Worldwide FTTx Panorama

EU FTTH Panorama & place of France
FTTH Rural leaderboard
Where's the growth in Europe?

Assises du Très Haut Débit - July 7, 2022

IDATE

CONSULTING & MARKET INTELLIGENCE

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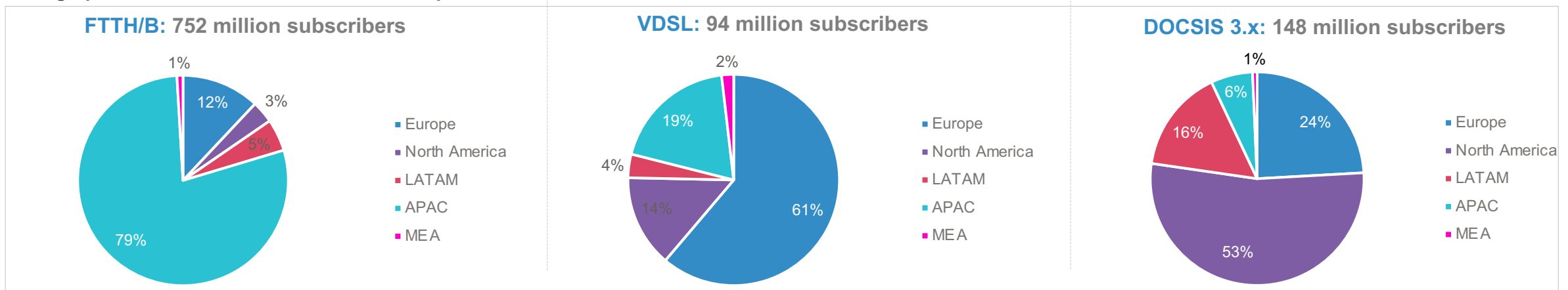
Agenda

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FTTx Worldwide picture

Regions tend to differ in terms of technology adoption. It is confirmed that there is no single path to implementing superfast broadband technologies

- **FTTH/B networks** have been widely deployed and adopted in the **Asia-Pacific region**. In **Europe**, FTTH/B is making real strides, but still having to compete with copper-based architectures from many incumbents, **that are planning to move towards fibre in the next years.** In **North America,** strategies are concentrated around legacy **copper network switchoffs** and migrating to FTTH in the coming months and years. In Latin America, major FTTH/B deployments have been observed mainly in Brazil, Mexico and Argentina. In the coming years, **next-gen PON technologies** will allow up to **25/50 Gbps** speeds for end-users, thus accelerating FTTH adoption and creating new opportunities for businesses.

- **VDSL networks:** Many incumbents have switched to FTTx and new generation copper based solutions (Vectoring or G.fast) to use the legacy copper infrastructure. However, new ambitious national programmes tend to clearly focus on full-fibre technologies to eliminate digital divide, in a post-COVID era.

- **DOCSIS 3.x networks:** Have been mainly deployed in the USA, although some European countries are home to widely deployed cable networks. Many of these networks are being upgraded to **DOCSIS 3.1** in order to provide Gigabit speeds. Some cable companies are also deploying new FTTH solutions to have a more scalable infrastructure over time. By 2020, DOCSIS 4.0 was released allowing to reach 10 Gbps speeds, **however major players are not considering to migrate towards 4.0 in the coming years.**

994 million FTTx subscribers worldwide by June 2021

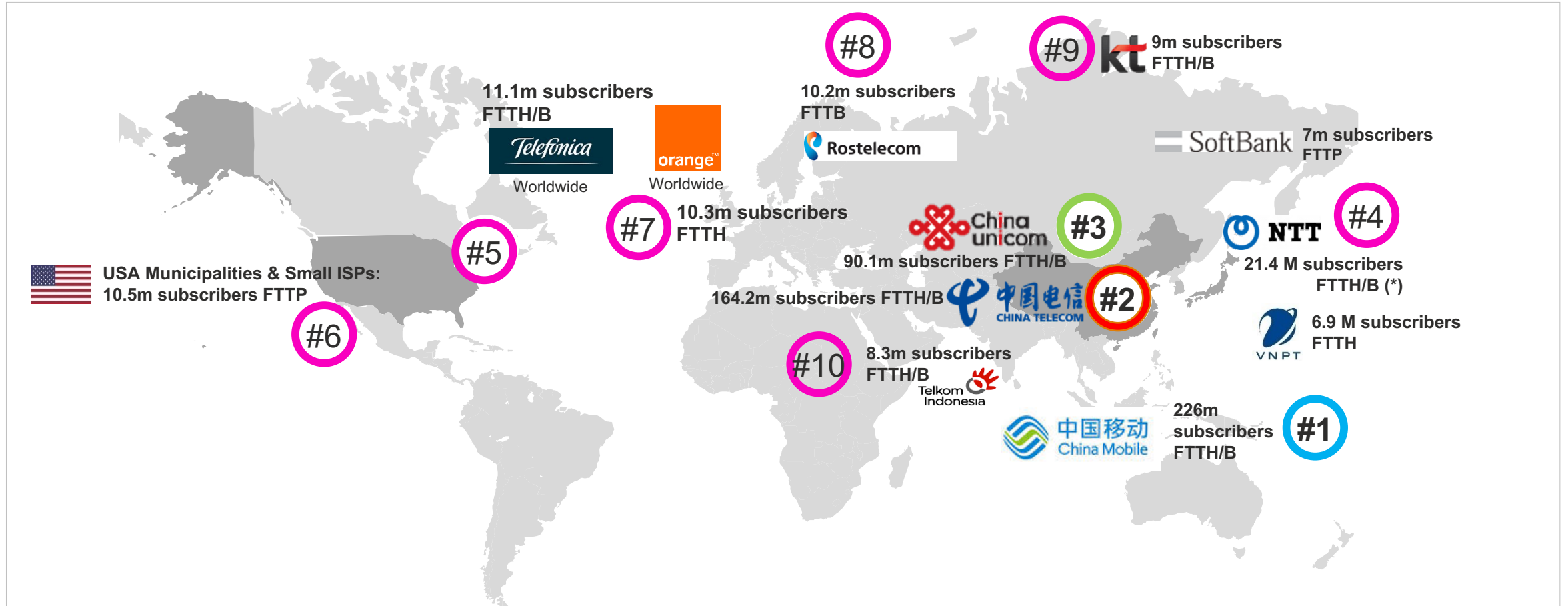## Geographical breakdown of the three main superfast broadband architectures, June 2021

FTTH/B: 752 million subscribers

- 1%
- 12% — Europe
- 3%
- 5%
- 79%
- Europe
- North America
- LATAM
- APAC
- MEA

VDSL: 94 million subscribers

- 2%
- 19%
- 4%
- 14%
- 61%
- Europe
- North America
- LATAM
- APAC
- MEA

DOCSIS 3.x: 148 million subscribers

- 1%
- 6%
- 24%
- 16%
- 53%
- Europe
- North America
- LATAM
- APAC
- MEA

Source: IDATE DigiWorld, *World FTTx markets*, December 2021

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Worldwide FTTH/B Leaders

- **There are six Asian telcos among the world's Top 10 FTTH/B providers**
- **The top 3 providers are Chinese operators, followed by NTT, Telefonica, USA Municipalities, Orange and Rostelecom.**
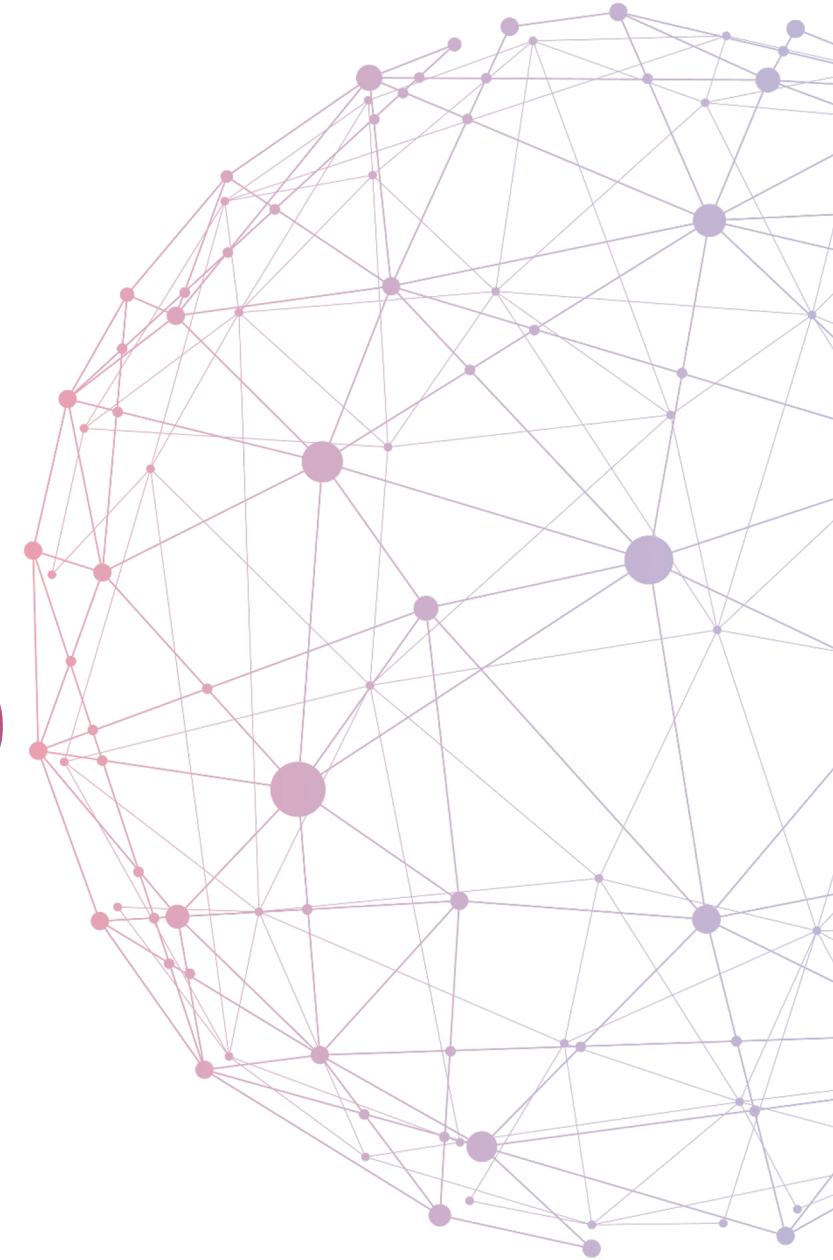
Worldwide FTTH/B Leaders, June 2021

#8

#9 **kt** 9m subscribers FTTH/B

10.2m subscribers FTTB

11.1m subscribers FTTH/B

Telefonica
Worldwide

orange™
Worldwide

Rostelecom

SoftBank 7m subscribers FTTP

#7 10.3m subscribers FTTH

#5

China unicom #3

NTT #4

90.1m subscribers FTTH/B

21.4 M subscribers FTTH/B (*)

USA Municipalities & Small ISPs: 10.5m subscribers FTTP

164.2m subscribers FTTH/B **中国电信 CHINA TELECOM** #2

VNPT 6.9 M subscribers FTTH

#6

#10 8.3m subscribers FTTH/B

Telkom Indonesia

中国移动 China Mobile 226m subscribers FTTH/B #1

(*) NTT includes retail subs + subs from collaboration model
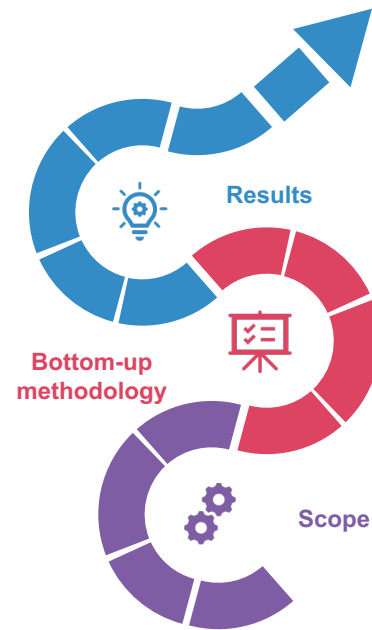
01 | EU STUDY BACKGROUND

Methodology

➢ Mission on behalf of the **FTTH Council Europe**

  ➢ Provide a complete summary of the status of FTTH/B in Europe measured during September 2021

➢ This study is based on data and information collected by the European Commission (through DESI studies) and information gathered from local regulators in each country (if available).

➢ Both quantitative and qualitative data

➢ Market status in the country

➢ Strategic approach of involved players

➢ Desk research

➢ Direct contacts with leading players and IDATE partners within countries

➢ Information exchange with FTTH Council Europe members

Results

Bottom-up methodology

Scope

➢ Desk research

➢ Data per player for FTTH/B and other fibre-based architectures

➢ Key parameters study: technical, financial, business model, figures

02 | GENERAL OVERVIEW AND MAIN TRENDS

FTTH/B Market Panorama
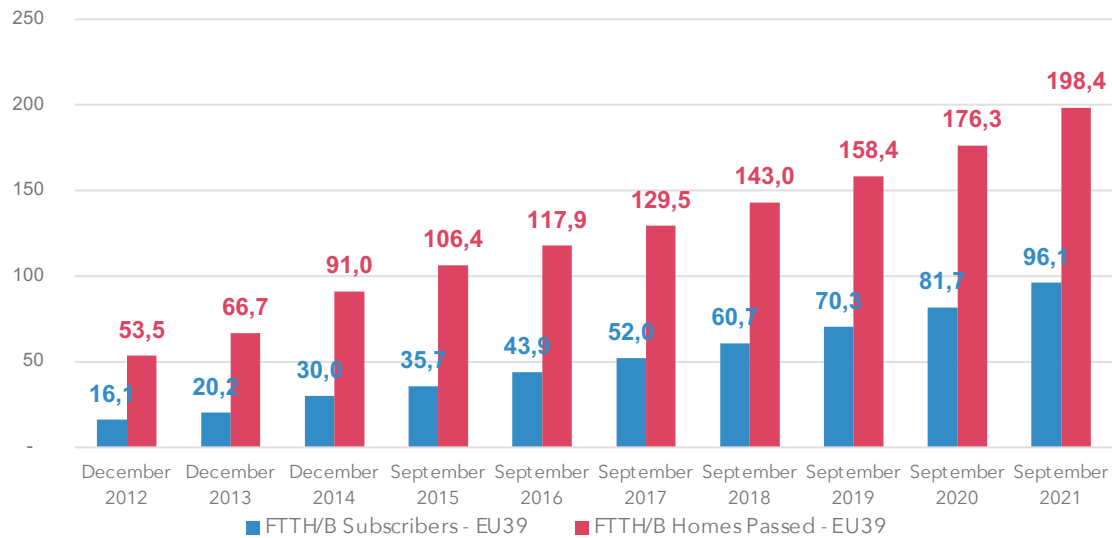## Key Figures

As of September 2021, in EU39*:

**96** million FTTH/B Subscribers

198 million FTTH/B Homes Passed

FTTH/B European market evolution (EU39)
In terms of Homes Passed and Subscribers (2012-2021)

	December 2012	December 2013	December 2014	September 2015	September 2016	September 2017	September 2018	September 2019	September 2020	September 2021
FTTH/B Subscribers - EU39	16,1	20,2	30,0	35,7	43,9	52,0	60,7	70,3	81,7	96,1
FTTH/B Homes Passed - EU39	53,5	66,7	91,0	106,4	117,9	129,5	143,0	158,4	176,3	198,4

Detailed FTTH/B Market Panorama scope

■ EU27 countries

■ Other European countries under study
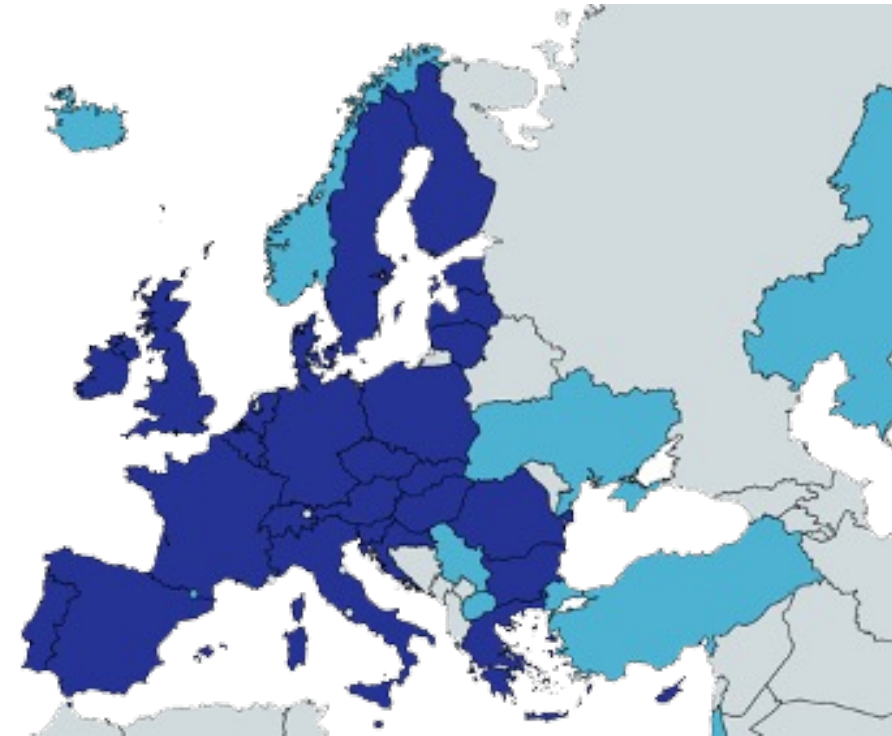
Coverage rate

EU27+UK: **48.5% (Up 4.6%)**
EU39: **57% (Up 4.5%)**

Take-up rate

EU27+UK: **52.4% (Up 5.6%)**
EU39 : **48.5% (Up 3.6%)**

* EU39 detailed composition:
➤ EU27 + United Kingdom
➤ CIS countries: Kazakhstan, Ukraine, +2
➤ Iceland, Israel, North Macedonia, Norway, Serbia, Switzerland, Turkey

03 | **LEADING COUNTRIES**
UPDATE AT SEPTEMBER 2020

Note on several important impacts in 2022

Several countries have made significant progress since September 2021 and deserve a special mention.

There have also been significant regional actions this year which impact the accuracy of data from Ukraine

The FTTH Council have removed Russia and Belarus from individual mention in the report due to their actions and support of the invasion of Ukraine

United Kingdom is accelerating extremely rapidly since our report data collection point of September 2021, adding up to 600k homes passed per month or about 3.5 million homes passed, reaching over 10.5 million homes passed by the end of March 2022.

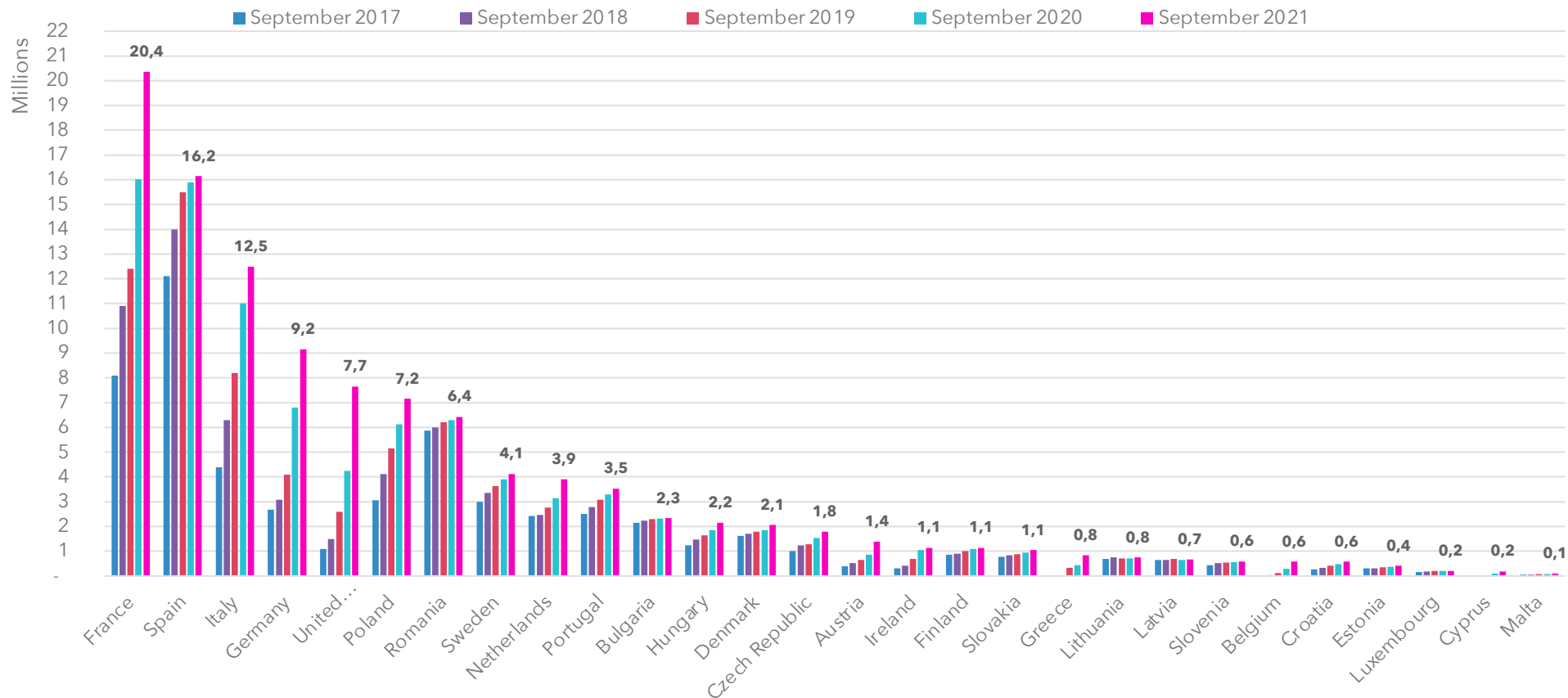**7.7 M HP** in Sept. 21 → **~ 10.5 M HP** in Mar. 22

Regarding the specific case of Ukraine, FTTH/B coverage in the country was about 68% of total homes in September 2021. We have no current data on the level of damage caused by the War on FTTH networks in Ukraine and despite seeing reports of amazing efforts to maintain the network as much as possible – we do not know yet how fast these networks can be rebuilt.

FTTH/B Homes Passed
EU27+UK Ranking

EU27+UK ranking in terms of FTTH/B Homes passed over time (in million homes)
Data comparison between Sept. 2017 and Sept. 2021

5 fastest growing markets (in both volume and %)
Data from Sept. 2020 to Sept. 2021
(in terms of FTTH/B Homes Passed)

Legend: ■ September 2017 ■ September 2018 ■ September 2019 ■ September 2020 ■ September 2021

Values (in Millions): France 20,4 · Spain 16,2 · Italy 12,5 · Germany 9,2 · United... 7,7 · Poland 7,2 · Romania 6,4 · Sweden 4,1 · Netherlands 3,9 · Portugal 3,5 · Bulgaria 2,3 · Hungary 2,2 · Denmark 2,1 · Czech Republic 1,8 · Austria 1,4 · Ireland 1,1 · Finland 1,1 · Slovakia 1,1 · Greece 0,8 · Lithuania 0,8 · Latvia 0,7 · Slovenia 0,6 · Belgium 0,6 · Croatia 0,6 · Estonia 0,4 · Luxembourg 0,2 · Cyprus 0,2 · Malta 0,1

Rank		
France +4.3 M	1	Belgium + 109%
UK +3.4M	2	Greece + 90%
Germany +2.4M	3	Cyprus +83%
Italy + +1.5M	4	UK + 80%
Poland +1M	5	Austria + 62%

European Coverage – EU27+UK

2 new countries have passed the 50% mark of total homes passed with fibre! Who is next?

FTTH/B coverage* in EU27+UK as of September 2021 (*Homes passed/Households)

Country	Coverage
Latvia	89,0%
Spain	88,8%
Portugal	86,8%
Sweden	83,8%
Bulgaria	81,0%
Romania	78,8%
Estonia	76,2%
Denmark	74,3%
Luxembourg	70,7%
Slovenia	68,1%
France	67,3%
Ireland	60,8%
Lithuania	58,3%
EU39	**57,0%**
Slovakia	55,0%
Hungary	52,2%
Malta	50,0%
Netherlands	49,0%
EU 27 + UK	**48,5%**
Italy	47,7%
Poland	47,4%
Czech Republic	42,7%
Cyprus	42,1%
Finland	41,3%
Croatia	39,8%
Austria	35,5%
United Kingdom	26,6%
Germany	22,1%
Greece	18,9%
Belgium	11,7%

France: 67%

Newly entered (>50%): Slovakia, Hungary
16/28 Countries now exceeding 50% of total homes passed with fibre!

FTTH/B Subscribers
EU27+UK Ranking

EU27+UK ranking in terms of FTTH/B Subscriptions over time (in million homes)
Data comparison between Sept. 2017 and Sept. 2021
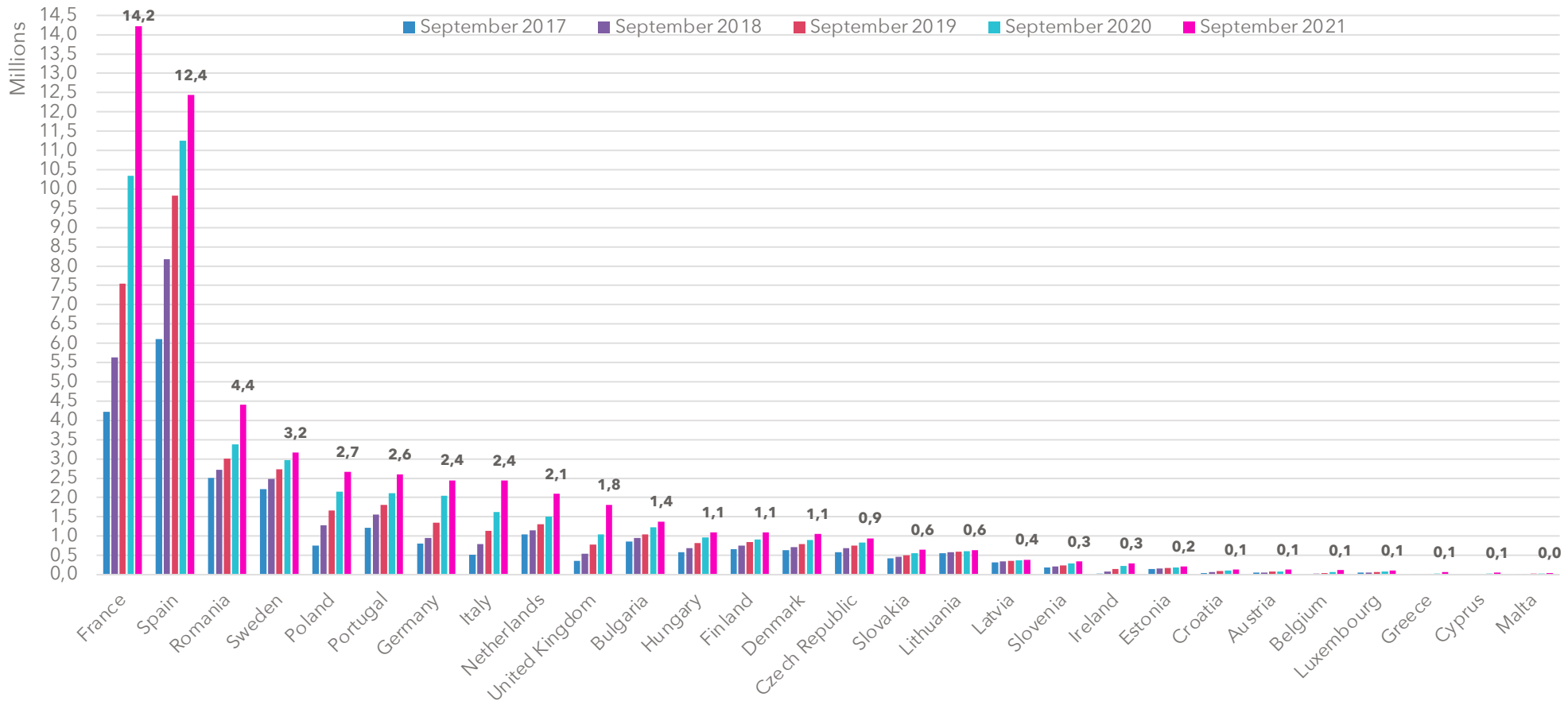
5 fastest growing markets (in both volume and %)
Data from Sept. 2020 to Sept. 2021
(in terms of FTTH/B Subscribers)

Volume	Rank	%
France +3.8 M	1	Greece + 121%
Spain +1.2M	2	Cyprus + 114%
Romania +1.0M	3	Belgium +92%
Italy +820k	4	UK + 73%
UK +765k	5	Austria + 53%
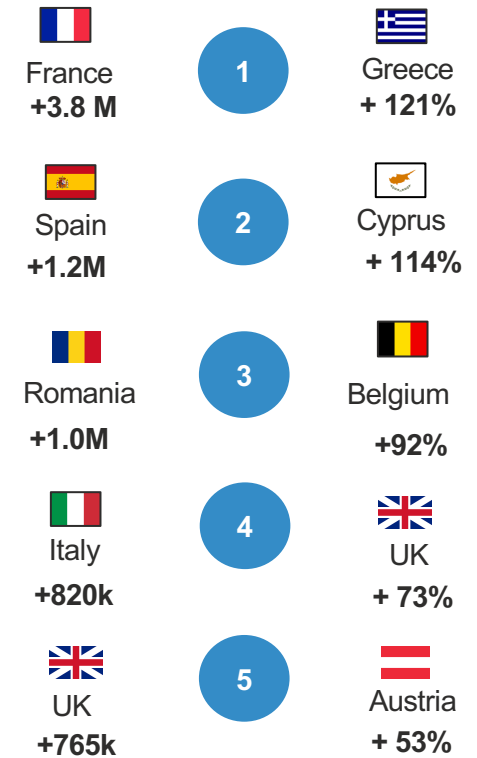
FTTH/B
Take-up Rate
Summary map

FTTH/B take-up* map - September 2021
*(Subscribers / Homes Passed)

Take-up rate

EU27+UK: **52.4% (Up 5.6%)**
EU39 : **48.5% (Up 3.6%)**

- FTTH/B take-up < 30%
- FTTH/B take-up 30% > 50%
- FTTH/B take-up 50% > 70%
- FTTH/B take-up > 70%

94%
96%
46%
77%
50%
59%
85%
51%
40%
26%
24%
51%
37%
20%
21%
27%
52%
61%
48%
9%
51%
67%
70%
50%
58%
22%
41%
74%
20%
59%
46%
37%
8%
77%
49%
27%
19%

European Ranking
FTTH/B Markets – September 2021

Penetration rates of European countries - September 2021 (FTTH/B Subscriptions / Households)

Country	Rate
Iceland	78.4%
Spain	68.4%
Sweden	64.4%
Portugal	64.1%
Norway	56.5%
Romania	54%
Latvia	52.3%
Lithuania	49.7%
Bulgaria	47.7%
France	47.1%
Finland	39.6%
Slovenia	39.5%
Estonia	38.5%
Denmark	38.2%
Luxembourg	34.1%
Slovakia	33.7%
Hungary	26.8%
Netherlands	26.4%
Switzerland	25.1%
Malta	24.4%
Czech Republic	22.3%
Kazakhstan	20.9%
Turkey	18.9%
Poland	17.6%
North Macedonia	16.6%
Israel	15.9%
Ireland	15.7%
Ukraine	13.7%
Serbia	12.2%
Cyprus	11.2%
Italy	9.3%
Croatia	8.8%
United Kingdom	6.3%
Germany	5.9%
Austria	3.2%
Belgium	2.4%
Greece	1.5%

- FTTH subscribers
- FTTB subscribers

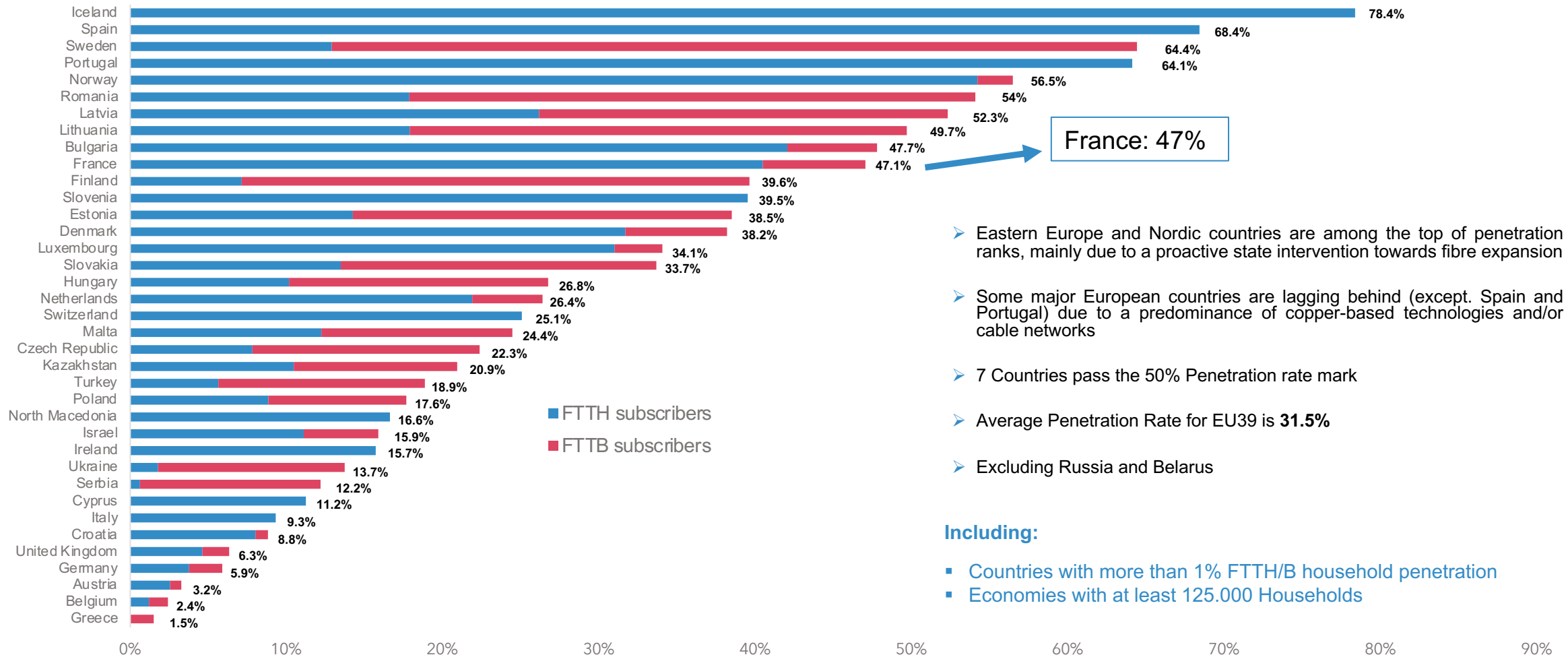**France: 47%**

➤ Eastern Europe and Nordic countries are among the top of penetration ranks, mainly due to a proactive state intervention towards fibre expansion

➤ Some major European countries are lagging behind (except. Spain and Portugal) due to a predominance of copper-based technologies and/or cable networks

➤ 7 Countries pass the 50% Penetration rate mark

➤ Average Penetration Rate for EU39 is **31.5%**

➤ Excluding Russia and Belarus

Including:

- Countries with more than 1% FTTH/B household penetration
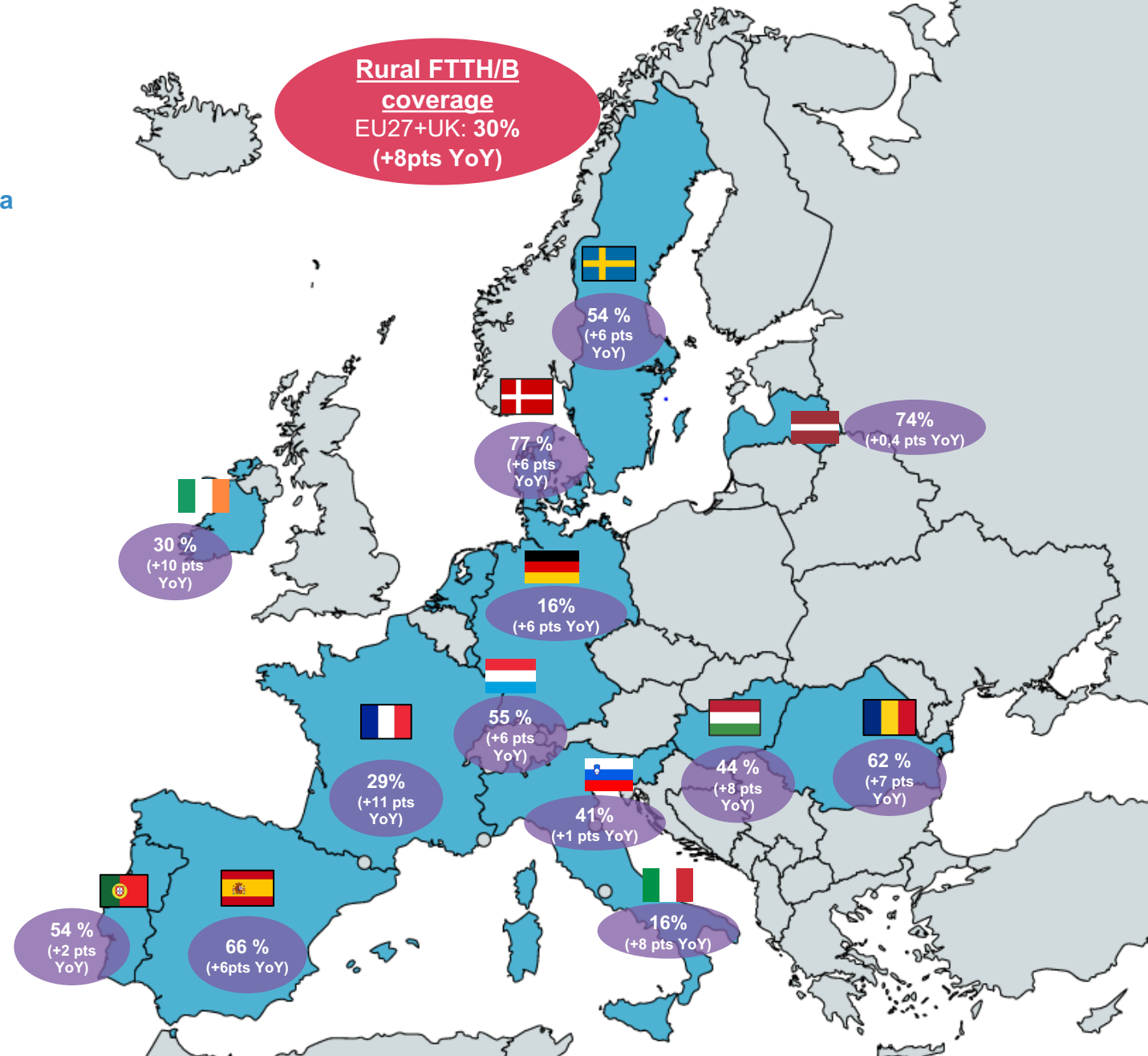- Economies with at least 125.000 Households

04 | FTTH RURAL LEADERBOARD
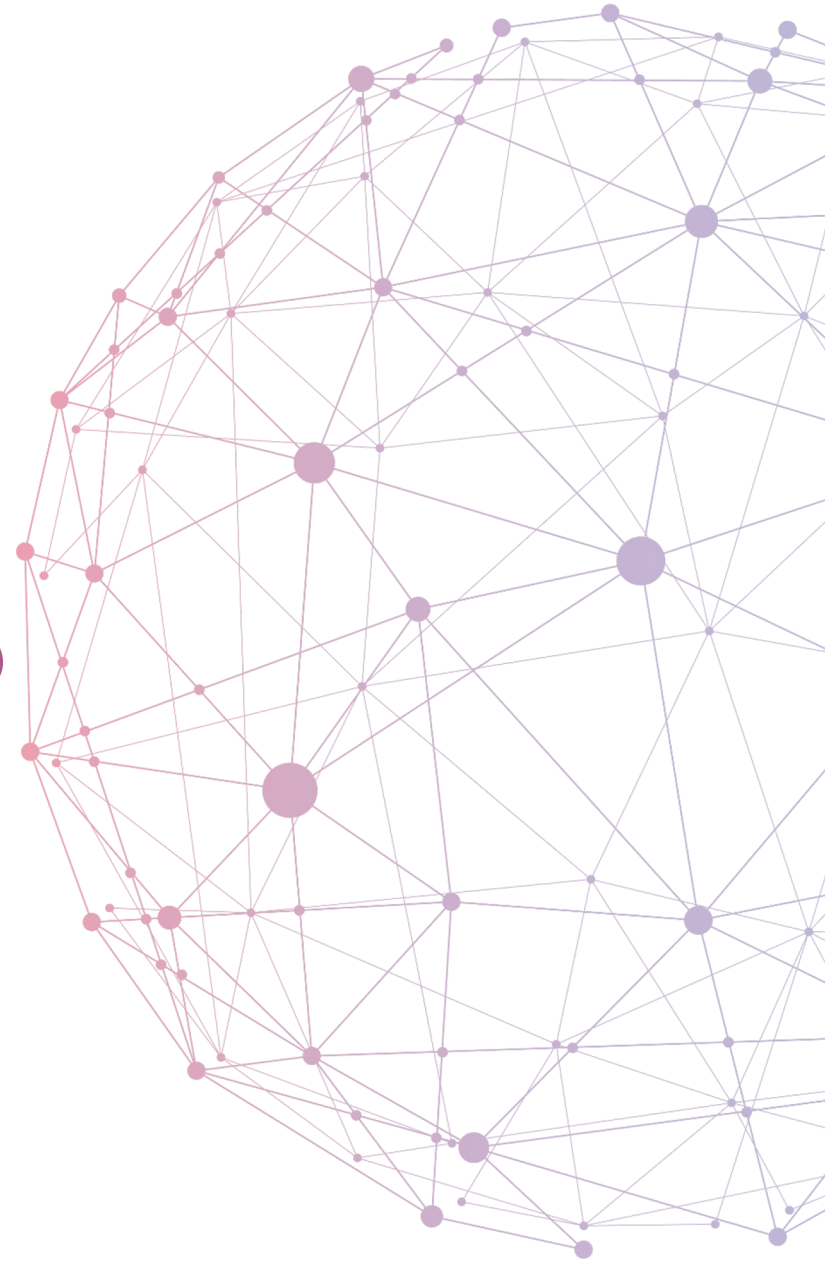
Connecting rural Europe with full-fibre

➤ **FTTH/B progressively implemented in non-dense areas, but at a very different pace among European countries**

Country	UE27+UK Ranking	Rural FTTH/B Coverage (2021)	Rural FTTH/B Coverage (2015)
Denmark	#1	77%	46%
Latvia	#2	74%	67%
Spain	#3	66%	6%
Romania	#4	62%	25%
Luxembourg	#5	55%	29%
Sweden	#6	54%	14%
Portugal	#7	54%	15%
Hungary	#8	42%	4%
Slovenia	#9	41%	22%
Ireland	#10	30%	0%
France	#11	29%	2%
Netherlands	#12	29%	18%
…	…	…	…
Italy	…	16%	0%
Germany	…	16%	1%

Rural FTTH/B coverage
EU27+UK: 30%
(+8pts YoY)

54 % (+6 pts YoY)

74% (+0,4 pts YoY)

77 % (+6 pts YoY)

30 % (+10 pts YoY)

16% (+6 pts YoY)

55 % (+6 pts YoY)

44 % (+8 pts YoY)

62 % (+7 pts YoY)

29% (+11 pts YoY)

41% (+1 pts YoY)

54 % (+2 pts YoY)

66 % (+6pts YoY)

16% (+8 pts YoY)

Source: European Commission, Regulators, IDATE

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05 | CONCLUSIONS

Fibre improves the customer experience
Based on Ookla Global Index November 2021

Full-fibre connectivity supports higher download speeds, higher upload speeds and lower latency.

Fibre facilitates Working From Home (WFH), allowing true business critical functions outside the office.

This supports video-conferencing, cloud-based services and other real-time or bandwidth hungry applications now in demand

FTTH/B Penetration alongside Ookla Global Index - Fixed Download Bandwidth
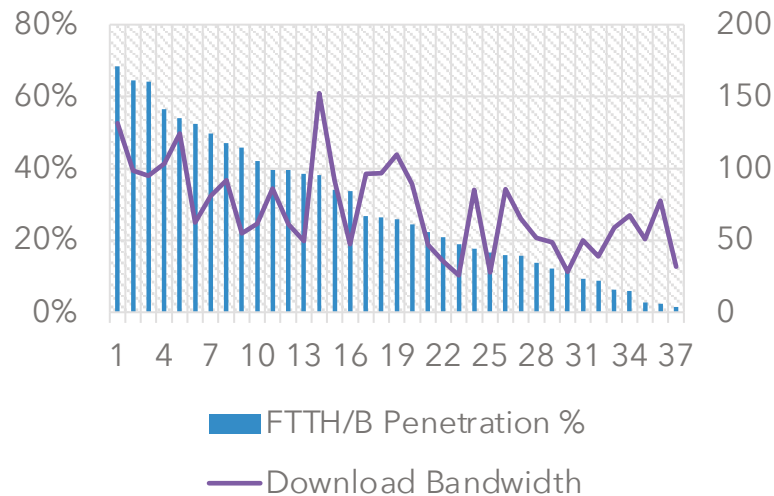
FTTH/B Penetration alongside Ookla Global Index - Fixed Upload Bandwidth
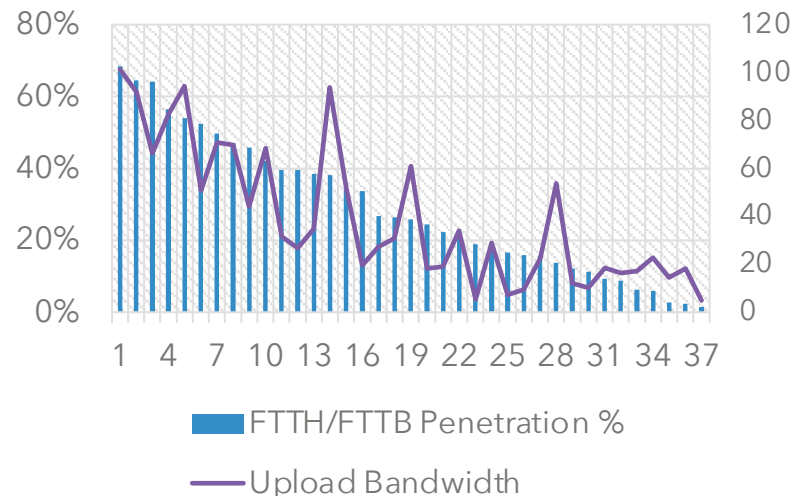
FTTH/B Penetration alongside Ookla Global Index - Latency

Source: IDATE estimations for FTTH Council EUROPE

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The Road to Full Fibre – Who has the most work left to do?
EU27+UK – September 2021

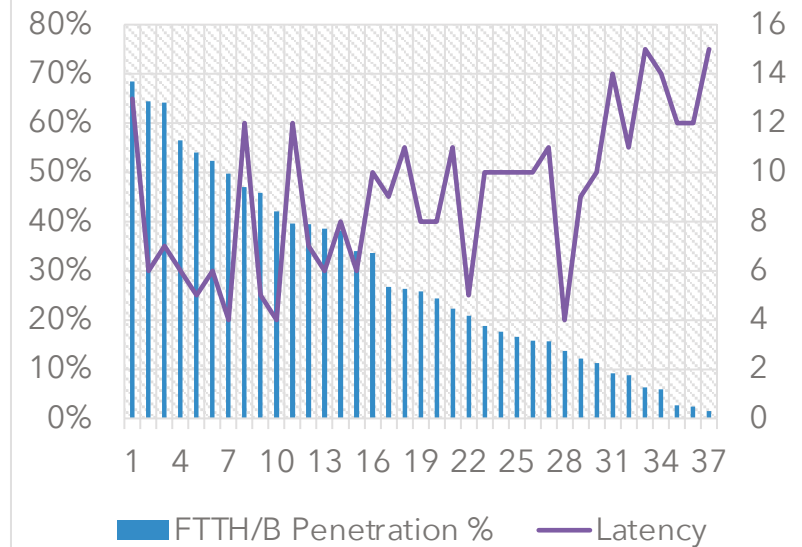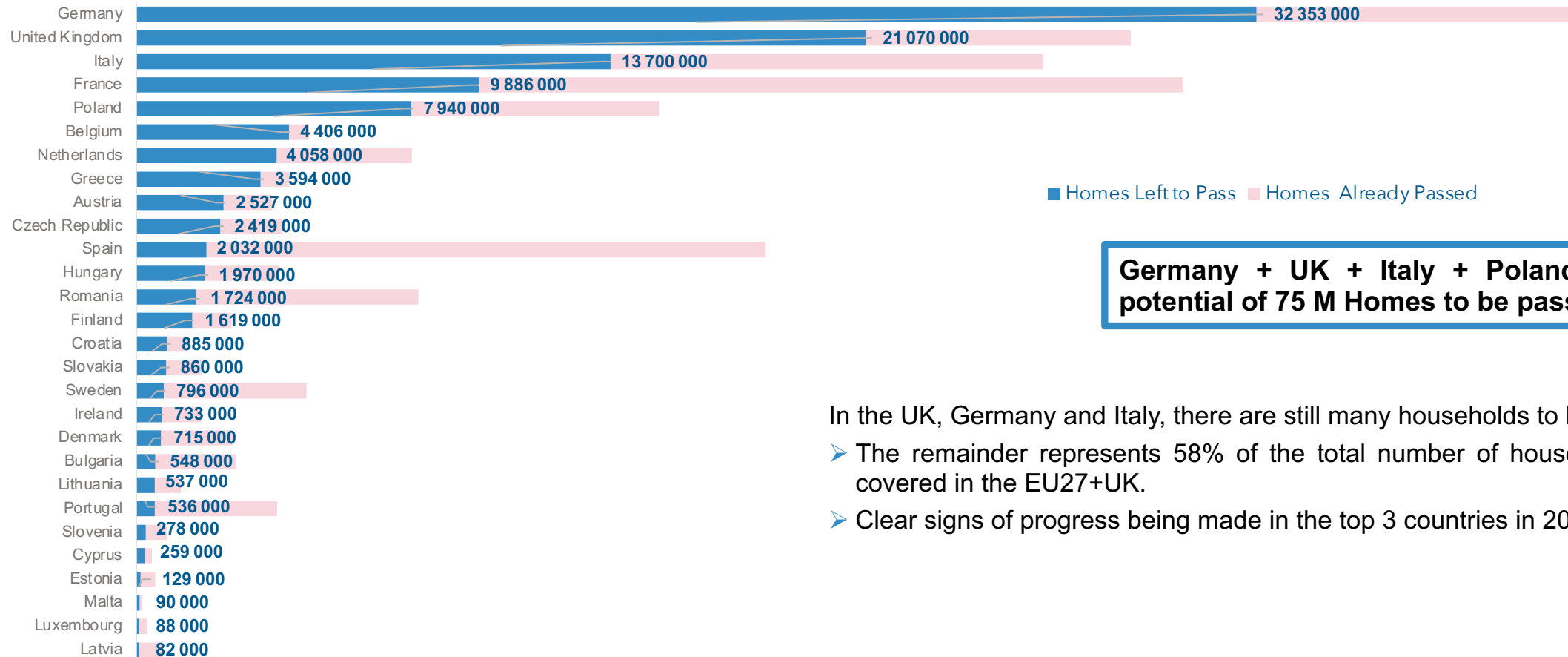| Country	Homes Left to Pass
Germany	32 353 000
United Kingdom	21 070 000
Italy	13 700 000
France	9 886 000
Poland	7 940 000
Belgium	4 406 000
Netherlands	4 058 000
Greece	3 594 000
Austria	2 527 000
Czech Republic	2 419 000
Spain	2 032 000
Hungary	1 970 000
Romania	1 724 000
Finland	1 619 000
Croatia	885 000
Slovakia	860 000
Sweden	796 000
Ireland	733 000
Denmark	715 000
Bulgaria	548 000
Lithuania	537 000
Portugal	536 000
Slovenia	278 000
Cyprus	259 000
Estonia	129 000
Malta	90 000
Luxembourg	88 000
Latvia	82 000

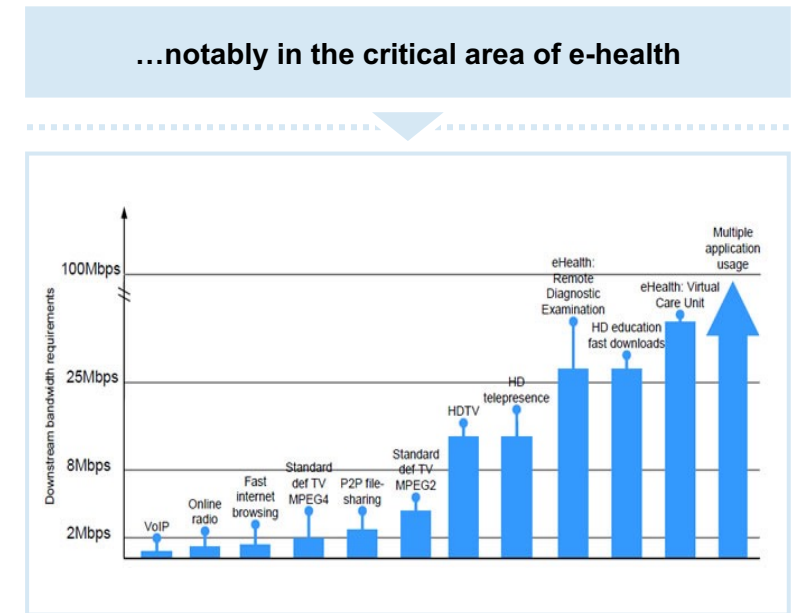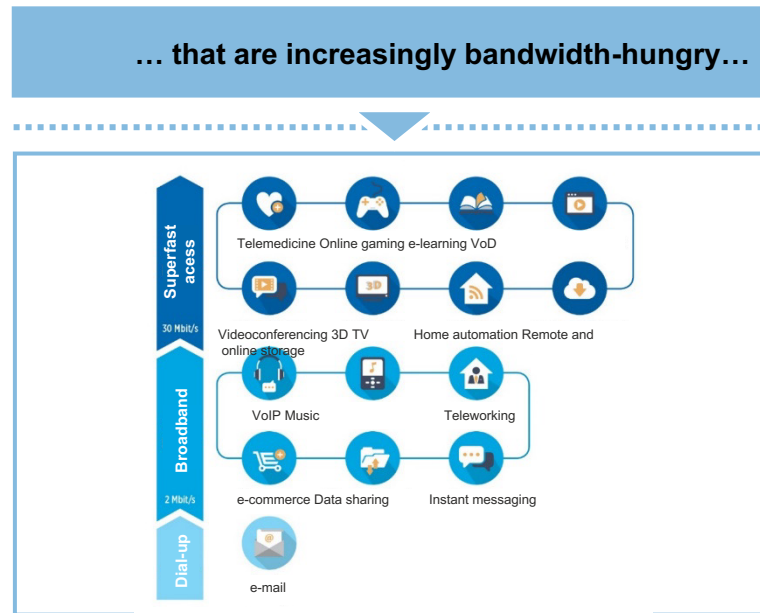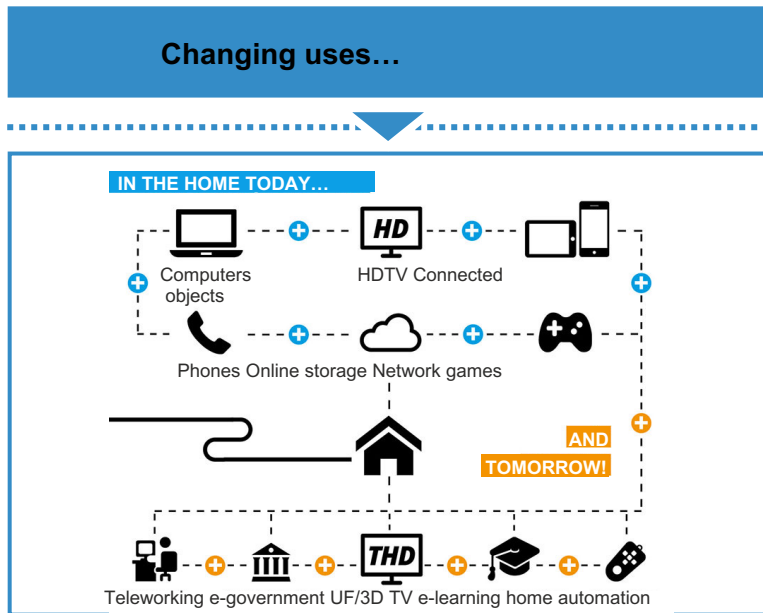■ Homes Left to Pass   ■ Homes Already Passed

Germany + UK + Italy + Poland: a potential of 75 M Homes to be passed

In the UK, Germany and Italy, there are still many households to be covered.

➤ The remainder represents 58% of the total number of households to be covered in the EU27+UK.

➤ Clear signs of progress being made in the top 3 countries in 2022

Source: IDATE for FTTH Council EUROPE

Bandwidth growth driven by Video but also new usages

- **Growing traffic and new uses driving a rise in connection speeds**:
  - The global average broadband speed continues to grow and will more than double from 2018 to 2023, from 45.9 Mbps to 110.4 Mbps according to the Visual networking Index (Cisco)
- **e-health, e-education** and the **use of multiple apps at once** inside the home will become increasingly common over time, and require connections above **30 Mb/s per application**
  - e-health applications: remote diagnostics, virtual care and remote surgery, rapid data sharing between practitioners, home automation and connected objects for patients
  - Educational applications: enhanced textbooks, touchscreen tablets, interactive tutoring and support, E-learning (online professional training), MOOC (online classes)

Changing uses…	… that are increasingly bandwidth-hungry…	…notably in the critical area of e-health

Changing uses… panel:
IN THE HOME TODAY…
Computers objects — HDTV Connected
Phones Online storage Network games
AND TOMORROW!
Teleworking e-government UF/3D TV e-learning home automation

Bandwidth-hungry panel:
Superfast acess
Telemedicine Online gaming e-learning VoD
30 Mbit/s
Videoconferencing 3D TV online storage — Home automation Remote and
VoIP Music — Teleworking
Broadband
e-commerce Data sharing — Instant messaging
2 Mbit/s
Dial-up
e-mail

e-health chart (Downstream bandwidth requirements):
100Mbps
25Mbps
8Mbps
2Mbps
VoIP, Online radio, Fast internet browsing, Standard def TV MPEG4, P2P file-sharing, Standard def TV MPEG2, HDTV, HD telepresence, eHealth: Remote Diagnostic Examination, HD education fast downloads, eHealth: Virtual Care Unit, Multiple application usage

Source: http://www.coeurduvar.com/grands-dossiers/amenagement-numerique & https://www.maine-et-loire.fr/conseil-departemental/grands-projets/tres-haut-speed/

Source: IDATE Market Intelligence

IDATE

IDATE Market Intelligence: FTTx & Gigabit Society – Reports & Dataset

MERCI !!

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Upcoming publications*

Format	Title	Publication date
Report + DB	World FTTx Markets (twice-yearly update)	1H 2022
Report	NGPON 25 vs 50 – Technologies and service adoption – Operators' expectations	1H 2022
Report	Copper Switch-off - Keys to success, best practices	1H 2022
Report + DB	Smart City Markets (yearly update)	2H 2022
Report	What are the worldwide growth pocket in the fibre industry?	2H 2022
Report	In-home broadband, the next frontier?	2H 2022

Available publications

Format	Title	Publication date	Group licence € Excl. VAT
Report	Fiber for a sustainable future - A key enabler to lower carbon	1Q 2022	750
Report + DB	World FTTx Markets	2H 2021	On request
Report	eHealth: digital helping to build the future of health	2H 2021	3,000
Report	Connected Territories and Mobility	1Q 2022	3,000
Report	Digital and Environmental Transition	1Q 2022	750
Report	Corporate Social Responsibility of telcos	2H 2021	4,500
Report	The e-Sports market	2H 2021	4,500
Report + DB	Smart City Markets	2H 2021	4,500
Report	Key dilemma for cable operators: FTTH versus DOCSIS 4.0	1H 2021	4,500
Report	XR consumer market	1H 2021	4,500
Report	The potential of 5G Fixed Wireless Access	2H 2020	4,500
Report	FTTH Opportunities after COVID-19	2H 2020	3,750
Report	Open Access Fiber Networks in Europe	2H 2020	3,750
Report	Power Utilities and FTTH	1H 2020	2,250