



# Broadband markets

**Broadband coverage: Basic broadband** is available to everyone in the EU, while **fixed technologies** cover 97% leaving 6 million homes unconnected. **Next Generation Access (NGA)** covers 62%, up from 54% a year ago. Deployment of **4G** mobile increased sharply. Rural coverage remains significantly lower, especially in NGA.

Basic broadband is available to all in the EU, when considering all major technologies (xDSL, Cable, Fibre to the Premises, WiMax, HSPA, LTE and Satellite). Taking only fixed, fixed wireless (WiMAX) and mobile wireless (HSPA and LTE) into account, the coverage goes down to 99.4%. Fixed and fixed-wireless technologies cover 97.2% of EU homes.

Next Generation Access technologies (VDSL, Cable Docsis 3.0 and FTTP) capable of delivering at least 30Mbps download are available to 62%.

Coverage in rural areas is substantially lower for fixed technologies (89.8%), and especially for NGA (18.1%)

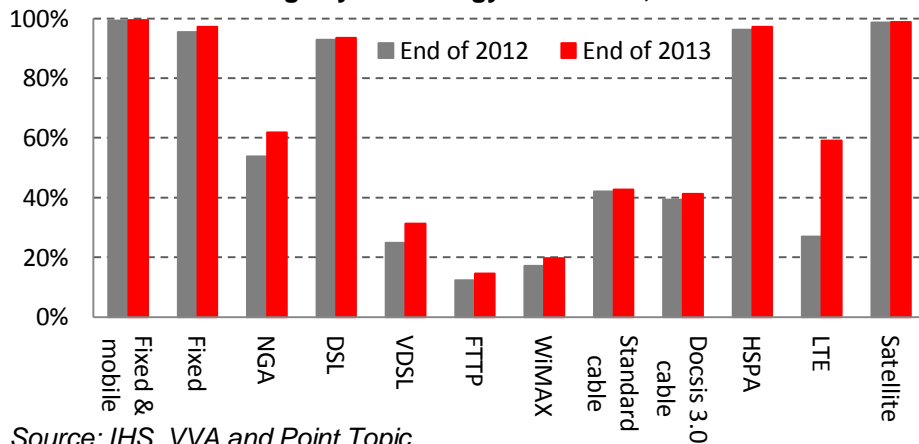
### Our Target

Basic broadband for all by 2013: **100% in 2013**

Fast broadband (>30Mbps) for all by 2020: **62% in 2013**

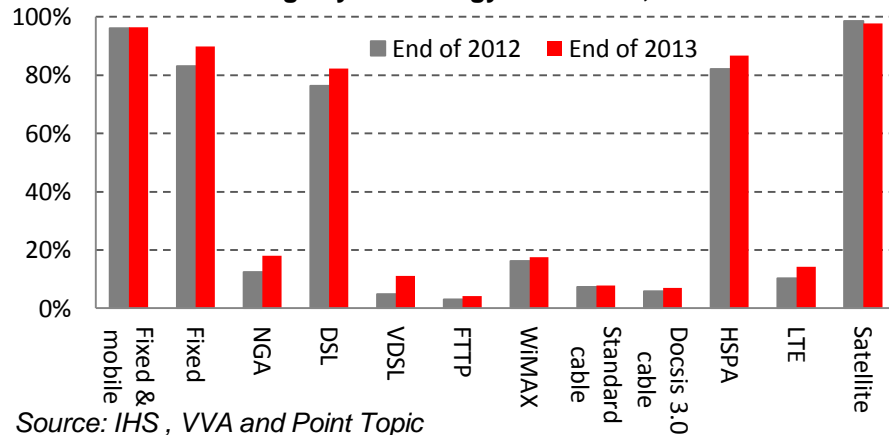


**Total coverage by technology at EU level, 2012 - 2013**



Source: IHS, VVA and Point Topic

**Rural coverage by technology at EU level, 2012 - 2013**



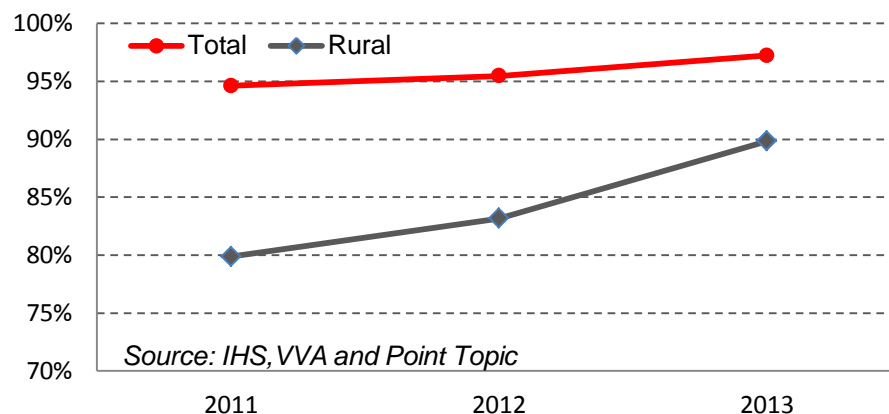
Source: IHS, VVA and Point Topic

## Coverage of fixed broadband technologies continued to increase slightly with a focus on rural areas. In four Member States, all homes are covered by at least one fixed technology.

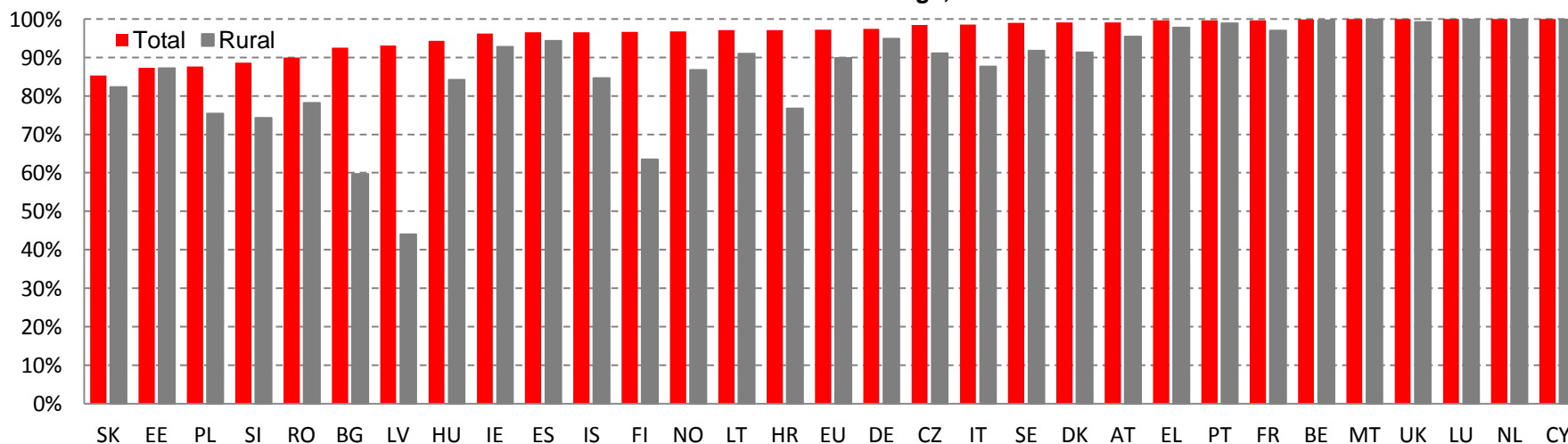
Primary internet access at home is provided mainly by fixed technologies. Among these technologies, xDSL has the largest footprint (93.5%) followed by Cable (42.7%) and WiMAX (19.7%). Fixed coverage is the highest in the Member States with well-developed DSL infrastructures, and is over 90% in all but four Member States.

Overall coverage of fixed broadband increased by 2 percentage points in the last two years, but there was a remarkable progress in rural areas from 79.9% in 2011 to 89.8% in 2013.

Fixed broadband coverage in the EU, 2011-2013



Fixed broadband coverage, 2013

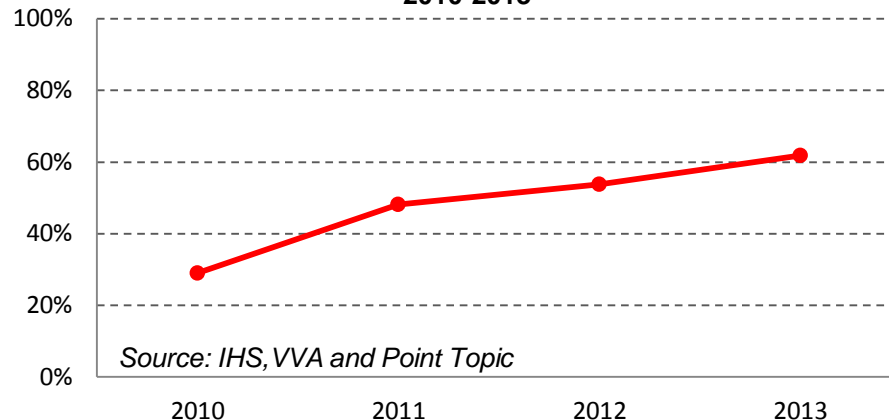


Source: IHS and VVA

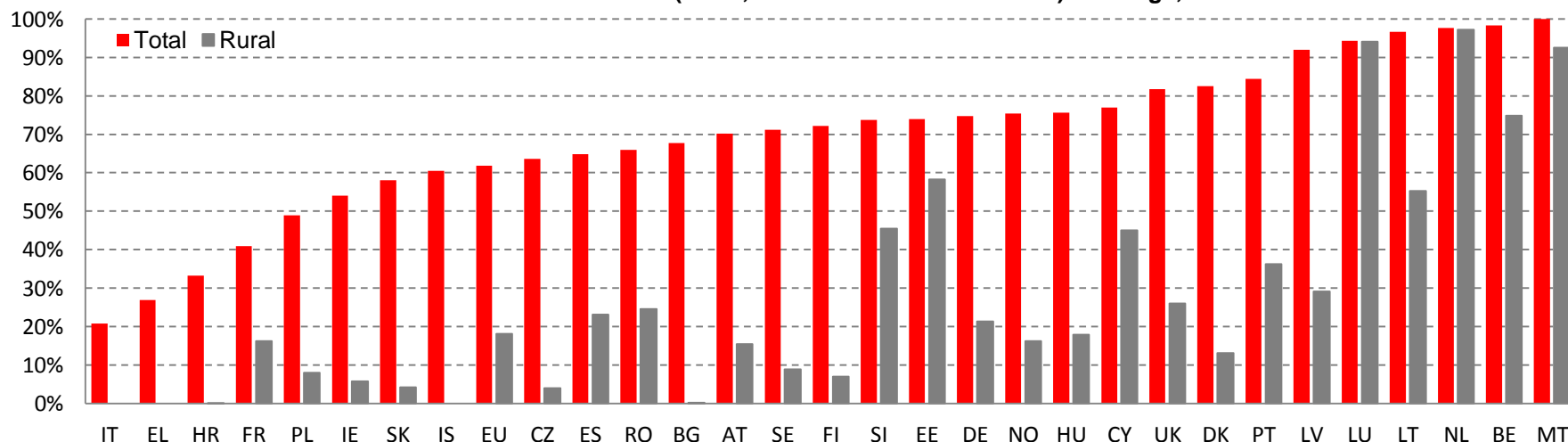
# The coverage of Next Generation Access technologies doubled since 2010. While Malta, Belgium and the Netherlands are close to full coverage, Italy, Greece and Croatia are lagging behind.

For the purpose of this report, Next Generation Access includes VDSL, Cable Docsis 3.0 and FTTP. At the end of 2013, Cable Docsis 3.0 had the largest NGA coverage at 41.2%, followed by VDSL (31.2%) and FTTP (14.5%). Developments until 2012 were dominated by the upgrade of cable networks, while VDSL coverage grew by more than 60% in the last two years. NGA networks are currently very much limited to urban areas: rural coverage is only 18.1%, coming mainly from VDSL.

Next Generation Access (NGA) broadband coverage in the EU, 2010-2013



Next Generation Access (FTTP, VDSL and Docsis 3.0 cable) coverage, 2013

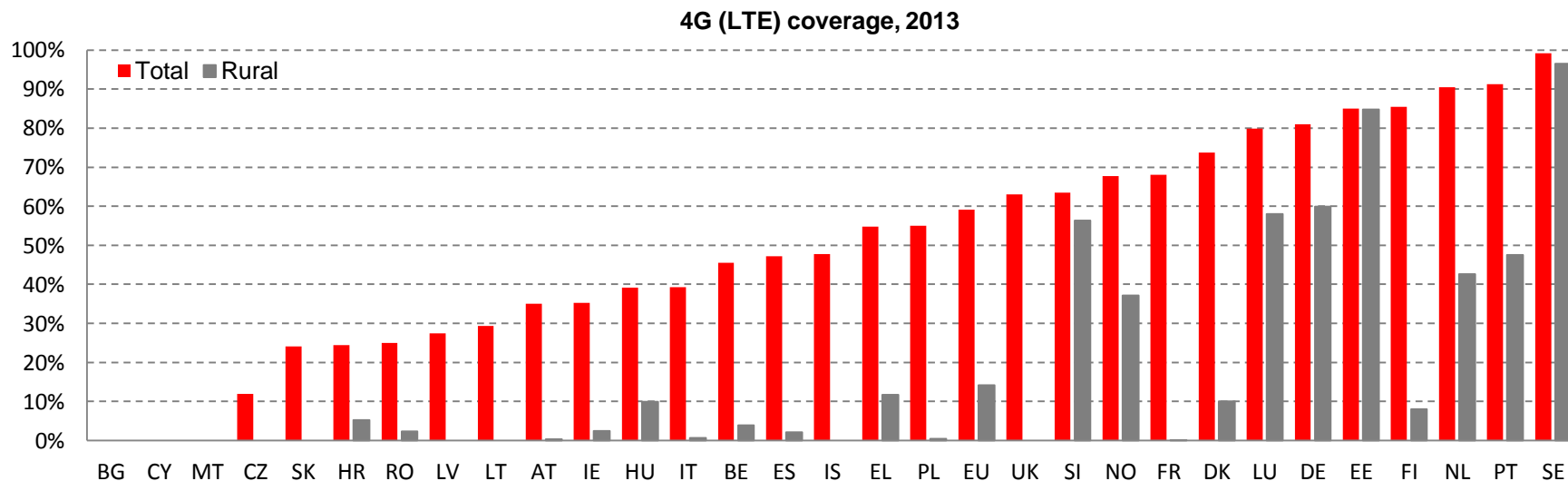
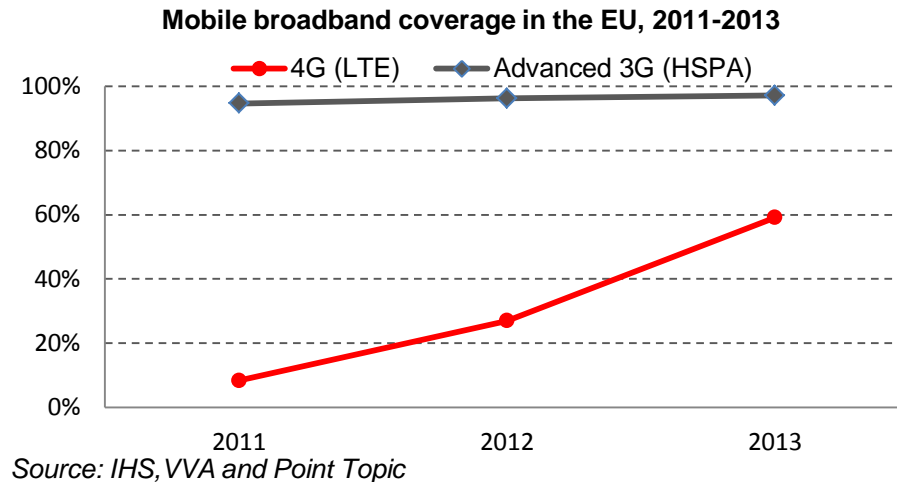


Source: IHS and VVA



## 4G mobile broadband availability reached 59%, up from 27% a year ago. 4G has been commercially launched in all but three Member States.

In 2013, deployments of 4G (LTE) speeded up. Nevertheless, 4G coverage is still substantially below that of 3G (HSPA). As of October 2013, close to 60% of Mobile Network Operators in the EU offered 4G services on LTE networks. LTE deployments have focused so far on urban areas except for Sweden, Estonia, Germany, Luxembourg and Slovenia. LTE is most widely developed in Sweden, Portugal and the Netherlands, and has not yet been launched in Bulgaria, Cyprus and Malta.



Source: IHS and VVA

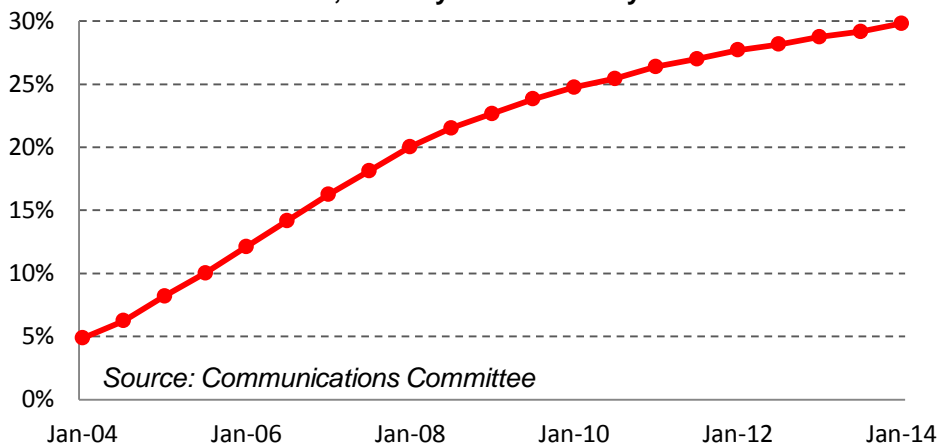
There are **30 fixed broadband subscriptions per 100 people** in the EU, which corresponds to a **take-up of 76%\*** of homes. The number of subscriptions are still increasing, but the growth rate is low.

The fixed broadband subscriptions market is still on the increase. The growth in penetration stabilised between 1 to 1.3 percentage points per year. The market grew by 5.4 million subscriptions in the last twelve months.

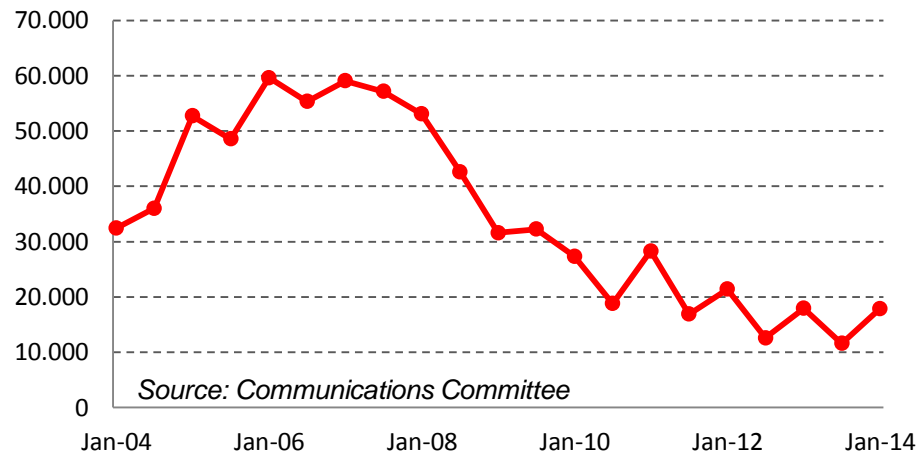
The slowdown is caused by the saturation of the most advanced Member States, as well as a modest migration from fixed to mobile technologies.

Penetration in the EU is higher than in the OECD (27%), and the same as in the US.

**Fixed broadband penetration (subscriptions as a % of population) at EU level, January 2004 - January 2014**



**Fixed broadband subscriptions growth per day at EU level, January 2004 - January 2014**



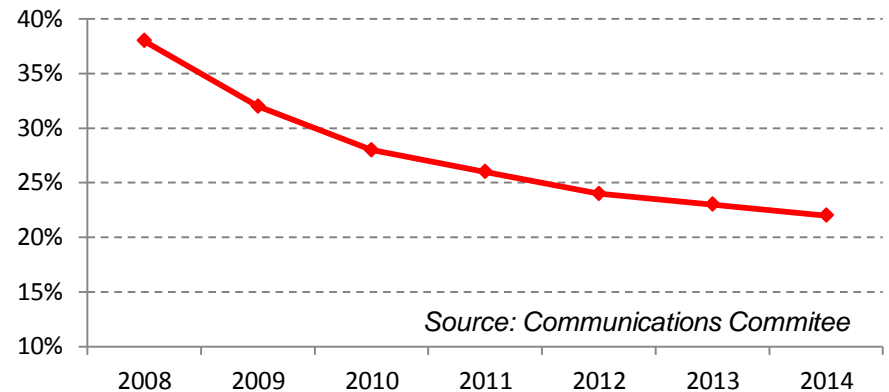
\* Source: Eurostat

**Take-up by Member State varies greatly, from 19 to 41 subscriptions per 100 people. Denmark and the Netherlands are among the leaders worldwide, while Romania, Bulgaria and Poland are lagging behind.**

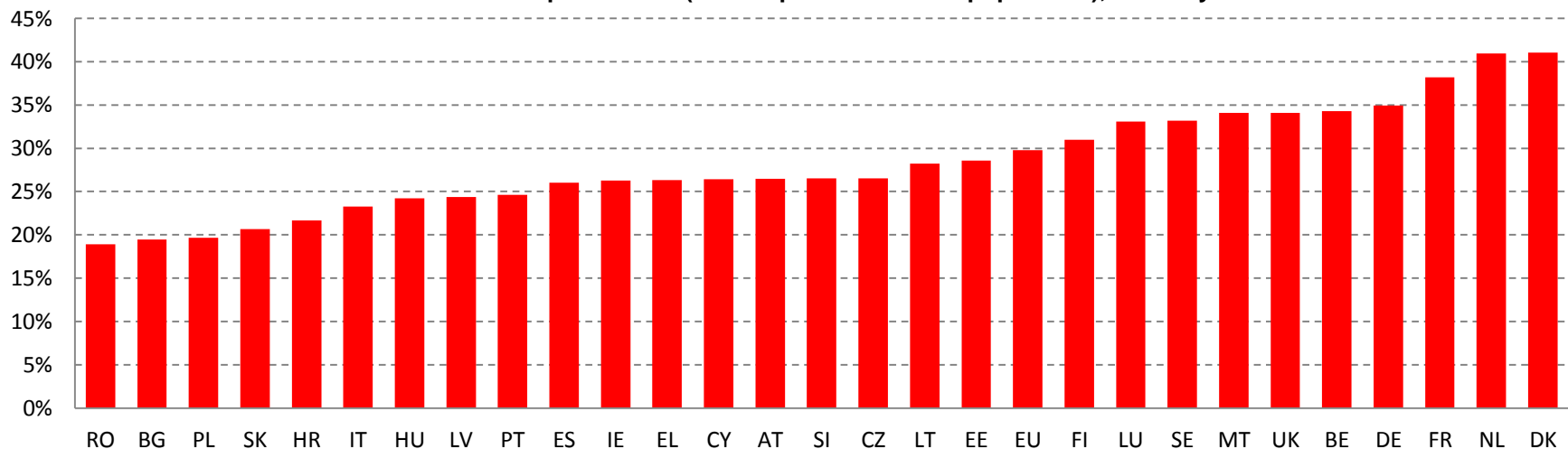
Although still very large differences can be observed in take-up across Europe, the coefficient of variation measuring the dispersion among the Member States decreased from 38% in 2008 to 22% in 2014.

The Netherlands and Denmark are traditionally on the top of the list. They are followed by France, Germany, Belgium, the UK and Malta. At the bottom of the list, we can find five Eastern European Member States (Romania, Bulgaria, Poland, Slovakia, and Croatia).

**Coefficient of variation of fixed Broadband penetration (subscriptions as a % of population) in the EU, 2008-2014**



**Fixed broadband penetration (subscriptions as a % of population), January 2014**



Source: Communications Committee

## Progress by Member State in take-up shows a mixed picture. Lithuania and Greece are catching up, but little growth was recorded in Bulgaria and Poland despite their low penetration levels.

There is very weak correlation between the current fixed broadband penetration and the progress made in the last 12 months. The situation is worrying in those Member States in the lower left hand corner of the chart. Italy made the smallest progress last year, despite the fact that it has a relatively low take-up. The same applies to Bulgaria, Poland and Croatia, who are among the countries with the lowest take-up.

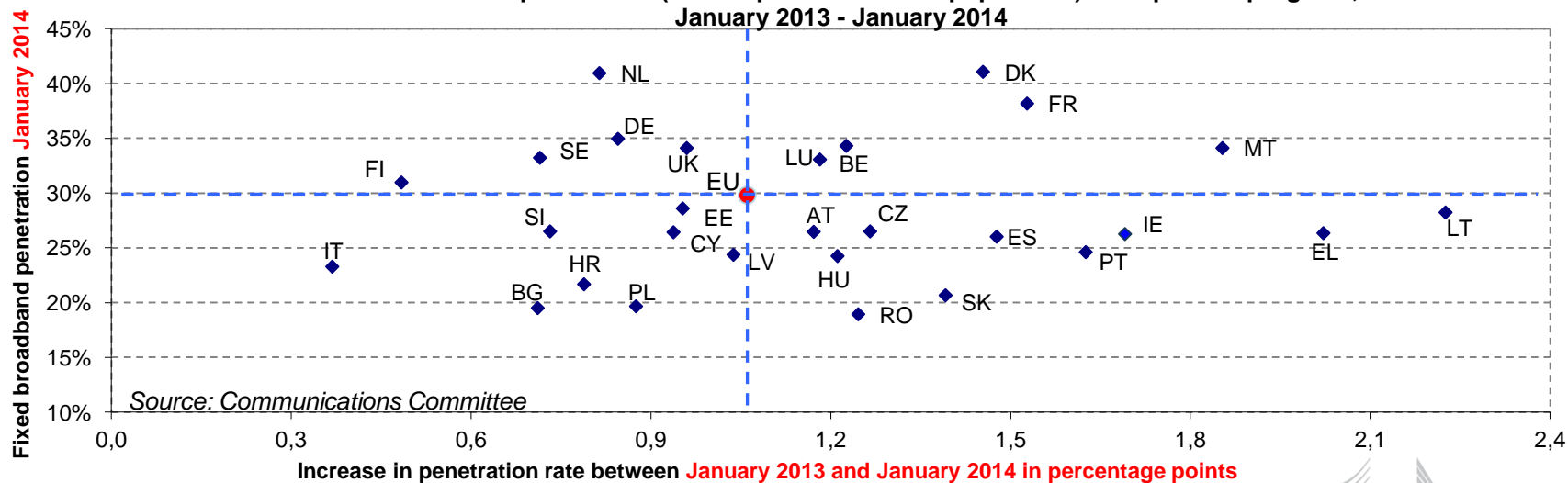
On the other hand, take-up in Lithuania and Greece went up by more than 2 percentage points, and as a result they got

closer to the EU average. Progress was also higher than average in Ireland, Portugal and Spain. Romania and Bulgaria having the lowest penetration levels in the EU progressed only a little bit faster than the average.

Looking at the top right corner, Malta increased the most, followed by France and Denmark.

In the top left corner, Finland and Sweden exhibited fairly low growth rates, as the markets are getting close to saturation.

Fixed broadband penetration (subscriptions as a % of population) and speed of progress, January 2013 - January 2014

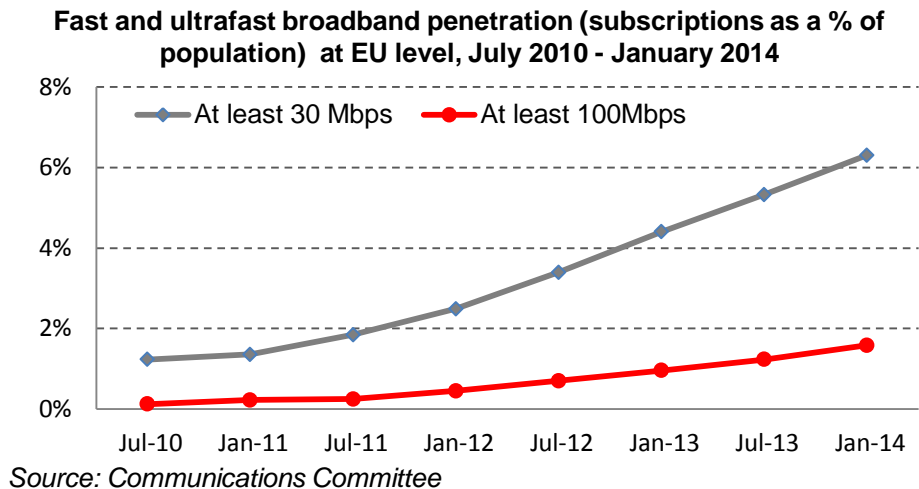




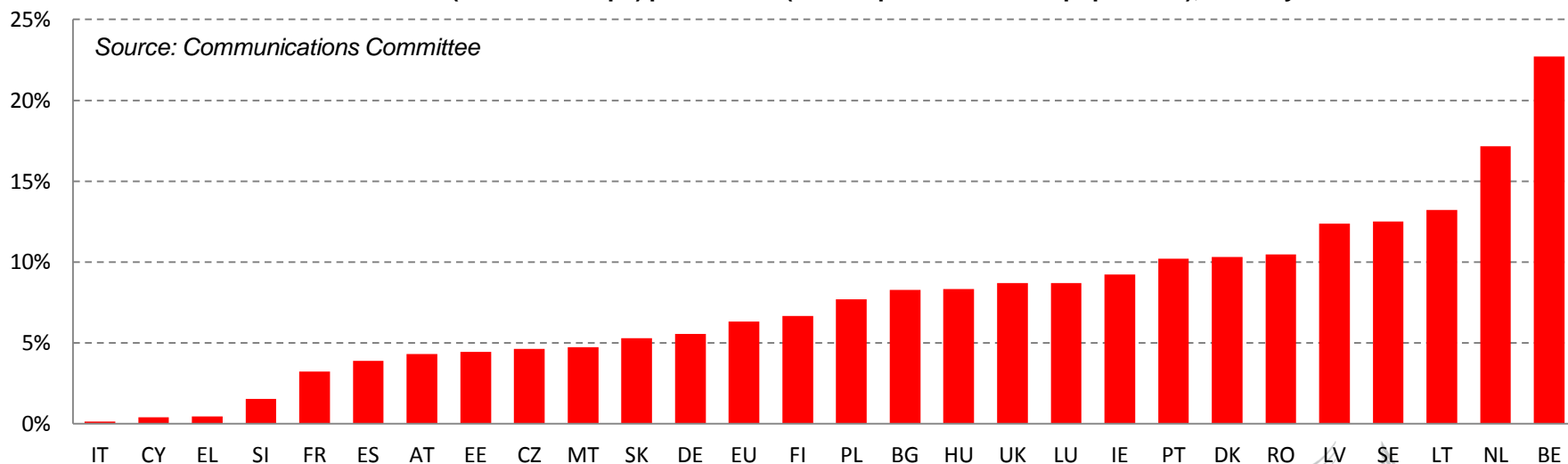
**>30Mbps** subscriptions are getting popular, while **>100Mbps** is still rare in the EU. An estimated **15%** of homes subscribe to **fast** or **ultrafast** broadband.

With the increasing availability of NGA networks, fast broadband subscriptions are getting more and more widespread in Europe. Currently there are 6.3 fast broadband subscriptions (offering a headline download speed of minimum 30 Mbps) per 100 people in the EU, up from 2.5 two years ago.

Fast broadband connections are most widely used in Belgium, the Netherlands, Lithuania, Sweden and Latvia. Cable Docsis 3.0 and VDSL play a major role in Belgium and the Netherlands, while in Lithuania, Sweden and Latvia FTTB and FTTH are the prevailing technologies. On the other hand, Italy, Cyprus and Greece has less than one fast broadband subscription per 100 people.



**Fast broadband (at least 30Mbps) penetration (subscriptions as a % of population), January 2014**



## Take-up of ultrafast (>100Mbps) broadband remains marginal at 1.6 subscriptions per 100 people corresponding to 3% of homes.

Ultrafast connections represent only a fraction of fixed broadband subscriptions despite the fact that FTTH/B and Cable Docsis 3.0 networks are capable of delivering such a speed.

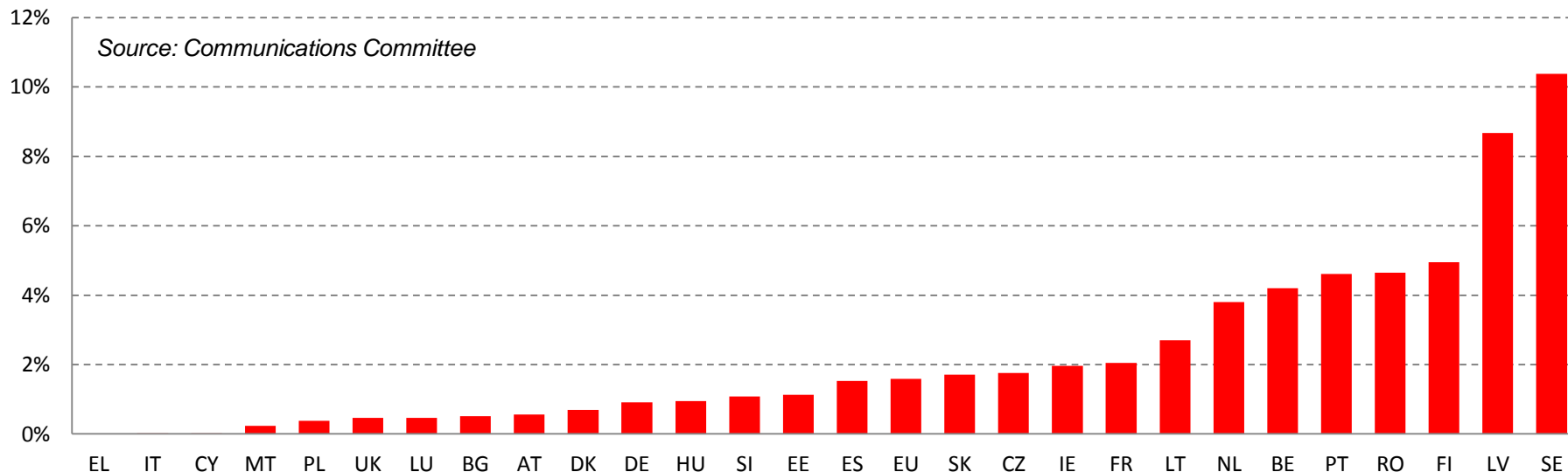
Sweden is by far the leader in this product category, followed by Latvia, Finland, Romania, Portugal, Belgium and the Netherlands.

### Our Target

50% of homes subscribing to at least 100Mbps by 2020 -  
3% in 2013



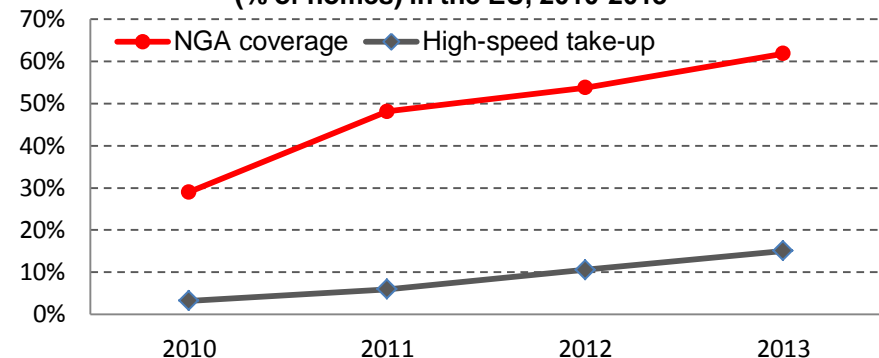
Ultrafast broadband (at least 100Mbps) penetration (subscriptions as a % of population), January 2014



The take up of **fast broadband** (at least 30 Mbps) falls well below the **NGA coverage**: NGA is available to 62% of homes in Europe, but only an estimated 15% subscribe to fast broadband.

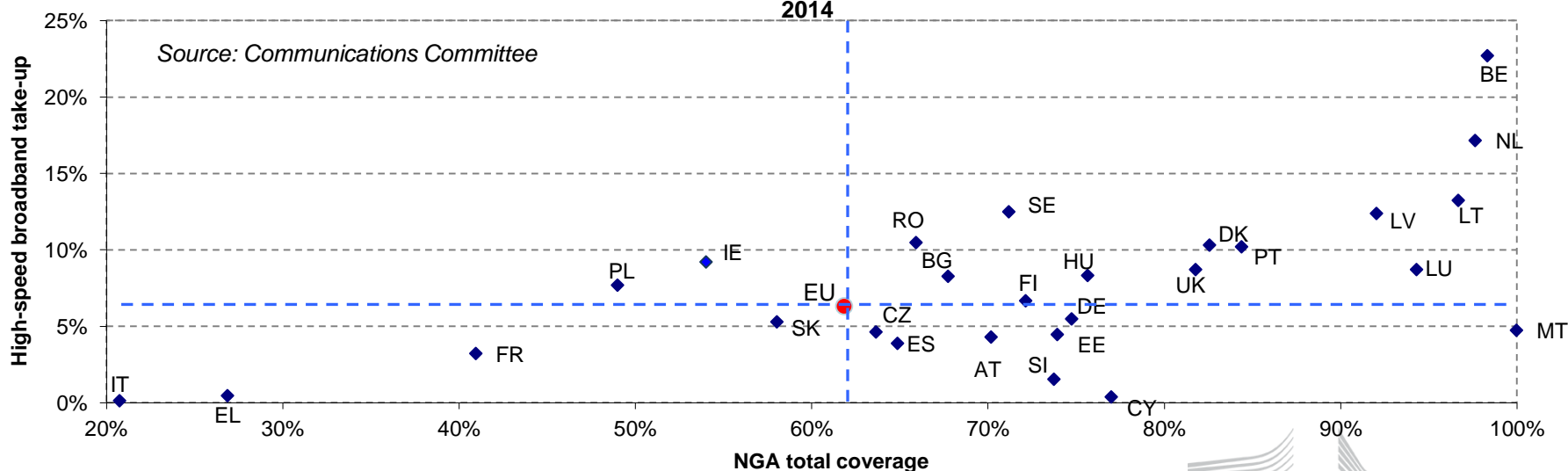
Countries with higher NGA coverage tend to have higher high-speed broadband take-up, but very large differences can be seen across Member States. For instance, looking at the countries with the highest NGA availability, Belgium has 23 fast broadband subscriptions per 100 inhabitants as opposed to only 5 in Malta and 9 Luxembourg.

Evolution of NGA coverage and high-speed (at least 30Mbps) take-up (% of homes) in the EU, 2010-2013



Source: Communications Committee

NGA coverage and high speed (at least 30 Mbps) broadband take-up (subscriptions as a % of population), January 2014

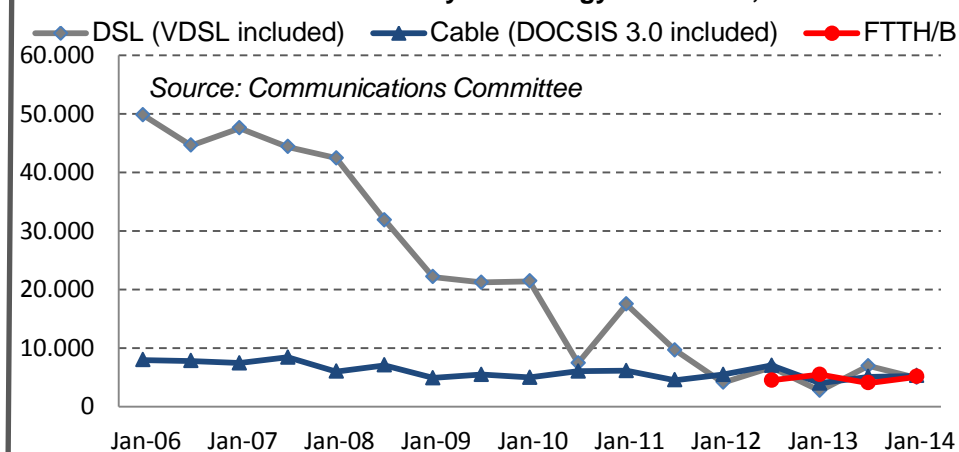


Over 70% of subscriptions are **xDSL**, although xDSL is slightly losing market share. **Cable** is second with 18% of the market. **Fibre to the Home/Building** is emerging.

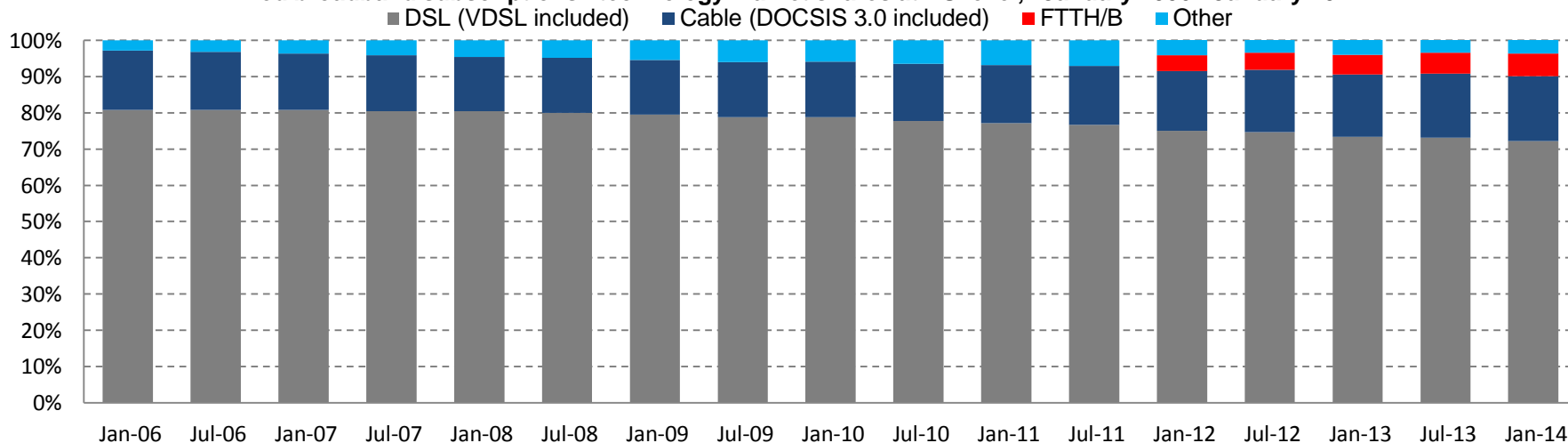
Although DSL is still the most widely used fixed broadband technology, its market share declined from 80% in 2009 to 72% in 2014. The main challenger, cable somewhat increased its share during the same time period, but most of the gains were posted by alternative technologies, especially FTTH/B. Net gains of DSL, cable FTTH/B were in the same magnitude over the last two years.

Nevertheless, DSL continues to be predominant, and its position can be strengthened thanks to the increased VDSL coverage.

Fixed broadband net adds by technology at EU level, 2006-2014



Fixed broadband subscriptions - technology market shares at EU level, January 2006 - January 2014



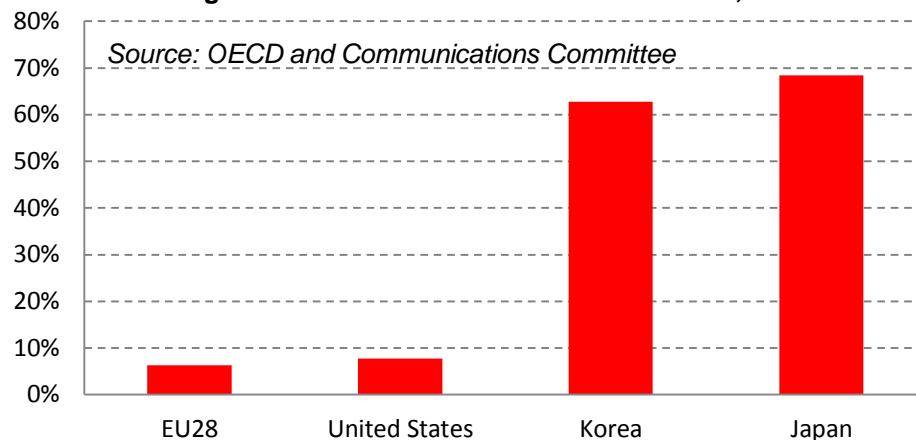
Source: Communications Committee

**xDSL** is particularly predominant in Greece and Italy, and has the lowest share in Bulgaria, Lithuania and Romania. **Cable** has very high market share in Belgium, Hungary, Malta and the Netherlands. **FTTH/B** is the most important technology in Lithuania, Latvia and Romania.

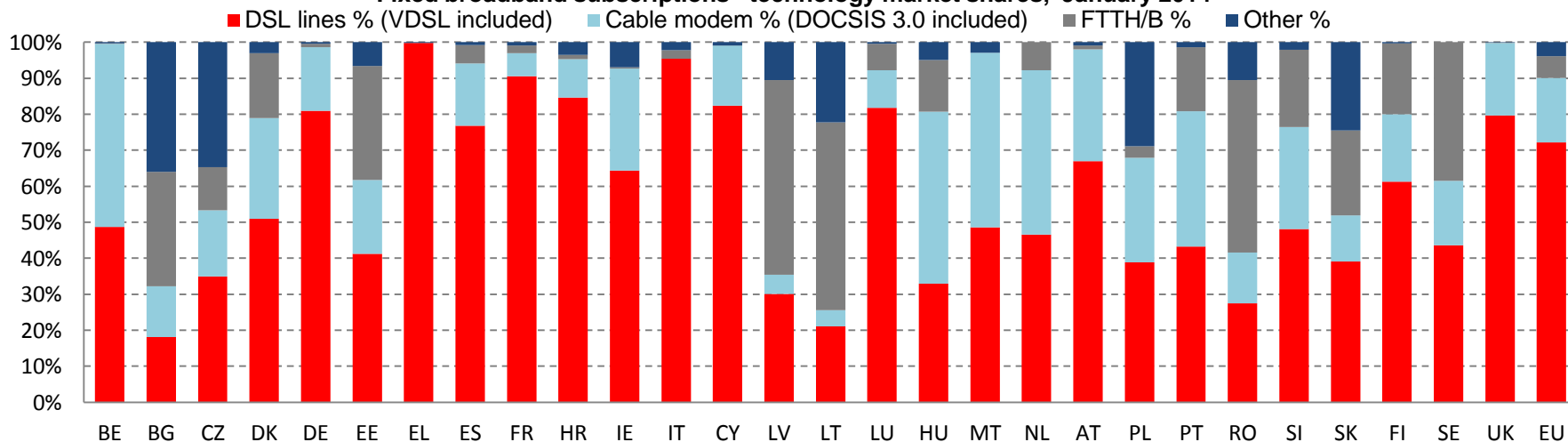
The share of xDSL ranges from 18% in Bulgaria to 100% in Greece. DSL is generally less dominant in Eastern Europe. Looking at alternative technologies, cable is present in all but two Member States and it is the most important competitor of DSL in the majority of the Member States.

FTTH and FTTB together represent only 6% of EU broadband subscriptions. In these technologies, Europe is very much lagging behind South Korea and Japan.

Percentage of fibre connections in total broadband, June 2013



Fixed broadband subscriptions - technology market shares, January 2014



Source: Communications Committee

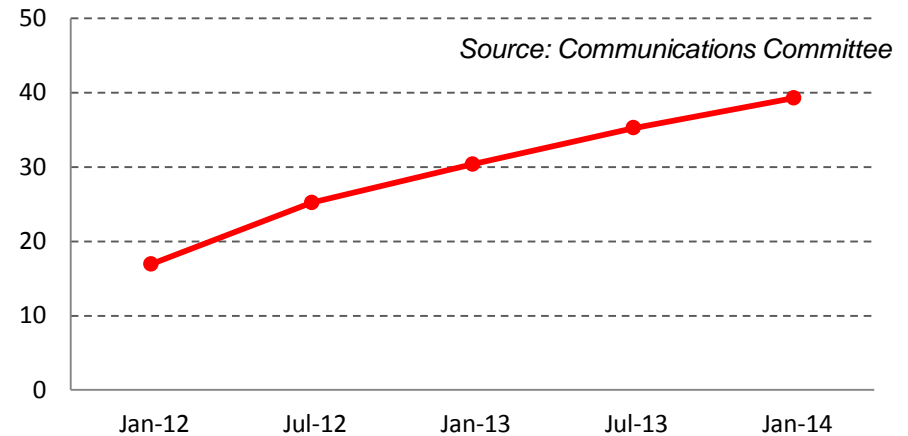


**NGA** subscriptions more than doubled in the last two years, but only one in four subscriptions are NGA. Over two thirds of subscriptions are NGA in Belgium and Romania, while less than 5% in Croatia, Cyprus, Greece and Italy.

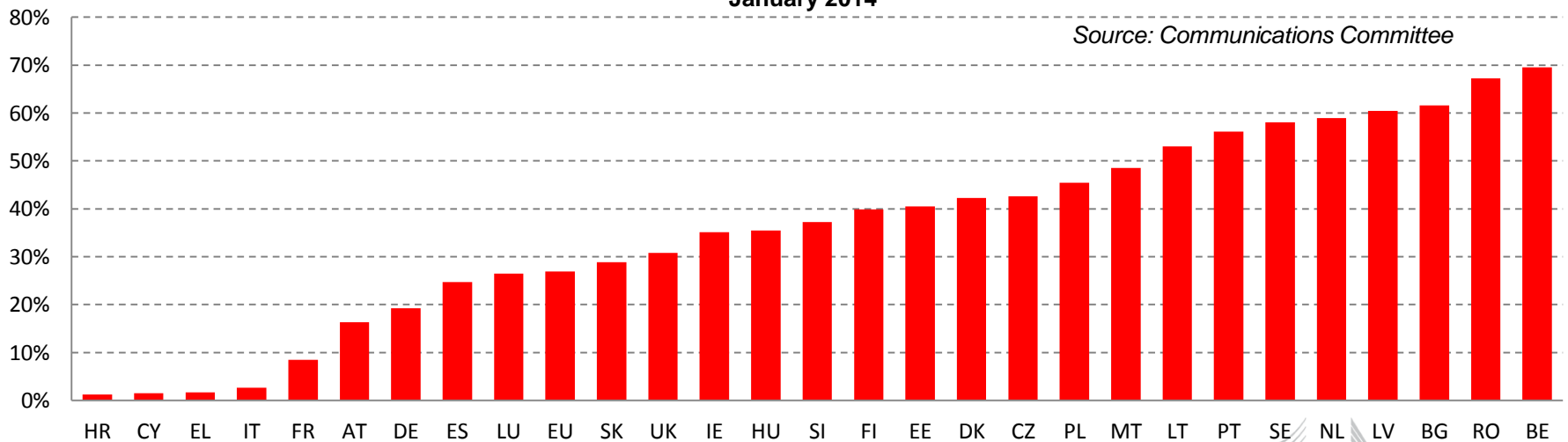
Next Generation Access accounts for 27% of all EU fixed broadband subscriptions. Its sharp increase of the last two years is to a great extent because of the evolution of cable markets. Now, that close to 80% of cable subscriptions have already been upgraded to DOCSIS 3.0, the growth can only continue with higher take-up of VDSL and FTTH/B.

The majority of broadband subscriptions are NGA in Belgium, Romania, Bulgaria, Latvia, the Netherlands, Sweden, Portugal and Lithuania. At the same time, Croatia, Cyprus, Greece and Italy is very much behind all other Member States.

Evolution of NGA subscriptions (in millions) in the EU, 2012-2014



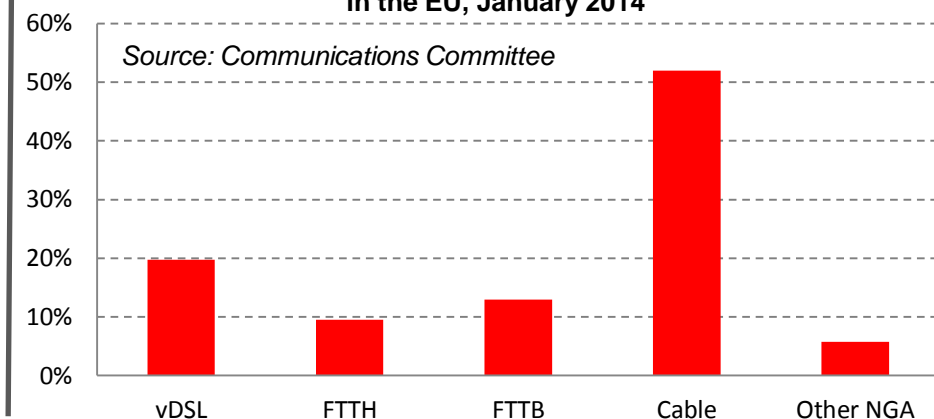
NGA (FTTH, FTTB, VDSL, Cable Docsis 3.0 and other NGA) subscriptions as a % of total fixed broadband subscriptions, January 2014



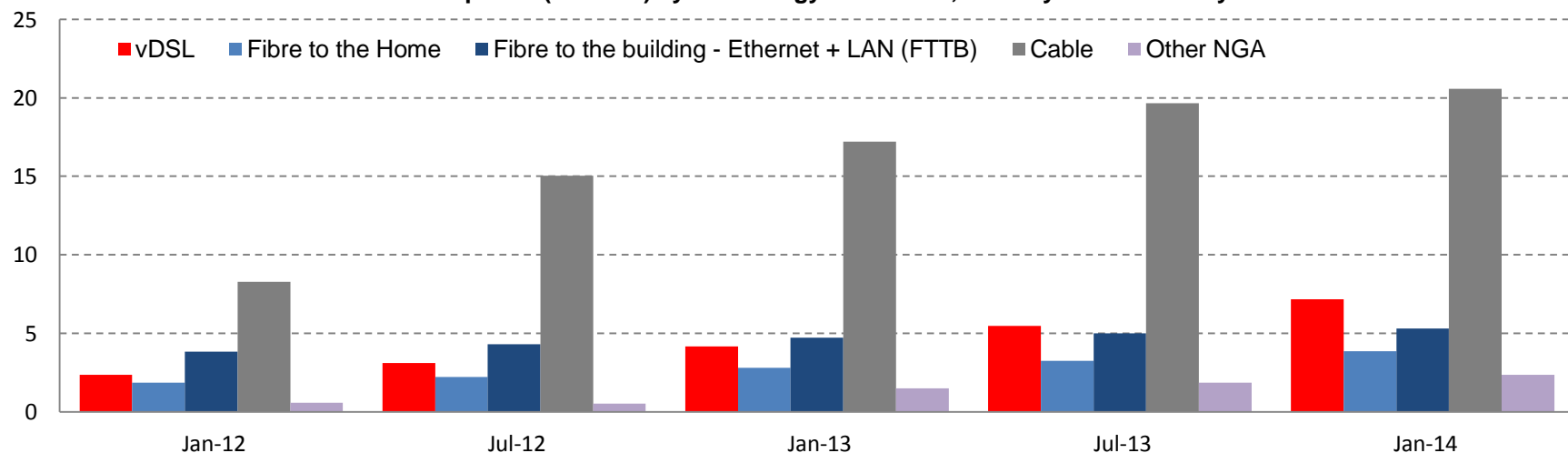
**Cable Docsis 3.0** is currently the largest NGA technology in the EU both in terms of coverage and take-up. **VDSL** subscriptions went up by 39% in the last six months.

Over 50% of NGA subscriptions are Docsis 3.0, which is remarkable given that cable broadband in total represents only 18% of all EU fixed broadband subscriptions. While the vast majority of cable networks have been upgraded to NGA, in xDSL, only 1/3 of the network is VDSL. Nevertheless, VDSL coverage went up by 25% and the number of subscriptions by 72% in the last twelve months. FTTH and FTTB have 10% and 13% share in total NGA, respectively.

Share of different NGA technologies in total NGA subscriptions in the EU, January 2014



NGA subscriptions (millions) by technology at EU level, January 2012 - January 2014

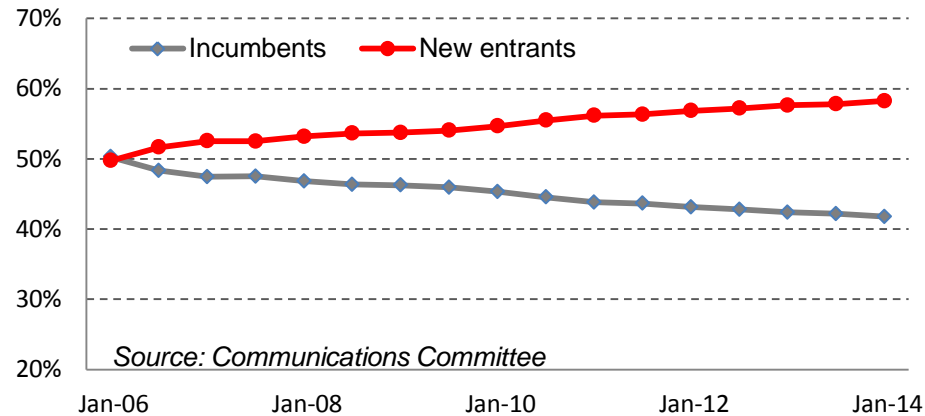


Source: Communications Committee

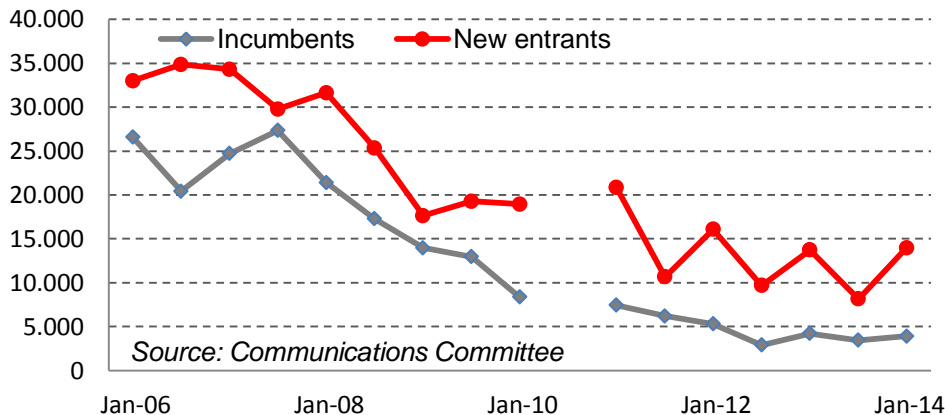
# Competition in the fixed broadband market: new entrant operators are continuously gaining market share, but incumbents still control 42% of the subscriptions.

Incumbent operators are market leaders in almost all Member States, although their market share is decreasing. During the last eight years, new entrant operators always posted higher net gains than the incumbents. In the last six months, new entrants yielded 80% of the total net gain in the market. This, however, could not result in a large change in the overall market share of new entrants because of the low growth rate of the total market.

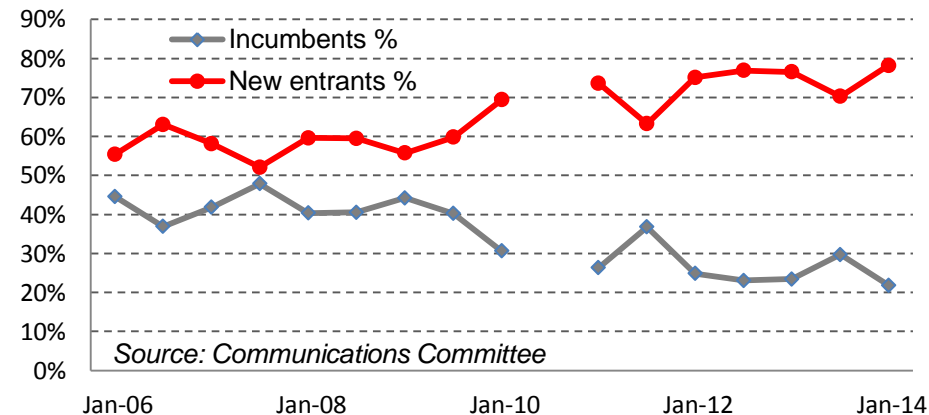
Fixed broadband subscriptions - operator market shares at EU level, January 2006 - January 2014



Fixed broadband subscriptions growth per day by operator at EU level, January 2006 - January 2014



Fixed broadband subscriptions growth per day by operator at EU level, January 2006 - January 2014



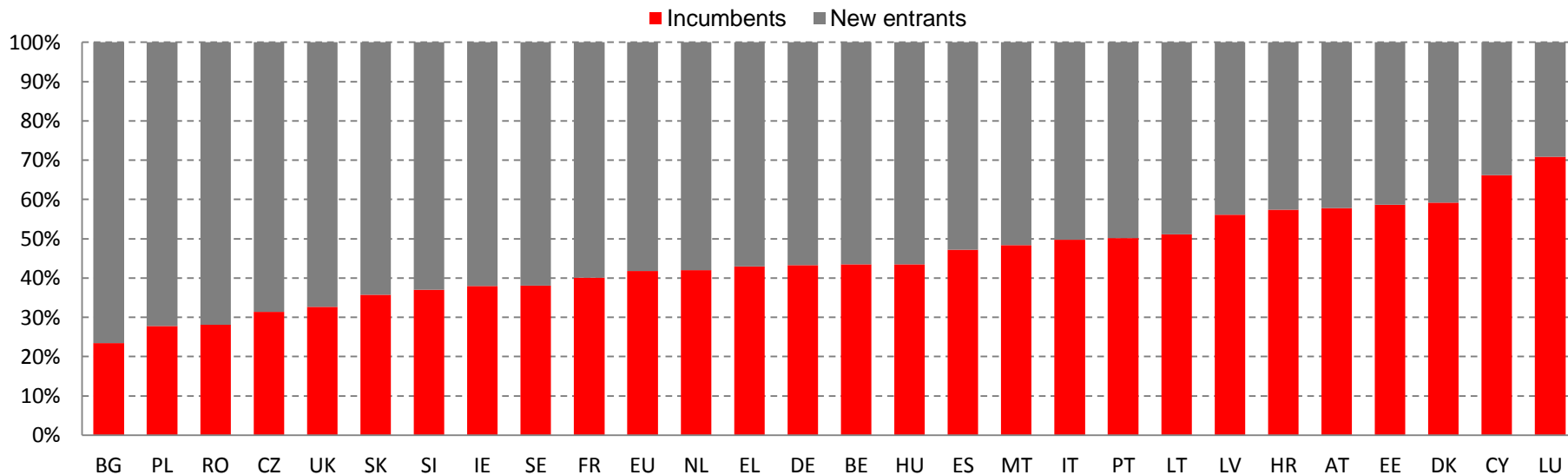


The **market share of incumbents** show very large differences across Europe. In 9 out of the 28 Member States, more than half of the subscriptions are provided by the incumbent operator.

Market shares are calculated at the national level for the incumbents and new entrants. However, broadband markets are geographically fragmented suggesting that a large number of homes are served by only one provider (most likely by the incumbent operator in this case).

Incumbents have the highest subscription market share in Luxembourg and Cyprus, where the small market size may favour concentration. Incumbents are the weakest in Europe in four Eastern European Member States: in Bulgaria, Poland, Romania and the Czech Republic. In all these four Member States, most of the subscribers use technologies other than xDSL.

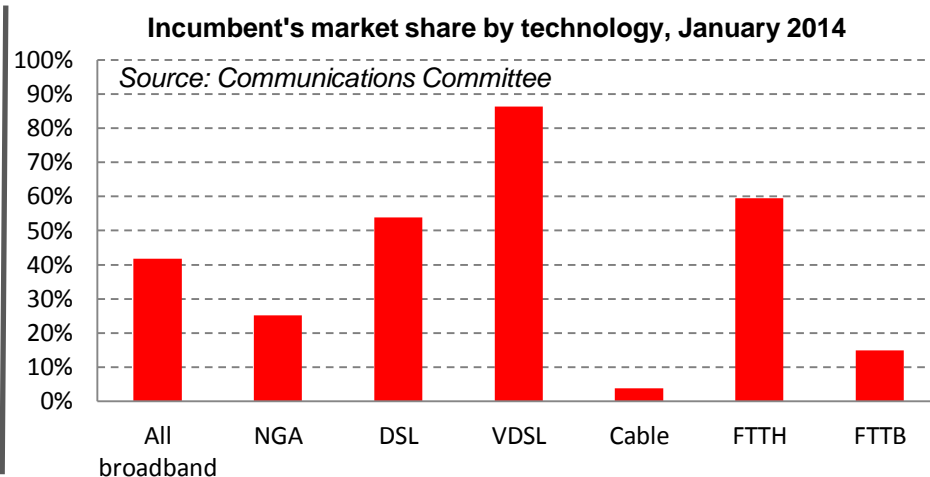
Fixed broadband subscriptions - operator market shares, January 2014



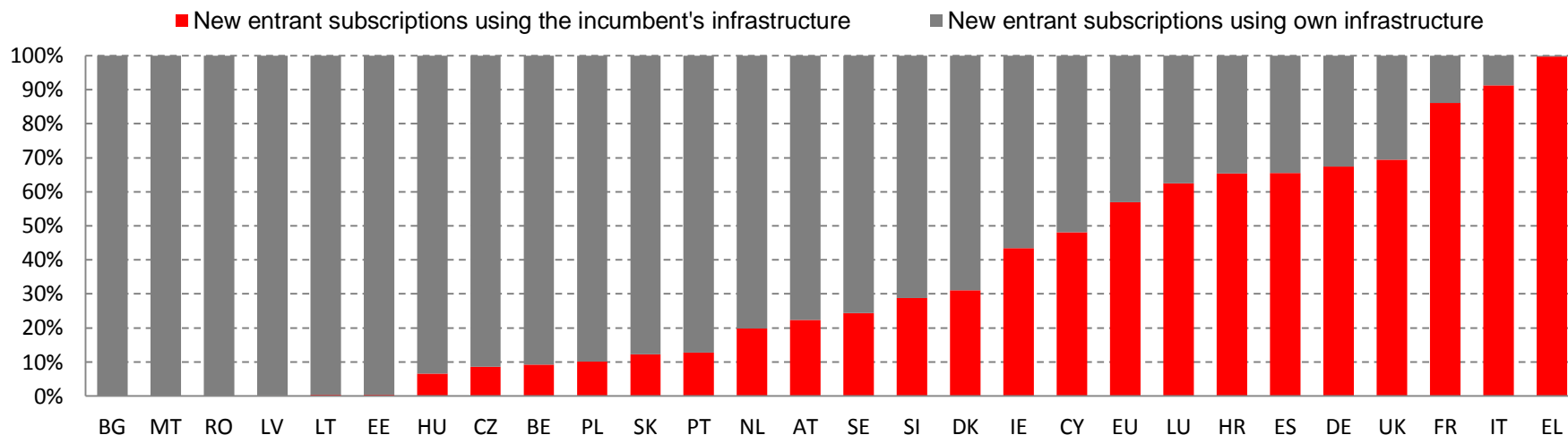
Source: Communications Committee

In the **DSL** market, unbundling reduced the dominance of incumbents, but in **VDSL** incumbents have over 80% of subscriptions. Nevertheless, **NGA** is provided mainly by new entrants because of the high share of **cable**. More than 50% of new entrant subscriptions use the incumbents' network infrastructure.

New entrant operators can compete with the incumbents by using either the incumbent's network or their own network to offer internet access. In Greece, competition is purely service based, in Italy and France over 80% of new entrant subscriptions use the incumbent's network. In the Eastern European Member States, competition is rather based on competing infrastructures. This applies also to Belgium, Malta, Portugal and the Netherlands.



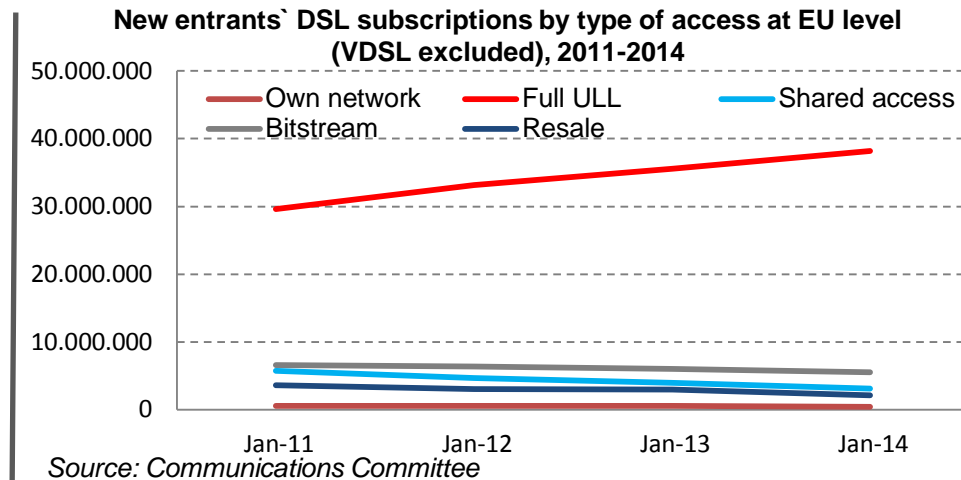
**New entrants' subscriptions - using own infrastructure or the incumbent's network, January 2014**



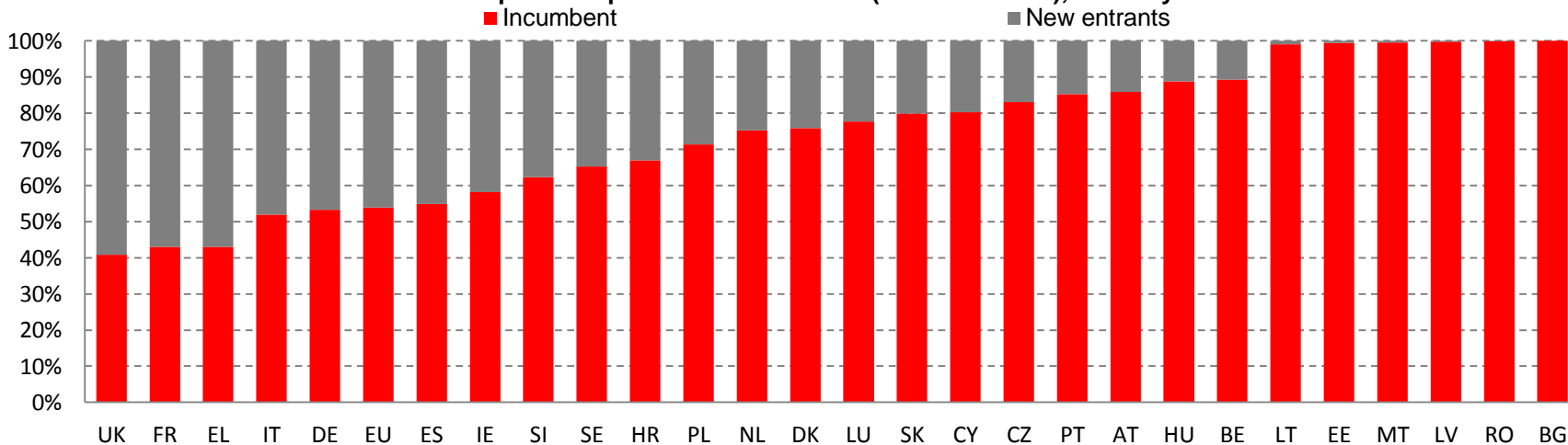
Source: Communications Committee

54% of DSL subscriptions belong to the incumbents. New entrants mainly use **Local Loop Unbundling** to sell DSL. In six Member States, the new entrants' presence in the DSL market is marginal. In all these Member States, alternative technologies are significant.

In Bulgaria, Romania, Latvia, Malta, Estonia and Lithuania, there is virtually no competition in the DSL market. These Member States, however, have strong platform competition. At the same time, in the UK, Greece and France, new entrants have the majority of xDSL subscriptions, followed by Italy and Germany. In all these Member States, the vast majority of new entrants' DSL subscriptions are provided through Local Loop Unbundling, but in Italy bitstream is also important.



**DSL subscriptions - operator market shares (VDSL included), January 2014**

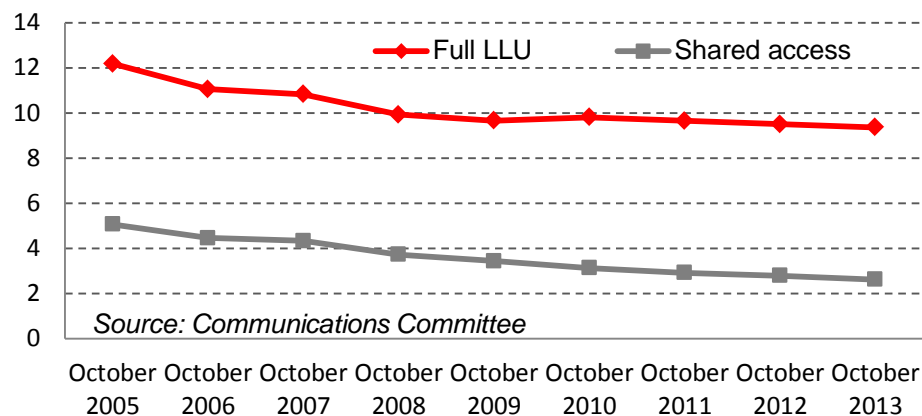


Source: Communications Committee

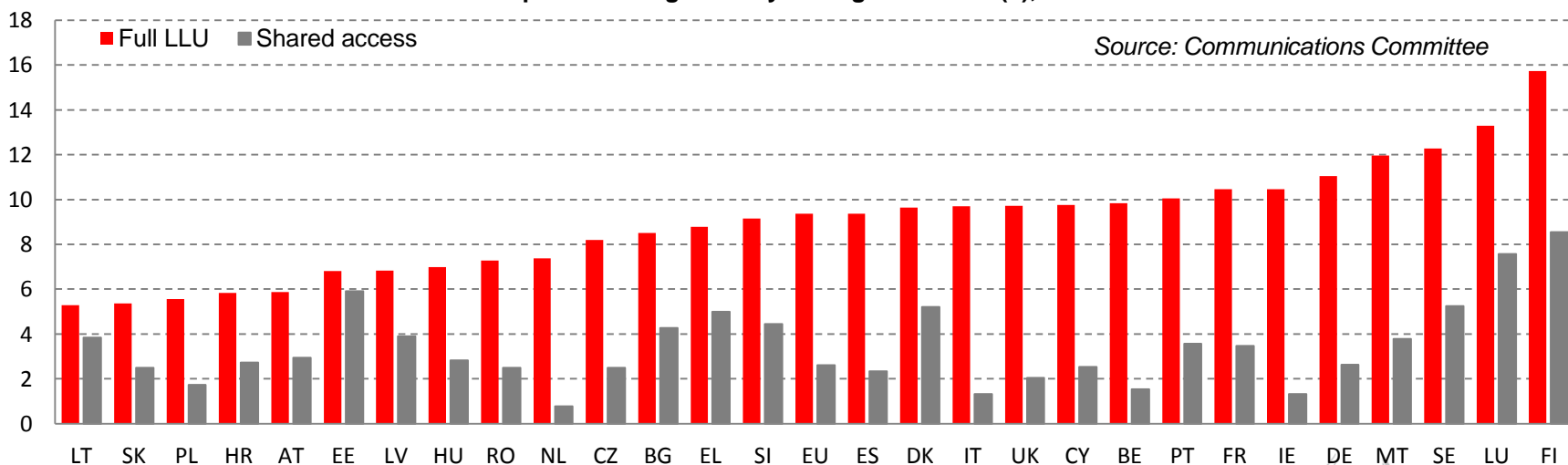
# The wholesale charges of **Local Loop Unbundling** went down by 25% for **full access**, and by 50% for **shared access** since 2005.

The regulated wholesale charges giving access for new entrants to the local loop are important to effective service based competition in the xDSL market. The monthly average total cost (calculated as the monthly rental + the one time connection charge distributed over a three years period) stood at €9.35 for full access (provision of both voice and broadband) and at €2.61 for shared access (provision of broadband only) in October 2013. LLU charges decreased substantially in Ireland and Sweden last year.

Local Loop Unbundling monthly average total cost (€) at EU level, 2005-2013



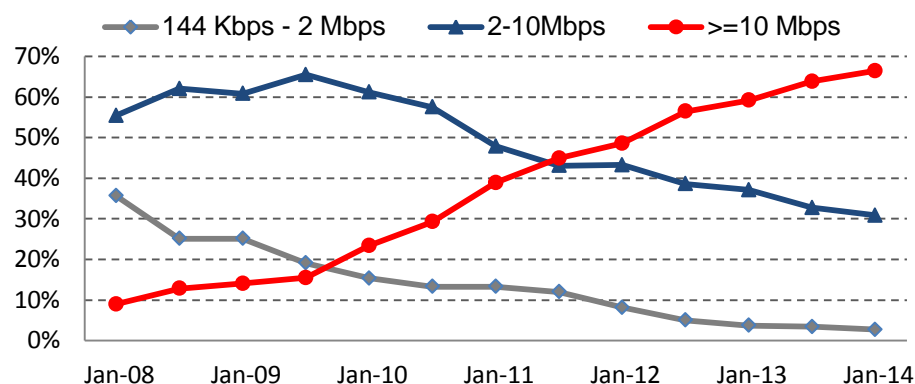
Local Loop Unbundling monthly average total cost (€), October 2013



## Fixed broadband speeds: 2/3 of subscriptions are at least 10Mbps. <2Mbps is marginal (3% of all subscriptions) except for Estonia and Slovenia.

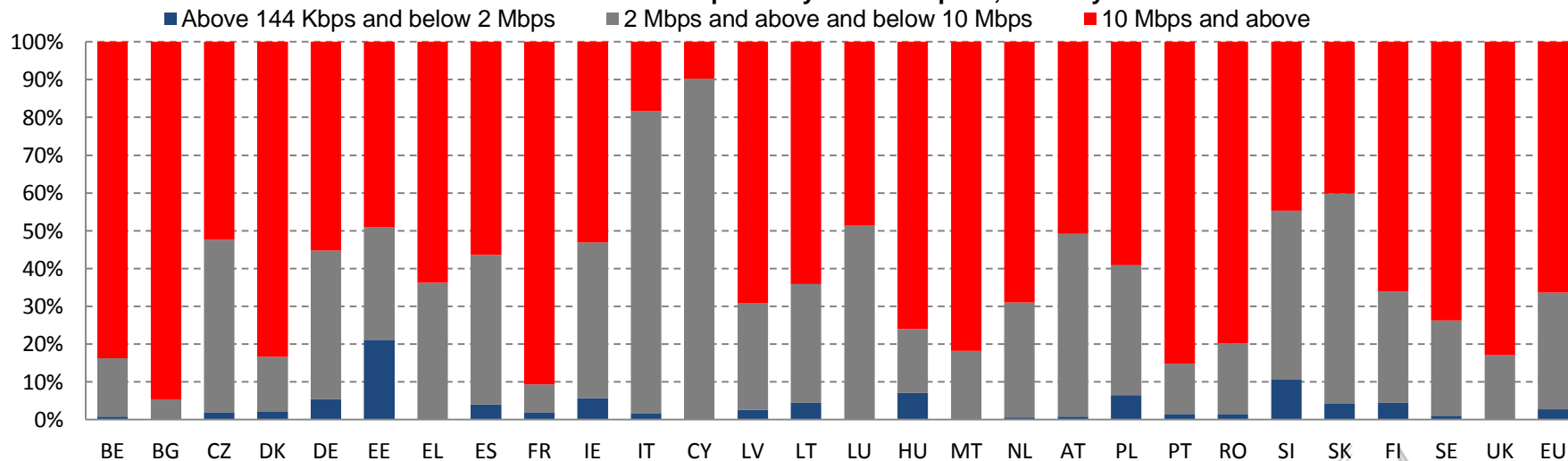
Low speed fixed broadband subscriptions are getting marginal: only 3% of all subscriptions have lower than 2 Mbps advertised download speed as opposed to 36% six years ago. At least 10Mbps applies to two thirds of subscriptions, up from 9% in 2008. However, broadband connections are still slow in Italy and Cyprus, where less than 20% of subscriptions are at least 10Mbps. In Estonia and Slovenia, still a relatively large proportion of subscriptions are below 2Mbps.

Fixed broadband subscriptions by headline speed at EU level, 2008-2014



Source: Communications Committee

Fixed broadband subscriptions by headline speed, January 2014



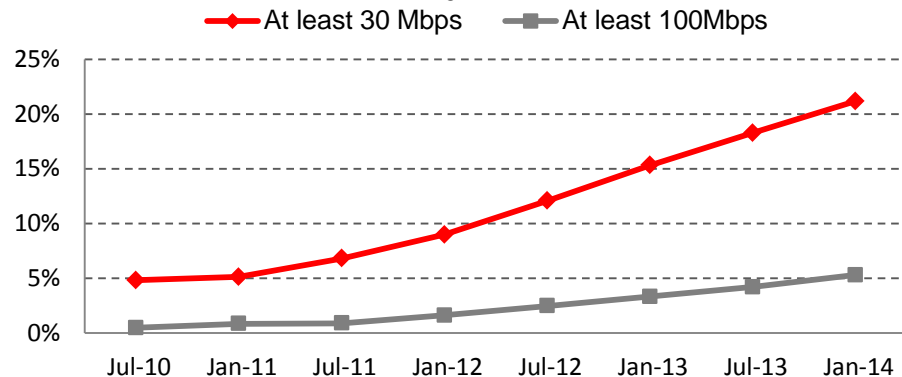
Source: Communications Committee

**Fast and ultrafast** broadband subscriptions grew by 44% in twelve months. In Belgium, Latvia and Romania, the majority of subscriptions are at least 30Mbps. Ultrafast (at least 100Mbps) is most widespread in Latvia, Sweden and Romania.

Despite the growth of fast and ultrafast subscriptions, they are still rare in the EU. In January 2014, only slightly more than one in five subscriptions were at least 30 Mbps and only 5.3% at least 100Mbps.

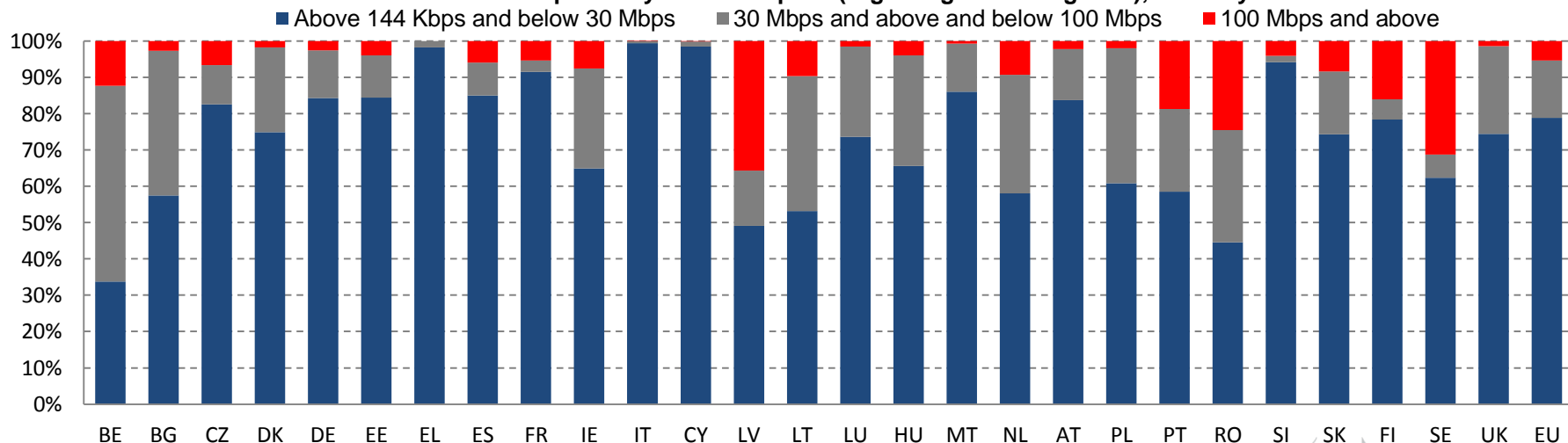
In Belgium, Latvia and Romania, already more than 50% are at least 30Mbps, while the same ratio is less than 10% in Italy, Greece, Cyprus, Slovenia and France. In ultrafast (at least 100 Mbps), Sweden, Latvia and Romania are the most advanced with more than 20% of subscriptions.

Fixed broadband subscriptions by headline speed at EU level, 2010-2014



Source: Communications Committee

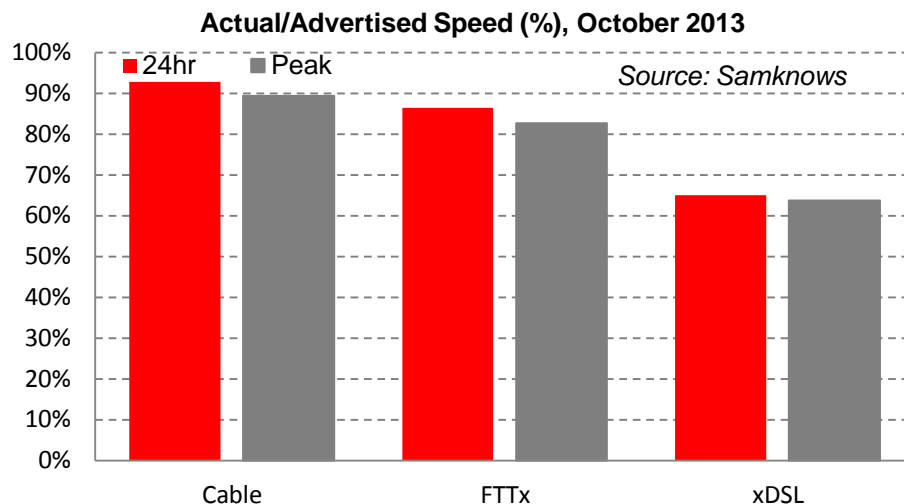
Fixed broadband subscriptions by headline speed (Digital Agenda categories), January 2014



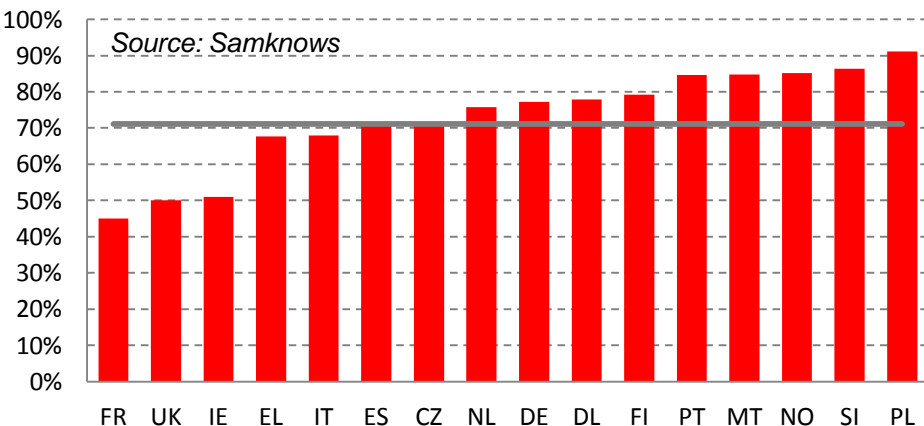
Source: Communications Committee

**Actual speeds** of broadband connections are significantly lower than advertised speeds. DSL delivers only 64% of the speed advertised by the operators in peak hours.

Speeds of broadband products are advertised as "up to a certain Mbit/s", but there are significant differences between the advertised speed and the actual speed that consumers receive. In the EU, the actual download speed is 76% of the advertised speed. DSL delivers only 63.8% of the advertised headline download speed, compared to 89.5% for cable and 82.7% for FTTx.



**Actual Download Speed of xDSL technology as a Percentage of Advertised Speed, peak hours, October 2013**



Despite the fact that in the US 96% of the advertised download speed is delivered, the actual download speeds attained in Europe are considerably higher than those in the US for all the three major technologies.

Regarding peak hours, we can see that the performance is only very slightly below the 24 hour average.

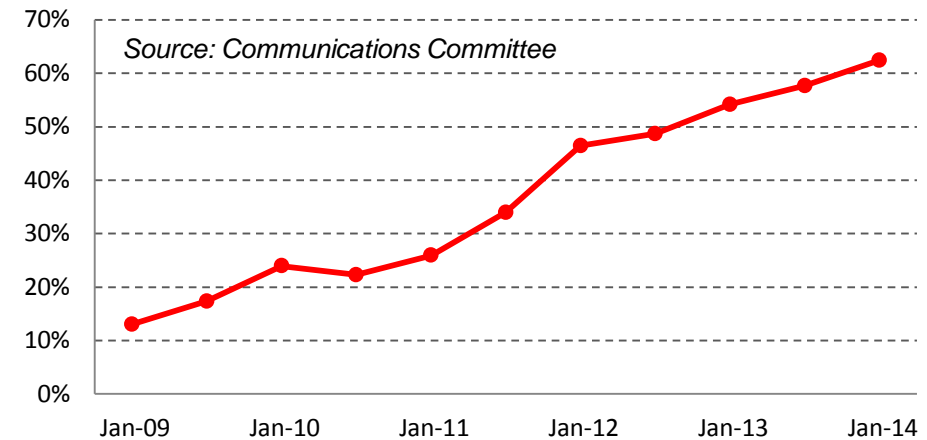
As for the xDSL being the most widely used technology in Europe, there are large differences across Member States: 90% of the advertised download speed is attained in Poland, but only 45% in France and 50% in the UK and Ireland.

There are 62 active **mobile broadband** SIM cards per 100 people in the EU, up from 26 three years ago. The growth in subscriptions somewhat slowed down in the last twelve months.

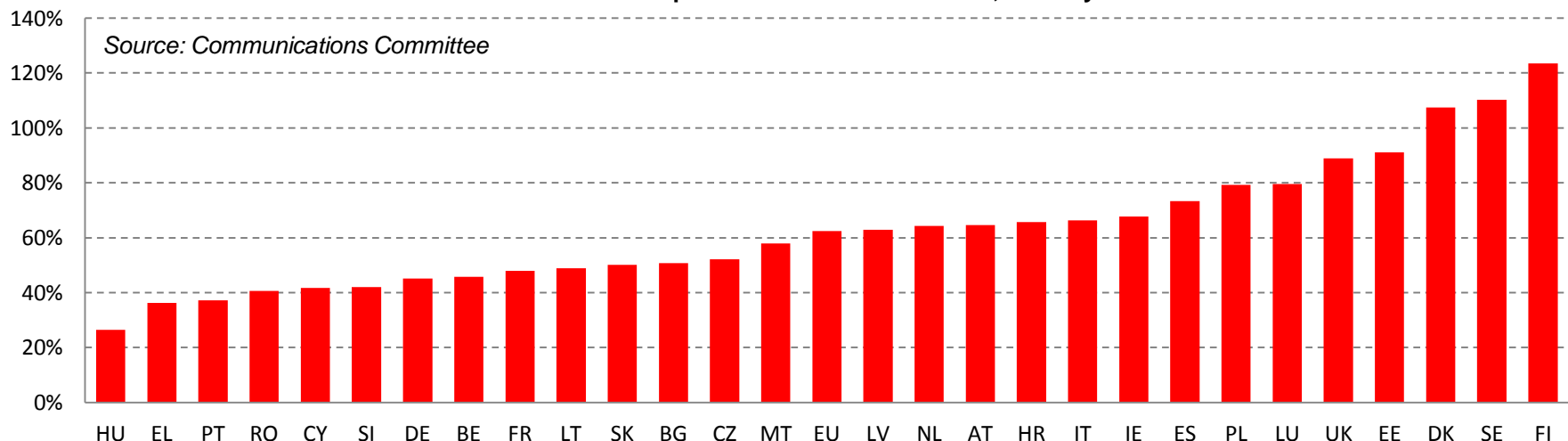
Mobile broadband represents the fastest growing segment of the broadband market, although the growth somewhat slowed down in the last twelve months in terms of active subscriptions. Take-up increased by 15% in 2013 compared to 18% in 2012.

In the Nordic countries, there are already more than 100 subscriptions per 100 people, while in Hungary, Greece and Portugal the take-up rate is still below 40%. Most of the mobile broadband subscriptions are used on smartphones rather than on tablets or notebooks.

Mobile broadband penetration at EU level, January 2009 - January 2014



Mobile broadband penetration - all active users, January 2014

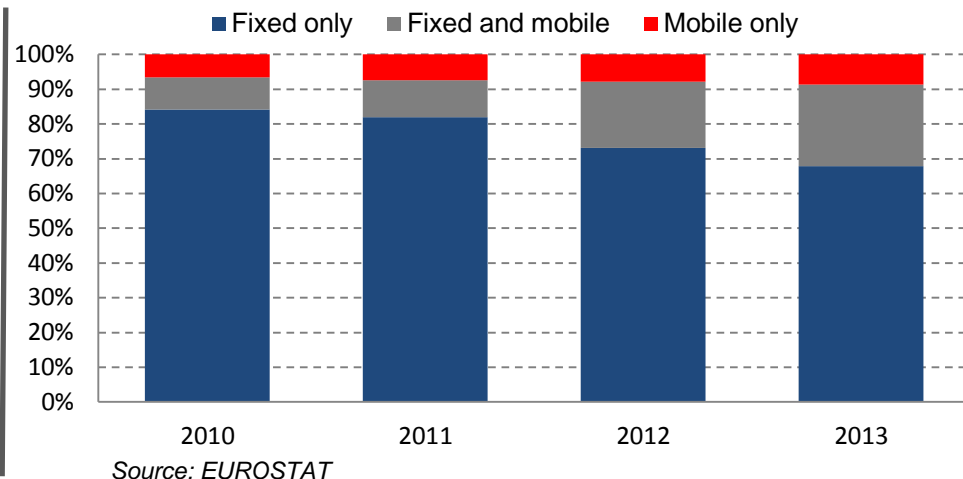




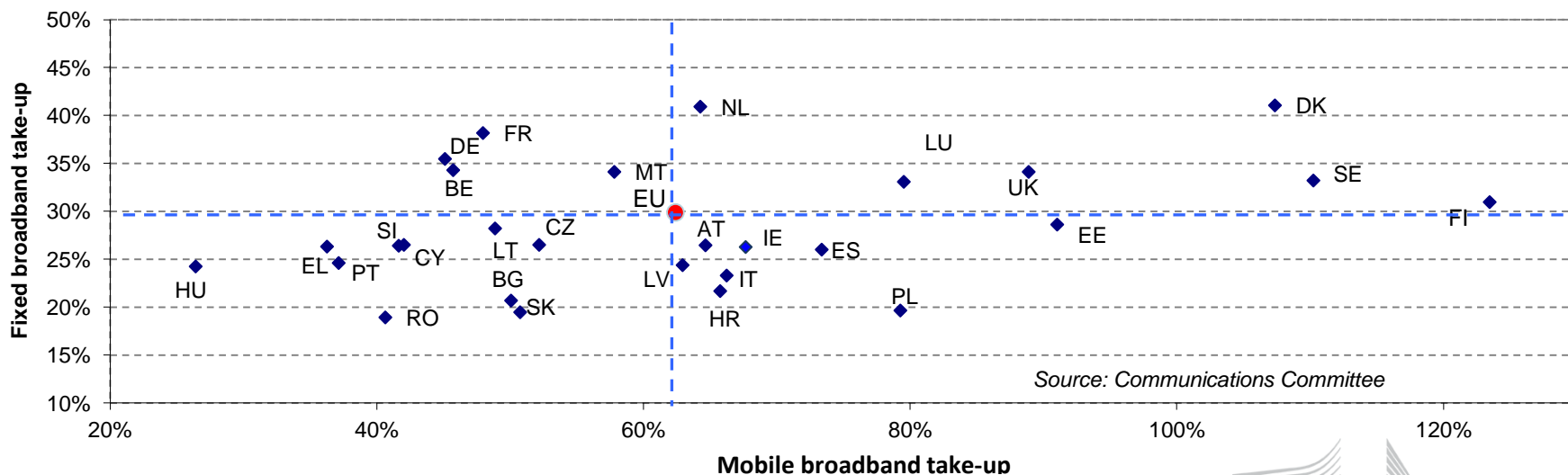
# Mobile broadband is mainly used a **complementary** connection rather than a substitute to fixed broadband.

The correlation between fixed and mobile broadband take-up remains rather weak in the EU. More than 30% of homes with internet access use mobile broadband, up from 16% in 2010. However, in most of the cases, mobile broadband does not substitute a fixed connection: only 8% of homes with internet access rely purely on mobile technology. Exceptions are Austria, Finland and Sweden, where mobile broadband is more widely used as a primary connection.

Distribution of households by means of access to Broadband



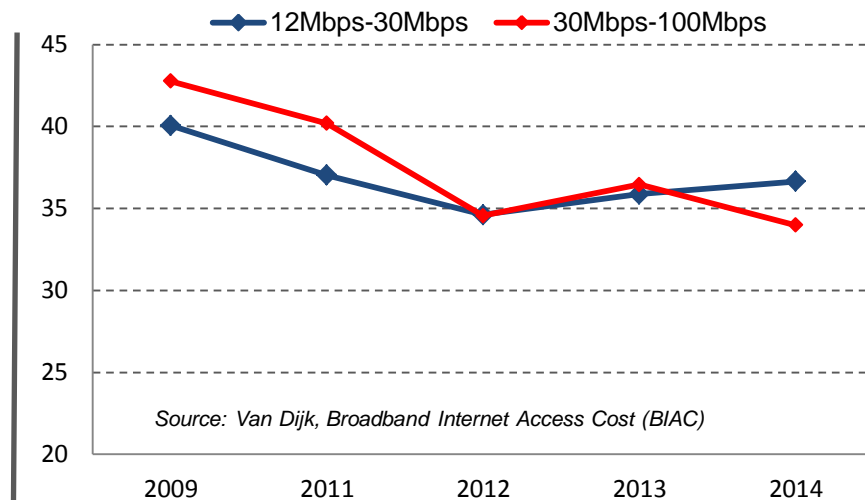
Fixed broadband penetration and mobile broadband take-up, January 2014



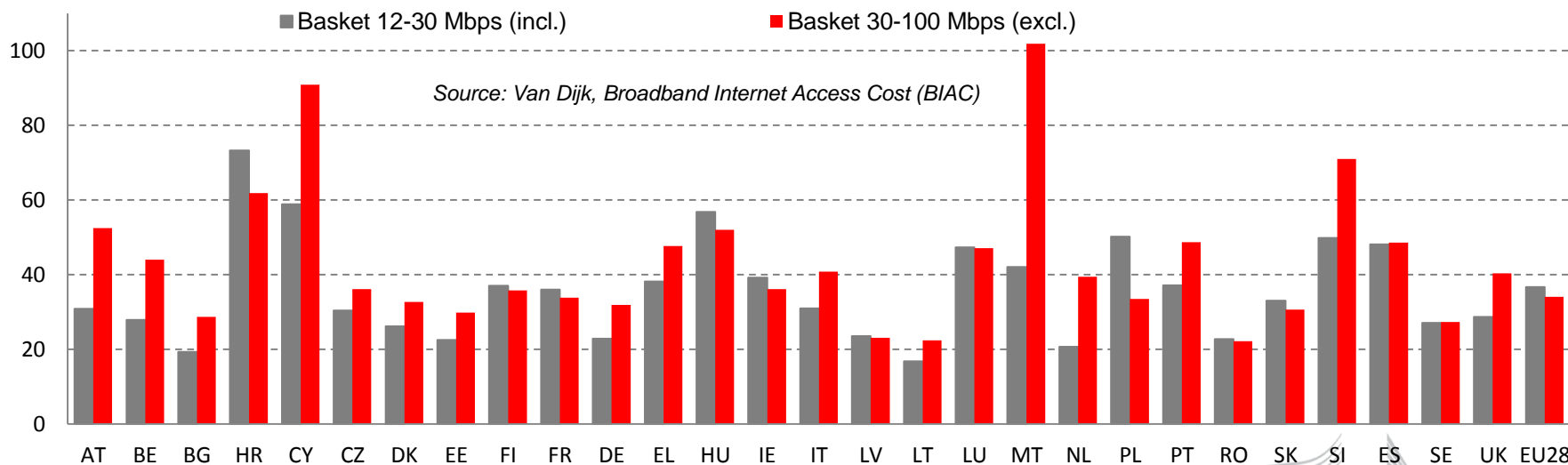
## Prices of high speed broadband access across the EU Member States tend to decrease over time but remain dispersed across Member States.

Broadband access prices remain dispersed across Europe: the median prices (calculated on Purchasing Power Parity) vary between €22 and €102 for a standalone offer with a download speed between 30 and 100 Mbps. The median prices were the lowest in Romania (€22), Lithuania (€22) and Latvia (€23) and the highest in Malta (€102), Cyprus (€91) and Slovenia (€71). In Croatia, Cyprus, Greece and Italy, fast broadband (at least 30Mbps) is still rare, representing less than 5% of all subscriptions. The median price of standalone offers of 30 to 100Mbps decreased from €43 in 2009 to €34 in 2014.

Broadband retail prices (EUR PPP) – Standalone offers, 2009-2014

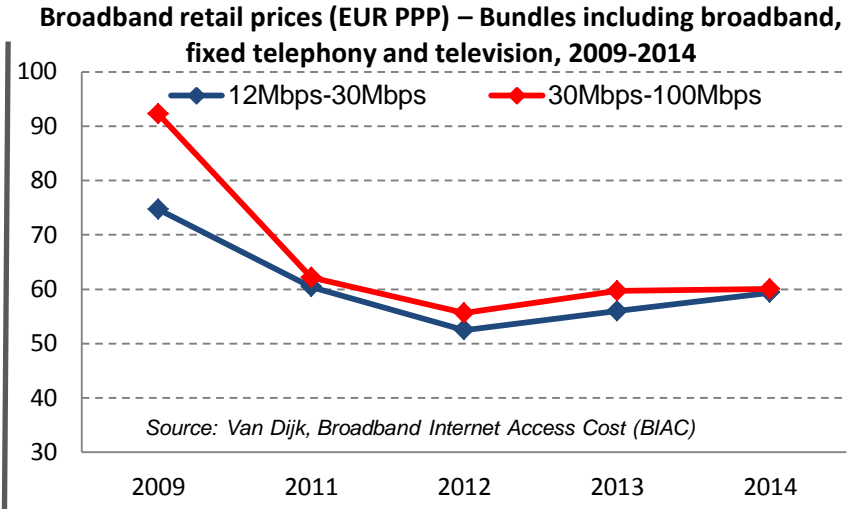


Broadband retail prices (EUR PPP) – Standalone offers, 2014

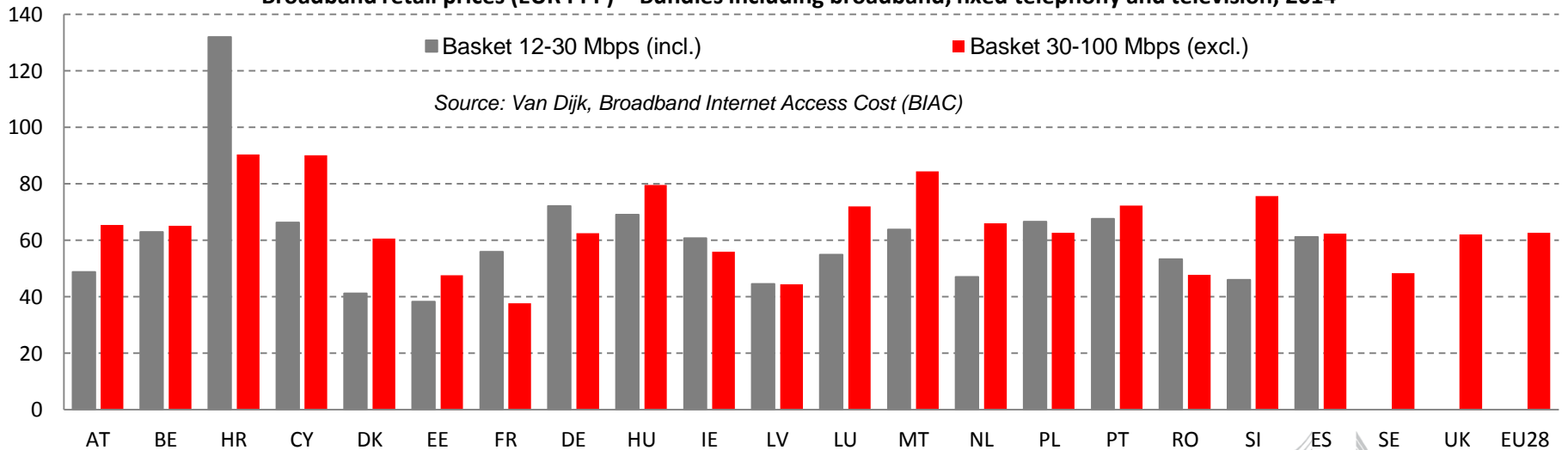


# Prices of triple play bundles including broadband access, fixed telephony and television went down considerably since 2009.

The median prices of triple play bundles including broadband access (with a download speed between 30 and 100 Mbps), fixed telephony and television vary between €38 and €90 in the EU. The median prices were the lowest in France (€38), Latvia (€44) and Estonia (€48) and the highest in Croatia (€90), Cyprus (€90) and Malta (€84). Prices decrease over time, with the median going down from €92 in 2009 to €62 in 2013.



**Broadband retail prices (EUR PPP) – Bundles including broadband, fixed telephony and television, 2014**

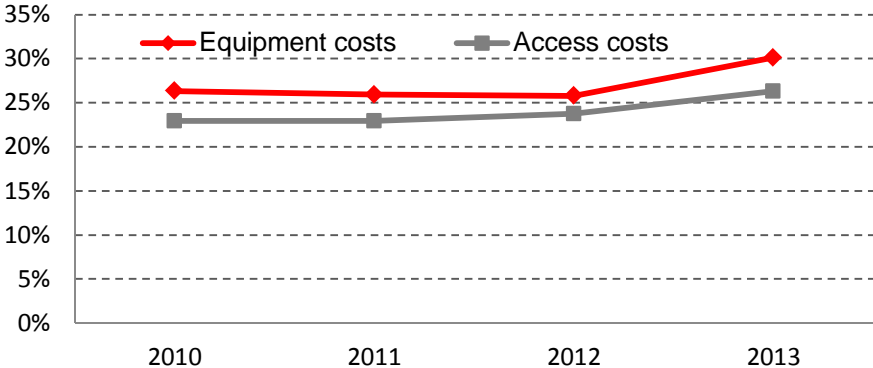


**Broadband take-up** tends to be lower in countries where the cost of broadband access accounts for a higher share of income.

The correlation between fixed broadband take-up and the relative price of broadband access is negative (-66%), so broadband take-up tends to be lower in countries where the cost of broadband access represents a higher share of the income.

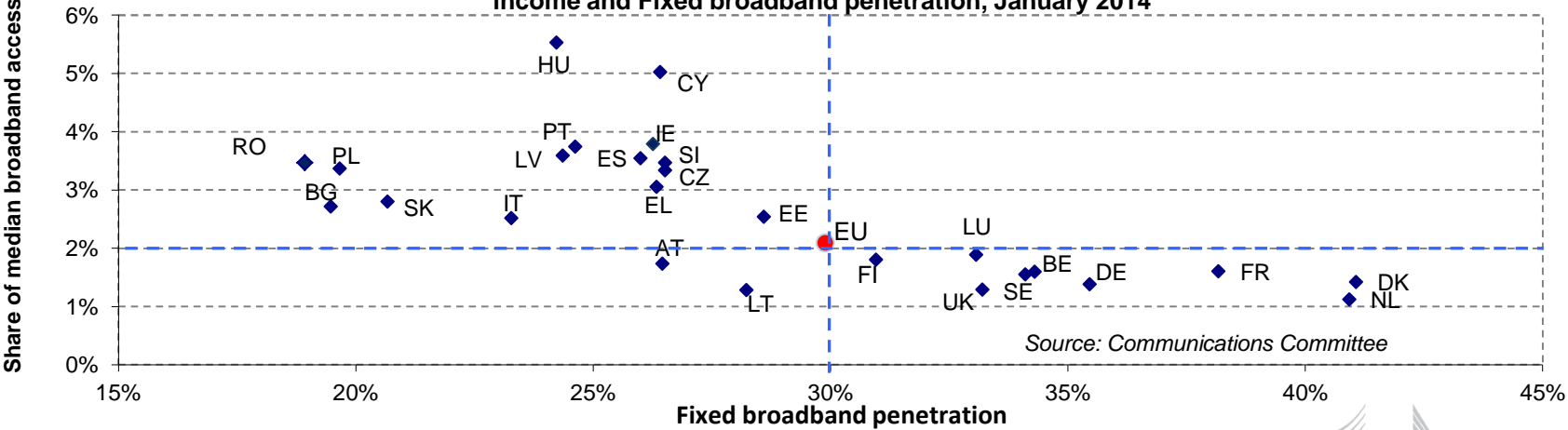
26% of those households without internet access considers the broadband access prices a barrier to take-up, while for 30% the required equipment is not affordable.

**Affordability - a barrier to internet access at home (% of households without internet access) at EU level, 2010-2013**



Source: EUROSTAT

**Share of broadband access cost (standalone offer, download speed between 12 and 30 Mbps) in disposable income and Fixed broadband penetration, January 2014**



Source: Communications Committee