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COMMISSION STAFF WORKING DOCUMENT

Digital Agenda Scoreboard 2013

COMMISSION STAFF WORKING DOCUMENT

Digital Agenda Scoreboard 2013

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1.   EXECUTIVE SUMMARY

The EU economy was marked by recession in 2012. According to the latest Commission figures, annual GDP in 2013 is forecast to contract 0.1% in the EU and 0.4% in the Euro area. Unemployment is at unacceptable levels in many countries, particularly for the youth. Constrained by high levels of debt, governments are under pressure to cut public spending. Against this background, there are few potential sources of growth and employment. One of the most important sources is technological progress, including digitisation, and its adoption by society.

Adopting ICT and adapting businesses to new technology is a key factor of competitiveness for every company. Similarly, using ICT innovatively improves public services and reduces costs as well as making them easier for citizens and businesses to access from a distance. Moreover, despite the high overall unemployment, there are shortages of ICT specialists in the EU, forecast to reach up to 900 000 unfilled vacancies by 2015. Hence, completing the Digital Agenda for Europe[1] (DAE), adopted by the European Commission in 2010 is more than ever a priority for attaining the Europe 2020 objectives.

The Digital Agenda identified 101 specific policy actions across 7 domains: the digital single market; interoperability and standards; trust and security; fast and ultra-fast internet access; research and innovation; digital literacy, skills and inclusion; and ICT-enabled benefits for EU society. This combined set of actions is intended to stimulate a virtuous circle of investment in and usage of digital technologies. A review of the DAE adopted by the Commission in December 2012 outlined the areas where further emphasis was needed to attain those goals. The Digital Agenda Scoreboard reports on progress made in achieving the DAE goals.

This document is the third edition of the Digital Agenda Scoreboard, assessing overall impact on the basis of 13 key performance targets, and reporting on the progress of policy actions between June 2012 and May 2013. It is accompanied by a series of online publications looking in more detail at specific aspects of the Digital Agenda, such as digital competences or high-speed broadband[2]: http://ec.europa.eu/information_society/digital-agenda/scoreboard/index_en.htm.

There is much good news to report. For the last three years, regular internet usage has been rising steadily, especially among disadvantaged groups, while non-usage has been falling. Those users also do more online, more shop online and more use eGovernment services, including advanced ones. Roaming prices have fallen much faster than in the past, although this is primarily due to legislation, rather than to increased competition. Basic broadband coverage is nearly complete, although not all of it is ensured by fixed lines. Also, the market share of Light-Emitting Diodes continues its expansion course. In all of these areas, the targets are likely to be met.

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[1]   Available at http://ec.europa.eu/information_society/digital-agenda/index_en.htm.

[2]   The content of these online publications corresponds to what used to be published in the annual Digital Competitiveness Reports.

However, not all the news is good. On current trends, the target of 20% of citizens shopping online cross-border by 2015 is certain to be missed. Similarly, the share of SME selling online likely will remain far below the target of 33% by 2015.

Finally, for the 2020 targets it still is too early to tell. The take-up of high-speed broadband has started to accelerate, but is still very far away from the levels desired for 2020. Public R&D in ICT has grown, but so far by less than the average growth rate required to double by 2020.

Figure 1: How the EU scores on the Digital Agenda targets
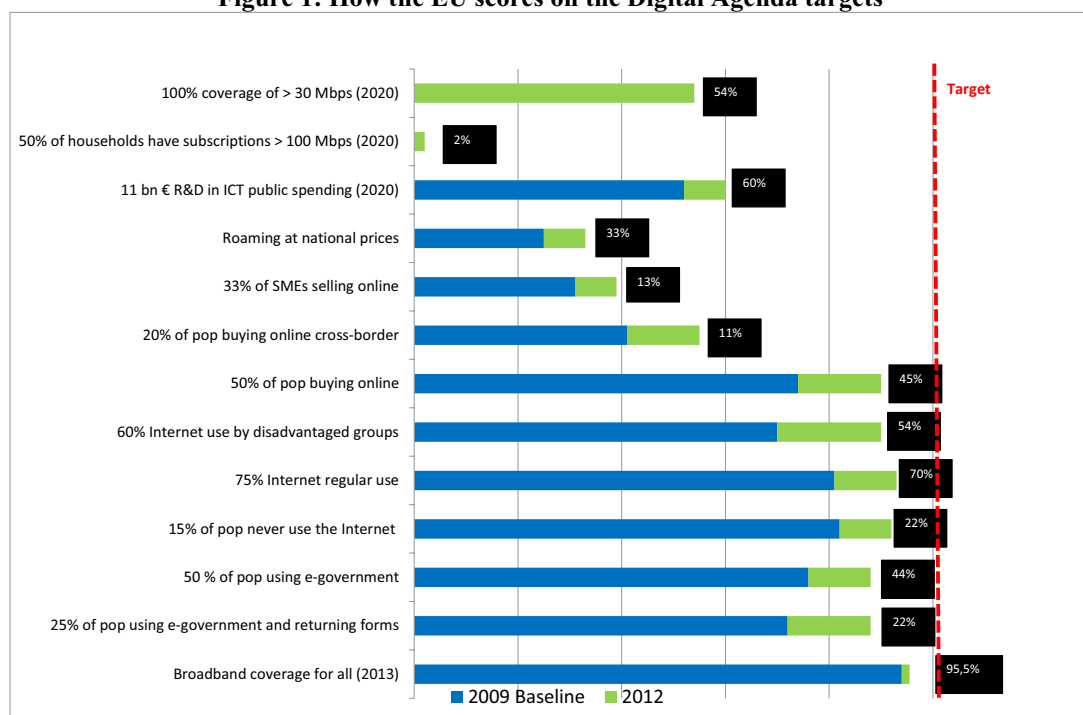
Source: Commission services

The Commission has so far completed 61 actions under the Digital Agenda, while 8 have been delayed or are at risk of being delayed. The remaining 32 actions, under the responsibility of either the Commission or the Member States, are on schedule for completion by their respective deadlines.

The Digital Agenda was heavily front-loaded from the beginning, with a large number of actions scheduled for 2010 and 2011. As a result, the number of actions to be reported upon in this edition is smaller than in previous years. Indeed, for one of the pillars, R&D, there was no action to be completed this year. For some of the others, there was just one action to be named. Of course, this doesn't mean that no action is taking place; activities with a longer time horizon are on-going, as do activities not explicitly included in the Digital Agenda.

The Digital Agenda review, which was adopted at the end of 2012, defined 31 new actions. Nine of these actions have already been executed. These are included in this Scoreboard (section 5).

2. THE KEY PERFORMANCE TARGETS

Annex 2 of the Digital Agenda sets out the key performance indicators. This limited set of indicators provides numerical evidence of the progress towards a selected group of headline targets. This section presents the performance of the EU with respect to these targets. As such, they do not follow the seven-pillar structure.

- **Key performance target 1a**: the entire EU to be covered by broadband by 2013.

The coverage of fixed broadband networks was stable in 2012 at 95.5% of the European population. Urban citizens in all Member states are well covered, but rural fixed coverage still stands below 80% in 10 member states, pointing to a gap in the use of structural funds, although it rises to above 90% in all but three (Slovakia, the Czech Republic and Estonia) if mobile coverage in rural areas is included. Including also satellite technology, coverage is almost complete at above 99.9%, but satellite take-up is not yet widespread in the rural areas.

At the same time, there are more and more public funding schemes supporting broadband rollout in Europe, but they are concentrated in the United Kingdom, Italy and Germany. In 2012, the European Commission took 21 decisions regarding broadband projects involving public funding. The total amount of broadband State aid approved in 2012 was approximately € 6.5 bn, which is more than three times higher than a year earlier, € 6 bn of which was accounted for by the three Member States mentioned.

- **Key performance targets 1b and 1c**: the entire EU to be covered by broadband above 30 Mbps by 2020 and 50% of the EU to subscribe to broadband above100 Mbps by 2020

High-speed broadband coverage and uptake is growing. Now, 54 % of households have access to fast or ultra-fast (above 30 Mbps) Internet access, up from 49% last year. The wider availability of high-speed connections is also reflected in uptake patterns. Indeed, 59% of all fixed broadband connections now provide speeds of 10 Mbps and above, and even growth in broadband subscriptions above 30 Mbps has taken off, with penetration going from 2.5% to 4.2% in one year (Figure 2). Interestingly, among the top six member states in terms of penetration above 30 Mbps, one can find Lithuania, Latvia and Romania, in a reversal of the ranking for basic broadband. The fastest growth by far can be observed in Belgium, adding 9.1 points in one year, which is more than the total achieved so far by 23 member states. Italy and Greece have only marginal high-speed broadband subscriptions. Superfast connections above 100 Mbps remain very scarce, but have doubled from 1.6 % to 3.4 % of total broadband connections.

- **Key performance target 2a**: 50% of the population to buy online by 2015

Progress towards achieving the target of 50% of the population using the internet to purchase goods and services is steady: in 2012 EU-wide the share stands at 45%, up another two percentage points since 2011 and eight since the Digital Agenda was launched. There are three groups of countries: the Nordics and the large Northwestern economies (plus Luxemburg) are already well beyond the target of 50%; especially the Nordics continue to progress rapidly, adding 3.5 points this year. A second group of countries from all regions is in line with the EU average and will most likely achieve 50% by 2015, as will the EU as a whole; Slovakia's performance of +8 points compared to 2011 stands out.

Most of the Southern and Eastern member states are in a third group below 35%, which will find it quite a challenge to reach 50% by 2015. Nevertheless, some countries in this group made significant progress since 2011, with Portugal, Spain and Lithuania adding 4 points each.

Figure 2: High speed broadband penetration
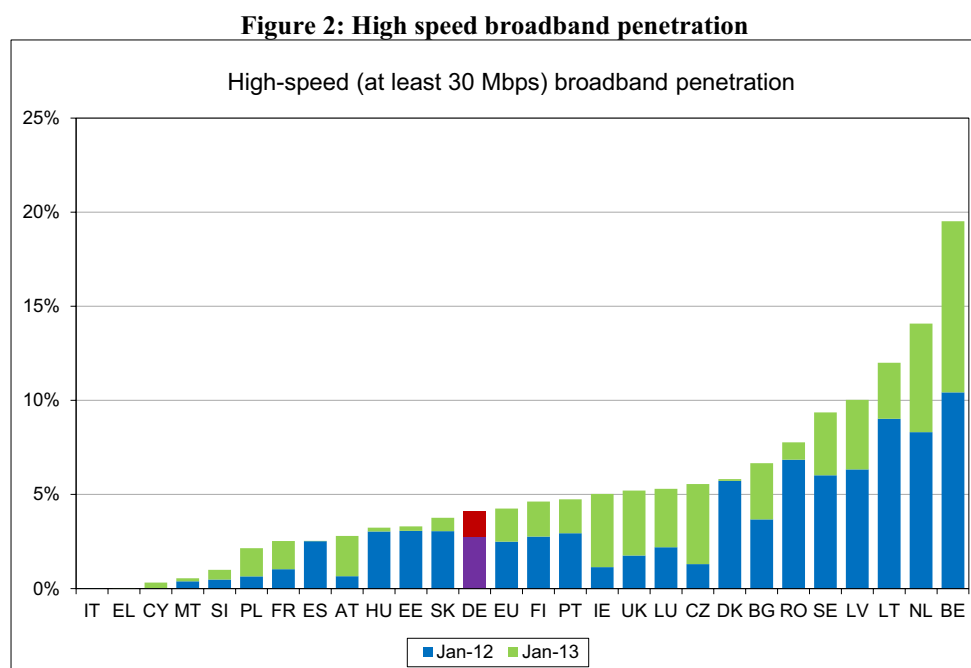
Source: Commission services based on COCOM. Total number of subscriptions by households and enterprises divided by population.

- **Key performance target 2b**: 20% of the population to buy online cross-border by 2015

The proportion of cross-border online purchasers remains low, reaching only 11%. While the gain of 1.4 points since 2011 is slightly larger than in the previous years, it remains too low to achieve the objective of 20% by 2015 (Figure 3)., Growth is concentrated in those countries already displaying relatively high levels, with Austria, Luxemburg and Ireland among the fastest growing, together with Slovakia and Latvia. However, in a number countries buying online from abroad remains a marginal activity, and in the Czech Republic, Poland and Romania there was no growth, either. At the other extreme, in the smallest countries Cyprus, Malta and Luxemburg, virtually all of those who buy online also buy from other member states.

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Figure 3: National and EU cross-border purchases of individuals (% of individuals)
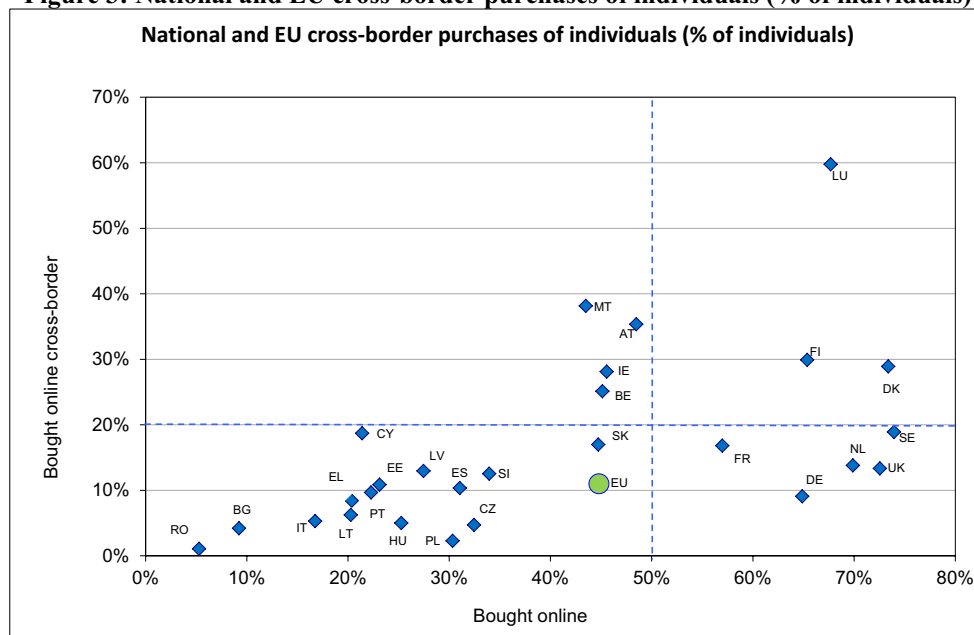
National and EU cross-border purchases of individuals (% of individuals)

Source Eurostat, Community survey on ICT usage in households and by individuals, 2012: percentage of individuals between 16 and 74 who ordered goods or services for private use during the last year, and who ordered from sellers in other EU countries; horizontal lines represent targets

- **Key performance target 2c:** 33 % of SMEs to make online sales/purchases by 2015

Figure 4: eCommerce by SMEs

eCommerce by SMEs

■ selling online   ■ buying online
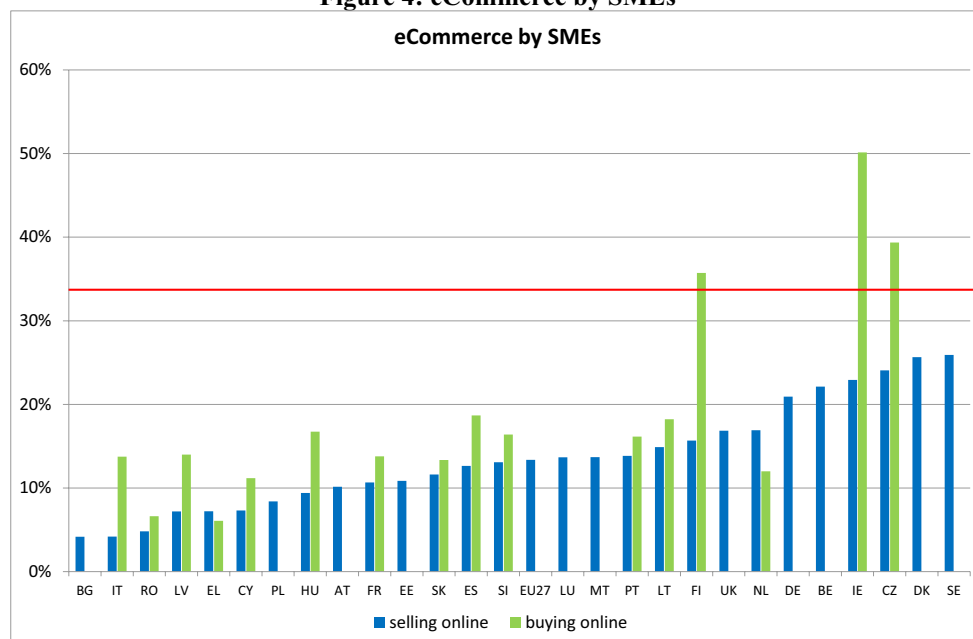
Source: Eurostat, Community survey on ICT usage and eCommerce in enterprises. (Enterprises with 10-249 persons employed purchasing/selling online in 2011at least 1 % of their orders/turnover; horizontal line represents both targets); data for eleven member states not available

Online selling remains a niche activity for European SMEs, with only a quarter of SMEs using this distribution channel even in the best performing countries Denmark and Sweden (Figure 4).

Moreover, adoption of eCommerce for selling is slow: across the EU the share went up by only 1 point from 12% to 13%. However, the fast growth of front runners Sweden (+2) and Denmark (+3) shows that the slow increase is not due to natural saturation among SMEs; other relatively fast growing countries were the UK and Slovenia (+3). Online purchasing is much wide spread, but due to data limitations an EU level cannot be calculated[3].

- **Key performance target 2d**: the difference between roaming and national tariffs to approach zero by 2015

Roaming prices declined by 4.8 cents in 2012, which is four times faster than in the two previous years (Figure 5). However, roaming prices are still more than three times higher than national call prices. The decline is mainly due to the effects of the new roaming regulation which came into force on 1 July 2012 and is not the result of increasing competition.

Figure 5: Price differences between roaming and national calls
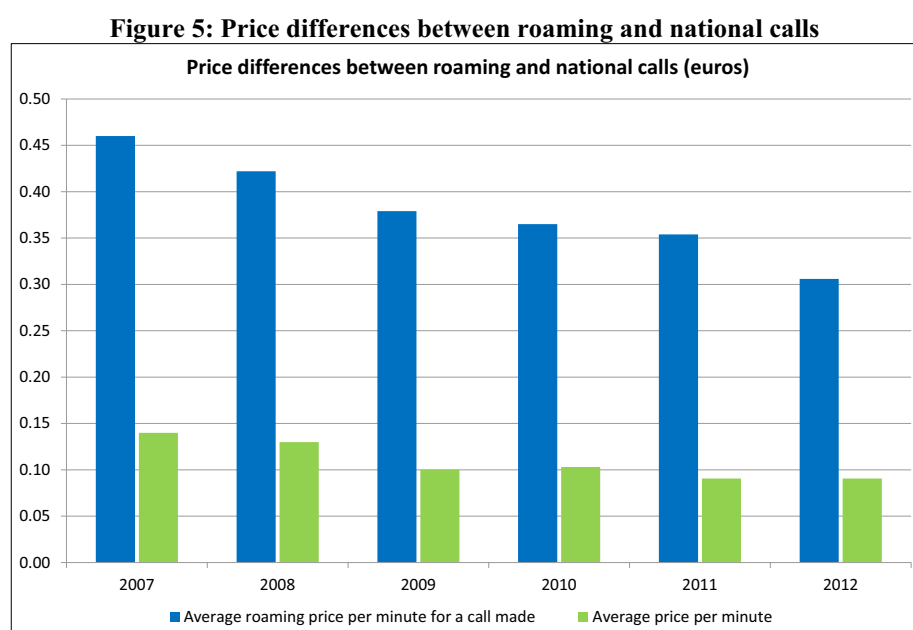
Source: Commission services based on BEREC

- **Key performance target 3a**: to increase regular internet usage from 60% to 75% by 2015, and from 41% to 60% among disadvantaged people.

- **Key performance target 3b**: to halve the proportion of the population that has never used the internet from 30% to 15% by 2015

Regularly Internet use continues its road to becoming the norm in Europe, adding another two percentage points in 2012 to reach 70% (Figure 6). This brings total progress since the launch of the Digital Agenda to 10 percentage points, two thirds of the targeted 15 points. Conversely, the percentage of non-users has fallen last year by 2 points to 22%, compared to an initial level of 30% in 2009. Most of the growth in use now comes from the lower half of the table, with Romania and

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3   National data collection has become optional since 2011, which is why data are available only for sixteen Member States accounting for just over half of the EU population.

Portugal both achieving the fastest growth in regular use (+6% and +4% respectively) and the fastest decline in non-use (both -6%). France and Luxemburg managed to add roughly 4 points despite already high initial levels, showing that even in the upper half of the table there is still room for growth.

**Figure 6: Regular internet use in 2012 (% of individuals)**
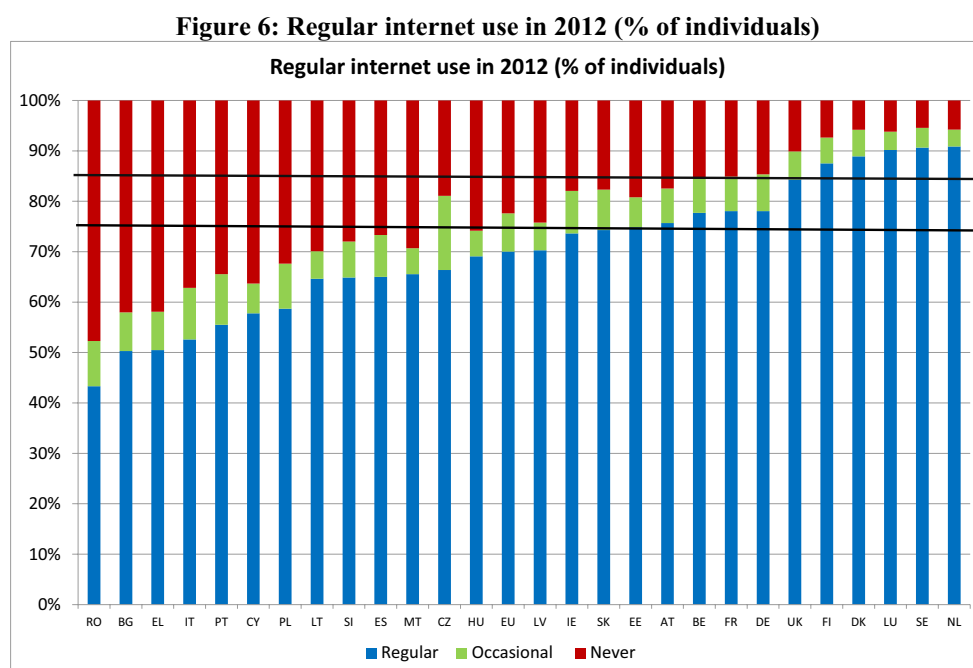
Source: Eurostat, Community survey on ICT usage in households and by individuals; persons aged 16-74 using the Internet at least once a week or never; the rest is classified as occasional users; horizontal lines represent targets

The use of the internet by disadvantaged groups continue to slowly catch with the overall population. Their level of regular Internet use went up last year by 3 percentage points to 54%, bringing overall progress to 13 points compared to 2009. The share of disadvantaged individuals who used the Internet daily was 43% in 2012, up from 40% the year before,, while regular but not daily use remained at 11%. Continuing progress at the current rates would result in achieving all three targets by 2015.

- **Key performance target 4a**: 50% of citizens to use eGovernment by 2015, with more than half returning completed forms

The proportion of citizens using the internet to interact with public authorities has resumed growth, reaching 44% in 2012 after 41% during the two preceeding years (Figure 7). Interestingly, the best performances were spread all the way from the bottom of the table (Romania with a jump of +24, Greece and Lithuania +7 each), through the middle (Latvia and Spain +6 each), to the top (Sweden and France +5). Remarkably, the share of those eGovernment users actually returning completed forms remains stable at 50%, although national figures vary widely, between Romania, where only 10% of eGovernment users send back filled forms, to Denmark, where 85% do. One should note that low overall use can go along with a high share of sending back forms (Lithuania 80%), while high use can go along with a relatively low share (Luxemburg 40%).

Figure 7: Use of eGovernment by individuals
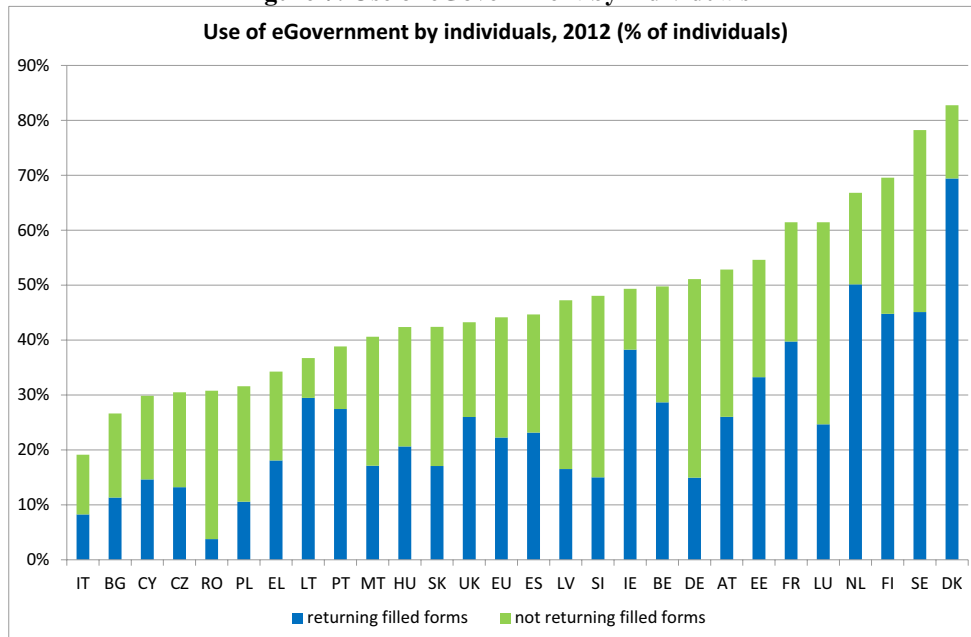
Source: Eurostat, Community survey on ICT usage in households and by individuals, 2012; percentage of persons aged between 16 and 74 using eGovernment services in the last 12 months; horizontal lines represent targets

- **Key performance target 4b**: all key cross-border public services, to be agreed by Member States in 2011, to be available online by 2015

Member States have not yet agreed on a list and the discussion is ongoing.

- **Key performance target 5**: to double public investment in ICT R&D to €11 bn by 2020

In 2011, public investment in ICT R&D (Figure 8) suffered from the budgetary restraints in member states, increasing by only 1.8%, compared to a required annual growth of 5.5% between 2007 and 2020 in order to reach the target. Although recent estimates for the previous years have been slightly revised up, the result is that public R&D in ICT is currently roughly 3% below the required trajectory. It is also interesting to note that the share of ICT in publicly funded research continues to increase, reaching 7.3%. Indeed, it is thanks to this increased share that public R&D in ICT rose at all and did not fall like overall public R&D. Regarding business R&D in ICT[4], in 2010 it recovered a bit from the 7.4% fall of the previous year, growing by 2.7% according to provisional estimates. However, this partial recovery obviously was not yet sufficient to return to pre-crisis levels.

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[4] Sectoral BERD figures are released with a significant delay, which is why values refer to an earlier year than estimates for public R&D in ICT

Figure 8: Public investment in ICT R&D

Public investment in ICT R&D
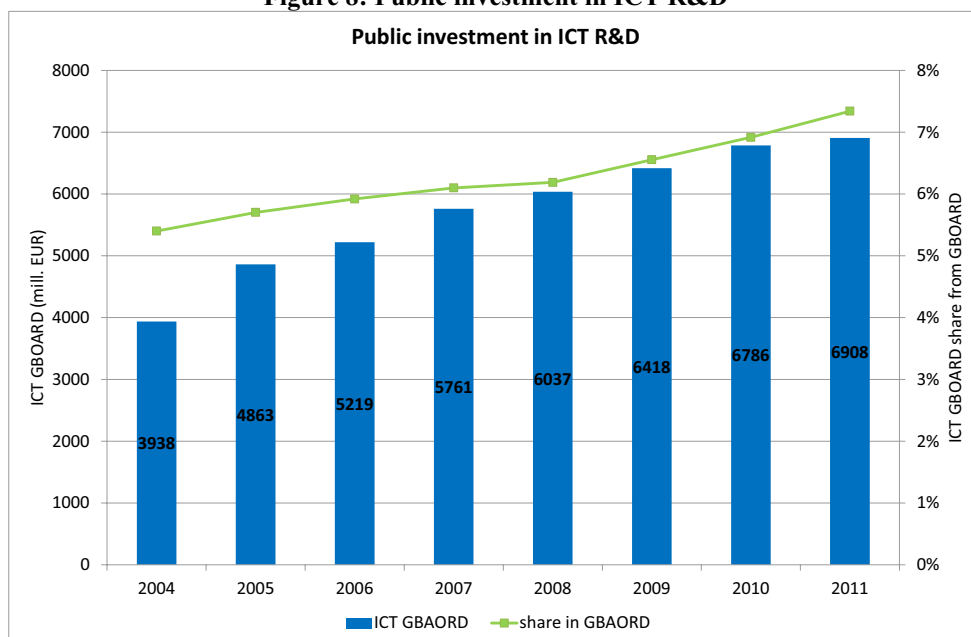
Source: IPTS5. Values for EU-27 in EUR m. NB: the baseline estimate for 2007 has been revised due to a new methodology;

- **Key performance target 6**: to reduce energy use of lighting by 20 % by 2020

The shift towards energy-efficient lighting is happening fast. Indeed, the market share in value of solid-state lighting such as light-emitting diodes (LEDs and OLEDs), which consume little energy, increased from 12.8 % in 2011 to 14.4% in 2012, an eight-fold increase compared to the Digital Agenda starting point of 1.7 % in 2009. It is to be expected that this rapid growth will continue apace in the remaining years of the Digital Agenda, ensuring that the target will be met.

3.   INVOLVING STAKEHOLDERS

The Commission will continue to cooperate and engage with Member States and stakeholders to ensure successful implementation of the Digital Agenda. Throughout last year, engagement helps to shape the policy approach; ideas and issues that emerged from online discussions, the Digital Agenda High Level Group and set-piece events such as the Digital Agenda Assembly 2012 and visits to all Member States ("Going Local") contributed towards the content of the DAE Review (see below under 6).

Online engagement was the focus of much of the outreach efforts, and was often tied in with events such as the Digital Agenda Assembly and the Going Local series of visits. Contributors were able to post comments and suggestions, and to respond to blogposts and tweets by Commission officials and Vice President Kroes.

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5   Stancik, J. (2013 Public ICT R&D Funding in the EU . Institute for Prospective Technological Studies, JRC Technical Report (forthcoming); will be available at
http://http://is.jrc.ec.europa.eu/pages/ISG/PREDICT.html.

The annual Digital Agenda Assembly in Brussels in June 2012 facilitated discussions on progress towards implementing DAE targets, and seeking solutions to challenges. Around 1100 stakeholders attended and participated via a series of interactive workshops and plenary sessions, participation was also be possible via a variety of online and social media tools.

Going Local - the annual outreach initiative whereby the European Commission undertakes visits to each Member State –built upon the previous two exercises. Online and social media engagement before, during and after the visits enabled detailed discussions tailored specifically to the needs of each Member State.

Finally, the Digital Agenda High Level group, made up of Member State representatives, met regularly throughout the year to discuss implementation of the DAE at a national level. In 2012, Member States took part in a study to monitor progress of DAE actions specific to them; the data can be updated by Member States in real time, to reflect changes in status.

4. KEY POLICY ACTIONS IN THE THIRD YEAR

The Digital Agenda is structured into seven 'pillars': A vibrant digital single market, Interoperability and standards, Trust and security, Fast and ultra-fast internet access, Research and innovation, Enhancing digital literacy, skills and inclusion, and ICT-enabled benefits for EU society. The following sections address policy actions planned under these pillars for June 2012 to May 2013 in the Digital Agenda.

4.1. A vibrant digital single market

As shown by the data on eCommerce (see section 2), buying online is still very much a national activity. Moreover, growth rates for cross-border eCommerce are low, which poses a real challenge for the digital economy. After the numerous proposals in 2011, last year saw a more measured activity, focused on aspects related to intellectual property, consumer confidence, complemented by the new roaming regulation.

On intellectual property, on 11 July 2012 the Commission adopted a proposal for a Directive on collective rights management and multi-territorial licensing of rights in musical works for online uses. The proposal aims at ensuring that right holders have a say in the management of their rights and envisages better functioning collecting societies as a result of the set standards all over Europe. The proposed directive will also ease the multi-territorial licensing of authors' rights for the use of music on the Internet. This should lead to improved access to and more offer of music online.

On 18 December 2012, the Commission adopted a Communication on content in the Digital Single Market. It introduces a structured stakeholder dialogue, which was launched in February 2013 and seeks to deliver rapid progress in four areas through practical industry-led solutions: cross-border access and the portability of services; user-generated content and licensing for small-scale users of protected material; facilitating the deposit and online accessibility of films in the EU; and promoting efficient text and data mining for scientific research purposes. In parallel, the on-going review of the EU legal framework for copyright, based on market studies, impact assessment and legal drafting work, aims to reach a decision in 2014 on whether to table legislative reform proposals.

From December 2012 to March 2013, the Commission opened a public consultation on the efficiency of proceedings and accessibility of measures regarding civil enforcement of intellectual property rights. These data will enable the Commission to conduct a comprehensive assessment of the functionality of civil enforcement systems put in place in the Member States. The responses are currently being evaluated.

The Commission's work on payments has been pursued. Following the Green Paper on an integrated European market for card, internet and mobile payments, and the subsequent public consultation, the Commission plans to adopt a legislative initiative on multilateral interchange fees and a proposal for a review of the Payment Services Directive in the second quarter of 2013.

To increase consumer confidence in the Digital Single Market the Commission has completed two actions last year. On 17 December 2012, a Code of EU online rights, compiling the basic set of rights existing in EU legislation and related to the digital environment, was integrated in Your Europe - Citizen's portal. In fact, European citizens enjoy a series of rights that are relevant to the digital environment, such as freedom of expression and information, protection of personal data and privacy, requirements for transparency and universal telephone and functional internet services and a minimum quality of service. However, these existing rights are scattered across various EU legal instruments and are not always easy to grasp. The Code intends to raise awareness and understanding about key digital rights of EU citizens.

On 21 March 2013, Commission services published a study on "EU online Trustmarks – Building Digital Confidence in Europe". This study provides an analysis of the current state-of-play on trustmarks in Europe. Four policy options are reviewed by the study and the final report addresses the pros and cons of these options. The Commission is currently considering the results of the study.

Moreover, the 2011 Commission proposals for a Directive on Alternative Dispute Resolution for consumer disputes and for a Regulation on Online Dispute Resolution for consumer disputes were adopted by the Council and the European Parliament on 22 April 2013. They include in particular the setting up of a European online dispute resolution platform by the Commission which will allow consumers and traders resident in the EU to submit to the competent alternative dispute resolution entity, electronically and in any EU official language, their complaints relating to an online sales or service contract.

Finally, considering that the decline of roaming prices in recent years has been too slow, the new roaming regulation was adopted on 13 June 2012 and entered into force on 1 July 2012. It further lowers existing ceiling for voice calls and SMS, introduces a ceiling for data roaming, promotes transparency of roaming charges, and provides for a safeguard against unexpected roaming bills.

4.2.   Interoperability and standards

Interoperability between ICT services and applications is a key necessity for a productive economy, and standards are vital for interoperability. Nevertheless, as far as envisaged measures to license interoperability information are concerned, following a public consultation on Access to Interoperability Information of Digital Products and Services, legislative measures do not appear to be appropriate to address the issues at stake. A staff working document describing the various outcomes will be published soon. Subsequently, the potential of non-legislative measures will be

explored in 2013, such as the development of model licences for interoperability information and guidelines for estimating the value of interoperability information.

In addition, in the second quarter of 2013 the Commission intends to adopt a Communication presenting guidelines that should help public authorities to make better use of standards in order to avoid being locked-in into ICT systems. This should also increase the number of responses to call for tenders for ICT public procurements. In support of the approach outlined in the Communication, the Commission will organise meetings where public authorities can exchange best practices and a light monitoring program will be set up in order to measure the effects of the better use of standards.

4.3.   Trust and security

The increasing importance of ICT networks for the economy makes attacks on these networks both costlier and more attractive to cyber-criminals. For the Cybersecurity Strategy of the European Union, see the new actions under the refocused Digital Agenda (section 5).

4.4.   Fast and ultra-fast internet access

A key objective of ICT policy in all advanced economies is to ensure ubiquitous Internet access at speeds fast enough to enable the network-based knowledge applications needed for tomorrow's competitiveness. In the past year. the Commission's focus was on discussions with member states on funding for high-speed broadband deployment.

As part of the revision of the European Structural and Investment Funds period for the 2014-2020, in October 2012 the Commission services adopted positions on the development of the Partnership Agreements and programmes underlining the need for broadband deployment where appropriate. Regarding the Connecting Europe Facility (CEF), in February 2013 the   budget proposed by the Commission for digital networks and services infrastructure of € 9.2 bn (in constant 2011 prices) was cut to € 1 bn in the conclusions of the European Council on the Multi-annual Financial Framework (MFF) for the period 2014-2020.

As far as the implementation of national broadband plans by the end of 2012 is concerned, Member States' national broadband plans remain incomplete, and not all of them address how to reach the DAE broadband targets.

For broadband state aid guidelines and civil engineering cost reductions, see the new actions under the refocused Digital Agenda (section 5).

4.5.   Research and innovation

After the adoption by the Commission of the major revision of ICT R&D support by the European in the Horizon 2020 at the end of 2011, there was no legislative action due for completion in 2012/13.

4.6.   Enhancing digital literacy, skills and inclusion

The Internet and ICT have reached most of society, but not all European citizens are equipped with the skills needed to achieve the goal of 'Every European Digital' by 2015, Europe needs to develop

the ICT skills base of its population, in particular its labour force, and to ensure that all citizens can access the Internet.

On 3 December 2012, the European Commission adopted a proposal for a Directive on the accessibility of the public sector bodies' websites. This Directive would introduce mandatory EU standardised accessibility features, from the end of 2015, for 12 types of websites, including websites for essential government services like social security and health related services, job searches, university applications and issuing of personal documents and certificates.

Regarding digital literacy, the Gdansk Roadmap for Digital Inclusion was developed through stakeholder consultation and had already been launched in October 2011. However, the development by Member States of long-term e-skills and digital literacy policies, which was due by the end of 2011, is not yet complete in all Member States.

The development of an online interactive platform for consumer education, including materials on new media technologies and media literacy has resulted in a community educational website called "Consumer Classroom", aimed at teachers of 12-18 year-olds, which was launched on 15 March 2013. The updated Code of EU online Rights takes into account the latest legislative developments.

Last but not least, work on the identification and recognition of what one understands under digital literacy/competences has been integrated into the Grand Coalition on Digital Jobs (see the new actions under the refocused Digital Agenda, section 5).

4.7.   ICT-enabled benefits for EU society

ICT is a cornerstone of many policy initiatives, therefore not limited to technology policy or to the ICT sector. In 2012, key initiatives concerned energy efficiency, intelligent transport, health, cultural heritage, and efficient public administration.

Concerning energy efficiency, the new Energy Efficiency Directive 2012/27/EU was adopted on 25 October 2012. The Directive foresees amongst other measures an exemplary role to be played by the public sector in driving energy efficiency improvements through public procurement of energy-efficient products (notably office equipment covered by the EU-US Energy Star Agreement) and services. Green Public Procurement criteria for street lighting and indoor lighting were published in early 2012. Moreover, the final results of a study on Methodologies to Measure the Potential of Smart Grids for Green House Gas Reductions was finalised on 4 June 2012.

Regarding intelligent transport and intelligent energy, on 10 July 2012 the European Commission launched a Smart Cities and Communities European Innovation Partnership (SCC), by joining ICT to the existing SET-PLAN Smart Cities and Communities Initiative. This Partnership will bring together the demand and the supply of innovative solutions, pool research and innovation resources from energy, transport and ICT, and focus them on actions that demonstrate and propagate cost-effective technological and innovative non-technological solutions that are on the verge of commercialisation. Regarding EU support to showcase commercial-scale solutions, for 2013 alone, € 365 million in EU funds have been earmarked for the demonstration of these types of urban technology solutions..

As far as health is concerned, the eHealth Network set-up by Article 14 of Directive 2011/24 on patients' rights in cross-border healthcare, which is composed of national authorities responsible for eHealth, plans to draw up guidelines on non-exhaustive data set for patients summary/electronic health records that can be exchanged across borders by November 2013. These guidelines will enhance interoperability between electronic health systems and continuity of care and to ensure access to safe and quality healthcare.

In terms of cultural heritage, on 26 September 2012 the Commission presented a strategy to unlock the full potential of the cultural and creative sectors in the EU to boost jobs and growth. This strategy focuses on the promotion of a modern regulatory environment and stronger partnerships between different policies, in particular culture, education, industry, economic affairs, tourism, urban and regional development, and territorial planning. It also proposes a €1.8 billion 'Creative Europe' programme for 2014-2020.

The Commission Recommendation on the digitisation of cinemas (originally planned for 2011) has been transformed into a proposal for a Council Recommendation on European film in the digital era, with an enlarged scope including film heritage, new models of on-line distribution and media chronology. It is now is due to be adopted in the second quarter of 2013.

Regarding the improvement of efficiency in public administration, the European Commission adopted its ambitious IT strategy "e-Commission 2012-2015" on 1 August 2012. The new strategy aims among others to improve the transparency of the Commission and to eliminate digital barriers between European public administrations. The strategy is guided by principles such as openness and reusability. It will be implemented via a rolling action plan, which is updated on annual basis.

On 17 December 2012 the review of the Public access to Environmental Information Directive was published, finding that application of the Directive has substantially improved access to environmental information on request. However, as the emergence of an information society requires a shift from an approach dominated by information-on-request needs to an approach centred on active and wide dissemination using the latest technologies, the Commission offers to help Member States to structure information better for active dissemination.

Finally, the 4th meeting of the eGovernment Expert Group took place on 22 February 2013. Member States and the Commission pointed out the progress on cross-border public service activities in the new Large Scale Pilot eSENS,. In their meeting the eGovernment Expert Group agreed to endorse a number of focus areas and key enablers for digital cross border public services.

5. THE DIGITAL AGENDA 2012 REVIEW

A large majority of actions having been scheduled for the first three years, the Commission revisited the strategy in a review adopted in December 2012[6] and refocused the Digital Agenda on the following key areas:

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[6]   The Digital Agenda for Europe – Driving European Growth digitally, COM (2012) 784 of 18.12.20012, available at http://ec.europa.eu/digital-agenda/en/news/digital-do-list-new-digital-priorities-2013-2014

- Creating the world's largest and richest digital single market for content and services;

- Speeding up public sector innovation;

- Stimulating private investment in high-speed fixed and mobile broadband networks,;

- Creating the world's largest cloud enabled ICT market;

- Fostering a secure and trustworthy internet environment,

- Spurring innovative web-based ventures and promoting digital skills

- Funding key enabling technologies.

For each of these areas, the refocused Digital Agenda proposes one key transformative action, complemented by supporting actions, a total of 31 actions altogether. Despite the short time span since its adoption, nine actions have already been carried out.

- ➢ The European Cloud Partnership, bringing together industry and the public sector to establish a Digital Single Market for cloud computing in Europe, was established on 19 November 2012.
- ➢ On 5 December 2012, the Commission launched a Global Alliance against Child Sexual Abuse Online in close cooperation with the EU Member States and the United States.
- ➢ On 19 December 2012 the European Commission adopted revised guidelines for the application of EU state aid rules to the broadband sector, containing in particular a reinforcement of open access obligations and improved transparency rules.
- ➢ On 7 February 2013, the Commission adopted its cyber security strategy "An Open, Safe and Secure Cyberspace", representing the EU's comprehensive vision on how best to prevent and respond to cyber disruptions and attacks.
- ➢ Simultaneously, it adopted a proposal for a Directive on Network and Information Security, a key component of the overall strategy requiring all Member States, key Internet enablers and critical infrastructure operators to ensure a secure and trustworthy digital environment throughout the EU.
- ➢ On 4 March 2013, the Commission launched the Grand Coalition for Digital Jobs, a multi-stakeholder partnership to address the persistence of a large number of unfilled vacancies for ICT specialists.
- ➢ On 26 March 2013, the Commission adopted a proposal for a Regulation on cost reductions for civil engineering works, which account for up to 80% of the cost of installing broadband networks. By avoiding unnecessary digging, the Commission's draft Regulation could save between 40 and 60 billion euro or up to 30% of the total investment costs.
- ➢ On 24 April 2013, the Commission adopted a Green Paper: Preparing for a Fully Converged Audiovisual World: Growth, Creation and Values, exploring what convergence of digital technologies and content could mean for Europe's economic growth and innovation, cultural diversity, and consumers, especially those that may need protection, such as children.
- ➢ On 23 May 2013, the Commission proposed a New European Industrial Strategy for Electronics. By better coordinating public investments in micro- and nano-electronics (such as semiconductors and computer chips), it is designed to expand Europe's advanced manufacturing base and to mobilise €100 billion in new private investments. On the same day, five major projects were launched as a first step of implementation of the strategy.

Progress on the other actions will be reported in the future editions of the Digital Agenda Scoreboard.

6.   READ MORE

The evidence provided in this document represents only a small part of the data available to measure the progress of the Digital Agenda. A more detailed analysis can be found under http://ec.europa.eu/information_society/digital-agenda/scoreboard/index_en.htm.

ANNEXES

1. STATE OF THE TELECOMS SERVICES SECTOR IN EUROPE

1.1. Introduction

The European telecoms sector experienced a decline in revenues of -1.1%[7] in 2012. While this decline is less than in 2011 (-2.2%), it contrasts with the trend in other regions such as the US and the rest of the world, where revenues for telecoms services experienced 5.1% and 5.8% year-on-year increases respectively in 2012.

Table 1: Revenues of the EU telecoms sector

	Growth rate 2010/2011	Growth rate 2011/2012	Share in e-comms service revenue
Fixed voice and Internet access and services	-2.2%	-1.1%	39%
Fixed voice telephony	*-7.2%*	*-7%*	*24%*
Internet access and services	*2%*	*2.4%*	*15%*
Mobile voice telephony and mobile data services	-1%+	0.4%	54%
Mobile voice telephony	*-4.4%*	*-2.7%*	*34%*
Mobile data services	*6.3%*	*6.3%*	*19%*
Business data services	0.3%	1.1%	7%
Total telecom services (carrier services)	-2.2%	-1.1%	100%

Source: EC services based on EITO 2012

In absolute figures, carrier services revenues were estimated at EUR 234.6 billion in 2012. This compares to EUR 237.2 billion in 2011. Voice services (fixed and mobile) are still the main contributor, accounting for 59% of revenues of EU telecom operators, but their relative size continues to decrease (-7% growth in fixed voice telephony and -2.7% in mobile). Data revenues continue to grow, in particular revenues for mobile data services (6.3% growth compared to a 3.5% growth for fixed data). Data revenues account for 41% of the sector (Figure 1).

Figure 1: Telecommunications revenues by segment
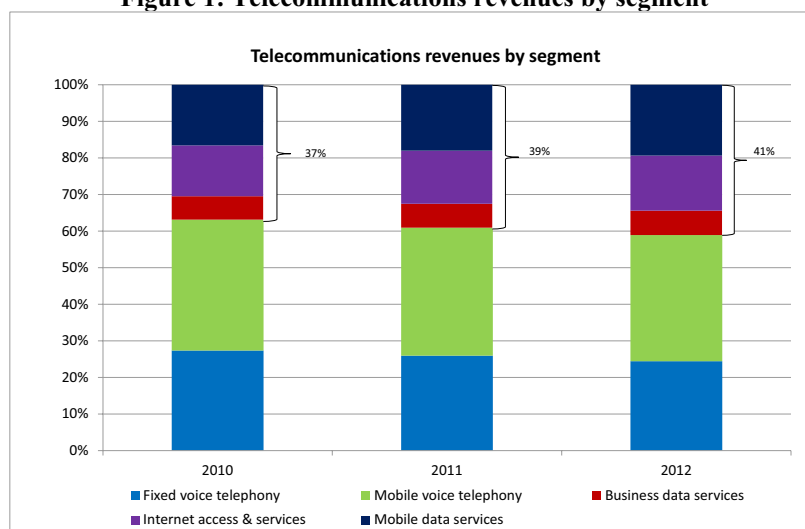
Source: EC services based on EITO 2012

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[7] EITO 2012. Figures on growth in the different segments are based on data for 13 Member States that represent around 85% of the EU market

1.2. Key developments in 2012

In 2012 telecoms operators struggled to reverse the declining trend in revenues and margins, focusing on retaining customers and increasing ARPU, amidst a combination of challenging elements:

- very high penetration of current generation of fixed and mobile telephony and of fixed-line broadband access[8] in several countries, with limited prospects for organic growth;

- downward pressure on telecoms pricing driven by a number of factors including competition and shrinking demand for services in several countries heavily affected by the financial and economic situation[9];

- rapidly growing demand for fixed and mobile data traffic driven by the fast spread of smartphones and tablets[10]. This brought about a further commoditization of voice, both in fixed and more and more in mobile services, that was not compensated by the steady increase of mobile data revenues.

1.2.1. Growth of mobile traffic

The gap between the impressive growth in traffic and the much lower growth in data revenues is having a clear impact on the sector. Between 2010 and 2012, revenues from data services increased by 8%. By contrast, the proportion of the European population using a mobile phone to access the Internet nearly doubled, going from 14% to 27% in 2012[11] and the demand in traffic has been doubling every year. The volume of mobile data traffic in Europe is expected to grow more than tenfold in the period from 2010 to 2015[12] and global growth surged by an estimated 350% between 2010 and 2012 (Figure 3). It is estimated that, in 2012 alone, mobile data traffic increased by 69%, with 3G data representing almost 50% of the total and with an acceleration of LTE traffic (+207% y-o-y growth)[13]. In 2012 a fourth-generation (4G) connection generated 19 times more traffic on average than a non-4G connection and although 4G connections represent only 0.9% of mobile connections they account for 14% of mobile data traffic. At the same time, the price of mobile data in the EU is amongst the lowest in the world, with some data plans being less expensive in the EU than in other regions of the world (Figure 4). Since achieving full coverage of 4G networks offering higher speed access may still take some years, rapid adoption of 4G services at higher prices is not expected. This compares badly to the rapid rise of LTE subscribers in South Korea, where it only took a few months to double the number of subscribers from ten to twenty million[14], or to the wide coverage of LTE networks in the US, which doubled from 41% to 86% of the population in one year[15].

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[8] See chapter on broadband.

[9] Especially in Greece, Spain and Ireland. The state of the economy deteriorated in 2012 at European level with a -0.6% GDP growth rate in the euro area and -0.3% in the EU27 compared to 2011.

[10] In 2011, tablet shipment volume soared by more than 150% year-on-year in most Western European markets, with France and Italy both seeing shipment growth more than tripling and Switzerland and Austria seeing shipment volume almost tripling (EITO 2012). In 2012 the market for tablets was estimated at 117 million units (IDC, 19/09/12).

[11] Eurostat
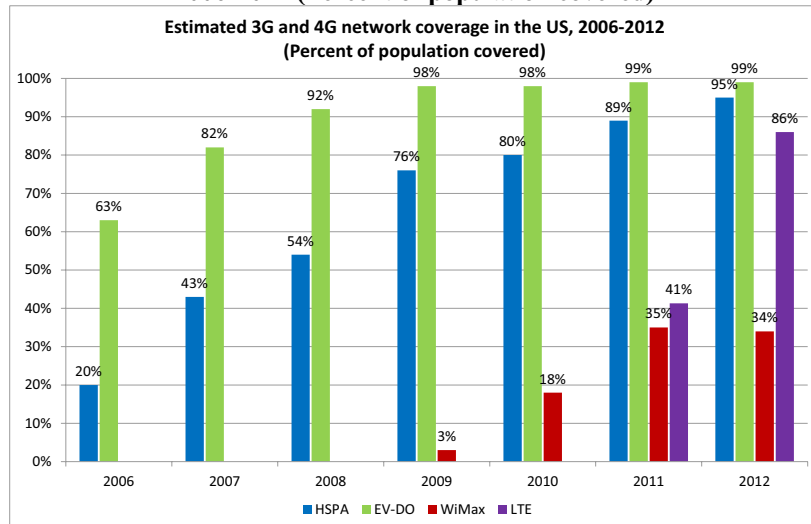
[12] *Europe clears the way for 4G*, ScreenDigest, January 2012

[13] ABI Research, March 2012

[14] *LTE subscriptions in South Korea top 20 million*, TeleGeography, April 2013

[15] *16th wireless service competition report*, FCC, March 2013

Figure 2: Estimated 3G (HSPA and EV-DO) and 4G (WiMax and LTE) network coverage in the US, 2006-2012 (Percent of population covered)

Source: FCC

As in the fixed broadband markets, mobile operators need to find the right pricing strategies to convince mobile users of the benefits of adopting more expensive 4G services thereby increasing mobile ARPU[16].
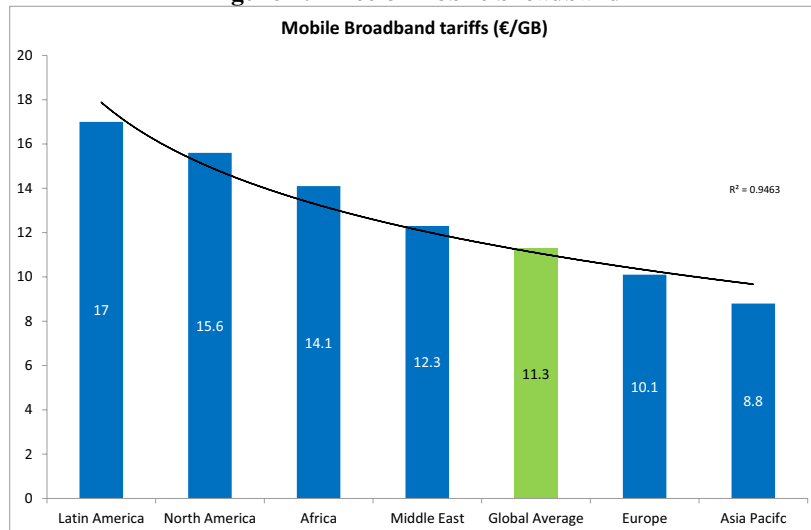
Figure 3: Global mobile traffic: voice and data 2007-2012
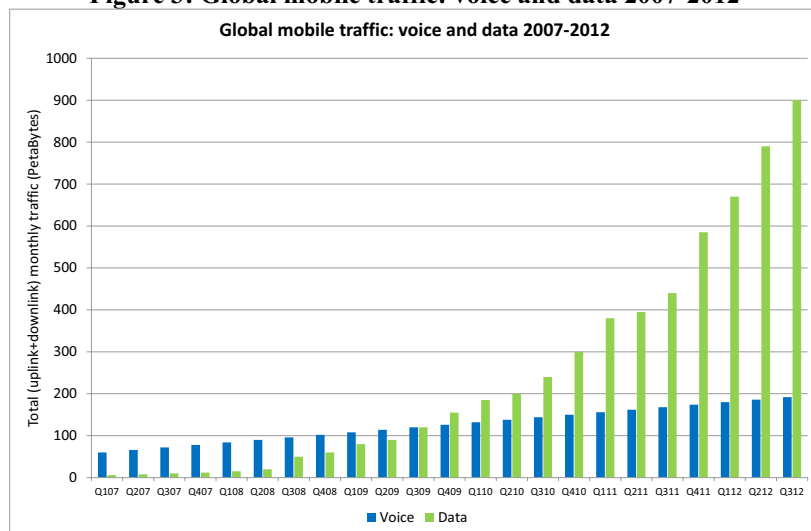
Source: Ericsson

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[16] *4G - going faster, but where?* Arthur D. Little - Exane BNP Paribas report 2013, April 2013. Chapter four provides additional data on the perceived barriers to the use of the mobile internet by consumers
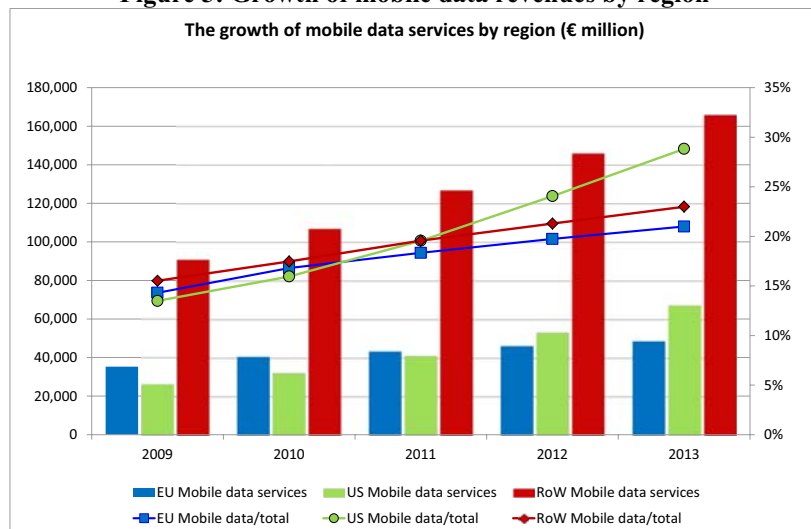
Figure 4: Price of mobile broadband

Mobile Broadband tariffs (€/GB)

Region	Tariff
Latin America	17
North America	15.6
Africa	14.1
Middle East	12.3
Global Average	11.3
Europe	10.1
Asia Pacifc	8.8

R² = 0.9463

Source: Quantum Web

Compared to other regions, the EU market is lagging behind both in terms of mobile broadband revenue growth as well as with regards to the overall size of the market (Figure 5). According to some estimates[17], the average U.S. mobile subscriber used 450 MB per month in the first quarter of 2012, and this figure could have increased up to 750 MB per month at the end of the year. This compares for instance with an average 250 MB[18] per month in the UK. It is true though that mobile data consumption in the EU is very much determined by the dominance of limited data plans, and susbscribers to operators with unlimited or generous data plans tend to show comsumption patterns similar to the US. The relative size of the EU mobile market shrank in 2012 compared to the US or China (Figure 6).

Figure 5: Growth of mobile data revenues by region

The growth of mobile data services by region (€ million)

Legend: EU Mobile data services, US Mobile data services, RoW Mobile data services, EU Mobile data/total, US Mobile data/total, RoW Mobile data/total
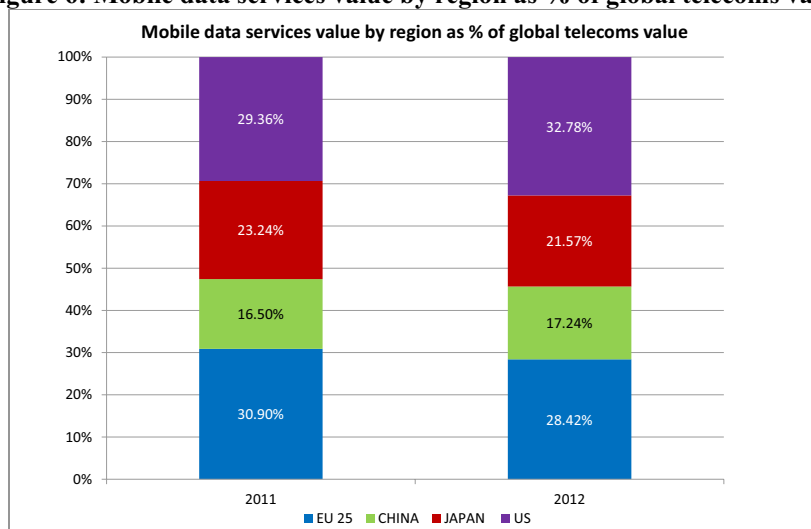
Source: EC services based on EITO 2012

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[17] Nielsen, July 2012

[18] Ofcom's Infrastructure Report - 2012 Update. http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/broadband-speeds/infrastructure-report-2012/

Figure 6: Mobile data services value by region as % of global telecoms value

Source: EC services based on EITO 2012

In terms of traffic, it is estimated that the EU market will not even take a fifth of the global mobile traffic in 2017, with Asia Pacific and North America accounting for almost two-thirds of global mobile traffic (Figure 7).

Figure 7: Global Mobile Data Traffic Forecast by Region
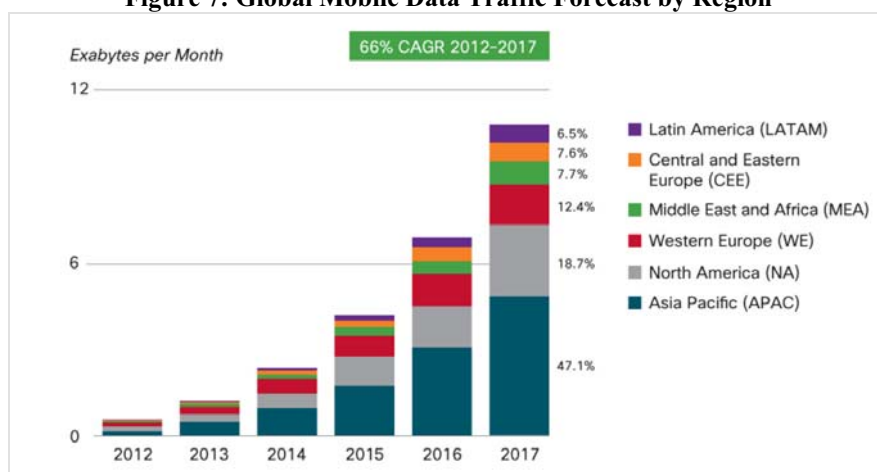
Source: Cisco

1.2.2. Fixed traffic

Despite the extraordinary growth in mobile, in 2012 fixed traffic still represented the largest share of total internet traffic. In contrast with the growth in mobile data, some operators have expressed concerns about the sluggish demand for faster fixed broadband products and the lack of incentives to invest in this segment. They argue that there is a gap between current and projected availability and the actual take-up of high-speed broadband access, combined with the still significant level of revenues coming from traditional voice services. This reduces operators' capacity to price up new high-speed broadband products. To oppose this view, some analysts point to market signs indicating that demand for faster fixed broadband products is on the rise, as in the UK, for instance[19]. At EU

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[19] *BT Q3 2012/13 results: Fibre take-up accelerates, but sports costs loom*, Enders Analysis, February 2013; OFCOM: Ofcom's latest report into fixed-line residential broadband speeds shows that the average actual UK speed has risen by a third (3.1Mbit/s or 34%) in the six months

level, fixed broadband access lines providing speeds equal or higher than 10 Mbps experienced a very high increase (+ 10 percentage points), accounting for almost 60% of all EU lines at the end of 2012, and the take up of broadband subscriptions above 30 Mbps went up from 2.5% to 4.1% in one year. Next Generation Access lines capable of providing much faster speeds account for 20% of all fixed broadband lines as opposed to 12% of one year ago. It is significant that the number of xDSL connections at global level decreased for the first time in the fourth quarter of 2012 to 366.66 million from 366.95 million in the previous quarter, trumpeting the arrival of faster access technologies[20]. Arguably, the arrival of the connected TV to the market, along with an ever increasing number of other connected devices per households (computers, smartphones, tablets, video players, game consoles, DVD players and set top boxes) triggers the demand for more capacity (Figure 8). Some analysts also argue that a surge of fixed internet traffic can be expected in the next five years: the absence of cost constraints, the faster speeds offered by fixed technologies and the proliferation of connected devices[21] are some of the reasons put forward for such renewed growth. Indeed traffic offloading to fixed and Wi-Fi networks and the use of femtocells as enablers of mobile broadband access was a very recurrent topic throughout 2012[22]; 33% of total mobile data traffic was offloaded in 2012 and this figure is projected to increase to 46% in 2017[23]. The deployment of femtocell units at global level is expected to multiply by 20 times between 2011 and 2016[24].

Figure 8: Connected devices by type in Western Europe
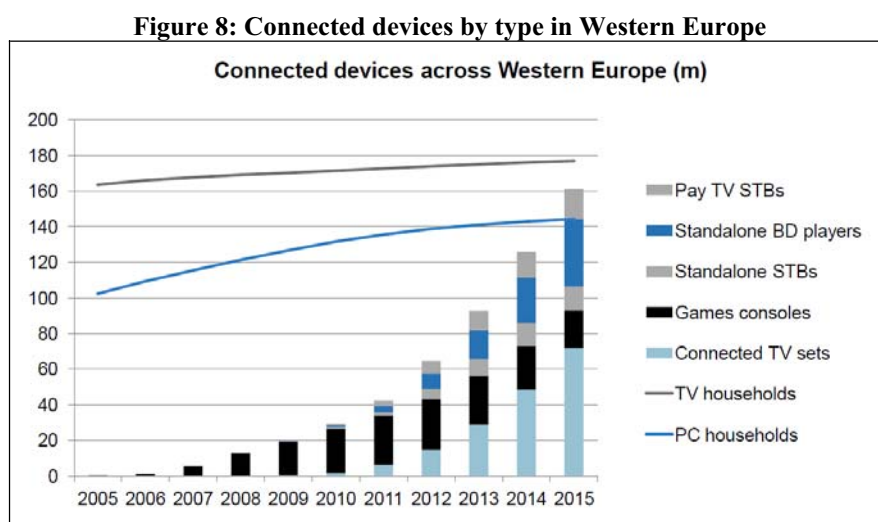
Source: ScreenDigest

1.2.3.   *The platform battle*

The blurring of the boundaries between three market segments that were once very well delimited (internet service providers; broadcasters and providers of online content and/services;

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from May to November 2012, as take-up of 'superfast' services increased; In January 2012 Virgin Media announced an increase in broadband speeds to meet consumers demand.

[20] *The DSL king is dead long live the VDSL king*, Point Topic, April 2013. See the chapter on the broadband market for more information on the take up of NGAs.

[21] *Surging fixed Internet traffic should make operators and policymakers consider the effectiveness of rural LTE*, Informa, February 2013

[22] *Mobile Data Offload & Onload*, Juniper Research, April 2013: The amount of mobile data generated by mobile devices (smartphones, featurephones and tablets will exceed 90.000 petabytes in 2017, but only 40% of data generated by these devices will travel through mobile networks with the largest part of data sent through WIFI networks and small cells.

[23] Cisco Visual Networking Index Forecast, February 2013. http://newsroom.cisco.com/release/1135354

[24] Informa, *Small-cell deployments to be dominated by consumer-driven femtocells*, May 2012.

manufacturers of consumer electronics and IT components[25]) has seriously affected telecom operators. Revenues in the global IT industry (manufacturers of servers, PCs, handsets and tablets, software, IT services) were estimated to have increased by 1.2% in 2012, although the actual figure could change depending on the performance of some economies.

New market actors are providing communications, content and value added services on top of the communications channels provided by network operators. While the provision of such services benefits telecom operators as it stimulates network effects, thereby increasing the value of being connected and driving demand by consumers for further and better connectivity, it also erodes the main source of revenues of network operators. The traditional voice service, which still contributes a quarter of overall telecommunications revenues, is fading away very quickly, replaced by voice applications provided by the OTTs (Skype, GTalk or even Facebook voicemails). Substitution of SMS text messaging by IP-based messaging services was another reason for margin erosion in several telecom operators[26], and this prompted many operators to develop new, more aggressive pricing structures as well as their own IP messaging products[27]. Finally, voice revenues were also affected by reductions in mobile termination rates in 2012 (in nine EU countries average MTR were slashed by more than 50%), mobile number portability and, in some countries, by the competitive pressure of network challengers[28] and MVNOs.

Manufacturers of mobile devices and operating systems have also entered the picture by providing content and applications platforms linked to their devices, Apple's "app store" and Google's "Play store" being the typical examples; the arrival to the market of smartphones has been the main driver of the explosion of mobile broadband traffic, and this has certainly benefitted operators (newest versions of smartphones may consume twice as much data as the previous models[29]). Also more and more broadcasters are launching online TV services in an effort to attract larger audiences and generate more revenues from advertising[30] amidst a growing trend to switch from the traditional TV sets to other fixed and mobile devices[31], and this also spurs demand for more broadband capacity.

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[25] Intel, a semiconductor manufacturer, was rumoured to be preparing the launch of a virtual cable TV service and set top box and. Smart Tv manufacturers also deploy their own Connected TV platforms.

[26] Daily OTT messaging traffic has overtaken daily P2P SMS traffic in terms of volume, with an average of 19.1 billion OTT messages sent per day in 2012, compared with an average of 17.6 billion P2P SMS messages, Informa, *OTT messaging traffic will be twice the volume of P2P SMS traffic by end-2013*, April 2013. According to recent estimates, the use of texting applications would have taken away $23 billion in revenue from carriers as of the end of 2012. (Ovum, http://ovum.com/press_releases/ovum-forecasts-social-messaging-will-cost-telcos-over-23-billion-in-sms-revenue-in-2012/). Whatsapp has more users than Twitter and the platform handles about 8 billion incoming and 12 billion outgoing messages per day.

[27] At the 2012 Mobile World Congress the five largest EU mobile operators (Vodafone, DT, TI, Telefonica and France Telecom unveiled an application called Joyn under the Rich Communication Services programme created by the GSM Association. This application would in principle be free and not include advertising, and additional services (VoIP and IP video calls) would be added. France Telecoms has been selling its own OTT messaging app named *Libon*, Telefonica announced the preloading of its *TuMe* app in its smartphones and Vodafone introduced its *Red Package*, which may include unlimited calls and text messages for free.

[28] Iliad's Free Mobile managed to attract 2.6 million subscribers in 82 days. Informa Telcoms and Media. *Case study: Iliad's Free Mobile signs up 2.6 million subscribers in just 82 days*, June 2012.

[29] *Arieso reveals latest trends in smartphone data use*, Arieso, January 2012.

[30] 20% of all advertising budgets in Europe were dedicated to online in 2011. ADEX BENCHMARK 2011, July 2012. In 2012 mobile advertising revenues jumped by 111% to $3.4 billion. IAB *Internet Advertising Revenue Report*, April 2013. See also "White Smoke: The new era for video news", Associated Press, April 2013.

[31] *Zero-TV Doesn't Mean Zero Video*, Nielsen Research, March 2013. In Sweden owners of computers or tablets now have to pay television license fees and Finland will start collecting the public service broadcasting tax from general taxes. A 2011 survey by Google amongst 1 400 tablet users in the US showed that more than 1 in 3 respondents used their tablet more than they watched TV.

Figure 9: Use of connected devices at home
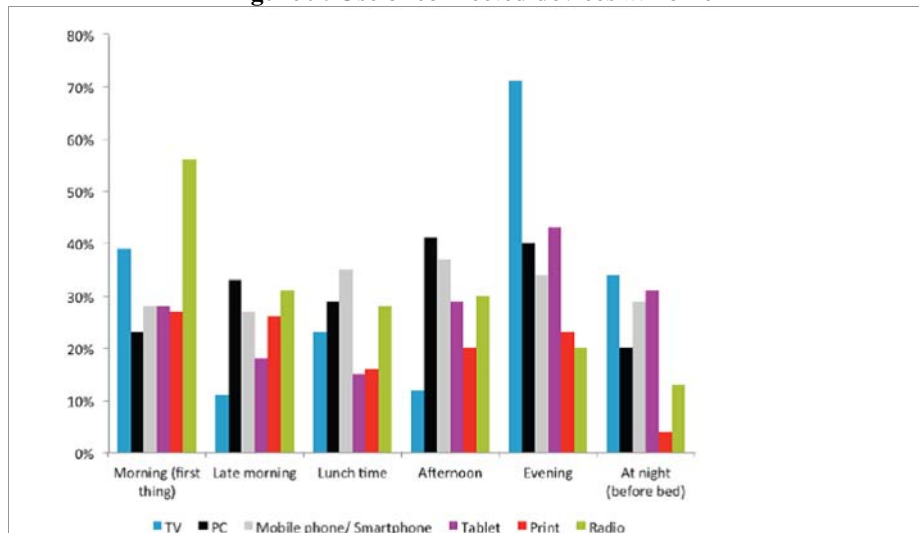
Source: Deloitte/GfK, February 2013

Here again there is a similar network effect: consumers that have several mobile devices value online content more than those with just one device[32]. But, the rapid adoption of smartphones and tablets, with their associated content and applications platforms, has had an impact in the commercial strategies of operators, which did not succeed in making their own content and services platforms profitable[33]. By subsidizing smartphones in an effort to gain new mobile data subscribers, network operators have indirectly supported the competing online platforms of the largest manufacturers, driving consumers away from their own content platforms. There are many different figures on the mobile applications market, the value of which could have reached 11 billion euros in 2012, with more than 50 billion downloads and 41 applications per user on average, which represents a 32% increase over 2011, when the average was 32 applications[34]. Other sources estimate a smaller market size with around 44 billion downloads for an estimated value of 4.15 billion euros[35]. While Android is the dominant operating system in the world, equipping up to 70 per cent of the smartphone market, App Store is estimated to be earning on average about 2.6x the app revenue of Google Play[36]. Consumption patterns are also very different from one country to another. In the US, Apple devices are very popular (35% of the smartphone market) and they generate twice as much mobile data traffic as Android based devices, which dominate the market with more than 50% of it[37].

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[32] "There is a 41 percent increase in perceived media value when consumers add a second mobile device to their collection, another 40 percent increase when they add a third, and a 30 percent increase when they add a fourth". *Through the Mobile Looking Glass*, The Boston Consulting Group, April, 2013

[33] Operator platforms would account for just 6% of content downloads worldwide, with Google Play and Apple's App Store concentrating 70% of this market. Juniper Research, March 2013. Samsung, the number one manufacturer of Android-based smartphones, has announced partnerships with several publishers of games, travel tips, books and music and will be providing access to these applications through its hub. IDC estimates that games on smartphones are expected to outpace hand-held devices by the end of 2013. *Worldwide Gaming-Optimized Handheld, Smartphone, and Tablet Gaming 2013–2017 Forecast*, IDC, April 2013.

[34] *Survey Report: Mobile Apps - What Consumers Really Need and Want, Compuware*, March 2013, quoting data from Nielsen. http://www.compuware.com/about/release/747433/mobile-apps-vs-mobile-websites--and-the-winner-is

[35] HIS Screen Digest. Downloads for all smartphone and feature phone application stores excluding tablets.

[36] App Annie Index, Market Report Q1 2013 – *iOS App Store revenue 2.6x that of Google Play*, http://blog.appannie.com/app-annie-index-market-q1-2013/

[37] *16th wireless service competition report,* FCC, March 2013; Investing Analytics for Piper Jaffray, http://www.jailbreakauthority.com/apple-ios-devices-generate-double-the-web-traffic-than-android/; Big differences between Finnish Android smartphone and iPhone owners, Alekstra,

The situation in Finland is the reverse: here Android owners consumed 2.07 GB of mobile data – nearly twice the 1.05 GB of iPhone owners. Telecom operators also need to be aware of these trends in their commercial and pricing strategies.

This battle to gain control of the platform is confirmed by the fact that some device manufacturers are willing to sell their devices at cost, with the objective of having more and more consumers buying content (music, films, application and books) from their online platforms[38] ,or by the new way to access Microsoft Office 2013, which would be based on a subscription model that would include some free minutes of VoIP per month. Operators are therefore understandably willing to support the emergence of alternative ecosystems that would put pressure on the dominant ones[39] and enter into alliances with providers of online content and services, bundling access to this content in their data plans[40]. Mobile payments is also another market segment where operators are exploring several strategies. In September 2012 the European Commission cleared the creation of a mobile commerce joint venture in the UK between Telefonica, Vodafone and Everything Everywhere.

1.3.　Operators' strategies

Telecom operators are trying to find their way through this transition period from legacy PSTN to IP broadband networks where pricing for core and strategic telecom services proved to be either flat or in decline. Consequently, European telecom operators are adopting strategies, both short and long-term, in order to improve their ARPU and secure their revenues. More specifically, telecom operators are considering some of the following strategies:

- Geographic diversification of their businesses in emerging markets: Domestic revenue growth for some European carriers was negative in 2012 and some operators were able to experience some growth in overall revenue thanks only to international operations.

- Increasing line rental fees and developing more aggressive bundled products including services provided by OTTs. Replacing mobile handset subsidies policies with leasing and financing plans and the introduction of multi-device plans and shared-data schemes, which enables operators to retain customers while reducing the significantly high investments in acquiring new handsets. In a few cases, mobile and fixed data plans could be subject to price increases or the end of unlimited data plans, as in the UK or more recently in Germany[41].

- Creating ad-hoc tailor-made service at wholesale and business segments. Several studies developed by NRAs analysed business communications market and proved that incumbent operators, which are the largest telecom operators in Europe in their domestic markets, had a higher market share in this segment that one would expect when comparing to the retail market. On top of IT corporate services, there is an increasing trend for operators to bundle personal cloud storage and data management in their higher-end service packages. Examples

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[38] AmazonMP3, had 22 percent of the market for music downloads in the United States in l2012 up from 7 percent in 2008. *Amazon gains against Apple's iTunes in music downloads*, Reuters, April 2013.

[39] At the last World Mobile Congress 18 large mobile operators announced their support to Mozilla as a third mobile operating system/platform. These were América Móvil, China Unicom, Deutsche Telekom, Etisalat, Hutchison Three Group, KDDI, Korea Telecom, MegaFon, Portugal Telecom, Qtel, SingTel, Smart, Sprint, Telecom Italia Group, Telefónica, Telenor, Telstra, and VimpelCom

[40] The latest example of such trend is the agreement between Deutsche Telekom and Evernote under which DT subscribers will get free access to the $45-a-year premium version of Evernote for one year. Other examples include Deutsche Telekom's deal with Spotify and Orange's deal with Deezer.

[41] *Neue Spielregeln für DSL?,* Deutsche Telekom, April 2013

include Vodafone Cloud, Orange's My Content Online and Deutsche Telekom's Telekom Cloud.

- Developing policies to retain existing consumers and attract new ones, which include diversified portfolios, better understanding of the changing consumer behaviour and strengthening customer care services, customer profiling and customization of products using big data. Price differentiation enables users to choose the option which best fits their needs; both in terms of usage and monthly expenditure. In these ways, European telecom operators look to diversify their product portfolio and to be able to build loyalty within their customers; by meeting their specific needs and offering value-added services - for instance operators may leverage on their billing relationship with customers[42]. Going beyond the telecom market, Magyar Telekom can be mentioned as an operator that has widely diversified its portfolio selling electricity and gas to its fixed line subscribers; by end-3Q12, 45% of its triple-play users had also bought its energy offerings[43].

- A longer term approach refers to the Internet of Things. The number of machine-to-machine (M2M) device connections worldwide is expected to increase from 124 million in 2012 to 2.1 billion in 2021[44] and mobile operators are positioning themselves to compete in this emerging market. According to the mobile industry, mobile operator data revenues will overtake voice revenues globally by 2018 and much of the demand in data traffic will be spurred by connected devices and M2M traffic[45]. In 2012 there was a 42% rise in shipments of SIMs designed for M2M applications, according to the SIM alliance members[46].

1.3.1. *Geographic diversification*

Several European telecom operators were able to experience growth at group consolidated basis due to business diversification in emerging markets; the non-EU operations of several operators gave them some breath in terms of revenues growth and increased their contribution to the overall group revenues[47]. On average[48], domestic operations accounted for around 41% of overall revenues, 25% originated in other EU countries and 34% in non-EU operations (Figure 10). Portugal Telecom, Telenor and Telefonica already source more than half of their revenues from non-EU countries and Vodafone, DT, Telecom Italia, Tele2 and BT also obtain between 30 and 40% of their revenues from non   EU   markets   (

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[42] *Mobile Content Business Models*, Juniper Research, March 2013

[43] Informa Telecoms and Media. *Case study: Magyar Telekom resells energy to diversify revenue portfolio,* April 2013

[44] Analysys Mason.

[45] *GSMA-Connected Living*, http://www.gsma.com/connectedliving/. In March 2013 ComReg, the Irish regulator, launched a public consultation to investigate the possibility of a more targeted long term numbering resource for the exclusive use of M2M applications and services to satisfy the demand for numbers arising from the emerging M2M services. http://www.comreg.ie/_fileupload/publications/ComReg1333.pdf

[46] *Global SIM shipments rise 6% due to increased NFC, LTE and M2M demand*, Mobile Europe, April 2012

[47] "*Emerging markets were not that popular after the previous financial crisis in 2008, but under the current crisis, which has its origin in Europe, the case is different - Asia being beautiful*. Telenor sees Asian growth as antidote to Europe's woes, http://uk.reuters.com/article/2012/01/05/telenor-idUKL6E8C53PU20120105

[48] Based on a sample of eighteen European operators: Telefonica, Deutsche Telekom, Telecom Italia, Vodafone, France Telecom, KPN, Mobistar, TPSA, Tele2,Telia Sonera, Telekom Austria, Belgacom, TDC, Portugal Telecom, Elisa, BT, OTE and Telenor. Third quarter 2012- Third quarter 2011 data analysis.

Table 2).

Figure 10: Revenues of the largest EU operators by geographic region
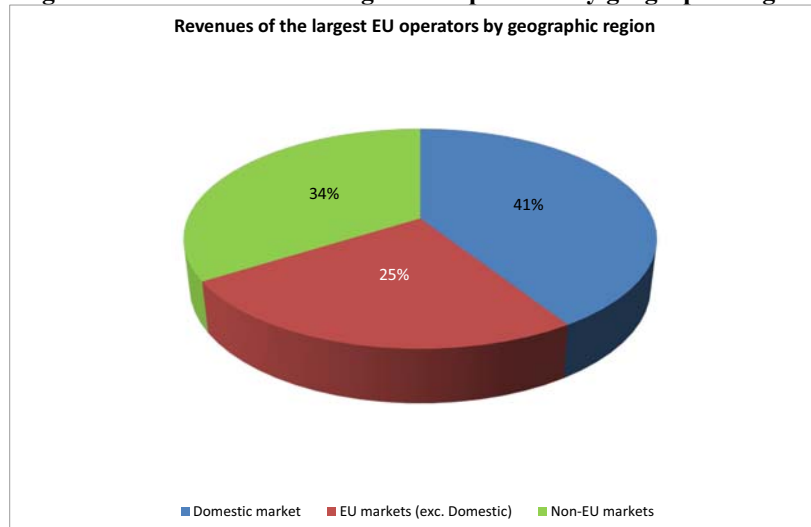
Source: EC services based on a sample of eighteen European operators

Table 2: Revenues of the largest EU operators by geographic region

TELECOM OPERATOR	COUNTRY	Other markets EU+	Other markets (world)	Domestic market	EU markets (exc. domestic)	EU markets (inc. domestic)	Non-EU markets
Vodafone	UK	Germany, Italy, Spain, UK, , Malta, Netherlands	Albania, Turkey, India, South Africa, Mozambique, Tanzania, Australia, New Zealand, Egypt, Qatar, Ghana, Kenya, US	11%	58%	69%	31%
Telefonica	SPAIN	UK, Germany, Czech Republic,	Brazil, Argentina, Venezuela, Chile, Peru, Colombia, Mexico	24%	24%	48%	52%
Telenor	NORWAY	Sweden, Denmark, Hungary, Serbia, Montenegro	Thailand, Malaysia, Bangladesh, Pakistan, India	25%	20%	45%	55%
Tele2	SWEDEN	Norway, Netherlands, Germany, Austria, Estonia, Latvia, Lithuania, Croatia,	Kazakhstan, Russia	29%	28%	57%	43%
Telia Sonera	SWEDEN	Finland, Norway, Denmark, Lithuania, Latvia, Estonia, Spain	Kazhakhstan, Azerbajian, Uzbekistan, Tajikistan, Georgia, Moldova, Nepal	36%	47%	82%	18%
Deutsche Telekom	GERMANY	Greece, Hungary, Netherlands, Poland, Czech Republic, Croatia, Austria, Slovakia	USA	44%	28%	72%	28%
Portugal Telecom	PORTUGAL	Hungary	Brazil, Angola, Macao, Namibia, Cape Verde, East Timor, Sao Tome and Principe, Kenya, Mozambique	41%		41%	59%
France Telecom	FRANCE	Spain, Poland, Romania	Egypt, Mali, Senegal, Ivory Coast, Cameroon, Guinea, Congo	49%	33%	82%	18%
KPN	NETHERLANDS	Germany, Belgium,	Mexico, US,	58%	34%	92%	8%
Telecom Italia	ITALY		Brazil, Argentina	61%		61%	39%
British Telecom	UK	Ireland, Spain, France, Germany, Italy, Netherlands	Australia, Brazil, US, India, Singapore	41%		41%	59%
Telekom Austria	AUSTRIA	Bulgaria, Croatia, Slovenia	Belarus	64%	28%	92%	3%
OTE	GREECE	Cyprus, Romania, Bulgaria,		69%	12%	80%	20%
Belgacom	BELGIUM	Luxembourg	Morocco	77%	23%	100%	
TDC	DENMARK	Sweden, Norway, Finland		84%	16%	100%	
Elisa	FINLAND	Estonia		93%	7%	100%	
Mobistar	BELGIUM	Luxembourg		95%	5%	100%	
TPSA	POLAND			100%		100%	
TOTAL (18 operators)				41%	25%	65%	33%

As indicated in Table 1, as much as 24% of sector revenues still originate from fixed voice services, a segment led by national operators, many of which do not operate outside their home markets. But it is estimated that no less than 45% of the EU fixed broadband lines are served by telecom operators

with presence in several EU countries and this figure is even higher in mobile telephony, where around 80% of the market is in the hands of the five largest mobile providers. Two trends characterise European operators:

- Operators with a significant international footprint performed better than pure national players, due to stagnation of organic growth in EU markets and more demanding and budget concerned consumers in the EU;

- This also had an impact on investment trends, with operators active in Eurasia or Latin America having a slightly higher CAPEX percentage than EU only operators.

1.3.2. More aggressive bundled products

Major operators now value retaining current customers as much as gaining new ones. Thus, they have created strategies based on different types of bundled offers in order to include data services, SMS and voice minutes[49]. The popularity of these products is increasing. By contrast, broadband standalone services are fading away, representing around 34 percent of all offerings in 2013, down from 64 percent six years ago.

There exist many different types of bundled services, which can include either a combination of fixed-line telephony and broadband access or fixed broadband access and television (double play), products combining fixed voice, broadband access and television (triple-play) and more recently quadruple play products, which offer mobile voice and data on top of triple play offerings. Some EU operators added quadruple play products to their portfolio with the aim to provide customers all telecom needed package in a row and reduce churn ratio. The number of quad play services doubled between 2011 and 2012[50]. There are still many differences in the retail offerings across EU Member States, and the market in France, for instance, is very different in this respect compared to Germany[51].

Bundles may reduce churn but have to be carefully designed so as to minimise loses in revenues. The configuration of the bundled products and their price depend very much on the kind of technologies most used by consumers and operators need to adapt their offer profile to better meet the requirements of consumers. A recent Commission market study[52] revealed that consumer survey respondents who had switched their internet provider in the last three years were more likely to have had standalone access with their previous connection than with their current connection (22% compared with 12%). This was mainly the result of an increase in packages including both fixed telephony and TV (with or without other services such as mobile telephony or mobile Internet).

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[49] Spanish fixed line telecoms providers are gaining a bigger share of the country's shrinking mobile market as cash-strapped consumers switch to bundled packages offering mobile, internet and other services (...) In the UK cable-based Virgin Media, which has focused on selling mobile as part of bundled packages, has a contract customer base of 1.7 million compared with under 500,000 clients five years ago and is Britain's no.5 player with 3 million mobile clients overall. Reuters, *Spain's Jazztel, ONO make headway in shifting mobile market*, April 2013

[50] *Study on Broadband Internet Access Cost*, Van Dijk, September 2012

[51] *Vodafone, KDG and quad play in Europe*, Enders Analysis, March 2013.

[52] Consumer market study on the functioning of the market for internet access and provision from a consumer perspective (or else the 2012 ISP study, to be published in July 2013)

1.4. European telecom operators investment overview

Capital expenditure (CAPEX) in 2012 was estimated at around 45 billion in 2012, representing on average 15% of group consolidated figures for the major European telecom operators, up from the 14% of total revenues in 2011[53] (Figure 11). This ratio was slightly lower for operators with a smaller size, which could be due to the fact that some of these operators have already supported and developed before and are now in a mature phase of their business development. Larger European operators with overseas activities had higher investment needs driven by the demand from these markets, including spectrum investment needs. Figures on investment in network equipment hide the fact that prices of network gear went down in the period; so in real terms the investment effort may have been higher.

Figure 11: Capex/Revenues ratio per main operators (per country of origin)
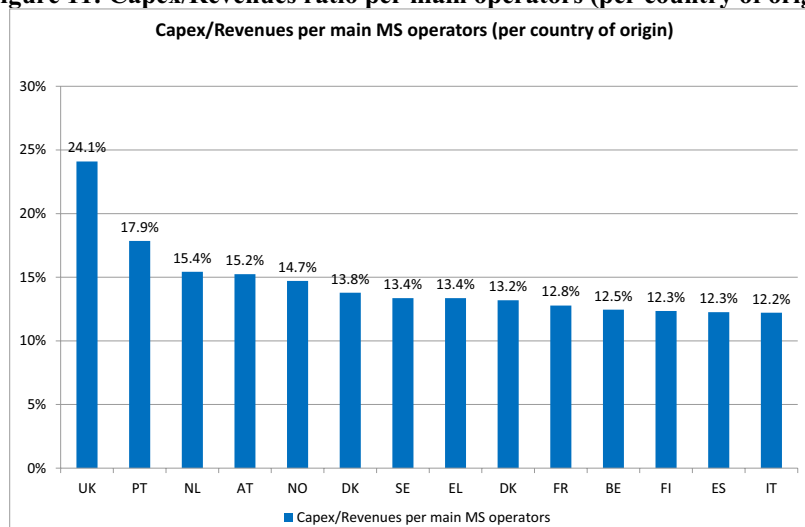
Source: EC services based on a sample of eighteen European operators

When it comes to mobile infrastructure, investment focused on HSPA and LTE roll-out, including expanding backhaul capacity. Many mobile operators continued their network sharing strategies in order to rationalize investments and achieve greater coverage more rapidly. Some operators estimate that the radio access network-sharing model is the best option for cost savings and enables savings of 40 to 60% on opex and capex.

According to latest figures[54] while 47 European operators offered an active LTE network (Figure 12), there were only 5 Member States[55] where no LTE network was offered. The first LTE launch was in Sweden in December 2009. LTE networks were mainly located in Western European countries, with HSPA and HSPA+ being the major technology investment for Central and Eastern European countries. Yet EU LTE subscribers only represent a small percentage of global LTE subscribers, with the large majority of these located in North America and Japan[56].

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[53] Source: Commission services based on a sample of eighteen European operators – ETNO - ECTA

[54] European Commission Services based on GSMA data (GSA Confirms 156 Commercial LTE Networks Launched and Increasing Global Reach), March 2013. Figures include wholesale and retail services.

[55] Bulgaria, Ireland, Spain, Italy, Cyprus, Malta

[56] EITO 2012

Figure 12: Number of mobile network operators in Member States with an active LTE network

Number of mobile network operators in Member States with an active LTE network
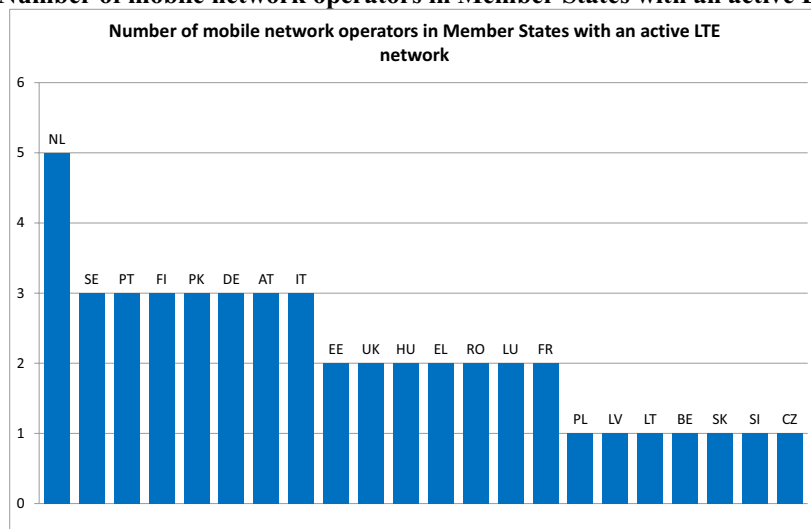
Source: EC services based on GSMA data

Regarding investment in fixed broadband, most EU operators have planned significant investments in the coming years to expand the coverage of next generation fixed access networks, combining VDSL and Fibre to the Home (FTTH) technologies. VDSL appears to be the technology choice of large operators, accounting for around 60% of population coverage in the long term, followed by FTTH. The situation may however be significantly different in countries where cable modem and local area networks are strong competitors[57].

At the end of 2012 the coverage of NGA fixed networks in the EU was very uneven, with extensive NGA coverage in Belgium (97% of the population) and the Netherlands (98%). Other countries were much less advanced, with just 14% in Italy or 24% in France.

Announcements of NGA investment plans increased at the end of 2012. DT announced details in December 2012 of a plan to double its VDSL footprint in four years, with 65% "fiber" coverage targeted by 2016 and an option towards 80%, alongside a 85% LTE coverage. KPN plans to achieve 21% FTTH + 55% VDSL coverage by 2013; Telefonica 45% VDSL by 2013 and 3mln FTTH until Aug 2014. Belgacom has 80% VDSL coverage and Portugal Telecom 40% based on FTTH.

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[57] *Market Functioning in Network Industries – Electronic Communications, Energy and Transport*, DG ECFIN, Occasional Papers 129, February 2013

Table 3: Investment plans European operators

Company	Coverage 2012		Target	
	VDSL	FTTH	VDSL	FTTH
Belgacom	83%	0%	83%	20%
BT Group	37%	12%	50%	20%
Deutsche Telekom	30%	1%	60%	30%
France Telecom	0%	8%	60%	20%
KPN	70%	16%	80%	40%
Portugal Telecom	0%	40%	20%	40%
TDC		4%	60%	20%
Telecom Italia	0%	0%	60%	10%
Telefonica	35%	12%	60%	20%
Telekom Austria	46%	6%	60%	10%
Telenor	30%	1%	60%	20%
TeliaSonera	11%	13%	60%	13%

Source: Nomura. The timeframe of planned investments varies from one operator to another

As indicated above, telecoms operators have yet to find the right balance between growth-enhancing investment and setting the right price premium to engage consumers in moving to faster access products.

1.5. The EU telecoms sector versus other regions

In 2012, the global telecommunications carrier services market was expected to grow by 4.2%. However, large regional differences exist in performance. While the EU telecoms sector is waning, in terms of traffic, revenues and users, in other regions of the world, where uptake of mobile broadband is much faster, there is significant growth.

There are differences as well in the global ICT industry, with North America, Asia Pacific and some emerging economies experiencing much higher demand for software and ICT services than in Europe[58].

In the US, the ICT market was expected to increase by 6% in 2012, with positive figures in all segments - especially in mobile data. With regards to emerging economies, data show that their share of global ICT spending has increased in 2012 to account for an estimated 27% of worldwide ICT expenditure. The Asia Pacific region remains dynamic despite some indications that regional economic growth is slowing. In 2012, ICT market growth in China and the BRIC countries was also dynamic, with spending in the latter also on the rise thanks again to mobile traffic. As a consequence of this growth, Brazil already has the world's fourth-largest telecommunications market. Data on demand for international bandwidth reflect this shift. Bandwidth demand on the trans-Atlantic route, which has long been the world's highest-capacity route, increased at a rate of 36% annually between 2007 and 2012. In the same period, demand for bandwidth on the Europe-Asia route via Egypt grew 87% per year and 70% from the US to Latin America.[59]

Figure 13: Demand for international bandwidth: New capacity deployments on major submarine cable routes
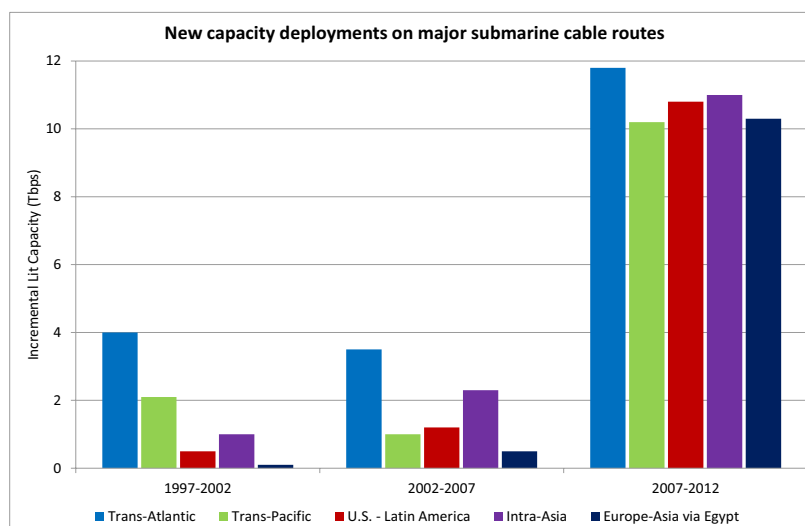

Source: TeleGeography

China is another example of the rebalancing of the international telecoms market. In 6 years, China doubled its weight in terms of telecom services revenues - from 6% to 14%. On the other hand, the EU25 market lost eight percentage points of world revenues - going down from 29% to 21% of World telecom services. US represented more than one quarter of the total market and Japan (11%) was half the size of the EU25 (Figure 14).

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[58] EITO 2012

[59] *International bandwidth demand is decentralising,* TeleGeography, April 2013
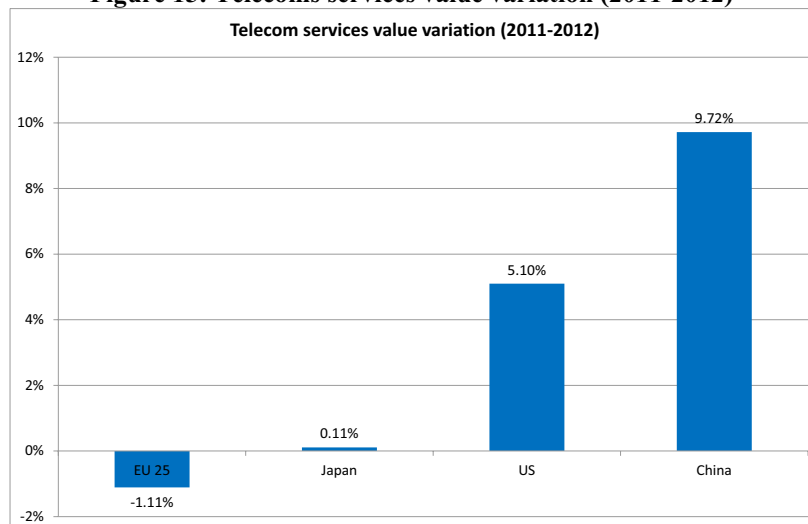
Figure 14: World telecom services revenues trends by area
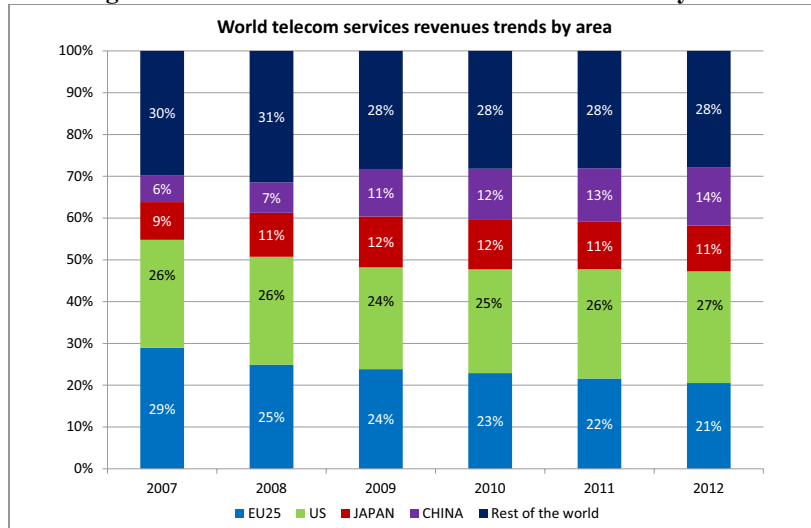
Source: EC services based on EITO 2012

In 2012 the telecom services market in China was estimated to have grown by 9.72%, almost double the growth rate of the US (5.1%) and in stark contrast to the decline witnessed in the EU (-1.11%) (Figure 15).

Figure 15: Telecoms services value variation (2011-2012)

Source: EC services based on EITO 2012