FAST AND ULTRA-FAST INTERNET ACCESS

- The broadband market grew in 2011 but the growth rate continued to slow down. The fixed broadband penetration rate in January 2012 was 27.7% of the population, just 1.3 percentage points up from 26.4% in 2011.

- Despite the slower growth, the EU penetration rate exceeded that of Japan in 2011 for the first time. The difference with the US is 0.5 percentage points behind only.

- Speeds of fixed broadband lines increased significantly in 2011 with almost 50% of all lines providing download speeds of 10 Mbps and above.

- But the take up of fast and ultra-fast broadband, i.e. 30 Mbps and 100 Mbps, is still low with just 7.2% and 1.3% (respectively) of all fixed lines providing those speeds.

- In the second half of 2011, the number of new broadband lines based on xDSL was almost equal to the number of new lines based on alternative technologies sold both by new entrants and incumbents, indicating a shift towards other technologies closely linked to Next Generation Access Networks (NGAs) and capable of providing faster speeds.

- In 2011 there was an explosion in mobile broadband with penetration reaching 43% of the population in January 2012 from 26.8% in January 2011. This growth was fuelled by handheld devices; there were 35.1 mobile broadband connected handheld devices per 100 citizens in January 2011, up from 19.6 in 2011.

- Data revenues increased by 22.6% in Q3 2011 compared to Q3 2010 in the five largest Western European markets[1]. LTE (Long-term evolution) networks are already available in eight EU Member States and mobile broadband traffic is already more than twice as high as fixed traffic and is expected to grow exponentially in the coming years.

[1] Based on Q3 2011 operators' financial reports

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The need for fast broadband

The Digital Agenda for Europe set three major targets on broadband: basic broadband networks should be available to all EU citizens by 2013 and by 2020 half of European households should subscribe to at least 100 Mbps, while 30 Mbps should be available to all Europeans. As the 2013 target is mostly achieved, the Digital Agenda has a clear focus on migration to faster speeds.

Targets are expected to be achieved through the deployment of a mix of technologies: wireline and wireless. Rollout of fast broadband in the EU has just started, but the rapid diffusion of broadband (the quickest among ICTs) suggests that the achievement of the 2020 targets should be feasible, despite the current economic downturn.

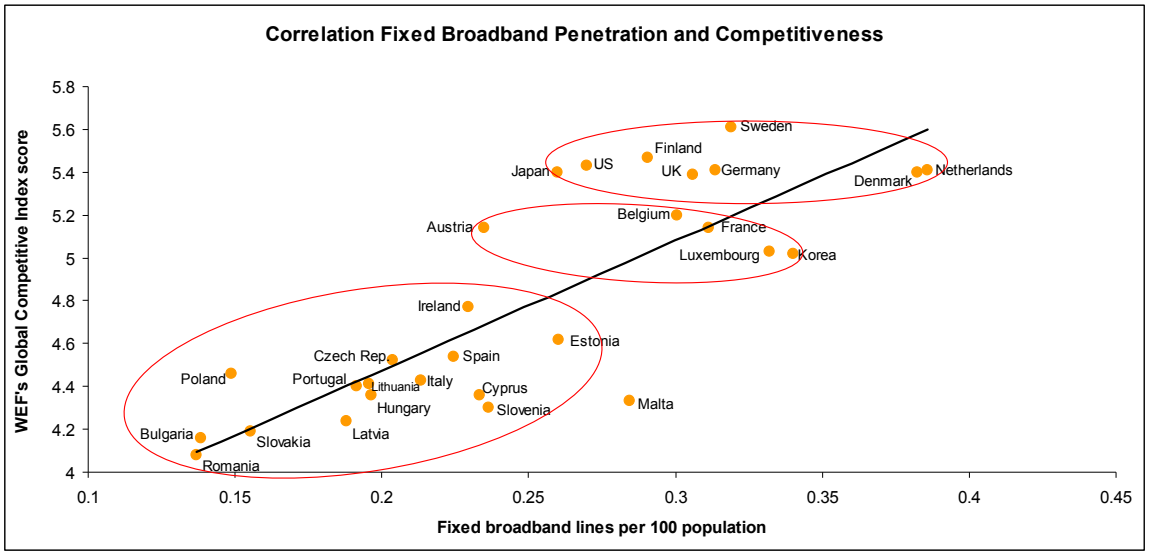
Widespread use of faster speeds is considered a crucial factor to realise economic growth and to have an impact on job creation (Figure 1). Evidence shows that a 10% increase in the broadband penetration rate yields a GDP impact of around 1%.[2] Because of a lack of empirical evidence, the economic literature has not yet delivered firm conclusions on the impact of a migration to faster speeds. However, positive effects can be discerned. First, the construction of broadband networks creates jobs and generates investment (it is estimated that 60-80% of the total cost of broadband deployment is linked to duct work, which is rather labour intensive, see table 2). Secondly, the adoption of broadband by firms yields efficiency gains which contribute to growth of GDP (through Multifactor Productivity growth)[3]. Third, high-speed internet stimulates the development of new services applications creating new markets. Finally, residential users receive a benefit in terms of consumer surplus, which is not directly related to GDP but which breeds from improved access to information, entertainment and public services.

Research is starting to pinpoint different employment effects by industry sector. Broadband may simultaneously cause labour creation triggered by innovation in services and a productivity effect in labour intensive sectors. Nevertheless, we still lack a robust explanation of the precise effects by sector and the specific drivers in each case. However, given that the sector composition varies by regional economies, the deployment of broadband should not have a uniform impact across a national territory.

[2] Czernich, N., Falck, O., Kretschmer, T. and Woessmann, L. (2011), Broadband Infrastructure and Economic Growth. The Economic Journal, 121: 505–532. doi: 10.1111/j.1468-0297.2011.02420.x

[3] Broadband is an enabling technology and by itself does not have an economic impact. Its impact on efficiency gains materialises as the adoption of broadband is accompanied by a number of organisational changes, including training and other cultural factors (known as "intangible capital"). Hence, its impact appears with a lag relative to the moment of adoption.

Figure 1: Correlation between penetration of fixed broadband and competitiveness



Source: EC services based on COCOM and WEF

Estimates on job creation vary but point in a positive direction. For example, in relation to broadband deployment in the EU, it was estimated that 440,000 jobs would be created in the business services sector in 2006 and 549,000 jobs in other economic sectors due to broadband-related innovation in knowledge-intensive activities. This employment creation would compensate for the loss of jobs due to process optimisation and structural displacements within the economy, with a net creation of 105,000 jobs in 2006 in Europe[4]. In the United States, for every one percentage point increase in broadband penetration in a state, employment was projected to increase by 0.2 to 0.3 percent per year. For the entire US private economy, this suggests an increase of about 300,000 jobs[5].

With regard to higher speed networks, investment in NGAs can deliver important countercyclical effects, both as a result of network construction and in relation to spill-over impacts on the rest of the economy. While the former is likely to be concentrated in the construction and electronic communications sectors, the impact of externalities is greater in service sectors and in particular in those characterised by high transaction costs (such as financial services).

[4] Source: The Impact of Broadband on Growth and Productivity, Micus Management Consulting Gmbh, 2008

[5] Source: The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data, The Brookings Institution, 2007 (figures refer to growth excluding the non-farm economy)

Table 1 — Broadband impact on job creation, Source: ITU

COUNTRY	RESEARCHER/ INSTITUTION	STIMULUS INVESTMENT (US$ million)	NETWORK DEPLOYMENT JOBS ESTIMATE			
			DIRECT	INDIRECT	INDUCED	TOTAL
UNITED STATES	Katz (Columbia)	$ 6,390	37,300	31,000	59,500	127,800
	Atkinson (ITIF)	$ 10,000	63,660	165,815		229,475
SWITZERLAND	Katz (Columbia)	~$ 10,000	~80,000	~30,000	N.A.	~110,000
GERMANY	Katz (Columbia)	$ 47,660	281,000	126,000	135,000	542,000
UNITED KINGDOM	Liebenau (LSE)	$ 7,463	76,500	134,500		211,000
AUSTRALIA	Government	$ 31,340	-	-	-	~200,000

Source: ITU6

1.1. The fixed broadband market

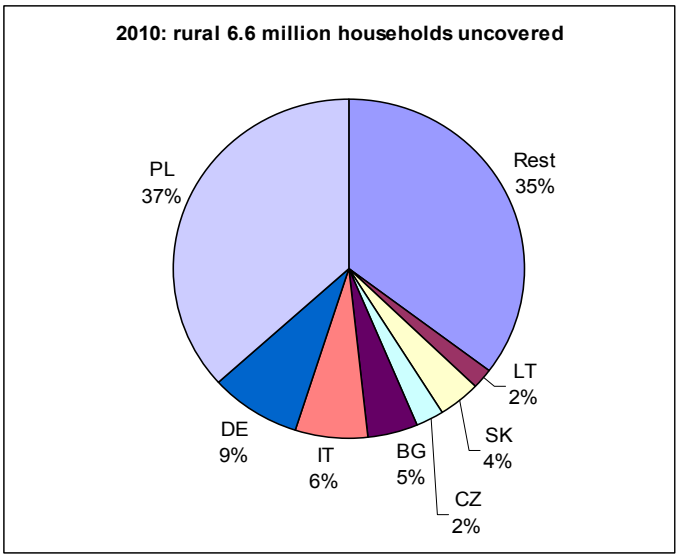
1.1.1. Broadband coverage by 2013

The DAE's aims is for all European citizens to have access to basic broadband by 2013 and access at speeds equal to or higher than 30 Mbps by 2020. Coverage of networks capable of providing speeds of 30 Mbps and above is estimated at 50% at the end of 2011.

The coverage of DSL networks was 95% at the end of 2011 with the growth of the EU average staying flat during 2011.

Coverage in rural areas is typically lower than in urban areas; 70% (6.6 million households) of the 9.4 million unconnected households are in rural areas in 2010[7]. A breakdown by country shows that most of the unconnected households in rural areas are in Poland (37%), followed by Germany (9%) and Italy (6%) (Figure 2).

Figure 2: Non covered rural households in the EU



Source: EC services based on IDATE

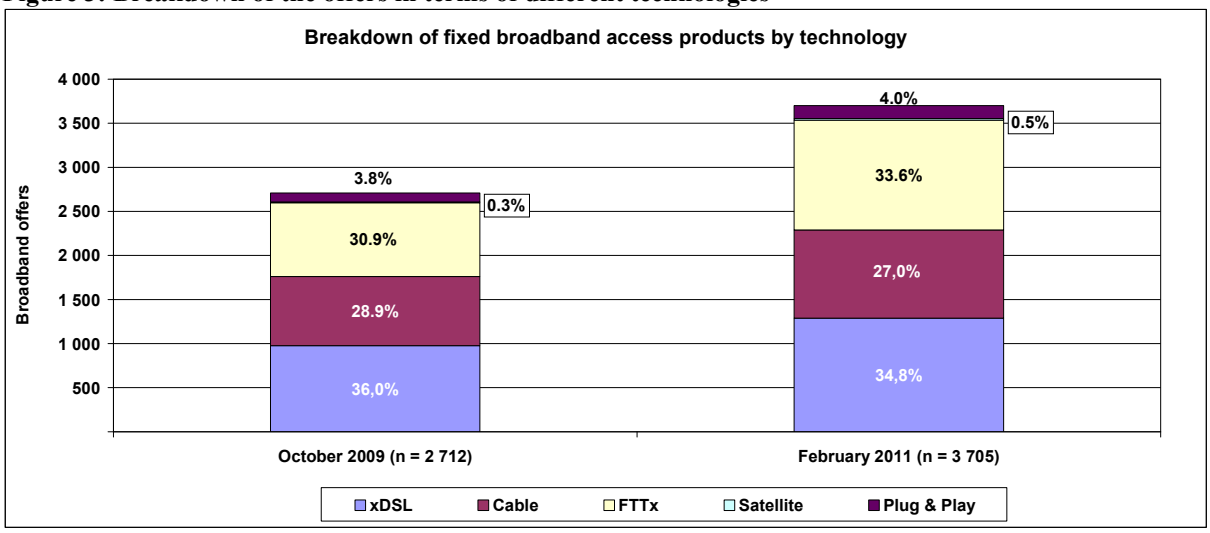
[6] The Impact of Broadband on the Economy: Research to Date and Policy Issues, Raul Katz, 2010, http://www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR10/documents/GSR10-ppt1.pdf

[7] 2011 data on coverage per Member State not available

Satellite could provide access to basic broadband to the rest of population. In the longer term, all territory should be covered with fast broadband offering at least 30M bps. To achieve this target, carriers may use different technologies, wireline and wireless.

Data on satellite coverage is not available, but it is clear that less populated areas of Europe will need to rely on access through satellite. A new generation of satellites can provide faster internet to more users in principle everywhere in the EU. At present the capacity of existing broadband by satellite appears sufficient to connect the bulk of the unconnected population. However, as satellite broadband access capacity depends on the combination of the number of users and the average broadband speed, it is difficult to estimate the real availability of broadband by satellite. Also there are some limitations with broadband satellite, related mainly to installation and equipment costs, in particular the installation of the satellite dish, which is relatively expensive compared to other broadband technologies. In February 2011 out of a database of more than 4,000 retail broadband products, only 0.5% (15 products) of these were based on satellite (Figure 3). Satellite broadband products offer speeds that go from 144 kbps to 4 Mbps and the median price per month is on average above the price of products based on other technologies[8].

Figure 3: Breakdown of the offers in terms of different technologies



Source: Broadband Internet Access Cost (BIAC)

1.1.2. National policies to stimulate rollout: Broadband National Plans and public funding

In its Broadband Communication[9], the Commission stressed the importance of all Member States having an operational broadband plan with defined national targets aligned with the European broadband targets. The Communication also underlined the need for a balanced set of policy actions to incentivise investment in fast and ultra-fast internet, in particular resulting from a consistent and thorough implementation of the EU regulatory framework for e-communications, the uniform implementation of the Radio Spectrum Policy Programme, adequate cost reduction measures and the coherent application of the State Aid Broadband

[8] Study on Broadband Internet access costs, VanDijk, August 2011.
http://ec.europa.eu/information_society/digital-agenda/scoreboard/docs/pillar/biac_reporting_tool.xlsx
[9] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0472:EN:NOT

guidelines[10]. To support the development of these plans, the Communication included a commitment to review national broadband plans as part of its Digital Agenda governance.

In spring 2012, the European Commission thoroughly assessed national broadband plans[11], summarising the current state of play in national broadband plans and aiming at fostering a mutually beneficial exchange of knowledge on good practices between countries by assembling examples of national implementation measures.

First, regarding basic broadband, eight Member States (Denmark, Finland, France, Luxembourg, Latvia, Malta, Netherlands, United Kingdom) have already achieved full coverage with basic broadband services and a further 17 countries have set a corresponding quantitative target or are about to do so. There is a range of definitions of 'basic' with download speeds from 512 Kbps to 4 Mbps. In many cases the timing is more ambitious than the DAE deadline of 2013 but not all plans envisage full basic coverage by this date.

Second, as for NGA coverage, 21 Member States have so far defined quantitative coverage objectives for the deployment of NGA with download targets ranging from 25Mbps to 1Gbps and with coverage footprints between 75% and 100% of households or population. A rare case is Luxembourg with an ultimate NGA target of 1Gbps/0.5Gbps (download/upload) by 2020. Plans are currently being revised in several Member States.

Third, in terms of demand for NGA, only those five (Cyprus, Hungary, Italy, Lithuania, Portugal) that have fully subscribed to the DAE targets have integrated take-up targets into their broadband plans. The few making such commitments reflect the belief that demand will follow supply and hence a policy that leads to the desired supply is all that is needed. But a number of Member States question the rationale for ultra-fast broadband subscription targets, claiming there is little evidence of market failure and no visible externalities associated with a connectivity subscription as such. This group tends to either neglect or disagree that widespread use of high speed connectivity may be a precondition for the development of new applications which are not necessarily known today or that, already today, simultaneous use of multiple existing applications may exhaust current bandwidths to their limits.

National broadband plans also exist in other industrialised countries outside the EU, focusing as well on spurring NGAs. In the United States, the objective is that by 2020 100 million US households should have affordable access to actual downloads of at least 100Mbps (50Mbps by 2015) and upload speed of at least 50Mbps (20Mbps by 2015). It also targets widespread and world-fastest wireless networks and 1Gbps download speed broadband access service in public institutions such as schools, hospitals and government buildings. In Japan, the Ministry of Internal Affairs and Communications (MIC) targets ultra-fast broadband coverage by the end of 2015. In South Korea, the Korean government intends to connect all homes to the internet at 1Gbps and cut the monthly price to US$27 a month, down from US$38/month by the end of 2015. In Australia, the National Broadband Network is expected to cover 100% of premises and 93% of homes, schools and businesses at up to 100 Mbps over fibre by 2021, with the remainder at up to 12 Mbps over next generation wireless and satellite.

As regards the deployment of NGAs, there exists a trade-off between the incentives that private operators have in investing in NGAs and the interests of the national regulators to increase competition in the broadband market. Countries are using different strategies in order to attain both deployment and competition in NGAs. Most of the countries in the EU expect telecom operators to deploy NGAs, enhancing competition via mandatory unbundling as is already done with copper networks. A group of countries, such as Sweden, the United

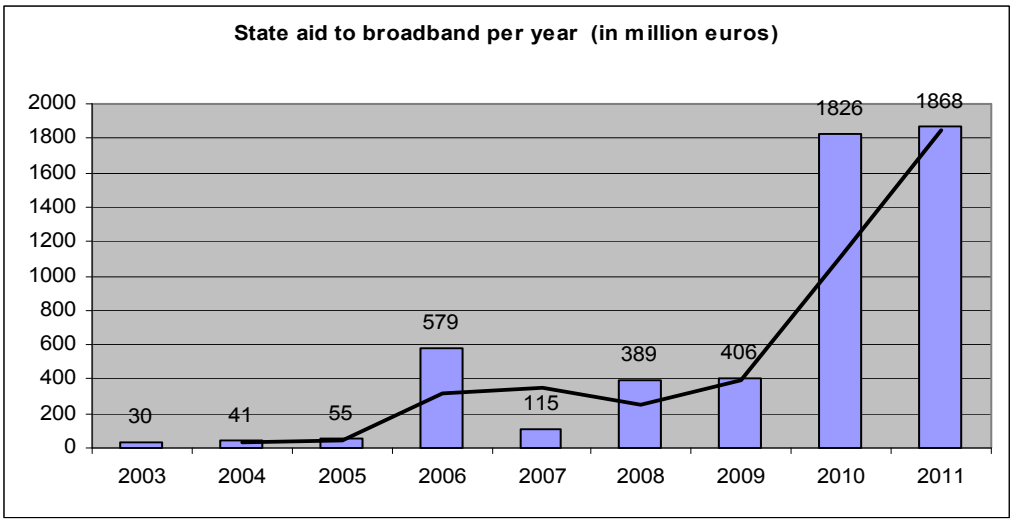
[10] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52009XC0930(02):EN:NOT
[11] http://ec.europa.eu/information_society/newsroom/cf/item-detail-dae.cfm?item_id=7948

Kingdom and Japan have introduced functional separation for fixed broadband networks but not always in association with public investment. Another group of countries (it is the case in Australia) are investing public funds in deploying NGAs. A further group of countries, such as the United States or Korea, rely mostly on private infrastructure-based competition with no (or little) use of unbundling (non mandatory access).

The broadband DAE targets and the *Community Guidelines for the application of State aid rules in relation to rapid deployment of broadband network*[12] (hereafter: "Broadband Guidelines") are closely related and the amount of State funds devoted to broadband networks has increased in the past years. First adopted in 2009, they explain how public funds can be channelled for the deployment of basic broadband networks as well as NGA networks to areas where private operators do not invest due to lack of funds and/or incentives.

The amount of State aid earmarked for broadband networks increased again in 2011 to EUR 1,868 million, slightly above the 2010 record. This shows the increasing importance that the availability of broadband infrastructure is gaining in all Member States (Figure 4).

Figure 4: Amount of State aid authorized per year (in million euros)



Source: European Commission

In 2011, the Commission launched a process to review the Broadband Guidelines in order to keep up with market and technology developments. After the publication of the revised draft Guidelines, a consultation with stakeholders was launched in June 2012[13]. The Commission also commissioned two studies[14] on the implementation of the current Broadband Guidelines through an analysis of cases studies and technological issues.

The revision of the Broadband Guidelines is also part of the State Aid Modernisation[15].

The Commission is currently working on providing guidance on key regulatory concepts such as costing methodologies for setting key wholesale access prices. Such guidance aims to ensure that under equivalent circumstances, access products are priced in a consistent way across the EU while at the same time appropriately taking account of national specificities.

[12] Text reference 2009/C235/04
[13] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/550
[14]Study on the Implementation of the existing Broadband Guidelines, WIK Consult
http://ec.europa.eu/competition/consultations/2011_broadband_guidelines/final_report_en.pdf
Guide to broadband investment, Analysys Mason
http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action=display&doc_id=889
[15]On 8 May 2012, the Commission set out an ambitious State aid reform programme,
http://ec.europa.eu/competition/state_aid/modernisation/index_en.html

The likely instrument will be a recommendation pursuant to Article 19 of the Framework Directive. A public consultation addressing different costing methodologies for the implementation of cost orientation obligations and incentives to invest in NGA networks was closed at the end of 2011[16].

The Commission is also working on a new initiative that concerns cost reduction. The need for cost reduction measures has already been addressed in the Digital Agenda for Europe, the Broadband Communication, the eCommerce Action Plan as well as in many National Broadband Plans. Many studies suggest that the largest single cost component of deploying networks, going up to 80%, is civil engineering and that these costs could be significantly reduced, among others, by the re-use of existing telecommunications ducts, the sharing of alternative infrastructure owned by other utilities, coordination of civil works across utilities (e.g. water, energy, railways) and/or by proper coordination between national and local authorities. This initiative aims to incentivise NGA rollout and facilitate investments by decreasing the associated costs and administrative burden. Areas of action may include administrative procedures, duct mapping, duct sharing, coordination of civil engineering and in-house equipment. A public consultation was launched in April 2012[17].

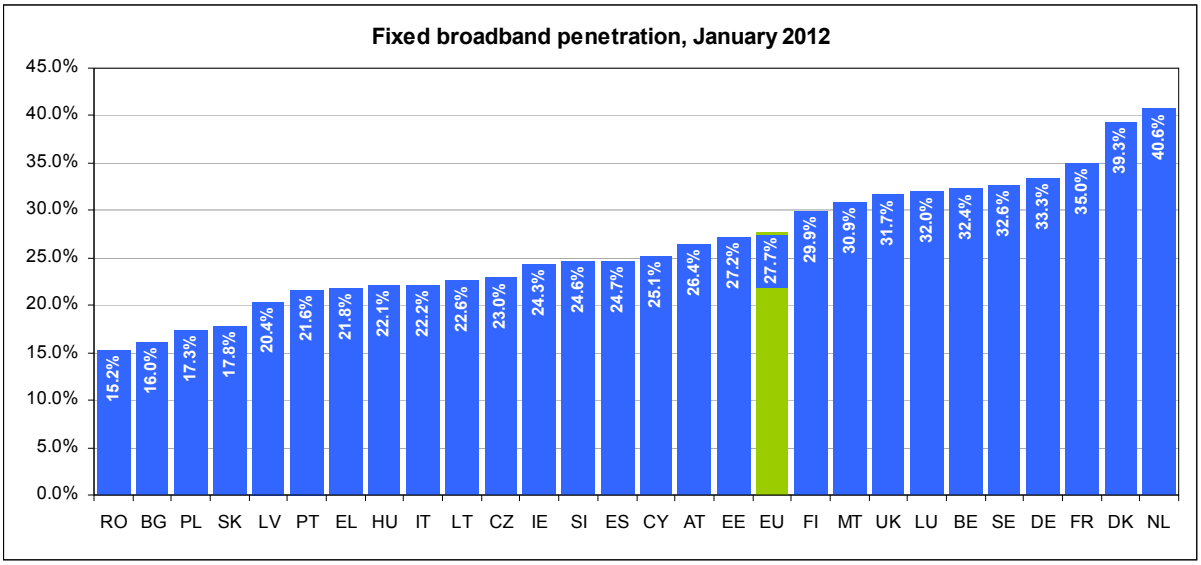
In addition, and with the aim to help bridging the funding gap, the Commission has adopted a plan -- the Connecting Europe Facility[18] (CEF) -- to give a EUR 50 billion boost to Europe's transport, energy and digital networks between 2014 and 2020, out of which EUR 9.2 billion will be spent in broadband networks and services in line with EU competition and State aid rules. At least EUR 7 billion out of the EUR 9.2 billion will be available for investment in high-speed broadband infrastructure. Public funds channelled to invest in broadband infrastructure will have positive externalities (such as giving projects credibility and lowering risk) and are expected to leverage between EUR 50 billion and EUR 100 billion of private and public money. The remaining funding (around EUR 2 billion) would support public interest digital service infrastructure such as electronic Government and Health records, electronic identification, electronic procurements, cooperation to take down illegal content, etc.

1.1.3. The fixed broadband market

The EU fixed broadband market included more than 139 million fixed broadband lines by January 2012. The EU broadband market continued to grow in 2011 with some 6.7 million new lines (5% year-on-year growth). At the end of 2011, there were 27.7 fixed broadband lines per 100 inhabitants in the EU (Figure 5) with nine countries reaching 30 lines or more per 100 inhabitants.

[16] http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/cost_accounting/index_en.htm
[17] http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/cost_reduction_hsi/index_en.htm , with July 20th as deadline
[18] http://ec.europa.eu/budget/reform/commission-proposals-for-the-multiannual-financial-framework-2014-2020/index_en.htm

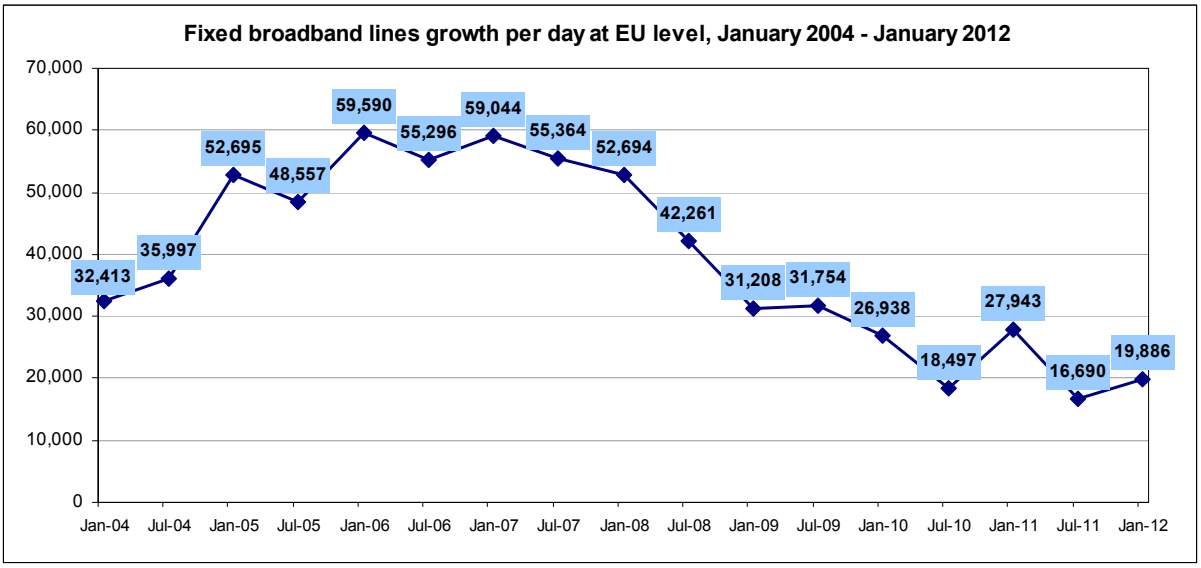
Figure 5: Fixed Broadband Penetration Rate, January 2012



Source: Communications Committee

Despite the increase in the number of fixed lines, the growth rate continues to slow. The penetration rate by population increased by only 1.3 percentage points from January 2011 to January 2012, recording a significant decrease in the number of net additions with respect to January 2011 (19,886 lines per day) (Figure 6). These indicators show that the market is mature and reaching its ceiling in many countries. Countries experienced positive growth in their penetration rates including Finland, which had regressed in previous years.

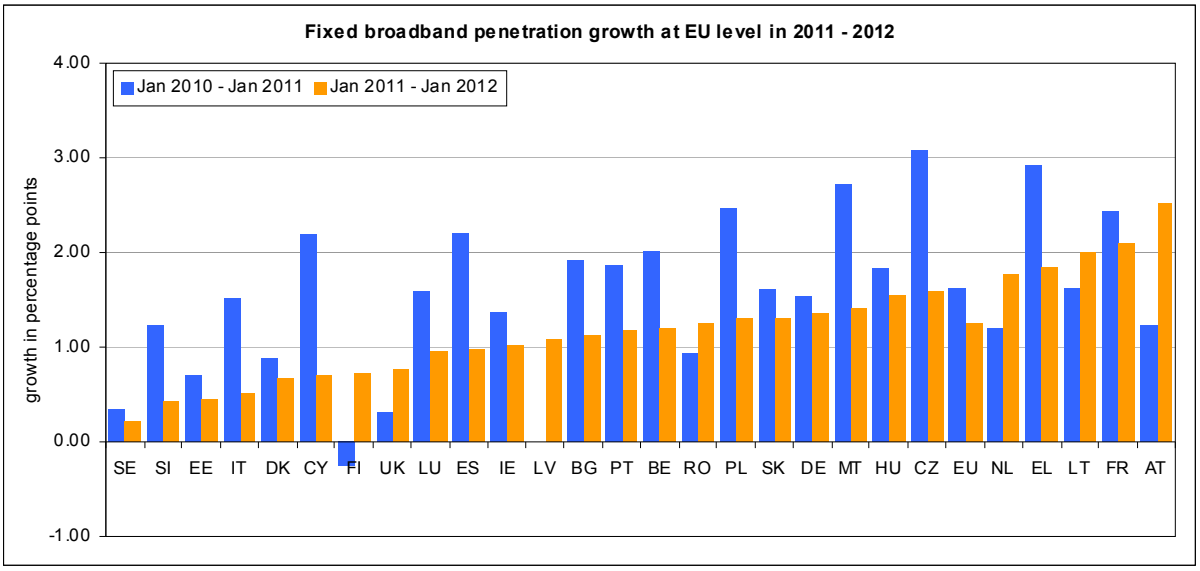
Figure 6: Growth of fixed broadband lines per day



Source: Communications Committee

Overall, the average growth rate in penetration levels in Europe has decreased to 1.3% from 1.6% in the period from January 2010 to January 2011. It seems that a critical mass of the broadband market penetration has been achieved and that the penetration growth rate is diminishing (Figure 7).

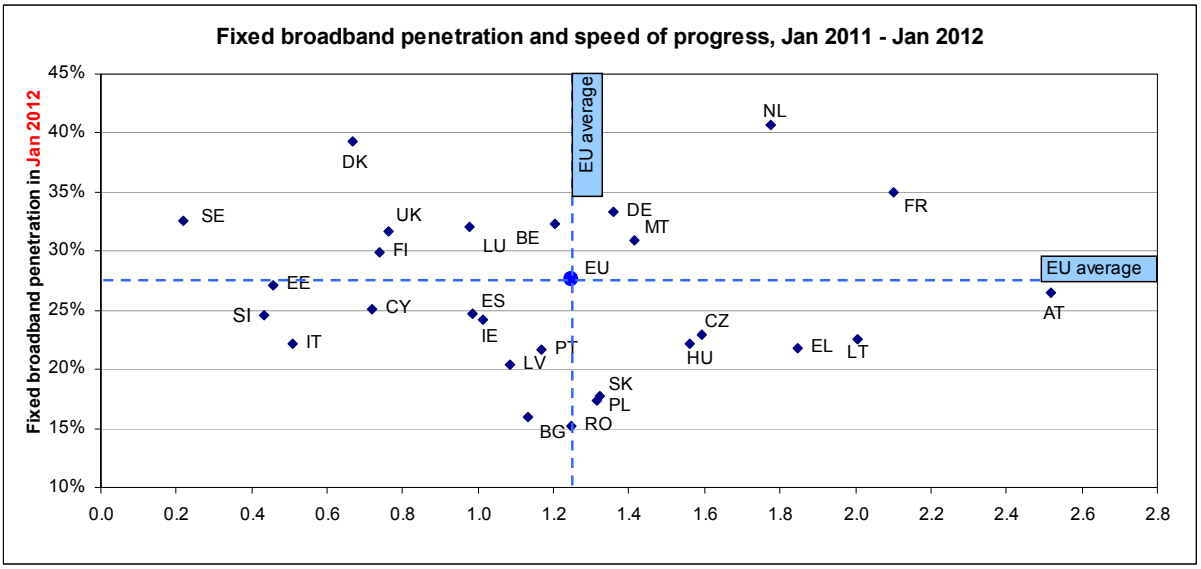
Figure 7: Fixed broadband penetration and speed of progress, 2011-2012



Source: Communications Committee

A group of countries (Slovenia, Estonia, Italy and Cyprus) had very low growth rates and remain below the average EU penetration rate. Some countries with still low penetration rates experienced a boost in their growth: Austria, Lithuania, Greece, the Czech Republic and Hungary. A smaller group of countries with penetration rates above the EU average showed low growth rates: Sweden, Denmark, Finland, the United Kingdom, Luxembourg and Belgium. France was the country with the second highest growth in penetration and is now the country with the third highest penetration level, having overtaken the UK. Growth and penetration rates were also positive in the Netherlands (the highest penetration level in the EU), Germany and Malta. Finally, Bulgaria and Romania have the lowest penetration levels in the EU; their growth rates also lagged behind the EU average (Figure 8).

Figure 8: Growth of fixed broadband penetration in EU Member States, 2010-2012

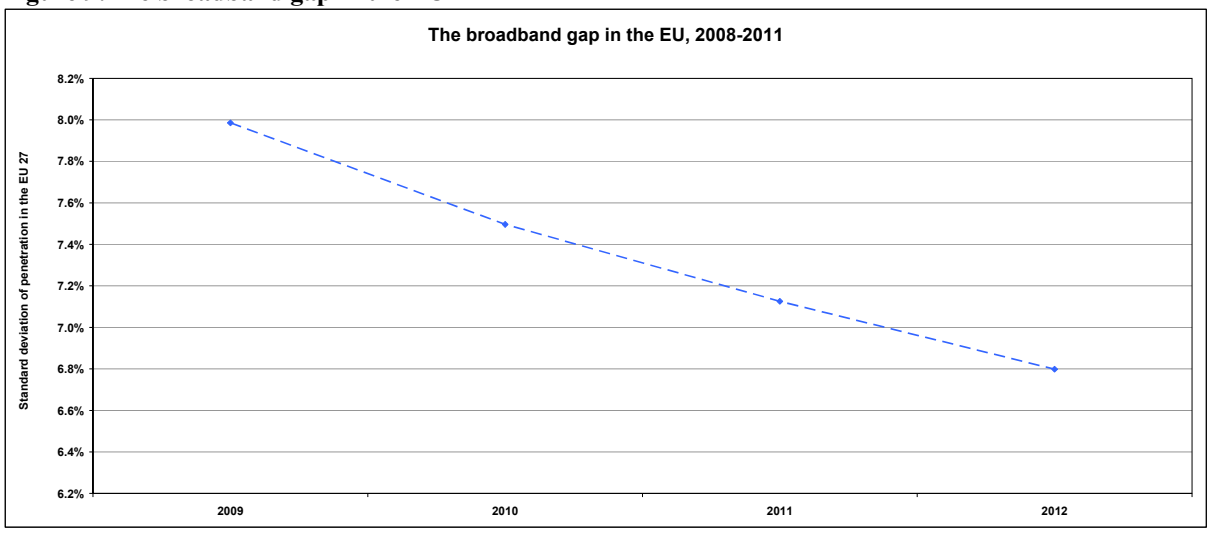


Source: Communications Committee

The broadband gap, a measurement of the dispersion of penetration rates between countries in the EU, continued to decline; the slope was similar to that of 2011 (Figure 9). The broadband gap is closing partially because the penetration rate in many developed countries did not grow as much as that in countries with penetration levels below the average. The catch-up is very

slow for some countries such as Bulgaria, Romania, Poland or Slovakia, and it might take longer than expected.

Figure 9:The broadband gap in the EU

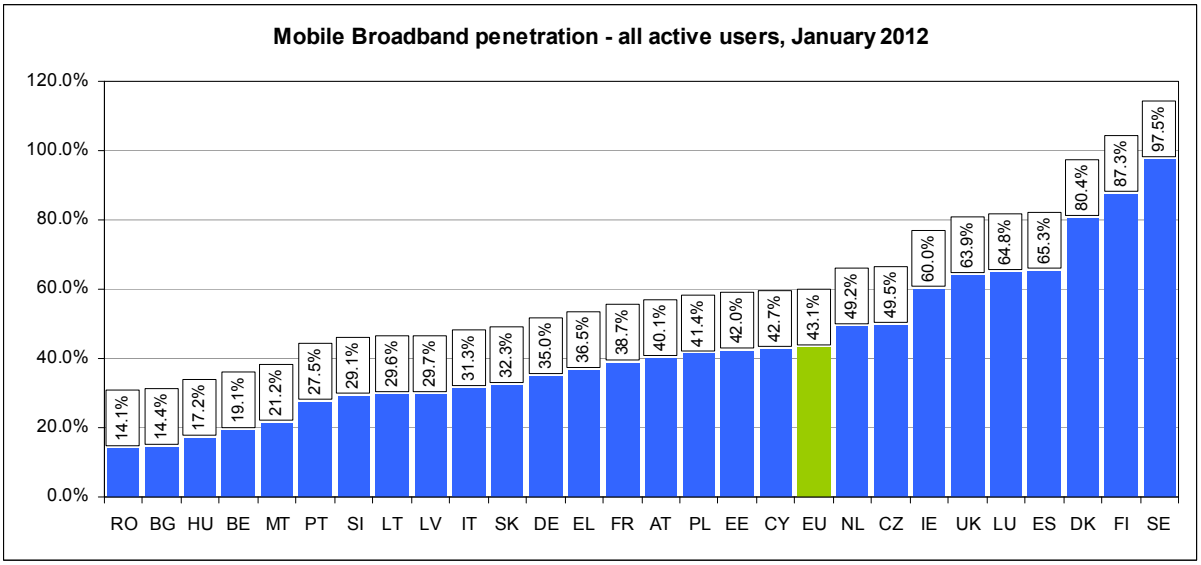


Source: Communications Committee

1.1.4. Fixed and mobile broadband

The boost of mobile broadband, including both datacards and smartphones, was very important in 2011; data through wireless devices is growing exponentially. The penetration rate for all active subscribers jumped from 26.2% in 2011 to 43.1% in 2012 (i.e. a 17 percentage point year-on-year increase) (Figure 10).

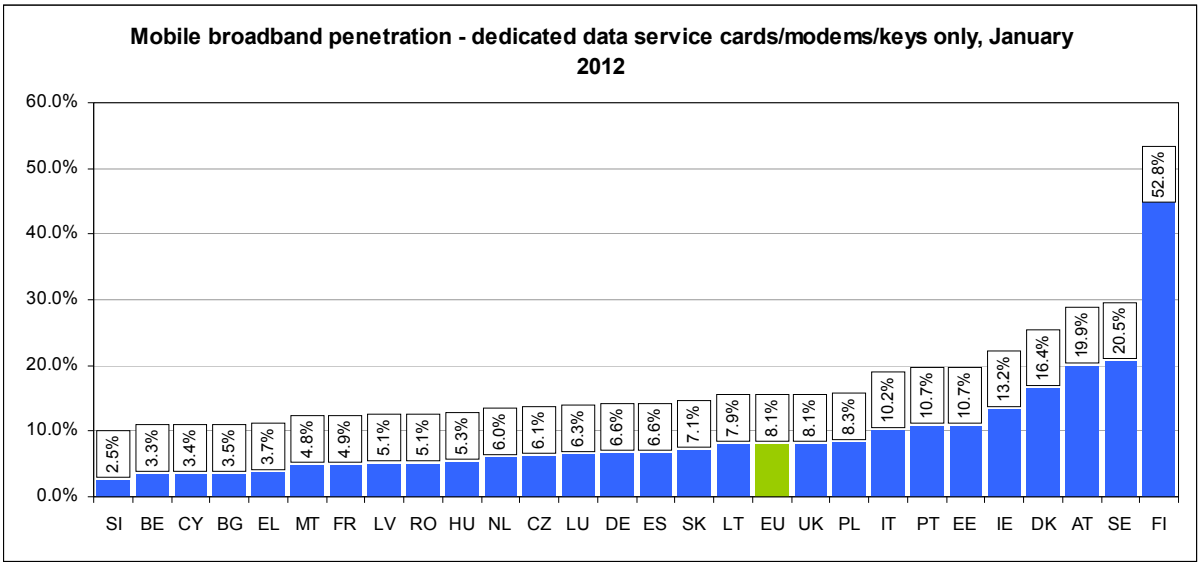
Figure 10



Source: Communications Committee

However, this increase was mainly due to a steep increase in the number of people using the internet through smartphones; the penetration level of datacards (laptop devices) only increased from 7.1% in 2011 to 8.1% in 2012 (Figure 11). Therefore, mobile broadband growth was driven mainly by demand for handheld devices (smartphones or tablets) rather than by fixed wireless access based on laptops.

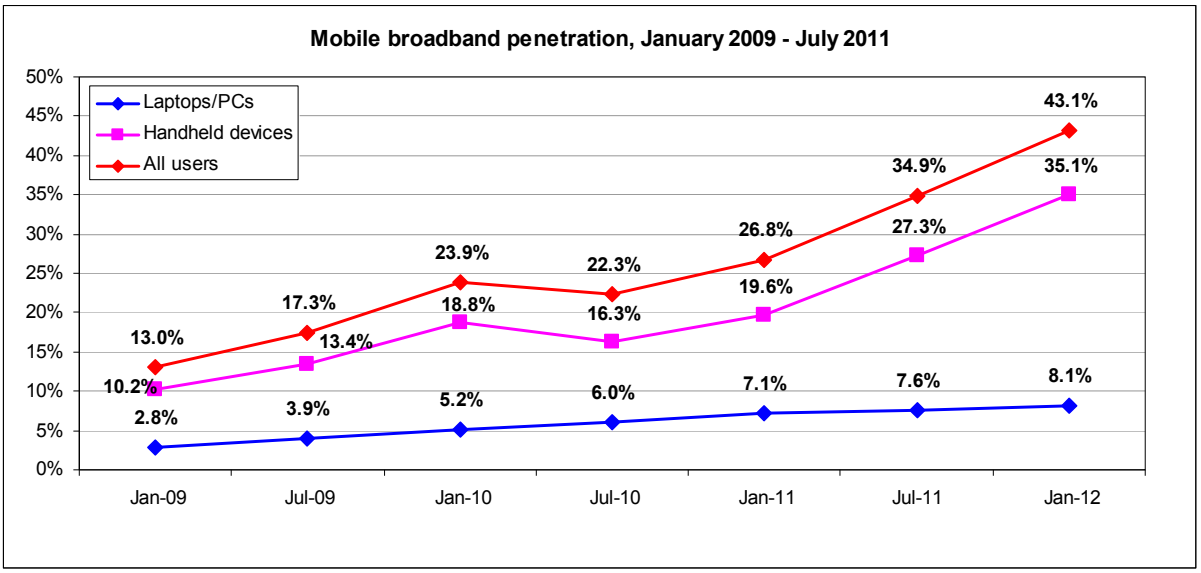
Figure 11



Source: Communications Committee

As the internet features on smartphones are so far limited (offers are usually price metered and quality is limited for some applications and services due to lower speeds and the smaller size of the screen), it is more logical that these are at present used more as a complement to fixed broadband than as a substitute. However, the rapid introduction of tablets and improved smartphones (Figure 12) in terms of processing power, capacity (fourth generation mobile speeds) and screen size may indicate that there will be a change in the way mobile broadband is used and in the future stronger substitution effects might appear.

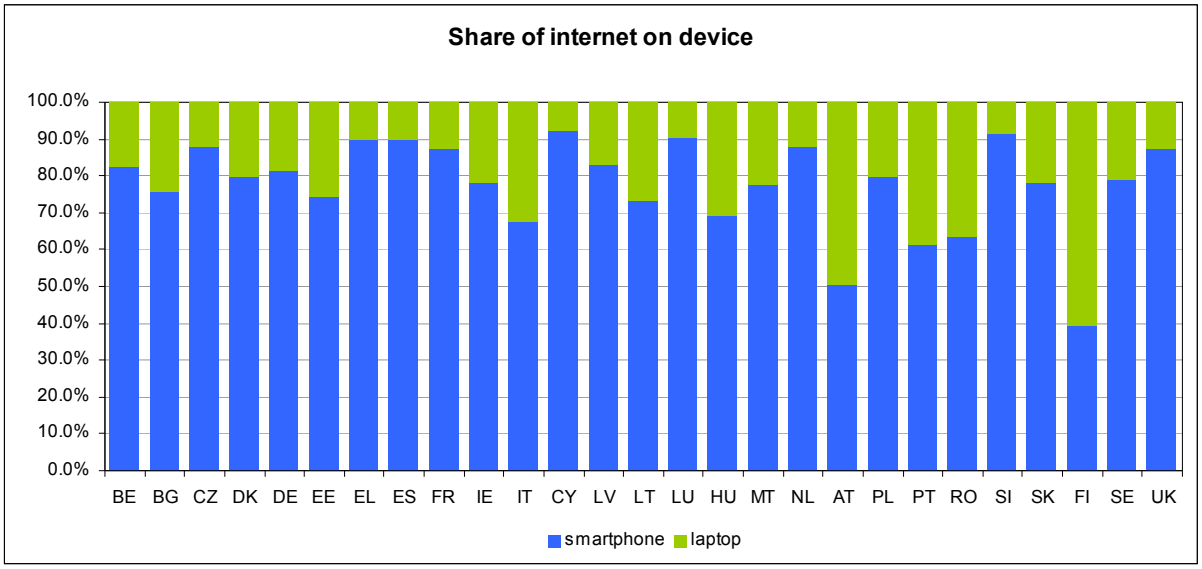
Figure 12



Source: Communications Committee

For example, Finland and Austria have a big share of mobile internet through laptops compared to other countries which might reflect a greater substitutability between mobile and fixed broadband. In countries such as the Netherlands, Greece, Spain, Cyprus or Slovenia most of the mobile broadband lines are sustained on smartphone devices (i.e. there is a greater degree of complementarity) (Figure 13).

Figure 13



Source: Communications Committee

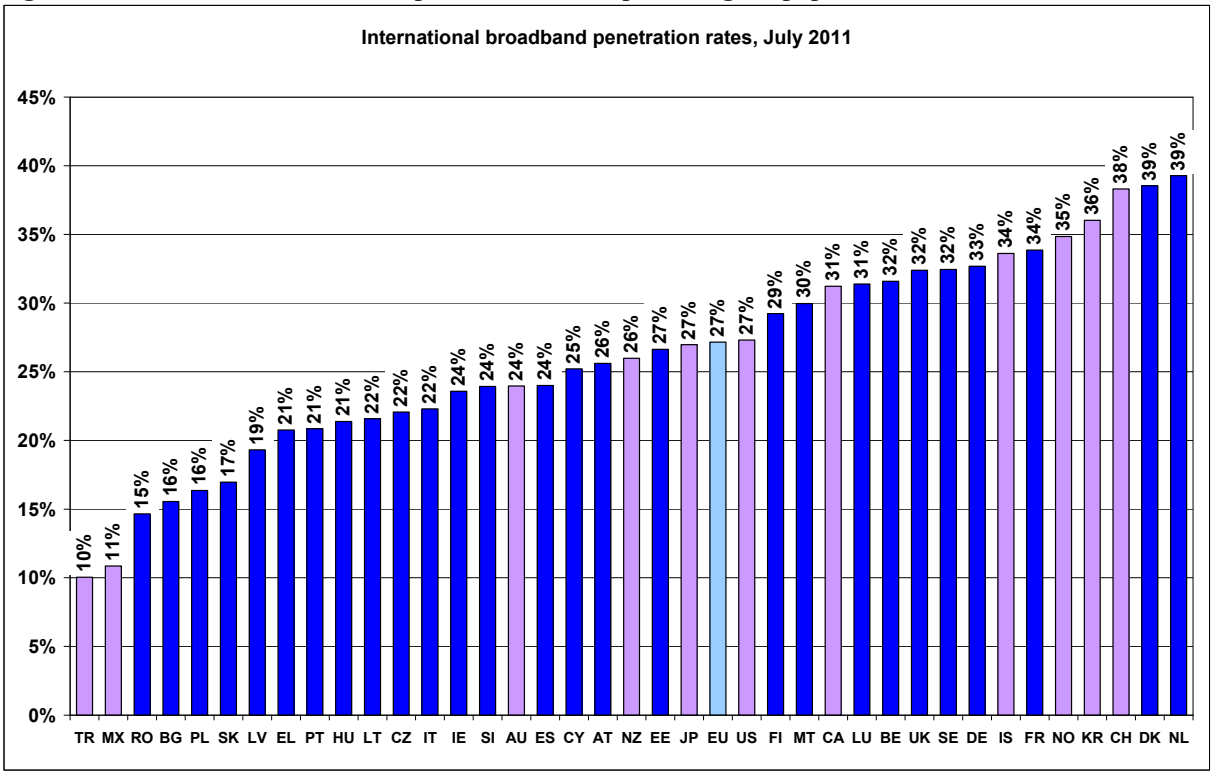
Combining fixed and mobile broadband by businesses is now common place in Europe. In 2011, more than nine out of 10 enterprises in the EU27 had access to and used the internet. More than eight out of 10 accessed and used the internet through a fixed broadband connection and almost half via a mobile broadband connection. While the percentage of enterprises having internet access and using a fixed broadband internet connection in January 2011 was, on average, high in the EU27 (95% and 87% respectively) and increased marginally compared to January 2010 (+1 percentage point, +2 percentage points respectively), the share of enterprises that used mobile broadband internet connections (47%) increased sharply by 20 percentage points, in particular among medium-sized enterprises (+23 percentage points).

However, the share of enterprises using a mobile broadband connection varied widely from country to country from 15% in Romania to 77% in Finland and 67% in Sweden. Of the large enterprises, more than 90% in Austria, Finland, Sweden, Germany, France and the United Kingdom used mobile broadband internet connections.

1.1.5. An international comparison

The EU penetration rate surged in 2011 and for the first time overtook Japan (by 0.2 percentage points) and was only 0.5 percentage points behind the United States; in 2010 Europe lagged behind these two countries by 1.4 percentage points and 0.7 percentage points respectively. In fact, between July 2010 and July 2011, the EU increased its penetration rate by 2.1 percentage points while, in the same period, the United States and Japan only increased their penetration rates by 0.3 percentage points and 0.6 percentage points respectively (Figure 14). On a global level, the Netherlands and Denmark continued to be the first countries in the ranking.

Figure 14: International broadband penetration rates, percentage of population



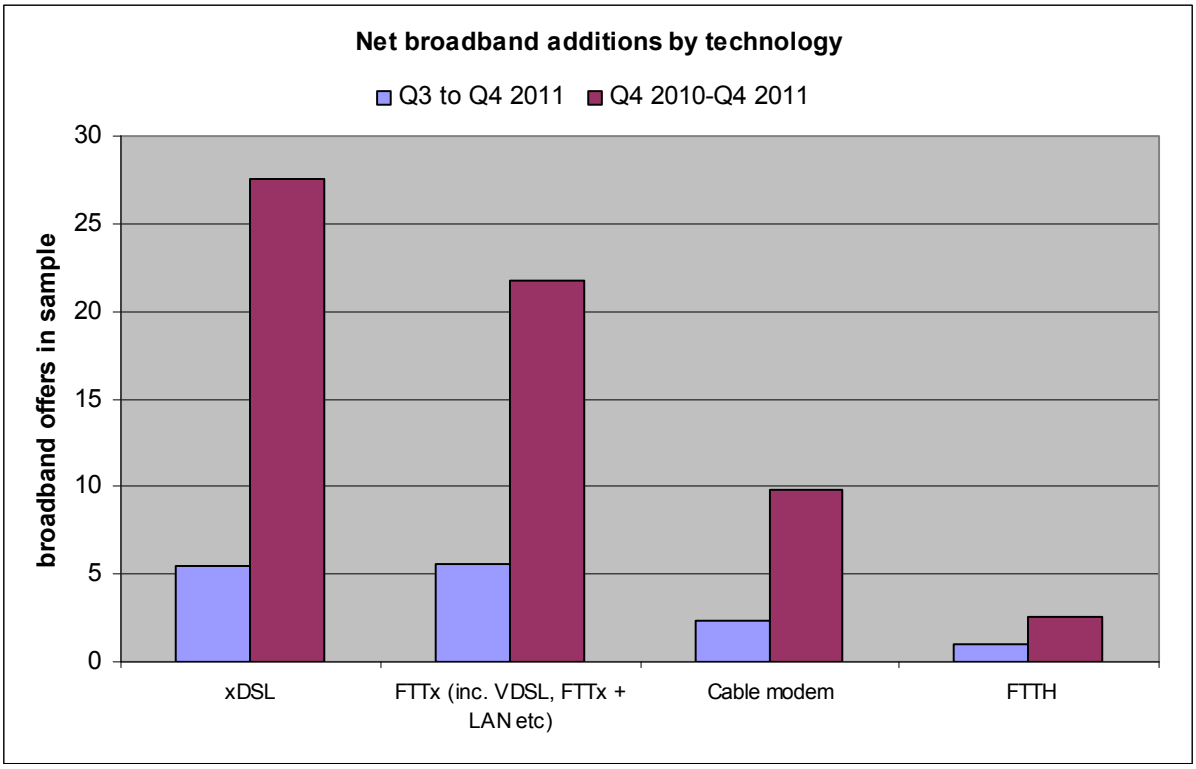
Source: Commission services based on COCOM and OECD figures

1.1.6. Broadband technologies and speeds

DSL continues to be the predominant technology in the EU broadband market despite the decrease in its share from 80.9% of all fixed broadband lines in January 2006 to 75.9% in January 2012 (Figure 16). In absolute terms, the number of xDSL lines increased but as the overall market grew faster, the share of DSL lines fell. The loss of market share in 2011 by lines using xDSL technologies, including VDSL, has become more moderate (-1.1%) with respect to the previous year. Most of the gains have gone to lines based on cable modems (+0.6 percentage points), with other technologies just gaining a mere 0.5 percentage point.

However, the noticeable development was the loss of market share of xDSL lines that occurred in the second half of 2011 (-0.7 percentage points) when, according to the data, almost the same number of lines using technologies other than xDSL were sold (Figure 17). Considering that VDSL lines are yet a fraction of the DSL market (around 1.5% according to COCOM data), this is a very significant development as it shows that the substitution of first generation broadband access accelerated at the end of 2011. This change mirrors developments in other regions of the world; altogether, in the last quarter of 2011 the number of net additions of lines based on FTTX, FTTH, and upgraded cable-modem clearly exceeded growth of DSL based lines (Figure 15).

Figure 15

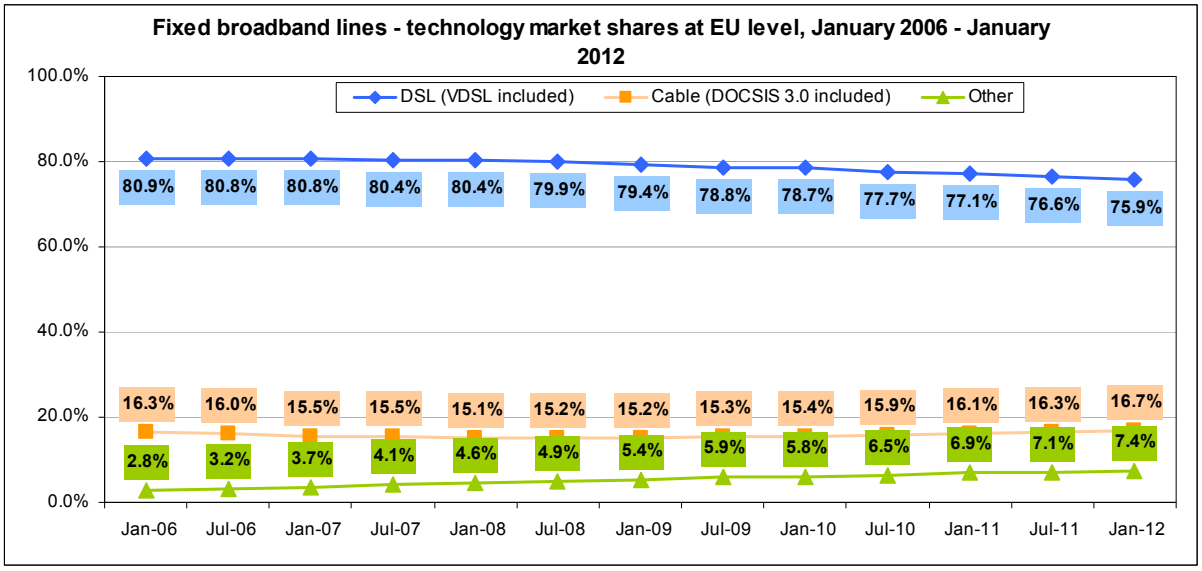


Source: Point Topic

Growth of fixed broadband based on cable and other non-DLS technologies with respect to xDSL technologies was significant in Cyprus (4.3 percentage points), Lithuania (4.1 percentage points), Latvia (3.8 percentage points), Ireland (3.7 percentage points) and Portugal to a lesser extent (2.9 percentage points).

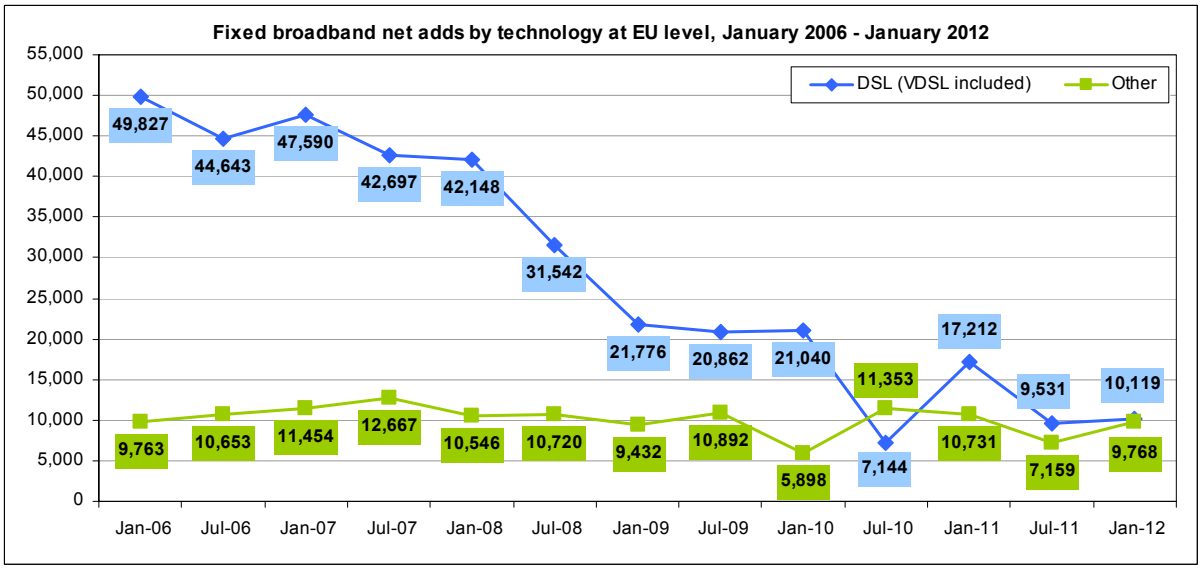
The growth of alternative technologies also brought an increase in nominal speeds from 5.1% of all fixed broadband lines providing download speeds equal to or higher than 30 Mbps in January 2011 to 8.5% a year later. Significantly, the proportion of broadband access lines that can be qualified as NGA, because they are based on fibre infrastructure and can be easily upgraded to provide speeds of 30 Mbps and beyond, already represents 12% of all broadband lines.

Figure 16: Fixed broadband lines in the EU by technology



Source: Communications Committee

Figure 17



Source: Communications Committee

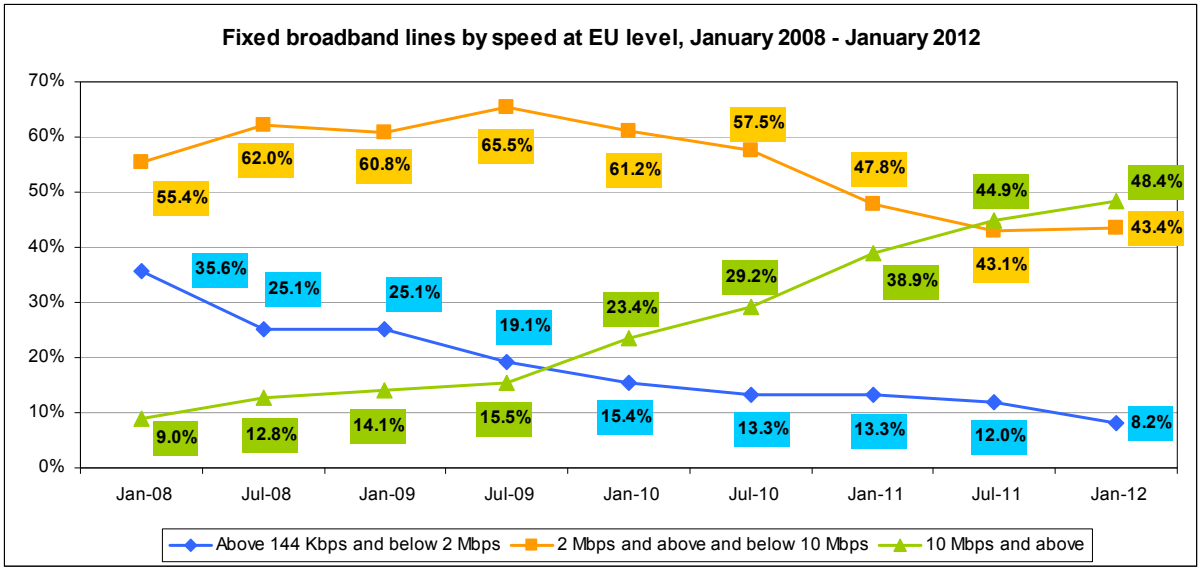
DSL technologies still dominate the EU market and current broadband speeds remain far below the targets set by the DAE. However, lines providing speeds of 10 Mbps and above increased by 9.5 percentage points year-on-year, representing 48.4% of the total market in January 2012 (Figure 18). The proportion of intermediate speeds (above 2Mbps and below 10Mbps), which accounted for the largest share of lines in 2011 (47.8% out of the total), fell to 43.4% in 2012. The range of speeds below 2 Mbps continued falling and represented only 8.2% of the total broadband market in 2012.

Evidence on the importance of faster speeds starts to emerge. A recent survey on firms' perceptions of the importance of speeds[19] shows the existence of significant fragmentation of speeds across the same businesses with branches in different locations. While higher speeds are considered to have had a significant impact on the internal organisation of work, low

[19] Enhancing the business value of broadband, INSEAD, 2012

speeds are seen as the main barriers to the use of crucial business applications such as cloud computing.

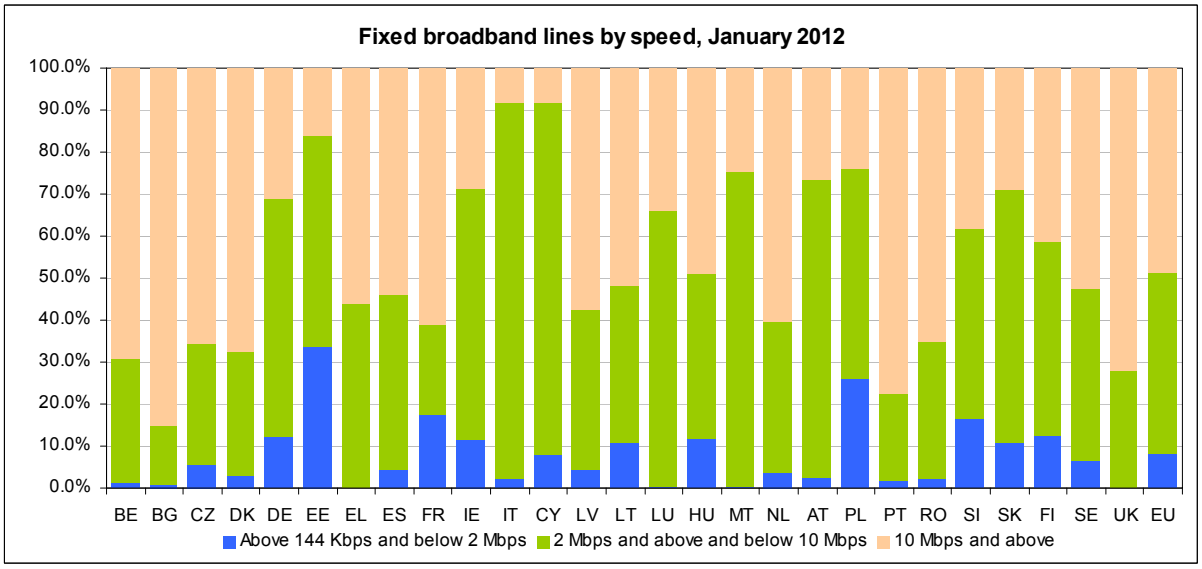
Figure 18: Fixed broadband lines by speeds, 2008-2012



Source: Communications Committee

More than 75% of fixed lines in Bulgaria and Portugal provide speeds above 10 Mbps. The United Kingdom, Belgium and Denmark follow with around 70%. Romania, the Czech Republic, France, the Netherlands and Latvia have a share of around 60% (Figure 19).

Figure 19: Fixed broadband lines in the EU Member States by speed

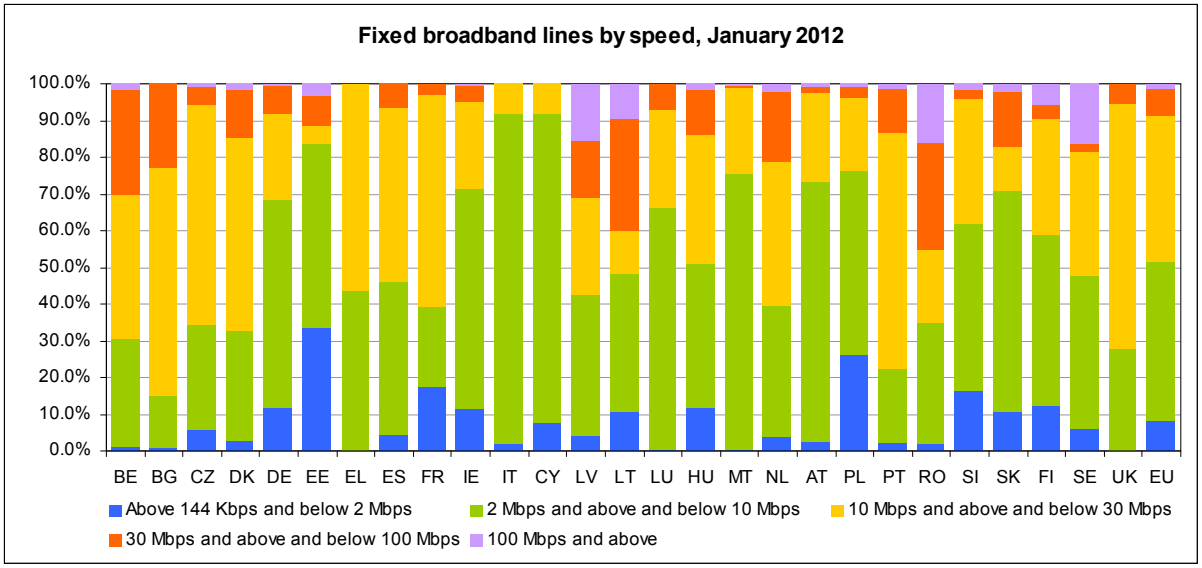


Source: Communications Committee

While there is a clear trend towards delivering higher speeds using first generation broadband technologies, only 8.1% of the population in the EU subscribes to lines providing speeds equal to or higher than 30 Mbps. Most of these lines are for speeds above 30Mbps and below 100 Mbps with just 1.3% of accesses in some EU countries providing speeds equal to or

above 100 Mbps (Figure 20). Lack of demand for NGAs by consumers who claim there is no need for faster access appears to be one of the main reasons for this low uptake level[20].

Figure 20: Fixed broadband lines in the EU Member States by speed

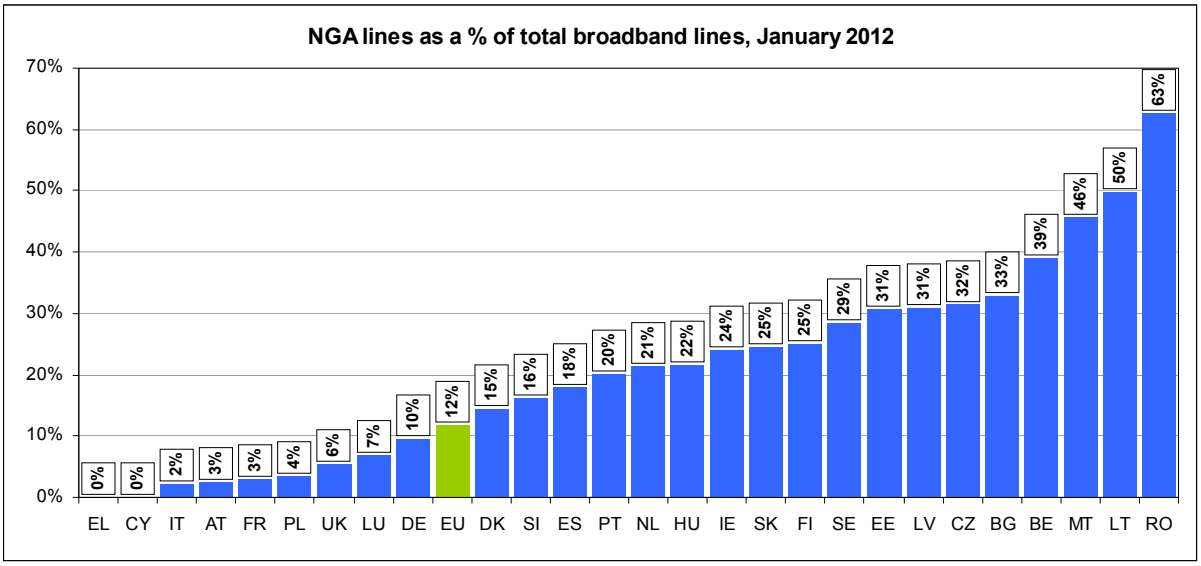


Source: Communications Committee

In 2011, only 12% of all fixed lines in the EU (Figure 21) were NGAs, i.e. were based on fibre technologies allowing the provision of ultra-fast download speeds (VDSL, Fibre to the Home, Fibre to the Building, + Ethernet/LAN, cable modem) even if actual speeds were in some cases lower than 30 Mbps. The deployment and take-up of NGAs across the EU is very heterogeneous and depends on a number of factors, including the competitive framework, the existing infrastructures and socio-economic factors which are particular to each EU country. For instance, Romania, despite being the country with the lowest fixed broadband penetration rate, is the country with the highest relative number of broadband lines with speeds above 30 Mbps. Similarly, Lithuania has the highest rate of take-up of FTTH and FTTB by households, according to the FTTH Council (Figure 22), even though the fixed broadband penetration rate is well below the EU average. Bulgaria is in a similar situation. But many of these FTTH/FTTB connections do not yet provide very fast speeds. Conversely, countries such as Denmark or the Netherlands are only average in terms of the take-up of very high-speed access lines while they have the highest penetration levels.

[20] The European Commission is running a consumer market study on the functioning of the market for Internet access and provision from a consumer perspective in the EU. Amongst other issues that will be looked at is the extent to which the service provided meets consumers' needs and expectations. In particular, whether the download speed of the Internet connection matches the contract conditions of consumers and the extent to which a slower speed of internet connection constitutes an important factor for switching provider.

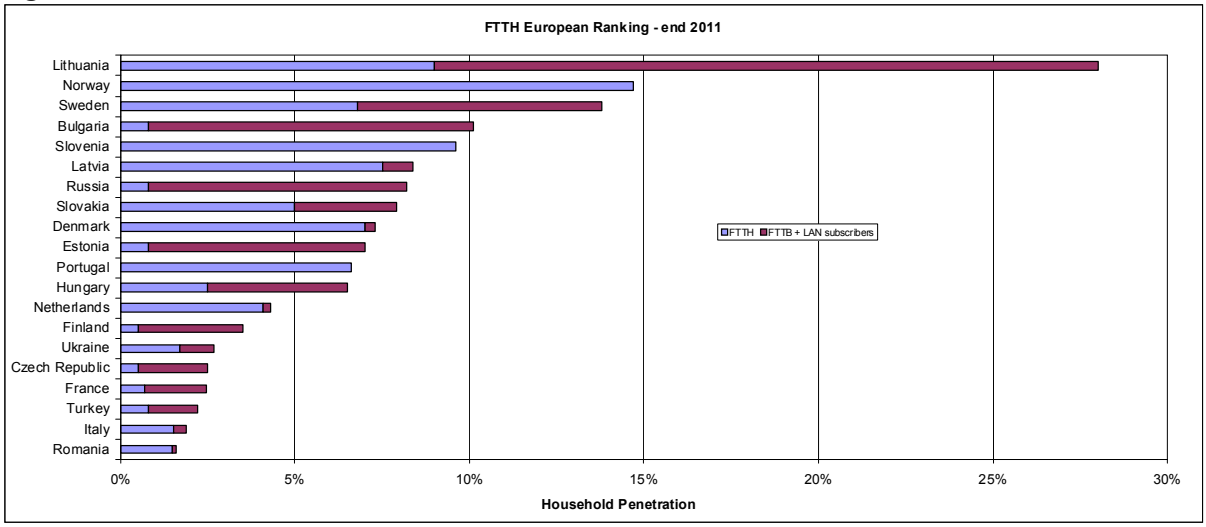
Figure 21: Take-up of NGAs



Source: Communications Committee

The Commission is agnostic about the technology used to reach fast and ultra-fast broadband. So far NGAs take-up accounts for 12% of the total broadband market although only 8.1% of clients are subscribing to speeds above 30Mbps. Therefore, some subscribers stay on products with speeds lower than 30Mbps despite their broadband access being supplied through next generation access networks. This gap between the levels of high speed adoption and the availability of NGAs reflects a lack of incentives by consumers to upgrade to faster service tiers. In some cases, carriers upgrade their clients' contracts for free but in other cases they split their offers so as to charge different prices depending on the speed provided. The fact is that some customers (around 25% of NGAs users) are not interested in fast broadband despite having potential access.

Figure 22



Source: FTTH Council Europe

As regards the evolution of coverage and take-up to meet the DAE in 2020, an estimated[21] penetration rate of 96% on an average speed of 30Mbps is expected while the equivalent figure for 100Mbps broadband is around 60%. Countries with either high population density

[21] Source: Analysys Mason, "The socio-economic impact of bandwidth", forthcoming

and/or high current coverage are likely to be the countries that will more easily meet the DAE targets.

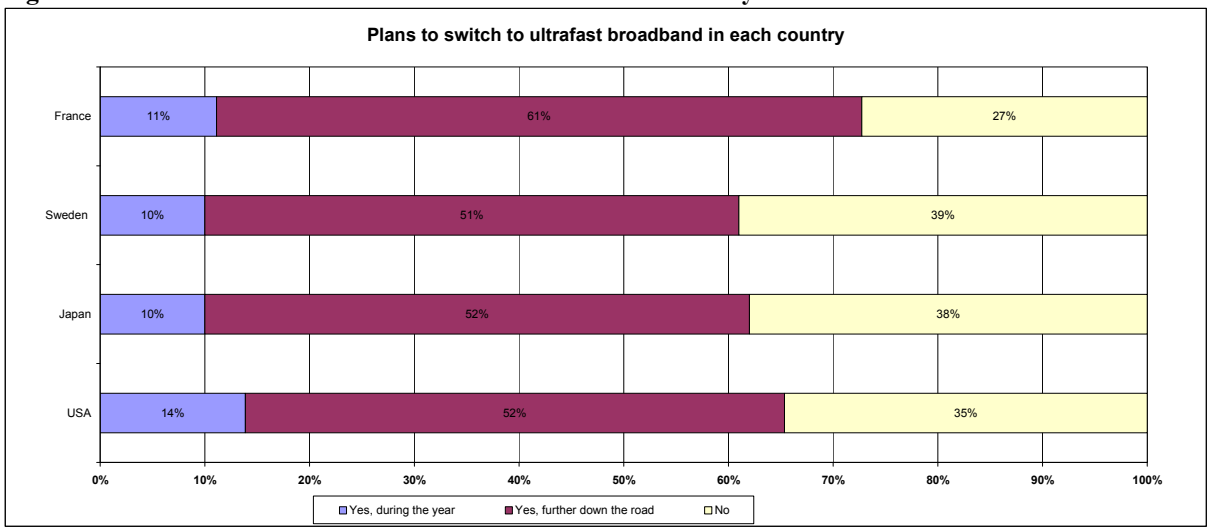
1.1.7. The NGA Demand Gap

Although NGA rollout has accelerated since last year to reach 34% of Europeans, only 2% of them actually take up fast speed connections. It takes time for consumers to realise the benefits of faster speeds and be ready to pay a premium for it. In France, for example, differences in consumption levels between ultra-fast and slower broadband concern mainly viewing HD content, remote applications, video calling and downloading films. In Sweden, differences concern Tweeting, VOD and chat rooms. In Japan, they relate to accessing remote applications and network gaming. In the United States, gaps are primarily in the realm of TV and video consumption[22]. Moreover, US users of ultra-fast broadband are much more frequent users than others and a significant number switched to the use of new applications as speeds increased. In the other countries, users reported heavier consumption of services and applications they already used.

Ultra-fast broadband services are generally regarded as improving customers' satisfaction of their broadband experience. Drivers are mainly related to TV/video service consumption and simultaneous usage of a household. Main barriers are related to pricing and lack of availability. Despite obstacles, 10% of households polled in France and Sweden plan to switch to ultra-fast broadband within a year and over 50% in the long run (Figure 23).

Pricing is identified as the prime obstacle to take-up. In some of the surveyed countries, differences in prices are not particularly strong, hence a lack of information and appropriate marketing may still be an issue. A recent Eurobarometer survey[23] carried out on behalf of the European Commission addressed European consumers' willingness to pay for ultra-fast broadband and found that 82% of EU citizens were not willing to pay more for a faster internet connection than their current one. The three main reasons for not switching to ultra-fast broadband were a lack of awareness of the potential benefits, lack of services and expected prices. Content upload and sharing (39%), online videos (32%) and TV watching (27%) were the main drivers for the EU population to pay more for their internet connection.

Figure 23: Plans to switch to ultra-fast broadband in each country



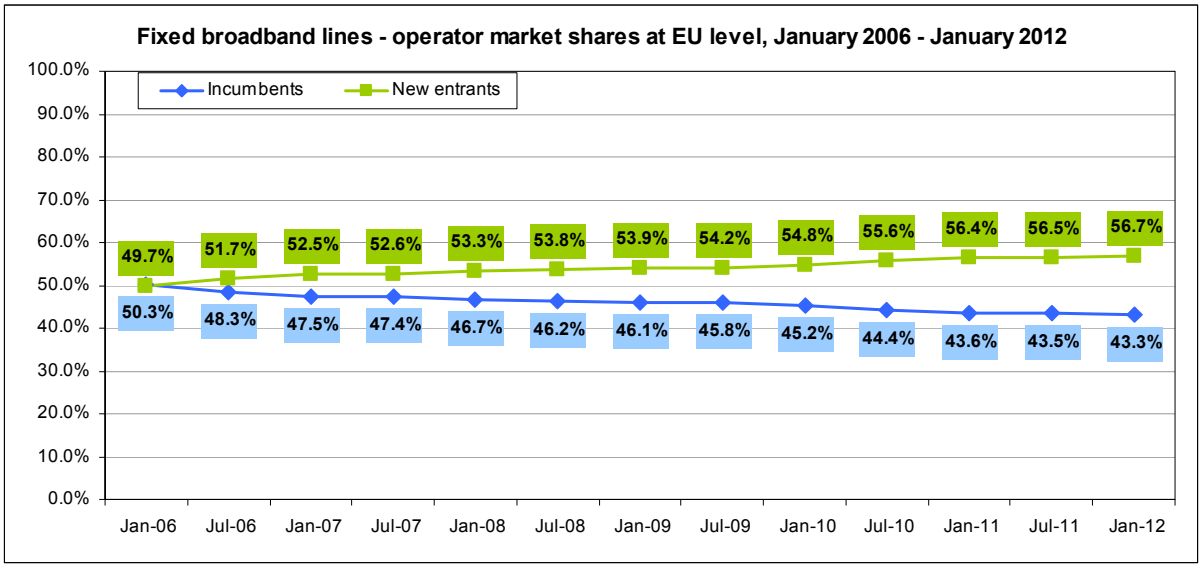
Source: IDATE - Ultra-fast broadband consumer market survey 2011 Base: Non-ultra-fast BB internet households

[22] Idate, "Ultra-fast broadband survey", October 2011.
[23] Available at http://ec.europa.eu/information_society/digital-agenda/scoreboard/pillars/singlemarket/index_en.htm

1.1.8. Competition dynamics

The market share[24] of the incumbent fixed operators has followed a downward trend in the period from July 2003 to July 2011. In January 2012, this trend continued and at the EU level, new entrant operators managed to regain some market positions (Figure 24).

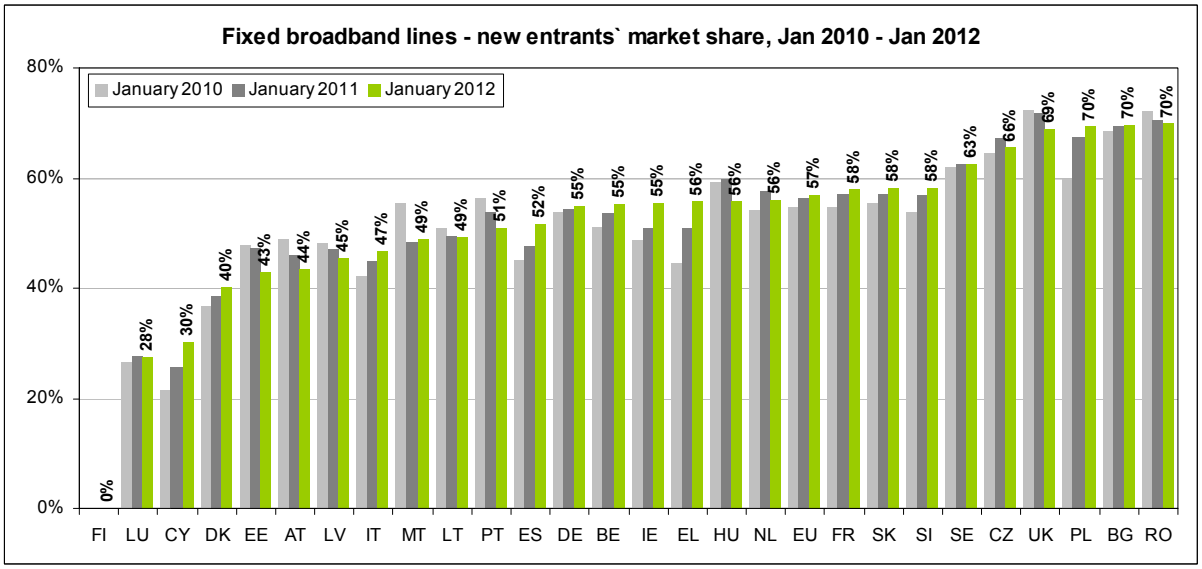
Figure 24: Percentage of broadband lines by operator



Source: Communications Committee

New entrants' market share in January 2012 increased by 0.4 percentage points from the previous year and now stands at 56.7% of the total broadband market. However, incumbent operators increased their market share with respect to January 2011 in a large group of countries: Estonia (4.3 percentage points), Hungary (3.9 percentage points), Portugal (3 percentage points), the UK (2.9 percentage points), Austria (2.4 percentage points) and the Netherlands, Latvia and the Czech Republic (around 1.7% percentage points each). New entrants made significant gains in Greece (4.7 percentage points), Cyprus and Ireland (4.6 percentage points) and Spain (4 percentage points), where the incumbent has for the first time lost its market leadership (Figure 25).

Figure 25: Fixed broadband lines – New entrant's market share, 2010-2012

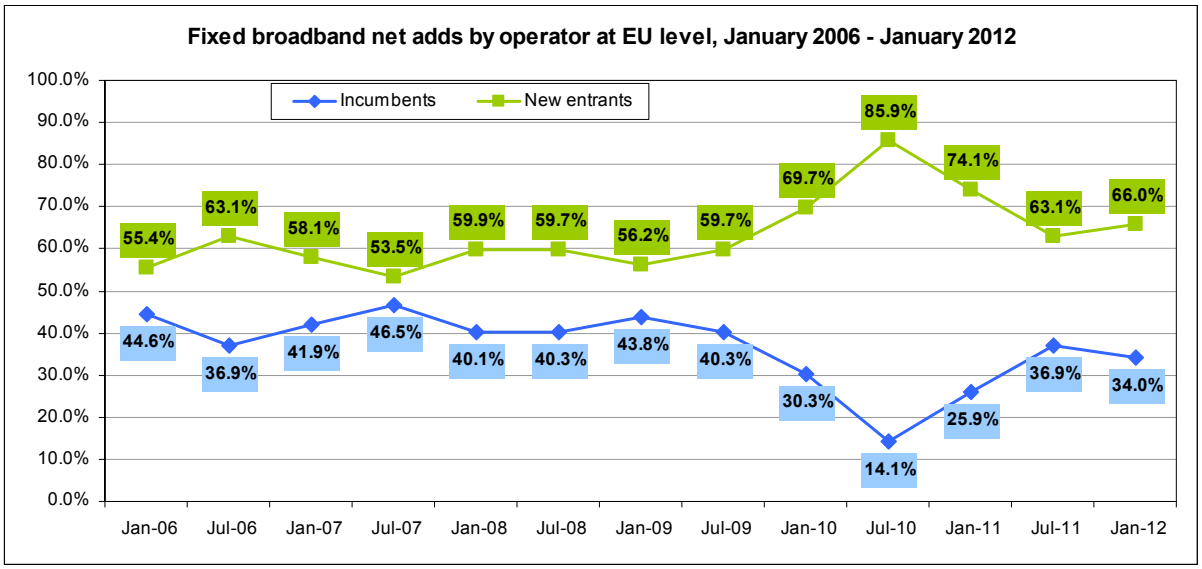


[24]Based on accesses

Source: Communications Committee

The share of new lines in favour of new entrant operators is still above that of incumbent operators. In the EU, 66% of market growth was due to new entrants whereas incumbents contributed to 34% of new broadband lines. Therefore, new entrant operators sold two thirds of all the new fixed lines in January 2012. However, new entrants decelerated their net adds amounted to 8.1 percentage points with respect to the previous year (Figure 26).

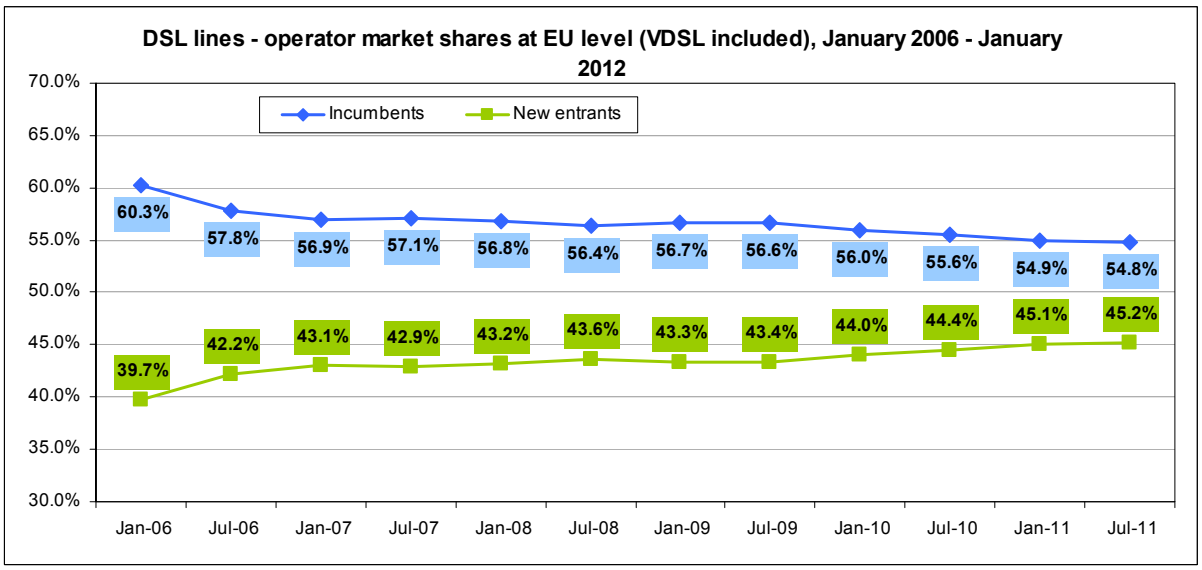
Figure 26: Fixed broadband net adds by operator in the EU



Source: Communications Committee

Regarding the DSL market, incumbents continued their negative trend and lost more market share than in previous years with a net 0.8 percentage point loss to 54.8% (Figure 27). It seems that DSL incumbent lines and those from unbundlers are converging. Nonetheless, the trends are smooth since the DSL market is already competitive and incumbents are cutting off prices to keep their market share.

Figure 27: DSL lines – Market shares at EU level, 2006-2011



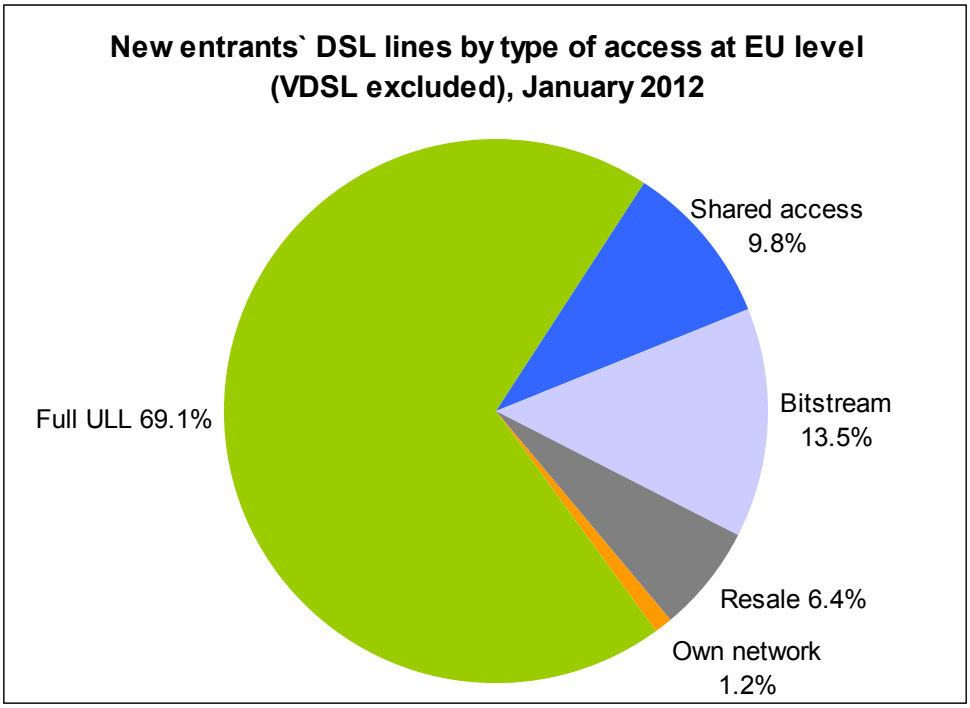
Source: Communications Committee

New entrants are using local loop unbundling (fully unbundled lines and shared access) as the main option to access the incumbent network. Full LLU access increased by 12.3 percentage

points in 2012. A transfer is taking place from other types of accesses to full LLU and in this way, shared access decreased by 2.6 percentage points and bitstream and resale accesses also declined (by 1.3 percentage points and 1.6 percentage points respectively).

All in all, LLU accounts for 78.9% of total DSL accesses and is by far the most used wholesale access. Bitstream/resale access accounts for 19.9% and DSL lines provided by new entrants with their own network account for only 1.2% of the total (the same percentage as in January 2011) (Figure 28).

Figure 28: New entrants' DSL lines by type of access



Source: Communications Committee

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

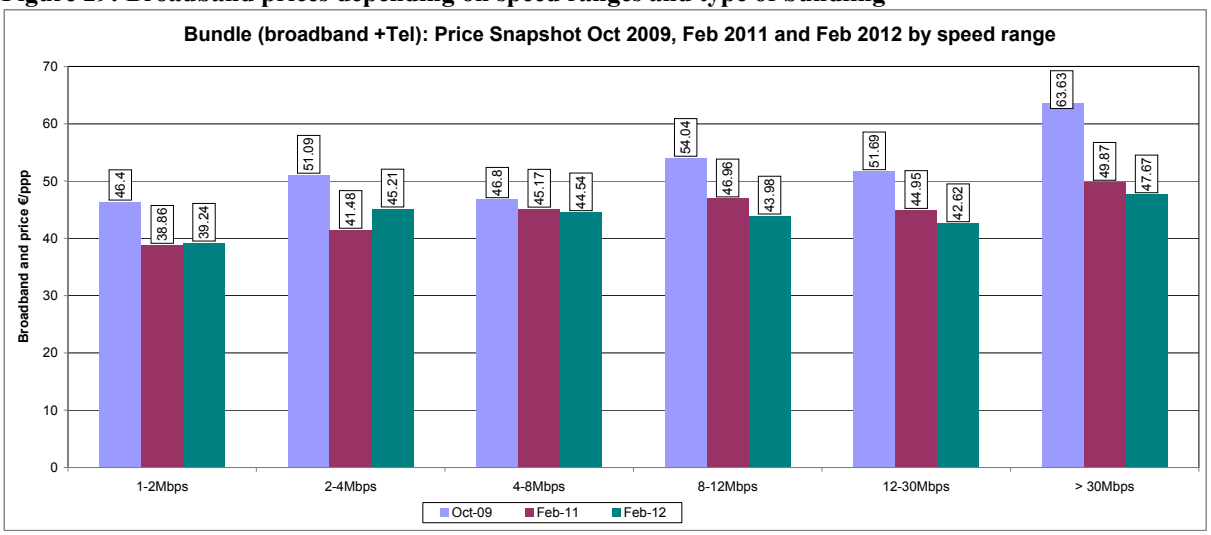
1.1.9. Prices

To analyse trends in broadband retail prices, it is necessary to split available offers according to speed brackets and bundling solutions (stand alone internet; internet + telephone; internet + television) and then look at the evolution in prices. Median prices are used to compare the price levels in 2009 to 2012 (Figure 29).

The broadband prices refer to a snapshot in years 2009 and 2012. The sample includes around 3,700 commercial offers[25] and reveals a pattern of price reduction over the last three years for bundled offers (broadband + telephony or broadband + telephony + TV). Price competition is mainly taking place in the broadband segment with speeds above 4 Mbps. Price evolutions for the triple play offers are a bit clearer.

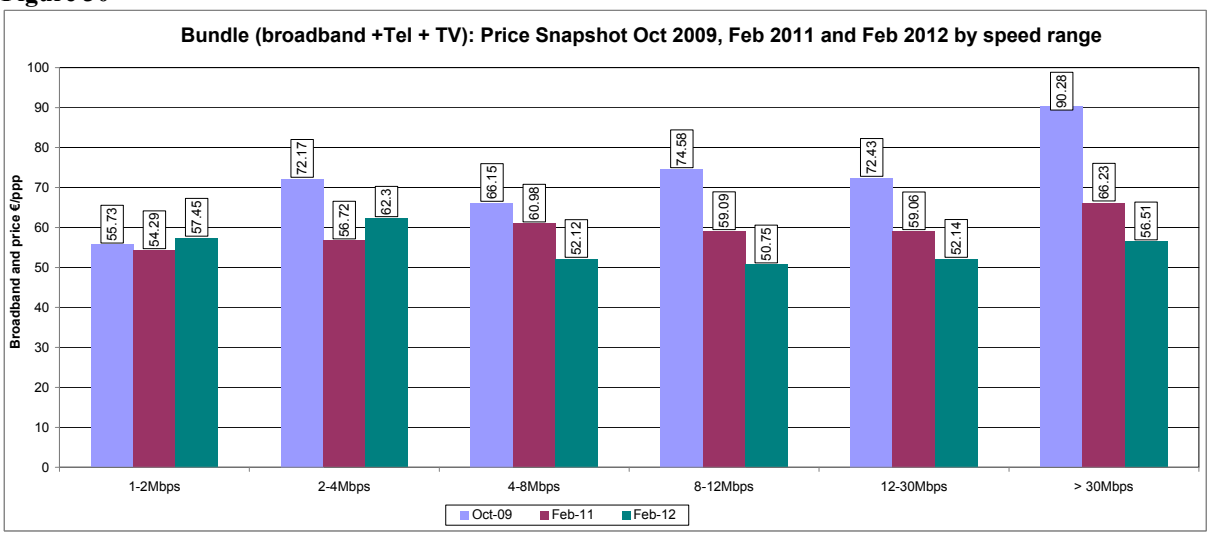
[25] Broadband Internet Access Cost (BIAC). Report August, 2011. Van Dijk-Management Consultants

Figure 29: Broadband prices depending on speed ranges and type of bundling



Source: Broadband Internet Access Cost (BIAC) Report 2012 (forthcoming). Van Dijk-Management Consultants

Figure 30

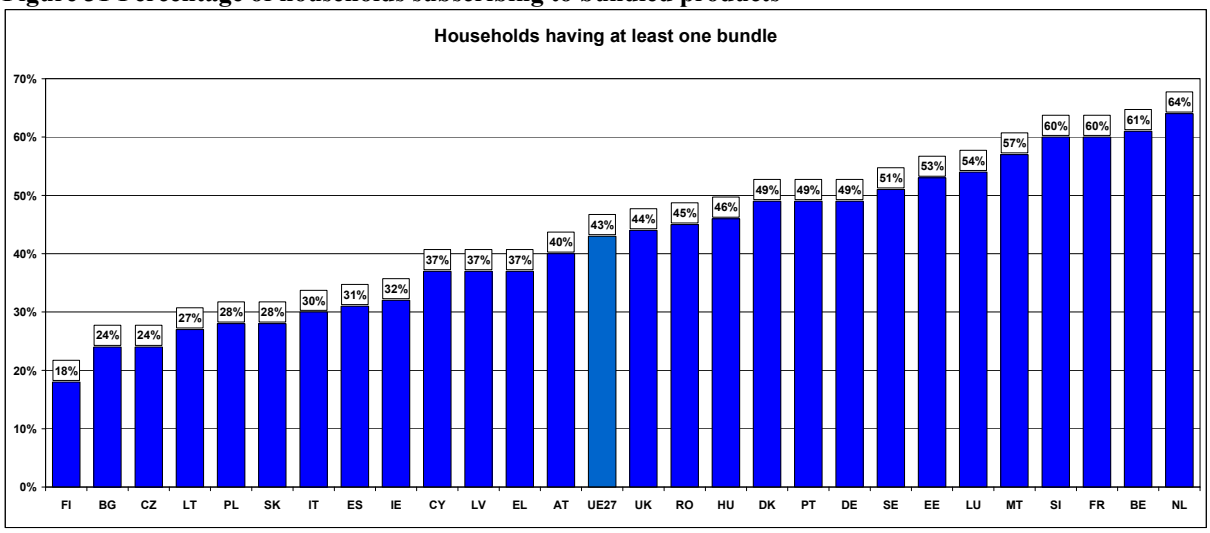


Source: Broadband Internet Access Cost (BIAC). Report August, 2011. Van Dijk-Management Consultants

According to a Eurobarometer survey, the use of service packages continues to grow across the EU with 43% of households now obtaining their communication services through a package (up from 29% four years ago). Most packages include internet access (90%) and a fixed telephone (81%). The inclusion of television channels is less popular (48%) and a mobile telephone in the package is the least common item (19%). Most users have never considered switching bundle provider (60%).

Bundled service packages are the prevailing way for consumers to get electronic communications services in the Netherlands, Belgium, France, Slovenia, Malta, Luxembourg, Estonia and Sweden (Figure 31).

Figure 31 Percentage of households subscribing to bundled products



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

1.2. Developments in mobile communications

- Total revenues of the EU mobile sector decreased by 0.8% in 2011.
- Nevertheless, data revenues increased by 22.6% in Q3 2011 compared to Q3 2010 in the five largest Western European markets.
- Europe remained the region with the highest mobile subscription penetration at 127%. Penetration increased by 4.3 percentage points in 2011. Machine-to-Machine SIM cards represented 4.1% of total subscriptions in the EU. Fifty percent of subscriptions were postpaid.
- Market leaders' and main competitors' (second largest operators in national markets) market shares have slightly decreased. Mobile Virtual Network Operators (MVNOs) have 4.1% of subscriptions.
- Average Revenue per User declined by 9% in 2010. Average Revenue per Minute stood at EUR 0.11 in 2010.
- Mobile broadband coverage (HSPA) reached 85% in 2010. LTE is already available in eight EU Member States.
- Mobile broadband penetration (all active users) went up to 43% in January 2012 from 26.8% in January 2011.
- Mobile broadband traffic is already more than twice as high as voice traffic and is expected to grow exponentially in the coming years.

1.2.1. The mobile market

Total revenues of the EU mobile telecoms sector decreased by 0.8% in 2011. Voice telephony revenues declined by 4.7% while data revenues increased by 9.8%. Mobile data was the fastest growing segment of the telecoms services market. However, since data represented only 13.8% of mobile revenues, this could not compensate for the decline in mobile voice services[26].

Europe remained the region with the highest mobile subscription penetration at 127%. Penetration increased by 4.3 percentage points in 2011. Machine-to-Machine SIM cards represented 4.1% of total subscriptions in the EU and 50% of subscriptions were postpaid.

The mobile sector is a very competitive segment of the telecoms market. Market leaders' and main competitors' (second largest operators in national markets) market shares have slightly decreased in the EU mobile markets. At the same time, the mobile market remained highly concentrated with more than two thirds of subscribers belonging to the top two operators in many Member States. Mobile Virtual Network Operators had a market share of 4.1% in October 2011.

Mobile prices continued to go down. Average Revenue per User declined by 9% in 2010. Average Revenue per Minute stood at EUR 0.11 in 2010. Mobile communications became cheaper by 31-42% based on representative usage baskets between 2006 and 2010[27].

Mobile broadband is the primary focus area of mobile operators. Mobile broadband coverage (HSPA) reached 85% in 2010. Fourth generation mobile networks (LTE) are already available in eight EU Member States. Mobile broadband penetration (all active users) went up to 43.1% in January 2012 from 26.8% in January Penetration of dedicated devices increased more moderately from 7.1% to 8.1% in the last twelve months. Mobile broadband traffic is already more than twice as high as fixed traffic, and is expected to grow exponentially in the coming years[28].

1.2.2. Mobile subscriptions

Europe continued to be the region with the highest mobile SIM card penetration in the world. The penetration rate reached 127% in the EU (Figure 32) in 2011 as opposed to 110% in Australia (2009), 100% in Latin America (2011), 98% in South Korea (2009), 97% in North America (2011), 96% in the Middle East (2011), 88% in Japan (2009) and 69% in China (2011)[29].

Despite the already high penetration rate in the EU, mobile SIM cards grew by 21.6 million in 2011. The very high penetration rate is as a result of several factors: people may have separate subscriptions for business and private use or data and voice communications. In addition, 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. Furthermore, the growing number of SIM cards used for communication between objects (Machine-to Machine SIMs) is significant and partly responsible for the growth in penetration.

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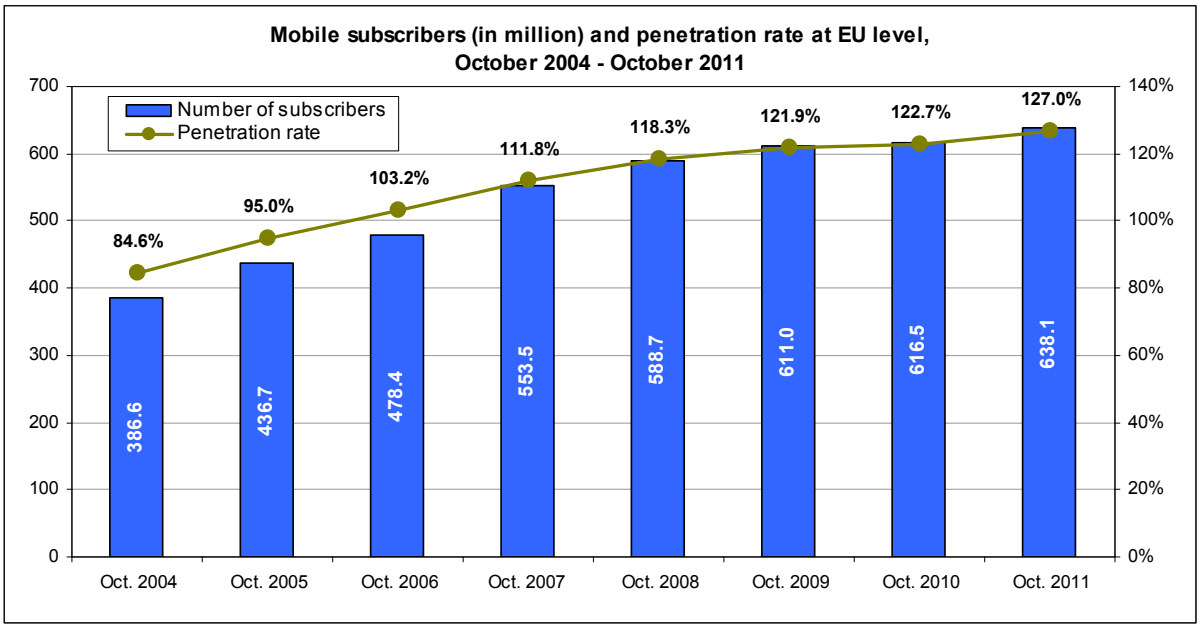
[26] EITO (2011)
[27] Teligen (2011)
[28] Ericsson: Traffic and market data report (November 2011)
[29] Source: OECD Communications Outlook 2011 and Ericsson: Traffic and Market Data Report (November 2011). For some countries, the latest available figures are as of 2009. Mobile penetration stood at 121.9% in the EU in 2009.

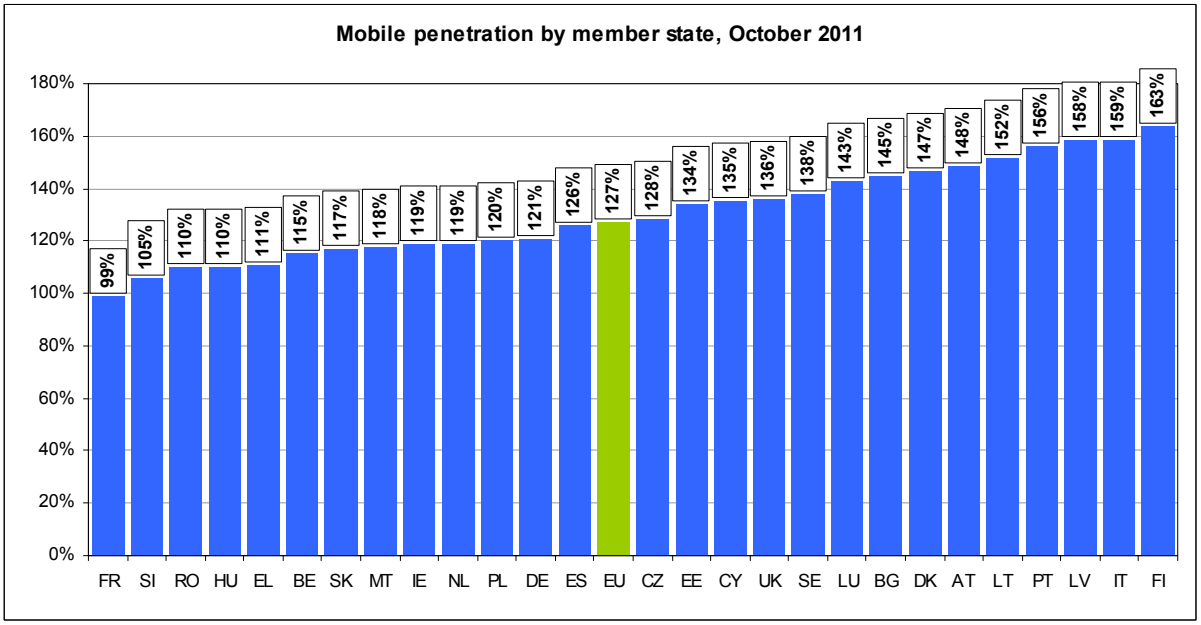
Figure 32: Mobile subscribers and penetration rate at EU level October 2004 – October 2011



Source: Commission services

There are large differences in penetration at Member State level (Figure 33). Latvia, Finland, Italy, Portugal and Lithuania are above 150% as opposed to France and Slovenia (below 110%). France is the only Member State with less than 100% due to the very high focus on postpaid subscriptions. The differences among Member States do not necessarily mean that in countries with lower penetration, mobile use is also lower. Differences rather reflect the different levels of multiple subscription use.

Figure 33: Mobile penetration by member state, October 2011

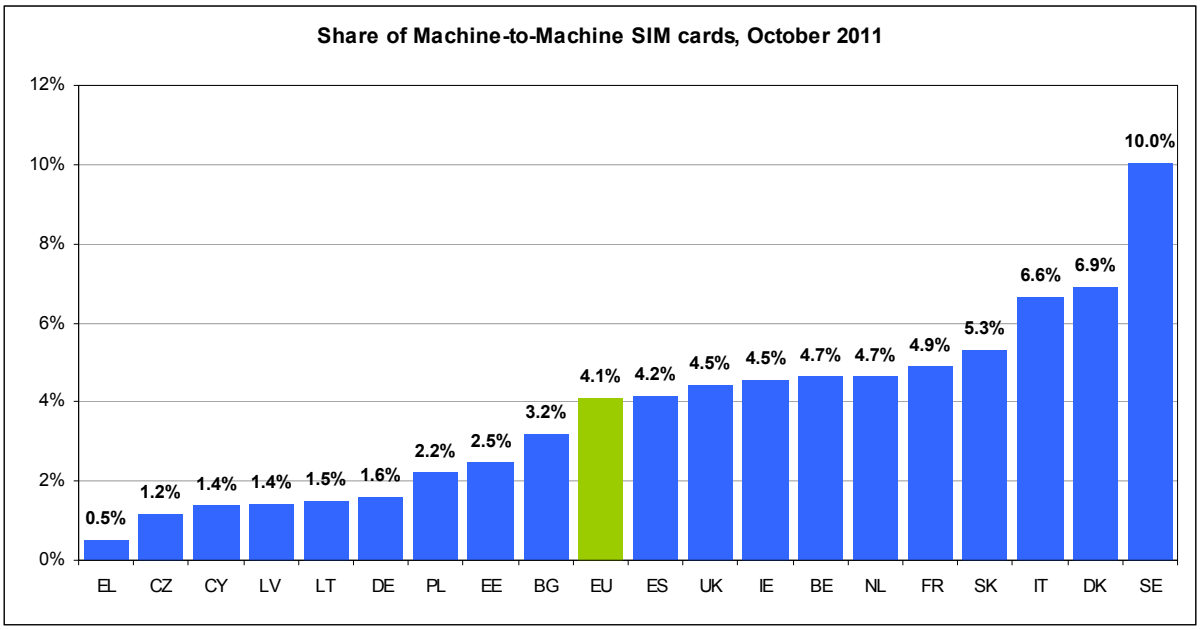


Source: Commission services

Starting this year, the Commission reports on the percentage of Machine-to-Machine SIM cards (Figure 34). Machine-to-Machine SIM cards are used in several industries through a large variety of devices to communicate between objects. M2M can be used in homes (e.g. alarm systems), smart grids, fleet management, health care and smart metering for example. Nineteen of the 27 Member States were able to provide data. There were 23 million M2M

SIMs in those 19 countries, accounting for 4.1% of all SIM cards. Sweden has by far the highest figure with 10%. Recent analysis estimates that by 2020, there may be as many as 2.1 billion M2M SIMs worldwide[30] .

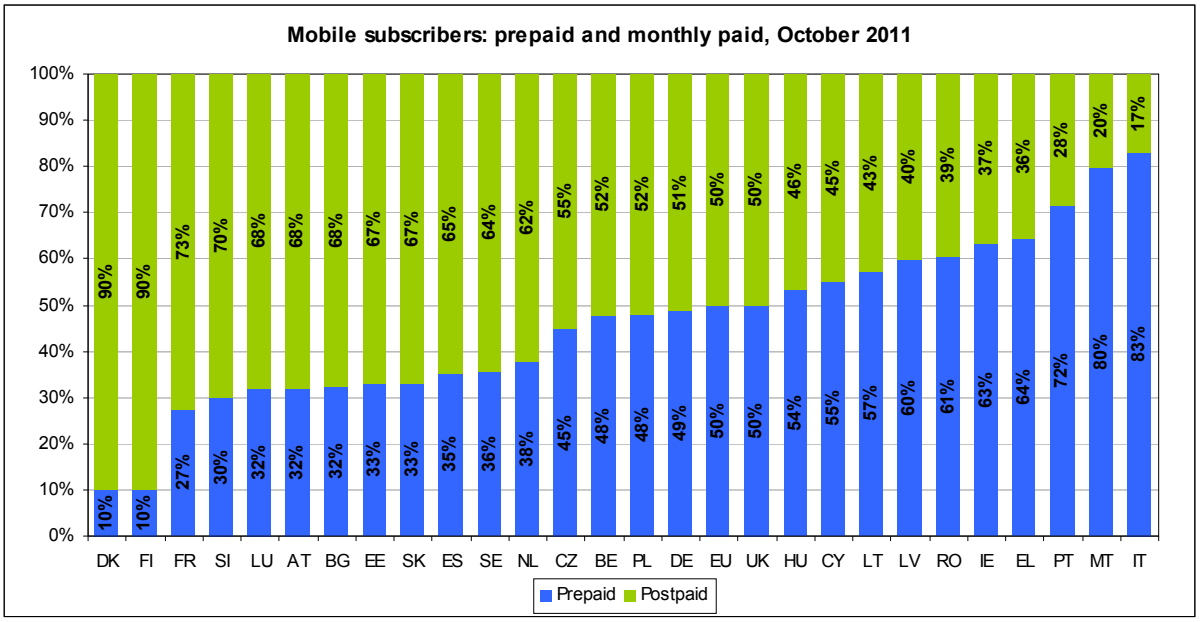
Figure 34: Share of Machine-to-Machine SIM cards, 2011



Source: Commission services. The figure for the EU represents an average of 19 Member States.

Half of EU mobile subscriptions were postpaid in October 2011 exhibiting a growth of 0.7 percentage points in a year (Figure 35). Postpaid is especially dominant in Denmark and Finland with a share of 90% of all subscriptions. At the same time in Italy and Malta, prepaid has a share of 83% and 80% respectively.

Figure 35: Mobile subscribers: prepaid and monthly paid, October 2011



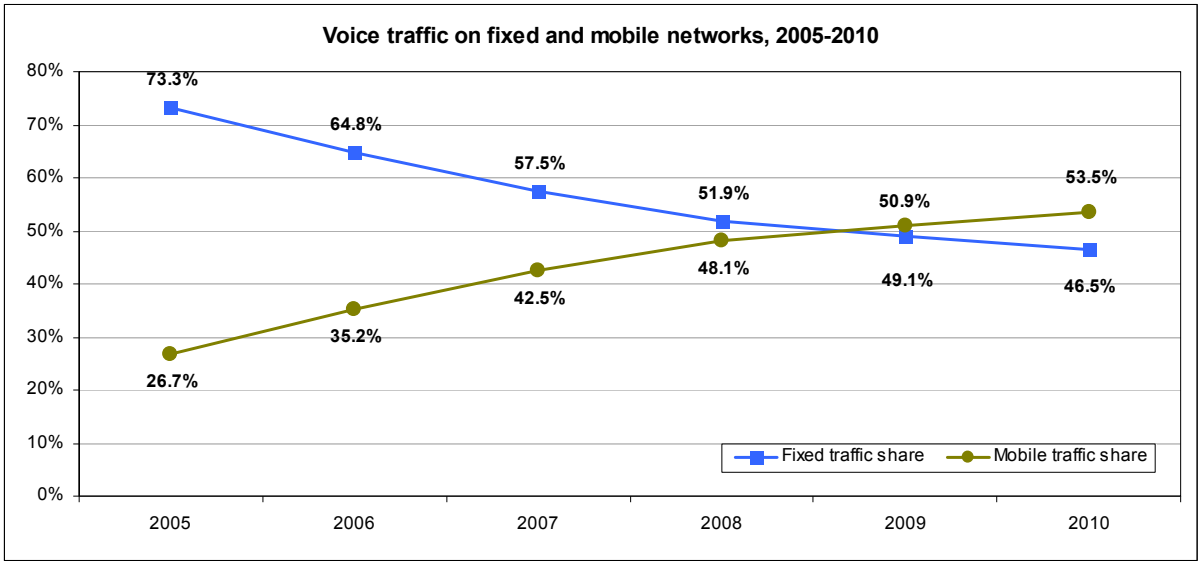
Source: Commission services

[30] Analysys Mason: Imagine an M2M world with 2.1 billion connected things …(2011)

1.2.3. Mobile voice traffic development

Mobile voice traffic has recently overtaken fixed PSTN (public switched telephone network) voice traffic (Figure 36) to become the dominant telephone technology based on voice traffic volumes. In 2005, PSTN fixed voice traffic was three times higher than mobile; in 2010 mobile voice traffic was slightly higher than fixed PSTN. This is to some extent caused by the fall in mobile prices as mobile communications became cheaper by 31-42% based on representative usage baskets between 2006 and 2010[31].

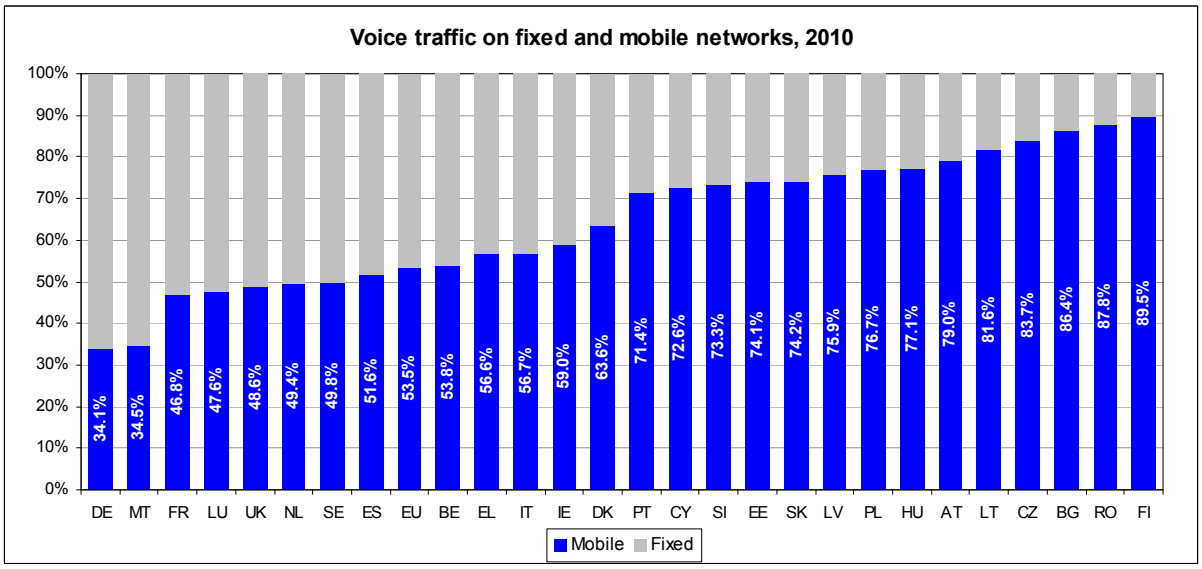
Figure 36: Voice traffic on fixed and mobile networks, 2010



Source: Commission services

However, in countries with well established fixed markets, the fixed voice segment remained strong despite the growing mobile penetration: in Germany, France, the UK, Luxembourg, Malta, the Netherlands and Sweden still more than 50% of voice traffic is fixed (Figure 37).

Figure 37: Voice traffic on fixed and mobile networks, 2010



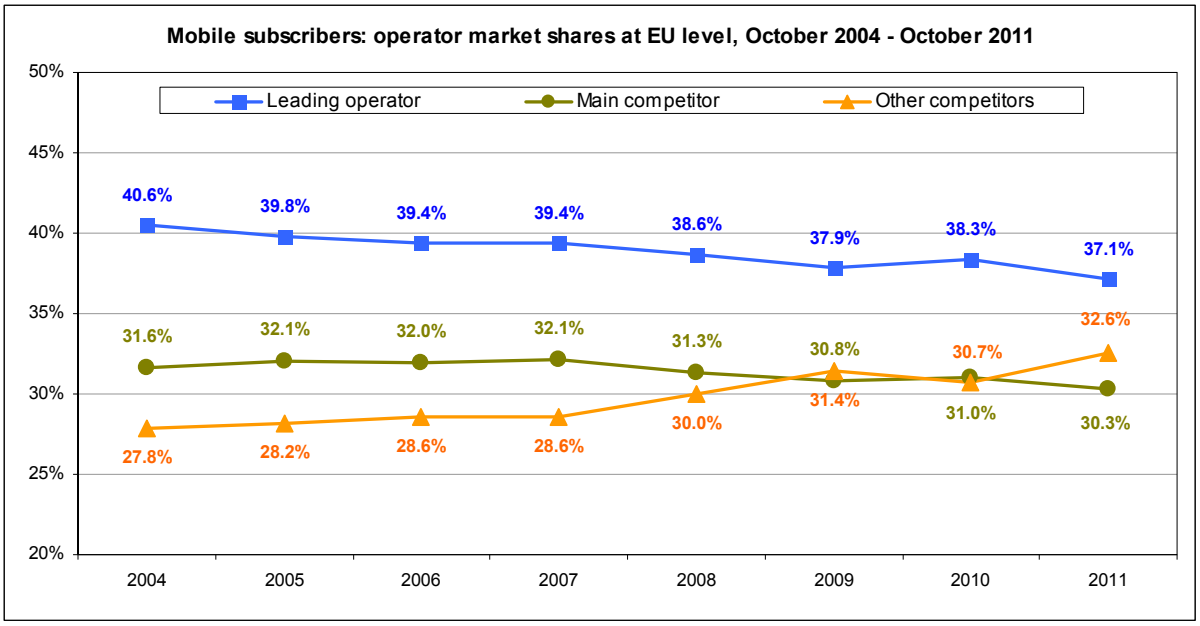
Source: Commission services

[31] Based on the OECD usage baskets, source: Teligen: Report on Telecoms Price Developments (2011)

1.2.4. Competition in the mobile sector

The mobile sector is the most competitive segment of the telecom market. The market share of leading operators has been slightly declining and stood at 37.1% in October 2011. Main competitors (the second largest operators in the Member States) have also lost market share over the past years (Figure 38). The EU regulations on number portability and the lowering of mobile termination rates contributed to this trend. At the same time, the mobile market remained highly concentrated with more than two thirds of subscribers belonging to the top two operators.

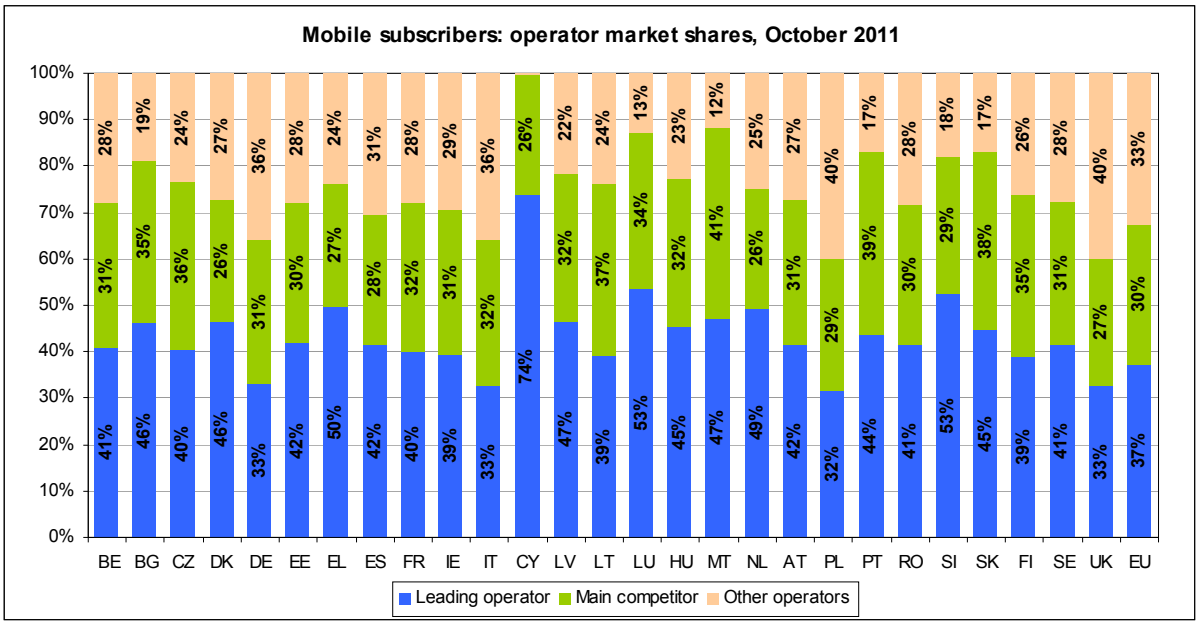
Figure 38: Operators' market shares at EU level, October 2004 – October 2011



Source: Commission services

The highest level of concentration is observed in Cyprus where there are only two Mobile Network Operators. Cyprus is followed by Luxembourg and Slovenia, where the market leader has the majority of the SIM cards. Market leaders are the weakest in Poland (32%), the UK (33%), Italy (33%) and Germany (33%) (Figure 39).

Figure 39: Mobile operators' market shares at EU level, October 2004 – October

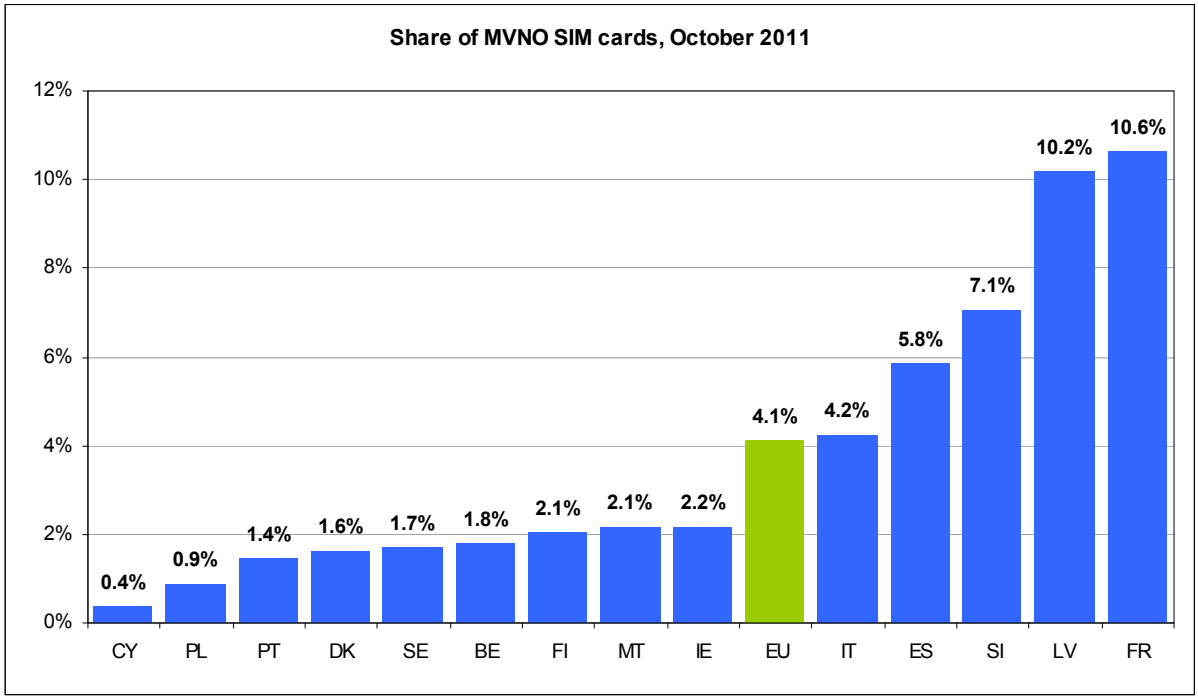


Source: Commission services

The performance of Mobile Virtual Network Operators shows a mixed picture in Europe[32]. MVNOs are defined as operators with their own SIM cards and own mobile network code but without any mobile telecommunications network infrastructure. Operators that fulfil the above two conditions, but are majority owned (more than 50%) by any of the Mobile Network Operators operating in the same national market are not included (e.g. operators being only a sub-brand of a Mobile Network Operator). MVNOs play an important role in Latvia and France where they represent more than 10% of the subscriptions; they are marginal in the majority of the other countries. At the EU level, MVNOs have a market share of 4.1% (Figure 40).

[32] Data is available for 15 Member States only.

Figure 40: Share of MVNO SIM cards – October 2011

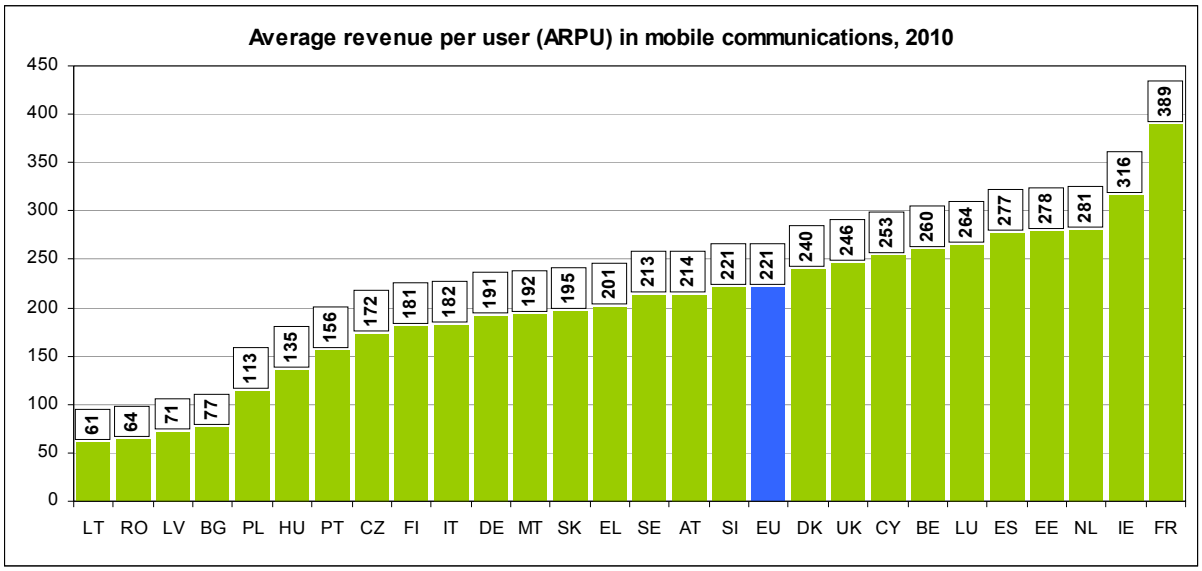


Source: Commission services

1.2.5. Average Revenue per Minute (ARPM) and Average Revenue Per User (ARPU)

Average Revenue per User (ARPU) stood at EUR 221 in 2010 as opposed to EUR 244 a year ago. France had by far the highest ARPU (EUR 389), which is partly caused by the low penetration rate (it is not common in France to have more than one subscription per person). There were four countries with an ARPU of less than EUR 100 per year: Bulgaria, Latvia, Lithuania and Romania (Figure 41).

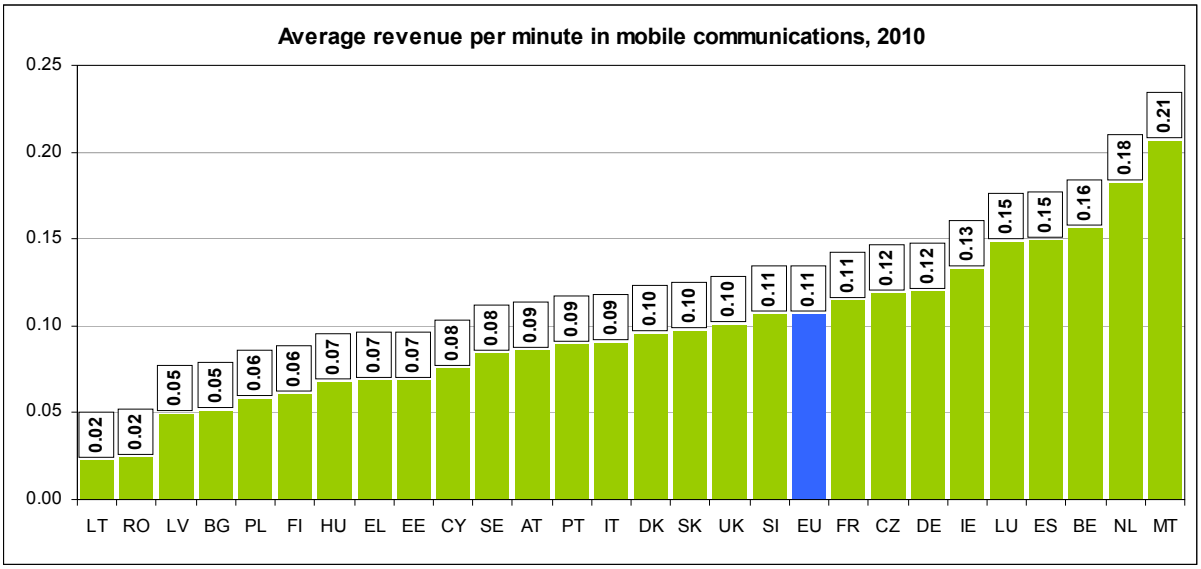
Figure 41: Average Revenue per User (ARPU) in mobile communications, 2010



Source: Commission services

European mobile users paid 11 cents per voice minute on average in 2010 (Figure 42). Malta and the Netherlands[33] were the most expensive countries with 21 and 18 cents per minute (respectively). Average Revenue per Minute has been decreasing over the past years.[34] Although voice usage has increased, this could not compensate for the price drops, so voice revenues have been declining in the EU[35].

Figure 42: Average Revenue per Minute(ARPM) in mobile communications, 2010



Source: Commission services

1.2.6. The direct impact of regulation

1.2.6.1. Mobile number portability

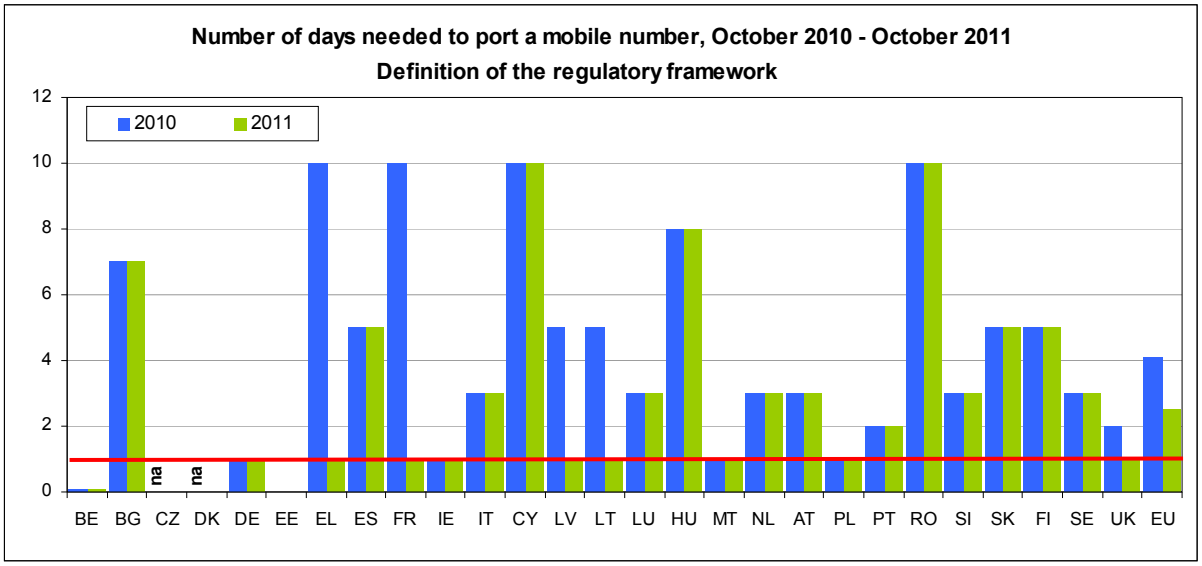
Number portability makes it easier for mobile subscribers to migrate from one operator to another. Although subscribers can port their numbers in all EU countries, in October 2011, it took 2.5 days on average to port a mobile number (Figure 43) which is higher than the maximum permitted in the regulatory framework. Only in eleven Member States can a number be ported in a maximum of one day. At the same time, the transposition of the related provision in the framework at national level has been carried out by most Member States throughout 2011. In addition a number of national regulatory authorities have adopted implementation measures or are in the process of doing so.

[33] In December 2011 the Dutch competition Authority opened an investigation into Dutch mobile network operators. http://www.nma.nl/en/documents_and_publications/press_releases/web/2011/28_11_nma_confirms_investigation_into_dutch_mobile_network_carriers.aspx

[34] Because of a slight change in the definitions, no comparison is provided with 2009.

[35] Enders Analysis: European Mobile Market Analysis (November 2011)

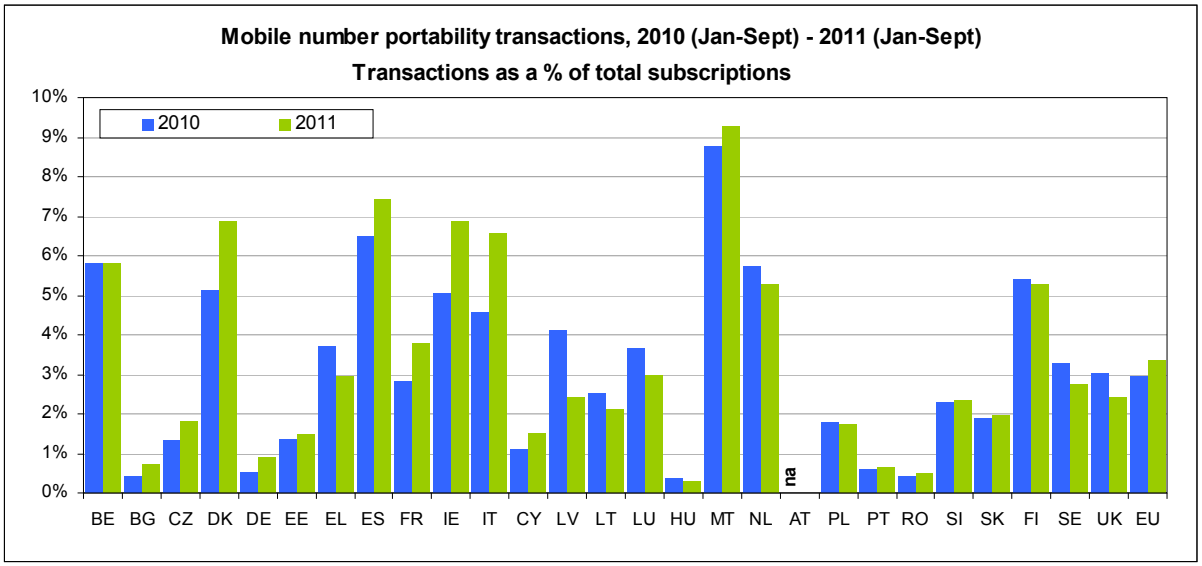
Figure 43: Number Portability: Number of days needed to port a mobile number, October 2011



Source: Commission services

The popularity of number portability varies among Member States (Figure 44). In Malta, Belgium, Denmark, Spain, Ireland, Finland, the Netherlands and Italy more than 5% of subscriptions were migrated using number portability. During the same period, the ratio was below 1% in Bulgaria, Germany, Hungary, Portugal and Romania. At the EU level, there was a slight increase from 2.9% to 3.4% between 2010 and 2011.

Figure 44 Mobile number portability transactions as a % of total subscriptions, 2010-2011

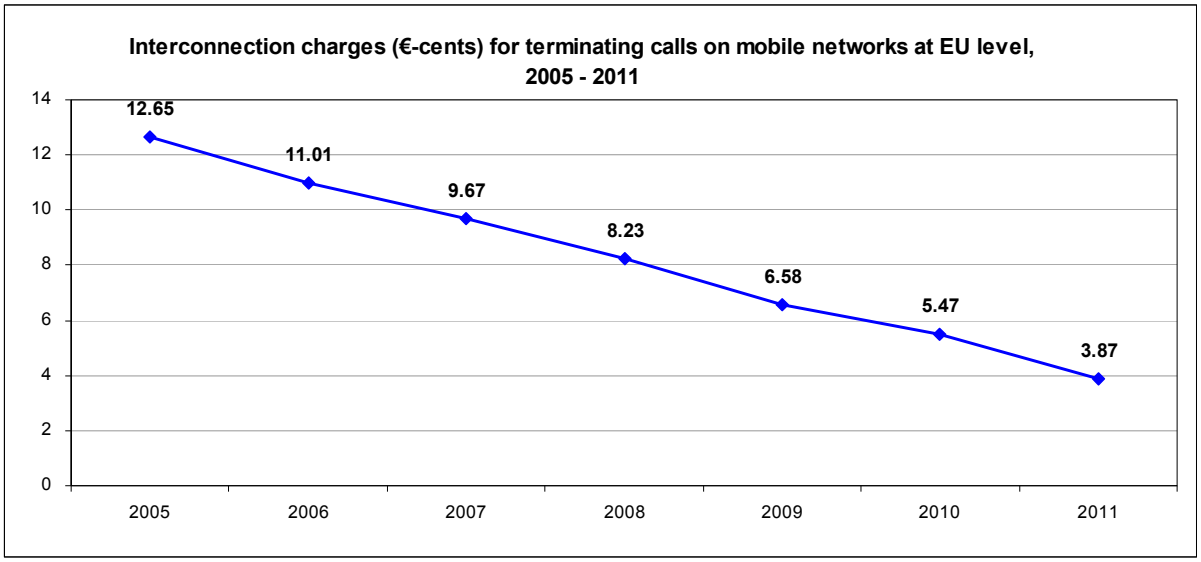


Source: Commission services

1.2.6.2. Mobile termination rates

Mobile termination rates (wholesale charges for terminating calls on mobile networks) have continued to decline. There was a remarkable reduction of 29% last year (Figure 45).

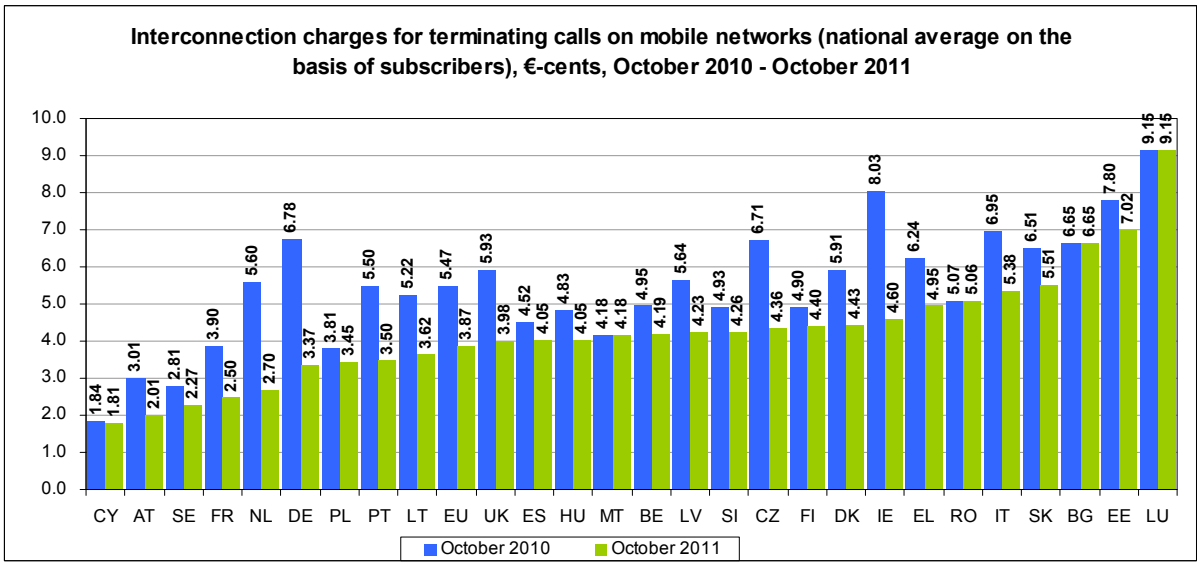
Figure 45: Average mobile termination rates at EU level, 2005-2011



Source: Commission services

Germany, Ireland, and the Netherlands saw the largest decrease in mobile termination rates. In Luxembourg, Estonia and Bulgaria, rates remained very high (Figure 46).

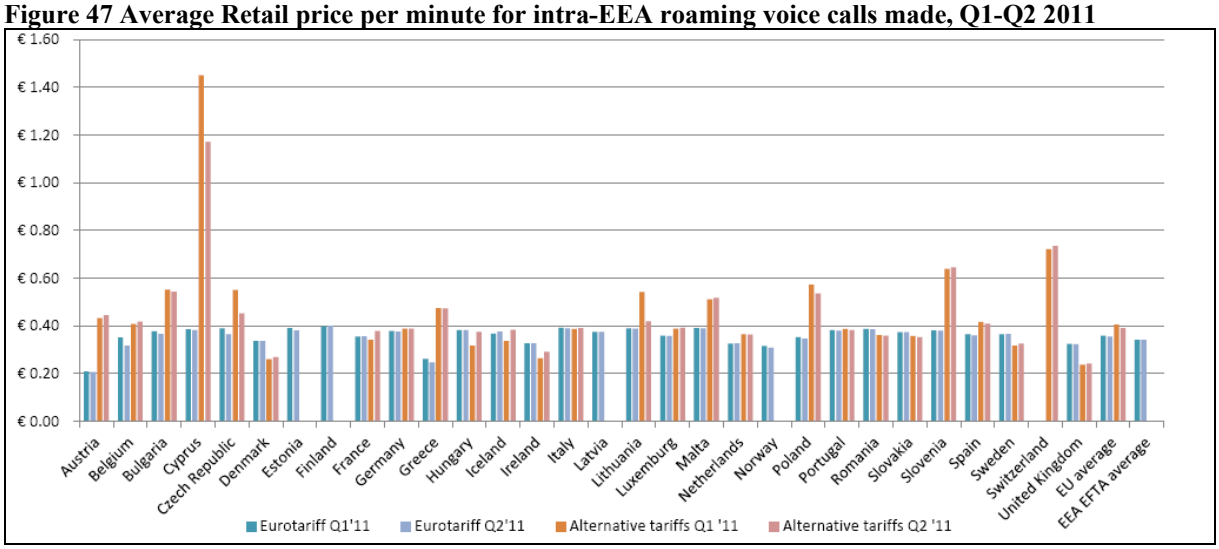
Figure 46 Mobile termination rates by member states, October 2010-October 2011



Source: Commission services

Looking at roaming prices, there is a very high difference between Average Revenue per Minute for all types of calls (EUR 0.11) and calls made while roaming (EUR 0.35) (Figure 47).

Figure 47 Average Retail price per minute for intra-EEA roaming voice calls made, Q1-Q2 2011



Source: BEREC

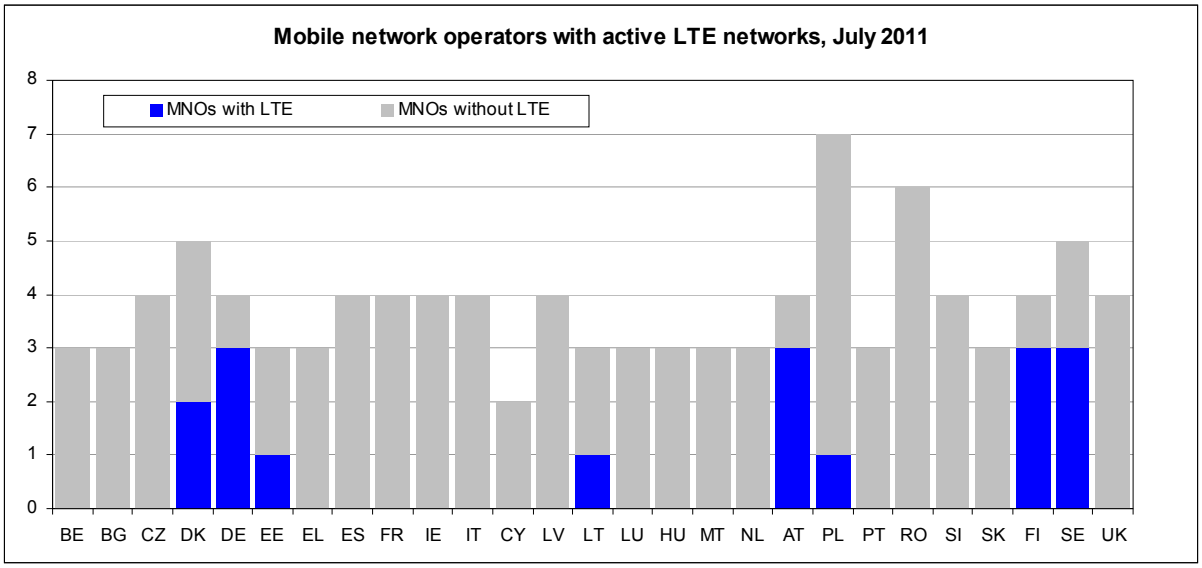
1.3. Mobile Broadband

1.3.1. Mobile Broadband coverage

On average, there was 85% population coverage of third generation HSPA networks in the EU in December 2010.[36]

Fourth generation mobile networks are already present in the EU (Figure 48). As of July 2011, LTE services were commercially available in 8 Member States (Denmark, Germany, Estonia, Lithuania, Austria, Poland, Finland and Sweden). Seventeen out of the 105 Mobile Network Operators in the EU had some LTE coverage in July 2011. LTE networks may offer a faster and more reliable mobile internet experience, which can help mobile operators compete directly with fixed broadband technologies.

Figure 48: Mobile network operators with active LTE networks, July 2011



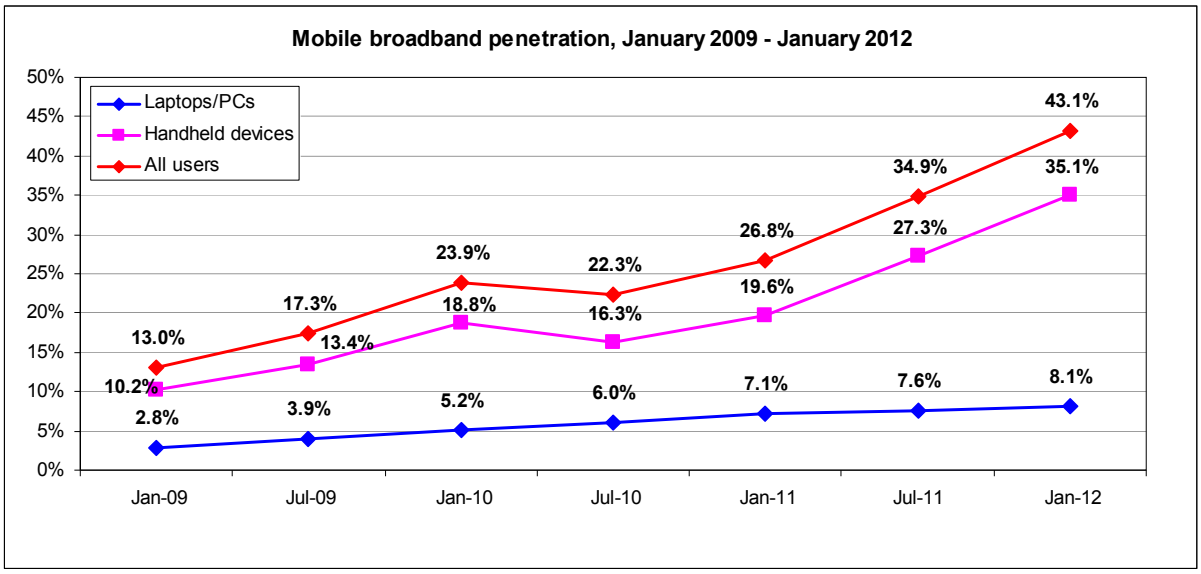
Source: Commission services

[36] Idate

1.3.2. Mobile broadband subscriptions/users

Mobile broadband penetration reached 43.1% (use of handheld devices and computers), which is a significant increase compared to six months ago (Figure 49). It is the handheld devices segment, which is responsible for this growth, where penetration increased from 27.3% to 35.1%.

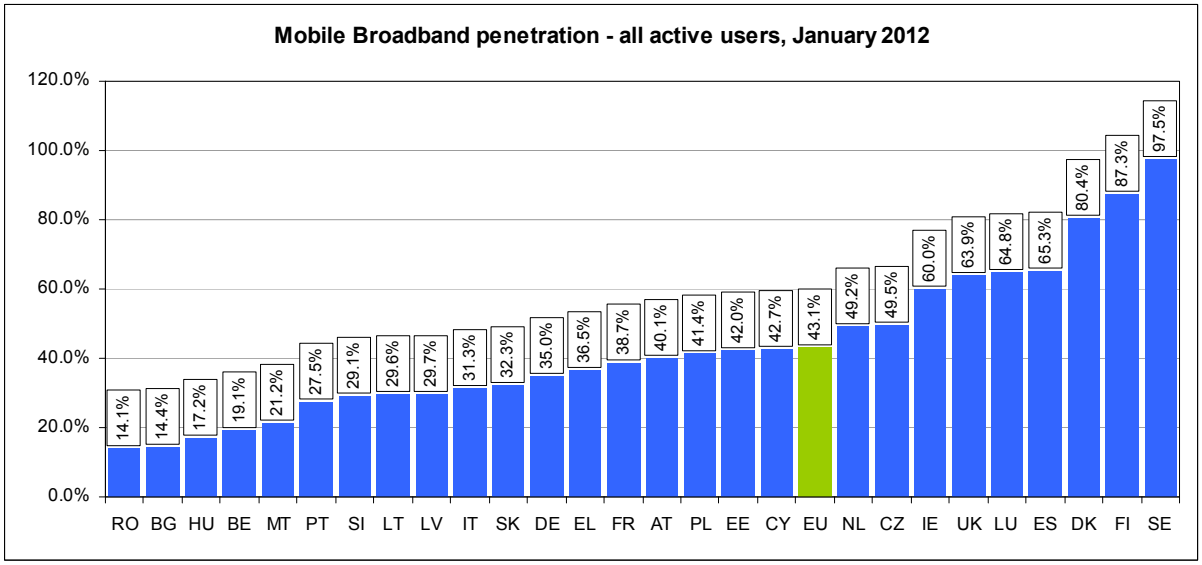
Figure 49: Mobile Broadband penetration at EU level



Source: Communications Committee

Looking at all active users at the Member State level mobile broadband is most popular in the Nordic countries where penetration is above 80%. Four Member States have a mobile broadband penetration rate lower than 20% (Figure 50).

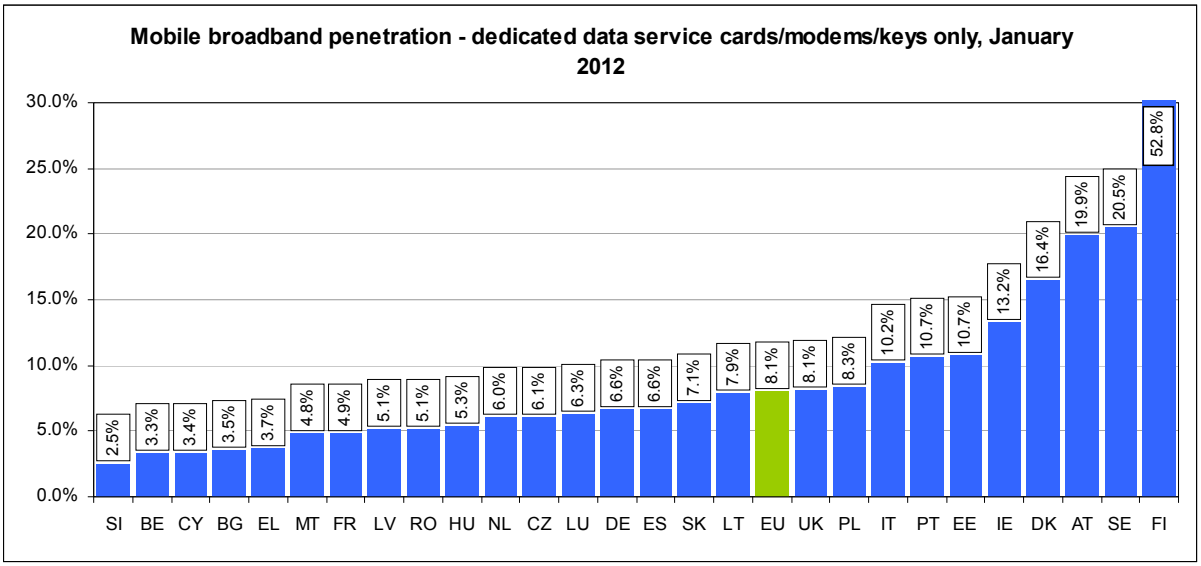
Figure 50: Mobile Broadband penetration – all active users



Source: Communications Committee

The penetration of mobile broadband as measured by dedicated data service cards/modems/keys increased from 7.6% to 8.1% in the last six months, which represents a slowdown compared to growth rates seen in the 2009-2010 period (Figure 51). Nordic countries and Austria have the highest penetration rates. LTE may help operators achieve accelerated growth in the coming years.

Figure 51: Mobile Broadband penetration – dedicated data service cards/modems/keys only, January 2012



Source: Communications Committee

Globally, mobile broadband subscriptions are expected to increase from 900 million in 2010 to 4.7 billion in 2016. This would imply that more than 50% of mobile subscriptions would use mobile broadband[37]. Smartphone sales support this trend; in Q3 2011, smartphones represented 53% of handset sales in the five largest Western European countries[38].

1.3.3. Mobile Broadband usage

Mobile data traffic surpassed voice traffic in Q4 2009 and was more than twice as high as voice traffic in Q2 2011. By 2016, mobile voice traffic will be marginal compared to data traffic[39]. European mobile broadband traffic is expected to double in 2012. In 2016, total European mobile broadband traffic will be 14.5 times higher than in 2011. Mobile video represented slightly more than 50% of total mobile traffic, which is forecasted to go up to 70.5% by 2016. Smartphones are expected to generate 48% of total mobile broadband traffic followed by laptops and netbooks (24.2%) and tablets (10%) in 2016. Average usage varies greatly between smartphones, tablets and laptops/netbooks. A massive growth is forecast for all three categories[40].

Table 3: Mobile broadband average usage (MB/month) for device categories

Device	2010	2011	2016
Smartphones	55	150	2576
Tablets	405	517	4223
Laptop, netbook	1460	2131	6942

Source: Cisco

[37] Ericsson: Traffic and market data report (November 2011)
[38] Enders Analysis: European Mobile Market Analysis (November 2011), Five largest Western European countries: Germany, UK, France, Italy and Spain
[39] Ericsson: Traffic and market data report (November 2011)
[40] Cisco Visual Networking Index: Global Mobile Data Traffic Update, 2011-2016 (2012)

Mobile broadband speeds are increasing; in 2011 the average connection speed was 1.3 Mbps globally, which is an increase of 39% compared to 2010. In 2016, the average connection speed on smartphones will go up to 5.1 Mbps[41].

Based on a US survey[42] of smartphone users, 89% use their smartphones for purposes other than voice calls every day: 81% browse the internet, 77% use a search engine, 68% use an application and 48% watch video at least once a week. As for the purpose, 89% used smartphones to stay connected, 82% to research and read news, 75% to navigate, 65% to keep entertained, 45% to manage and plan, 95% to look for local information and 79% for shopping related activities.

A survey on the mobile use of the internet will be conducted by Eurostat in 2012 in all Member States. Findings of this research will be published in the Digital Agenda Scorebaord next year.

1.3.4. Conclusions

The European mobile industry focused mainly on mobile broadband in 2011. Mobile broadband is the segment exhibiting the fastest growth rate in the telecoms services market and it has the potential to compensate for declining voice revenues in the coming years. Mobile operators have been heavily investing in HSPA (High Speed Packet Access) networks to keep pace with the growing number of mobile broadband users and the exponentially increasing traffic. The number of mobile broadband users increased by 61% in the EU in a year while global mobile broadband traffic more than doubled in 2011. Fourth generation mobile broadband (LTE) is already available in eight EU Member States. LTE may help mobile operators compete directly with fixed broadband technologies; that would completely change the competitive situation of the broadband market. Consequently, the wider use of LTE could stimulate investments in the fixed broadband environment, i.e. it can accelerate the transition from legacy broadband to NGA technologies. Nevertheless, mobile operators need to follow developments in voice revenues very cautiously as voice still represents 86% of revenues. A strong decline in voice revenues could definitely threaten investments in mobile broadband networks.

1.4. State of the telecoms services sector in Europe

After a slight decline in revenues in 2010, the negative growth rate of revenues[43] in the European telecoms sector accelerated in 2011 due to a worsening of the European economy. Domestic revenue growth for most European carriers was negative in 2011 although some operators were able to experience some growth in overall revenue thanks to the diversification of their businesses in emerging markets. In line with the economy, the situation of the telecoms market in Europe is worse than in 2010 with growth mainly sourced from the mobile and fixed data markets. However, despite the worsening of the economic situation, mainly due to the pressure of the sovereign debt crisis, EU GDP in 2011 is estimated to have grown by 1.5%, contrasting with the decline of carrier services revenues in Europe of 1.3%.

Mobile and fixed operators are under pressure to upgrade their networks to cope with booming demand for internet-connected phones and PCs. However, operators still seem to lack sufficient incentives to invest in next generation networks due to sluggish demand and the positive revenue stream generated by existing copper networks and current business models.

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[41] Cisco Visual Networking Index: Global Mobile Data Traffic Update, 2011-2016 (2012)
[42] Google/IPSOS OTX MediaCT: The Mobile Movement (April 2011)
[43] Based on EITO and the operators' financial statements.

In the short term, as data traffic is increasing and (partly) substituting voice or SMS traffic, operators are focusing on revenues arising from internet access through the development of integrated tiered pricing plans or agreements with over-the-top internet platforms. Also, strategies focus on cutting prices only to specific groups of consumers (for instance discounts on tariffs only through operators' websites), avoiding price wars between carriers.

1.4.1. Revenues

Table 4: Telecoms sector growth

	Growth rate (2009-20010)	**Growth rate (2010-2011)**	**Share in e-communication services revenue (2011)**
Fixed voice telephony and Internet access and services Fixed voice telephony Internet access and services	-2.9% *-7.6%* *6.4%*	-3.4% *-7.1%* *2.9%*	35.0% *21.3%* *13.8%*
Mobile voice telephony and mobile data services Mobile voice telephony Mobile data services	0,2% *-3.3%* *11.1%*	-0,8% *-4.7%* *9.8%*	46.4% *32.6%* *13.8%*
Business data services	-1.1%	0.4%	7.4%
Pay TV	6.1%	2.5%	11.1%
Total Telecom services (carrier services)	**-0.4%**	**-1.3%**	**100%**

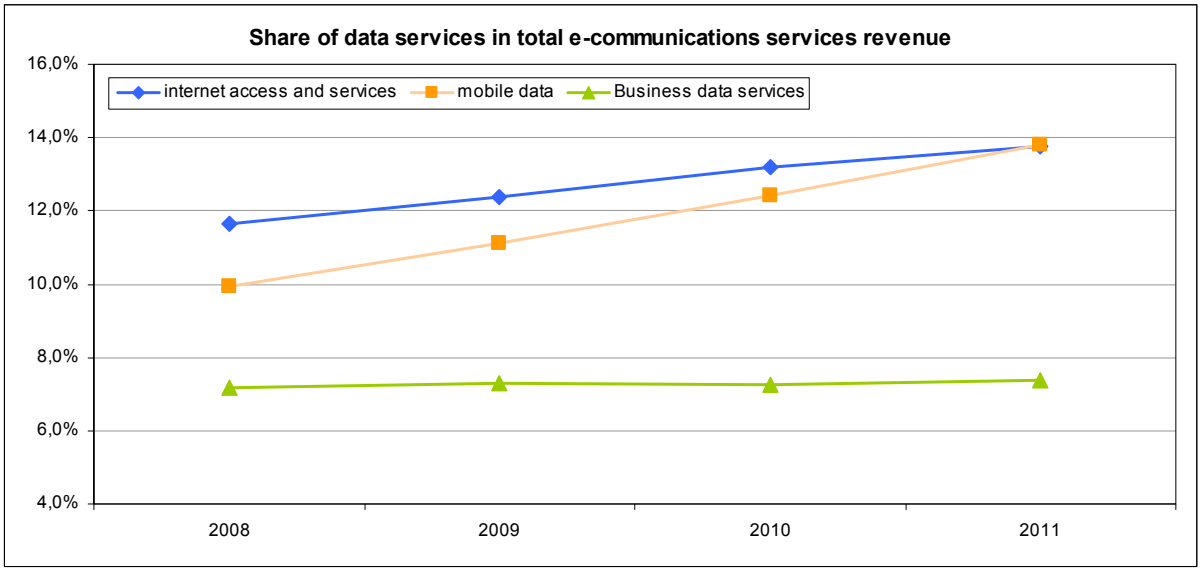
Source: EITO 2011

The negative growth of revenues coming from telecoms services in Europe accelerated to -1.3% in 2011[44], from -0.4% in 2010; in absolute figures, carrier services' revenues were EUR 278.9 billion in 2011. Taking into account the whole EU telecom sector (carrier services plus telecom equipment), revenues were EUR 354 billion in 2011; that compares to EUR 356 billion in 2010. Revenues from voice are still the main driver (accounting for 54% of revenues for EU telecom operators) but its importance continued to decrease (-7.1% in the case of fixed voice telephony and -4.7% in the case of mobile voice telephony) while revenues from data (27.6% of the total for individuals and households and 7.4% for companies) kept on growing, in particular revenues for data related to mobile services (+2.9% in the case of fixed internet access and +9.8% in the case of mobile data services).

Worldwide revenues for telecoms services presented a 3.1% year-on-year revenue increase in 2011, which contrasts with the trend in the EU market (Figure 54).

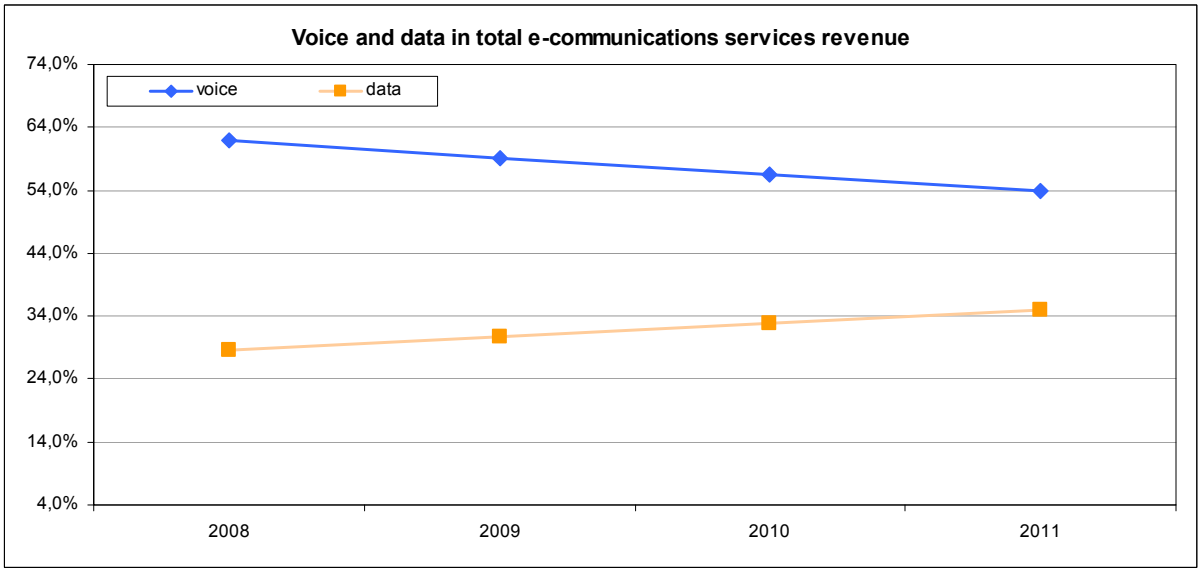
[44] EITO January 2011.

Figure 52: Share of data in mobile, fixed and business



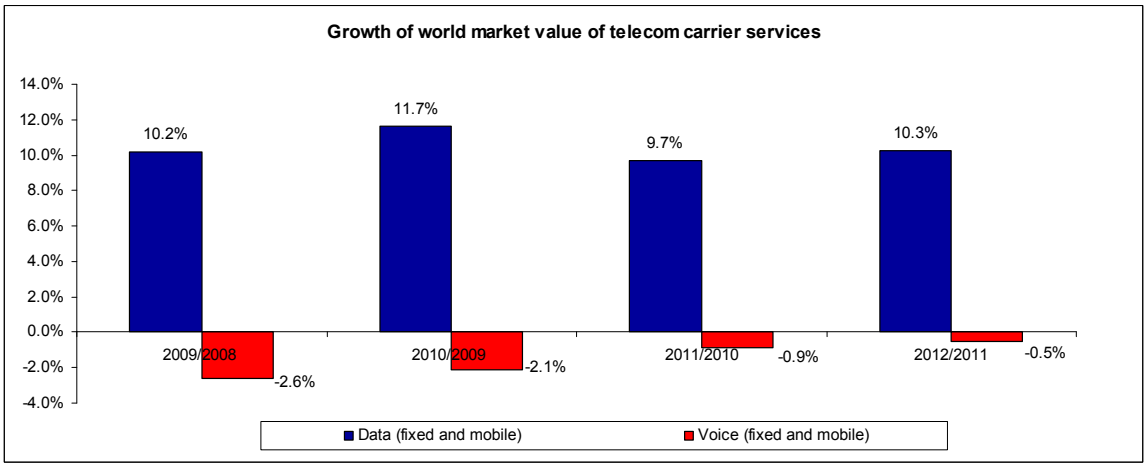
Source: EITO 2011

Figure 53: Voice and data as total revenues for carrier service



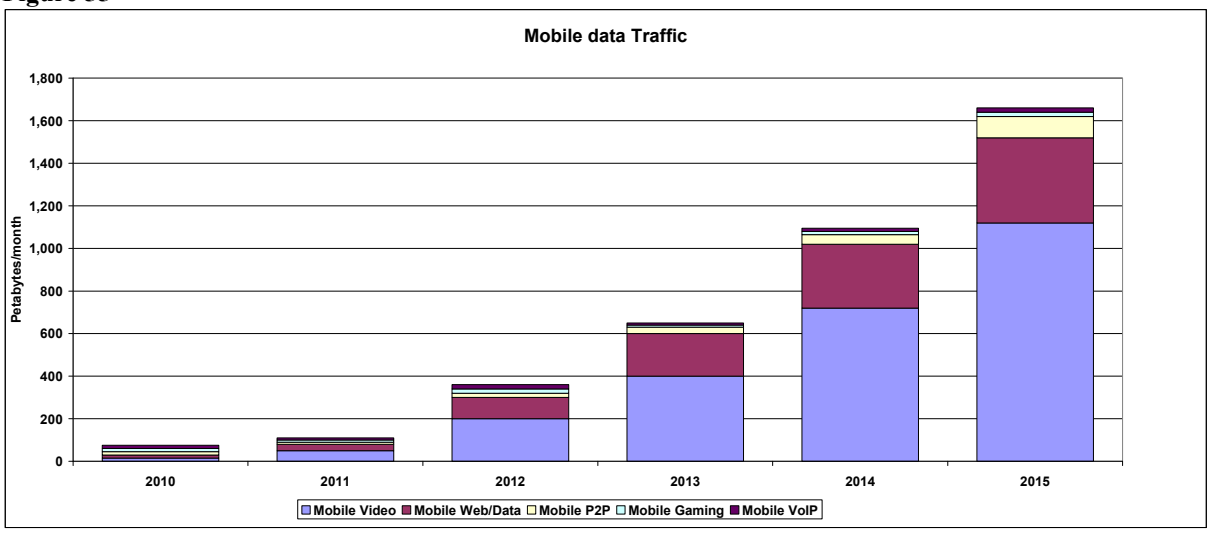
Source: EITO 2011

Figure 54



Source: EITO 2011

Figure 55



Source: Source: Cisco Visual Networking Index (VNI) Global Mobile Data Traffic Forecast, 2010–2015

Sources of revenue growth are shifting. All the areas that have traditionally made money, like voice calls and SMS, are being eclipsed while data demand on networks is growing steadily. As for data revenues, the gap between mobile and fixed data revenues continued to widen in 2011 although the contribution of data revenues arising from mobile networks accounted for the same percentage (13.8%) to total revenues in 2011 as the contribution from fixed networks.

Electronic communications account for more than half of revenues in the ICT sector. However, the importance of the IT sector, especially IT services, is attracting the attention of operators. The reason for this is that operators need to change their business model to keep on growing and cloud computing services are offering new opportunities for diversification.

1.4.2. Investment and access to finance

As indicated above, the economic crisis contributed to the decline in operators' revenues in their domestic markets. For the main EU operators[45], domestic revenues declined by about 4.5%, although this decrease in revenues was compensated by a 17.3% increase in revenues made by European operators in markets outside Europe.

A weighted average of Capex (capital expenditure) [46] increased by about 7.5% for many operators due, to some extent, to investment in coverage and high speed broadband. The big funds needed to roll out NGA networks prompted several major operators to team up to share the costs to reduce Capex and operating costs. Overall, capital expenditure rebounded compared to the previous year. The increase in Capex[47] was thanks to an increase of 2.1% in fixed equipment. Meanwhile, there was a decrease of 1.5% in expenditure on mobile.

Capex over revenues increased by 0.4 percentage points in 2010 compared to the previous year (Figure 56).

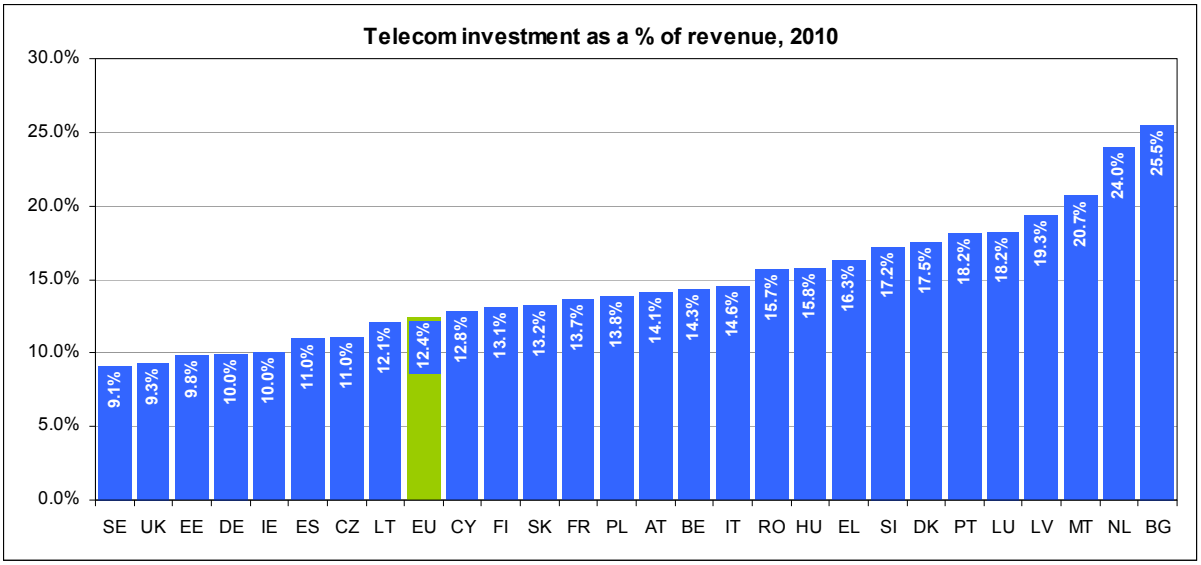
[45]A sample with a group of eighteen European operators: Deutsche Telekom, Telefonica, Vodafone, Orange, Mobistar, TPSA, KPN, Telecom Italia, Tele2, Telia Sonera, Telekom Austria, Belgacom, TDC, Portugal Telecom, Elisa, OTE, Telenor and BT. Third quarter 2011-Third quarter 2010 growth rates.

[46]Capital Expenditure based on our sample of European operators. Third quarter 2011-Third quarter 2010 growth rates.

[47]EITO January 2012. Capex figures for 2010. No figures yet available for 2011.

The weighted average EBITDA margin[48] for the main European operators decreased by 4.8% in 2011 compared with 2010.

Figure 56: Telecom investment over revenue



Source: Commission services

[48]EBITDA over revenues based on the sample of European operators. Third quarter 2011-Third quarter 2010 growth rates.