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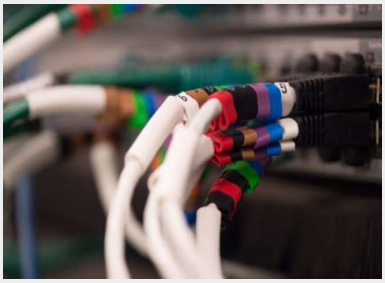
Audit brief



BROADBAND IN THE EU

September 2017

The European Court of Auditors is currently examining whether the European Commission and the Member States are on-track to achieve the Europe 2020 broadband objectives.

The 2010 Digital Agenda for Europe foresaw bringing basic broadband (> 144 Kbps) to all Europeans by 2013 and ensuring coverage of all Europeans with fast broadband (> 30 Mbps) by 2020 as well as at least a 50% take-up of ultra-fast broadband (> 100 Mbps) by 2020.

Recent studies estimate that up to 220-250 billion euro will be required to achieve the 2020 broadband targets. EU broadband infrastructure financing accounts for over 11 billion euro in the current programme period.

The auditors will consider whether the Member States have developed and implemented appropriate strategies to achieve the broadband objectives set by the Commission and how likely they are to achieve them. They will also look at the use of multiple sources of EU and national funding for broadband and the degree to which the Commission has supported and monitored the Member States in achieving the broadband objectives. To test this, the auditors have selected a sample of five Member States (Ireland, Germany, Hungary, Poland and Italy).

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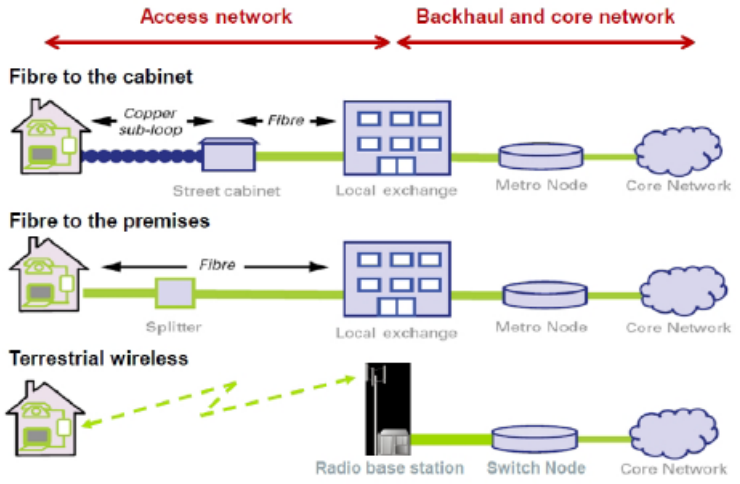
BROADBAND NETWORKS

The evolution of online services and IT-applications has increased the demand for quality and speed of the EU's telecommunication networks. Download speed, upload speed and latency[1] have been flagged by relevant stakeholders in a 2015 public consultation as the top connectivity features today and for 2025[2]. Improvements in all three aspects are required so that EU citizens can benefit from innovative services and applications, such as smart electrical grids; real-time cloud computing services and e-health services[3].

The term 'broadband' is used to refer to the capacity which can be provided for transmitting information at faster speeds through telecommunication networks. There is a wide range of technologies available to provide broadband access, each with its own technical characteristics (see ***Figure 1***).

Figure 1 – Infrastructure components in broadband networks



Source: ITU, Developing successful Public-Private Partnerships to foster investment in universal broadband networks, 2012.

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1 Latency is the delay with which data is transmitted from one end of the connection to the other. Users perceive low latencies as very fast responses.

2 Commission's 2015 Public consultation on needs for Internet speed and quality beyond 2020.

3 Commission Communication « European Broadband: investing in digitally driven growth", COM(2010)472.

As explained in the Commission "Guide to high-speed broadband investment"[4], a broadband network consists of three layers:

- a passive infrastructure (ducts, cables, masts, premises);
- an active equipment component implementing the technology (transponders, routers, switches, control and management servers); and
- delivery of services.

In addition, satellite connections can be used to serve remote areas, but at lower speed and higher latency.

Broadband deployment is essential to enable the current trend of automation and data exchange in manufacturing technologies (such as "Industrie 4.0" in Germany or "Fabbrica Intelligente" in Italy).

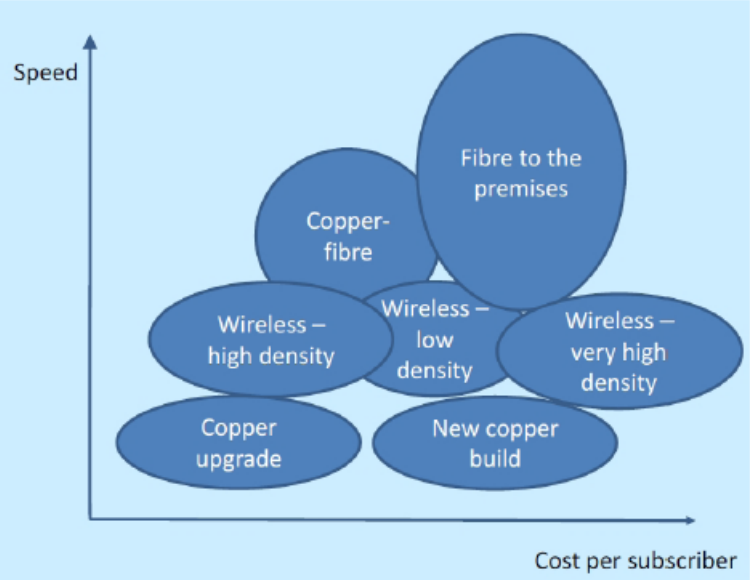
The regulatory and competitive environment for electronic communication in the EU has evolved throughout the years in the liberalisation of the market completed in 1998. Rules guaranteeing access to the networks of former monopolies were established and operators in liberalised segments of the market were subject to competition rules. Opening up former monopolies encouraged investments in infrastructure and delivered benefits to consumers in terms of choice, price and quality.

Operators still face a number of challenges due to the developments in the market and in consumer demand. The cost of broadband deployment, particularly Next Generation Access (NGA) networks aiming at significant improvements in speed and quality, is high and investing in areas with a low population density (such as rural areas) presents significant financial risks. In addition, fixed and mobile networks are converging and consumer demand has shifted from voice to data traffic. In this context, new emerging online players, whilst being subject to less regulation, challenge the role of traditional operators in providing communication services (TV, internet etc.) in addition to broadband/internet access.

[4] European Commission, Guide to High-speed broadband investment, 2014.

Each of these technologies has its own characteristics as well as costs and benefits, with existing copper cable being the cheapest technology for a lower speed, and "fibre to the premises" enabling the highest speed at a higher cost. Building new copper cables costs however almost the same as new fibre (see ***Figure 2***).

Figure 2 – Cost of provision of broadband via different technologies



Source: ITU, Strategies for the deployment of broadband, 2013.

ECONOMIC BENEFITS OF BROADBAND

Research indicates that investments in broadband infrastructure and the availability of broadband access contributes positively to employment and economic growth, despite involving considerable costs upfront[5]. A 2011 study concluded that an increase of 10 % in broadband connections in a country could result in 1 % increase in GDP per capita per year[6]. In 2012, the Commission estimated that a 10 % increase in broadband connections could raise labour productivity by 1.5 % over five years[7].

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5 R. Wieck, M. Vidal, Investment in telecommunications infrastructure, growth and employment – recent research, 21st regional ITS conference, Copenhagen, 2010.

6 L. Holt, M. Jamison, Broadband and contributions to economic growth: lessons from the US experience. Telecommunications Policy v. 33 p. 575-581; Global Industry Leaders' Forum, Broadband enabled innovation, ITU, 2011.

7 Commission Communication "The Digital Agenda for Europe - Driving European growth digitally", COM(2012)785, 18.12.2012.

EU POLICY OBJECTIVES FOR BROADBAND

In 2010, the Commission adopted the Europe 2020 strategy aiming at smart, sustainable and inclusive growth and containing seven flagship initiatives[8]. One of these was "A Digital Agenda for Europe" setting out targets for fast and ultra-fast internet to maximise the social and economic potential of Information and Communication Technologies (ICT), most notably the internet, for EU citizens and businesses. This Digital Agenda was updated in 2012[9]. It sets out three objectives with regard to broadband:

- by 2013, to bring basic broadband to all Europeans (> 144 Kbps and ≤ 30 Mbps[10]). This objective was achieved in 2016 mainly due to satellite coverage;
- by 2020, to ensure coverage of all Europeans with fast broadband (i.e. > 30 and ≤ 100 Mbps[11]); and
- by 2020, to ensure take-up of 50 % or more of European households to ultra-fast broadband (i.e. > 100 Mbps[12]).

In 2010, the Commission also issued a Communication that laid out a common framework for actions at EU and Member State to meet the Europe 2020 broadband targets. According to this strategy the Member States had to

- develop and make operational national broadband plans by 2012;
- take measures, including legal provisions, to facilitate broadband investment;
- use fully the Structural and Rural Development Funds, and
- implement the European Spectrum Policy Programme and the NGA Recommendation.

In 2014, the completion of the Digital Single Market[13] (DSM) where citizens and businesses can seamlessly access and exercise online activities under conditions of fair

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8 Commission Communication "EU 2020, A strategy for smart, sustainable and inclusive growth", COM(2010) 2020, 3.3.2010.

9 Commission Communication "A Digital Agenda for Europe", COM(2010) 245 final/2, 26.08.2010); Commission Communication "The Digital Agenda for Europe - Driving European growth digitally", COM(2012)785, 18.12.2012.

10 Between 14 minutes and 50 hours to download a two-hour movie

11 Between four minutes and 14 minutes to download a two-hour movie

12 Less than four minutes to download a two-hour movie

competition, irrespective of their nationality or place of residence has been made one of the Juncker Commission's 10 political priorities. This requires high-speed, secure and trustworthy infrastructures and content services and, as a consequence, fast broadband infrastructure to be in place.

In 2016, the Commission announced that it would propose an overhaul of the telecoms regulatory framework, based on the results of the evaluation of the regulatory framework under the Commission's Regulatory Fitness and performance programme (REFIT). Moreover, in September 2016, the Commission identified three strategic objectives for 2025 that complement those laid down in the Digital Agenda for 2020[14]:

- Gigabit connectivity for all main socio-economic drivers;
- all urban areas and all major terrestrial transport paths to have uninterrupted 5G coverage; and
- all European households, rural or urban, to have access to Internet connectivity offering a downlink of at least 100 Mbps, upgradable to Gigabit speed.

The Commission is following-up on these targets via a number of mechanisms[15]:

- a High Level Group has been set up to coordinate actions between the Member States;
- a Digital Assembly is held annually to discuss progress with relevant stakeholders; and
- Member State's progress in implementing their broadband plans is monitored by the Commission and a Scoreboard/Progress Report is published each year.

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[13] "A Digital Single Market Strategy for Europe", COM(2015) 192 final, 6/5/2015, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.

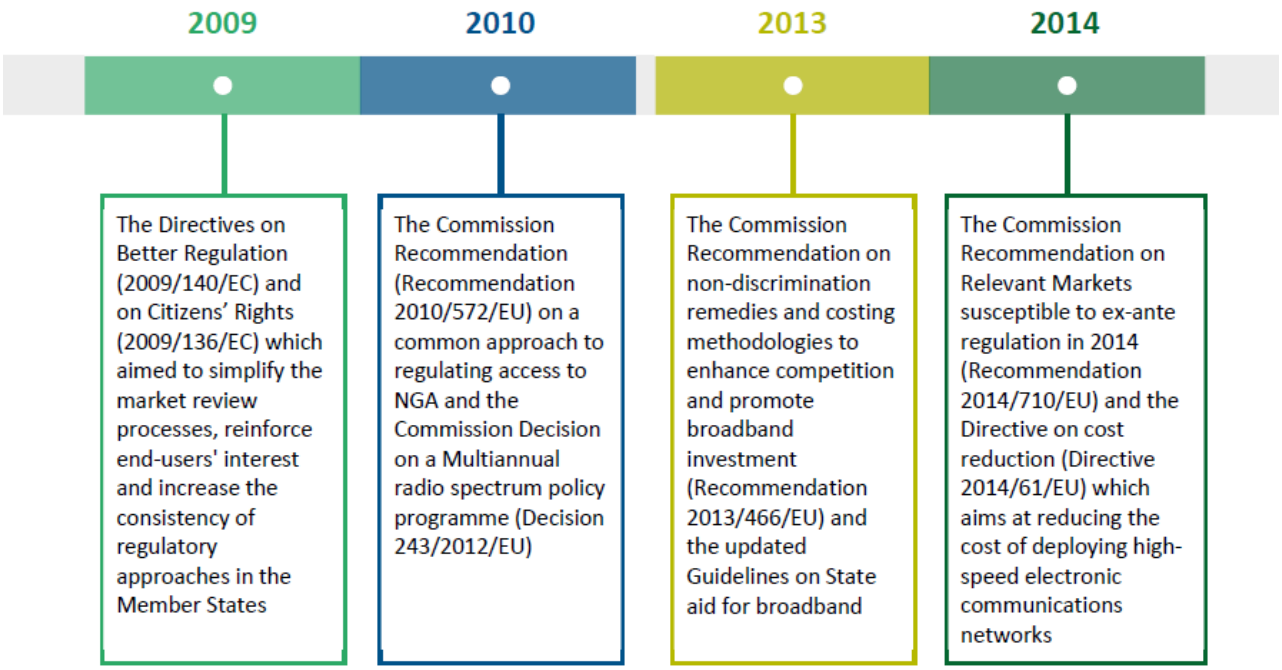
[14] Communication from the Commission: Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society (COM(2016) 587 final).

[15] See chapter 3 - Implementation and governance, the Digital Agenda for Europe (COM (2010) 245 final of 19.05.2010).

REGULATORY ENVIRONMENT

In parallel to the policy initiatives above, the regulatory framework has also evolved throughout the years. The most significant EU initiatives to roll out high speed internet to end users are shown in ***Figure 3***.

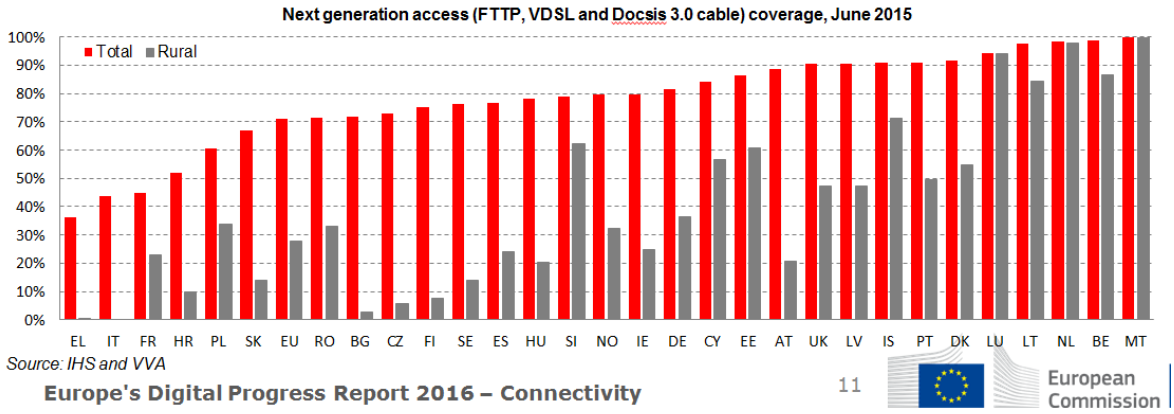
Figure 3 – Timeline of EU initiatives



STATE OF PLAY FOR BROADBAND WITHIN THE EU

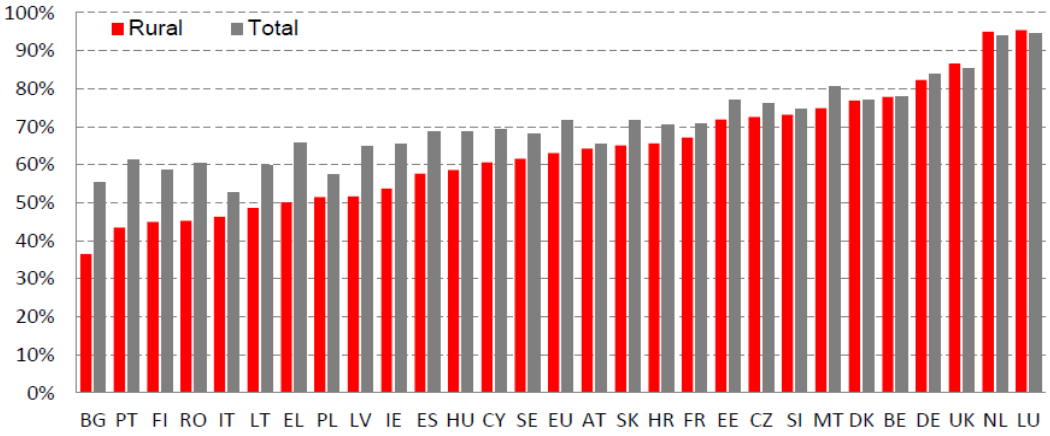
In relation to the expansion of broadband, the coverage of the NGA networks (speeds > 30 Mbps) across the EU increased by 23 % between 2011 and 2015 to reach 71 % of the population. However, according to the Commission, as illustrated in ***Figure 4***, the situation varies significantly between Member States with rural areas generally lagging behind. There are only nine Member States (Slovenia, Cyprus, Estonia, Denmark, Luxembourg, Lithuania, Netherlands, Belgium and Malta) where both urban and rural areas reached an NGA coverage of more than 50 % in June 2015.

Figure 4 - Next Generation Access Coverage, percentage of population, June 2015



With regard to take up, that is the subscription to broadband services, there are also significant variances between Member States, as illustrated in ***Figure 5*** below. In 2015 there are 10 Member States with both rural and urban subscription rates above 70 %: Estonia, Czech Republic, Slovenia, Malta, Denmark, Belgium, Germany, Netherlands and Luxembourg.

Figure 5 - Household fixed broadband subscription rate, 2015



Source: Eurostat

With regard to the take up at higher speeds in 2015, according to the Commission[16], 22% of the households in the EU subscribed to fast broadband access of at least 30 Mbps, and 8% subscribed to ultrafast broadband (at least 100 Mbps).

According to the Commission, an investment of 180 to 270 billion euro is needed in order to achieve the Digital Agenda broadband targets across the 28 Member States[17]. Specifically as regards the 100 Mbps take-up target (50 % of all fixed subscriptions) for 2020, the Commission identified an investment gap of 90 billion euro[18].

The market has also become more competitive over the last 10 years: the market share of the incumbents in the fixed broadband market stood at 41% in 2015; a drop from 56 % in 2004 (see ***Figure 6***[19]). There were only six Member States (Latvia, Estonia, Denmark, Austria, Cyprus and Luxembourg) where the incumbents still had a market share above 50 %.

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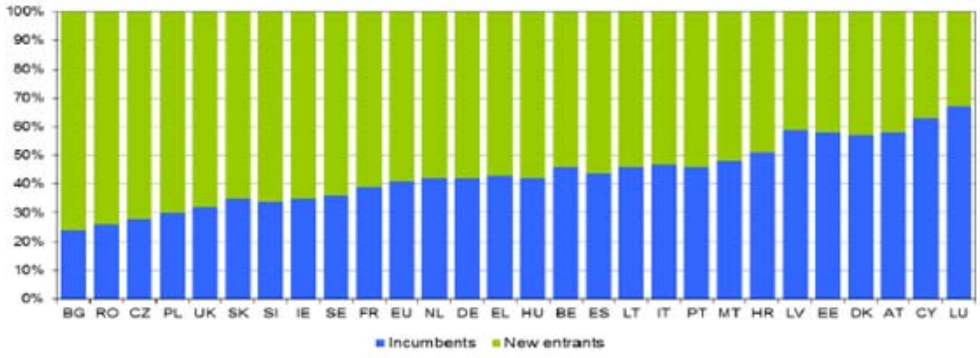
16 Europe's Digital Progress Report 2016 – Connectivity, European Commission.

17 Broadband Commission for Digital Development. Broadband for all; the state of broadband, 2014. ITU/Unesco, 2014.

18 European Commission, Roadmap, Evaluation and Reform of the Regulatory Framework for electronic communications networks and services (REFIT), June 2015.

19 Commission Staff Working Document, Evaluation of the regulatory framework for electronic communications accompanying the proposal for a Directive establishing the European Electronic Communications Code, SWD(2016) 313 final, 14.09.2016.

Figure 6 - Fixed broadband subscriptions – operator market shares, July 2015



ROLES AND RESPONSIBILITIES

The responsibility for implementation and rolling out broadband is divided between a number of bodies at EU and Member State level. At EU level, several Directorate Generals (DGs) and agencies in the European Commission have competencies in relation to broadband:

- DG Communications Networks, Content and Technology (DG CONNECT) is responsible for developing broadband policy and for adopting legislative initiatives and enforcing EU legislation in the field of electronic communications;
- DG Competition (DG COMP) is in charge of enforcing EU's competition rules and developing EU competition policy in all fields, including electronic communications and broadband. These activities include State aid and merger control;
- For shared management, DG for Regional and Urban policy (DG REGIO) and DG for Agriculture and Rural Development (DG AGRI) need to approve the programmes in Member States through which broadband projects are funded respectively by the European Regional Development Fund (ERDF) or the Cohesion Fund and the European Agricultural Fund for Rural Development (EAFRD); and
- the Commission's Innovation and Networks Executive Agency (INEA) is in charge of implementing most of the Connecting Europe Facility (CEF) programme budget for 2014-2020.

Moreover, a number of bodies support the harmonised implementation of electronic communications policy and legislation within the EU. In particular, it is up to National Regulatory Authorities to monitor and enforce EU electronic communications law in the Member States.

EU FUNDING FOR BROADBAND

The telecommunication private sector is the major investor in broadband infrastructures. For the segments of the markets where private investment is too risky or is not viable economically, the national/regional/municipal public sector can provide additional funding, and often is the major investor. Financing through EU funding sources is a third, but generally minor, investment stream to fund areas subject to market failures.

The funding provided from the EU budget has increased from under 3 billion euro for the 2007-2013 programme period to over 14 billion euro for the 2014-2020 programme period. For 2014-2020, broadband projects can be financed through five main mechanisms (see ***Table 1***):

Table 1 - Summary of funding sources for the 2014-2020 programme period

Funding sources	Total funding (million euro)
ERDF	6 018
EAFRD	922
EFSI	1 416
CEF	156
EIB loans	5 600
Total	14 112

In order to achieve the three 2025 objectives using the infrastructure developed for the Europe 2020, the Commission estimates a total cost of 515 billion euro. The Commission

expects that 155 billion euro of this should be provided by the telecommunication operators[20]. This leaves an investment gap of around 360 billion euro.

In Ireland the main challenge is the coverage of premises in sub-urban and rural areas with broadband, since these areas are financially un-interesting for commercial operators. The National Broadband Plan (NBP) published in 2015 aims to connect these premises through a public procurement process by subsidising a portion of the operators' investments. Currently, the Irish government has allocated 275 million euro for the NBP, among which 75 million euro from the ERDF. The tendering process is on-going.

In Germany, in order to implement its Digital Agenda 2014-2017 strategy, the government adopted in 2015 the national federal government broadband aid programme for communes. The fifth call for applications is ongoing in 2017 and the federal funding has reached over 4 billion euro. In addition, in some Länder regional funding is available for developing broadband, e.g. Bavaria with 1.5 billion euro. The EAFRD and ERDF provide further financial support amounting to 362 million euro for the 2014-2020 programme period, the EIB granted loans for the broadband infrastructure of over a billion euro. Germany aims for a mix of technologies, but gives high importance to the use of the existing copper infrastructure through vectoring.

In Hungary the National Infocommunication Strategy adopted in 2014 envisages the coverage of those less developed areas, where neither market nor public networks are available at present, and the signs of market failure appear due to the lack of current and planned developments. For that purpose two calls for proposals have been launched using ERDF and national funds. Currently, the Hungarian government allocated 216 million euro for deploying broadband, out of which 164 million euro from ERDF.

[20] Communication from the Commission: Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society (COM(2016) 587 final).

In Poland the objectives of the European Digital Agenda were adopted by the National Broadband Plan of 2014 which included the planned financing sources (Open Pension Funds, Polish Investments, and ERDF). Following the mid-term evaluation of the NBP, financing sources and the gap to be filled will be updated later in 2017. For the 2007-2013 programme period a number of investments in broadband were undertaken with financial support from the ERDF amounting to close to a billion euro. The main challenge for the 2014-2020 programme period is to incentivise the operators to invest in fibre optic networks in the rural areas where not every household can be connected at a reasonable cost even with the support of ERDF. About two billion euro of ERDF has been allocated to close this gap.

In Italy, the main challenge is the coverage of premises in mountainous and rural areas with broadband, since these areas are considered as financially not viable for commercial operators. The government adopted the Italian broadband strategy in 2015 to cover these premises and chose to implement the public concession model through a number of calls for proposal. So far two calls have been published. The ERDF and EAFRD contributions to interventions in these areas are estimated at 1.4 billion euro for the 2014-2020 programme period.

RISKS TO SOUND FINANCIAL MANAGEMENT

When preparing its audits the Court carries out a risk analysis of the policy area or programmes that the auditors intend to examine. For this audit on broadband the auditors identified the following risks:

- Difficulties for the Member States to put in place the necessary technological and regulatory changes to create a competitive environment which can attract sufficient private sector investments in broadband;
- overall public funding available for the implementation of Member States' broadband plans being insufficient to connect the not commercially-viable areas;
- weaknesses in the Commission's broadband strategy and Member States' broadband plans in terms of target setting and timing to reach these targets; and

- poor monitoring by the Commission of the Member States' progress in the implementation of the broadband plan.

ABOUT ECA SPECIAL REPORTS AND AUDIT BRIEFS

The ECA's special reports set out the results of its audits of EU policies and programmes or management topics related to specific budgetary areas.

Audit briefs provide some background information in relation to an on-going audit task. They are based on preparatory work undertaken before the start of the audit and are intended as a source of information for those interested in the policy and/or programme subject to our audit.

If you wish to contact the team in charge of this audit, please do so through the following mail address: **ECA-Broadband-Audit@eca.europa.eu**.