

Application form for a project under the Recovery and Resilience Facility

1. Name of the project.
Large-scale deployment of digital infrastructure on the territory of Bulgaria
2. Description of the project (targets, main activities).
<p>The digital transition is key to strengthen the social and economic resilience, to achieve sustainable growth potential and job creation. The COVID-19 pandemic has accelerated the trends towards the digital transformation by reinforcing the significance of digital infrastructure, online education and SMEs digitalisation. Broadband access is recognized as one of the main tools for improving the economic and social well-being of the population. It is becoming an increasingly important factor not only for the competitiveness of enterprises, but also for supporting social inclusion, while simultaneously expanding the opportunities for development and use of digital-based services, including e-Government services. The deployment of high-speed connectivity can lead to a significant increase in gross domestic product, employment, the competitiveness of national economies on the international stage and increase the quality of life.</p> <p>Broadband access is an essential element of digital transformation. Non-discriminatory, safe and effective Internet access must be provided as a service in the public interest so that everyone can participate in economic and public life. Without high quality and sustainable digital infrastructure, not only is the efficient use of digital services limited or difficult, but also the use and development of technologies and various innovative solutions.</p> <p>The next generation of mobile communications (5G) is a key technology to achieve digital transformation and are therefore the focus of the public's attention. 5G will be a key component of the gigabit networks of the future and will require entirely new ICT architectures.</p> <p>For the private and public sectors, 5G offers huge opportunities for innovation and added value. This technological evolution has the potential to improve the quality of life through intelligent health services, connected mobility, e-government, respectively m-government and, last but not least, unlimited access to sources of information.</p> <p>Digital infrastructure is a prerequisite for unrestricted access to public services, regardless of the place and time as it will create more opportunities for people to overcome economic and social isolation – local enterprises will be facilitated and motivated to implement new business strategies and models, to develop innovative products and services competitive on regional and international markets, labor mobility will allow the creation of new jobs and the acquisition of market niches. Citizens, for their part, will not only have easier access to digital services in the field of health and social services, but also to online education and courses for professional qualification, cultural exchange, etc.</p>

Objectives

- ✓ The main objective of the project proposal is to build symmetric gigabit networks for access across the country and creating conditions for connecting with networks on European level. The sustainable optical network, combined with a universally accessible mobile network, will allow every citizen, every business and every public institution to use digital opportunities on equal terms throughout the country.
- ✓ The main road networks will be covered by secure 5G connectivity to ensure high-speed broadband coverage providing speeds of up to 1 Gbps for the main roads included in the TEN-T network – motorways Trakia, Hemus, Struma, and the link to Romania and Turkey.
- ✓ The digital divide will be overcome to the maximum extent by deploying digital connectivity in remote and sparsely populated areas and by increasing the digital competences of the population, by providing sufficient capacity and speeds up to 1 Gbps for end customers through various technologies such as optics and 5G.
- ✓ Prerequisites for improving the processes of digitalization and widening the accessibility to administrative, health and social services in the country will be created.

Main activities

I. Pillar A – Deployment of 5G connectivity along key transport corridors

The pillar aims to create conditions for the construction of short-range wireless access points, as well as to encourage joint use of infrastructure. The deployment of ultra-high-speed optical networks is an absolute prerequisite for the deployment of 5G equipment and the provision of continuous network coverage and capacity. The maximum capacity that will be available to the base stations will reach 10 Gbps, and for end customers the network will be able to provide speeds up to 1 Gbps.

Efforts will be aimed to ensure 5G connectivity along transport corridors, thus creating conditions for effective use of intelligent systems in order to promote innovation and investment by applying means of increased flexibility in the use of spectrum. Such new technology will create conditions for development of smart cities and intelligent transportation systems, as well as a new way to become fully integrated by allowing massive simultaneous connections and ubiquity of network, even under high mobility situations or dense populated areas. In this way, 5G will become a key enabler for real Internet of Things and its corresponding Internet of Vehicles.

The existing infrastructure on highways and main roads will be modernised and new sites will be deployed in order to move towards uninterrupted 5G connectivity in order to achieve continuous coverage and sufficient capacity. The proposal is based on 5G on 700 MHz/3.6 GHz bandwidth.

The intervention will cover the following transport corridors:

European Transport Corridor No 4	Vidin – Sofia – Pernik – Kulata & Sofia – Plovdiv – Kapitan Andreevo
European Transport Corridor No 8	Gyueshevo – Sofia – Plovdiv – Plodovitovo – Burgas – Varna

European Transport Corridor No 9	Ruse – Dimitrovgrad – Makaza
European Transport Corridor No 10	Kalotina – Sofia – Plovdiv – Plodovitovo – Kapitan Andreevo
Transport Corridor to Varna	Botevgrad – Veliko Tarnovo – Shumen – Varna

The national corridors will create the necessary conditions for connection with those in neighboring countries using administrative support and arrangements such as the agreement concluded between Greece – Bulgaria – Serbia for connectivity along the Sofia-Thessaloniki – Belgrade corridor. The envisaged interventions take into account these initiatives and provide for the possibility of corresponding connectivity with neighboring countries, including Romania and Turkey, although cross-border sections of the 5G Corridor as a whole cause less market interest, but the parallel use of RRF and CEF2 funding would overcome these obstacles and create conditions for building effective gigabit connectivity in the area, which in turn will stimulate the development and supply of cross-border digital services.

II. Pillar B — Improvement of coverage in settlements with focus on peripheral, sparsely populated and rural areas

The situation in rural areas is unsatisfactory, with only 1% of households benefiting from VHCN technology, which is well below the EU average of 20%. The use of FTTP (Fiber to the premises) networks has increased to 42%, but not in rural areas, where it is used by only 1% of households, at 18% per EU level.

Private operators are reluctant to invest in those areas that are mostly remote, rural areas with low population density, which is due, on the one hand, to significant infrastructure deployment costs and, on the other, to the low profitability of such investment. Another factor that makes private investments in the respective zones unattractive to private operators is the relatively low purchasing power of local residents and thus the number of potential customers of telecommunications services compared to investments would be significantly unprofitable.

This pillar will ensure connectivity at the last mile level with high-speed optical internet, providing speeds of up to 1Gbps to end customers. The main objective is to cover cities with larger populations and their peripheral settlements in order to ensure rapid national coverage of 5G and to ensure high-speed access to broadband for maximum number of residents. For this purpose, the capacity to each settlement will be 10 Gbps. Depending on the number of inhabitants in the settlements, the final customer transmission can be both through an optical fixed network and through a mobile network. Services up to 1 Gbps will be available in households.

The focus is placed on cities with population of more than 1000 people, thus the coverage of over 200,000 households in the country is planned.

About 15 % of all settlements with a population of less than 1000 are rated as places of historical importance and/or tourist centers, where high capacity coverage is also required. Given the limited resources, the possibility of intervention in at least 5% of these settlements will be analyzed.

Settlements with a population of between 5 000 and 10 000	Maximum number of settlements with a total population of nearly 500,000
Settlements with a population of between 1000 and 5 000 people	> 60% of settlements
Settlements of Historical Importance and Tourist Centers	<5% of settlements with population under 1000 people

III. Pillar C – Development of state supported network by increasing its transmission capacity

The optical connectivity built under Pillars A and B will be used to develop and upgrade the public administration network, as well as the PPDR (Public Protection and Disaster Relief) network for public safety, protection of the population and response to disasters, by connecting a maximum number of municipalities. The efforts will be concentrated towards optimization of the developed in the regional and municipal centers distribution networks by updating the active equipment and migration of services in the upgraded state network.

The activity is aimed at:

- Increasing the transmission capacity of the state network in the country through delivery and commissioning of active equipment required for the effective operation of the optical services networks;
- replacement and upgrade of the components of the existing network;
- migration of existing e-services into the upgraded state network through integration of the old infrastructure to the new with continuity of the services while carrying out of the relevant infrastructure tests;
- creating preconditions for increasing the transmission capacity of all services with public institutions built under other projects and initiatives.

This activity will ensure a higher rate of data exchange and thus – a more effective process of providing e-services to the population and businesses, as well as ensuring high-speed information exchange and use of broadband applications / services in the PPDR network of law enforcement agencies.

A system for management and monitoring and security of the state network will be established in parallel. A single system for network management and remote monitoring of active equipment at all times and every point for the provision of e-services through the state network is planned.

IV. Pillar D – “Green” connectivity

Green energy, environmental protection and emissions reduction are key factors in ensuring quality connectivity. Balancing these objectives in reducing capital and operating costs is of paramount importance. A comparative analysis of energy consumption in broadband networks has shown that fiber optic networks are the most energy efficient solution, especially in view of the increase in traffic due to data savings.

Furthermore, by increasing scope and adopting very high capacity digital infrastructure, the measures proposed in this component will also stimulate the development of digital solutions that

support the decarbonization of all sectors and reduce their environmental footprint. Solutions based on 5G are expected to lead to a significant increase in efficiency in production and logistics.

In this regard, it is economically justified to ensure the provision of alternative power supply to base stations in order to achieve business continuity while reducing the carbon footprint.

The use of renewable energy sources such as solar panels and/or wind generators to power base stations will ensure reduced energy consumption and provide connectivity even under exceptional circumstances. This pillar may cover both existing and newly built base stations under pillars A and B.

V. Pillar E – Demand stimulation

The use of broadband-based services should be stimulated to reach average European levels. According to the Digital Economy and Society Index (DESI) , Bulgaria is seriously lagging behind with only 67% of the population using Internet at average European levels of 85%. This negative trend can be changed by expanding the possibilities for using different types of access at an affordable price. The development of 5G technologies will make mobile downloads much faster as the responsive mobile internet will create new opportunities for distance learning and work. 5G networks will provide secure access to cloud content, corporate applications, telemedicine. 5G wireless technology will require the production of new devices and application development. New VoIP (Voice Over Internet Protocol) devices and smart devices offering a wide range of capabilities will be introduced to the market.

Switching to the use of 5G networks also necessitates the use of 5G compatible devices that have a high final price. This requires the use of end-user incentive schemes such as voucher scheme for terminal equipment. The voucher scheme will cover key groups of the population and businesses, which will be selected after careful analysis. Priority will be given to small and medium-size enterprises, key professions and areas of social and economic life, as the focus will be strengthening on provision of opportunities for access to high-speed networks to vulnerable social groups, incl. large families and various social institutions (foster homes / community centers / centers for additional qualification).

The availability of such instruments will ultimately stimulate telecom operators to develop and provide their own schemes for attracting potential customers in these groups.

The indicative groups to which the envisaged support will be directed are illustrated in the table:

Target groups	Purpose	Indicative device sharing
Hospitals/ medical centers/pharmacies - both in urban & rural areas	Ensure healthcare anytime, anywhere for everyone.	20%
School & education centers, research centers both in urban & rural areas	Providing an opportunity for innovative education, reaching more students and teachers no matter where they are.	20%
SME /Start-ups	Stimulate and support SME to explore innovations	20%
People with low income/ people with disabilities / students	Easier access and acquisition of 5G technology	20%

Smart Projects & partnerships with government	Digitalization of public services, e-governance etc.	20%
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Type of devices also with indicative share between them:

Types of devices	Indicative device sharing
Smartphones and tablets	50 %
Specialized equipment (health, educational)	40 %
Other	10 %

VI. Pillar F – Management and promotion of the project

This pillar will ensure immediate control of the implementation of the above pillars, as well as provision of costs for increasing the administrative capacity of the Bulgarian Competence Office (BCO) in the field of broadband project coordination, expert support etc.

Cost for on-site visits for the construction activities and installation of equipment; supporting the issuance of permits and certificates, tests on the functioning of the new access points and tests on migration of e-services, etc. will be covered. Here are included the employer's remuneration and social security contributions for the experts participating in the project implementation team as well as those participating in the reception committees.

The promotion of the project will spread to a large-scale campaign to present the effect of deploying and using high-speed connectivity. Special emphasis will be placed on acquainting citizens with the impact on the environment and public health in the implementation of infrastructure with an emphasis on 5G.

Signboards for the places of the construction activities, promotional materials and public events promoting the project's activities and the effect of its implementation.

3. Beneficiary

Ministry of Transport, Information Technology and Communications
Partners: State e-Government Agency; telecommunication operators

4. Time schedule for the implementation of the project, including activities, stages¹.

For the implementation of the project activities a total of 48 months are needed, as the project will start at the beginning of 2022 and will be finalized by the end of 2025.

Activity	Quarter/year																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	2021		2022				2023				2024				2025			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

¹ The timetable will be relevant for setting intermediate targets within the framework of the Recovery and Resilience Plan and is directly related to the release of instalments from financial support under the Recovery and Resilience Facility

Preparation and approval of State aid notification	x	x	x															
Preparation of Public procurement and conclusion of a contract	x	x	x															
Preparation of an investment/ conceptual project			x	x	x													
Activities to Building Permit:			x	x	x	x												
Construction works						x	x	x	x	x	x	x	x	x	x	x	x	
Activities to Permit of Use:															x	x	x	x
Preparatory study and design of the EESM	x	x	x	x	x													
Replacement of EESM devices in the support layer			x	x	x	x	x	x	x									
Replacement of EESM devices in COR layer					x	x	x	x	x	x	x	x	x	x	x	x	x	x
Building an EESM management and monitoring system – delivery and installation of servers, management software and protection software											x	x	x					
Delivery and installation of equipment						x	x	x	x	x	x	x	x	x				
Delivery of devices													x	x	x	x		
Management and promotion	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

In the table below is detailed the indicative allocation of costs by year under the condition that all activities are started in parallel and the allocation of costs for obtaining permits for 50% of the sites will be done within the first year and the remaining 50% - within the second year, respectively the completion of the construction activities in the second/third year of the project and finalizing the permits for use by the end of the programming period. The distribution is indicative.

20% advance allocation of the necessary funds will ensure the successful implementation of the project.

Year	PC (20%)	CW (70%)	PU (10%)	Total
2022	68 507 532			68 507 532
2023	68 507 532	239 776 364		308 283 896
2024		239 776 364	34 253 721	274 030 085
2025			34 253 720	34 253 720
			Total	685 075 323

4.1. When can the project start at the earliest after its approval?

Right after the approval of the project.

5. Indicative financial resource by activities, including sources of funding (SBs, European funding, private funding, IFI).

Indicative allocation of costs by strands and activities			
	Activity	Description	Amount
A	European Transport Corridor No 4	Vidin – Sofia – Pernik – Kulata & Sofia – Plovdiv – Kapitan Andreevo	41 250 159 lv.
	European Transport Corridor No 8	Gyueshevo – Sofia – Plovdiv – Plodovitovo – Burgas – Varna	39 281 793 lv.
	European Transport Corridor No 9	Ruse – Dimitrovgrad – Makaza	26 381 833 lv.
	European Transport Corridor No 10	Kalotina – Sofia – Plovdiv – Flodovitovo – Kapitan Andreevo	20 955 694 lv.
	European Transport Corridor to Varna	Botevgrad – Veliko Tarnovo – Shumen – Varna	21 406 909 lv.
B	Settlements with population 5 000-1 0 000		8 187 104 lv.
	Settlements with population 1 000-5 000	> 60 % of settlements	131 030 620 lv.
	Settlements with population 0-1 000	< 5 % of settlements	22 243 265 lv.
	Mobile broadband access for settlements with population 500-5 000	Towers and optical connectivity for base stations	24 006 022 lv.
	Bachol Sites		134 104 228 lv.

C	Replacement of devices in the EESM support layer (level L1, L1.5 from the OSI model)	Increased data transfer rate and number of households and businesses with high-speed Internet access	27 511 764 lv.
	Replacement of devices in the EESM support COR layer (level L2, L2.5, L3 from the OSI model)	Increased data transfer rate and number of households and businesses with high-speed Internet access	23 505 882 lv.
	Replacement of units in the aggregated layer (L3 of the OSI model) and EESM access layer	Increased data transfer rate and number of households and businesses with high-speed Internet access	41 563 529 lv.
	Establishment of a system for management and monitoring and remedies for the EESM	Secure and efficiently controlled data transfer environment	5 748 000 lv.
D	Solar panels / Wind generators on Base stations	~1 000 websites	60 728 521 lv.
E	5G vouchers	100 000 vouchers	55 000 000 lv.
F	Project management and promotion	Administrative capacity; management; promotion	2 170 000 lv.
		Total	685 075 323 lv.

For part 'Construction of Transport Corridors', the activities covered by the scope are the following:

- Construction of optical infrastructure along the corridors;
- Construction of deviations to the base station;
- Building and powering towers.

When constructing the optical infrastructure, there will be additional costs for technical premises which cannot be identified and indicated as a separate item at this stage. When detailing the specific routes and settlements, the funds will be allocated to one of the above categories.

Structure and methodology for determining the scope of activities:

Main activities involved in the different stages related to deployment of optical networks:

Investment/ideal project
Research for a new channel network
Notification of investment intention
Design of a new channel network
Activities to Building Permit:
Settlement of relations with owners and acquisition of property/obligation rights
Prior coordination of project routes
Implementation of spatial planning procedures -/PMP-PP; RMP-PS/Two and more districts
Coordination and approval of investment projects and obtaining RS of constructions I-V category

CMR
Blow a cable into a pipe
Making of machinery pit 0,80/0.40 m with showering and tamping
Laying a signal bar on a channel network
Laying pipe in pit (2 pieces)
Mounting of sleeves for HDPE tube
Making a single cable shaft
Preparation of execution documentation (per metre of cable)
Splashing
Delivery and installation of fiber fibers for optical cable
OTDR measurement (optical time-domain reflectometer)
Material
Tube HDPE Ø40, 3,6 mm thickness (2 pcs)
Sleeve F 40 for HDPE
19 OWP System
Optical cable up to 432 fibers in different directions
Signal tape "Watch Optical Cable"
Joint optical
Activities to Permit of Use:
Supervision during construction
Filming and laying activities in the cadaster of a channel network
Preparation of technical passport of the site
Actions for putting objects I – category III into operation

Main activities included in the different stages related to the construction of Towers/Base Stations:

Activity
Preparatory study
Preparation of an investment project and supplying a Building Permit
Construction – Tower 36 m – galvanized construction with seamless pipes
Air conditioning
Power supply 50 kW
Supervision during construction and commissioning

Main activities included in the individual stages related to the upgrade of the EESM:

Activity
Pre-exploration and design
Replacement of devices in the EESM support layer (level L1, L1.5 from OSI model – DWDM/OTN devices
Replacement of devices in the EESM support COR layer (level L2, L2.5, L3 from the OSI model – delivery and installation of routers/commuters
Replacement of devices in the aggregate layer (L3 of the OSI model) and EESM access layer – supply and installation of aggregating devices and access devices
Building an EESM management and monitoring system – delivery and installation of servers, management software and protection software

The project activities will stimulate investments by telecommunications operators amounting to BGN **320 000 000,00** distributed in active equipment, core networks, spectrum fees, etc.

Sources of funding: EU, national co-financing, private funding.

All amounts are in Bulgarian leva at the rate of BGN 1.98553 for one euro.

5.1. Allocated financial resource according to the type of expenditure:	
The financial resources for the activities shall be allocated as follows:	
<i>Construction of optical connectivity:</i>	
Activity	Part
Preparation of preliminary project	9 %
Coordination of preliminary design and issuance of building permit	11 %
CMR activities	50 %
Materials	20 %
Supervision during the activity to Permit of Use	10 %
<i>Construction of Towers/Base Stations:</i>	
Activity	Part
Preparatory study	7 %
Preparation of an investment project and supplying a Building Permit	
Construction of construction – tower 36 m – air conditioning and power supply	90 %
Supervision during construction and commissioning	3 %
<i>Increasing the EESM's transmission capacity</i>	
Activity	Part
Pre-exploration and design	1 %
Supply and installation, commissioning of active equipment and migration of existing services, training of operational staff	93,5 %
Installation and configuration of operational personnel management and protection and training systems	5,5 %
<i>Purchase of equipment/devices</i>	
Activity	Part
Purchase of equipment(solars/wind turbines), different types of devices	100 %
6. Indicators	
6.1. Result indicator(s)	
Transport corridors with continuous 5G connectivity	
<ul style="list-style-type: none"> - Starting value – 0 [2021 year] - Intermediate value – N/A - Final value – 5 [2025 year] 	
Settlements with high-speed connectivity with possibility for 5G	
<ul style="list-style-type: none"> - Starting value – 5 [2021 year] 	

<ul style="list-style-type: none"> - Intermediate value – N/A - Final value – 288 [2025 year]
Number of towers on transport corridors for 5G
<ul style="list-style-type: none"> - Starting value – 0 [2021 year] - Intermediate value – N/A - Final value – 132 [2025 year]
Number of base stations using alternative energy sources
<ul style="list-style-type: none"> - Starting value – 0 [2021 year] - Intermediate value – N/A - Final value – 1000 [2025 year]
6.2. Effect indicator(s)
Increased average data transfer rate
<ul style="list-style-type: none"> - Starting value – 30 Mbps [2021 year] - Intermediate value – N/A - Final value – 1 Gbps [2025 year]
Internet users
<ul style="list-style-type: none"> - Starting value – 65 % [2021 year] - Intermediate value – N/A - Final value – 90 % [2025 year]
Households covered with high-speed Internet access
<ul style="list-style-type: none"> - Starting value – 80 % [2021 year] - Intermediate value – N/A - Final value – 99 % [2025 year]
7. Does the implementation of the project require the implementation of a procedure under the Public Procurement Act?
<p>The deployment, management and exploitation of the network will be awarded by a way of an open, public non-discriminatory selection procedure in line with European and Bulgarian public procurement rules. The tender notices will be published on a central website and all relevant information will be available prior to that. Qualitative selection criteria and their weighting will be specified in advance, in accordance with the procurement legislation. The tender will specify the requirements for the target network which will consist of the minimum services and coverage requirements. The preparation of the procedures for selection of contractors for the implementation of the project is envisaged to start in 2021 with an indicative period of 8 months for conducting the procedures.</p>

7.1. If a PPA procedure is required, what part of the activities and financial resources will be subject to the public procurement?	
99,9%	
7.2. If a PPA procedure is required, what is the indicative timetable for its implementation?	
Year	Activities
m. 6-12 2021	Development of documentation and terms of reference
m. 10 2021-2 2022	Announcement of a public procurement
m. 2 2022	Award of the contract
m. 2 2022 – m. 12 2025	Fulfilling the contract activities
m. 1-2 2026	Verification of results and expenses
8. Demarcation and complementarity.	
8.1. If similar projects have been implemented (regardless of their source of funding), describe how this project builds on/completes what has been achieved with previous projects.	

The activities under this project proposal complement and develop the implementation of the following projects:

✓ **The initiative for free internet in public places WiFi4EU**

The initiative encourages free access to wireless internet for citizens in public places, including in parks, squares, public buildings, libraries, health centres and museums through EUR 15,000 vouchers to be used to install wireless internet equipment in public spaces on the territory of the municipality. In the first call under the WiFi4EU initiative 113 Bulgarian municipalities were selected for funding, and subsequently another 2 received their vouchers, and the funding from it amounted to EUR 1 725 000. After the three calls, 86 % of the Bulgarian municipalities have won vouchers for building high-speed wireless connections in public places. This result ranked our country first in the EU by the share of municipalities covered by the WiFi4EU initiative.

The WiFi4EU initiative demonstrates the serious need for high-speed and high-quality connectivity in public places on the territory of Bulgarian municipalities. However, the lack of high-speed connectivity on the territory of some municipalities prevents them from taking advantage of this type of funding, while others deter from applying. The reason lies in the requirement that the municipality which won a grant voucher should ensure connectivity with certain parameters to the relevant points for its own account and in places this proved impossible and/or economically unjustified.

The results of this project will create a precondition for optimizing the costs for connectivity between public administrations and administrations and citizens / firms and improving communications by increasing the transmission capacity of the infrastructure developed under the following projects and initiatives:

✓ **Projects under contracts from December 2020 for delivery, installation, configuration and commissioning of communication equipment in the city of Sofia**, which increases the transmission capacity between the main support node and the aggregating nodes, upgrades the support node and sets up an aggregator to optimize the State Hybrid Private Cloud (SHPC) services.

✓ **Project BG161PO001/2.2-01/2011/001 “Development of high-speed broadband access in Bulgaria through the construction of critical, secure and reliable public ICT infrastructure”.**

The project activities included building a network for high-speed broadband access in 29 municipal centers (building of routes to settlements in rural areas, passing through regional centers, installing the relevant active equipment and giving up to 20% of the capacity of optical cable lines for rent to operators of communications networks providing retail services).

As a result of the project's implementation, the following positive effects were achieved:

- stimulating social cohesion by providing access to online services to people living in sparsely populated and remote areas, thus overcoming the trends for the isolation of that part of the population from the public and cultural life of the country,
- developing the digital services market for citizens and businesses in the target areas by providing favorable and equal conditions for Internet providers to provide services based on next-generation access to citizens and businesses in these areas;
- Development of the next generation broadband market (NGA) through the provision of wholesale services.

✓ **Project “Technological Integration of the Electronic Communications Network (ESM) and the National Network of State Administration (NNC)”**, under contract No. 61/21.12.2011, which brings together the systems for monitoring and management of state support networks into a single consolidated centre, migrating users from ATM-based technology to Ethernet in the support nodes and nodes for access to the network, systems for protection of traffic between the main nodes. Project BG05SFOP001-1.005-0001 “Upgrade and development of the State Hybrid Private Cloud for the needs of e-Governance” under Operational Programme “Good Governance” 2014-2020. The project envisages the implementation of the activity “Enhancing the Capacity of the Single Electronic Communications Network for the purposes of the State Hybrid Private Cloud and the construction of a Protected Internet Centre”.

This activity aims to ensure the next generation access for the provision e-government services, provided through State Hybrid Private Cloud, by expanding the capacity of the state network and building a Protected Internet Centre in selected locations and Internet traffic termination centers. In addition to increasing the efficiency of the provision of e-services for citizens and reserve resources for administrations, the Centre will provide a high level of cyber-sustainability to the ecosystem of e-Governance and a service for state cloud users – protection from DDoS attacks. Expanding the coverage and increasing the capacity of the state network for the purposes of provision of cloud services will be carried out by building deviations of the existing network to new users – local administrations, supply of the active equipment required and applicable software to implement connectivity between the data centres and between them and individual departments, as well as through the purchase and commissioning of communication equipment to increase its transmission capacity and ensure the smooth functioning of the state network.

The activities shall be entirely aimed at ensuring the state network’s expanded capacity only in relation to the provision of the functions of the state cloud.

8.2 If, under the Partnership Agreement programmes, the centrally managed EU instruments or the Fair Transition Fund are designed to implement similar projects, outline the demarcation of this project.

Under the Partnership Agreement (PA) and the Connecting Europe Facility 2, various digital projects are expected to be financed, which will contribute in their entirety to the development of digital infrastructure and e-government in the country.

This project is partly linked to the PA and CEF-2 projects, and is expected to contribute to the overall improvement of the level of digitisation, while its implementation is clearly demarcated from the funding under the abovementioned programmes.

The following interventions are to be implemented, which will ensure complementarity and sustainability of the described investments:

- **Construction of ultra-fast broadband infrastructure** within sub-measure 7.3. "Broadband infrastructure, including its creation, improvement and expansion, passive broadband infrastructure and measures for access to solutions through broadband infrastructure and e-government" of the Rural Development Programme for the period 2014-2020. The aim of the measure is to support the deployment of high-speed broadband networks capable of ensuring a speed of access to broadband of at least 100 Mbps, with the possibility of upgrading up to 1 Gbps in the NGA "white" zones in rural areas in Bulgaria. The intervention will enter into 59 strictly defined municipalities that meet the criteria of the EU Guidelines on the application of State aid rules in relation to the rapid deployment of broadband networks.

The results of this project will create a precondition for increasing the transmission capacity of the public network, upgraded and further developed under several projects and initiatives, including the future project under measure "Rural renewal and development in Bulgaria by providing access to high-speed broadband access and construction of secure public infrastructure" under sub-measure 7.3. "Broadband infrastructure, including its creation, improvement and expansion, passive broadband infrastructure and measures for access to solutions through broadband infrastructure and e-government" of the Rural Development Program for 2014-2020, the implementation of which has practically begun. Experts from SeGA have prepared a technical specification for selection of a contractor for design and construction of network connectivity of optical cable routes for creating an open access network, which is in the process of internal coordination and in February 2021 a public procurement will be announced.

The deliveries and commissioning of active equipment of new generation, together with the control and protection system of EESM, under this project will be carried out before the construction of optical cable lines and the delivery of the necessary equipment under the RDP project, which is planned in the period. September 2024 - September 2025. The activities under the RDP project require initial design of the routes of the cable lines, then - obtaining the relevant building permits and only then can proceed to the construction of the open access network in "white" areas from the territory of Bulgaria.

- **Connecting Europe Facility 2** The implementation of the current intervention would also bring benefits in terms of building 5G connectivity and the envisaged continuation of the initiative – 5G4EU, in which local communities will once again benefit, but the deployment of high-speed optical connectivity on the relevant territory is necessary. This will create opportunities for participation for settlements, which would otherwise remain excluded due to lack of technical

infrastructure and would be deprived of opportunities to stimulate all major drivers of socio-economic development, such as schools, hospitals, transport centres, major public service providers, etc.; will be stimulated the accelerated development of SMEs, creating new and modern jobs, preserving young people, etc. With achieving the objectives of intervention, the digital divide will be reduced, and the social cohesion will be strengthened in terms of social cohesion, etc.

- **The State Hybrid Private Cloud (SHPC)** provides the necessary shared cloud infrastructure for the central and local administrations for the implementation of cloud services, including e-services, used by citizens and businesses. DHR will contribute to the optimisation and restructuring of the costs of construction and maintenance of the information and communication resources of the administrations. It will provide secure cloud services for citizens and businesses, as well as in-house information and communication processes, projects and systems of administrations. It will also allow the maintenance and development of nationally significant electronic information arrays and databases.

In the programming period 2021-2027, co-financing from the European Regional Development Fund is envisaged the next development of cloud services (Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) and for integration with other public clouds and European cloud infrastructure for the use of available high-tech products and services. The single electronic communications network shall ensure the necessary secure and reliable communication connectivity with the data centers for the purpose of providing cloud services to the relevant administrations.

9. Does the project contribute directly to the implementation of any of the Council's Specific Recommendations addressed to Bulgaria within the framework of the European Semester 2017-2020? Please describe how.

The project contributes to the implementation of the following Council recommendations within the framework of the European Semester in the document "Council Recommendation on Bulgaria's National Reform Program 2020 and containing a Council Opinion on Bulgaria's Convergence Program 2020":

- *Improve distance access to work and promote digital skills and equal access to education.*

Building a large-scale digital infrastructure will ensure equal access to broadband-based services, ensuring the ability to train and work remotely. The deployment of networks with very large capacity will ensure that no part of the country or group in society will remain without adequate digital connectivity and will be the basis for the development of a dynamic and innovative economy and will ensure better access for businesses to diverse, high-quality and innovative digital services. Digital connectivity will contribute to ensuring access to all major drivers of socio-economic development, such as schools, hospitals, transport centers, major public service providers, etc.

- *To minimise the administrative burden on enterprises by improving the efficiency of public administration and strengthening e-government.*

Increasing the scope, capacity and upgrading the state network equipment will create a sustainable basis for e-government development, creating prerequisites for reducing the

administrative burden for businesses and improving the work of the administration by increasing the number of users of e-services and optimizing the business environment through digitization of small and medium-sized businesses, medical and social services in the country.

10. Does the project contribute to the implementation of a sector reform? Please describe how.

I. Development and implementation of an effective political and regulatory framework

1. National broadband plan

In August 2020 an updated National Broadband Infrastructure Plan for Next Generation Connected Bulgaria was adopted, which outlines national goals and priorities and is bound to the objectives of the European level until and after 2025.

Digital connectivity is defined as an important factor not only for the competitiveness of enterprises, but also for supporting social inclusion and for the development and use of e-Government services. For the development of information and communication technologies, the necessary digital infrastructure should be provided as a platform for the provision of various e-services. The measures established in *Connected Bulgaria* in this area will be concentrated on improving the access to high-speed Internet in less populated regions and its active use by the population and businesses, as well as in the development of high-speed mobile internet in the country. Of key importance for the digitization of the Bulgarian economy and public services will be the investments for the deployment of 5G mobile networks in the country.

The main priority fields in the plan are:

1. Broadband infrastructure - accelerated building of broadband infrastructure, incl. for the needs of the state administration;
2. Very high-speed infrastructure – creating conditions for very high-speed networks' deployment;
3. Spectrum efficient use - establishing conditions for building NGA networks;
4. Improving coverage in settlements located in peripheral, sparsely populated and rural areas;
5. Bridging the Digital divide;
6. Network security.

2. Strategic approach to digital transformation

Adequate digital connectivity is part of the framework “Digital transformation of Bulgaria for the period 2020-2030”, approved in July 2020. Digital transformation is recognised as a necessary process of technological development in order to create conditions for innovation and business growth, to increase the efficiency of the workforce, to create a competitive digital economy and a high standard of citizens. The deployment of networks with very high capacity to ensure that no part of the country or group in society will remain without adequate digital connectivity is the basis for the development of a dynamic and innovative economy and provides better access for businesses to diverse, high-quality and innovative digital services.

Digital connectivity contributes to ensuring access to all major drivers of socio-economic development, such as schools, hospitals, transport centres, major public service providers, etc.

Infrastructure, which integrates physical and digital aspects, is crucial for ensuring the next wave of innovation and economic growth.

3. Modern legislative framework in the sector

In order to promote connectivity and access to networks with very high capacity and competition, including in terms of infrastructure, and to support market development and to protect citizens' interests, an updated legislative framework has been developed. The aim is to promote investment in networks with very high capacity due to their crucial importance in achieving sustainable economic growth in the digitization of the economy, while not affecting the competitive environment and the interests of consumers.

The proposed draft Law amending and supplementing the Law on Electronic Communications will achieve:

- ensuring more efficient, efficient and coordinated use of spectrum;
- development of the market for electronic communications;
- maintaining conditions for effective competition;
- creating conditions for the construction and development of very large-capacity networks, including 5G networks;
- improving the protection of citizens' interests and the rights of end-users, including those with disabilities.

II. Effective use of spectrum

1. Reduction of spectrum charges

For the promotion of accelerated deployment of 5G networks, the Council of Ministers approved amendments and from January 1, 2021 amendments to the fees collected by the Communications Regulation Commission under the Law on Electronic Communications shall enter into force. This will reduce the amount of the one-off fee by 50 % and the annual spectrum usage fee by 35 %. Optimizing spectrum charges is an important condition for more investment in the mobile communications sector, enabling businesses to use broader bands and build networks with greater capacity to provide high-speed broadband services of better quality to meet the needs of consumers.

2. Accelerated spectrum assignment process

In order to ensure the effective and efficient use of spectrum, the achievement of wireless broadband coverage on the territory of the country and the population with a high quality and speed connection, coverage on the main transport routes, as well as promoting competition and avoiding its distortions, an extension of authorisations for the use of harmonised spectrum, including wireless broadband services, is envisaged not less than 15 years, with the possibility of extending at least 20 years.

700 MHz

By 30 May 2020, a frequency resource of 2x20 MHz within the 700 MHz range was provided for 5G networks.

In July 2020, the national regulatory authority launched a public consultation procedure on the prospects and conditions of use of the available resource in the 700 MHz band.

Only common interest is expressed in the course of the consultations and there is no specific intention by operators.

2.6 GHz

In December 2020 the national regulatory authority announced a public consultation on the use of individually assigned scarce resource – radio frequency spectrum in the 2.6 GHz range.

3.6 GHz

In December 2020, the national regulatory authority announced its intention to issue authorizations to use individually assigned scarce resource – radio spectrum in the 3.6 GHz range for electronic communications through a terrestrial network allowing the provision of electronic communications services with national coverage using 100 MHz in the 3600-3700 MHz band (TDD mode).

On 28 January 2021, the national regulatory authority adopted a decision to conduct a competitive procedure for the provision of 370 MHz of the 3.6 GHz range.

26 GHz

Bulgaria has designated 2078 GHz in the 26 GHz range for harmonized use for 5G. The spectrum is fragmented, but blocks between 300 and 500 MHz continuous spectrum can be provided.

The National Regulatory Authority envisages conducting a public consultation procedure on the use of available resources in 26 GHz scope at the beginning of 2021.

III. Creating a favorable investment environment

1. Reduction of administrative burden

The regime for the deployment of base stations is seriously relaxed. According to the adopted additions to the Spatial Planning Act, no building permit is required for maintenance, equipment and/or improvement of elements of the radio transmission systems, as well as their replacement or supplementation by assembly or disassembly of elements of the radio transmission system. Nevertheless, electromagnetic field measurement (EMF) is mandatory and the National Regulatory Authority keeps an electronic register for upgraded base stations.

2. Reduction of investment costs

With a government decision in the implementation of infrastructure projects with public funds, requirements will oblige beneficiaries, where possible, to prepare investment projects involving the construction of protective pipes and cable shafts laid in underground infrastructure, which can be used by all network operators.

3. Promotion of joint investments

Implementation of measures to improve horizontal coordination between the different infrastructure sectors in terms of joint planning, construction, use and maintenance of physical infrastructure. Improving the availability of information necessary to share existing physical infrastructure by providing information through the Single Information Point entirely electronically.

11. Does the project contribute to the development of any aspects of sustainable economic development? Please describe how.

The current project contributes to the implementation of the model for a universal and integrated approach to eliminating economic, social and environmental disparities identified in the UN Programme “*Transforming our world: the 2030 Agenda for Sustainable Development*”, which sets out a set of Sustainable Development Goals to eradicate poverty, protect the planet, ensure the protection of human rights and ensure prosperity for all.

The objectives set out in these objectives are relevant to the following UN Sustainable Development Goals:

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

The establishment of a broadly accessible digital connectivity that ensures ubiquitous access to education, healthcare, business and digital services falls within all policy areas where transformation towards sustainable development are needed identified by the European Economic and Social Committee as follows:

- *A fair transition to a low-carbon and resource-efficient circular economy*— a positive effect on the ecological equilibrium of digitization of processes serving citizens and businesses;
- *Transition to socially inclusive society and economy – decent working conditions and human rights* — facilitated access to services on the labor market, digitized cultural exchange, etc.;
- *Transition to sustainable food production and consumption*— a more efficient business environment for food producers (fast exchange of information, cyber-protected transactions, online tools for raw materials supply and realization of production);
- *Investing in innovation and the long-term modernization of infrastructure and promoting sustainable enterprises* – the modernization of a communication infrastructure providing high-speed Internet access for the exchange of information and e-services;
- *Contribution of trade to global sustainable development* — a more effective business environment for importers and exporters of goods and services (fast exchange of information, cyber-protected transactions, online marketing tools, advertising, etc.).

12. Does the project contribute to the implementation of the objectives of the National Development Programme BULGARIA 2030? Please describe how.

This project contributes to several of the objectives set in the NDP 2030 as follows.

Direct:

- Building a large-scale digital connectivity is a prerequisite for the implementation of Pillar 3 Connected and integrated Bulgaria, Priority 8 Digital Connectivity – horizontal policies for digital transformation; digital cooperation, proactive and transparent solutions, secure cyberspace, ICT infrastructure as a factor for competitiveness; development of smart and sustainable agriculture through high-speed Internet access in rural areas.
- The development of e-Governance, including an optimized state network as a means of facilitating the lives of citizens and companies, is the basis of Pillar 4 Responsive and fair Bulgaria, Priority 10 Institutional Framework – reduction of administrative burdens, introduction of complex administrative services and services “episodes of life” and

“business events”, fully Internet-based submission and acceptance of applications; integrating key registers, automated data exchange and documents to minimize the instances, route and time needed for citizens and companies to use administrative services; digitizing archives; use of shared resources for e-management; an accessible integrated cybersecurity ecosystem.

Indirect:

- Creating an effective environment for broadly user-friendly ICT-based services to motivate their use and thus contribute to the implementation of Pillar 1 Innovative and intelligent Bulgaria with measures for developing an economy based on knowledge and smart growth, Priority 1 Education and skills – mastering key language and social competences and achieving functional literacy, increasing digital skills and competences of human resources.
- Access to high-speed connectivity will guarantee for businesses the opportunity to exchange good practices and standards, to introduce e-tools for businesses conduct and to have unimpeded access to regional and international markets; to increase their competitiveness under Pillar 1 Innovative and intelligent Bulgaria with measures for developing an economy based on knowledge and smart growth, Priority 3 Intelligent Industry – digital transformation of businesses, gaining market shares; development of Industry 4.0, R&D-intensive products with high added value.
- Intervening in mainly rural areas will provide an environment for exchange of information between farmers, national administrations and international programs for the introduction of modern technologies for precision farming, access to digital registers of agricultural land, usage of ameliorative facilities, biocidal products, etc. elements of the Pillar 2 Green and Sustainable Bulgaria, Priority 6 Sustainable agriculture – promotion of research, introduction of technologies and digitization, development of the value chain.
- The construction of continuous 5G connectivity will ensure modern transport connectivity, under which conditions are created to use intelligent transport systems while also contributing to higher levels of safety, Priority 7 Transport connectivity – ensuring better connectivity; trading conditions; high level of safety.
- The results of the project will provide equal access for small and isolated settlements to ICT infrastructure and practical models for support of entrepreneurship and social development under Pillar 3 Connected and integrated Bulgaria, Priority 9 Local Development – addressing the specific resources and needs of the territorial unit, focused interventions; rehabilitation of technical infrastructure.
- The ICT infrastructure upgraded under the project will provide access to administrative services related to employment opportunities as a measure for raising the living standards of marginalized social groups under Pillar 4 Responsive and fair Bulgaria, Priority 11 Social inclusion – employment as a measure of social inclusion by increasing the economic activity of vulnerable groups – self-employment and promotion of entrepreneurship, development of alternative employment, initiatives and measures to facilitate access to work and integrated social services.
- The state network will serve as media for digitization of the whole process of prevention and provision of health services under Pillar 5 Priority 12 Health and Sport – optimization of hospital care, e-health and provision of remote services, telemedicine for hard-to-reach areas.

13. Does the project contribute to the implementation of the objectives and priorities set out in the Integrated National Energy and Climate Plan? If yes, please describe how.

The Energy Efficiency Dimension section of INECP states that the planned policies, measures and programs to achieve indicative national energy efficiency targets for 2030, as well as the other objectives of promoting energy efficiency, will require efforts to be directed towards ever-increasing renewable energy consumption. In this sense, the current initiative has an impact on the objectives set, as energy consumption will drop sharply.

In addition, the construction of secure digital connectivity across the country and especially along transport corridors will contribute to the successful implementation of the objectives set in the Energy Efficiency Dimension, namely – reducing the carbon footprint of the transport sector and increasing the network and information security of the energy sector.

A comparative analysis of energy consumption in broadband networks showed that optical fiber networks are the most energy efficient solution, especially with a view to increasing traffic volume due to data savings. Therefore, replacing copper networks (which use a much larger amount of active components requiring power) and the deployment of more resilient optical fiber elements can contribute to the digital transition and the Green Deal by complementing efforts to replace other outdated or less operational infrastructure (e.g. older data centers).

Furthermore, increasing the scope and use of digital infrastructure with very high capacity will stimulate the development of digital solutions that support the decarbonization of all sectors and reduce their environmental footprint. Solutions based on 5G, for example, are expected to lead to a significant increase in efficiency in production, logistics and transport.

5G networks will facilitate the deployment of large-scale sensor networks, which will help collect environmental and climate data to help prevent disasters. In less densely populated or inaccessible areas (such as forests or mountains) networks with very high capacity, based on wireless solutions such as 5G, are also expected to help develop new local business models (such as rural tourism or smart agriculture), thereby contributing to the green transition of local economies by changing the established economic status quo.

Furthermore, the measures proposed by the component contribute to the environmental transition, taking into account the six climatic and environmental objectives set out in Regulation (EU) 2020/852 (Taxonomy Regulation).

Given the above priorities and measures in the INECP, it can be concluded that the proposed project will contribute to their implementation.