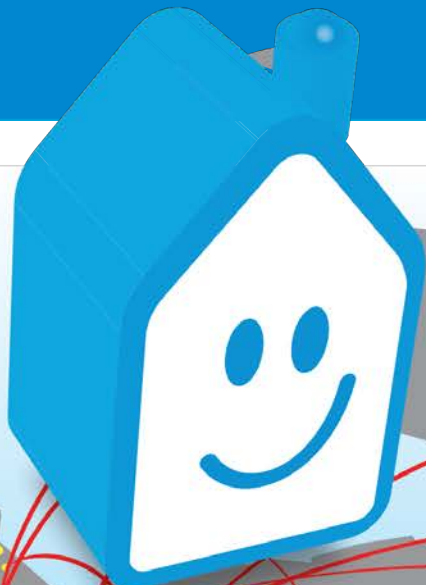


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European FTTH Forecast, 2014-2019: Behind The Numbers

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European FTTH Forecast, 2014-2019: Behind The Numbers

Moderator:

Els Baert

Market Intelligence Committee
FTTH Council Europe

Presenter:

Graham Finnie

Chief Analyst
Heavy Reading

Introduction

- Based on individual analyses of 22 countries, and brief reviews of a further 22 countries
- Covers a total of just over 324 million households, 206 million in the EU and 118 million outside the EU
- Aggregate forecast is up compared to last year:
 - Stronger than expected performance in Portugal, Spain and Russia
 - Recalibration of starting point in Kazakhstan, Netherlands, Romania and Russia
- Most countries will have passed the 20% “fiber maturity” household penetration line by 2019
 - 14 out of 22 analyzed in detail will have hit this mark; 9 will be over 30%
 - 5 of the 22 will still be below 5% penetration

How The Forecast Is Created

- In order to avoid inconsistencies, we agreed to use IDATE data from its Panorama as the starting point for the forecast
- A detailed forecast is created for each of 22 countries individually, and aggregated to create the overall forecast
- Forecasts are based on a set of “leading indicators” (demand-side, supply-side, and other factors such as regulation) which might affect market development

Demand-Side Indicators

LEADING INDICATOR	DEVELOPMENTS OVER THE PAST 12 MONTHS	POTENTIAL DEVELOPMENTS OVER THE NEXT 12 MONTHS
Marketing and take-up of third generation broadband services (at 20Mbit/s +)	Positive: Average speed per household continues to rise rapidly, paving the way for FTTH. Speedtest showed average European downstream speed at the end of 2014 around 28.5Mbit/s, up around 28% on the year; upstream speeds are rising at 50% per annum	Positive: We expect the rise in average speed will continue in 2014, pressurizing those still reliant on ADSL and first-generation VDSL—though some will shift to vectored VDSL for now, in order to meet demand more quickly
Consumer electronics—PCs, digital cameras, HDTV, etc	Positive: 2014 was a better year than 2013, with stronger growth in connected TVs the main positive factor. PC sales also began rising again, and number of devices per home is rising steadily	Neutral: number of devices per home will continue to multiply, but no hardware is likely to require FTTH in the near future. 4K TV will begin to make more impact by 2016
Services that drive higher-speed broadband	Neutral: Downstream services based on VDSL can support all current services, including on-demand video, but the rise in uploading of photos, videos and Cloud services is driving a need for more symmetrical bandwidth, with take-up of Cloud services rising quickly	Neutral: OTT 4K TV or 4K IPTV could help to push some operators to FTTH, but the impact may not be felt for a couple more years yet.

Supply-Side Indicators

LEADING INDICATOR	DEVELOPMENTS OVER THE PAST 12 MONTHS	POTENTIAL DEVELOPMENTS OVER THE NEXT 12 MONTHS
Stated attitudes and plans of incumbent telcos	Positive: the stronger showing by incumbents in 2013 continued in 2014, with Orange and Telefonica leading the way in Western Europe; incumbents added over half of all FTTH lines.	Positive: Market share of incumbents will continue to rise as confidence in the FTTH business case grows
Competitive and entrepreneurial telco plans and their impact	Neutral: New entrants have had a big impact in many countries, but in some cases like Russia are pulling back. But elsewhere, alternative telcos like Vodafone are investing heavily	Positive: overall, the involvement of non-incumbents looks set to rise in Western Europe, and in most of Eastern Europe they remain dominant
Muni and utility plans and their impact	Neutral: there are some big positives in the Nordic region, but elsewhere plans have faltered and deadlines have been missed	Neutral: much depends on whether the many proposed and ongoing builds in Germany really bear fruit
Impact of cable MSOs	Neutral: Cable MSOs have had a mixed impact, forcing some telcos to opt for VDSL as a faster means to respond, while others move on to FTTH	Positive: as Cable MSOs push on to higher (even Gigabit) speeds, the impact may lead telcos (and MSOs) to switch from VDSL to G.Fast, FTTB and FTTH
Impact of mobile broadband	Neutral: Some substitution of fixed broadband, and diversion of capital, but counterbalanced by need for 4G fiber backhaul	Neutral: No major change in current situation is foreseen
Green-field housing and construction	Negative: House-building has been hit hard by the recession and remains far below its peak.	Negative: no sign house building will pick up enough in the near term to make any real difference for FTTH

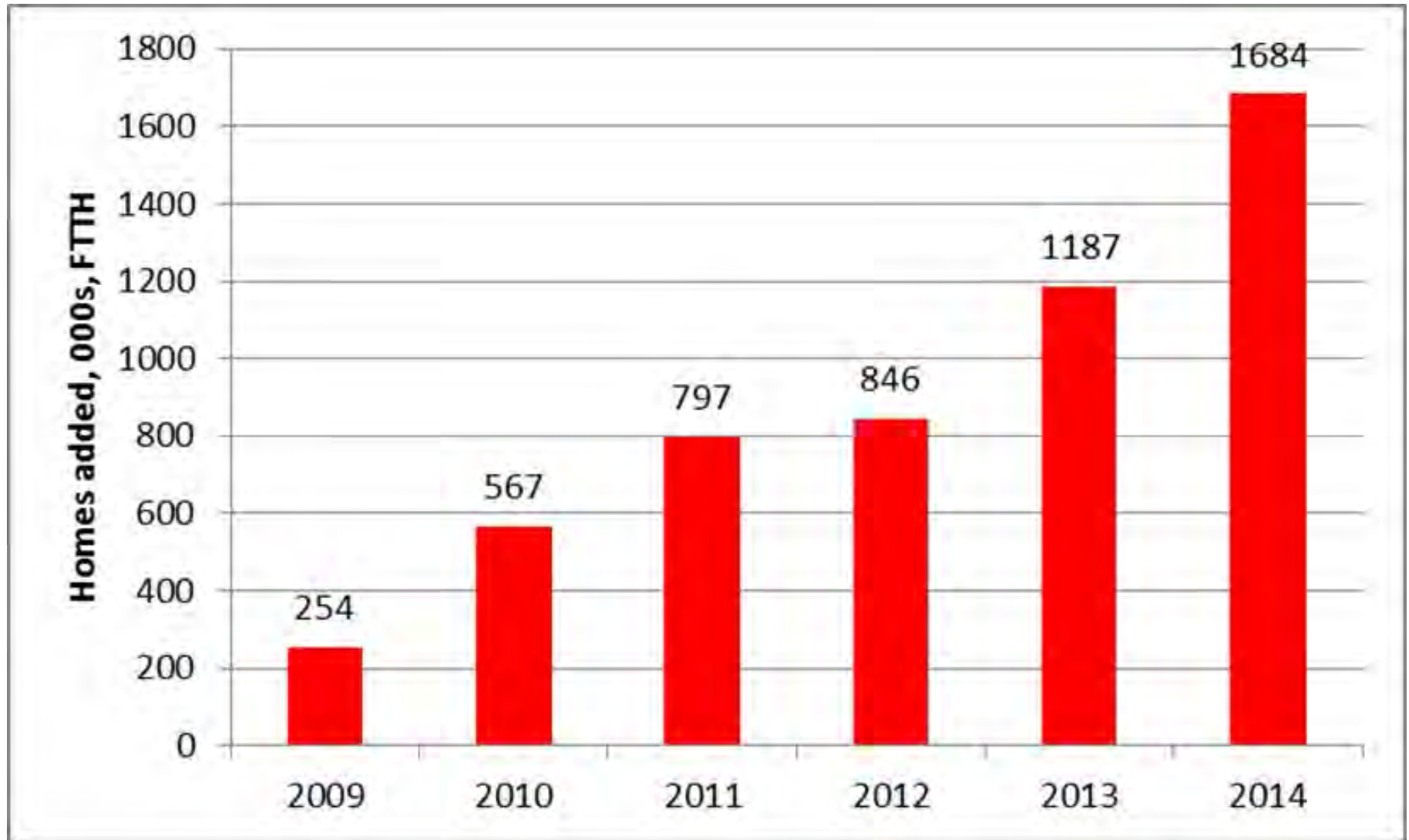
Other Indicators

LEADING INDICATOR	DEVELOPMENTS OVER THE PAST 12 MONTHS	POTENTIAL DEVELOPMENTS OVER THE NEXT 12 MONTHS
Impact of equipment cost and construction trends	Neutral: Although cost of both construction and electronics continues to fall slowly, it is only having a modest impact on decision-making	Neutral: Costs will continue to fall, but without having a major impact on network builder behavior
Impact of copper-based DSL developments	Negative: DSL vectoring, bonding and other developments are leading some operators to consider DSL anew and postpone FTTH	Negative: Vectoring will continue to have an impact over the next few years, delaying some FTTH deployment
Regulatory and political changes at European and national level	Neutral: Positive moves at both regional and national level, but Euro-regulation has failed to have a continent-wide impact yet,	Neutral: impact will vary, with some countries making good progress and others effectively putting up barriers
Macro-economic environment	Neutral: Despite the poor outlook, operators in some badly affected territories like Portugal and Spain have continued to build	Neutral: the economic outlook remains uncertain, and may result in capex postponement, but no short term impact
FTTH development outside Europe and its political & commercial impact	Neutral: although some European countries are falling far behind other world regions, it has had only a muted effect on European politicians and the public to date	Neutral: little sign yet that this is about to really explode as a political issue

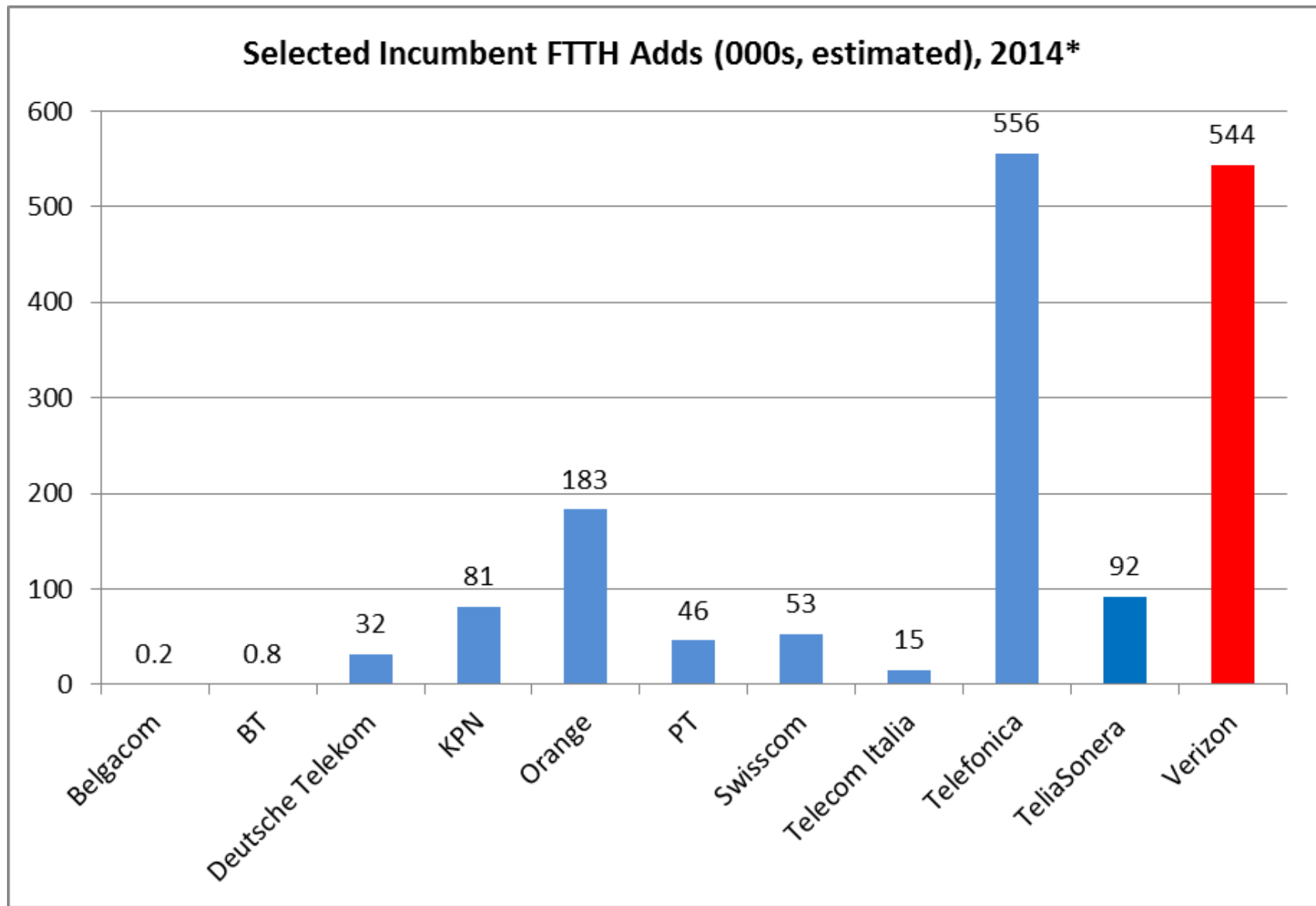
Positive Leading Indicators In 2014/2015

- Broadband line speeds continuing to rise at 30% downstream, 50% upstream per annum; devices per home rising
- Rapid build-out and positive signals in France and Spain, as well as many smaller countries
- Massive build in Eastern European countries has held pace and looks set to continue
- Competitive land-grab in an increasing number of countries with multiple players involved
- Cable operators continuing to up advertised speeds
- Improving regulatory environment with more collaboration among builders and lower costs

Incumbent FTTH Adds in EU Region, 2009-2014



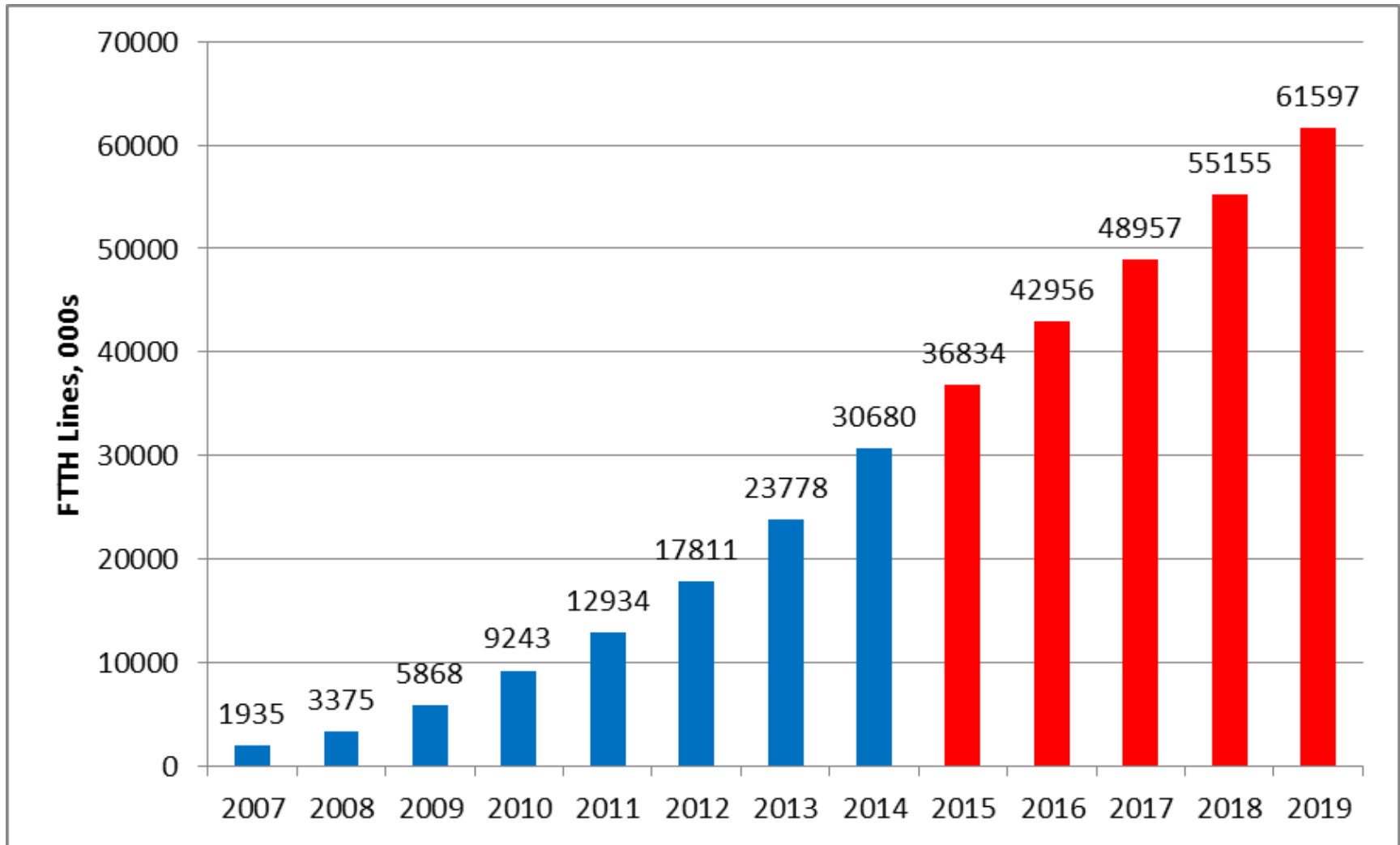
Incumbent Adds, EU, 2014



Negative Leading Indicators In 2014/2015

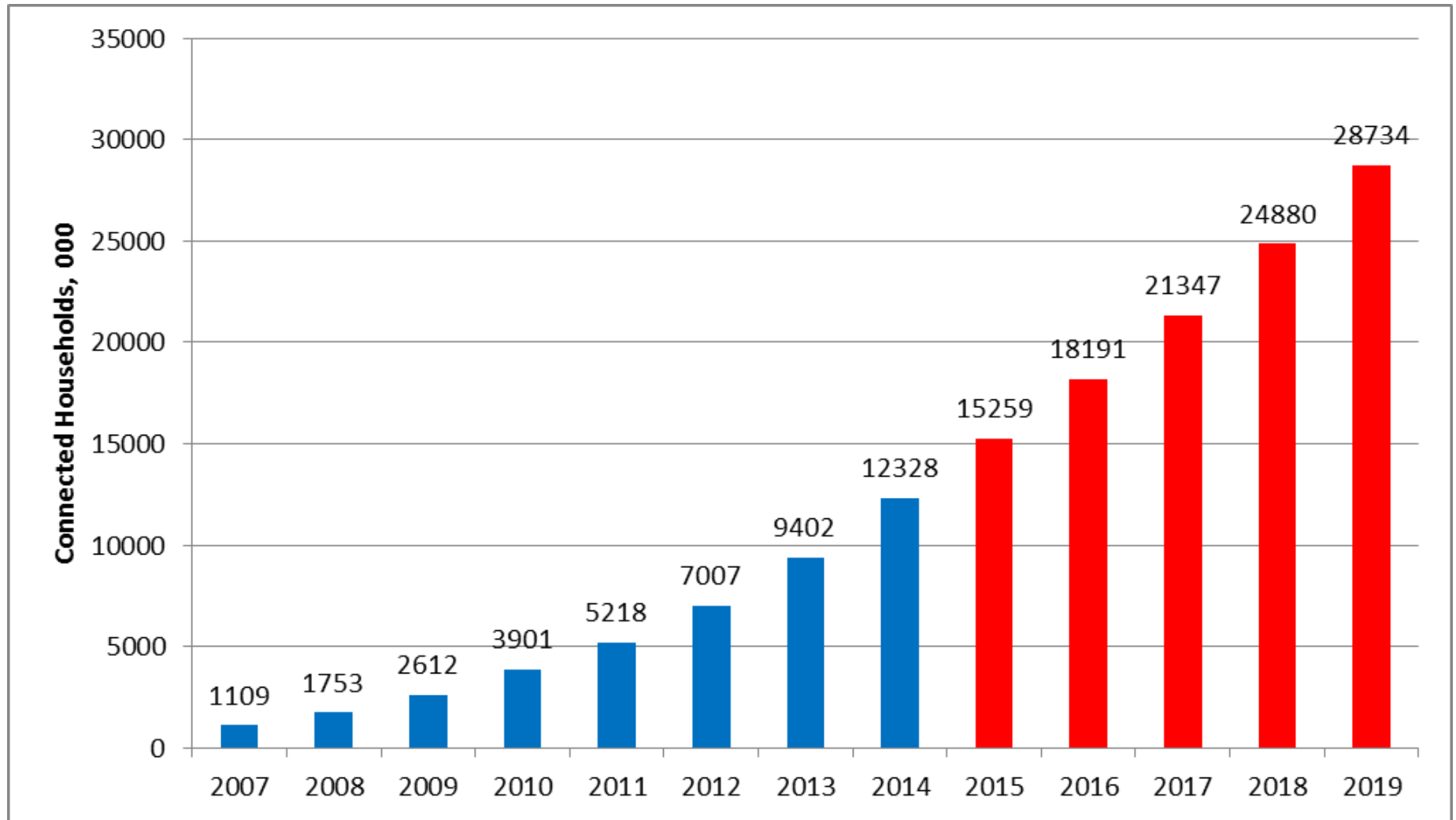
- No single application requires FTTH
- Some incumbents, especially in Western Europe, are looking to vectoring and G.fast as medium-term (or even long-term) solutions
- Municipal and utility movement restricted to a few countries in the region
- Slow-down in some countries that started well; strategy for harder to serve areas often unclear
- Little likelihood of major public funding to support builds

European Region FTTH Forecast

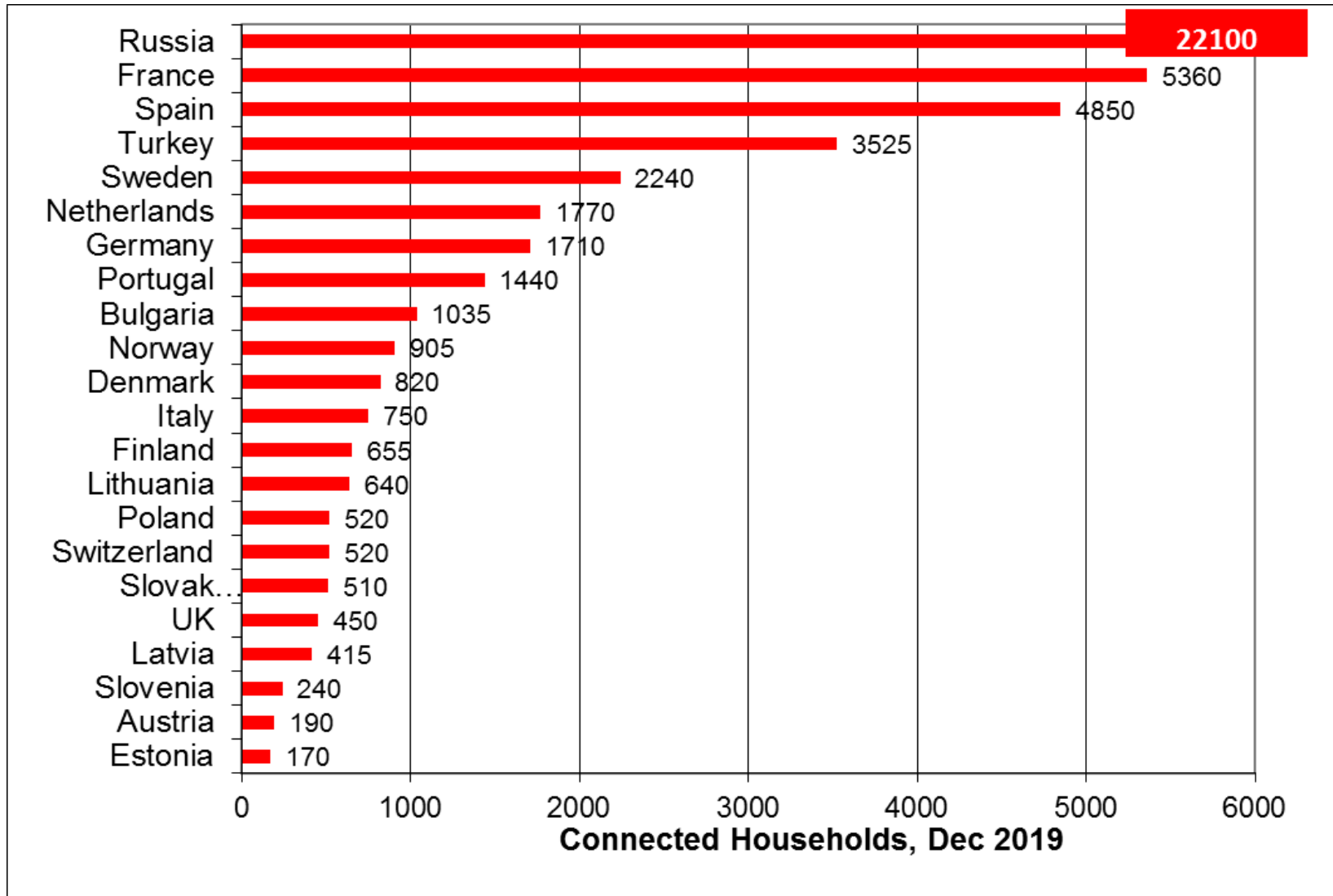


Note: Households connected directly to fiber and apartment connected via basement fiber termination (FTTB)

EU-Only Forecast

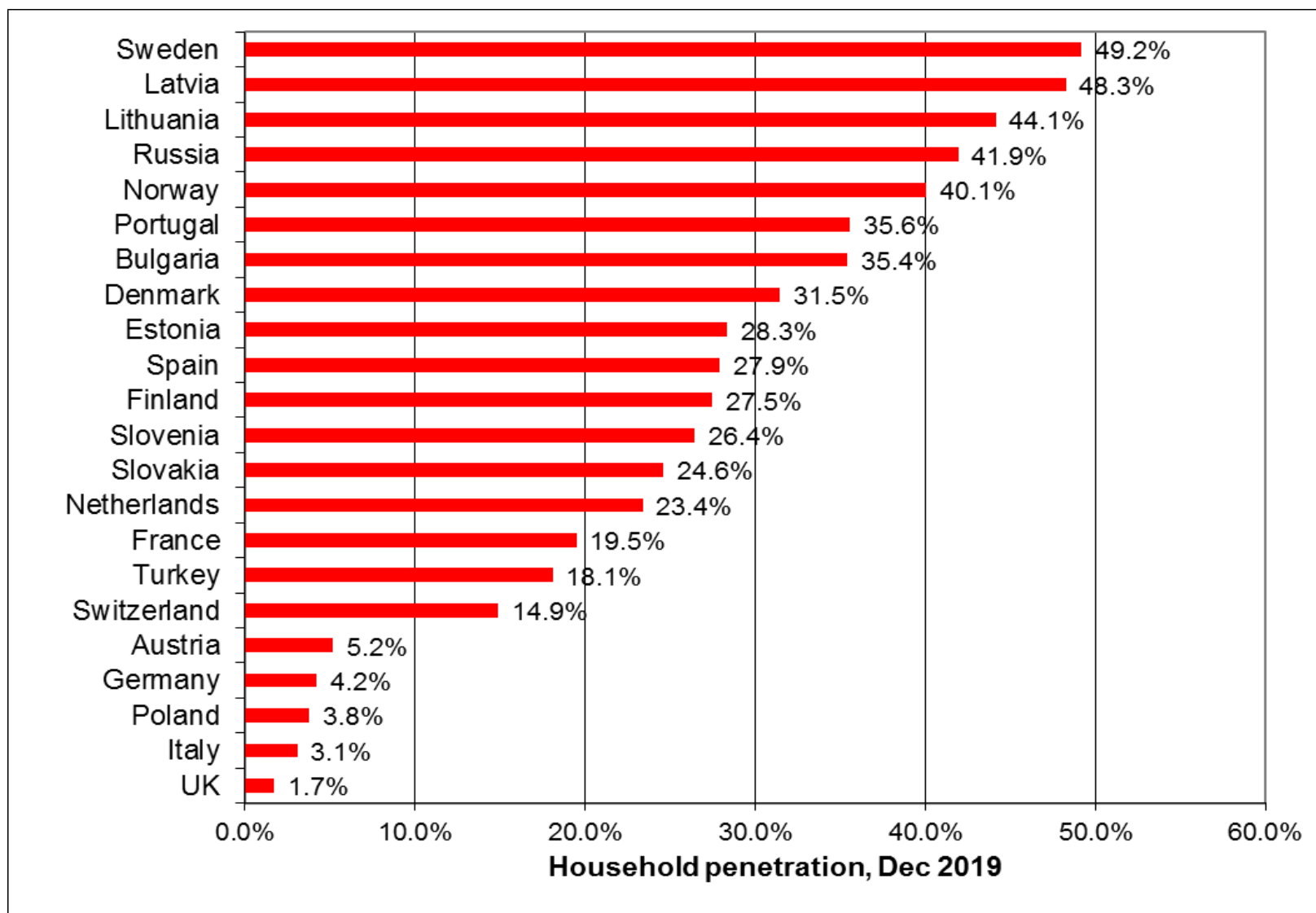


FTTH Countries In 2019*, By Number Of Connected Households



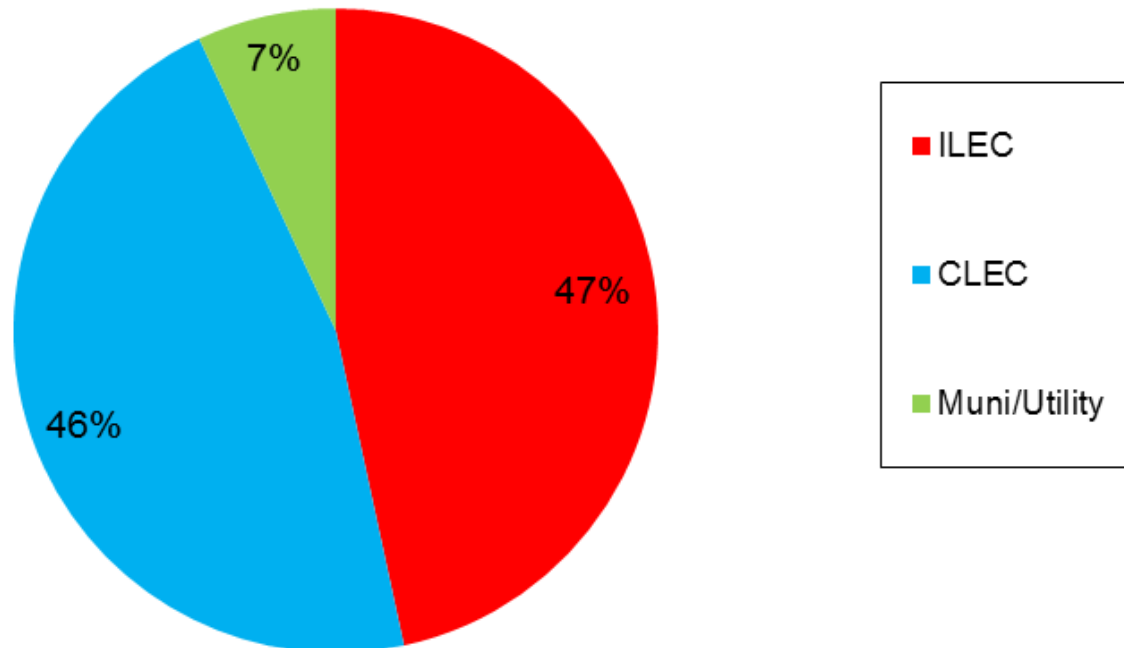
*Among the 22 countries analyzed in detail

FTTH Countries In Europe, 2019*, By Household Penetration



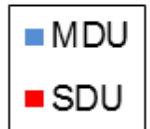
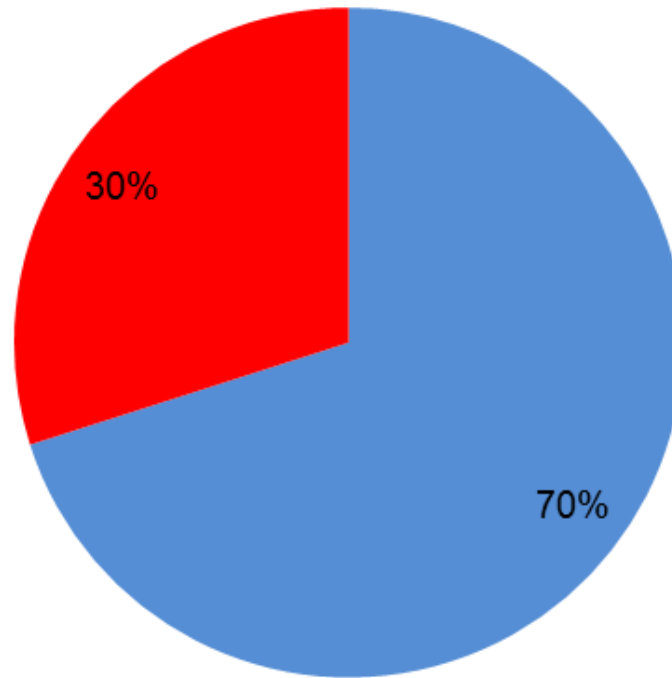
***Among the 22 countries analyzed in detail**

FTTH Connections In Europe, 2019, By Type Of Builder

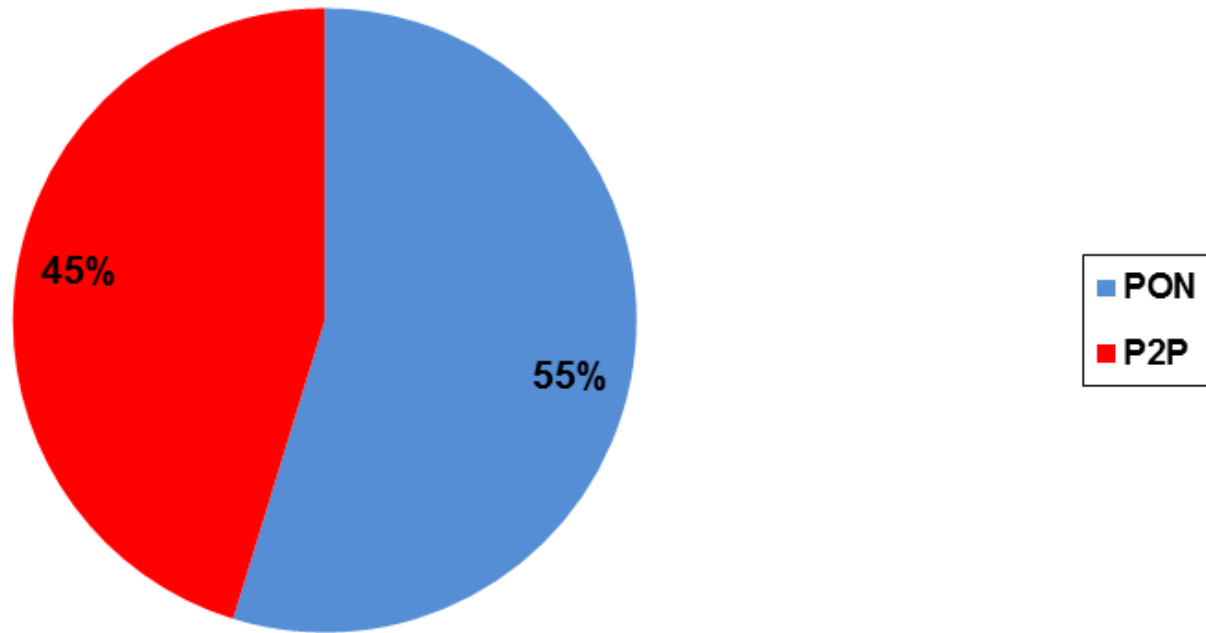


Note: ILEC = former incumbent monopoly telco (PTT). CLEC = competitive or alternative telco or broadband provider. Muni/Utility = network built by municipal local authority or by a power utility

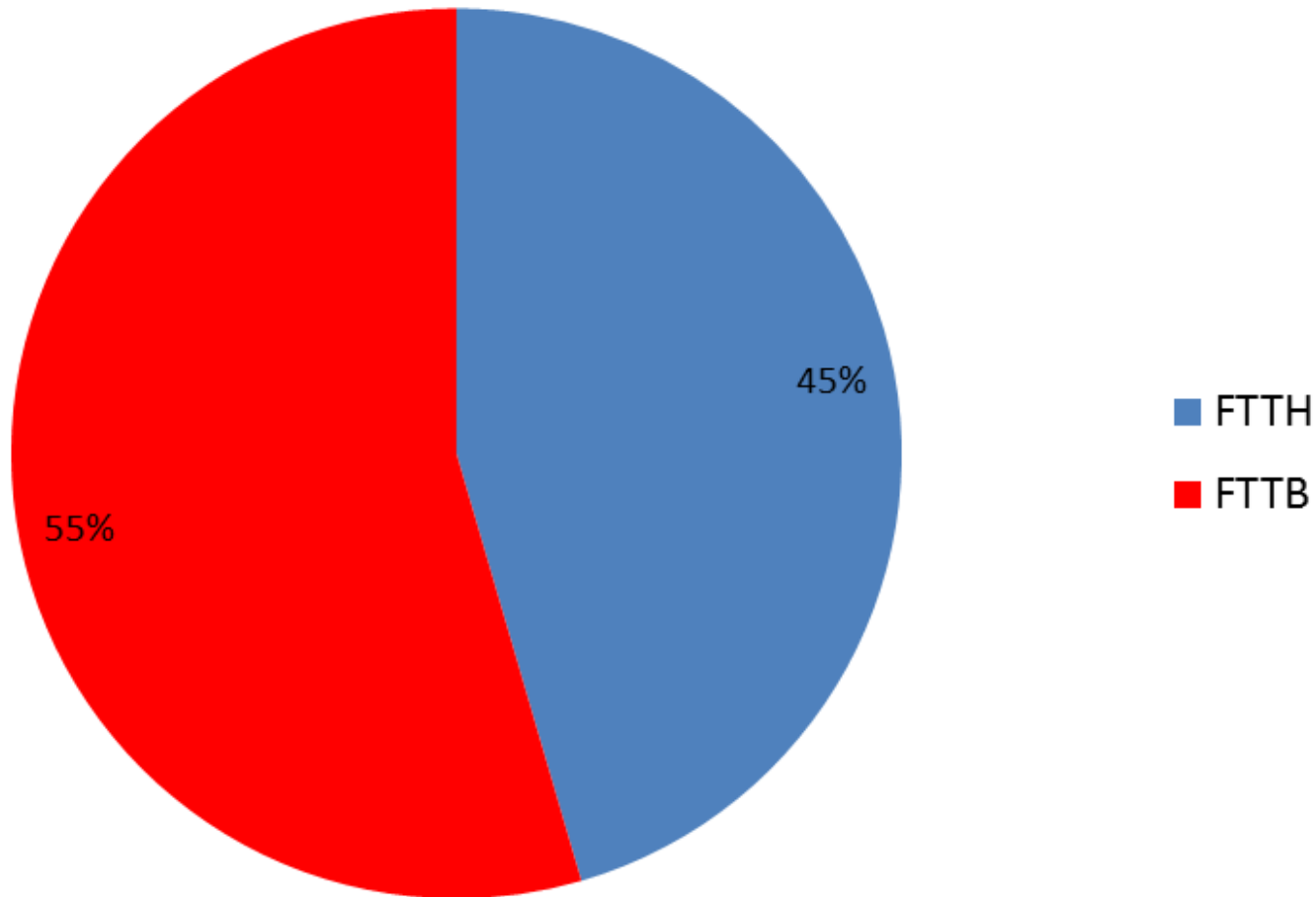
FTTH Connections In Europe, 2019, By Type Of Dwelling



FTTH Connections In Europe, 2019, By Type Of Technology



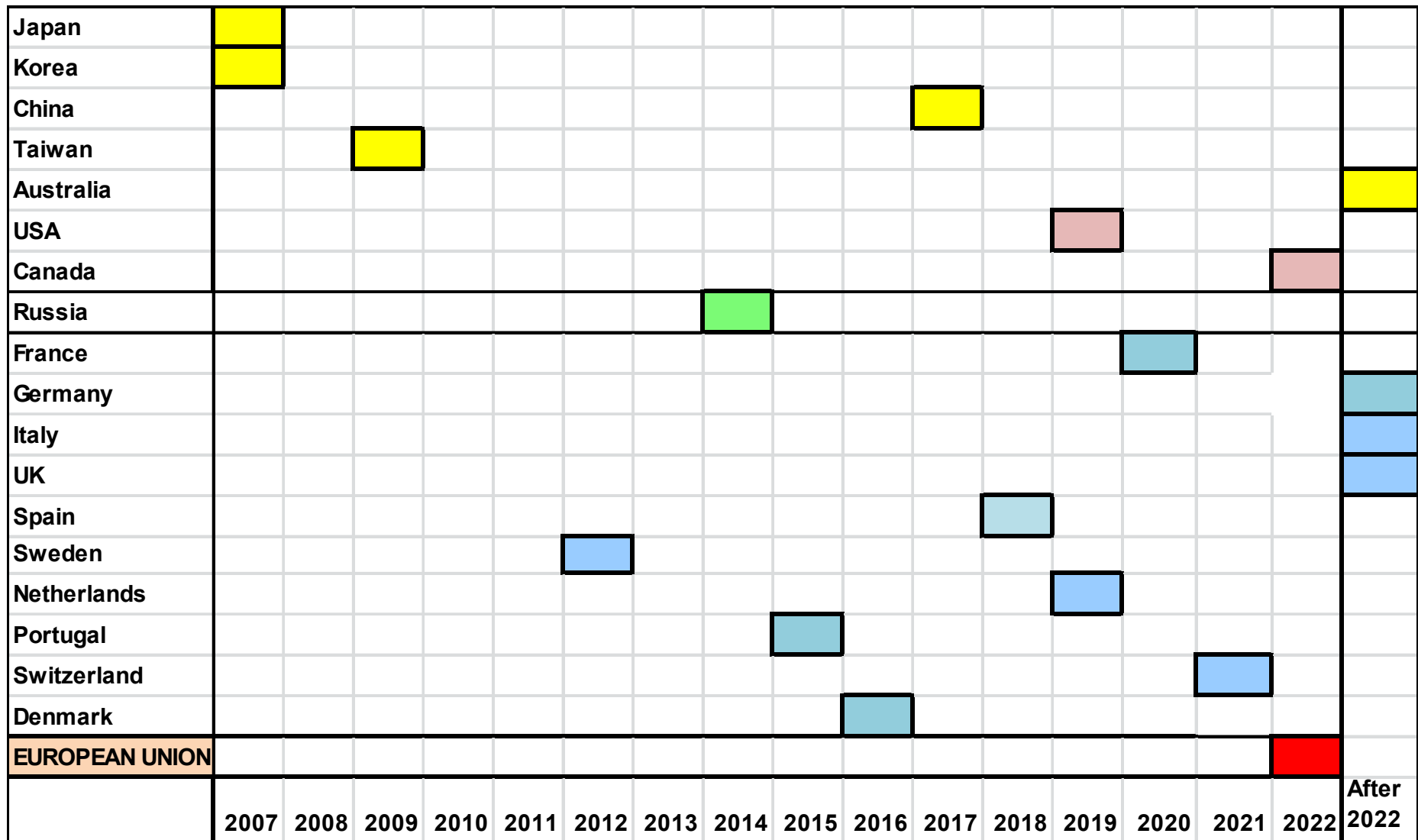
FTTH Connections in Europe, 2019, by Type of Connection



Changes in Forecast This Year

- This year's forecast is substantially up on last year, mainly because of changes to assumptions about the current situation in several countries. This year's IDATE figures included some major changes:
 - A large increase in the Russian FTTH base, mainly because of the inclusion of TTK (2m estimated lines at end 2014)
 - A large increase in the Romanian FTTH base, mainly because of a changed view about major operators' technology in use (2m more lines at end 2014)
 - Significant increase in Netherlands because of the inclusion of CIF (200,000 lines at end 2014)
 - Significant increase in Kazakhstan, because of the inclusion of KaR-Tel (330,000 lines at end of 2014)
- On a like for like basis (ie without including these changes), our forecast this year was also up, though only modestly. The main reason for this was that we underestimated the speed of deployment in Spain, and have up-rated our Spanish forecast to take account of that. We also increased our forecast for Russia to take account of Rostelecom's faster than expected progress.
- Among other countries, we increased our forecast in Denmark (positive signals about future plans); and Portugal (faster than expected progress and positive signals about future plans). We downgraded our forecasts for Austria, Estonia, Italy, Poland and the UK due to slow progress, and Bulgaria due to a changed starting point. Other country forecasts have not changed much, or at all.
- The overall impact of these changes is that we now expect 55.6m lines at the end of 2018, against 46.5m in last year's forecast. Most of this change is accounted for by changes to the forecasts for Romania, Russia, and Spain.

The Race To FTTH Maturity*



*Defined as 20% household penetration

- 61.5m households are expected to be connected to FTTH or FTTB at the end of 2019 in the countries covered by this forecast– this is about 19% of all homes in the region
- In the EU only, the total is forecast to be almost 29m, or 14.2% of all homes in the EU
- 14 of the 22 nations individually analyzed should achieve “fiber maturity” (20% penetration) by 2019– Sweden, Latvia, Lithuania, Russia, Norway, Portugal, Bulgaria, Denmark, Estonia, Spain, Finland, Slovenia, Slovak Republic, and the Netherlands
- A handful of countries will continue to lag far behind
- Incumbents will account for almost half of all connections at 2018
 - 70% of connections will be to MDUs
 - 55% will be based on PON, 45% on P2P Ethernet
- Where is the saturation point?

Appendix: Countries Covered by this Forecast

Individual Forecasts Created	Included in Aggregate Forecast
Austria	Andorra
Bulgaria	Armenia
Denmark	Azerbaijan
Estonia	Belarus
Finland	Belgium
France	Croatia
Germany	Cyprus
Italy	Czech Republic
Latvia	Greece
Lithuania	Hungary
Netherlands	Iceland
Norway	Ireland
Poland	Israel
Portugal	Kazakhstan
Russia	Luxemboug
Slovakia	Macedonia
Slovenia	Malta
Spain	Montenegro
Sweden	Moldova
Switzerland	Romania
Turkey	Serbia
UK	Ukraine



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