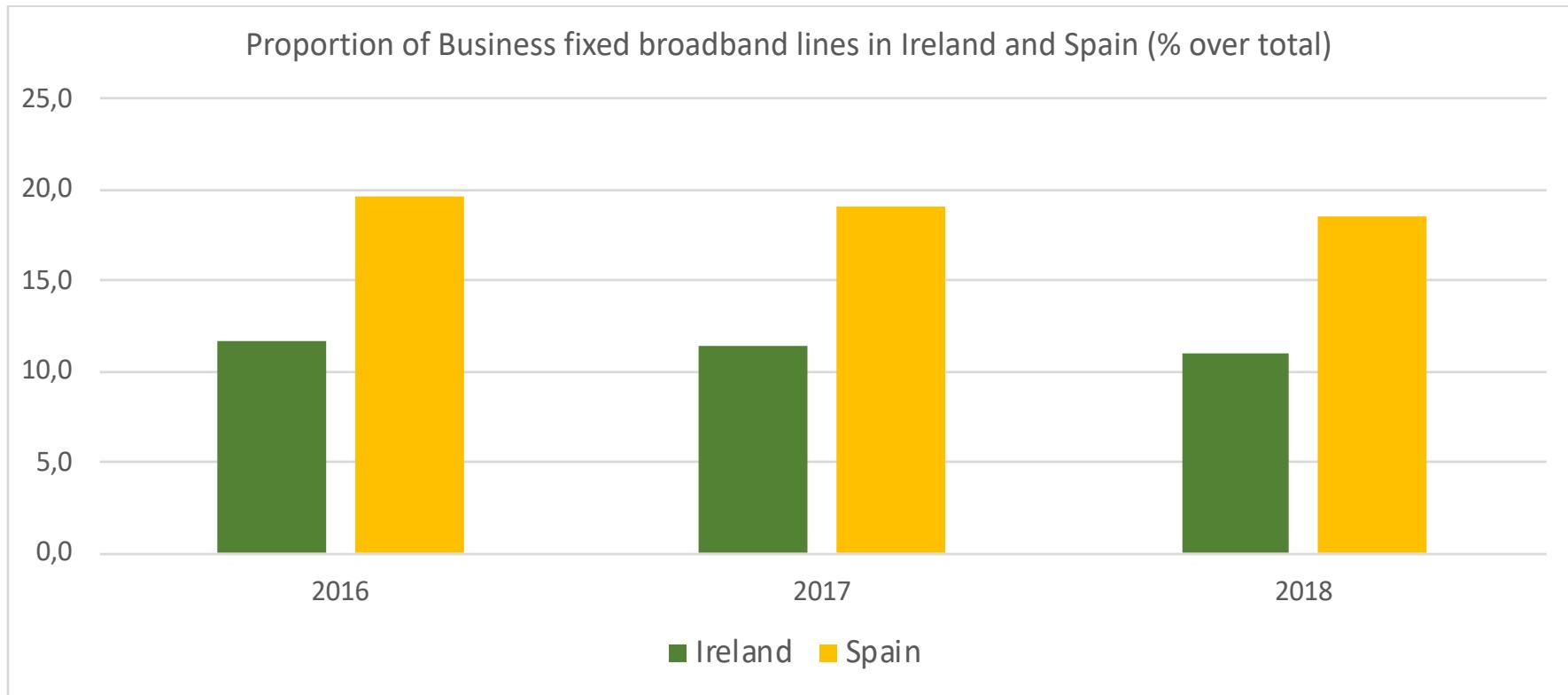
- the total subscriptions contracted by public and private organizations, institutions or businesses (i.e., non-residential customers) to access the public Internet at a fixed location at downstream speeds greater than, or equal to 256 kbit/s.

Scope/ Clarification

- Note that some Businesses/ institutions do not contract usual broadband subscriptions but rather need specifically designed quality of service conditions obtained via **leased lines** or dedicated circuits, which are connections out of the scope of this indicator.

Example:

The proportion of fixed broadband lines contracted by the Business segment in Spain (18.6% in 2018) and Ireland (11%) has been stable over time in each country for the last years.





Indicator: Fixed wired network coverage

approved in EGTI 2017

1. The indicator refers to the **availability** of the network and not to subscriptions nor usage
2. This indicator excludes fixed-wireless coverage.
3. Coverage is defined as “the network provider provisions or **could provision a last-mile connection** to the fixed-wired network **within a short period of time** (i.e. few days) and without an extraordinary commitment of resources”
4. If possible, data for residential and non-residential premises will be collected.
5. In order not to overestimate coverage, **perfect network overlap** will be assumed in the absence of more detailed geographical information on the network deployments by each operator



Clarification:

- usually coverage is calculated over "premises" not really households. In fact very difficult to separate "Residential coverage" from "Business/ institutions coverage"
- this indicator is broken down by (but is not the sum of):

Indicator 1: Number of households covered by the traditional public switched telephone network and/or **DSL**

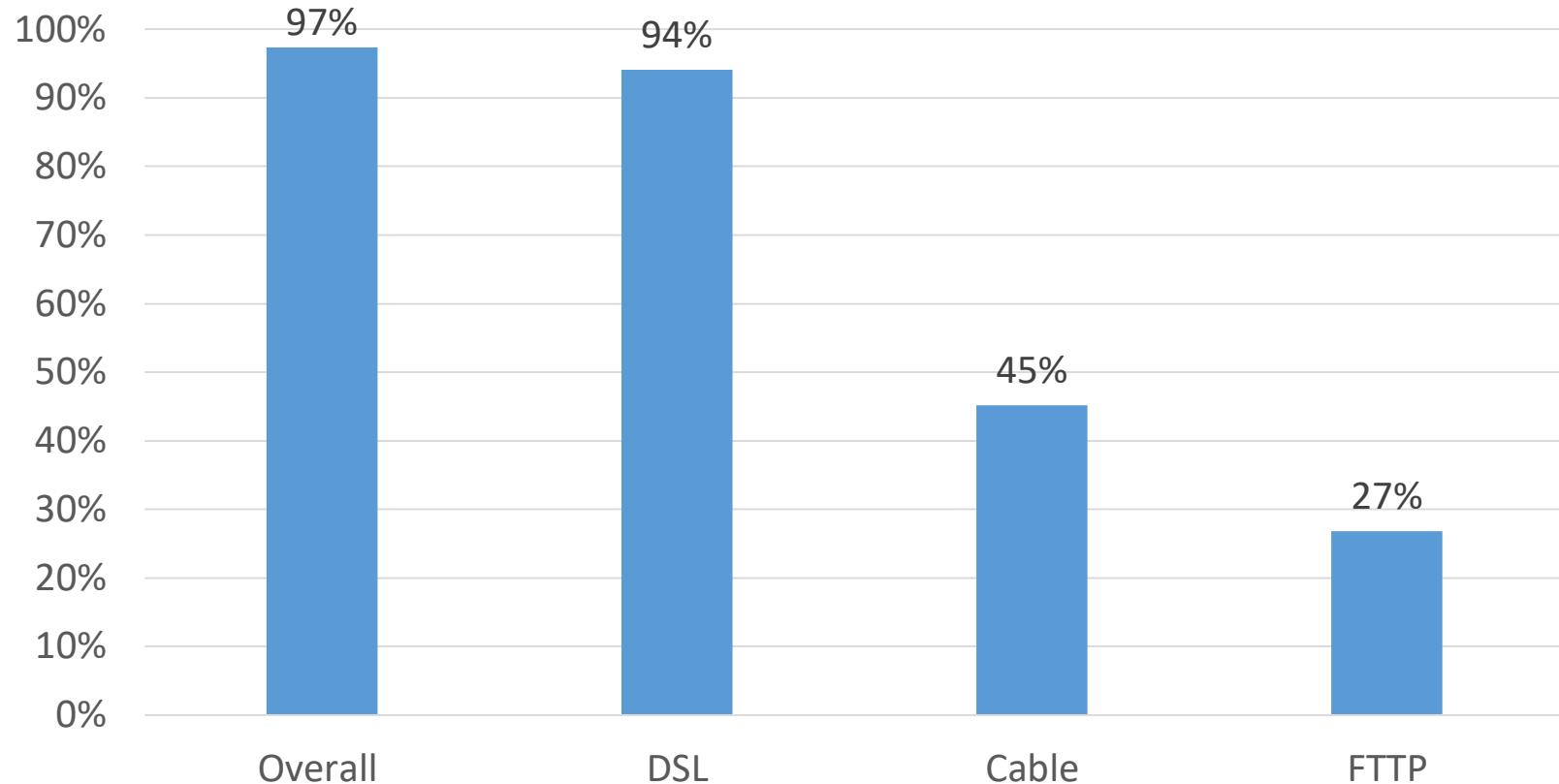
Indicator 2: Number of households covered by **cable TV** networks

Indicator 3: Number of households covered by **Fiber-to-the-premises** networks

Indicator 4: Number of households covered by **other** fixed-wired networks

Example

Fixed wired network coverage (% of households, 2017),
European Union



Indicator: International bandwidth indicators

Lit/ equipped capacity

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).

revised EGTI 2016

Used capacity

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).

Lit/ equipped intl. capacity

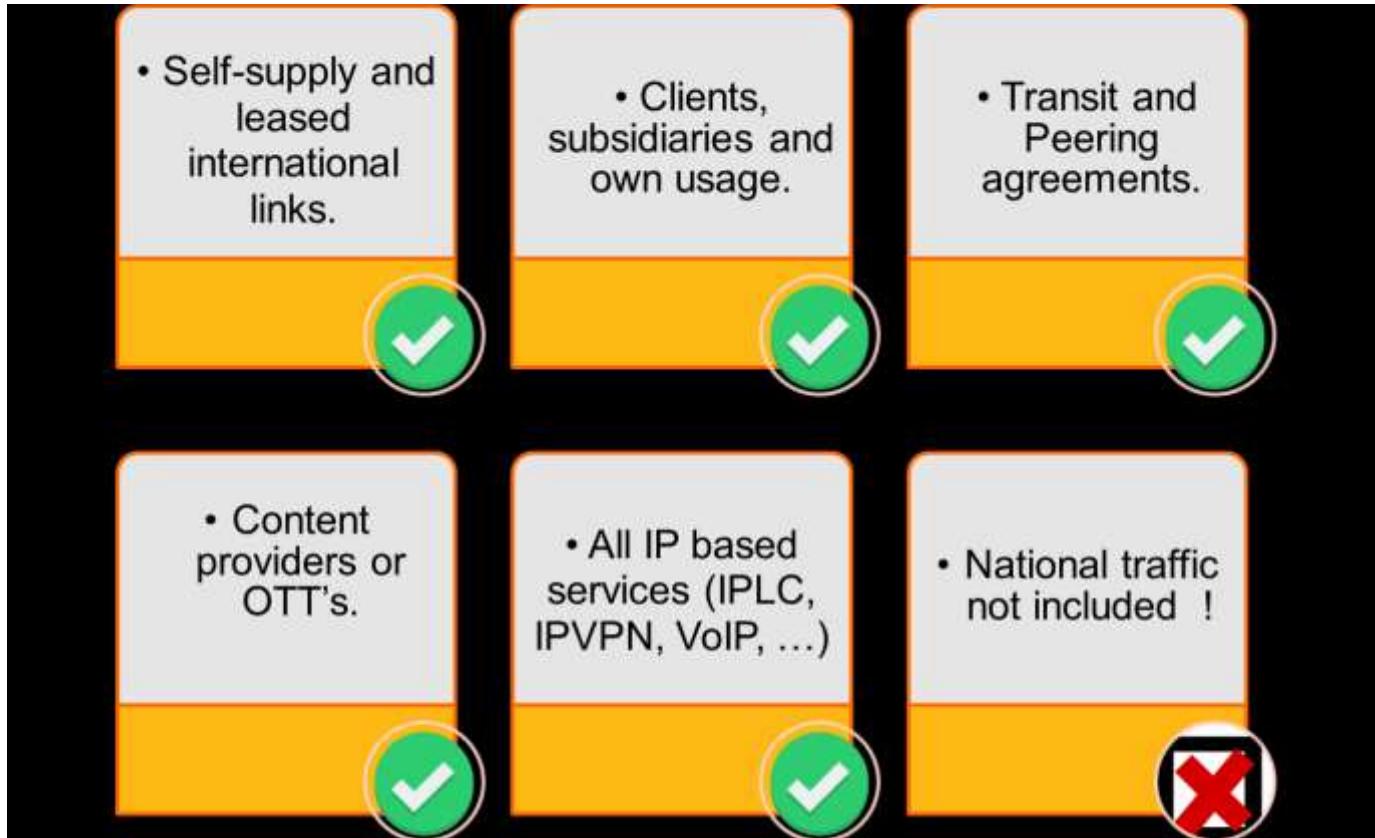
- It excludes unused, reserve or 'design' capacity
- Lit/equipped international bandwidth of operators owning and operating international links (**self-supply**) should be included as well as international bandwidth capacity of **leased or contracted** international links by service providers.

Used international capacity

- The **average** should be calculated over the 12-month period of the reference year.
 - 1) All IP based services
 - 2) Clients of the service provider, subsidiaries and own usage;
 - 3) Own (**self-supply**) use and links to international subsidiaries;
 - 4) Providers with which the service provider established **transit – or peering agreements**
 - 5) Content providers or OTT's.



What is counted as usage?





Thank you !!