



LIETUVOS RESPUBLIKOS
SUSISIEKIMO MINISTERIJA



Kuriame
Lietuvos ateitį
2014-2020 metų
Europos Sąjungos
fondų investicijų
veiksmų programa

Europos socialinis fondas

Ex-ante Evaluation of the EU Funds Investments to the Enhancing of Digital Connectivity in the Multiannual Financial Framework 2021-2027

Summary

Client: LR Ministry of Transport and Communications

Vilnius, 2020



Summary

European Commission 2016 September. 14 d. Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Connectivity at the heart of the digital single market. The Road to a European Gigabit Society ”(COM (2016) 587 final) (the Gigabit Society Communication) encourages Member States to contribute to the three strategic goals for 2025 implementation: ensure gigabit connectivity in areas where there are socio-economic development initiatives; ensure 5G connectivity in all urban areas and on all major land transport arteries; to enable all households to use an Internet connection with a speed of at least 100 Mbps. Implementing these challenges would respond to the growing need for better and faster internet, which can be ensured by ultra-high-bandwidth networks.

Analysis of the current situation

By the order of the Ministry of Transport and Communications of the Republic of Lithuania, the Preliminary Investments of the EU Funds into the Activities of Improving Digital Connectivity in 2021–2027 Evaluation (hereinafter referred to as "Evaluation"), the purpose of which is to prepare for the implementation of the objectives of the European Regional Development Fund and the Cohesion Fund for the period 2021-2027 by investing in improving digital connectivity. Evaluation identified the need for EU funds to invest in the EU's gigabit connectivity targets, based on an analysis of existing private and public infrastructure and service quality. The evaluation also identified measures to meet the demand and use of very high capacity networks and assessed the possibilities and mechanisms for providing technical support and expertise, including broadband competence offices, to strengthen the capacity of local stakeholders.

Based on the analysis of the existing private and public infrastructure and service quality, it was found that:

- In Lithuania, the coverage of public fixed communication networks reached 76.9 percent. The best public fixed communication networks are developed in the regions that include major Lithuanian cities: coverage in Klaipėda region in 2019 accounted for 84.7 per cent, in Vilnius region - 83.4 per cent, in Kaunas region - 82.6 per cent. The least developed fixed networks are in Alytus (62.7%), Tauragė (62%) and Utena (56%) regions;
- 2019 Telia Lietuva UAB had the most developed fixed network (76.1% of all residential premises). UAB CGates is the second operator with the most developed fixed network, which accounted for 22.8% of all dwellings.
- According to the structure of fixed line service users, the largest part (375.3 thousand service users) use Internet speeds from 100 Mbps to 1 Gbps. Also 250.2 thousand service users use Internet speeds between 30 and 100 Mbps. The speed of more than 1 Gbps in Lithuania reaches 3152 service users.
- In 2016–2017, the investment project for the development of the Next-generation Internet access infrastructure in Lithuania was prepared on the order of the Public Institution Placiacjuostis Internetas. In the project, a map of the coverage of Lithuania's new generation access network infrastructure (both fixed and mobile) ensuring a data transmission speed of at least 30 Mbps was compiled according to current and planned infrastructure and networks of communication operators until 2020. Assessing the the planned installation of fixed and mobile next-generation Internet infrastructure by 2020, it was assessed that after the implementation of the three-year development plans by the providers, in 2020. the possibility of a next-generation 30 Mbps

Internet access will exist in an area of 30,177 km², which makes up 46.22 percent of the total area of the territory of the Republic of Lithuania. In the case of both geographical and household coverage, the implementation of infrastructure development plans by 2020 by providers will ensure that 99.99 percent of households in municipal centers (including 5 major cities) will have access to next-generation internet access, while in rural areas the figure will reach 81.27%.

- On the basis of the next-generation Internet access maps developed in 2017, maps of existing broadband infrastructure and built in the near future (within 3 years, until 2022) in Lithuania with “white areas” of the 100 Mbps infrastructure were created. The technological analysis of the methodology for calculating the coverage of 100 Mbps mobile infrastructure and its initial coordination with RRT and operators showed that it is difficult to accurately calculate the coverage of future 5G networks, therefore the same LTE network speed and coverage calculation was used for preliminary calculations methodology. Preliminary indications are that at the low mobile frequencies used for network coverage, the allocation of additional spectrum from LTE to 5G would not significantly increase network coverage: by about 10-20%.
- In 2014–2020 in order to ensure better broadband access in rural areas, the project “Development of Broadband Infrastructure in Rural Areas” was implemented in two stages. In the first stage, 485 km of fiber-optic cable lines were laid, 432 objects were connected, and new infrastructure reached more than 400 settlements. In the second stage of the project, 342.7 km of fiber-optic cable lines were laid, 400 objects were connected, 79 thousand of population gained access to new or better IT infrastructure. The project “Development of Broadband Infrastructure in Rural Areas” aimed to create opportunities for public administration and economic entities and residents of rural areas to use broadband, improve the availability and attractiveness of services and competitiveness in these areas. In 2018, the project “Development of Next Generation Internet Access Infrastructure” was launched and is planned to be completed in 2021. The aim of this project is to create preconditions for residents to connect to the next generation access network in the territories that are not currently covered by the new generation access infrastructure (“white areas”), in which the development of the said infrastructure is not planned for the next three years. It is planned that after the implementation of the project, broadband will cover 254 thousand household areas and cover 9,150 km² of “white areas”. Implemented and ongoing projects have contributed to the improvement of broadband coverage and penetration rates. Total fixed broadband penetration in 2019 in Lithuania reached 68 percent of households and fell below the EU average of 77.6%, but during 2014-2019 penetration of broadband in Lithuania increased by 9.6 percent when EU growth was 7.7% point.

The evaluation also provides statistics on the demand for next generation Internet access infrastructure and services:

- During 2014–2019 fixed broadband penetration at a speed of at least 100 Mbps increased from 6.2% to 32%. Although growth in Lithuania was higher than in the EU (in the EU 4.6% in 2014 and 25.9% in 2019, respectively), the target set in the Digital Agenda for Europe to ensure that 50% all Lithuanian households would be using 100 Mbps and faster internet by 2020 will not be reached. Coverage of 30 Mbps and faster broadband connection in Lithuania in 2019 amounted to 69.4 percent of households (49.2% in 2014) (EU average in 2019 - 85.8%);
- Mobile broadband penetration in Lithuania in 2019 amounted to 103.2 subscribers per 100 subscribers, while the EU average is 100.2 subscribers. Lithuania exceeded the EU average only in

2019. Since 2014 until 2019 the number of EU subscribers increased less than in Lithuania - by 50%, compared to 87%. accordingly.

- 4G connection in Lithuania covers almost all households in the country (99.8%), while the EU average is 96.5%. It should be noted that 5G connectivity (percentage of allocated spectrum in relation to total harmonized 5G spectrum) in the EU 2020 amounted to 20.5 percent, while in Lithuania - 0 percent. Thus, although Lithuania is leading in the scope of 4G connection, 5G connection is not ready yet.
- Total investments of operators in electronic communications infrastructure in 2014–2019 decreased by 10.2% - from 82.3 million EUR up to 73.9 million. Eur. Operators' investments in electronic communications infrastructure in 2014 accounted for 13.6 percent. of total revenue, 2019 - 10.4 percent. During this period, most investments were made in the development of broadband communication networks - in the development of mobile 4G communication and fiber-optic communication networks.
- Broadband Internet access was not available for the 22.8 percent. of rural population in 2019. It should be noted that the gap between urban (excluding large) and rural areas decreased over the period of 2014-2019. In 2014, in other cities, 64.5 percent of households had broadband Internet access, while in villages - 56.7 percent. (7.8 percentage points gap) and in 2019, 79.3 percent of households had access in other cities while in rural areas 77.2 percent. of households had broadband access (2.1 percentage point gap).

During the evaluation, a qualitative and quantitative survey of operators was conducted in order to determine the planned investments, during which it was established that almost half of the operators participating in the survey by 2022 plans to invest in broadband infrastructure. It is tentatively estimated that private investment could reach 7.2 million. Eur.

Investment planning should take into account the socio-economic situation in Lithuania and the differences between the Capital and the regions of Central and Western Lithuania. In the region of Central and Western Lithuania, the population is declining faster and the population is aging. Accordingly, this region is less attractive for foreign direct investment (the difference from the Capital region in 2019 was 6.3 times). GDP per capita in the region of Central and Western Lithuania is lower by 44%, and the average disposable income per household is lower by 21.5%.

Sustainable investment model

An assessment of the current broadband situation, the identification of "white areas" and the planned investments of operators in the near future (until the end of 2022) show that without state intervention, the gigabit connectivity targets set in EU strategic and national documents will not be achieved.

To ensure gigabit connectivity goals EU, investments from the European Regional Development Fund (ERDF); European Social Fund (ESF); Economic Recovery and Resilience Fund (RRF); Connecting Europe Facility 2 (CEF2) can be used. Projects of Public Institution Placiajuostis internetas should be continued by providing broadband infrastructure in rural, remote areas due to the EU-wide recognition of this model and the experience gained in its application.

Factors and challenges limiting development

One of the main challenges for the development of broadband infrastructure is the negative economic return on investment in sparsely populated areas. In rural areas, the population is constantly declining, which is why existing customers are also disconnecting. For these reasons, operators do not plan to

develop infrastructure in these areas. Development is also severely constrained by the regulation of communication towers by classifying them as special structures. Design takes a very long time, and the process of obtaining building permits in municipalities differs due to the interpretation of different legal acts or the reluctance of municipal representatives to allow the development of infrastructure. This is a key factor holding back already planned investments, both public and private. The construction of fiber-optic cable lines development is restricted without the consent of the landowners of laying infrastructure through their land. Also, the construction of communication towers is hampered by resistance from residents due to misconceptions about their impact on health.

Stimulating the demand for and use of ultra-high capacity networks

The Gigabit Society Communication states that demand for network capacity can be stimulated through public Internet access, by providing access to the Internet in libraries, stations, educational institutions and other public institutions. This provision was included in the Information Society Development Program 2014–2020 “Digital Agenda of the Republic of Lithuania”.

The Gigabit Society Communication also states that ultra-high-bandwidth networks are needed by educational institutions to ensure the development of digital skills through the use of the latest online educational services. The digitalisation of public services increases the demand for and use of networks due to the need for continuous provision of services to citizens and businesses. The digitalisation of the transport sector, the deployment of intelligent traffic management systems, etc. also contribute to increasing the demand for networks.

In the Next generation Internet access development plan in the Republic of Lithuania in 2014–2020 it was identified that the population's use of the internet was not sufficient for the purposes set. This plan also emphasizes the need to increase the digital skills of the population, to implement e. services in order to create greater demand for network use.

Internet access services in Lithuania in 2019 were used by 81.5 percent of households. According to this indicator, Lithuania was 5th from the end among the EU countries (EU average - 90.5%).

Analyzing the promotion of demand in Lithuania in public institutions, the Assessment states that:

- In order to stimulate the demand and use of networks, in the period of 2008-2013 a continuous investment project was implemented in Lithuania, during which public Internet access was installed in more than 1,000 libraries. This is particularly important in promoting the use of the Internet in rural areas. During 2014-2020 the project “Encouraging the population to use the Internet intelligently in the renewed public Internet access infrastructure” is being continued. The project started in 2018 and should be completed by 2021. Its value is 10.7 million. Eur. The project is funded by the European Union Structural Funds Investment Operational Program 2014–2020. The target products of the project are upgraded 1,200 public Internet access points (1,000 of them in rural libraries) and 3,000 library staff trained in the use of hardware and software. Upgraded public Internet access points provide access to Internet speeds faster than 30 Mbps for people in remote areas.
- Information Society Development Committee implements the project “Connected Lithuania: Efficient, Secure and Responsible Lithuanian Digital Community” under the same measure as the above-mentioned project. Taking into account the fact that Lithuania lags behind the EU average in terms of the number of people using the Internet, the project is aimed at 500 thousand. Lithuanian population who do not use the Internet or have poor digital skills. The project's educational activities use the public Internet access infrastructure created in libraries. In order to train such a population, a network of e.scouts (volunteers) and 'digital leaders' that encourages

people to discover the opportunities offered by ICT, to help them learn and to start using the Internet. The project aims to increase the demand for the Internet - at least 87% of Lithuanian population would use Internet regularly and would not exceed 10% of population who have never used the Internet. The project is financed from the European Regional Development Fund and the state budget of the Republic of Lithuania.

The assessment also identifies groups of measures most commonly used to increase demand for broadband internet:

- Measures to encourage the use of devices: Broadband use is encouraged in less affluent households by distributing devices (such as personal computers), subsidizing their purchase, or encouraging employers to provide computers for home use by employees (various tax incentives apply). However, these measures target a relatively small section of the population due to significant budgetary constraints;
- Measures to encourage the development of services and applications: e-government solutions and digital services developed in the local language create the need for the population to use the Internet. One of the reasons why some households do not use the Internet is the lack of need, so moving essential services to the digital space can encourage them to connect and use Internet access.
- Measures to promote digital literacy and skills: Training the population with the lowest digital skills (such as the elderly, the unemployed or the low-educated) to use the Internet can stimulate demand for the Internet. Developing children's digital skills is also crucial, as they not only learn to use the Internet themselves, but also encourage their parents and other loved ones to improve the skills that help them learn.
- Reducing the cost of connection for households without broadband access: In order to connect more remote, rural areas and not impose significant connection costs on their inhabitants, states usually intervene by subsidizing network development, reducing operator fees by facilitating coordination of broadband infrastructure development. with civil engineering works, i. y. demand is stimulated by increasing supply.

The evaluation notes that most demand-side measures are small-scale and targeted at specific target groups, and that local measures in a small administrative unit are most beneficial, as local authorities are best aware of the needs of their community. The evaluation distinguishes 4 groups of users, which are grouped according to their capabilities and willingness to pay for Internet services and which require different packages of tools:

- The user group "cannot pay and does not intend": in order to encourage the use of high-speed Internet (100 Mbps and more), this group needs the use of this high-speed Internet-based services outside the home (library, school, etc.). This should encourage consumers, in particular, to want to pay for a faster internet service. In the long run, this group will also need subsidies for connection / use of the Internet.
- User group "can pay but does not intend": in order to encourage the use of high-speed (100 Mbps and more) Internet, this group needs to use this high-speed Internet-based services outside the home (library, school, etc.). This should encourage consumers, in particular, to want to pay for a faster internet service. Measures are needed to aggregate demand (obliging users to connect to the new network and become subscribers) in order to increase the use of the Internet and provide a guarantee to infrastructure managers that the networks will be used.

- Consumer group "can't pay but would like": this group needs subsidies or social tariffs (reimbursement of the cost of connecting to the Internet), but this carries the risk that some consumers will only use the Internet until they are compensated.
- Consumer group "can pay and wants": this group does not require public intervention.

The evaluation points out that, once the original issue of connecting to the Internet has been resolved, the main dilemma for consumers remains the need to connect to an even faster Internet, such as 100 Mbps and above. All of these measures have helped to meet the demand targets for broadband networks in the past, but in terms of securing 100 Mbps and faster broadband, these measures have limited impact, except for encouraging high-speed internet use outside the home by children and then encouraging older family members to use faster internet.

The highest speed demand until 2025 will be caused by cloud computing, progressive media and entertainment, and computer games. It should be noted that the highest speed is needed for activities that require more digital skills and the demand for them will increase the better the population's mastery of technology and knowledge of the opportunities offered by ICT. Projects in Lithuania aimed at expanding public Internet access and promoting the population on the Internet should contribute to the higher demand for networks, therefore it is proposed to continue them in the new programming period.

Technical assistance

The EC General-Directorates have encouraged Member States to participate on a voluntary basis in the creation of an European network of broadband competence offices. The main purpose of setting up a network of broadband offices is to help Member States achieve the objectives of the Digital Agenda for Europe, with a particular focus on the European digital single market and the Gigabit society.

The evaluation notes that broadband competence offices are being set up in all Member States, that national offices are being set up in Eastern Europe (usually the ministry responsible for the communications sector), and that regional broadband offices are predominant in Central and Western Europe. It is up to the Member States to decide whether the office of excellence for broadband should be national, regional or mixed, for example operating in several regions.

The main functions of the Broadband Competence Offices are to promote the efficiency and effectiveness of investment in broadband development; to support the implementation of the digital single market through public investment in broadband, such as the ERDF and the EAFRD; provide assistance and advice to residents and businesses on broadband deployment (coverage, penetration, quality of service, etc.), etc.

The evaluation concludes that taking into account the functions of broadband competence offices, their role in broadband implementation, the desire for broadband competence offices to exchange good practice with each other (within the country and with other EU Member States) in the implementation and development of broadband, that Lithuania Public investments for the implementation of broadband communication projects are distributed through the Ministry of Transport and Communications of the Republic of Lithuania, that broadband development projects are implemented by Plačiąjuostis Internetas, it is currently not needed to change the existing system and it is proposed that the Ministry of Transport and Communications of the Republic of Lithuania perform the functions assigned to the broadband competence offices.

Monitoring mechanism

In Lithuania, broadband communications are monitored by the Communications Regulatory Authority. Undertakings engaged in electronic communications activities must submit reports to the

Communications Regulatory Authority on the performed electronic communications activities every 3 months. Reports are provided through the Periodic Reports Subsystem of the Electronic Services Information System. The Communications Regulatory Authority analyzes, processes and summarizes the data of received quarterly reports on the activities of electronic communications networks and / or service providers.

Public fixed network providers shall also, by 31 January each year, must provide the Communications Regulatory Authority with information on the geographical and technological development of the public fixed communication networks managed by them, indicating the addresses of the buildings to which the communication lines managed by them under their ownership are connected and the types of these communication lines. This information must be provided through the Operator Networks subsystem of the Electronic Services Information System of the Communications Regulatory Authority. The evaluation notes that the data collected are used separately to assess coverage, i. E. coverage over a certain speed internet connection is assessed through the connection of fixed networks to households, excluding mobile coverage. The Communications Regulatory Authority intends to start the integration of fixed and mobile data in the assessment of coverage in certain cases, therefore the implementation of this monitoring change could improve the assessment of coverage.

The Communications Regulatory Authority publishes annual and quarterly reports, which provide depersonalized and summary information on the situation in the communications sector. The data collected are provided annually to the European Commission, which publishes aggregated country information according to the Digital Economy and Society Index.

Legal analysis

An analysis of EU, national and regulatory legislation relevant to the development of broadband has shown that changes are needed in the rules for building, electronic communications and land use. The construction of communication towers is limited by the strict requirements for the special status of a building granted to towers 30 m and higher. Requirements for design, obtaining building permits, etc. suspends part of the investment, which limits both public and private projects of operators. Until 2017 the communication towers were classified as simple structures, so it is proposed to make a change by restoring the previous procedure. In order to build fiber-optic cable lines through the land of private individuals, the operators themselves need to negotiate consents with the owners and, in their absence, abandon infrastructure development plans. Such regulation is stricter than for the construction of other networks, such as electricity, so it is proposed to at least harmonize permit requirements. It is also suggested that the design of new commercial or residential buildings should include the layout of the mobile infrastructure, as is the case for other engineering infrastructure.

Directions to improve broadband development

After reviewing the proposals submitted by the EC Commission to the Member States for the implementation of broadband communication, it was established that in Lithuania these proposals are being implemented in most cases.

According to the proposal for a Regulation of the European Parliament and of the Council on the European Regional Development Fund and the Cohesion Fund, in the 2021–2027 funding period, while improving digital connectivity special attention will be paid to high-capacity networks and the connection of households and businesses. During the ending 2014–2020 funding period, investments were made in the development of broadband infrastructure so that all residents, businesses and public sector institutions throughout Lithuania would have access to and use of broadband Internet access.

By the implementation of the 2014-2020 EU Funds Investment Operational Program Priority 2 "Promotion of Information Society" 2.1 Investment Priority "Broadband Deployment and Development of High Speed Networks Supporting New Technologies and Networks for the Digital Economy" 2.1.1 specific objective "Increase the availability and use of broadband electronic communications network infrastructure in areas where development of a next generation of access infrastructure and services cannot be guaranteed by the market " it was sought contribute to the targets of Digital Agenda for Europe that at least half of households use an Internet connection of 100 Mbps and faster. During the funding period of 2021–2027, Lithuania should contribute to the European Commission's 2016 Communication "Connectivity at the heart of the digital single market. The Road to a European Gigabit Society " target to ensure that all households have access to at least 100 Mbps Internet access. Contributing to this goal will require investment in infrastructure to ensure that high-speed internet networks cover the whole country. This requires a National or Regional Broadband Plan, which sets out the investment gaps to be addressed in the Communication "Connectivity at the heart of the digital single market". The Road to a European Gigabit Society. It should be noted that the assessment will provide an opportunity to develop a National or Regional Broadband Plan.

The EC Communication "Europe's 5G Action Plan" sets out 6 key actions that would encourage investment in 5G networks. It should be noted that not all actions are relevant to Member States individually, as some actions are carried out at international level. Lithuania has already implemented or is implementing the recommended actions for Member States.

The EC Communication "Connectivity at the heart of the digital single market. The Road to a European Gigabit Society "recommends that Member States take three initiatives to create a gigabit society: 1. Combining public support through grants and financial instruments; 2. Review the progress of national broadband plans and, by 2017, update them to cover the period up to 2025; 3. Establish and support a network of EU Broadband Competence Offices.

In order to implement the first initiative, this Evaluation is being carried out, which, given that the new funding period is tentatively set at 10% for the promotion of connectivity will be lower than in 2014-2020, will advise which model of sustainable investment in broadband infrastructure to choose.

The second initiative is implemented in 2017 and 2019. The Lithuanian Information Society Development Plan 2014–2020 was reviewed and updated in 2014. program "Digital Agenda of the Republic of Lithuania". The editorials mention the gigabyte society and the goals set to achieve its vision.

The third initiative, to set up and support an EU network of broadband competence offices, has also been implemented. The functions assigned to the competence offices in Lithuania are implemented by the Electronic Communications Division of the Networks and International Relations Department of the Ministry of Transport and Communications of the Republic of Lithuania.

Conclusions and recommendations

The assessment provides the information needed to provide the State aid scheme (s) as well as strategic proposals and recommendations "know it" or "do it". The key conclusion and recommendation is that public intervention is needed because operators do not plan to invest in rural, remote areas with low population density.

Assessing that 5G would be a sufficient technology to ensure 100 Mbps speed, the number of households in the "white areas" reaches 136 thousand. The proposed recommended scenario to cover these households tentatively envisages the construction of 215 communication towers, the construction of 452 km of fiber-optic cable lines for the connection of towers and the construction of 2,249 km of fiber-optic cable lines for the connection of households. An estimated € 130.2 million is needed to implement this

scenario. Eur. In order to cover the TEN-T "white areas" where 100 Mbps speeds are not guaranteed, 200 communication towers and 600 km of fiber-optic cable lines need to be built to connect them. The investment required for this purpose would amount to 26.2 million. A total of € 156.4 million is needed to cover households and TEN-T roads. Eur according to the recommended scenario.

If 5G is not considered to be a sufficient technology to cover the "white areas" of households, 64,462 km of fiber-optic cable lines would have to be laid in order to connect all 429,546 uncovered households via fiber-optic cable lines in a realistic scenario, with the required investment amounting to € 1.917 billion. Eur.

Recommendations for a detailed investment project are provided, which would indicate detailed technical solutions for technologies that can optimally cover the "white areas" and anticipate the specific investments required for this. There are also proposals for easier implementation of the planned investments - it is proposed to facilitate the regulation of construction and land use for broadband infrastructure, it is recommended to dispel the myths related to 5G technology prevailing among the society. The necessary actions are foreseen to facilitate the implementation of the measures provided for in Directive 2014/61 / EU. It is also proposed to continue digital literacy measures to increase the use of broadband networks and increase demand.