

## Pillar 4

### Fast and ultra fast internet access

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## 1. POLICY CONTEXT: FROM FAST TO ULTRA FAST BROADBAND

Ensuring comprehensive availability and take-up of fast and ultra fast internet is one of the building blocks of the Digital Agenda for Europe (DAE). To enjoy sustainable economic and social benefits, it is of utmost importance that advanced broadband networks and applications are available to all European business and consumers. This is the reason why the Digital Agenda for Europe as well as Europe 2020, the European growth strategy for the next decade, committed to achieve ambitious high-speed targets. In addition to basic broadband networks being available to all EU citizens by 2013, by 2020 half of European households should subscribe to at least 100 Mbps, and 30 Mbps should be available to all Europeans.

These targets mark a difference with previous EU strategies for Information Society policies, such as *eEurope* and *i2010*, which focused on widespread availability and take-up of first-generation broadband, e.g. internet connections enabling at least 2 Mbps. Coverage of fixed broadband access as proxied by copper pair (DSL) coverage is nowadays close to 100% (95% at the end of 2010). By 2013, the whole of the EU population is expected to have access to some kind of commercially viable broadband service. Adoption of first generation broadband services has grown significantly in the last decade in all EU countries, with some countries already reaching saturation levels.

The focus of the Digital Agenda has therefore moved to ensuring a firm transition to a new generation of faster broadband networks (NGA) that enable the faster provision of bandwidth-hungry innovative services at better quality.

In addition to these quantitative targets, the DAE also defined a number of policy actions under pillar 4 (very fast internet). The timely implementation of these actions is crucial to the achievement of the broadband targets. In 2010 the European Commission adopted a "broadband package" made up of three complementary measures to facilitate the roll out and take up of broadband networks. This package comprises a Commission Recommendation on regulated access to Next Generation Access (NGA) networks that provides regulatory certainty to telecom operators, ensuring an appropriate balance between the need to encourage investment and the need to safeguard competition; a proposal for a Decision to establish a Radio Spectrum Policy Programme to ensure, inter alia, that spectrum is available for wireless broadband; and a Broadband Communication outlining how best to encourage public and private investment in high and ultra-high speed networks. The adoption of the package is just the starting point of the process. Member States, industry and other stakeholders now have a large responsibility in ensuring that there is a follow up on their part of the actions.

Nurturing the development of broadband networks and services requires a combination of regulatory and policy measures. The impressive rate of broadband adoption in Europe over the last years has been facilitated by the implementation of the EU regulatory framework that fostered competition and innovation by ensuring that competitive telecom companies had access, on fair and non-discriminate conditions, to the networks of the historic incumbent operators. Competition by alternative networks, especially by cable modem operators, has also been influential in achieving significant growth rates.

The current EU regulatory framework has brought benefits to European citizens in terms of innovative and increasingly affordable electronic communications services, including

broadband. Some traditional services such as voice telephony are maturing, while others such as mobile broadband and NGA are on the rise. These more recent data services bring about new opportunities and challenges.

This report analyses market developments in the main electronic communication market segments (broadband, mobile and fixed voice). It concludes with a brief overview of the telecom sector. The report is complemented by additional information on regulated market indicators.

Table 1: **Telecoms and broadband related actions in the Digital Agenda**

| <b>ID</b> | <b>Action</b>   | <b>Progress</b> | <b>Pillar</b> |
|-----------|---|-----------------|---------------|
| 18        | Harmonisation of numbering resources  | On track        | 1             |
| 19        | Spectrum Policy Plan  | On track        | 1             |
| 20        | An investigation into the cost of non-Europe in telecommunication markets                 | On track        | 1             |
| 35        | Guidance on implementation Telecoms rules on data privacy and personal data               | On track        | 3             |
| 42        | Adopt an EU broadband communication - common framework for actions                        | Completed       | 4             |
| 43        | Funding for high-speed broadband  | On track        | 4             |
| 44        | European Spectrum Policy Programme  | Completed       | 4             |
| 45        | Foster the deployment of NGA networks - Recommendation on Next Generation Access networks | Completed       | 4             |
| 46        | MS - Develop and make operational national broadband plans                                | On track        | 4             |
| 47        | MS - Measures to facilitate broadband investment  | On track        | 4             |
| 48        | MS - Use fully the Structural and Rural Development Funds                                 | On track        | 4             |
| 49        | MS - Implement the European Spectrum Policy Programme                                     | On track        | 4             |
| 101       | Roaming   | On track        | 1             |

## 2. FIXED BROADBAND

### 2.1 *Broadband coverage*

One of the DAE targets ensures access to basic broadband for all by 2013. The Digital Agenda is agnostic with regards to the technology used for achieving this objective. Wireless technologies are arguably better fitted to provide coverage in those areas where it is not economically viable to lay down wired infrastructure. Satellites already cover the whole geographic territory of the EU, but availability of retail commercial offers vary among Member States and the cost of the reception equipment can in some cases be still significant. Other fixed wireless technologies such as WiMax and WiFi contribute to extend coverage. Networks with increasingly higher capacity are another option. Around 90% of the EU population was covered by third generation mobile networks at the end of 2010. As with fixed networks though, less populated areas still remain underserved.

With regards to fixed broadband technologies, the footprint of DSL<sup>1</sup> has been used as a fair proxy to monitor progress in this area. At the end of 2010, DSL access was available to 95.3% of the EU population, up from 94.4% one year earlier. DSL coverage in rural areas on the other hand reached 82.5% of the rural population. This means that around 23.5 million EU citizens, of which 18 million living in rural areas, cannot yet connect to a fixed access broadband network. Only six member states still have DSL coverage below 90% of population (Figure 1). In Poland, Bulgaria and Slovakia rural coverage is still below 60%.

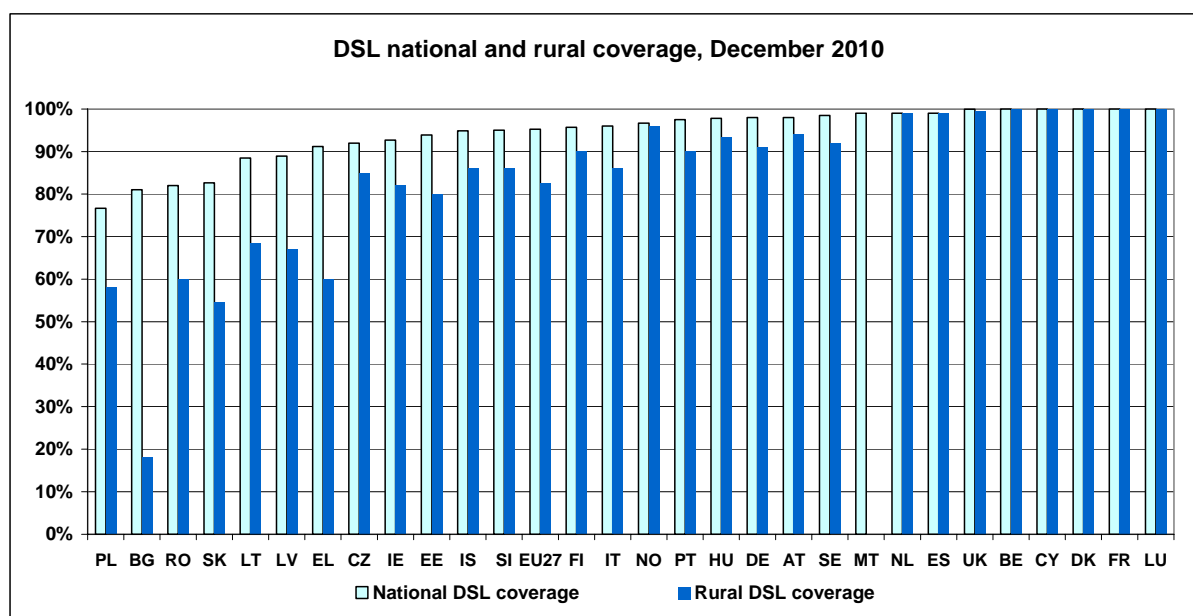
By way of comparison, in the United States the National Broadband Plan targets availability of broadband networks of at least actual 4 Mbps download and 1 Mbps upload to all US citizens. According to the US regulator (FCC), currently 4.2 million households have no broadband capability (2.7% of the total population) and another 2.8 million housing units are connected but only able to receive actual speeds below the 4 Mbps download target.<sup>2</sup>

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<sup>1</sup> The term "DSL Coverage" refers to the percentage of the population that depends on local exchanges equipped with a DSLAM.

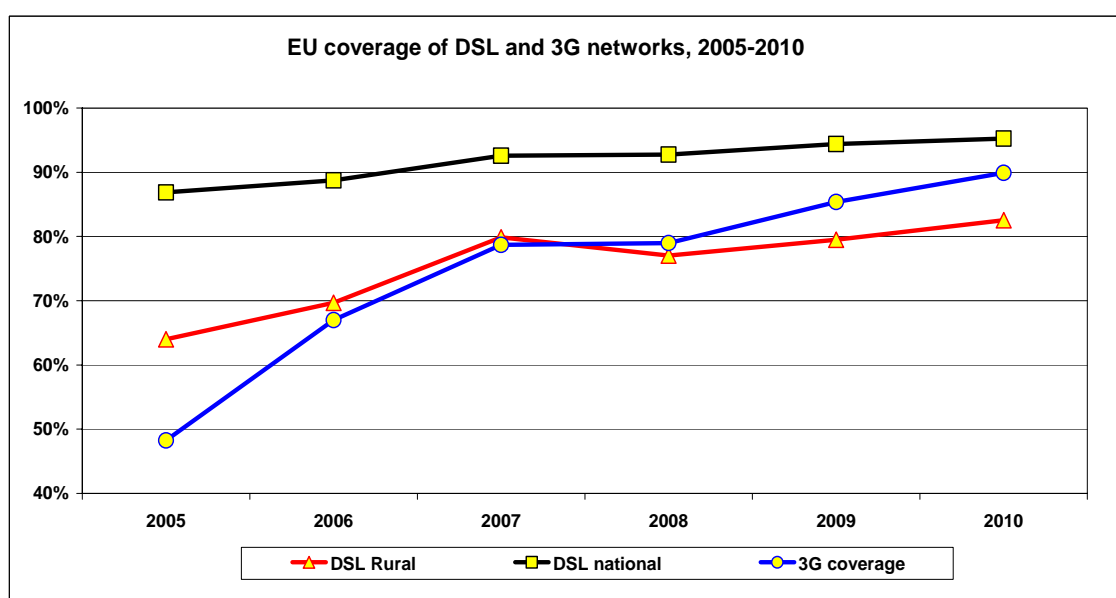
<sup>2</sup> Federal communications commission | The Broadband Availability Gap, <http://download.broadband.gov/plan/the-broadband-availability-gap-obi-technical-paper-no-1-chapter-2-broadband-availability.pdf>

Figure 1: DSL national and rural coverage, December 2010, percentage of population

Source: Idate<sup>3</sup>

Trends in fixed and wireless coverage between 2005 and 2010 suggest that the 2013 target of broadband for all will be achieved, through a combination of fixed and wireless technologies (Figure 2). Data on satellite coverage are not available, but it is clear that far and less populated areas of Europe will need to rely on access through satellite.

Figure 2: EU coverage of fixed broadband and 3G networks



Source: Commission services based on IDATE

<sup>3</sup> Broadband coverage in Europe, 2011 survey (forthcoming)

The European Commission in 2009 adopted the “Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband networks”, which explain how public funds can be channeled for the deployment of basic broadband networks as well as NGA networks to areas where private operators do not invest. In light of the market, technological and regulatory developments since 2009, the Commission has launched a public consultation to obtain the view of stakeholders on their experience with the guidelines so far. The Commission will decide later on this basis to what extent a review of the Guidelines would be necessary.

The primary objective of these guidelines is to foster a wide and rapid roll-out of broadband networks while at the same time preserving the market dynamics and competition in a sector that is fully liberalised. The guidelines also specify that whenever state aid is granted to private operators, the aid must foster competition by requiring the beneficiary to provide wholesale access to the publicly funded network for third-party operators. In particular, the guidelines outline the distinction between competitive areas ("black" areas) where no state aid is necessary, and unprofitable or underserved areas ("white" and "gray" areas) in which state aid may be justified, if certain conditions are met. This distinction is then adapted to the situation of NGA networks by requiring funding authorities to take into account concrete investment plans by telecommunications operators to deploy such networks in the near future. A number of crucial safeguards (such as detailed mapping, open tender, open access obligation or technological neutrality, and claw-back mechanisms) are laid down in the guidelines in order to promote competition and avoid crowding out private investment.

In line with the guidelines, in 2010 the European Commission approved the use of over €1.8 billion public funds for broadband development through 20 decisions in, among others, Catalonia, Finland, and Bavaria<sup>4</sup>.

## 2.2 *The fixed broadband market in 2010*

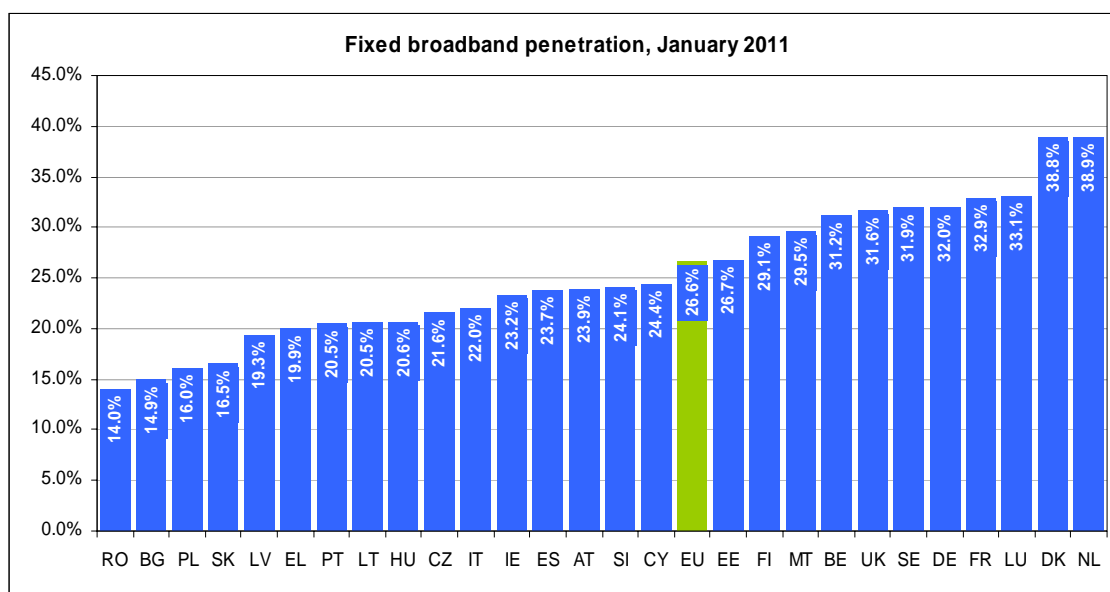
With 133 million broadband fixed lines, the EU broadband market continued to grow in 2010 with some 8.8 million new lines (7.1% year-on-year growth) and still remains the largest in the world. At the end of 2010 there were 26.6 fixed broadband lines per 100 inhabitants in the EU (Figure 3), with eight countries reaching 30 lines or more per 100 inhabitants. China is very likely to overtake the EU as the largest broadband market in 2011, as this country is expected to reach 160 million lines in 2011<sup>5</sup>.

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<sup>4</sup> For more information about state aid use for broadband, see the Spring 2011 State Aid Scoreboard, forthcoming in the second half of June at <http://ec.europa.eu/competition/publications/>

<sup>5</sup> Source: Informa. For a view of the growth of some BRICS markets, see "The ICTs landscape in BRICS countries. Brazil, India, China", JRC (2011) forthcoming."

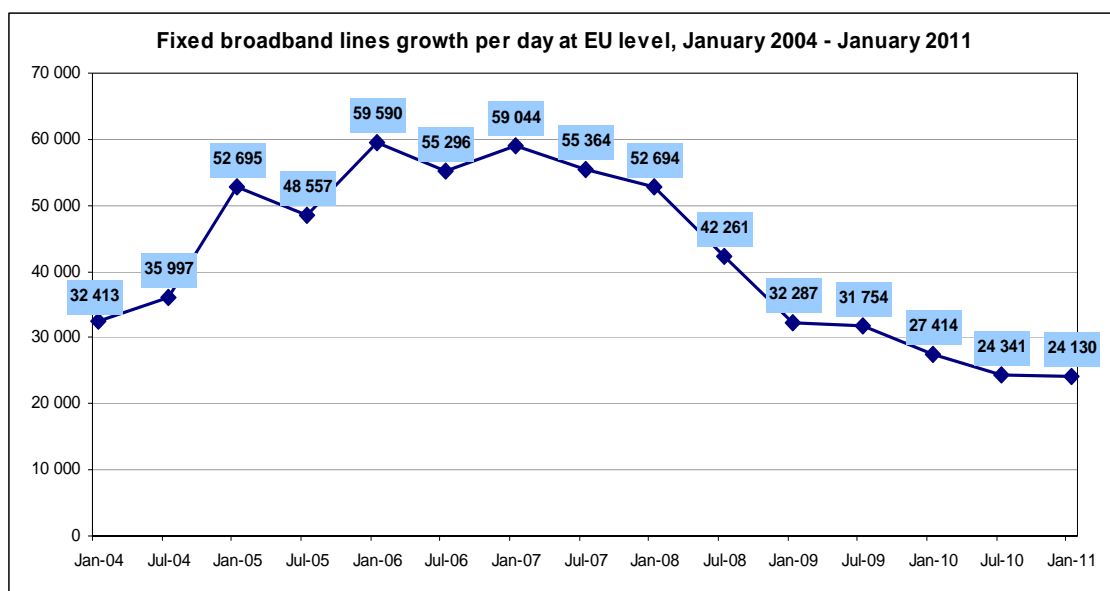
Figure 3: Fixed Broadband Penetration Rate, January 2011



Source: Communications Committee

Growth in the take up of fixed broadband marketing the EU however is declining. The penetration rate by population increased by 1.7 pp in 2010 and recorded the slowest growth rate since 2002. The number of net additions (24,130 lines per day) represents just a bit more than a third of the growth rates of 2006 and 2007 (Figure 4).

Figure 4: Growth of fixed broadband lines per day

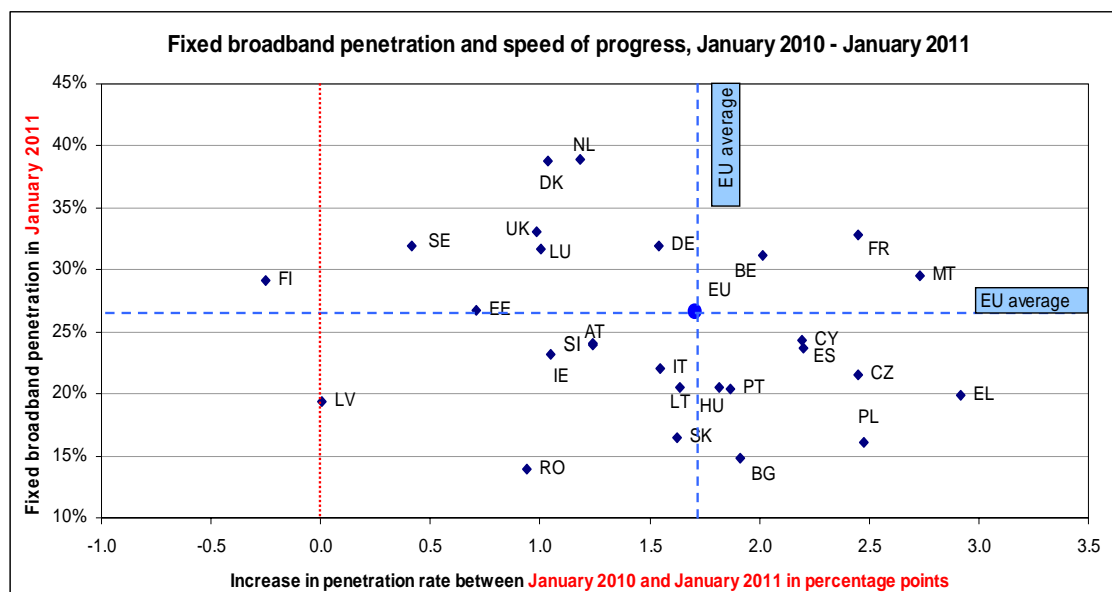


Source: Communications Committee

Many of the countries with the highest broadband penetration rates – the Netherlands, Denmark, Luxembourg, the UK and Sweden - experienced growth rates below EU average in 2010 (Figure 5). Finland experienced negative growth, possibly because users have shifted

from fixed to mobile broadband access. All in all, however, these results are indicative of markets approaching maturity. Growth was also weak in another group of countries with penetration rates on or below EU average: Latvia recorded no growth despite going out of recession at the end of 2010, and the fixed broadband market increased by just one percentage point or less in Estonia, Romania, Ireland, Slovenia and Austria. Growth was near European average in Germany, Italy, Lithuania, Slovakia, Portugal, Hungary, Bulgaria and Belgium. Cyprus, Spain, France, the Czech Republic and Poland exceeded 2 percentage point growth, and only two countries, Greece and Malta, grew by almost 3 pp (Figures 5 and 6).

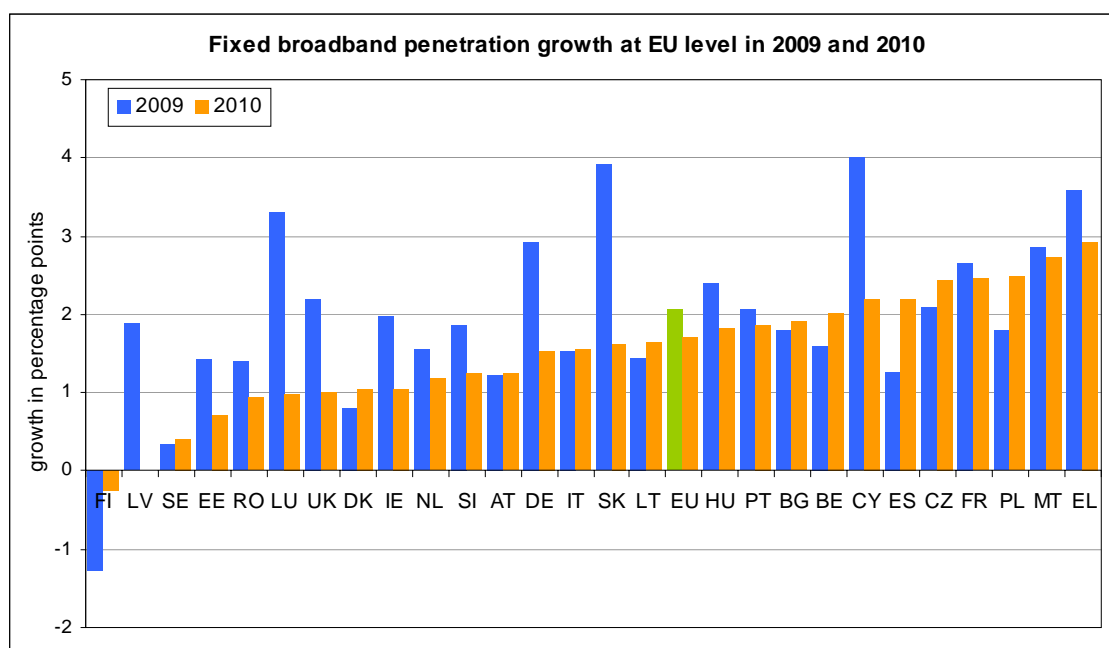
Figure 5: Fixed broadband penetration and speed of progress, 2009-2010



Source: Communications Committee



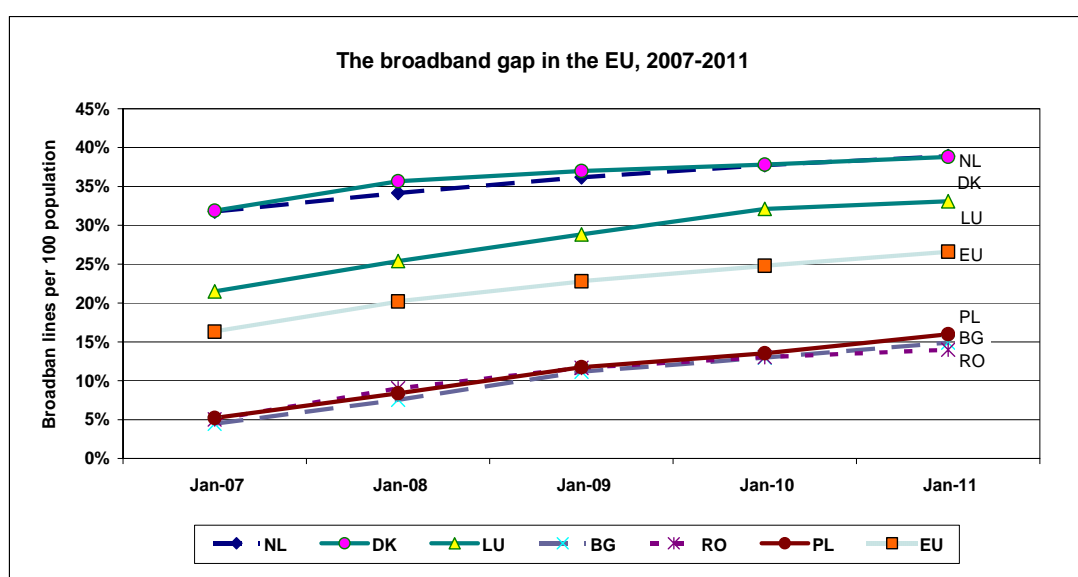
Figure 6: Growth of fixed broadband penetration in EU Member States, 2009-2010



Source: Communications Committee

The broadband gap, i.e. the difference between the countries with the highest and the lowest penetration rates in the European Union, continues to decrease but there are still considerable differences across countries. Romania, Bulgaria and Poland are still at the level of broadband adoption of the Netherlands or Denmark in July 2005. The broadband gap is being closed partially because most developed countries did not grow as much. Moreover, the growth rates of the less developed countries have considerably slowed in 2009 and 2010 (Figure 7), meaning that the catching-up process will take longer than expected.

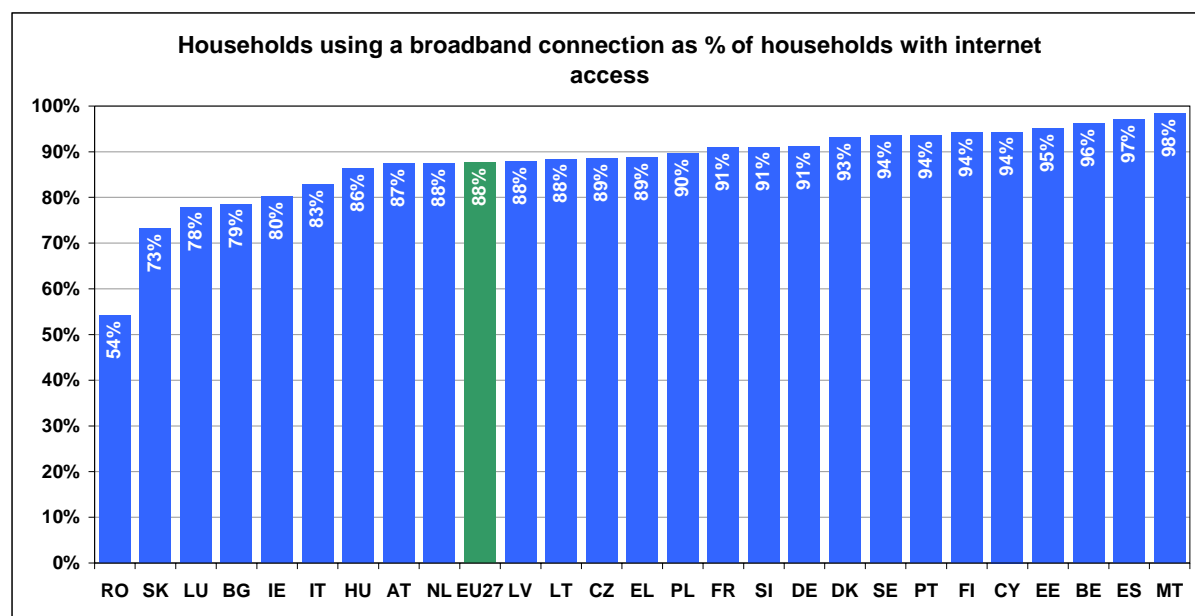
Figure 7: The broadband gap in the EU



Source: Communications Committee

Almost all internet connections in Europe are broadband (87.6% at EU level). This figure is however higher in other regions of the world. For instance in the US only 5% of internet connections used dial-up<sup>6</sup>, and this technology is not used anymore in Korea<sup>7</sup>. Romania and Slovakia are countries where the use of dial-up connections remains significant (Figure 8).

Figure 8: **Households connected to the internet with a broadband access, 2010**



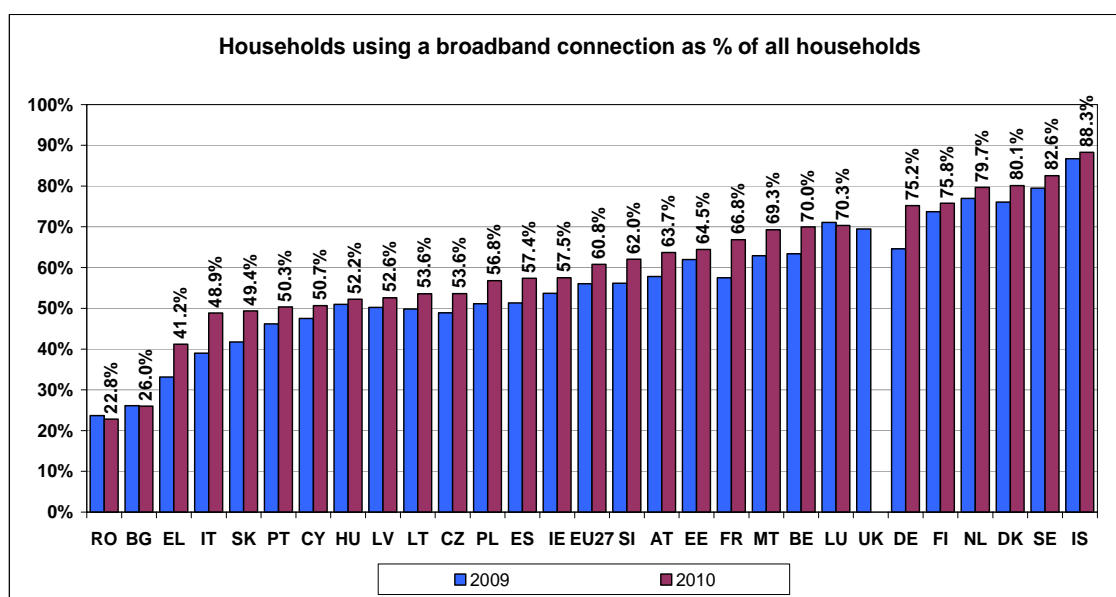
Source: Eurostat Community Survey on ICT Usage in Households and by Individuals. Data for the UK not available.

Yet between 20% and 30% of households in these advanced countries do not have any kind of broadband connection. There is therefore margin for growth. No need, lack of adequate skills, high subscription prices or unavailability of broadband are the main reasons for not using broadband. In the EU, on average, close to 40 % of households are not yet connected to broadband networks (Figure 9).

<sup>6</sup> Home Broadband 2010. <http://pewinternet.org/Reports/2010/Home-Broadband-2010/Part-1/Little-change-in-home-broadband-in-2010.aspx>

<sup>7</sup> "Survey on the Internet Usage", Korea Communications Commission, December 2010

Figure 9: Percentage of households using a broadband connection



Source: Eurostat Community Survey on ICT Usage in Households and by Individuals. 2010 data for the UK not available.

Fixed-to-mobile substitution is also an important element behind the slowdown in the adoption of fixed broadband connections. It is no coincidence that many of the countries with the lowest numbers of fixed net additions in 2010 display at the same time the highest rates of mobile broadband penetration. This applies in particular to Finland, but also to Austria, Ireland and Italy. Sweden is a country with very high levels of both fixed and mobile access. It is difficult to ascertain to what extent wireless broadband access is used as the principal way to access the internet, or whether the two are perceived as complementary. In a few countries mobile technologies such as UMTS are considered fully substitutes of fixed broadband access, while in many other countries consumers choose mobile access as a complement to fixed.

The significant increase in the take-up of mobile broadband subscriptions over the last two years, with a significant impact on traffic in mobile networks, is driving some mobile operators to end flat-rate pricing schemes and to bill consumers according to the volume, something that has not yet happened in the fixed segment. This may therefore bring more and more consumers to consider mobile broadband as a complement to fixed or, alternatively, to use mobile broadband for a limited number of applications that do not require excessive data consumption (Table 2).

Table 2: **Broadband usage per type of device**

|                         | Usage/month |
|-------------------------|-------------|
| Feature phone           | 1-30 MB     |
| Smartphone              | 200-400 MB  |
| Mobile broadband dongle | 1 GB-1.5 GB |
| Home broadband          | 10 GB-15 GB |

Source: Enders based on company reports

### 2.3 *An international comparison*

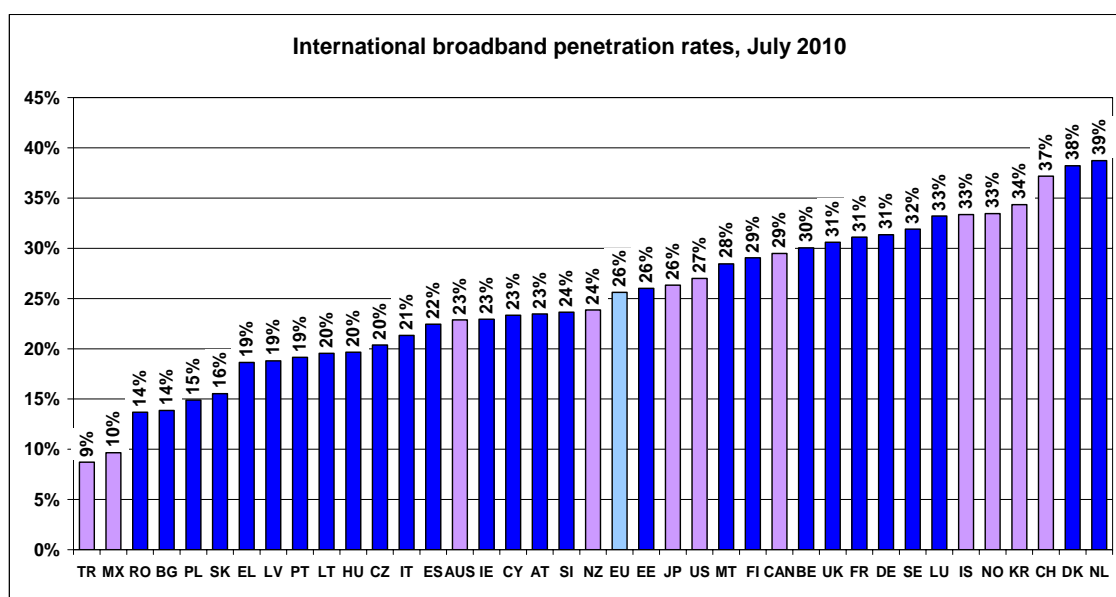
At international level the situation has not changed much compared to 2009 (Figure 10). The Netherlands and Denmark continue having the highest penetration rates, followed by Luxembourg and Sweden, along with a group of four non-EU countries (Switzerland, Korea, Norway and Iceland). The EU has narrowed the gap with the US (1.4 pp difference in July 2010 compared to 2.8 pp one year earlier and 3.4 pp in 2008<sup>8</sup>). According to market analysts, Brazil, Russia, India and China will account for the bulk of new fixed-broadband subscriptions over the next five years as growth continues to drop in developed markets<sup>9</sup>.

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<sup>8</sup> The annual growth in the fixed US broadband market was 4.4% (June 09-June 10), compared to a 7.5% growth in the EU. FCC's "Internet Access Services: Status as of June 30, 2010" at [http://www.fcc.gov/Daily\\_Releases/Daily\\_Business/2011/db0321/DOC-305296A1.pdf](http://www.fcc.gov/Daily_Releases/Daily_Business/2011/db0321/DOC-305296A1.pdf)

<sup>9</sup> Informa, "Global fixed-broadband forecasts: BRIC nations to provide foundations of second stage of broadband growth", 6 January 2011

Figure 10: International broadband penetration rates, percentage of population

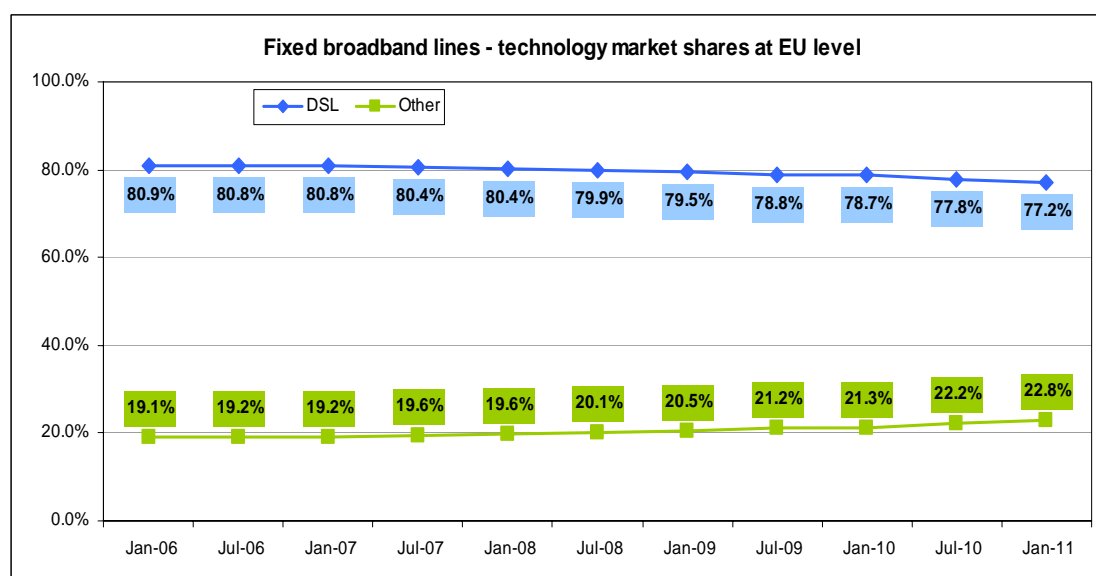


Source: Commission services based on COCOM and OECD figures

## 2.4 Broadband technologies and speeds

DSL continues to be the predominant technology in the EU broadband market, despite the slight decrease in its share, from of 80.9 % in January 2006 to 77.6% in January 2011. In 2010, 55 % of new lines were provided by means of xDSL technologies and 45% were connections using other types of technologies, while in 2009 these ratios were 71% and 29% respectively (Figure 11).

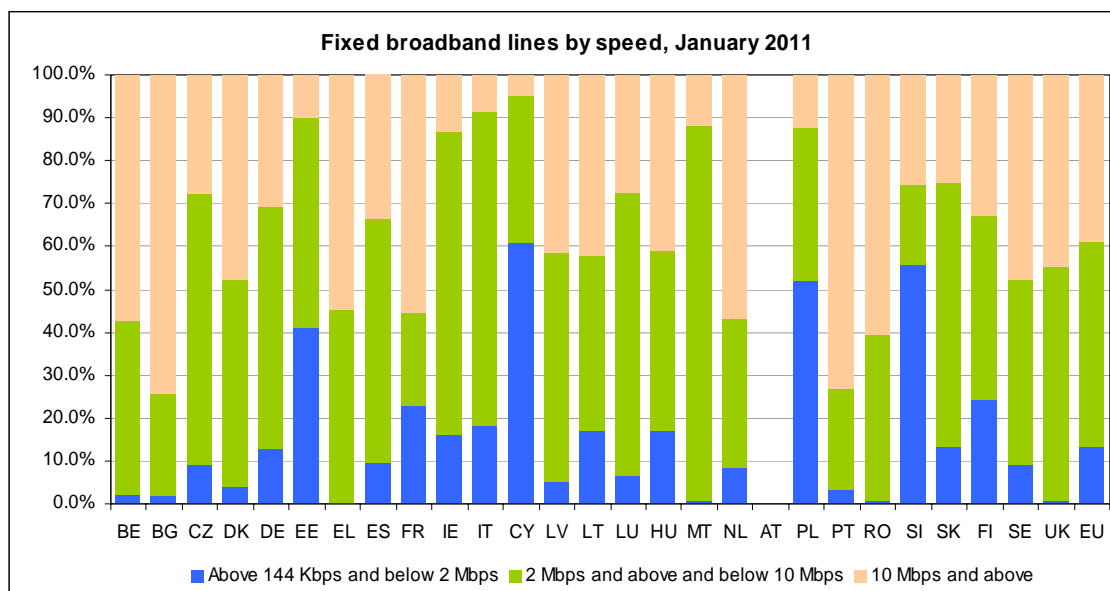
Figure 11: Fixed broadband lines in the EU by technology



Source: Communications Committee

The dominance of DSL technologies in the EU market means that current broadband speeds are still far from the targets set by the DAE. As of January 2011, on average 60% of fixed lines provide speeds of up to 10 Mbps (Figure 12).

Figure 12: Fixed broadband lines in the EU Member States by speed



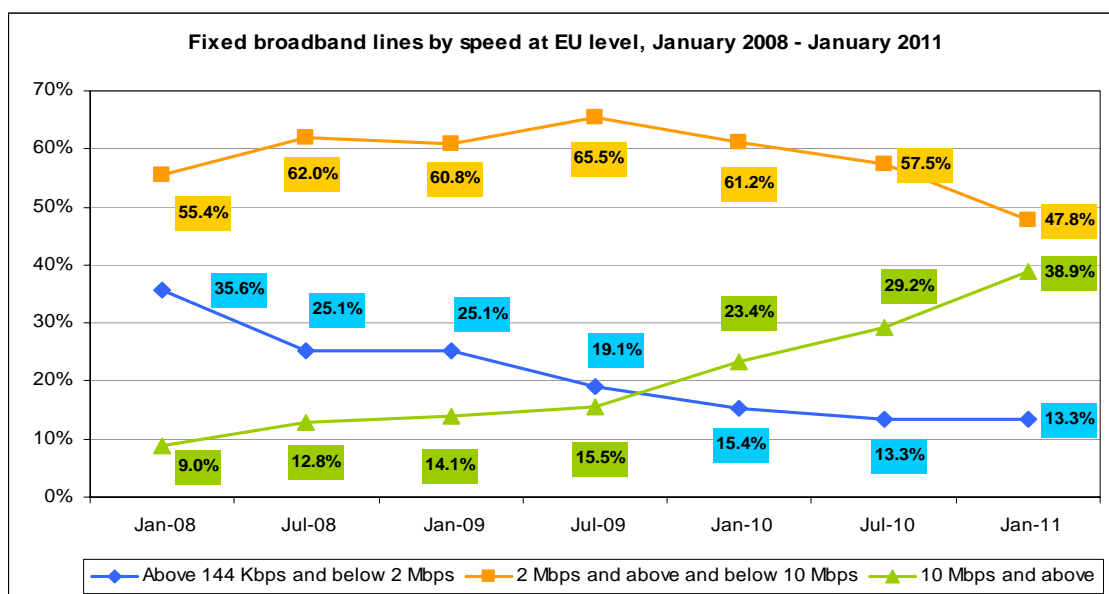
Source: Communications Committee - Data for Austria not available

In January 2011 around 86% of fixed broadband lines in the EU provide nominal speeds above 2 Mbps. Looking at higher speed rates, 40% of all lines provides speeds between 10 and up to 30 Mbps, which is a significant improvement compared to last year as these lines almost doubled.

More than 70% of fixed lines in Bulgaria and Portugal provide speeds above 10 Mbps. Romania, Belgium, the Netherlands, France and Greece follow with around 60% (Figure 12). In the case of Bulgaria and Romania the high proportion of high speed lines is driven by the availability of many brand new local networks built in the absence of legacy infrastructure. In Portugal, Belgium and the Netherlands the major driver is the competition between cable modem and DSL ex-incumbent operators. In all other countries with speeds around the EU average the situation is mixed, although there is a clear correlation between speeds and the degree of competition with alternative technologies.

The trend towards higher speeds that started in July 2009 has significantly accelerated in the second part of 2010, and the gain in 10+ Mbps has been equal to the loss in terms of 2-10 Mbps speed lines. Probably due to physical conditions (distance to the exchange or quality of the local access network), there still remains around 13% of lines providing very low speeds (144 kbps to 2 Mbps) since 2009 (Figure 13).

Figure 13: Fixed broadband lines by speeds, 2008-2011



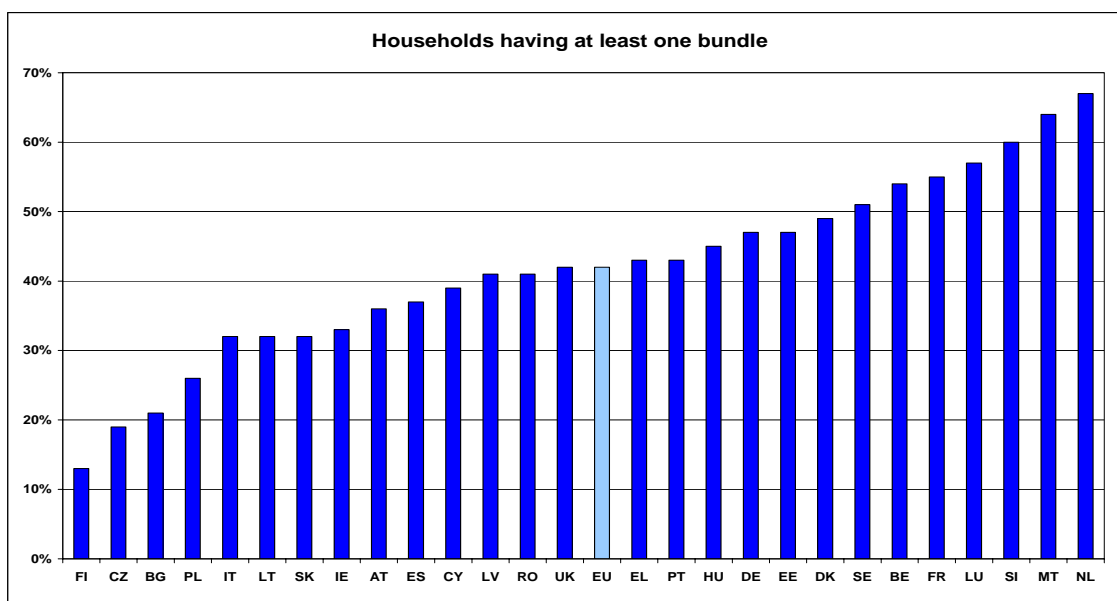
Source: Communications Committee

While there is a clear trend towards delivering higher speeds using first generation broadband technologies, only 5% of all fixed lines in January 2010 deliver speeds of 30 Mbps and above which can be qualified "next generation" access.

As of March 2010, it is estimated that 42% of households subscribed to bundled services (up from 29% three years ago). Bundled service packages are the prevailing way for consumers to get electronic communications services in the Netherlands, Malta, Slovenia, Luxembourg, France, Belgium and Sweden. 32% of Internet access services were provided by means of a bundled package in March 2010<sup>10</sup>, with a clear predominance of double play packages of broadband and fixed telephony, followed by triple play products which include television to services (Figure 14).

<sup>10</sup> Eurobarometer, E-Communications Household Survey, May 2011 (forthcoming)

Figure 14: Percentage of households subscribing to bundled products



Source: Eurobarometer, E-Communications Household Survey, May 2011

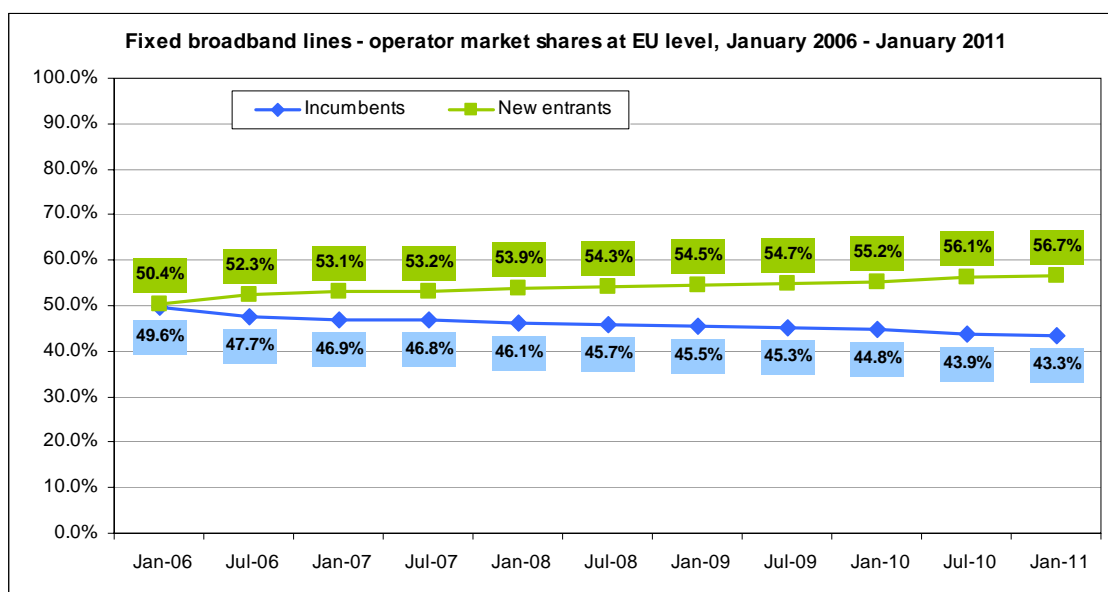
## 2.5 Competition dynamics

The market share<sup>11</sup> of the incumbent fixed operators has been following a downward trend since July 2003. Nonetheless, this competitive trend slowed down between 2007 and 2009, when some incumbent operators managed to reduce losses and even regained some market positions. During these three years, incumbents just lost 2 pp of the market overall. In 2010 though competition accelerated again notably, and incumbent operators lost 1.6 pp of the fixed broadband market. As a result, new entrant broadband providers now hold almost 57% of the fixed broadband market (Figure 15).

<sup>11</sup>Based on subscribers.



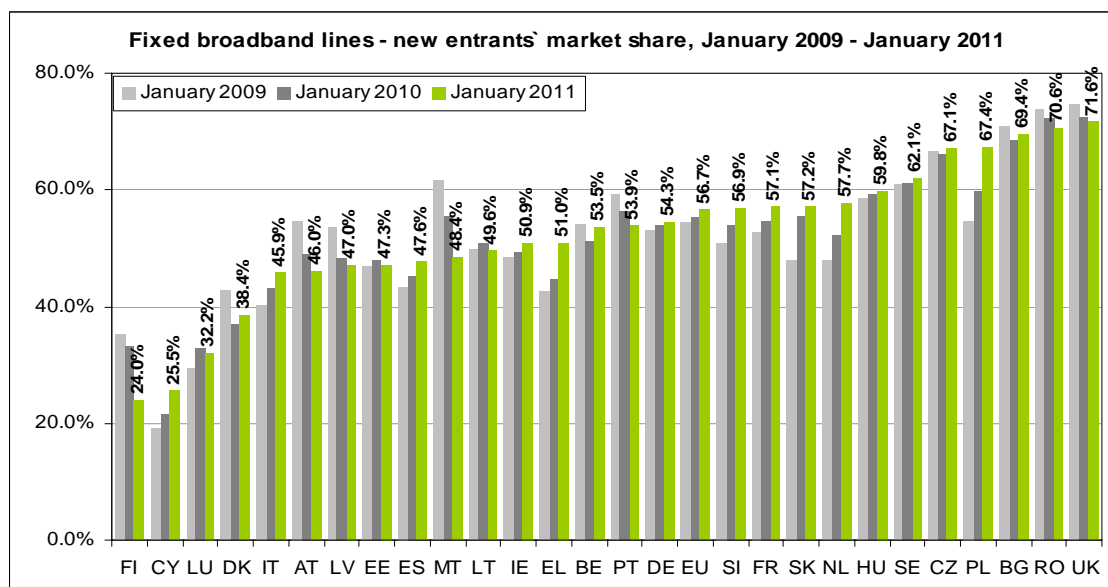
Figure 15: Percentage of broadband lines by operator



Source: Communications Committee

Incumbent operators in Finland (+9 pp), Malta (+7 pp) and Austria (+3 pp) are the main exceptions to the average EU trend. Although in 2010 incumbents in ten Member States regained parts of the market, these concentrated in small countries that do not have a strong impact on the EU average. In the UK the gains of the incumbent operator were much less significant than in 2009 (Figure 16).

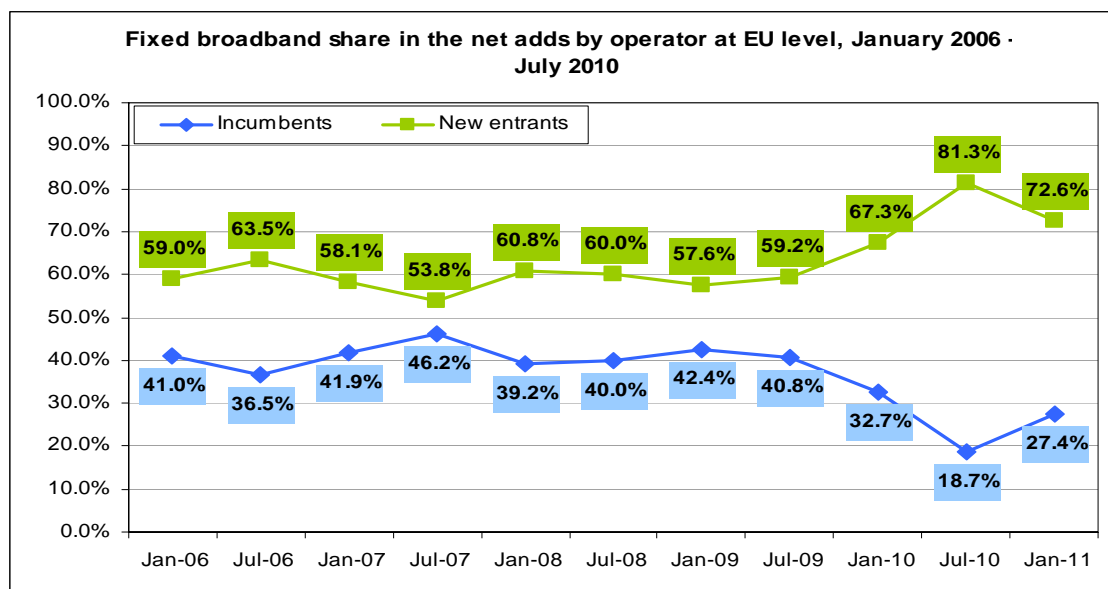
Figure 16: Fixed broadband lines – New entrant's market share, 2009-2011



Source: Communications Committee

The share of new lines sold by new entrants is the best indicator of this boost to competition: although market growth was limited, new entrants sold almost 80% of all the new fixed broadband lines during 2010, 17 pp more than in the previous year (Figure 17).

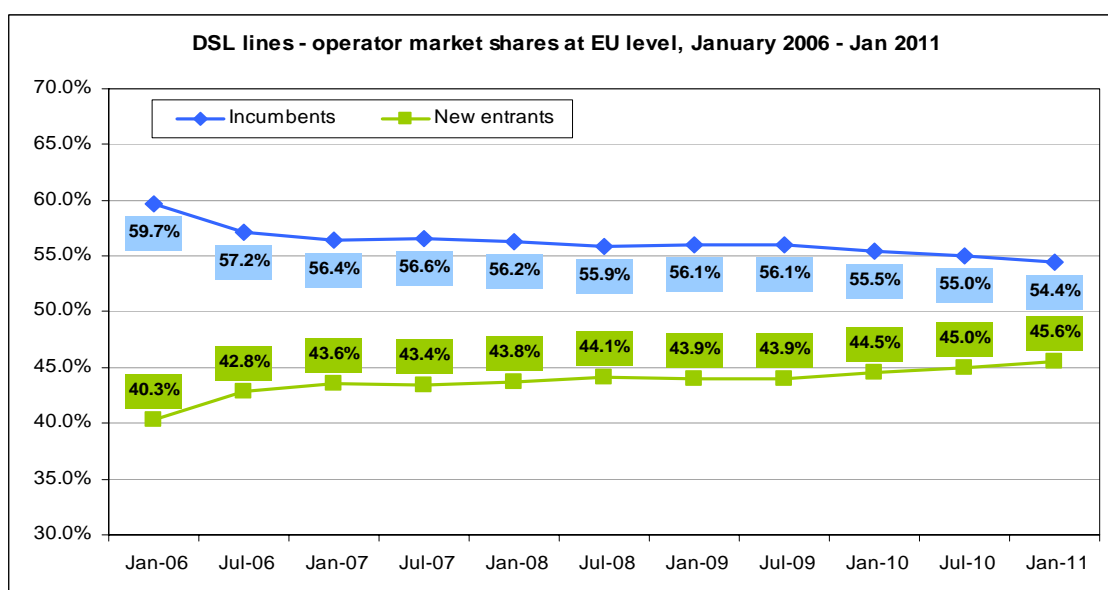
Figure 17: Fixed broadband net adds by operator in the EU



Source: Communications Committee

In the DSL market, incumbents have also lost more market share than in previous years with a net 1.1 points loss, keeping 54.4% of all DSL lines. This is also a major shift from the dynamics of the previous three years, during which unbundlers had managed to squeeze a gain of 0.9 pp only (Figure 18).

Figure 18: DSL lines – Market shares at EU level, 2006-2011

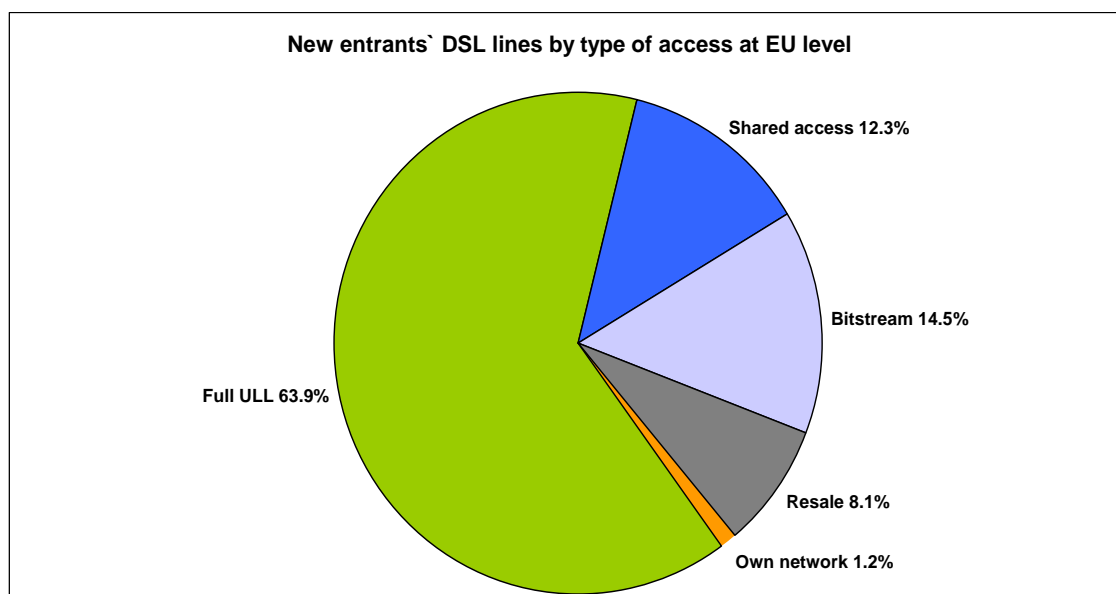


Source: Communications Committee

Local loop unbundling (fully unbundled lines and shared access) has consolidated as the main form of wholesale access for new entrants, with 76.2% of DSL lines, up from 73.7% in 2009.

New entrants are moving away not only from resale (-1.5%) and bitstream (-1.2), but also from shared access, which is the type of regulated access that experienced the most significant drop (-2.8) (Figure 19).

Figure 19: New entrants' DSL lines by type of access



Source: Communications Committee

Fully unbundled lines is the preferred way for new entrants to provide access in sixteen countries (Greece, Cyprus, Austria, Portugal, Finland, Germany, Estonia, Spain, France, Italy, Slovenia, Romania, Netherlands, Luxembourg, Denmark and the UK)). In Bulgaria, Malta, Slovakia, Lithuania, Hungary, Ireland and the Czech Republic bitstream dominates. Latvia and Belgium have a preference for resale.

## 2.6 *The slow move towards the next generation broadband access*

The EU broadband market has successfully grown over the last years (Table 3). A balanced combination of sector regulation and infrastructure competition has made this success story possible. In many European countries, especially in Western European countries, the explosion of the broadband market was facilitated by the availability of PSTN to a large proportion of the population, and operators invested in upgrading these networks to offer broadband access based on xDSL technologies. Sector regulation has triggered the entry of new market actors, mainly unbundlers, and promoted a competitive environment. In other countries where alternative infrastructures such as cable networks already existed, platform competition has been an important driver of growth. A third model of development has been that of a few countries where the footprint of the PSTN was limited and where new entrants invested on building a complete new network using more advanced technologies.

Table 3: Take-up of broadband by EU households

|  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  |
|--|-------|-------|-------|-------|-------|-------|-------|
| <b>% of households with an internet connection</b>                                     | 40.5% | 48.4% | 49.2% | 54.1% | 60.4% | 65.2% | 70.1% |
| <b>Households with a broadband connection as % of households with internet at home</b> | 33.2% | 47.6% | 61.8% | 76.8% | 80.4% | 86.0% | 87.6% |

Source: Eurostat Community Survey on ICT Usage in Households and by Individuals

Overall, the EU success has mainly built on the prior availability of PSTN and in some cases of cable modem networks. The level of investment relative to the average revenue per user and the high number of potential new customers made the business case apparent for fixed broadband providers. As a result, the EU broadband market is today the largest in the world. Broadband access has gradually become a mass product, with almost universal availability. In the fight to win and retain subscribers, operators have increasingly moved towards bundling other products to the broadband access. Prices have consistently gone down and performance has increased. 86% of fixed broadband lines in the EU are above 2 Mbps and as many as 40% of all lines provide speeds between 10 and up to 30 Mbps.

This success could, however, become a hindrance when it comes to implementing the Digital Agenda targets of 30 Mbps universal coverage and half of European households subscribing to at least 100 Mbps<sup>12</sup>. The DAE targets are based on the availability of the so called "next generations access (NGA)" networks, which can deliver much faster speeds than legacy broadband. Contrary to the first generation of broadband services based on xDSL technologies, however, deployment of NGAs requires a much higher level of investment since new fixed infrastructure based on fibre needs to be built in<sup>13</sup>. Depending on the level of ambition and the way in which targets are interpreted, it is estimated that between €73 and €221 billion would need to be invested to meet the targets<sup>14</sup>.

In the current situation, with a relatively low number of web applications that require much faster speeds and, consequently, with few consumers willing to pay a premium for very high speeds, many operators are very cautious about the size and the pace of their investments in fixed NGAs. While the price for subscribing to this new access technology remains the first barrier for many potential users, a recent consumer survey in Europe and in the US suggested that around 40% of respondents were not aware of the advantages of ultra fast broadband access<sup>15</sup>, and of the estimated 22.3 million households passed with Fibre-To-The-Home

<sup>12</sup> In the US the *National Broadband Plan* also includes a target of at least 100 million U.S. homes having affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second by 2020. By 2015, 100 million U.S. homes should have affordable access to actual download speeds of 50 Mbps and actual upload speeds of 20 Mbps.

<sup>13</sup> It appears that current xDSL broadband networks with commercially available technologies will hardly be able to offer the speeds of the DAE targets. This does not rule out the possibility of new technology developments, such as vectoring or line-bonding, but such developments would require an exam of the regulatory conditions under which operators grant other operators access to their local access broadband networks.

<sup>14</sup> "Investigation of the Telecommunications Investment Needs in Europe for the Digital Agenda Broadband Targets", Study prepared for the European Investment Bank, March 2011

<sup>15</sup> "Connected Consumer", Analysys Mason, November 2010

(FTTH) in Europe, only 3.9 million, i.e. 17% of the total, would subscribe to FTTH services<sup>16</sup>. What is more, the growth rate of homes passed in the second half of 2010 (23%) is not matched by the growth in effective FTTH take up (18%). Arguably this reluctance to subscribe to faster broadband speeds will lessen gradually as new services requiring higher speeds become available (entertainment services including HD video, 3D television and interactive gaming, multimedia communication, public online services, smart grids and M2M applications, HD user created content, etc<sup>17</sup>). Global Internet traffic is expected to increase more than fourfold by 2014, with video exceeding 91% of global consumer IP traffic by 2014<sup>18</sup>. Many of these applications do not only require faster download speeds but also higher upload speeds and a certain quality of service. Consumers are becoming aware of the importance of factors such as effective speeds, relative to advertised speeds<sup>19</sup>, latency or even volume caps imposed by operators in their offerings. Some operators also claim that the lack of certainty about the regulatory conditions on access obligations to these new networks disincentive some investment decisions. The Commission's Recommendation on Next Generation Access networks, adopted in September 2010, looks at providing guidance to national telecoms regulators on how they should regulate access to ultra-fast fibre networks, ensuring an appropriate balance between the need to encourage investment and the need to safeguard competition.

An international comparison on the take-up of lines based on fibre only (both fibre to the home and fibre to the building) reflects the extent of this problem: Compared to the US, Korea, Japan, China and even Russia, the EU has today almost the lowest number of FTTH lines and estimates indicate that growth in the adoption of this technology in the EU will increase at lower speeds than in other countries (Figure 20).

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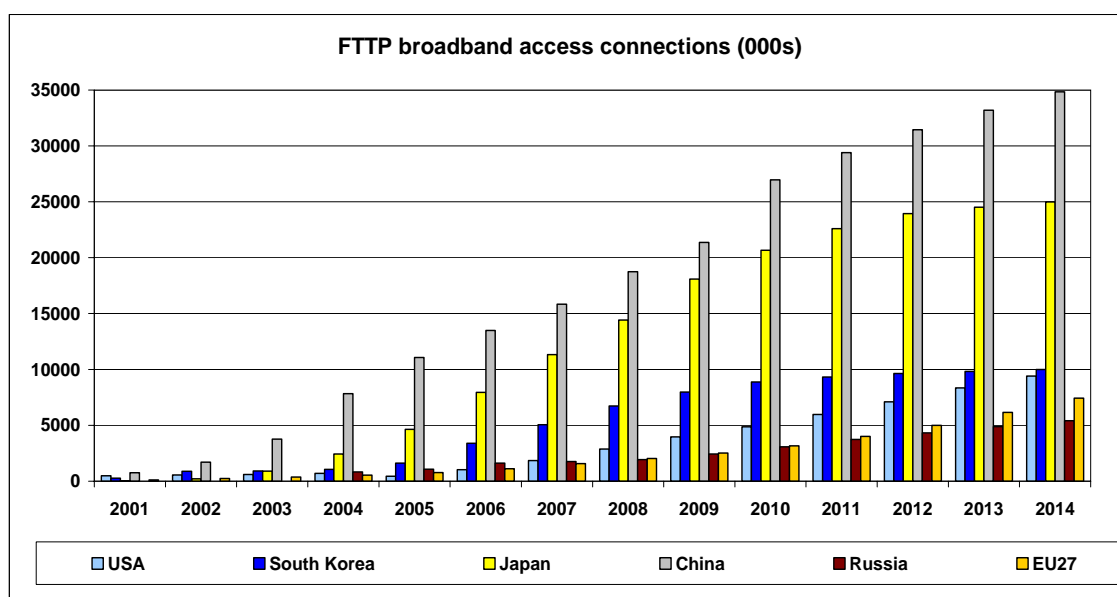
<sup>16</sup> IDATE - Fiber to the Home Council, February 2011. Figures refer to EU27 countries + Norway, Iceland, Switzerland, Andorra, Ukraine, Croatia, Serbia and Turkey.

<sup>17</sup> "A positive factor already documented in the JRC-IPTS study on videogames "Born digital/ Grown digital. Assessing the future competitiveness of the EU video games software industry" (2010), JRC Scientific and Technical Report, 24555 EN available online at <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=3759>"

<sup>18</sup> Cisco® Visual Networking Index (VNI) Forecast, 2009-2014, [http://newsroom.cisco.com/dlls/2010/prod\\_060210.html](http://newsroom.cisco.com/dlls/2010/prod_060210.html)

<sup>19</sup> In 2011 the European Commission has launched a study to measure and compare effective speeds and other parameters of broadband access in all EU Member States.

Figure 20: FTTH broadband access connections



Source: Screen Digest

Despite these gloomy forecasts at global level, there are signs that trends could evolve somehow in a more positive way due to several factors. First, as indicated earlier, there is a number of countries where the geographic footprint of PSTN networks is below 90% at national level and much lower in rural areas (between 40 and 70%), where the competitive constraint of xDSL lines over other technologies is not that strong. In some of these countries xDSL lines only account for between 30% and 40% of all broadband fixed lines and competition based on wholesale regulated products is almost inexistent or very weak. Competitors therefore use either existing alternative infrastructures such as cable modem, the coverage of which is above EU average, or simply invest in brand new networks based on fibre technologies. (Table 4).

Typical examples of this situation are Bulgaria, where 57% of broadband fixed lines use Fibre-To-The-Building (FTTB), and Romania, with similar levels of FTTB take up<sup>20</sup>. These new networks bring fibre-based access to the premises and are capable of offering speeds in line with the DAE targets. This does not necessarily mean that only ultra-fast speeds are marketed, and it is not unusual to find FTTH products with speeds of 10 to 20 Mbps in these countries meant to attract new customers. In Latvia the incumbent should have rolled out FTTH networks to some 300,000 households in urban areas by the end of 2010 and also used VDSL architecture to upgrade networks in certain compactly populated rural areas. In the Czech Republic the incumbent has maintained a stable market share of 85.5% in the DSL segment, while WLL and cable providers are the main market players building FTTx networks (mostly as FTTB) as upgrades of their existing networks. In Slovenia growth of the fixed broadband market was primarily based on FTTH technologies and cable, which was the preferred technology for new connections in 2010 due to the upgrade of the cable operators' networks to DOCSIS 3.0

<sup>20</sup> Source: Commission services based on COCOM, "A world of Fiber" by Diffraction analysis, January 2011, and IDATE - IDATE - Fiber to the Home Council, February 2011

Table 4: **Breakdown of fixed broadband lines by technologies**

| Country | DSL lines % | Cable modem % | Other % |
|---------|-------------|---------------|---------|
| RO      | 29%         | 14%           | 56%     |
| BG      | 31%         | 13%           | 57%     |
| LT      | 31%         | 7%            | 62%     |
| CZ      | 38%         | 22%           | 40%     |
| LV      | 40%         | 6%            | 54%     |
| HU      | 40%         | 44%           | 17%     |
| EE      | 44%         | 21%           | 35%     |
| SK      | 44%         | 11%           | 46%     |
| PL      | 51%         | 27%           | 22%     |
| MT      | 52%         | 44%           | 4%      |
| PT      | 53%         | 40%           | 7%      |
| BE      | 54%         | 45%           | 1%      |
| SE      | 55%         | 20%           | 25%     |
| NL      | 57%         | 40%           | 3%      |
| DK      | 58%         | 26%           | 16%     |
| SI      | 58%         | 25%           | 17%     |
| AT      | 69%         | 29%           | 2%      |
| IE      | 71%         | 20%           | 10%     |
| FI      | 71%         | 15%           | 13%     |
| EU      | 77%         | 16%           | 7%      |
| UK      | 79%         | 21%           | 0%      |
| ES      | 80%         | 18%           | 2%      |
| LU      | 84%         | 15%           | 1%      |
| DE      | 88%         | 11%           | 1%      |
| CY      | 91%         | 8%            | 1%      |
| FR      | 93%         | 6%            | 1%      |
| IT      | 98%         | 0%            | 2%      |
| EL      | 100%        | 0%            | 0%      |

Source: Communications Committee

Where cable modem networks are used, operators are starting to upgrade these to DOCSIS 3.0 technologies that enhance transmission capacity and allow much higher speeds. In some of these countries the footprint of cable modem networks is above average, both at national level and, in some cases, in rural areas as well. These deployments may start exerting some degree of competitive pressure over incumbents, which are expected to react upgrading their own networks so as to offer higher speeds based on VDSL.

Such scenario is already a reality in countries where competition between cable modem and xDSL is effective. Incumbents and new entrants started upgrading their networks to sell VDSL and DOCSIS 3.0 products, initially with increases in retail prices and later offering speed upgrades maintaining the price level of the first generation access. Belgium, the Netherlands and Portugal are typical examples of this pattern of development: In Belgium the incumbent uses a fibre-to-the-curb (VDSL2) technology, which allegedly reaches 75% of population, while the cable companies are enabling their networks for EuroDocsis 3.0, which have allegedly been upgraded for 90%. In the Netherlands, as a consequence of the introduction of EuroDocsis 3.0 technology, the cable networks are able to make interesting offers with speeds of more than 100 Mbps. The fixed incumbent deploys VDSL and also fibre, by means of a joint venture. Overall the number of homes-passed in the Netherlands has tripled over the past three years (444,000 lines in the second quarter of 2010). In Portugal several offers of 100 Mbps, 200 Mbps and even 1 Gbps were launched in 2010, following FTTH deployments in limited areas by some alternative operators and the incumbent and the upgrade of the main cable operator's network to DOCSIS 3.0. Growth of VDSL and DOCSIS 3.0 lines in these countries has accelerated over the last years. According to an industry association, 24 operators in 18 countries now offer broadband speeds of 100 Mbps or above and 51% of EU households would be able to access speeds of at least 30 Mbps via cable networks by 2013.

A variant of this model occurs in a few countries that have been very active in rolling out FTTP networks in parallel to cable and DSL. This is particularly the case of Sweden, Denmark and Finland. In Sweden FTTH, with a 24.4% fixed broadband market share, has eventually replaced cable as the most important alternative fixed platform to DSL. In Denmark, electricity providers continue to invest in the roll-out of FTTH networks and focus on delivering 100 Mbps, with around 200,000 homes currently served with this service.

In the countries where xDSL is the dominant technology, former incumbent operators control the major part of the infrastructure and, with the exception of the UK, continue having a strong market position (between 40% and 50% of the fixed broadband market). These operators may leverage on dominance to maintain and even increase revenues with a gradual roll out of VDSL and, in the long term, FTTx products. But this should not occur to the detriment of unbundlers, which have incurred significant investments over the last years.

Large incumbents face the dilemma of carrying long run and costly fibre investments with yet low expected commercial outcomes, in a framework of political pressure from regional and national governments on the one hand to invest in fibre and shareholders' demand for short term returns on the other. Hence the ratio of expected effective take up of NGAs against planned roll out becomes a critical element for operators when deciding to engage on new network deployment. Obviously in those countries where a large proportion of the population has never used the internet and shows low propensity to become connected, it is very difficult to defend hefty investment plans. This partly explains the timid deployment of NGAs in some Member States, where operators only roll out fibre based networks in very specific



geographic areas where expected returns appear to be more secure. Sector NGA regulation will therefore be critical in ensuring a smooth transition to second generation broadband access.

## **2.7      *The political debate***

In the past few years the political debate in Europe has evolved around the desirability of an advanced, high-speed broadband infrastructure fit for the 21<sup>st</sup> century. Most of the investment needed is expected to come from the private sector. Nevertheless the market has been very cautious about the move, as costs of deployment are significantly higher than for legacy broadband.

Operators are searching for new and sustainable business models while trying to determine the speed and extent of their NGAs investments. While commercial players are expected to invest in more densely-populated urban areas, public authorities can support developments by subsidies in more rural areas and, most importantly, by considering cost-cutting measures. Given the high costs of civil engineering, the European broadband policy emphasises ways to facilitate investment and remove bureaucratic obstacles to achieve more with less. Possible cost-cutting measures include (i) mapping of the suitable infrastructure; (ii) making sure that civil engineering works involve potential investors and exploit synergies between all network infrastructures; (iii) clearing rights of ways, etc.

To maximise the policy impact, European Member States are expected to develop national plans focussing both on the cost-cutting measures above as well as on the use of Community funds (such as Regional and Rural Development funding) in disadvantaged areas. Finally, other important Digital Agenda policies are crucial to strengthen developments in digital skills and the digital single market, which states that demand must be in place to ensure a vibrant digital future for Europe.

With regards to State Aid for the deployment of broadband networks, after the adoption of the 2009 Broadband Guidelines, the Commission has issued a record number of decisions and has approved a record amount of pro-competitive state aid in this sector (over to €1.8 billion in 2010).

## **2.8      *Policy responses to the DAE targets***

The European Commission has taken active steps to clarify the regulatory environment as well as to propose concrete measures to stimulate deployment of high-speed broadband. It has adopted a comprehensive package comprising:

- A Commission Recommendation on Regulated Access to Next Generation Access (NGA)<sup>21</sup> networks which sets out a common regulatory approach for access to new high-speed fibre networks. It requires national telecoms regulators to ensure an appropriate balance between the needs to encourage investment and to safeguard

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<sup>21</sup> C(2010) 6223

competition. This will provide increased regulatory clarity to all market players, which is necessary to stimulate investment in fast and ultra-fast broadband. The Telecommunications Framework Directive (2002/21/EC) requires Member States to ensure that their regulatory authorities take the "utmost account" of the Commission Recommendation, justifying any departure from it.

- A Commission proposal for a Decision by the European Parliament and Council to establish a five-year policy programme to promote efficient radio spectrum management<sup>22</sup> and, in particular, ensuring that sufficient spectrum is made available by 2013 for wireless broadband (which will significantly contribute bringing fast broadband connections to people in remote areas and to make innovative services available across Europe). Efficient and competitive use of spectrum in the EU will also support innovation in other policy areas and sectors such as transport and the environment.
- A Broadband Communication<sup>23</sup> that sets out a coherent framework for meeting the Digital Agenda's broadband targets and, in particular, outlines how to best encourage public and private investment in fast and ultra-fast broadband networks. It calls on EU Member States to introduce operational broadband plans for high and ultra high speed networks with concrete implementing measures. It also provides guidance on how to cut investment costs and indicates how public authorities may support broadband investment, including making better use EU funds.
- These initiatives add to the 2009 Commission State aid Broadband Guidelines. The Guidelines provide a clear framework for government as well as for stakeholders as to how public authorities should design their State aid measures in the most pro-competitive way. The broadband Guidelines aim at achieving the coverage goals of the Digital Agenda in harmony with the goal of keeping broadband markets competitive, avoiding to crowd out private investments and to recreate positions of monopoly as a consequence of State intervention.

## 2.9 *NGA deployment in Member States – Current situation, investment and national plans*<sup>24</sup>

In line with the DAE, many Member States have developed national broadband strategies setting ambitious targets in terms of broadband coverage and speeds.

National broadband strategies set out as a first target the covering of (mostly) 100 % of the population with basic broadband in the next years and the availability of much faster networks by 2015-2020. In some MS there is a significant gap between current take-up and coverage (both achieved and targeted coverage).

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<sup>22</sup> COM(2010) 471

<sup>23</sup> "European Broadband: investing in digitally driven growth", COM(2010) 472.

<sup>24</sup> Commission services based on "BEREC, Next Generation Access – Collection of factual information and new issues of NGA roll-out, February 2011" ([http://www.erg.eu.int/doc/berec/bor\\_11\\_06.pdf](http://www.erg.eu.int/doc/berec/bor_11_06.pdf)), the European Broadband Portal (<http://www.broadband-europe.eu/Pages/StrategyDetail.aspx?ItemID=37>) information provided by NRAs and operators' announcements. Look at country chapters for further details.

The speed targets range from 2 Mbit/s in some countries up to 400 Mbit/s in the Netherlands. The majority of MS's target has a target bandwidth of 50-100 Mbit/s which goes beyond the 30 Mbit/s target set in the Digital Agenda.

Many countries focus on rural/underserved areas (e.g. in Austria, Denmark, Finland, France, Germany, Italy, Lithuania, Malta, Portugal, Romania, Spain, Sweden, United Kingdom).

The following is a non-exhaustive list of Member States' response to the DAE targets (Chart 21).

- In Belgium, the “Belgium – Digital heart of Europe 2010-2015: 30 action points” initiative contains very different elements, covering both infrastructure and e-services. One specific target looks at 90% of households connected to broadband by 2015. According to the Belgian plan, by mid 2009 more than 70% of the population was potentially covered by networks offerings 20 Mbps download speeds and this percentage should increase to 95%. The good average speed in Belgium seems to be the result of platform competition between the incumbent and the cable providers, which both have a national geographical coverage of almost 100%. They have based their strategy on an upgrade of technologies, VDSL for the incumbent, which allegedly reaches 75% of population and EuroDocs 3.0 for the cable companies' networks, 90% of which have allegedly been upgraded.
- Bulgaria adopted its broadband strategy in 2009 and the Government has yet to present a detailed implementation programme. It plans to achieve 100% broadband coverage of 1 Mb/s by 2013. A governmental project for the development and operation of a broadband access network in less urbanised and rural areas has been launched, promoting open access for last-mile operators.
- The Czech Republic adopted in early 2011 a new broadband strategy called 'Digital Czech' that was prepared during 2010. The strategy sets out the following broadband targets: national coverage at minimum speeds of 2 Mbps (download), and in the cities at a minimum of 10 Mbps, by 2013; improving the quality of rural broadband connections to reach 50% of the average speed available in urban areas by 2015; and broadband at 30 Mbps to be available to at least 30% of subscribers in urban areas, also by 2015.
- In Denmark 77% of households could access 10 Mbit/s services by the end of 2009. In June 2010 the Danish government presented the "*Digital Roads to Growth*" initiative, which among 35 initiatives includes a target of 100 Mbit/s access to all households and enterprises by 2020. An intermediate objective included all households having access to a broadband connection of 0.5 Mbps by the end of 2010. Electricity companies continued investing in FTTH roll-out, with around 200 000 homes currently served with this service. The incumbent continues its VDSL strategy of upgrading its network in combination with the fibre network acquired with the take-over of a small fibre operator in 2010. However, according to the incumbent, VDSL, networks were only able to provide speeds of 15 Mbps.
- In Germany, the “Deutschland Digital 2015” initiative refers to all aspects of information society, including the implementation and update of the 2009 "National Broadband Strategy". This strategy wants to ensure that all German households have

access to broadband Internet at speeds of at least 1 Mbps by the end of 2010 at the latest. It appears that just 98.6% coverage was reached at the end of 2010. The second target is to bring broadband access of or above 50 Mbps to 75% of the households by 2014. The strategy is based on four pillars: use of synergies in infrastructure roll-out, supporting spectrum policy, growth-oriented regulation, and financial support measures. A national duct support scheme with a budget of 600 million Euros aims at fostering the deployment of NGA networks. In 2010 40% of new broadband customers were connected over non-DSL lines mainly based on broadband cable, 255 000 households had active broadband lines based on FTTH/FTTB and 200,000 active lines were based on VDSL.

- The Estonian EstWin project foresees the provision of wholesale service and making 100 Mbit/s wideband internet accessible to every citizen of Estonia by 2015 through the construction of a country-wide broadband network. A non-profit organisation called Estonian Broadband Development Foundation was created in August 2009 by major operators and the government. The first sub-project was launched in August 2010.
- Following completion of the National Broadband Scheme, Ireland now has 99% coverage for the whole country. The service provides a minimum download speed of 1.6 Mbps and maximum of 6.8 Mbps and is available for 235,000 premises across every county in Ireland. Speeds will be increased to a maximum of 10 Mbps by October 2012. A new Rural Broadband Scheme to be launched shortly will ensure that the remaining 1% of the country will be covered. However the prospects for investment in NGN remain uncertain in Ireland although cross-industry discussions are progressing well and trials are being undertaken by the incumbent operator, which is planning to invest €20 million in a trial of ultra-high speed fibre-optic broadband services capable of data speeds of up to 150Mbps.
- In Greece the initial parameters of the national project for the creation of a nation-wide fibre optic network infrastructure were being revisited in order to render this project more economically viable and attractive to potential investors. Plans were also made for the exploitation of the existing optics metropolitan area networks present in 72 Greek cities aimed at ensuring the rollout of broadband networks in rural areas. The Greek incumbent initiated the deployment of its new optical access network (FTTC with the use of VDSL2 technology). The project was initially developed in a limited number of urban areas, and will progressively expand to cover other areas in order to provide end users with speeds up to 50 Mbps. Besides the mentioned plans, there is also a planned measure to bring broadband to rural areas using the funds made available by the European Economic Recovery Plan.
- In Spain the "Plan Avanza 2 – 2011-2015" strategy provides state aid for extending basic as well as high-speed broadband coverage. Draft legislation includes the definition of 1 Mbps as functional access to the Internet as part of the universal service as of 2011. But there have not yet been any major fibre deployments in the country. In August 2010, the incumbent launched new broadband offers based on FTTH with speeds of up to 50 Mbps in limited areas, and most cable operators are currently providing speeds of up to 100 Mbps.

- In France the “National Ultrafast Broadband Program” released in June 2010 does not lay down any goals in terms of speed, just coverage (70% of households in 2020 and 100% in 2025). It includes a call for expressions of investment intentions in order to collect investment intentions of operators to deploy ultrafast local loop networks in the next 5 years outside very high-density areas. This measure serves as a basis for granting financial support in the next step. The Government estimated that fibre may cover 80% of the territory, 15% will be covered by other technology than fibre and 5% by the modernisation of the copper network. FTTH deployment has started in about 100 out of the 148 municipalities that ARCEP defined as very densely populated areas. In the third quarter of 2010, almost one million households were eligible for FTTH offers. A new call for expressions of investment will be held every 2 years. An amount of € 2 billions is devoted to increase national coverage with high-speed networks.
- Italy is currently one of the largest FTTH markets in Europe, with more than 2.5 million <sup>25</sup>homes passed and 348,000 fibre subscribers at the end of December 2010. Both the incumbent and the alternative operators have announced investment plans: The “Fibre for Italy” project (with the participation of Fastweb, Vodafone and Wind in a co-investment partnership), aimed at reaching 20 million people in Italy’s 15 largest cities by 2015, and Telecom Italia’s plan to connect 138 cities with FTTH/B by 2018. The Italian NRA has established a NGN Committee to define guidelines for NGN. The Italian government has started the “Italia digitale” project. The two pillars of the Plan are the National Broadband Plan to bridge the digital divide and the Next Generation Access Networks Plan. The latter, in particular, aims at enabling at least 50 per cent of Italians to surf the Internet at a speed exceeding 100 mbps by 2020. The “Broadband in Rural Areas” plan envisages financing the extension of the fibre backhaul network to local exchanges areas located in rural areas as well as broadband wireless solutions for the most remote areas. The Commission approved a number of regional projects in 2010, including anti-digital divide initiatives in Lombardia and Trentino.
- In Cyprus a first draft of the digital strategy for the country was subjected to internal consultation in September 2010. The national broadband strategy, which forms part of this digital strategy for Cyprus, sets out broadband targets as outlined in the DAE. Geographical coverage and quality of service requirements will be included in the forthcoming spectrum auctions so as to facilitate access to internet of a speed of more than 2 Mbps for all citizens by 2013. Internet access of a speed of more than 30 Mbps by 2020 is expected to be met with the deployment of broadband access networks making use of fibre optics and other technologies (ex. wireless), and with the licensing of more spectrum for electronic communication services. The plan also envisions the use of satellite services to provide basic Internet connectivity of 1 Mbps for every 5 users to areas in Cyprus where broadband services were not available (‘white areas’ – 151 rural communities). The incumbent operator continued upgrading its copper network with a view to provide services through VDSL2 on a nationwide basis, which is expected to be finalised by the beginning of 2011. An alternative fixed operator is currently developing its own FTTH network.

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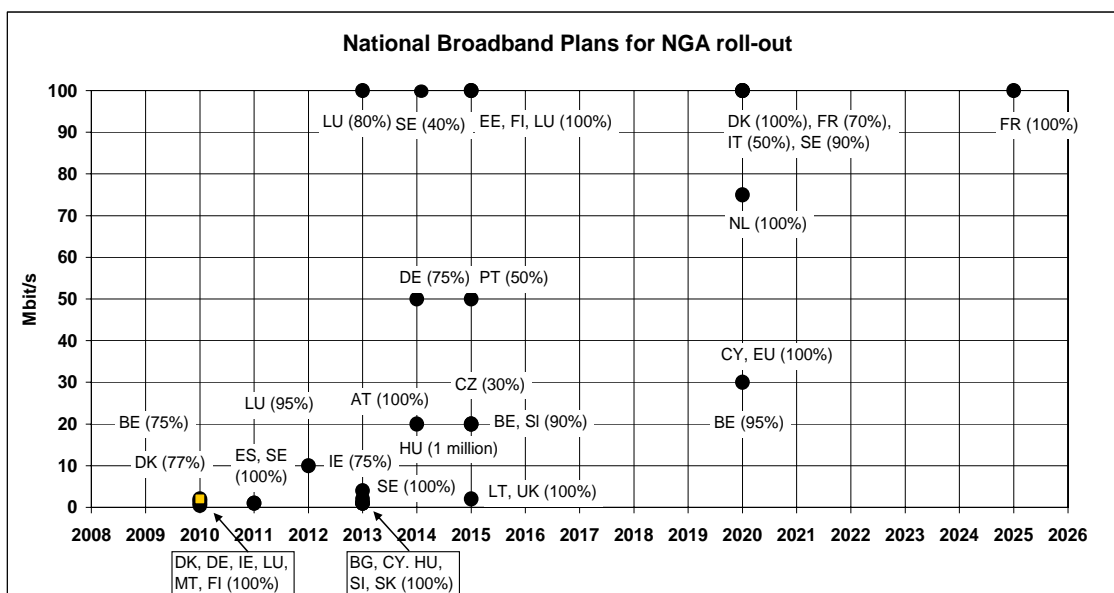
<sup>25</sup> FTTH Council

- Latvia has one of the highest shares of FTTH lines in the EU and the share of high speed lines (above 10 Mbps) doubled for the second consecutive year. The share of FTTH broadband lines jumped from 5.1% in January 2010 to 17.7% in January 2011. Latvian broadband operators continued to invest in upgrading their broadband networks. The incumbent reported having covered 300 000 households with FTTH networks by the end of 2010 and the alternative operators also worked on increasing broadband speeds. In August 2010, the Ministry of Transport submitted for approval to the Cabinet of Ministers draft “Guidelines for the electronic communications policy in 2011-2016”. These draft guidelines do not provide for specific broadband coverage targets but set the penetration targets (20% in 2012 and 25% in 2016 for fixed broadband and, respectively, 15% and 30% for mobile broadband). These draft guidelines have not yet been adopted.
- Lithuania is the European leader in FTTH penetration despite its lower than average broadband penetration rate. In June 2010, more than 20% of households were connected. As for take-up, penetration stood at close to 16%. A draft Lithuanian Information Society Development Strategy for 2010-2015 is under preparation, with one of its major targets being the provision of broadband access to 98% of Lithuanian inhabitants by 2015. Coverage of rural areas is the main challenge of the plan and the RAIN and RAIN-2 national projects look at stimulating the provision of fast broadband services in these areas. TEO LT was reported to have expanded the reach of its fibre to the home (FTTH) network to more than half of Lithuania's inhabitants.
- Luxembourg presented its national strategy for the development of NGNs in March 2010, aiming at increasing the speed of existing networks and the investment in NGNs so as to make Luxembourg the first "fibred" country in the EU, through a transition from VDSL to FTTH. A minimum speed of 2 Mbps downlink should be available for 100% of the population in 2010, 100 Mbps downlink by 2015, and 1 Gbps by 2020. Intermediate coverage-related targets include 95% of the population with access to 25 Mbps downlink by 2011, 80% of the population with 100 Mbps downlink access in 2013 and 50% of the population with 1 Gbps downlink access in 2015.
- The draft "Digital Hungary Programme" is closely linked to the European Digital Agenda, with basic and advanced broadband targets: 100% coverage of broadband connection of at least 4 Mbit/s by 2013 and 1 million with NGA access of at least 20 Mbit/s by 2014. According to information provided by the incumbent, as of December 2009, 545000 households can be reached via FTTB, although the market share of FTTH remained very low.
- Malta is currently in a transition phase with respect to its national broadband plan and no significant progress has been made on the move towards NGA networks. The previous policy plan ("Smart Island Strategy" – 2008-2010) aimed to achieve 100% broadband coverage at 2 Mbps by 2010, as well as 20% of households being connected to next generation networks. The government has now started to work on a new strategy outlining objectives for 2015. Despite some roll out of FTTC in certain areas, operators have not announced any investment plans or a timeframe yet in relation to FTTH. The Maltese NRA is considering extending the current scope of the universal service to include the provision of broadband connections permitting a minimum speed of 4 Mbps. The consultation was launched in the 3rd quarter 2010 and the NRA is currently reviewing the responses.

- In the Netherlands, the "Digital Agenda.nl" planned for May 2011 will cover the main aspects of the DAE. The Government has published a document which intends municipalities to identify their role in stimulating NGA roll-out and take-up. In most cases a facilitating role (e.g. opening streets) or a role for pooling demand is considered sufficient. In terms of actual coverage, broadband speeds are high in the Netherlands and it appears that cable companies are capable of providing very-high speed connections of more than 30 Mbps. Fibre is being rolled out by the fixed incumbent, by means of a joint venture, but also locally or regionally by smaller players and municipalities. Overall the number of homes-connected has tripled over the past three years (444 000 lines in Q2 2010).
- Austria foresees a target of providing every Austrian citizen with a broadband connection of at least 25 MBit/s by 2013. In December 2010 the Austrian Government presented the "Broadband Austria 2013" initiative, aimed at stimulating the rollout of broadband infrastructure in rural areas. A high-level competence centre for information and communication technologies for promoting the development, roll-out and usage of broadband technologies was established in 2010.
- Poland's broadband plans are currently based on the 2008 government's 'Strategy for the Development of the Information Society in Poland until 2013', which seeks to ensure general access to e-communications facilities. The strategy lacks specific broadband targets. A new comprehensive national broadband plan is expected in the first half of 2011.
- In Portugal more than 4 million households have access to high-speed broadband networks and the country aims for a 100% penetration of NGA. In 2009, the Government signed a protocol with four of the main operators and adopted new national legislation in order to boost investment in NGA. Five public tenders were launched for the deployment of NGA networks in rural areas, which are not served by private operators, including the outermost regions of the Açores and Madeira. The networks should provide a minimum download speed of 40 Mbps and cover at least 50% of the population in each area.
- Romania. No substantial progress has been achieved in relation to the project to develop fixed broadband infrastructure using EU rural development funds in accordance with the strategy adopted in 2009.
- The Slovenian Broadband strategy was adopted in July 2008 and defined quantitative broadband targets: Basic broadband coverage for 100% of Slovenian citizens by 2010, broadband coverage at minimum 2 Mbit/s for 98% population by 2012 and broadband coverage at 20 Mbit/s and availability of triple play for 90% population by 2015. Also a longer term objective was defined targeting the availability of FTTH or comparable broadband connections of greater capacity for 90% population by 2020.
- The Slovak national public broadband development project was revisited in 2010 with the principal outcome of shifting the focus to the financing of regional networks. Broadband access is defined at 2 Mbps downstream and 512 Kbps upstream. The new draft of the broadband strategy sets the national broadband target of full coverage by 2013 at 1 Mbps.

- The Finish broadband strategy for 2009-2015 includes the extension of the scope of universal service to broadband connections of an average speed of 1 Mbps from 1 July 2010. By the end of 2015 the target is to have 100 Mbit/s broadband networks available for all. By the end of 2015 high-speed (trunk) networks should be within the reach of virtually everyone in a 2 km distance, according to demand. Commercial deployments are expected to ensure that 95 percent of the country is covered in this way, and public funds should be used to cover the remaining 130 000 households in rural areas
- Sweden saw an increase in fast broadband speeds in 2010 due to an extension of fibre networks. In November 2009, the Swedish Government published its Broadband Strategy, with a target of 90% of households and companies having access to at least 100 Mbps broadband by 2020 and an intermediate target of 40% of households by 2014. The Government also set an objective of providing a 1 Mbps connection for every citizen as of 2011, on the understanding that this speed constitutes functional Internet access.
- In the UK, BT plans to roll out fibre broadband covering two thirds of premises until 2015, through both VDSL and FTTH. Virgin Media has started to roll out DOCSIS 3.0 at 100 Mbps on their existing cable network to 12.7 million homes. On 6 December 2010, the Government launched a new broadband strategy entitled “Britain’s Superfast Broadband Future”, which aims to make sure the UK has the “best broadband network in Europe by 2015”. It also aims at ensuring that “virtually” all homes will have access to a minimum level of service of 2 Mbps by 2015.

Figure 21: Member States' broadband targets



Source: Commission services based on BEREC, OECD and national sources



### 3. THE MOBILE SECTOR

Developments in the mobile segment have mainly been driven by the rise in data traffic. Data traffic on mobile networks is already greater than voice and is expected to almost double year by year<sup>26</sup>. The enormous increase in traffic is a result of four interrelated factors. First, the increasing penetration of smart phones and tablets (and also notebooks). By 2014, 83% of all Western European mobile connections will be 3G<sup>27</sup>. Second, the fast evolution of the mobile applications market, which offers an increasingly wide range of attractive content optimised for mobile handsets. Mobile application store downloads are expected to grow by 117 % in 2011 reaching 17.7 billion downloads worldwide<sup>28</sup>, with increasingly bandwidth-hungry applications driving up the average data consumption per user. Third, the mass market nature of the mobile market, with the evolution of devices and applications attracting large numbers of users. Fourth, mobile broadband is getting more and more popular for large screen use as well. Especially in countries with low fixed broadband penetration, mobile may be used as the main internet connection in a household.

The expected boom in demand for mobile data can only take place if mobile networks can manage the significant growth in traffic. In 2010, operators focused on improving their 3G and High Speed Packet Access (HSPA) networks, and prepared for the launch of LTE<sup>29</sup>, the 4<sup>th</sup> mobile generation. As for 3G, European population coverage was 90% in 2010. Spectrum for LTE has already been auctioned in several countries including Sweden, Finland, Germany, Austria, the Netherlands, Denmark and Estonia, and 10 operators in the EU have already commercially launched 4G<sup>30</sup>. LTE will bring effective speeds at user level comparable with current DSL products, thereby improving the competitive position of mobile broadband in relation to fixed offers. Nevertheless, the change-over to LTE will take time, as current devices can only operate on 3G or HSPA (or only on EDGE or GPRS) networks. This will trigger further investments in legacy networks too.

#### 3.1 *Mobile subscriptions: Penetration is still on the increase*

There were 622 million active mobile subscriptions in the EU in October 2010, which corresponds to a population penetration rate of 124.2%. Number of subscriptions is still on the rise, though the growth rate has slowed down. The high penetration rate reveals that it is very common to use more than one mobile subscription or SIM card. In many cases, people have a business and a private subscription, or a voice and a data only subscription. Due to the still large differences in roaming and domestic calls, those people spending substantial time in two different countries may have subscriptions in both countries.

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<sup>26</sup> Screen Digest: Mobile data traffic set for massive growth

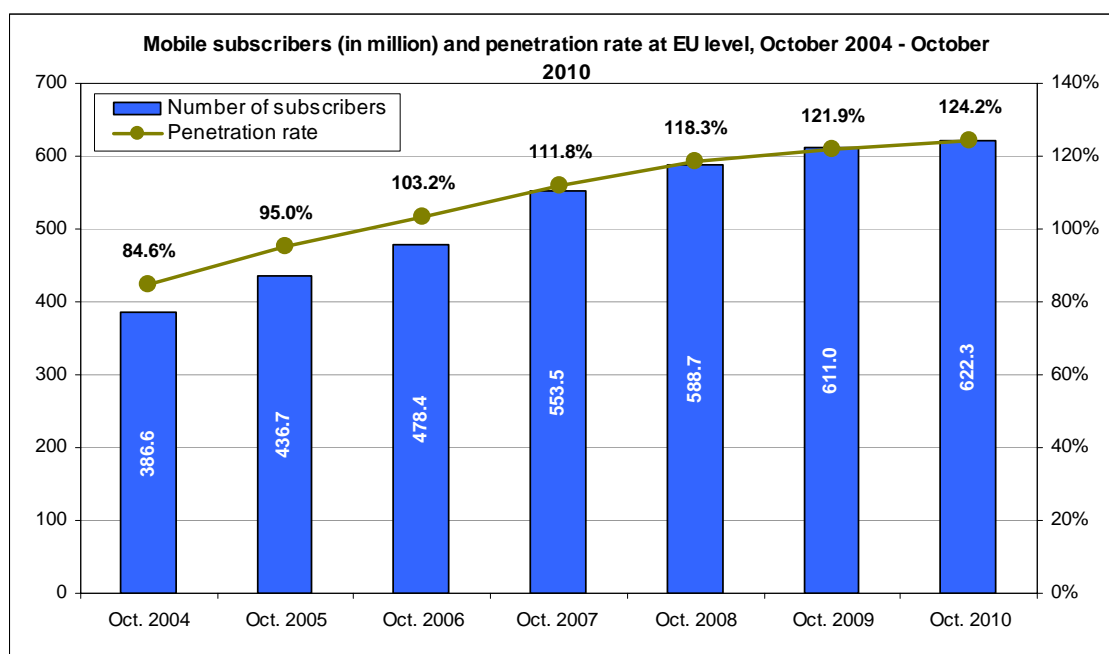
<sup>27</sup> Gartner: Market Trends: Worldwide, How Mobile SCPs can control the Mobile Data Explosion, 2011

<sup>28</sup> Gartner: Gartner Says Worldwide Mobile Application Store Revenue Forecast to Surpass \$15 Billion in 2011

<sup>29</sup> Long Term Evolution

<sup>30</sup> Source: GSM Association

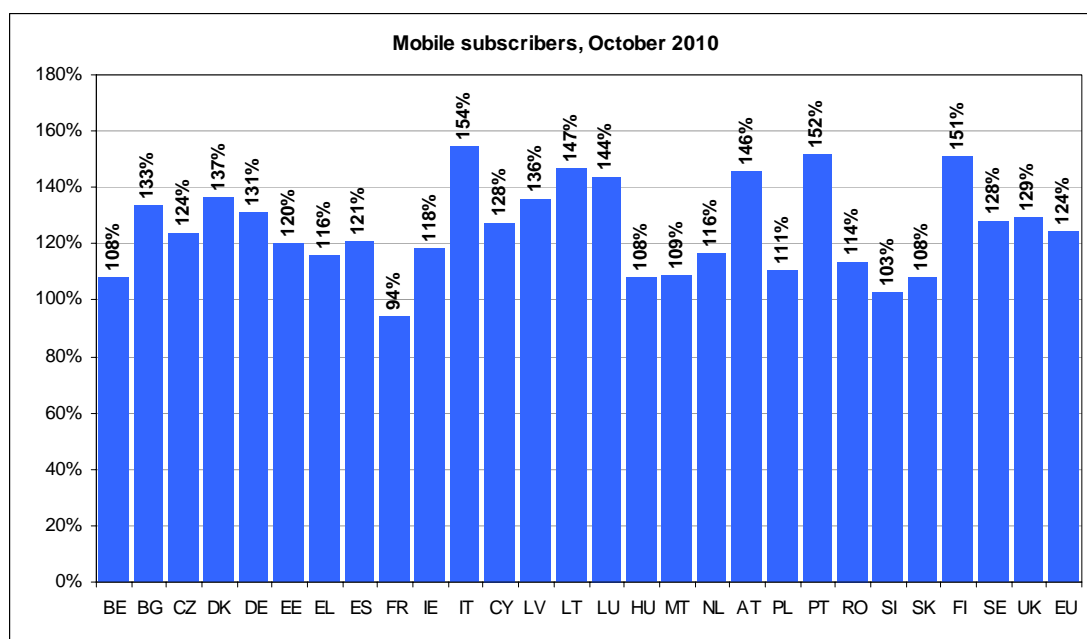
Figure 22: Mobile subscribers and penetration rate at EU level October 2004 – October 2010



Source: Commission services

There are large differences in penetration at the Member State level. Italy has the highest rate (154.5%), which is partly caused by the very high prepaid ratio. Penetration is also very high (above 140%) in Portugal, Finland, Lithuania, Austria and Luxembourg. France, being the only country below 100% penetration rate, is at the very bottom of the list, which is partly due to the very strong focus on postpaid (Figure 23).

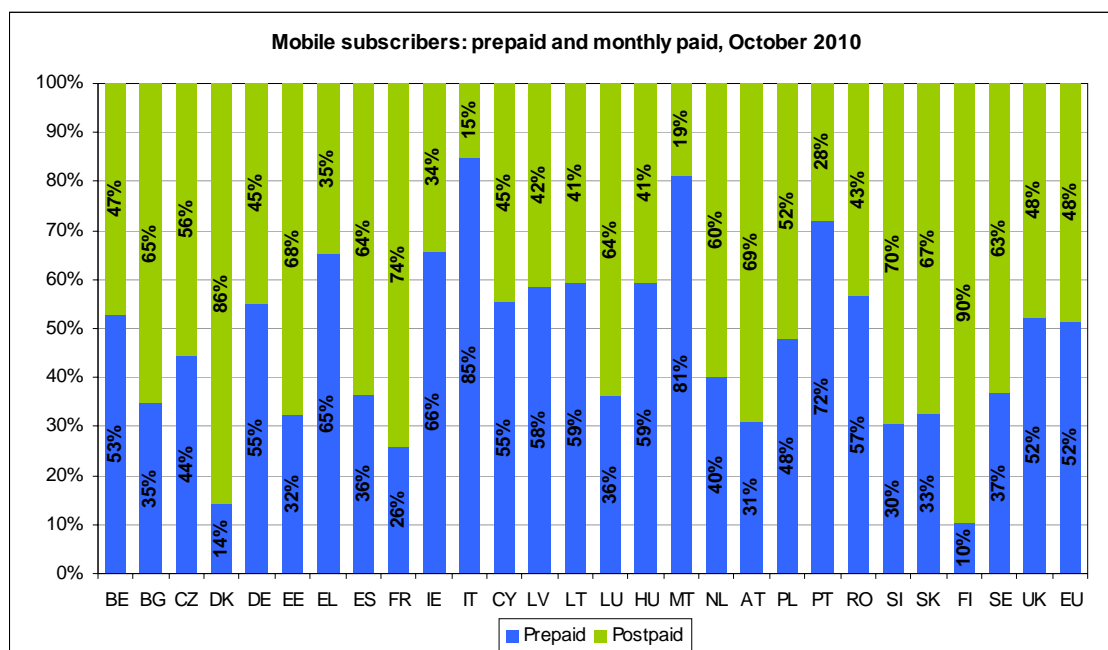
Figure 23: Mobile subscribers, October 2010



Source: Commission services

48.4% of European mobile subscriptions are postpaid, which is an increase of 3.7 pp compared to a year earlier. The ratios show large differences among the member states, which are mainly due to different operator strategies. The ratio of postpaid is generally higher in countries where the monthly paid customers are entitled to substantial subsidies on handsets, exclusive loyalty offers, and lower minute fees.

Figure 24: Mobile subscribers: prepaid and monthly paid, October 2010

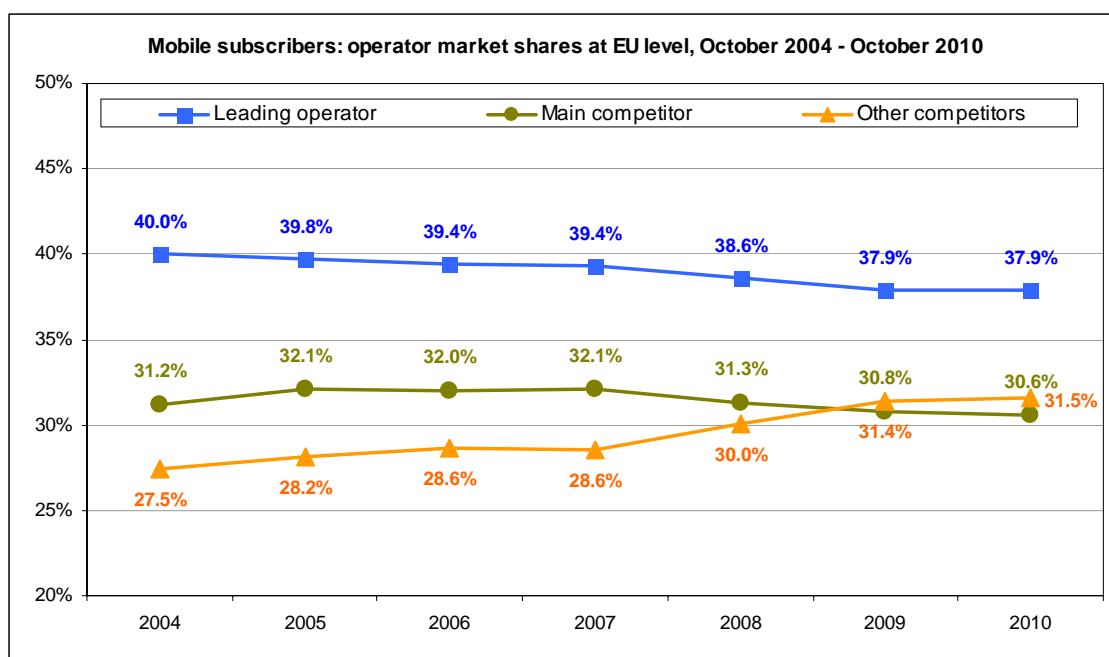


Source: Commission services

### 3.2 Competition: Market leaders are losing market share

Between 2007 and 2009, market leaders and main competitors (the second largest operator in a country) lost market share. This trend suggests that Mobile Virtual Network Operators were slightly gaining market share. Regulation has played an important role in strengthening competition in two ways. First, number portability eased very much the process of switching operators. Second, the lowering of termination rates has put small operators in a better position, as the price difference between on-net and off-net calls could be reduced. However, in 2010, market shares at EU level did not change, as the general strengthening of small operators was compensated by a merger in the UK market.

Figure 25: Operators' market shares at EU level, October 2004 – October 2010

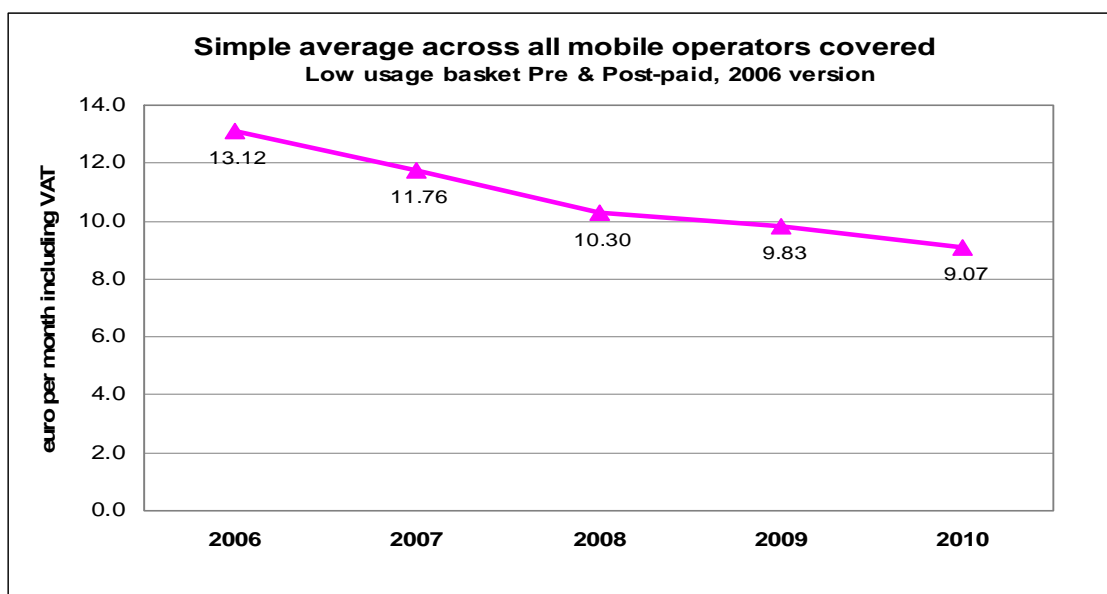


Source: Commission services

### 3.3 *Pricing and Average Revenue Per User (ARPU): Prices are decreasing, ARPU dropped even more significantly*

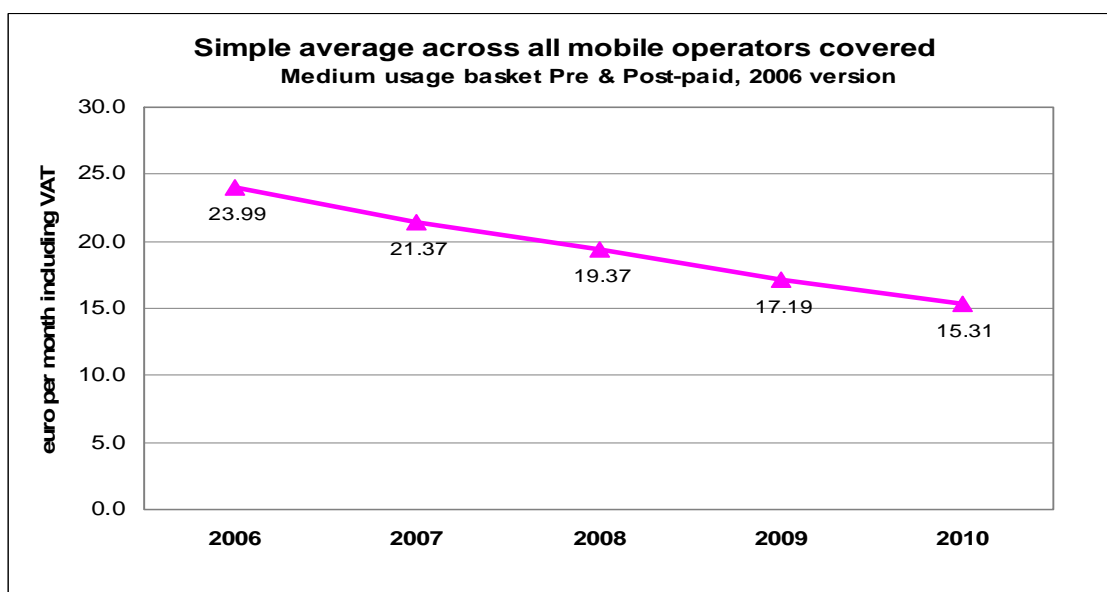
Mobile telephony prices, as measured by the OECD baskets methodology, have decreased for all consumer patterns (Figures 26a, b and c). While prices in the low usage basket have fallen by 7% in 2010, those in the medium and high usage basket have decreased by more than 10%.

Figure 26a: Mobile price development, low usage basket



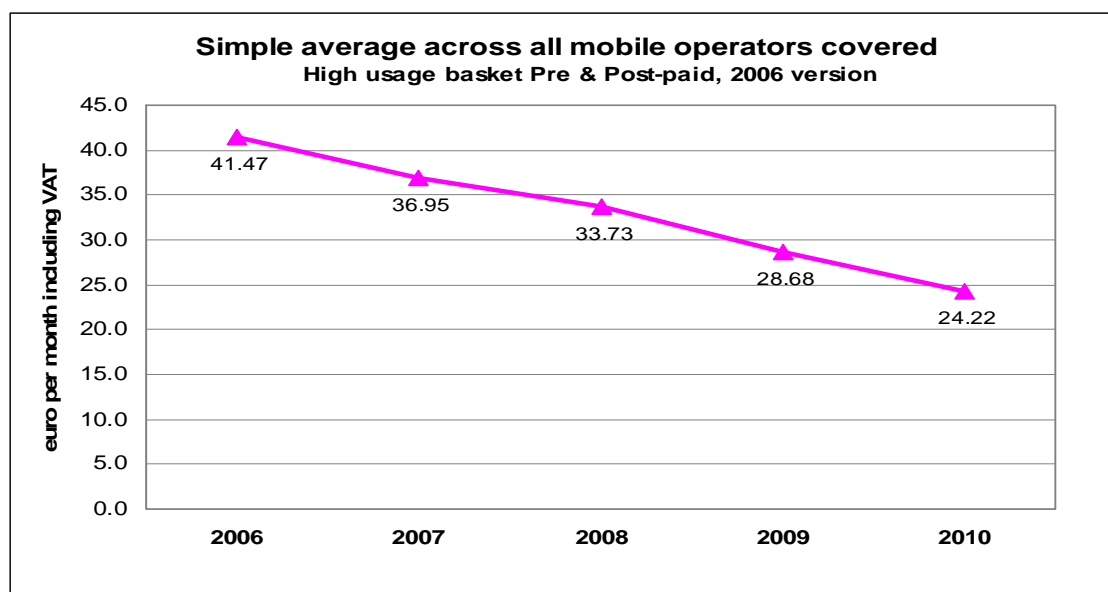
Source: Teligen

Figure 26b: Mobile price development, medium usage basket



Source: Teligen

Figure 26c: Mobile price development, high usage basket

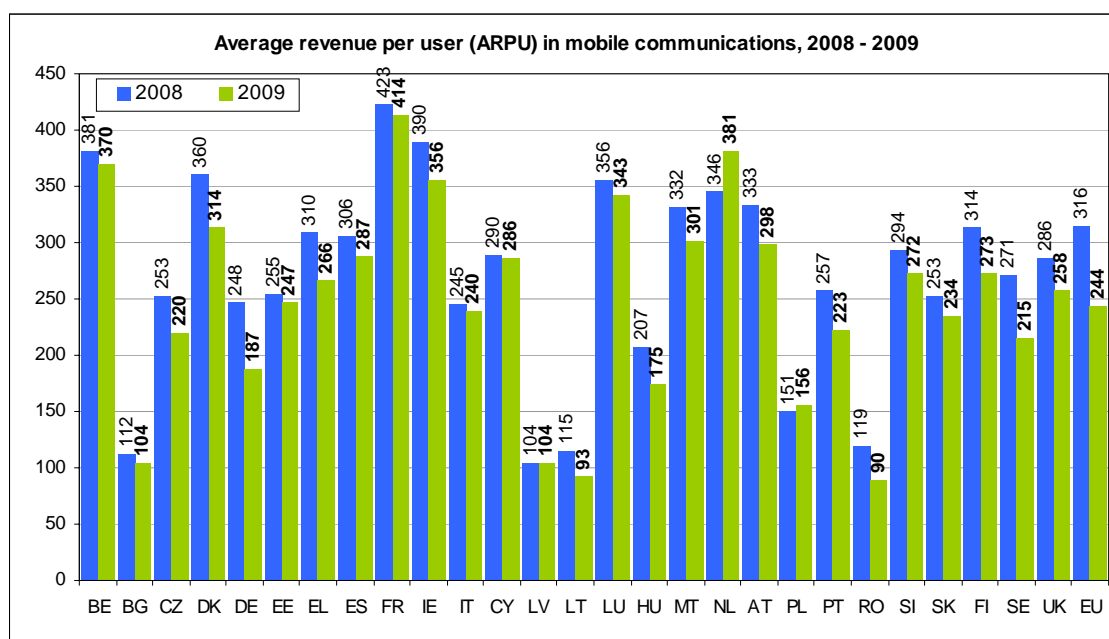


Source: Teligen

There are several reasons behind the price decrease. Competition has been increased as Virtual Mobile Network Operators emerged. Off-net and roaming retail charges were reduced due to regulation. As a result of lower switching costs (number portability), operators have to offer more loyalty discounts to retain valuable customers. In addition bundled offers, which may contain large discounts, are getting more and more popular too.

Average Revenue per User (ARPU) decreased more significantly than end-user prices. In fact, the reduction in prices is only one of the numerous reasons driving the development of ARPU. The market growth has slowed down and, in addition, the new customers generally experience lower consumption than the old ones. The reduction in wholesale prices (both roaming and domestic mobile termination rates) resulted in a large drop in wholesale revenues. Finally, the financial crisis made both consumers and enterprises more budget conscious.

Figure 27: Average revenue per user (ARPU) in mobile communications, 2008-2009

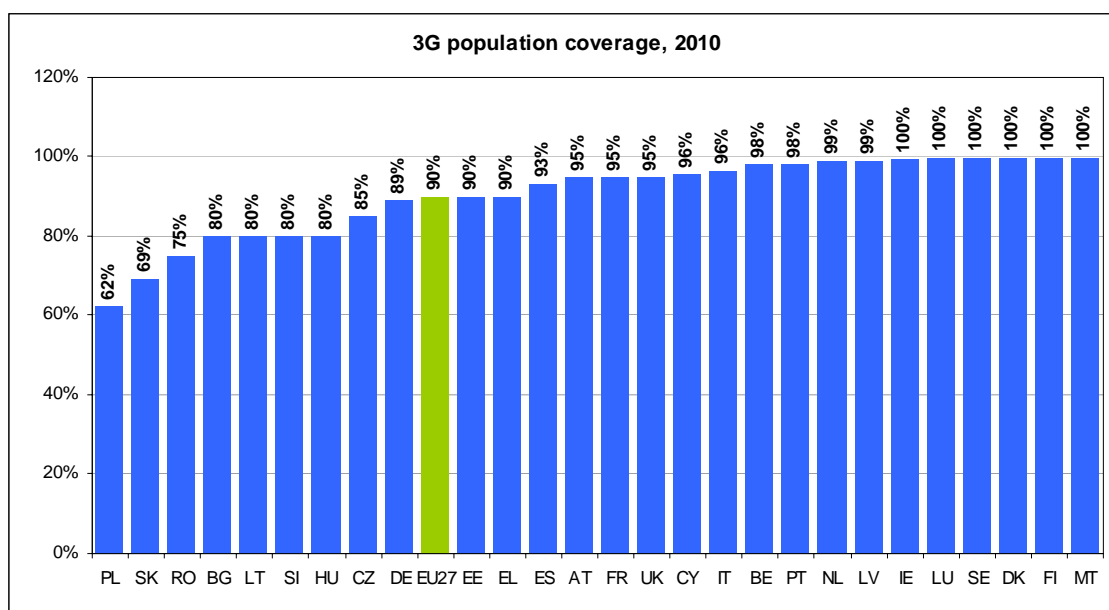


Source: Commission services

### 3.4 Mobile Broadband: Penetration of dedicated devices reached 7.2%

Mobile broadband is clearly the main source of revenue growth for mobile operators in the EU. On average, there was 90% population coverage of 3G in the EU in December 2010. Three member states (Malta, Finland and Denmark) have already reached full coverage. Coverage exceeded 95% in nine additional countries (SE, NL, BE, IT, IE, CY, PT, LU and LV). There are only two Member States (PL and SK), where 3G is not available to at least 70% of the population.

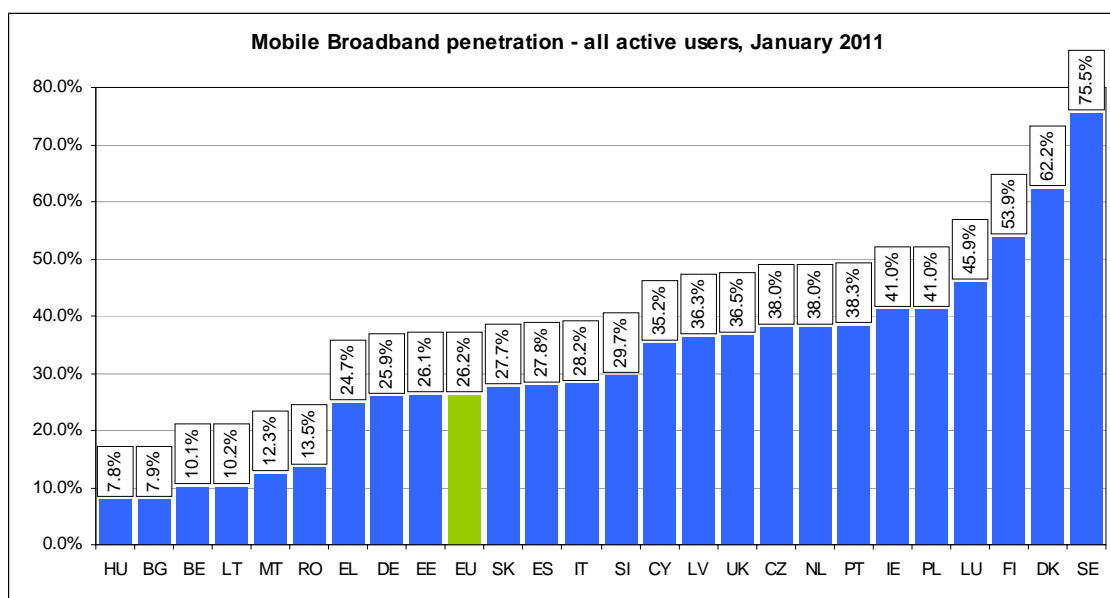
Figure 28: 3G population coverage



Source: Idate

Penetration of mobile broadband (use of any devices to access the internet through a mobile network) reached 26.2% of population in January 2011. Mobile broadband is most popular in the Nordic countries, where penetration is above 50%. At the same time, there are six Member States with a rate lower than 20%.

Figure 29: Mobile Broadband penetration – all active users



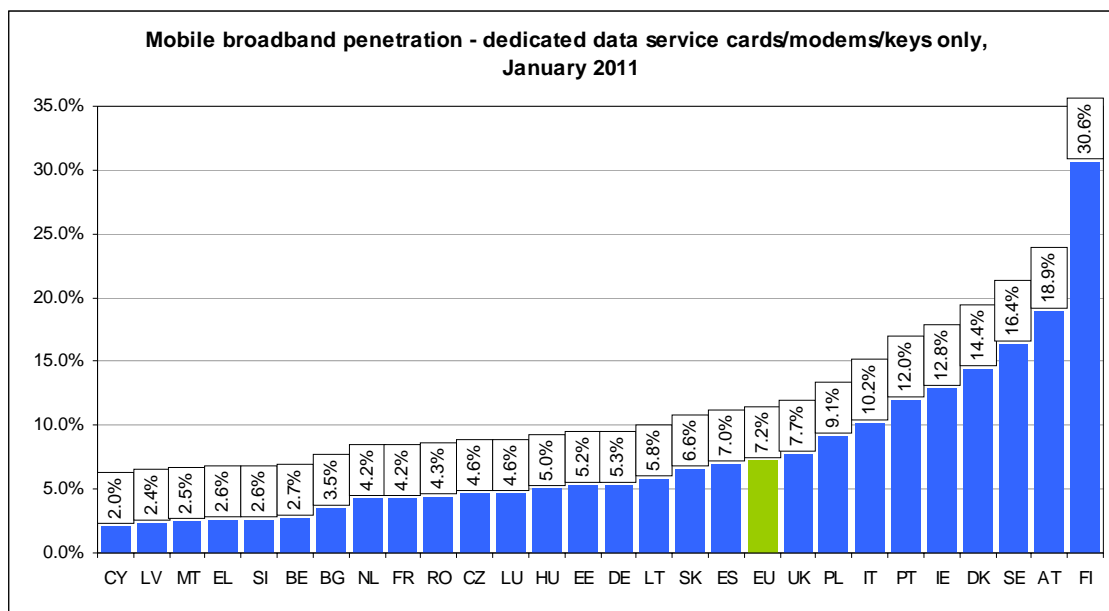
Source: Communications Committee

The penetration of mobile broadband as measured by dedicated data service cards/modems/keys was 7.2% (from 6.1% in July 2010 and 5.3% in January 2010). Take-up grew by 37% in 2010. Growth accelerated again in the second half of 2010 following a



slowdown in the first part of the year. Finland tops the league with a 30.6% penetration rate. In some Member States, like Austria, mobile broadband is considered a substitute product for basic broadband speed services.

Figure 30: **Mobile Broadband penetration – dedicated data service cards/modems/keys only, January 2011**



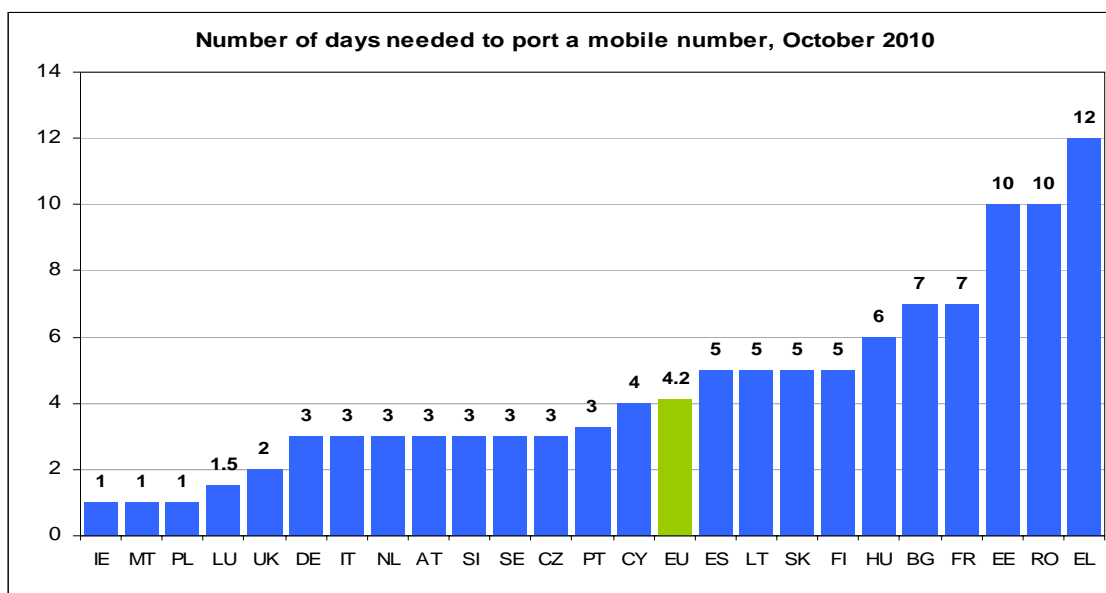
Source: Communications Committee

### 3.5 *The direct impact of regulation*

#### *Mobile number portability*

Mobile number portability is available in all Member States. In October 2010, it took 4.2 days in average to port a mobile number in the EU.

Figure 31: **Number Portability: Number of days needed to port a mobile number, October 2010**



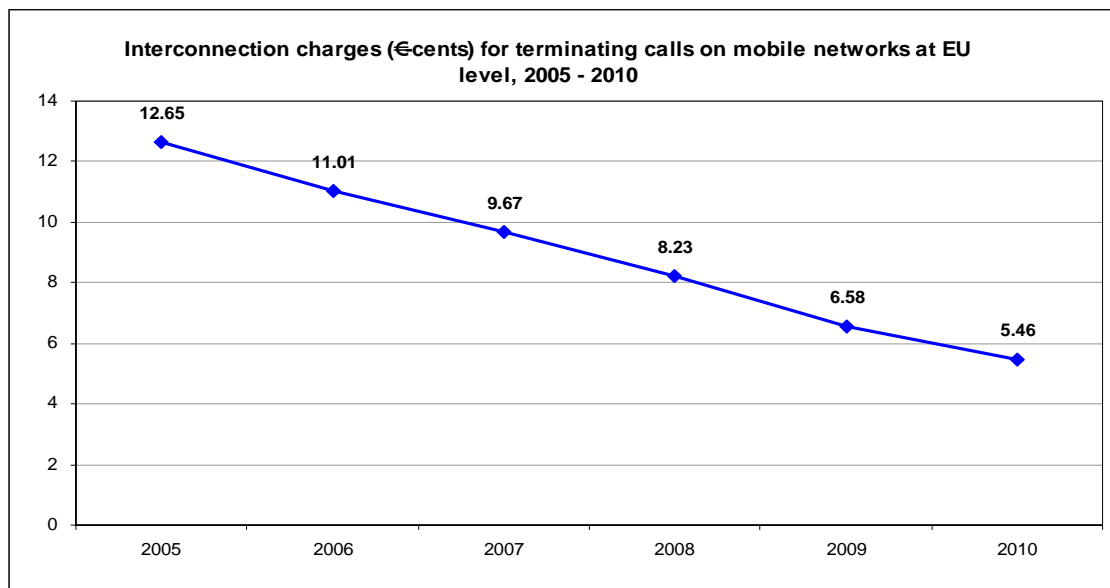
Source: Commission services

The wholesale cost of porting a number varies among the Member States. There is no charge in 11 Member States (BE, DE, EE, ES, FR, IT, LT, HU, PL, FI and UK), while the highest fee (21.5 EUR) is applied in CZ.

### ***Mobile termination rates***

Mobile termination rates have been going down since 2005. Since October 2005, there was a decrease of 57%.

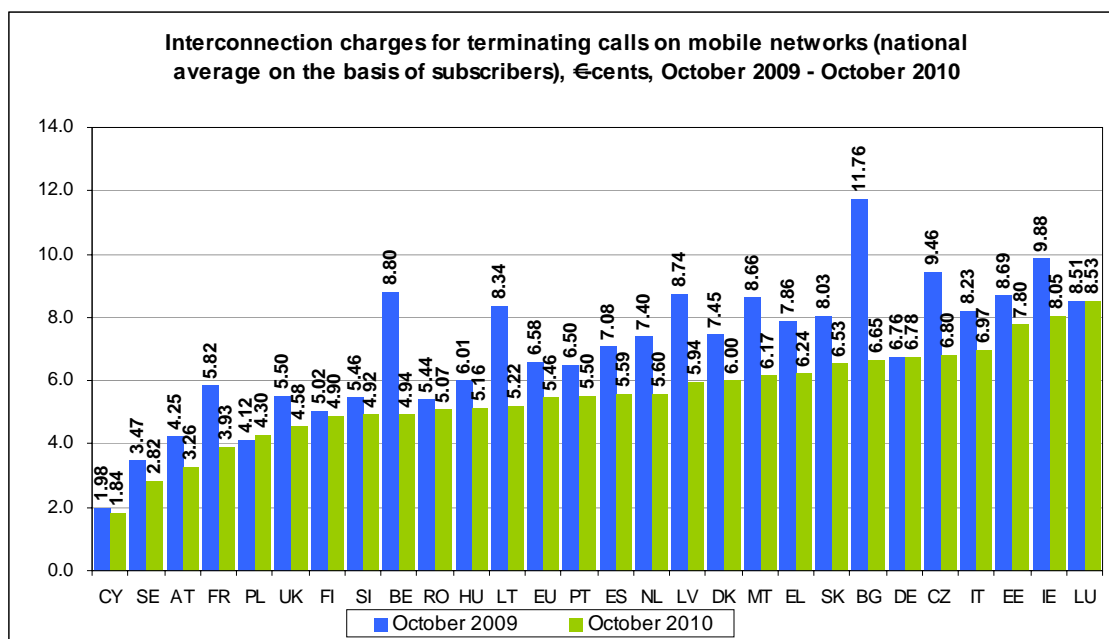
Figure 32: Average mobile termination rates at EU level



Source: Commission services

There are large differences among Member States, but the gap between the highest and lowest rates decreased to 6.69 €cents from 9.78 €cents. The largest reductions were made in Belgium, France, Latvia, Lithuania and Bulgaria.

Figure 33: Mobile termination rates by member states, October 2009-October 2010



Source: Commission services

## **4. THE FIXED VOICE SECTOR IN 2010**

### **4.1 *The decline of the traditional fixed voice telephony market***

Technological changes and market developments continue driving the disappearance of fixed voice telephony in its traditional form. Fixed voice telephony is evolving towards voice over IP solutions, being substituted by mobile voice telephony and, finally, included as a commodity within fixed broadband offers. At the beginning of 2011 it is estimated that 27% of households in the EU had a mobile telephone access but no fixed telephone access, and that 63% of households had a broadband internet access, in many cases combined with one bundle offer.

As the market is being more and more driven by the Internet and web applications, the traditional fixed voice telephony service increasingly appears as a service from the past although yet used by less technologically advanced groups. Although still with importance, its share in the total revenues is declining fast. In 2010, the revenues from fixed voice telephony decreased by 6.7% but still represent 23%<sup>31</sup> of the total revenues for the sector. Ten years ago this segment accounted for 45% of the sector. Therefore, this is the last year a separated analysis for the fixed voice telephone sector will be performed.

Prices of the calls outside bundled offers continue to slightly increase as the market for standalone telephony offers becomes increasingly concentrated (alternative operators move increasingly to bundled offers only).

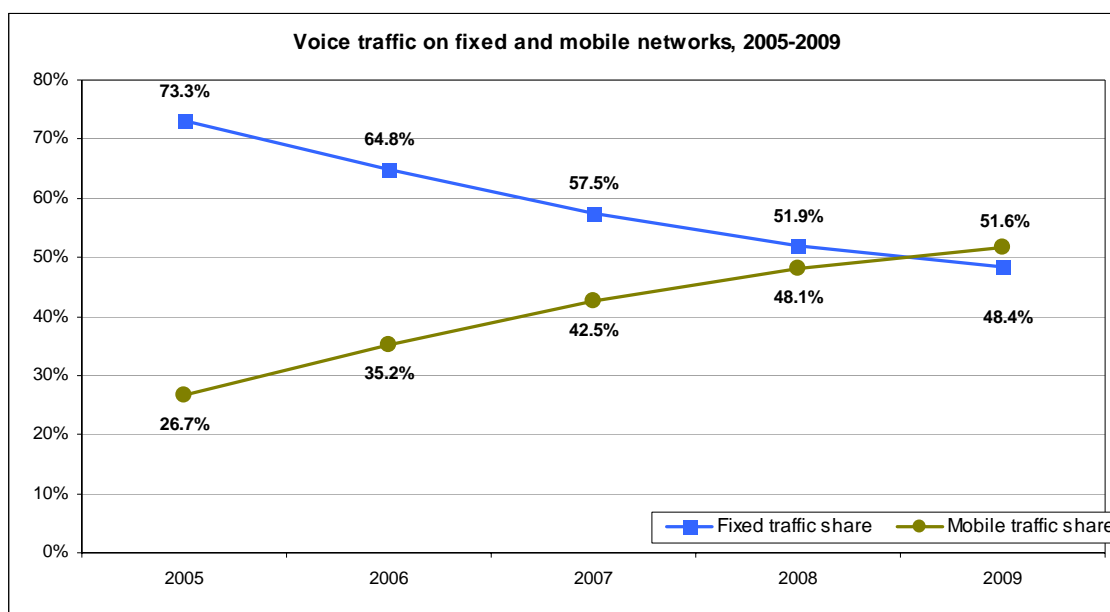
### **4.2 *VoIP and convergence***

More and more subscribers substitute traditional fixed voice telephony with mobile voice or voice over IP services. Mobile voice traffic surpassed fixed voice traffic for the first time in 2009 with 52% of the total traffic. Only 9% of European households claim having a fixed telephone access but no mobile telephone access.

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<sup>31</sup> Source: EITO 2010

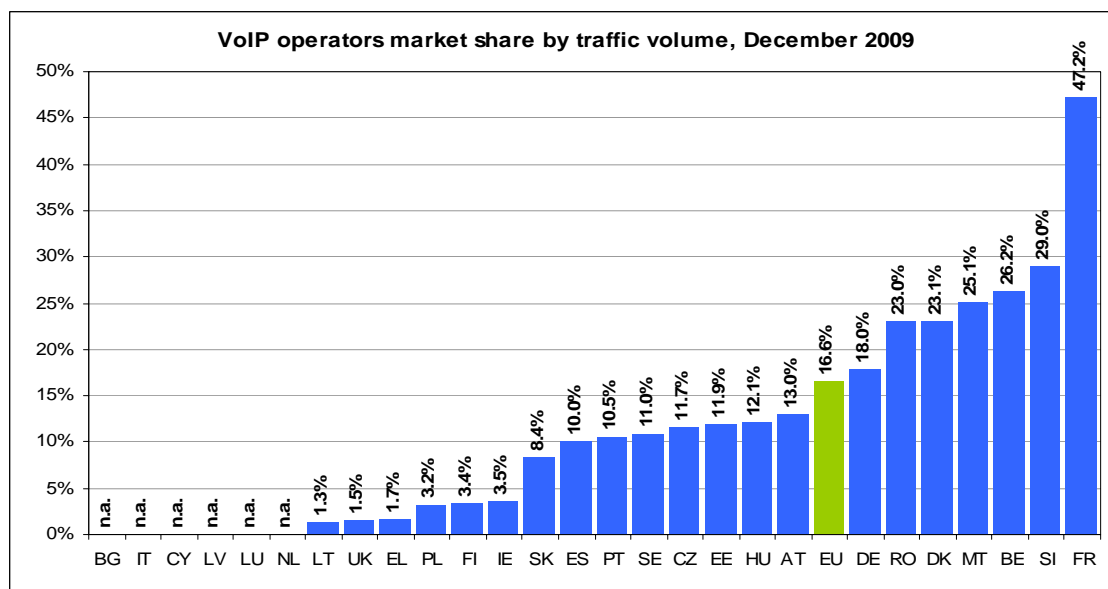
Figure 34: Voice traffic share of fixed and mobile networks



Source: Commission services

The market share of VoIP operators continues to increase as VoIP continues to replace traditional fixed voice telephony. The leading countries are France, Slovenia, Belgium and Malta. The market share of managed VoIP services represents 17% of the total fixed voice traffic (+12 pp).

Figure 35: Managed VoIP market share by volume

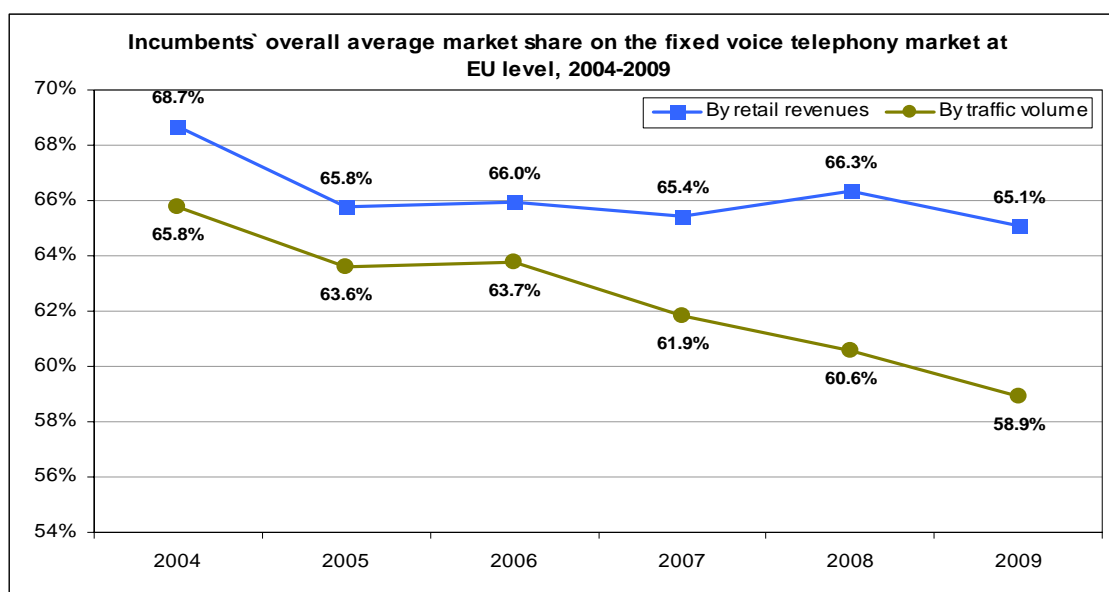


Source: Commission services

### 4.3 *The pattern of competition: fixed voice telephony market shares decreasing in terms of volume but not in terms of revenue*

The incumbent market share by revenues slightly decreased in EU-27 but has been stable in the past 5 years (between 66% and 65%). On the contrary the market share by traffic volume is constantly decreasing (from 64% to 59% in the same period of time) meaning that alternative operators are offering more minutes at lower prices or even for free under bundled products.

Figure 36: Average fixed voice telephony incumbent market share



Source: Commission services

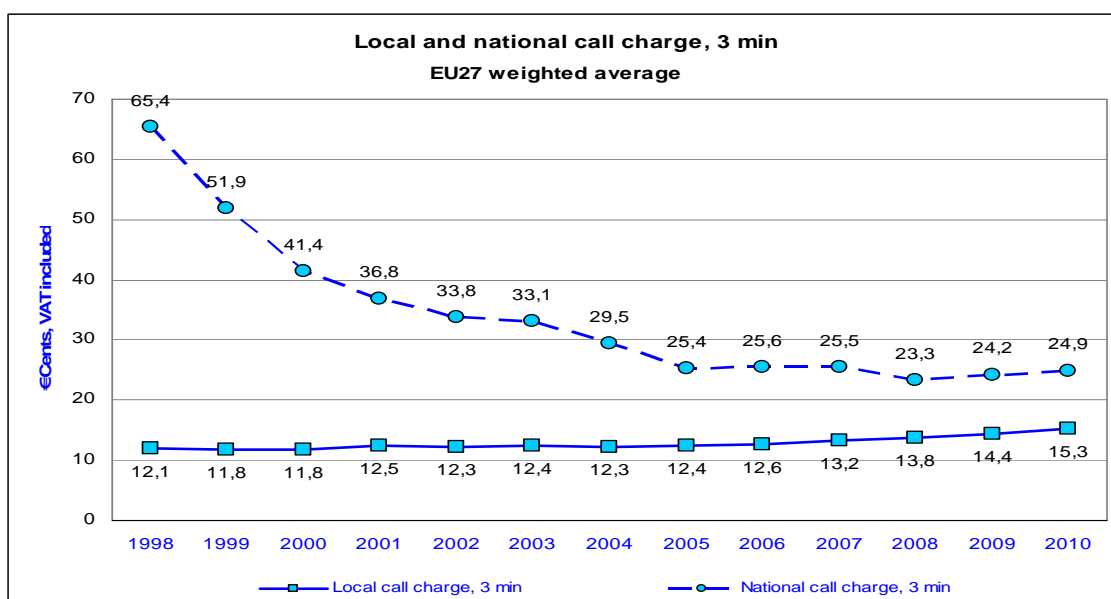
There are yet very uneven situations within the EU, and so while in the UK the market share of the incumbent was 49% in 2009, in Bulgaria it still represented 92%. Incumbent operators saw an increase of their market share both in Member States where they retain large parts of the market, such as Latvia and Luxembourg, as well as in other markets where alternative operators are strong (Denmark, the Netherlands, Austria, Portugal and Romania).

### 4.4 *Pricing in the fixed voice telephony sector: retail prices increase while wholesale prices continue to decrease*

The prices of standalone fixed voice telephony started to increase again in the EU. This trend started in 2008 for the national calls (and in 2004 or 2006 for the local calls depending on its duration). The reasons are again the lower competition in the fixed telephony segment with alternative operators moving to bundled offers with broadband where voice is included. Incumbent operators regaining market share are able to increase the prices for traditional voice telephony.

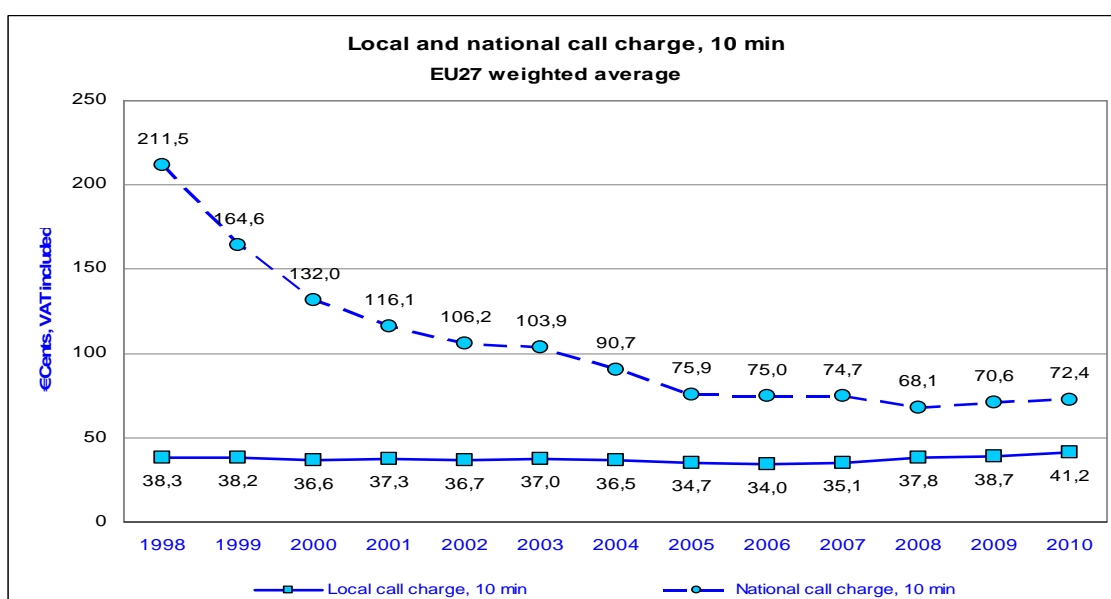
Prices for both 3-minute and 10-minute national calls have increased by 3% in 2010. In the case of the 3-minute and the 10-minute local calls, there has been a 6% increase.

Figure 37: Retail local and national call charge, 3 minute call



Source: Teligen

Figure 38: Retail local and national call charge, 10 minute call

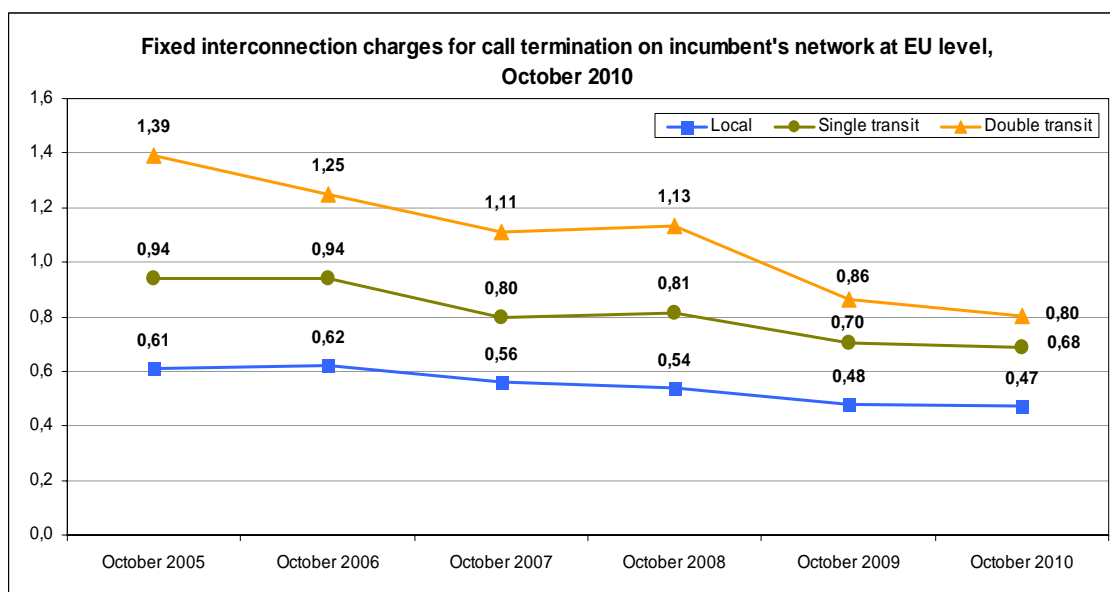


Source: Teligen

EU average fixed incumbent interconnection rates continue their slight decline in accordance with regulatory measures like glide-paths. EU fixed interconnection rate went down between October 2009 and October 2010 by 2% at local level, by 3% at the single transit level and by 7.5% at the double transit level. The Member States with the lowest interconnection rates are Poland and the UK, while Finland has the highest rates.



Figure 39: Fixed incumbent interconnection charges EU average

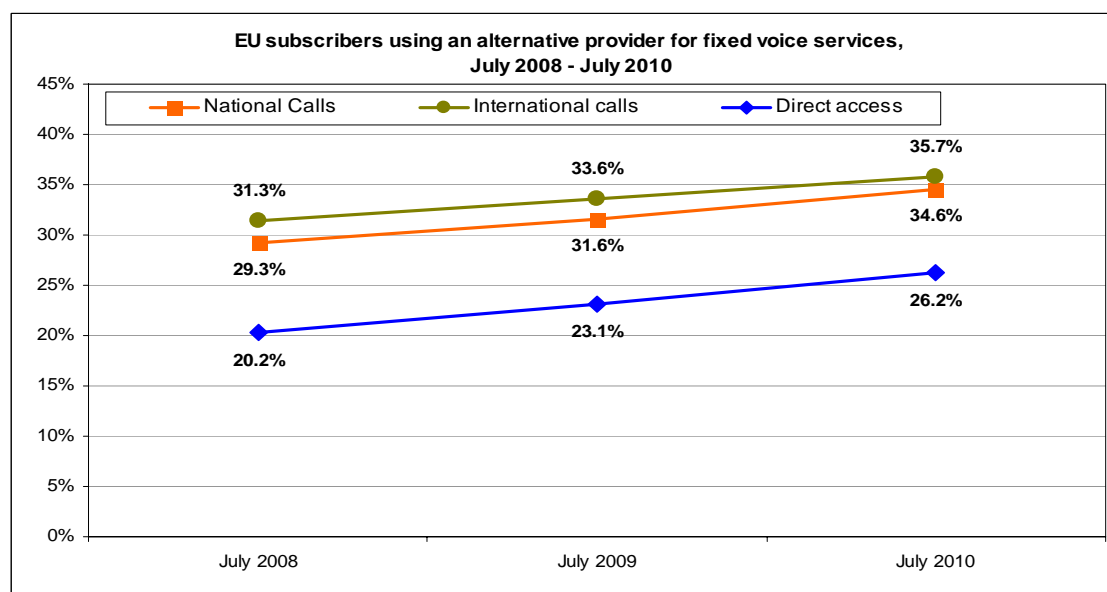


Source: Commission services

#### 4.5 Choice of provider and number portability

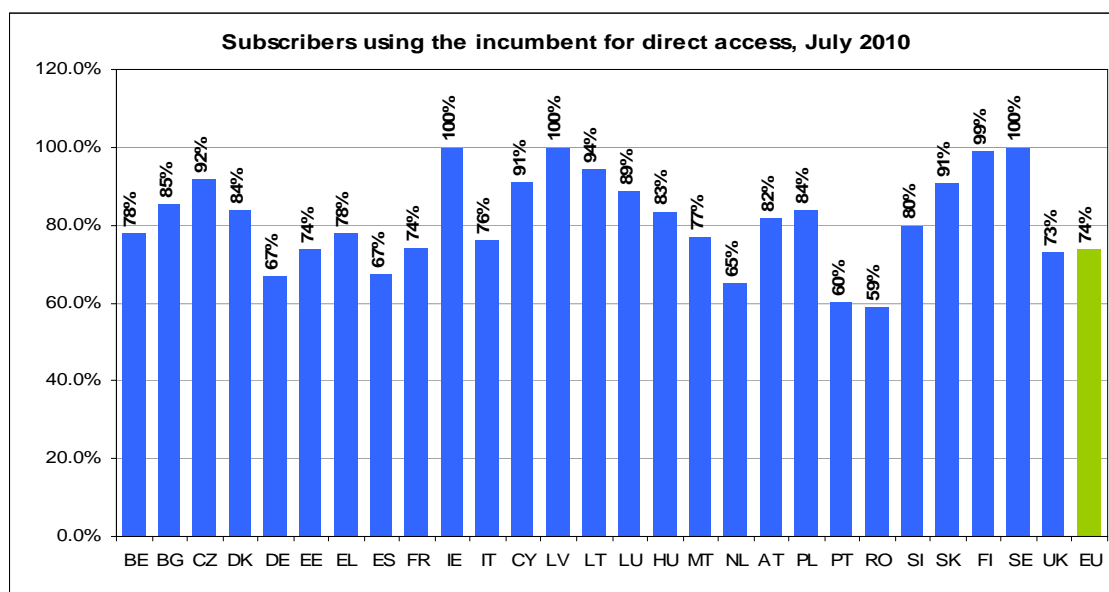
The provision of direct access by alternative operators only concerns 26% of the EU subscribers. Around 35% of them use an alternative provider for their international and national calls.

Figure 40: EU subscribers using an alternative provider for fixed voice services



Source: Commission services

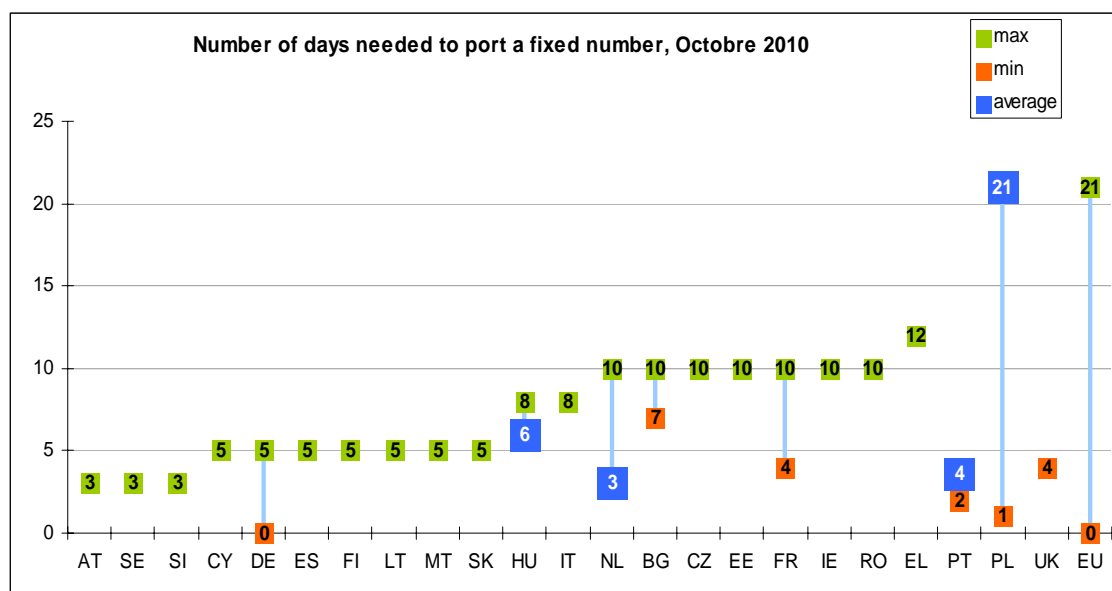
Figure 41: Subscribers using the incumbent for direct access, July 2010



Source: Commission services

A quick and clear procedure for fixed number portability process is necessary to ensure competition, since fixed telephony is included in triple and double play offers and can play a significant role regarding the switching of a broadband operator. Although for the majority of Member States the maximum time needed for porting fixed numbers is between 5 to 10 days, it can take as many as 21 days (in the case of Poland) for switching operator.

Figure 42: Number of days needed to port a fixed number, October 2010



Source: Commission services

## 5. STATE OF THE TELECOM SERVICES SECTOR IN EUROPE

2010 provided some recovery to the revenues<sup>32</sup> of the European telecom operators after the 2009 large decline, the worst year of the economic crisis. Although operators are starting to come back to positive growth rates, the growth in revenues is not yet robust due to the effects of the structural adjustments in recent years (decreases of prices, end of organic growth and absence of brand new services).

For the short term objective of increasing profits, operators are focusing on cost-cutting and innovative pricing strategies to try to capture growth (for instance ending flat rates and introducing data caps for mobile broadband services). From this perspective, average profitability of operators increased, and a number of operators even displayed the highest profits in history, but this was driven rather by costs lowering strategies (largely due to the strategies focused in OPEX and CAPEX cuts) than by net increase in revenues.

For the long term issue of the growth disparity between traffic and revenues (which is critical for investment decisions), operators are investigating the possibility of innovative managed services, tiered pricing schemes and bilateral agreements with over-the-top internet platforms. Data revenues are expected to represent almost 30% of mobile revenues in Europe by 2014<sup>33</sup>. Data is increasingly driven by the quick adoption of smartphones and similar devices. The relationship between platforms, devices and networks to extract value from this growth is at the core of this paradigm shift that will require additional CAPEX and increasing spectrum availability.

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<sup>32</sup> Based on EITO and the operators' financial statements.

<sup>33</sup> Source: Goldman Sachs March 2011

## 5.1 Revenues

Table 5: Telecom sector growth

|   | Growth rate (2008-2009) | Growth rate (2009-2010) | Share in e-communication services revenue (2010) |
|---|-------------------------|-------------------------|--|
| <b>Fixed voice telephony and Internet access services</b> | -3,9%                   | -2,6%                   | 36%  |
| Fixed voice telephony                                     | -7,7%                   | -6,7%                   | 23%  |
| Internet access and services                              | 4,4%                    | 5,6%                    | 13%  |
| <b>Mobile voice telephony and mobile data services</b>    | -1,7%                   | -0,9%                   | 46%  |
| Mobile voice telephony                                    | -4,8%                   | -4,2%                   | 34%  |
| Mobile data services                                      | 9,4%                    | 9,4%                    | 12%  |
| <b>Business data services</b>                             | -0,7%                   | -0,3%                   | 7%   |
| <b>Pay TV</b>   | 6,6%                    | 6,8%                    | 11%  |
| <b>Total Telecom services (carrier services)</b>          | <b>-1,7%</b>            | <b>-0,7%</b>            | <b>100%</b>                                      |

Source: EITO 2010

The overall growth of the telecom sector in Europe was -0.7% in 2010<sup>34</sup>, a lower decrease than -1.7% in 2009. Revenues for the EU electronic communications sector were €332 billion in 2009<sup>35</sup> (€350 billion in 2008), accounting for half of the entire ICT sector. Revenues from voice (still 57% of the revenues for the EU telecom operators) experienced important declines (-6.7% in the case of fixed voice telephony and -4.2% in the case of mobile voice telephony) while revenues from data (still a 25% of the total for individuals and households, 7% for companies) are increasingly higher (+5.6% in the case of fixed internet access and +9.4% in the case of mobile data services). Although data is more important than voice in terms of traffic, fixed and mobile voice telephony still account for the most important share of the sector's revenues. This asymmetry is one of the main issues to address for the sustainability of future business models.

The decline in the relative size of the EU telecom sector over the past 3 years is partly driven by the European macroeconomic environment, but also by the structural adjustment of the

<sup>34</sup> EITO January 2011.

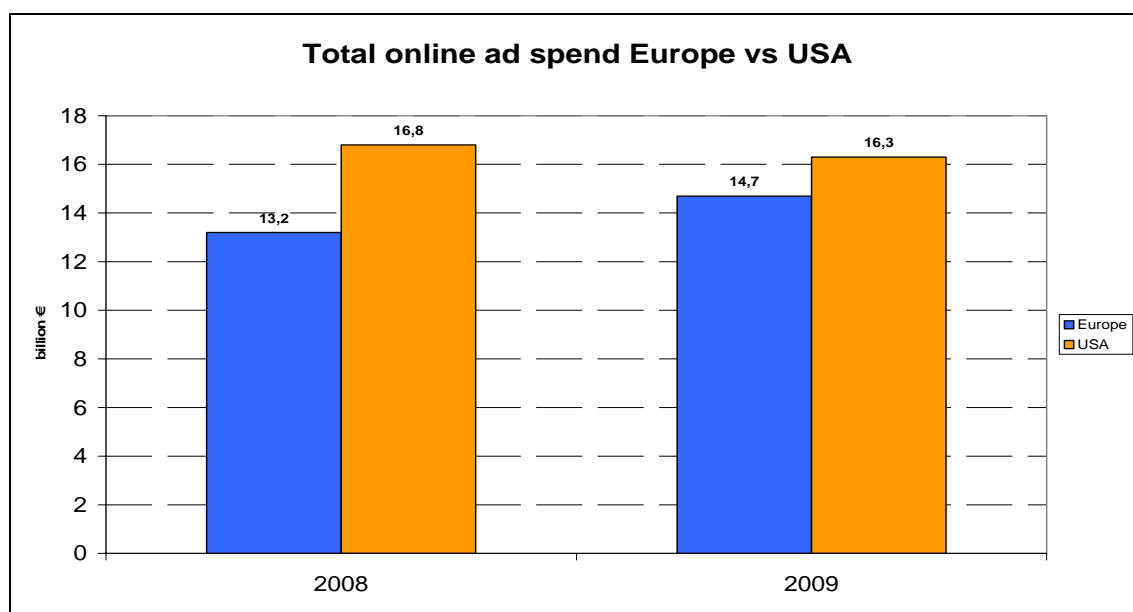
<sup>35</sup> Data from national regulatory authorities.

sector which faces lower ARPUs<sup>36</sup> in the main market segments. Main reasons are (i) organic growth in terms of new users coming to an end (in traditional markets like fixed and mobile telephony but also in legacy broadband), (ii) decreases in retail prices related to competition and technological developments, including voice over IP, but also due to the introduction of flat rates and bundles, and (iii) the absence of new sources of revenue growth. Most of the value from new services like mobile broadband is captured by companies outside the boundaries of the traditional electronic communication sector.

There seems to be a disconnection between the value and the positive externalities generated from the networks and the concrete incentives to invest in capacity from the operators. The evolution of the access revenues from access to the network is in sharp contrast with the increasing revenues coming from activities taking place within the network themselves that provide efficiencies for the whole economy (for instance e-commerce, search engines, or online advertising.).

In 2009, for example, the online advertising market kept growing and was the only segment of advertisement to do so. €14.7 billion were spent on online advertising in Europe in 2009<sup>37</sup>. The share of the internet jumped to 20% of the total advertising market due to the decline of other advertising forms. Growth was lower in more mature national markets (like the UK). Search advertising (that had a 10.8% increase in 2009 in Europe) was again the leading advertising segment, followed by displays (down in most mature markets) and classified ads.

Figure 43: Total online ad spend Europe vs USA



Source: IAB Europe 2010

The mobile communications sector also continued to grow in terms of number of subscriptions, but there has been a slight decline in revenues in 2010<sup>38</sup>. Despite the slightly larger customer base (2.6 pp growth in penetration), voice revenues have gone down by 4.2%.

<sup>36</sup> Average revenue per user: total revenues of the operator divided by the number of subscribers.

<sup>37</sup> AdEx 2009 European online advertising expenditure IAB Europe, September 2010

<sup>38</sup> Source: EITO

The growth in mobile data services could not compensate for the decline in voice and the total revenue of the mobile operators declined by 0.9 %. In 2010, voice revenues accounted for 74% of the total, which is 3 pp lower than a year ago. The growth in data revenues have been driven by mobile broadband internet.

Machine-to-Machine (M2M) communication is an important segment for the future to partly compensate for the decline in traditional voice and messaging services. Currently, there are 62 million connected objects worldwide, which are expected to grow to 2.1 billion by 2020, at an annual growth rate of 36%<sup>39</sup>. Nevertheless, M2M subscriptions have significantly lower ARPU than those of traditional subscriptions. In addition, mobile operators are also looking at emerging markets, where there is still a high potential in traditional services, too.

Despite the revenue decline in voice services in Europe, the role of these services is still extremely crucial, since these are responsible for 74% of total revenues. As growth in number of subscriptions has slowed down, emphasis is also to be put on reducing customer churn on traditional services. However, the mobile sector is not performing very well on customer satisfaction based on The Consumer Markets Scoreboard<sup>40</sup>, a survey monitoring the reported experiences and opinions of consumers in 50 consumer markets. According to the survey, the mobile sector has the 7<sup>th</sup> lowest overall score. Offers are not comparable enough, there is a low trust towards service providers and 19% experienced problems with the service (the fifth highest out of the 50 industries.)

## 5.2 *Investment and access to finance*

Operators keep on with cost-cutting strategies and lower investment intensities. The decrease in CAPEX<sup>41</sup> in 2009 was remarkable: -12% in mobile and -3% in fixed equipment<sup>42</sup>. The intensity of investment as measured by the CAPEX/revenues ratio is declining but is estimated to remain around 11% in 2010<sup>43</sup> (a level similar to 2009 but much lower than in 2008, 14% and 2007, 15%).

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<sup>39</sup> Analysys Mason: Mobile insight and the connected consumer.

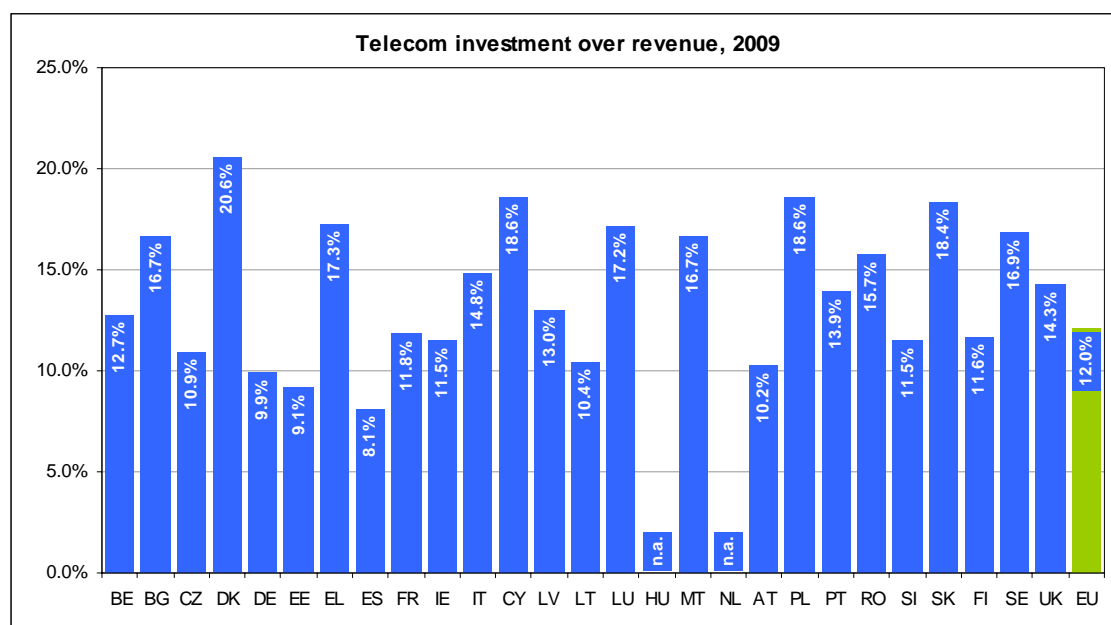
<sup>40</sup> [http://ec.europa.eu/consumers/strategy/docs/4th\\_edition\\_scoreboard\\_en.pdf](http://ec.europa.eu/consumers/strategy/docs/4th_edition_scoreboard_en.pdf)

<sup>41</sup> Capital Expenditure.

<sup>42</sup> EITO January 2011. No figures yet available for 2010.

<sup>43</sup> Source: Goldman Sachs 2011

Figure 44: Telecom investment over revenue



Source: Commission services

The weighted average EBITDA margin<sup>44</sup> for the 10 largest European operators<sup>45</sup> increased by 1.9 % in the first half of 2010 as compared with the first half of 2009. In general, financial margins in the sector have remained pretty stable.

In the case of mobile operators, the EBITDA over revenues ratio ceased to decline during the first two quarters of 2010. The EBITDA margin of the third and fourth mobile operator is lower than the ones of the first and the second in almost all Member States. This could lead to some consolidation.

Currently operators' profitability translates more into dividend pay-out than in investment. Moreover, in the current climate, operators find it more rewarding to buy assets in developing countries with a higher return on investment, rather than investing in Europe.

Regarding the access to finance, the operators do not seem to have any problem in general to access credit in 2010, although there is currently no a massive investment decision directed to fibre architectures. Markets consider cable nowadays as a better asset than legacy infrastructure, since they are easier to upgrade and, in the general view, face lower regulatory constraints than legacy networks. Finally, leading analysts consider operators with a mobile-only infrastructure not to be sustainable for the future. In that sense, mobile operators will have to buy fixed assets in order to compete in the quadruple play market.

<sup>44</sup> EBITDA over revenues.

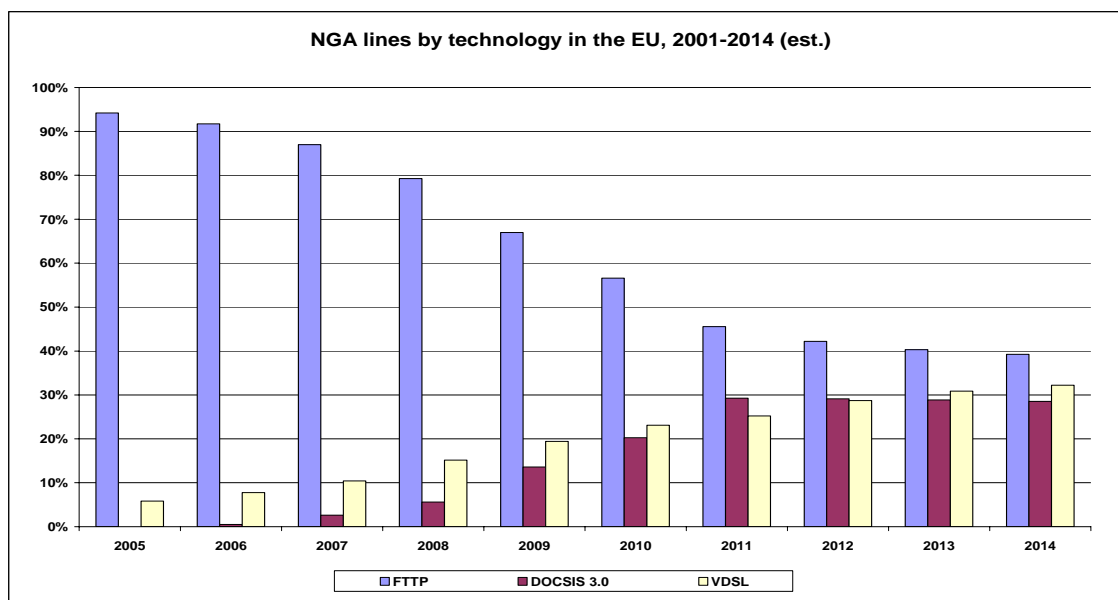
<sup>45</sup> Deutsche Telekom, Telefonica, Vodafone, Orange, Telecom Italia, BT, KPN, SFR, Telenor and Telia Sonera.

## 6. CONCLUSIONS

Ultra fast broadband network and applications are expected to have a significant impact in modern economies. The DAE has therefore set very specific targets in terms of availability and take up of NGA broadband. The DAE targets have come at a time when European economies start recovering from the worst economic crisis since the 1920s. While commercial operators are expected to take on most of these investments, public sector intervention will remain limited to the areas where returns on investment are not expected.

The broadband market continued to grow in 2010, despite the near saturation levels reached in a few Member States and the difficult economic situation of others. Competition has accelerated and broadband speeds have increased. But the deployment and take up of ultra fast broadband lines is still very low. However, the necessary pre-conditions seem now to be in place for ensuring a smooth but sustainable growth of the broadband market in line with the DAE targets. Competition between VDSL, DOCSIS 3.0 and FTTH providers is boosting the growth of ultra fast lines. Roll out of wireless 4G network should complement wired technologies in the achievement of these targets. The Commission has in parallel set a clear and predictable policy and regulatory framework that should promote the roll out and take up of next generation access lines. Investment is also currently held back as operators are looking for new business models to adapt to the new reality of increased data traffic and high capacity needs. In the light of these developments, it is not unlikely to expect much better results in the years ahead (Figure 45).

Figure 45: NGA lines by technology, 2001-2014



Source: Commission services based on Screen Digest