



AGENCY FOR ELECTRONIC COMMUNICATIONS
AND POSTAL SERVICES

ANNUAL REPORT FOR 2021



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AGENCY FOR ELECTRONIC COMMUNICATIONS AND POSTAL SERVICES

George Washington Boulevard No. 56, 81000 Podgorica

Tel: 020 406 760, Fax: 020 406 702

E-mail: ekip@ekip.me, Internet: www.ekip.me, Instagram: ekipcg

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PREAMBLE

The Agency for Electronic Communications and Postal Services (hereinafter referred to as “the Agency”) was founded on 8 March 2001, as an independent national regulatory authority for electronic communications and postal services, functionally independent from all subjects which exploit electronic communications networks, provide equipment or services at the electronic communications and postal services markets. The main guidelines and principles the Agency has applied in its regulatory activities in the sector of electronic communications are: providing safe and foreseeable business environment for the work of operators and for their investments, creating conditions for implementation and development of new technologies in the whole territory of Montenegro, while encouraging rational use of limited resources (radio-frequencies and numbering/addresses), promoting competition, preventing distortion of market competition between operators, as well as resolving disputes between operators, while continuously improving protection of users’ interests.

Managing bodies of the Agency, in accordance with the Law on Electronic Communications (“Official Gazette of Montenegro”, 40/13, 56/13, 2/17, and 49/19), are the Council and the Executive Director of the Agency. The Agency Council consists of the President and four members, while four members of the Agency Council perform their functions on part-time basis. During 2021, the Agency Council held 59 meetings, of which 12 meetings were ordinary meetings and 47 extraordinary meetings. On 31 December 2021, the Agency had 70 employees, including the President of the Council, Council Members and Executive Director.

The Agency carries out its activities in accordance with its responsibilities stipulated by the Law on Electronic Communications, and the Postal Services Act (Official Gazette of Montenegro, No 57/11, 55/16, and 55/18).

Annual Report on the work of the Agency for 2021 is prepared in accordance with Article 26 of the Law on Electronic Communications. The Report is a systematic group of information on the: level of market development and services of electronic communications and postal services, achieved competition level and taken regulatory measures, management efficiency and economical use of limited resources (radio-frequencies and numbering/addresses), as well as on other activities the Agency carried out within its competences, Work Plan and Financial Plan of the Agency for 2021, adopted by Decision No. 00-72/20-42/4 EPA 10 XXVII dated on 29 December 2020, adopted by the Parliament of Montenegro. The Annual Report is consisted of the following chapters:

- *Development of Electronic Communications Sector,*
- *Imposed regulatory measures,*
- *Implementation and quality of Universal Service in Electronic Communications Sector,*
- *Assigned limited resources,*
- *Development of the postal services market,*
- *Realisation and quality of universal postal services,*
- *Exercise of rights and protection of the users of electronic communications and postal services,*
- *Tasks performed by the Agency, in accordance with the 2021 Work Plan,*
- *Performed tasks that have not been subject to the 2021 Work Plan,*
- *Conclusion, and*
- *Appendices.*



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INTRODUCTION

Every natural or legal person can construct, make available and use electronic communications networks, electronic communications infrastructure and provide electronic communications services according to the conditions stipulated by the Law on Electronic Communications (hereinafter referred to as: the Law), and other regulations, provided that neither a man's life and health nor the environment and national security have been effected. At the end of 2021 in the Register of Electronic Communications Operators kept by the Agency were registered 35 operators.

Universal postal service may be provided by a legal person registered in the Central Register of Business Entities (CRPS), for the provision of postal services based on a special license. Certain postal services from the domain of universal postal service at the whole territory, universal postal service at the certain part of the territory can be also provided by legal person registered in the CRPS for the provision of postal services determined by the licence issued by the Agency. Commercial postal services can be conducted by legal or natural person based on the application submitted to the Agency. At the end of 2021 in the Register of postal services operators were entered 31 operators.

Electronic communications networks in Montenegro are highly developed, and these networks are supplied with the newest technologies. These networks provide the users in Montenegro with electronic communications services which exist in the developed countries. Significant operators carried out the migration of their networks to the so called All-IP environment, so that the services of voice transmission, data transmission and distribution of AVM contents are provided through a single IP network.

During 2021 the operators invested approx. 61 million euros in the development of electronic communications networks which makes a good base for further increase of their accessibility and provision of even higher and more accessible electronic communications services in the whole territory of Montenegro. This high level of the investments in the sector of electronic communications affirms the fact that we have a foreseeable regulatory framework which has created equal conditions for all the participants in the electronic communications market and

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On the occasion of the jubilee - 20 years of the work of the Agency and the cooperation between International Telecommunication Union (ITU) and the Agency, Ms.



Doreen Bogdan-Martin, director of the ITU-D Sector has pointed out: "This year EKIP celebrates 20 years of its work. I give tributes to their progress in the area of infrastructure and ICT regulation development, achieved in the last two decades, and look forward to their continuous efforts be an example of the best practices in the region.

Recognizing the progress in the field of infrastructure development and ICT Regulation they have achieved in the last two decades I hope their continuous efforts will be an example of the best practise in the Region. Fostering international cooperation in the sphere of digital development is one of the ITU's priorities. It is my pleasure to witness the cooperation made between the ITU and Montenegro in many fields which are by their actions dedicated towards that goal, as are the IPv6 and broadband mapping, as well as an active participation of Montenegro in promoting digital development throughout Western Balkans".

which has been also fostering the competition as the best way of regulation. It is also worth mentioning that the Agency stands for the principle of technological neutrality and does not give favor to any technology.

As regards the development level of fixed electronic communications networks at the end of 2021, approximately 70% of the households were covered with access networks based on the fiber optic cables (FTTx), 69% with VDSL, 49% with HFC, 18% with ADSL, approx. 15% of the households were not covered with fixed broadband access.

In 2021 the operators' networks dealing with distribution of AVM contents to end users were modernized. At least three types of distribution are offered in each municipality. The offer in 19 municipalities is based on all four types of distribution (KDS, IPTV, DTH and DVB-T2). The users in 13 municipalities may choose among all five operators. In the whole structure dominate KDS, DTH and IPTV users with approx. 97% of market participation.

Development of mobile electronic communications networks in Montenegro has continued in 2021, mostly due to increase in the capacities of the access part of LTE/LTE-Advanced mobile networks with a view to compensating increase in the traffic volume and ensuring high quality level of data transmission. Level of technology development of modern mobile electronic communications networks is calculated according to network capability to support, at the first place, broadband data transmission services of required quality. Parallely with a continuous need of the users to have always higher speeds of data transmission, as well as with a continuous increase in traffic volume generated by the users, mobile operators in Montenegro have been continuously improving their networks in order to meet the users' rising requests, thus keeping the step with technology development of operators in the developed European countries.

All three mobile networks in Montenegro are based on harmonized standards of the second generation (GSM/DCS1800, including GPRS package segments i.e. EDGE), third generation (UMTS, including HSPA+ i DC-HSDPA), and the fourth generation networks (LTE i.e. LTE-Advanced). As regards the support to data transmission services, GPRS/EDGE has been implemented to all GSM/DCS1800 radio base stations in the networks of all three mobile operators. In the access part of 3G network, all three mobile operators in Montenegro have implemented HSUPA technology (3GPP Release 6) for uplink and HSPA+ technology (3GPP Release 7) for downlink. Each UMTS radio base station of all three mobile operators theoretically allow a maximum flow of 21.1 Mbps for uplink i.e. 5.76 Mbps for downlink per 2x5 MHz wide channel. Depending on the capacity needs of the towns, DC-HSDPA (3GPP Release 8) concept has been implemented in many urban locations, and theoretically it allows a maximum downlink flow of 42.2 Mbps, using two neighboring channels 2x5 MHz wide. LTE technology implemented in the networks of mobile operators in Montenegro provides maximum downlink speeds of 150 Mbps and uplink speeds of 50-75 Mbps in the channel 2x20 MHz wide while implementing 64-QAM modulations and 2x2 MIMO techniques. By implementing aggregation techniques of LTE bearers in two i.e. three bands, and depending on the width of engaged spectrum, proportionately lower speeds are achieved in the downlink (precisely up to 300 Mbps in the zone of base station services where 2CA technique is implemented, and up to 375 Mbps at the locations where 3CA technique is implemented). With a view to increasing the capacities at several locations with a high traffic volume, Telenor and Crnogorski Telekom implemented 4x4 MIMO techniques (until 3GPP Release 12). There should be pointed out that the above values are theoretically maximum capacities per cell, and are rarely achieved under real conditions. Real flows on an application level depend on many parameters some of which are not connected with network performances, and this capacity is used by all users in the base service zone.

In June 2021 Crnogorski Telekom tested 5G NR technology, which is the first 5G installation under real conditions in Montenegro. Previously allocated radio frequencies in 2 GHz band were used for that purpose.

As regards the level of population covered with mobile network signals, Montenegro is comparable with the most developed European countries. Total coverage of population with GSM signals is approx. 99% while a total coverage with signals of UMTS and LTE networks is around 98%, which makes Montenegro one of the countries with very good coverage. Territory coverage with mobile network signal involves almost all

inhabited areas (all urban settlements, all suburban areas and the greatest part of rural areas), main roads (including tunnels) and tourist centers and, according to data received by software prediction analytics, coverage with GSM signals is approx. 85%, while more than 80% of the whole territory of Montenegro is covered with UMTS and LTE network signals (data received by software prediction analytics). Coverage of the remaining, mostly sparsely inhabited areas has been also improved through mechanisms of universal service. Considering a very demanding terrain configuration in Montenegro regarding the coverage with mobile network signals, radio access part of mobile networks of all three operators has been realized with a large number of radio base stations, which has been continuously increased, so that at the end of 2021 their statistics were as follows: 425 in Telenor network, 398 in the network of Crnogorski Telekom and 376 locations of base/repeater stations for outdoor and tunnel coverage in Mtel network.

According to the metrics results with regard to the quality of data transmission services in mobile networks carried out by the Agency at the end of 2019 and the beginning of 2020, average data transmission speed in the urban areas are, depending on network, in downlink in 15-20 Mbps band and 20-30 Mbps in uplink, while on the main roads are 10-18 Mbps in downlink and 11-28 Mbps in uplink. During 2021, the Agency did not carry out comparative measurement of the quality parameters of services provided through public mobile electronic communications networks. The scheduled measurement campaign was postponed to the first half of 2022, due to necessary upgrades of measurement devices, as they can support all technologies and functionalities which have been, in the meantime, implemented in the mobile networks in Montenegro.

The level of network and service development or level of the electronic communications market, is given in the following statistics:

- At the end of 2021 the number of mobile telephony users amounted to 1,120,074 which is a penetration of 180.65% in relation to population number, and is 3,70% higher than in the relevant period in 2020. There were more postpaid users at the end of 2021, exactly 59.01% (660.999), while 40.99% (459.075) were *prepaid users*. The users of all three mobile operators in Montenegro made 2,018,702,480 minutes of outgoing traffic in 2021. There was a total of 261,668,073 SMS messages and 458.078 MMS messages.
- In the same comparative period there were 189.519 fixed subscriber lines, which is a penetration of 30.57% in relation to population number, and there were 1.17% less fixed subscriber lines than in the same comparative period. In 2021 the users of all four fixed operators in Montenegro made 96,235,687 minutes of outgoing traffic, which is less than in 2020, when it amounted 108,652,306 minutes to all networks in Montenegro and abroad.
- The number of users of fixed broadband access was 2.23% higher at the end of 2021 than at the end of 2020. Number of users of mobile broadband access through data SIM cards in 2021 increased by 0.87% in relation to 2020 and the number of users who accessed the internet through mobile networks during December 2021 increased by 4.15% in relation to December 2020.
- Penetration of fixed broadband access at the end of 2021 amounted to 30.37% in relation to population number, while in relation to the number of households it amounted to 96.7%. The greatest number of users (42.84%) were the users of connections via optical fiber networks. Percentage of households in the area of NGA availability (30 Mbps) was 81.04%.
- At the end of 2021 total leased capacities of international transit of foreign operators (capacities of international transit used by the operators in Montenegro) were 285,25 Gb/s, which is an increase of 10 Mbps compared with the end of 2020.
- Total number of xDSL users at the end of 2021 was 53.543, being 4.72% less than at the end 2020, due to transition of users to networks with optical fibers.
- At the end of 2021 number of users who accessed the internet via optical fiber connections amounted to 80,664 being 10.05% higher than at the end of 2020.
- At the end of 2021, the number of users who accessed the internet via cable distribution systems amounted to 50,427 which is 2.61% more than in 2020.
- The number of users who accessed the internet via WiMAX, during 2021, decreased by 67.83% in relation to the respective previous year, so in 2021 there was a total of 728 users. This drop in the

number of users occurred as the license of Mtel operator for the use of radio frequencies in the 3.4-3.8 GHz band expires in April 2022.

- Total number of internet leased lines amounted to 238 which equals to the level in 2020.
- The internet access service in 2021 via MPLS used 164 users which is a drop compared to 2020 when there had been 177 users of the respective service.
- Total number of wireless access points increased from 599 in 2020 to 604 at the end of 2021.
- The internet satellite services were used by 72 users in 2021 which is similar to the respective figure in 2020.
- Total Internet traffic made by the users in fixed electronic communications networks during 2021 amounted to 352.62 PB which is 3.09% higher ratio than in 2020.
- Average internet traffic made by the subscribers in fixed electronic communications networks on monthly level amounted to 156.16 GB and is 0.9% higher than in 2020.
- Number of mobile broadband access users who accessed internet via data SIM cards during 2021 was 0.87% higher in relation to 2020.
- Total number of mobile services users (prepaid and postpaid) who accessed internet (through mobile telephones and modems) in December 2021 amounted to 561.944; 453.284 used 3G/4G, and 450,506 used only 4G access technology. Numer of users who accessed Internet via mobile networks in December 2021 is 4.15% higher than in the referral month of 2020.
- Total Internet traffic made by the users via mobile networks in 2021 was 73.70 PB which is 41.3% more than in 2020.
- According to the research on the ICT use in Montenegro conducted in October 2021, 82.2% of population used Internet in the last three months, being 4.6 percentage points more in relation to the relevant data for 2020.
- Penetration of the fixed broadband access (users of: xDSL, FTTH/B, cable distribution systems, WiMAX, leased lines ect.) amounted to 30.4% in 2021, which is an increase of 0.7 percentage points in relation to 2020. With regard to the number of households, penetration is 96.7%, meaning an increase of 2.2 percentage points comparing to 2020.
- Penetration of mobile broadband access, i.e. number of users who accessed Internet via mobile networks in December 2021 amounted to 90.6% and in relation to the comparative period in the previous year is 3.6% higher.
- In 2021, 305.008 minutes of traffic made 15 users via VoIP (*Voice over Internet Protocol*) used, which is 93.20% more VoIP traffic made in 2020.
- There was a total of 307 leased lines at the end of 2021. Comparing with the relevant period in 2020, number of leased lines was 8.4% lower, so at the end of 2020 it amounted to 335. Comparing with the previous year a significant decrease was in the number of leased lines regarding the category of leased lines of 2Mbps and nx2Mbps capacities (decrease of 25%), while the number of leased lines of other capacities was slightly lower.
- Number of distribution connections of AVM contents amounted to 243.931 at the end of 2021 godine and is higher than it had been at the end of 2020 (240,111).
- Total volume of traffic which terminated in the fixed networks in Montenegro amounted to 29.821.917 minutes in 2021, being a decrease of 3% in relation to 2020. Moreover, in relation to 2020, there was a 1.6% increase in the category of terminated national calls, while there was a decrease of 15.6% in the category of terminated international calls with regard to the comparative period.
- Total volume of traffic terminated in mobile networks in Montenegro amounted to 608,122,117 minutes in 2021, and this is a rise of 24.3% in relation to 2020. In relation to 2020 there was an increase of 19.2% in the category of terminated national calls, while in the category of terminated international calls was an increase of 50.5%.

The most important statistics regarding the Sector of Postal Services are as follows:

In 2021, postal operators carried out 35,337,407 postal services, which is 3.8% lower in relation to the previous year.

Pošta Crne Gore as the universal postal operator realized 34,743,988 postal services, which is 98.3% of the total volume of realized services, while other postal operators carried out 593,419 postal services ili 1,7% od ukupnog obima ostvarenih usluga.

34,340,145 postal services (97.2%) were carried out in domestic traffic, while 997.262 postal services (2.8%) were carried out in international postal traffic.

In 2021 Pošta Crne Gore carried out total of 34,743,988 postal services, being 4.2% lower than in the previous year when it amounted to 36,253,215. Out of the total number of realized postal services 15,146,125 were universal postal services and 19,597,863 were commercial postal services, i.e. 43.6% of the provided postal services referred to the universal postal services and 56.4% referred to commercial postal services.

Compared to 2020, in 2021 Pošta Crne Gore carried out 4.1% less universal postal services and 4.2% less commercial postal services.

In the structure of the volume of services provided in 2021 the largest percentage of participation was of Pošta Crne Gore as it participated with 44%. A total of 15,283,752 letter-post services was realized, which 6.1 % lower is compared to the relevant services carried out in 2021.

Pošta Crne Gore realized 10,972,449 services of hybrid posts, being 6.1% lower volume from the relevant one in the previous year. Participation of hybrid postal services in the total volume of realized services of Pošta Crne Gore in 2021 amounted to 31.6%.

Share of financial postal services in the total volume of realized services of Pošta Crne Gore for 2021 amounts to 21.3%. Financial postal services amounted to 7,420,487, which is 1.9% more in relation to the previous year. In the total volume of financial postal services, payment transactions (payments-disbursements) makes 55.4%, of which money orders 40.6%, a transfer of money 4%.

In 2021, Pošta Crne Gore realized 590,936 postal orders, which is a raise of 3.2% in relation to the previous year, when there was a total of 572,569 postal orders, and money transfer 4%.

Pošta Crna Gore provided 157,113 exspress services, being 11.4 % lower than in 2020, when the total of 177,341 express services had been provided.

Pošta Crne Gore made 49,891 parcel services during 2021, which is a decrease of 0.3% compared to the year before when the relevant service amounted to 50,027.

Total physical volume of postal services rendered by other postal operators during 2021, amounts to 593.419, which is 27% more than in 2020 (466,674).

The greatest share in total physical volume of postal services rendered by other operators belongs to Montenomaks, with 42.8% of rendered postal services, and Express One Montenegro, with 25.9% of the volume of postal services rendered by other operators.

In the structure of express services realized by other operators, Montenomaks has a leading position, covering 43.4% of express services market in 2021, followed by Express One Montenegro with 25.8%, and DHL with 8.6% market covered.

In the structure of parcel services rendered by other operators, Montenomaks is a leader, covering 41.6% of the parcel service market in 2021, which is followed by City Express One Montenegro with 26.1%, and DHL with 14% coverage.

The Agency controlled implementation of regulatory measures and obligations imposed on operators with significant market power imposed by decisions made during 2021, as well as by its decisions related to the previous years.

On its session held on 18.03.2021, having previously obtained a favourable opinion from the Agency for Protection of Competition, on the merits of initiating a new market analysis procedure, the Agency's Council made a Decision on initiating a new analysis procedure for five relevant markets,

In 2021 the activities on the Project of accounting separation and cost accounting were continued, following the dynamics planned by accounting separation and cost accounting methodology. In mid-January 2021, the Agency made final decisions on adopting the activities performed by the operators on the Project on accounting separation and cost accounting, according to CCA/LRIC methodology for mobile and fixed networks for 2019. Final decisions on decreasing the prices of regulated services were made in the first quarter of 2021.

In the end of June 2021, the Agency made Decision on the value of weighted average cost of capital for 2020, establishing that the value of weighted average cost of capital had been at the level of 6.91% before taxation, the operators with significant market power are in obligation to apply when calculating the costs for the provision of regulated retail and wholesale services. In accordance with accounting separation and cost accounting methodology, the operators submitted top-down cost models and regulatory accounting documentation (Document on allocation method, Regulatory accounting document and Regulatory financial reports with the opinion of an independent auditor). The Agency is in the final phase of the audit of top-down model for 2020, after which the Report on supervision of fixed and mobile network methodology of the operators will be prepared, based on the CCA/LIRIC methodology for fixed and mobile operator networks, as well as decisions on giving approvals on the operator's activities regarding the implementation of cost accounting and will initiate the price regulation.

In February 2019, the Agency prepared the "Feasibility Study on the cost model preparation of the Agency, according to Bottom up LRIC Methodology", and in October 2020, after the consultant had been elected, the Agency started the Project "Preparation and implementation of bottom-up LRIC cost models for fixed and mobile electronic communications networks", based on the "bottom-up" approach and Long Run Incremental Costs (LRIC). The first phase of the Project, related to initiating the Project, i.e. preparation of the Activity Plan, preparation of the Questionnaire and collection of data by the operators, as well as the second phase of the Project including preparation of the Methodology for bottom-up LRIC cost model for mobile networks, were completed in 2021, and were adopted by the Decision on adopting the Methodology for preparation and implementation of bottom-up LRIC cost models, on the meeting of the Council held on 27.05.2021. The third phase, which is Preparation and testing of cost models, considered as the most demanding phase, initiated at the end of 2021.

The Agreement on reducing the prices of roaming services in the public mobile communications networks in the Western Balkans Region was signed on 4 April 2019 in Belgrade, between the ministries of the bodies competent for the field of electronic communications of the following countries: Albania, Montenegro, Kosovo, Republic of North Macedonia and Republic of Serbia. On behalf of Montenegro the Agreement was signed by the Ministry of Economy. The Agreement imposes reduction of the roaming prices between signatory countries, as from 1 July 2019. Besides, the Agreement stipulates an additional price reduction of roaming services for regulated incoming calls and data transfer service, to be implemented as from 1 July 2020. As the final step, the Agreement stipulates that roaming services for the users from signatory countries are charged as if the users were in their home country (the so called "roaming like at home" – RLAH charging regime). On 17 December 2020, the Agency for Electronic Communications and Postal Services made Decision on imposing Crnogorski Telekom, Telenor and Mtel to introduce the following step in the price reduction of roaming services in the Western Balkans countries, as from 1 July 2021. In line with this step, roaming services (regulated call services, SMS and Internet access) will be charged as if the roaming user was in his/her home country (the so called "roaming like at home" – RLAH charging regime). Along with the Decision, the Agency made the Rulebook on determining detailed rules on the implementation of "fair use policy", the methodology on assessing the viability of abolition of extra charges for regulated retail roaming services, and the request submitted by the operator, necessary for the assessment, stipulating the situation in which the operators may deviate from charging regime defined by the Decision, Guidelines for implementation of the Decision, and Rulebook at the retail level (Guidelines for retail roaming in the Western Balkans Region, May 2021), in order to simplify the implementation of these regulations.

During 2021, the universal service in Montenegro was rendered by Mtel, which is the Universal service operator for providing Universal Telephone Directory Service and Universal Directory Enquiry Service and by Crnogorski Telekom, being the Universal service operator for providing services of access to electronic communications network, telephone calls and internet access throughout Montenegro. The number of Universal Directory Enquiry Service i.e. the number 1180 is available from all public electronic communications networks in Montenegro, and by calling the number 1180, it is possible get information on fixed and mobile telephone numbers of all subscribers who have not requested a ban on the publication of such data, by subscriber number or number user. During 2021, the users made 137,666 calls to the number

1180 in order to obtain information on the telephone number of the user whose number is requested or on the user of telephone number according to the telephone number.

The Agency continued to perform its activities on rationale management of radio-frequency spectrum as a limited natural resource. In 2021, the Agency issued 1,038 approvals for the use of radio frequencies, decisions on determining technical and operational conditions for the use of approved radio frequencies and decisions on assigning the call sign/MMSI number. 179 approvals for the use radio frequencies and determining technical and operational conditions for the use of approved radio frequencies were revoked in the respective period. The Agency continued to plan an efficient use of radio-frequency range and to carry out international coordination of radio frequencies, and the activities on deploying digital radio in Montenegro were improved, as it was tested by Radio-difuzni centar in Podgorica.

In 2021, a new spectrum auction was prepared and conducted in accordance with the Law. As the legal obligation of the Agency is to initiate public bidding procedure for the reassignment of radio frequencies at least six months before the expiration of the validity period of the existing approvals, the Agency decided to conduct the reassignment of radio frequencies in the 900 MHz, 1800 MHz i 2 GHz band by the end of 2021, for which the approvals to operator Mtel were valid until April 2022, along with the assignment of free radio frequencies in the 2 GHz and 2.6 GHz band, and to conduct the second assignment phase by the end of 2022, that would include radio frequencies for the 5G in the 700 MHz and 3.6 GHz band and as appropriate, radio frequencies in the 1500 MHz, 2.3 GHz and 26 GHz.

The auction conducted in 2021 was organized in the simple format of „clock“ auction with an additional round for possibly unallocated blocks (manual submission of bids and their evaluation), lasted 4 auction days during which 8 auction rounds were organized, and was organized with the application of 114 auction rules. The decision on the selection of bidders in the public bidding process was made in mid-January 2022. After the selected bidders paid the entire amount of the one-time fee for granting authorization for the use of radio frequencies and submitted the appropriate requests, at the beginning of February 2022 the Agency issued the appropriate authorizations for the use of radio frequencies in the 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz for the realization of public mobile electronic communications networks, valid until 1 September 2031, by which the allocation procedure was formally completed. Total revenue from the allocation of radio frequencies in the subject public bidding procedure, representing the revenue of the budget of Montenegro, amounts to 7,086,011.00 €. The revenue from the reserved spectrum (pre-auction phase), the revenue amounted to 4,430,000.00 €, and is equal to the initial price for the blocks included. The revenue from a non-reserved spectrum (main auction phase) was 2,656,011.00 € and is 218,011.00 € higher which is approx. 9% of the initial price for the blocks included. The value of unallocated spectrum at the initial price amounts to 192,000.00 €.

During 2021, the Agency was conducting ordinary and extraordinary control and monitoring procedures of radio-frequency spectrum on the territory of Montenegro in the form of one-day or several-day control-measuring campaigns. The activities were conducted in accordance with the Plan on ordinary and extraordinary control and monitoring of radio-frequency spectrum in 2021, in the 80 MHz – 3 GHz bands and in line with technical capabilities of the control-measuring equipment and software within the actual System for RF spectrum control and monitoring. At the beginning of 2021, further improvement of the System for RF spectrum control and monitoring was achieved by deploying and putting in the operation fixed station in the Nikšić Municipality.

In 2021, the operators submitted a total of 24 requests for the approval for numbers and/or addresses and 1 request for revoking the rights for the use of these resources.

The Single European Emergency Number "112" for the emergency calls is not only a call number, but also a synonym for a modern, integrated systems for receiving emergency calls and responding in the various urgent and emergency situations. Since 20 January 2016, the calls to the number "112" are received through

the 112 Center in Podgorica, Bijelo Polje and Bar. During 2021 OKC 112 received 219,374 calls which is 7.33% more than in 2020.

The number portability service in 2021 used 7,208 subscribers, i.e. 11.7% less than in the previous year. These services was mostly used by mobile telephone users – 6,392, while 816 numbers were ported in the fixed telephony. Average time of number portability in 2021 amounted to 2,48/3,47 (total number of work days/total number of days). Number portability service provided from 1 December 2011 till 31 December 2021 amounted to 69,567 numbers, of which 15,642 numbers in the fixed networks and 53,925 numbers in mobile networks.

Supervision of the work of electronic communications operators is performed by the Agency's supervisors for electronic communications. In 2021, a total of 145 controls was done, of which 128 scheduled controls and 17 extraordinary controls. Professional supervision of the work of postal operators was carried out by the supervisors from the Agency, and in 2021 a total of 39 controls of the work of postal operators, of which 26 ordinary and 13 extraordinary controls.

During 2021, the Agency received 447 submissions of the users of public electronic communications, of which 379 complaints against operators' decisions on the complaints.

A number of submissions by users (68 in total) related to user questions and were answered by letters, some related to issues whose solution is not within the competence of the user protection service, so they were forwarded to supervisors for electronic communications, and some to malfunctions and servicing of telephone devices, so they were forwarded to the Directorate for Inspection Affairs, since they are within their jurisdiction. During 2021, 379 procedures were conducted based on user complaints, of which 66 procedures ended with a decision to accept the appeal, and 94 procedures ended with a decision to reject the appeal due to unfoundedness. A large number of procedures initiated by user complaints were ended by decisions on the suspension of the procedure (219), for the reason that, in the meantime, after submitting the complaints, and with the mediation of the Agency, the operator changed its decisions, i.e. adopted the user's objections, which is why the users gave up the complaints. This number of decisions on the suspension of proceedings, together with the number of accepted appeals, indicates that 285 appeals were resolved in favor of subscribers, which accounts for 75.2% of the total appeals submitted. During 2021, 21 lawsuits were filed against the Agency's decisions, which were answered within the legal deadline. According to the judgments of the Administrative Court, which accepted the lawsuits and annulled the Agency's decisions, 4 decisions were made in the retrial.

Common use of telecommunications cable ducts were implemented in 15 municipalities of Montenegro in the total length of 660 km, being 2% more in relation to the same period in the year before. At the end of 2021, the operators owned 600 antenna masts. The operators as the owners of antenna masts, lease the space on antenna masts on 322 locations, which is approx. 54% of the total number of antenna masts. The operators had 711 places where the premises/buildings/containers with the equipment were located. Common use was implemented on 213 locations, which is approx. 32% of the total number of premises/buildings/containers.

During 2020, the Agency delivered a new system for mapping of electronic communications infrastructure, based on an open source solution. The system for mapping of electronic communications infrastructure is used by the operators, developers of spatial-planning documentation, state, local and other institutions and offices, investors and other relevant natural and legal persons. Through that portal, the operators can deliver data on their electronic communications infrastructure. Also, the implementation of the new system enabled operators to submit plans for the construction of electronic communication infrastructure, and investors to submit notifications about the planned construction of roadways. This system enables efficient planning of networks and services, better quality and simpler creation of planning documents, and investors to invest based on real data. This system allows an efficient planning of networks and services, facilitates development of planning documents of a higher quality, an enables the investors to make their investments based on real

data. Data on telecommunications cable ducts, antenna masts, premises/buildings/containers for storing electronic communications along with data on a high-voltage electricity poles and antenna supports and air ducts. 118 active users from the following entities: 15 operators, 11 planners – developers of planning documents and 3 state authorities were recorded in the system.

At the beginning of June 2019, the Agency put into service system for measuring and analysing the quality of internet access service, the so called “EKIP NetTest”. The EKIP NetTest system allows measuring of parameters of Internet access service quality in fixed and mobile electronic communications networks in Montenegro, and is available to all modern web browsers and mobile devices with Android operations system (version 6.0 or some later version), and iOS (version 10 or later version). Mobile applications can be downloaded from Google Play for Android OS and from App Store for Apple iOS. During 2021, a total of 3,102 individual measurements of the users from Montenegro were performed according to the measurement server of the EKIP NetTest system. The users of mobile communication networks made 547 measurements, where the average download speed was 45.51 Mbps. The number of measurements in fixed electronic communication networks in the same period was 2,555. An average download speed amounted to 39.29 Mbps. The IPv6 Protocol was implemented in the EKIP NetTest during 2021.

Upon request of the holder of preparatory work, the Agency and the operators shall develop and adopt planning document, submit data on actual and planned electronic communications networks, electronic communications infrastructure and associated facilities in the area covered by the planning document. Furthermore, as referred to in the same Article, the Agency’s obligation is to give opinion on the harmonization of planning of electronic communications networks, electronic communications infrastructure and associated facilities in the procedure of preparation of planning document. Based on 5 delivered requests, the Agency submitted relevant data and recommendations for development of spatial planning documents. Data and recommendations were submitted to the Ministry of Ecology, Spatial Planning and Tourism, and were requested for the development of five planning documents in the following municipalities: Budva (2), Mojkovac (1), and Podgorica (2). In 2021, upon 11 requests submitted for opinion, the Agency submitted the opinion on 11 drafts to spatial planning documents. All the opinions to the draft planning document were delivered to the Ministry of Ecology, Spatial Planning and Tourism and are related to planning documentation prepared in the following municipalities: Bar (2), Cetinje (1), Podgorica (3), Rožaje (1), Tivat (1) and Ulcinj (3). The Ministry of Ecology, Spatial Planning and Tourism was submitting the preliminary spatial planning documentation for approval. The Agency replied to the requests, granting 5 approvals to the preliminary spatial planning documentation, in the following municipalities: Berane (1), Gusinje (1), Herceg Novi (1), Plav (1), and Podgorica (1).

The cooperation with the relevant state bodies and institutions had been carried out in accordance with the laws and at the level necessary for the implementation of the following laws: Law on Electronic Communications, Law on Electronic Media, Law on Digital Broadcasting, Postal Services Act, Law on Inspection Supervision, Law on Personal Data Protection, Law on Consumer Protection, and Law on Protection of Market Competition. With a view to establish, develop and strengthen the cooperation within legally determined competitions with the Environment Protection Agency (EPA), the models for improving the cooperation between these two agencies were improved, which resulted in the conclusion of the Cooperation Agreement at the beginning of January 2022.

In the scope of international activities, along with other institutions, organizations and regulatory bodies the Agency continued to cooperate with the Body of European Regulators for Electronic Communications (BEREC), International Telecommunication Union (ITU), European Mediranean Regulators Group (EMERG), European Regulators Group for Postal Services (ERGP), Conference of Postal and Telecommunications Administrations (CEPT), Universal Postal Union (UPU), and European Committee for Postal Regulation (CERP). According to the EU Regulation regarding electronic communications adopted at the end of 2018 (European Electronic Communications Code - EECC) the Agency signed the Work Agreement on the participation in BEREC during the 39th Plenary Session of BEREC, held on 13 and 14 of June 2019 in Gent, Belgium. By signing this agreement the, the Agency could participate in the operations of BEREC Board, Contact Network and

Working Groups of BEREC, as well as in the work of Managing Board of BEREC Office. The Agency also participated in selecting the member of Mini Board, representing non-EU countries. The continuance in the Agency's participation in the work of BEREC allows the Agency to implement best regulatory practices in the sector of electronic communications, faster transfer of expertise and even greater strengthening of personnel capacities.

The European Regulators Group for Postal Services (ERGP) in the work of which Montenegro participates as a regulatory body of the EU candidate country, held two ordinary plenary sessions. Plenary sessions were preceded by the meetings of working groups, were preliminary documents, elaborated on plenary sessions, and had been completed.

Upon invitation of the President of the Council of the Regulatory Authority for Electronic Communications of Portugal (ANACOM) and the President of the European Mediterranean Regulators Group (EMERG), the representatives of the Agency took part for the first time in the EMERG plenary meeting, held in April 2021. The focus of the EMERG activities for the following years corresponds with the Agency's mid-term plans, and considering that the exchange of knowledge and experience among regulators representatives within the EMERG work and actions, will contribute to further strengthening of the Agency's administrative capacities, and thus further improvement of the regulatory frame and development of the electronic communications market in Montenegro, the Agency started a formal initiative for becoming a full EMERG member, and after the initiative had been evaluated by the EMERG members, the Agency became the 23rd member of the EMERG in the middle of June 2021.

In 2021, the Agency and the International Telecommunications Union (ITU) continued with the organization of the International Conference - Regional Regulatory Forum for Europe. The conference on Universal connectivity for a post-pandemic digital Europe was held on 27-28. September 2021, within the framework of the regional initiative for Europe on broadband infrastructure, broadcasting and spectrum management, which was adopted at the World Conference on Telecommunications Development. Regardless of the fact that the Conference was held via online platforms, as in previous years, the interest in participating in the Conference was great. Over 28 eminent speakers presented and discussed during the program sessions. More than 230 registered participants from more than 30 countries took part in the Conference. Also, in cooperation with ITU, a national workshop for Montenegro was held in Podgorica on the topic "IPv6 strategy, policy and implementation". The workshop aimed to raise awareness at the national level regarding the transition from Internet Protocol Version 4 (IPv4) to Internet Protocol Version 6 (IPv6). The workshop was attended by 67 representatives of ministries, state bodies, universities, electronic communications operators, banks, IT companies, the Chamber of Commerce, ITU and BEREC.

The fourth Digital Summit of the Western Balkan countries (WB6) was held in October 2021 in the organization of the Ministry of Public Administration, Digital Society and Media, on behalf of the Government of Montenegro. For the purpose of the Summit, the Agency prepared video materials where the representatives of the Ministry of Economic Development, mobile operators and the Agency set forth their plans with regard to the implementation of 5G in Montenegro. The Agency's representatives also participated in the panel on the subject of digital infrastructure and connectivity, where they presented information on the availability and use of broadband services, level of development of electronic communications infrastructure and future plans for the development of electronic communications networks and services.

In 2021 the Agency's representatives participated in the activities of the Work Group for the Negotiation Chapter 10 – Information Society and Media and Negotiation Chapter 3 – The right to establish the companies and the freedom in the provision of services.

In 2021, the Agency completed all activities provided for by the Work Plan and Financial Plan of the Agency for 2020 adopted by the Decision No: 00-72/20-42/4 EPA 10 XXVII of 29 December 2020 (“Official Gazette of Montenegro” 129/20) of the Parliament of Montenegro, and/or by the Operations Plan for realization of the Work Plan 2021 and the Work Program 2021 of the Agency Council.

1. DEVELOPMENT OF ELECTRONIC COMMUNICATIONS SECTOR

1.1. Development level of electronic communications networks

Electronic communications networks in Montenegro are at a very high level of development and are equipped with the latest technologies for the provision of electronic communications services. Through these networks, the users in Montenegro are provided with all electronic communications services that meet the needs of the users of the services available in the developed countries. Big operators carried out migration of their networks to the so-called All-IP environment, so that through voice transmission services a unique IP network, data transfer and distribution of AVM contents are provided.

During 2020, the operators invested approximately 61 million euros in the development of electronic communications networks, which makes a good bases for improving future accessibility and provision of electronic communications services of higher quality and at lower prices throughout Montenegro. This high investment level in electronic communications sector reaffirms the fact that in Montenegro we have foreseeable regulatory framework allowing equal conditions for all participants in the electronic communications market, which encourages competition as the best regulation method. It is also worth mentioning that the Agency stands for the principle of technology neutrality and does not give advantage to any of the technologies.

1.1.1. Development level of fixed electronic communications networks

The backbone of the operators is based on SDH and MPLS transmission systems realized through fiber optic cables and radio relay systems as physical medium for signal transmission.

SDH backbones are realized using the latest SDH equipment of the world known equipment producers. Maximum network capacity is 10Gb/s (STM64) and serves for SDH and EoS transmission traffic (*Ethernet over SDH*). SDH backbone network mostly realized by ring topology in order to protect the services. A smaller part of the backbone SDH network has a chain topology in places where it was not physically possible to implement a ring topology. There are also local SDH rings and chains for receiving SDH and Ethernet traffic of the local transmission level.

MPLS backbone is a transmission infrastructure allowing high-speed transmission of IP traffic on the territory of Montenegro. By using MPLS network, all business users are provided with basic IP communications service for connecting remote locations with central location, and through MPLS network, they can also implement a group of additional services using advanced technology which allow automation of system configuration per request, high level of security of end to end communication in network traffic, mapping of priorities of business processes through the very backbone, as well as advanced surveillance and network management functions. MPLS network is also used as a backbone network for broadband services provided for the users of these services (services of broadband access, IPTV services etc.).

DWDM (Dense Wavelength Division Multiplexing) technology, by multiplexing wavelengths, allows increase in capacity of existing fibre optic cables. With implementation of this technology, a transparent high-speed transmission of national and international transit traffic is provided.

The IMS (IP Multimedia Subsystem) is a network architecture used for providing multimedia services to end users, and which has also been standardized in accordance with 3GPP/TISPAN specifications. Besides Mtel, which uses this platform since the beginning of its work, Telenor and Crnogorski Telekom also implemented IMS platform.

Progress of technology and development of new services are always putting higher demands to existing access copper network, in order to make transport of service and support to the service available from IP Platforms. Crnogorski Telekom decided to implement MSAN (Multi Service Access Node) concept of access network elements, i.e. to deploy the equipment which makes telephony (*Voice*, ISDN BRI, ISDN PRI and *Broadband*) and broadband xDSL services, available through the network of copper pairs. MSAN enables PSTN user to switch to IMS based system, without using additional equipment i.e. without ADSL or FTTH connections, while telephone remains directly connected to copper network towards MSAN POTS or ISDN port. The equipment is entirely integrated with the IMS system. MSAN active equipment is incorporated according to developed router network and switches in MIPNET network (MPLS network of Crnogorski Telekom), and completely follows topology of MIPNET network. By implementing xDSL technology, beside the access to fixed telephone network and associated services, end user is allowed through actual infrastructure (copper pairs), to access Internet with high-speed flow (up to 40 Mbps-VDSL), as well as the service of distribution of AVM contents. In 2021, Crnogorski Telekom had 253 xDSL hubs.

Development of access networks based on fibre optic cables (FTTH/B) continued also in 2021. Fixed electronic communications operators have developed their access network based on fiber optic cables, using GPON technology, which allows much higher internet access speeds, resulting in higher quality of service provided for end users. Number of FTTH/B connections of Crnogorski Telekom increased by 16.40%, while the number of FTTH connections of Telemach was 11.65% higher than in 2020. Mtel has also developed its access networks based on the fibre optic cables, so that during 2021, number of FTTH/B connections increased by 6.44%. At the end of 2021, FTTH/B access networks were available to end users in each municipality of Montenegro. The operators continue to extend their access networks.

Mtel and Telemach continued to extend their HFC networks, with implemented DOCSIS 3.0 standard, and in relation to 2020 the number of users raised by 2.61%.

It is estimated that at the end of 2021 approximately 70% of households were covered with FTTx, 69% with VDSL, 49% with HFC, with ADSL 18%, while approx. 15% of household were not covered with fixed broadband access.

During installation of fiber optic cables, a common use of telecommunications cable sewage was mostly implemented, so that it exists in 15 Montenegrin municipalities in total length of approx. 660 km, which is 2.3% more than in 2020.

Further modernization of networks of the operators performing distribution of AVM contents to end users was carried out. In all municipalities at least three methods of distribution are offered, the offer in 19 municipalities is based on all four distribution methods (KDS, IPTV, DTH and DVB-T2). In 13 municipalities, among five available operators the users may choose the one they prefer. In the total structure are dominating: KDS, DTH and IPTV users with more than 96.7% market share, but the number of users through DVB-T2 platform has been also increasing.

At least three distribution methods are offered in the municipalities, and the offer in 19 municipalities is based on all four distribution methods (KDS, IPTV, DTH and DVB-T2). In 13 municipalities, users have the

option to choose all five operators. In the total structure are mostly used: KDS, DTH and IPTV, with approximately 96.7% market share.

1.1.2. Development level of mobile electronic communications networks

Development of mobile electronic communications networks in Montenegro continued during 2021, mostly by increasing the capacities of the access part of LTE/LTE-Advanced mobile networks with a view to compensating the increase in the traffic volume and keeping data transmission high quality.

Level of technological development of modern mobile electronic communications networks reflects in the network capacities to support broadband data transmission services. Due to continuous needs of the users to have higher data transmission speeds and higher service quality, mobile operators in Montenegro have continuously improved their networks in order to meet growing needs of the users, thus keeping the pace with technological development of the operators in developed European countries. By allocating radio frequencies in the 800 MHz, 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz, necessary conditions for further development of mobile electronic communications networks and services in Montenegro, have been fulfilled.

All three mobile networks in Montenegro are based on harmonized standards of second generation (GSM/DCS1800, including GPRS package segment, i.e. EDGE package segment), third generation (UMTS, including HSPA+ and DC-HSDPA), and fourth generation (LTE, that is LTE-Advanced). Regarding the support to data transmission services, GPRS/EDGE is implemented in all GSM/DCS1800 radio base stations in the networks of all three mobile operators. In the access part of 3G network, all three mobile operators in Montenegro deployed HSUPA technology (3GPP Release 6) on uplink and HSPA+ technology (3GPP Release 7) on downlink. All UMTS radio base stations of all three mobile operators, theoretically, enable maximum download of 21.1 Mbps and maximum upload of 5.76 Mbps in the 2x20 MHz wide channel. Depending on demands for the capacities, at many locations in urban city areas a DC-HSDPA (3GPP Release 8) concept is implemented, which theoretically enables maximum downlink of 42.2 Mbps, using two adjacent channels 2x5 MHz wide. LTE technology implemented in the networks of mobile operators in Montenegro, enables maximum downlink of 150 Mbps and maximum uplink of 50-75 Mbps, in the channel 2x20 MHz wide and applying 64-QAM modulation and 2x2 MIMO techniques. By applying aggregation of LTE bearers in two and in three bands, depending on the width of involved spectrum, in downlink were reached proportionally higher speeds. More precisely, the speed of 300 Mbps was reached in the network of Crnogorski Telekom in the zone of the base station services used for implementation of 2CA techniques, and 375 Mbps on the locations where 3CA techniques are implemented. In order to enhance the capacities on several locations with a great traffic volume, Telenor and Crnogorski Telekom applied 4x4 MIMO techniques (up to 3GPP Release 12). It should be noted that the stated values represent the theoretical maximum capacity per cell, which is rarely achieved in real conditions. Real flows at the application level depend on many parameters, some of which are not related to network performance, and in LTE networks this capacity is shared by all users in the service area of the base station.

In June 2021, Crnogorski Telekom carried out testing of 5G NR technology, which is the first 5G installation in real conditions in Montenegro. Previously allocated radio frequencies from the 2 GHz range were used for this purpose. The test scenario involved the implementation of a NR radio base station together with a co-located LTE radio base station and the application of the dynamic spectrum sharing technique (*Dynamic Spectrum Sharing - DSS*). Testing was conducted at the locations of TK Center Berane and TK Center Bijelo Polje.

When the word is about the representation of radio interface technology in the access network for providing data transmission services, according to the results of measuring service quality parameters in mobile networks, LTE technology dominates with a share of over 99% of the total number of data transmission sessions in cities, i.e. over 95% on roads. The rest of the data traffic is realized through UMTS networks, while

GSM technology is not significantly used for data transmission. When we talk about the representation of radio interface technology in the access network for providing data transmission services, according to the results of measuring service quality parameters in mobile networks, LTE technology dominates with a share of over 99% of the total number of data transmission sessions in cities, i.e. over 95% on roads. The rest of the data traffic is realized through UMTS networks, while GSM technology is not significantly used for data transmission.

Voice transmission service is provided in all three mobile networks through GSM/DCS1800 and UMTS networks, based on circuit switching. VoLTE technology is still not implemented. According to the results of measuring of service quality parameters in mobile networks, 95% of the total number of voice calls in the cities and around 75% of the total number of voice calls on the roads were realized in the UMTS networks, while the remaining part in GSM/DCS1800 networks.

With regard to IoT/M2M technology, NB-IoT technology (specified in 3GP Release 13) was deployed only by Crnogorski Telekom, on several locations, mostly for meeting individual user requests in the limited service zone. NB-IoT bearer is implemented in the protection range between neighbouring LTE bearers in the protection range of 800 MHz.

UMTS and LTE/LTE-Advanced networks operate integrally, with an integrated core and common transmission network. The transmission part of Telenor network and Mtel network is based for the most part on microwave radio-relay connections, with optical fiber transmission, but which is expanding. Crnogorski Telekom uses optical transmission capacities on the backbone of the transmission network, and in the part of the transmission to the backbone of the network, it also relies to a significant extent on microwave radio-relay connections. In order to provide support for meeting the growing demands for broadband services, the capacities of transmission networks are constantly being expanded, by increasing the capacity of radio-relay connections (on some routes to the technological maximum) and developing optical connecting roads, both in the backbone of the network and in the part of the transmission to the backbone of the transmission networks. All three mobile operators have migrated their transmission networks to all IP transmission. In the networks of all three operators, the so-called vertical handover, i.e. automatic connection switching from one technology to another, which achieves maximum transmission performance and connection continuity.

Regarding population coverage rate of mobile networks signal, Montenegro is comparable with the most developed European countries. Namely, total coverage with GSM signal is around 99%, while total coverage with UMTS and LTE networks signal is approximately 98% (data provided by software prediction), what makes Montenegro one of the countries with very good coverage. Almost all populated areas (all urban settlements, all suburban areas and the greatest part of rural areas), main roads (including tunnels), and tourist centres are covered with mobile network signal - with GSM is covered approximately 85%, and with UMTS and LTE is covered 80% of the whole territory of Montenegro (data provided by software prediction).

Coverage of other, less populated areas is improved through universal service mechanisms. Having in mind very demanding terrain configuration in Montenegro for the coverage with mobile network signal, radio access part of mobile networks of all three operators is realized with radio access signal of mobile networks, with high, even continuously increasing number of radio base stations. Thus, at the end of 2021, the following radio base stations were operating: 425 in Telenor network, 398 in the network of Crnogorski Telekom, and 376 locations of base/repeater stations for outdoor and tunnel coverage in Mtel network.

Radio access part of GSM network of Crnogorski Telekom is realised with radio base stations at 368 locations, as of Telenor at 410 locations and of Mtel at 351 locations. Except for radio base stations in the range of 900 MHz, used for basic coverage with 2G signal, capacity problems in densely populated areas, were mostly resolved by collocated DSC1800 radio base stations in the range of 1800 MHz. During spectrum refarming in 900 MHz and 1800 MHz bands, volume of GSM/DCS1800 installations has been gradually reduced in the networks of all three operators, while released RF resources have been used for implementation of spectrally more efficient UMTS and LTE technologies.

The access part of the UMTS networks of all three operators is realized in 2 GHz and 900 MHz bands. By implementing the UMTS technology in the 900 MHz band, population coverage in Montenegro with 3G signal is extended to rural and less populated areas, and the signal has been enabled along the main roads. Radio access part of the UMTS networks is also realized with quite a great number of Node B stations (at the end of 2021 there were 413 stations in Telenor network, 297 in the network of Crnogorski Telekom, and 298 stations in Mtel network), mostly collocated with GSM/DCS1800 radio base stations.

The greatest progress with regard to the plan of development of mobile electronic communications network during 2021 was achieved in the access part of LTE/LTE-Advanced networks of all three operators. Til the end of 2021, Crnogorski Telekom implemented LTE radio base stations in the 800 MHz, 1800 MHz and 2.6 GHz at 372 locations, of which 126 locations were provided with 2CA technique, while at 35 locations was implemented 3CA technique. The base coverage with LTE signal of the network of Crnogorski Telekom is approximately 97% of the population of Montenegro, while coverage with the signal of LTE network with regard to the opportunity of providing data transmission services with minimum downlink flow of 10 Mbps, approximately amounts to 96.5% of the population of Montenegro (data provided by software prediction). At the end of 2021, in the access part of LTE network of Crnogorski Telekom, there were 151,875 PRB (*Primary Resource Block*) active blocks.

According to the results of software prediction, basic coverage of the population of Montenegro with LTE signal of Telenor network is approximately 96.5%, while the coverage with the signal of LTE network in terms of possibility of providing a data transmission service with minimum downlink flow of 10 Mbps amounts to approximately 95% of the population of Montenegro. LTE radio base stations realized in the 900 MHz, 1800 MHz and 2 GHz are implemented at 420 locations, of which 2CA technique was implemented at 177 locations, while at 76 locations was implemented 3CA technique. At the end of 2021, in the access part of LTE network of Telenor, 126,325 PRB blocks were active.

Level of basic population coverage in Montenegro with LTE network signal of Mtel amounts nearly to 95%, while the coverage with LTE signal in terms of capability to provide data transmission service with minimum downlink flow of 10 Mbps is more than 93% of the population of Montenegro (data provided by software prediction), achieved by implementing e-Node of B stations in the 800 MHz, 1800 MHz, and 2.6 GHz bands at 279 locations, of which 2CA technique was implemented at 97 locations, while 3CA technique was implemented at 20 locations. At the end of 2021, the capacity in the access part of LTE network of Mtel was provided by means of 87,500 active PRB blocks.

According to the results of measuring the parameters of the quality of data transmission services in mobile networks, which the Agency carried out at the end of 2019 and the beginning of 2020, the average speed of data transmission in urban areas, depending on network, was in the range of 10-18 in downlink flow, and in the range of 11-28 Mbps in uplink.

In 2021, the Agency did not carry out a comparative measuring of quality parameters of the services provided through public mobile communications networks. The planned measurement campaign was postponed to the first half of 2022 due to the need to upgrade the measurement equipment, so that it could support all the technologies and functionalities that have been implemented in mobile networks in Montenegro in the meantime.

Relying on the above mentioned, the level of development of mobile communications networks and the availability of mobile communications services in Montenegro at the end of 2021 can be expressed as follows:

- 98-99% population coverage with GSM signal;
- Coverage of 97-98% population with UMTS and LTE signal;
- allowed data transfer service with functional flow of 10Mbps or more in downlink, on the territory inhabited with appr. 97% of population;
- 15-20 Mb/s average speed of data transfer in downlink in urban areas, and 10-18 Mbps along the main roads (according to measurement results at the end of 2019);

- in serving data traffic LTE/LTE-Advanced networks participate with over 99% in urban areas, i.e. over 95% along main highways, while the rest of data traffic is realized through UMTS networks;
- in serving voice traffic, UMTS networks participate with a share of over 95% in urban areas, i.e. over 75% along the main highways, and the rest of the voice traffic takes place through GSM/DCS1800 networks;
- the technology development level of UMTS networks is stopped at HSPA+ and DC-HSPA (3GPP Release 7 and 8) regarding downlink, and HSUPA (3GPP Release 6) regarding uplink;
- the technology development level of LTE networks at LTE-Advanced level (3GPP Release 10-12), e-Node B stations with up to three aggregated LTE carriers 10 MHz or 20 MHz wide, 64-QAM modulation and 2x2 MIMO technique (4x4 MIMO technique on several locations with a large traffic volume in the network of two operators);
- VoLTE technology is not implemented;
- implemented NB-IoT technology (3GPP Release 13) in the network of one operator, on some locations;
- one operator conducted testing of 5G NR technology in the range of 2 GHz with application of DSS technique.

1.2. Implementation of 2021 Information Society development strategy

The strategy of the development of the Information Society of Montenegro 2020 determines strategic goals of development in this area with the aim to reach the standards of the European Union set in the 2020 Digital Agenda and single digital market strategy. The document is divided into chapters that are identified as a key to achieve the EU standards in that area: infrastructure for broadband Internet access, information security, human capital, e-business, e-education, e-health, e-inclusion, e-management and research, innovation and development.

In the chapter regarding broadband Internet access infrastructure are enlisted series of measures that shall be implemented in order to follow strategic directions of the development. With a view to adequate monitoring of the realization of the goals set forth in the part of the infrastructure for broadband Internet access, strategic indicators as measurable quantities that will be monitored during the implementation of the Strategy were introduced.

In the Table below is given an overview of strategic indicators of the Strategy, their values in 2017, values achieved at the end of 2021 and the values planned by the Strategy. While calculating the indicators, only ≥ 2 Mbps broadband connections are considered.

Indicator	2017 Strategy status	2018 Plan	2020 Plan	2021 status
Availability of NGA broadband access ¹ Share of households in the field of NGA availability (30 Mbps)	26.5%	60%	100%	81.04%
Penetration of fixed broadband connections (households) Share of households using at least fixed broadband access (2 Mbps)	53.3%	80%	100%	95.92%

¹ During 2020, the Agency introduced new methodology for calculating availability of NGA broadband access. After implementation of the System for broadband access mapping, the Agency can, based on the geo-referenced data on electronic communications networks, given by the operators, and based on the available data on geographic positions of buildings (with predictions of household positions), quite precise in calculating the value of mentioned indicator.

Share of broadband connections of high speeds	3.6%	30%	70%	69.57%
Share of connections of broadband internet access via fixed network of high speeds (30 Mbps) in the total number of fixed broadband connections				
Penetration of fixed ultra-speed broadband connections (households)	0%	20%	50%	39.61%
Share of households using ultra-speed fixed broadband access (100 Mbps)				

Note: Share of the households used at least by fixed broadband access (2 Mbit/s) in the coastal area of Montenegro and in Podgorica is quite high as there are more connections in relation to the number of households, i.e. in some of the municipalities is more than 200%.

1.3. Overview of registered operators of electronic communications in 2021

In accordance with the Law on Electronic Communications, the operator of electronic communications is a physical or legal person, and/or entrepreneur providing or being entitled to provide public electronic communications service or to lease public electronic communications network or public electronic communications infrastructure and associated facilities.

Legal or physical person shall before start to use, and/or the operator before the completion or change of the regime in the use of public electronic communications networks or provision of public electronic communications services, submit written application to the Agency at least 15 days before starting to use, that is before end or change in the regime of the use of electronic communications networks or before end or change in the provision of public electronic communications services.

At least seven days from the date of receiving duly fulfilled application, the Agency shall enlist the operator in the Register of operators or shall make the change or remove it from the Register and shall also issue the confirmation on registration, change or removal of the operator from the Register.

At the end of 2021, a total of 35 operators were enlisted in the Registered of operators kept by the Agency for performing the following services:

- implementation of public fixed electronic communications network and provision of public fixed electronic communications services,
- implementation of public mobile electronic communications networks and provision of public mobile electronic communications services,
- implementation of public fixed electronic communications networks based of fixed wireless access (FWA) and provision of public electronic communications services,
- provision of the service of voice transmission through the networks based on internet protocol,
- provision of public service of internet access,
- provision of public service of leased lines,
- implementation of public electronic communications networks for transmission and broadcasting of radio signals and other signals, provision of public electronic communications services of transmission and broadcasting of radio signals, public electronic communications services of the lease of lines and public electronic communications services of multiplexing, transmission of multiplexed signals to the transmitter multiplex network for broadcasting radio and other signals and electronic communications infrastructure lease services,
- implementation of public cable electronic communications networks and provision of public electronic communications services of distribution of radio and television programs to end users,
- provision of public electronic communications services by means of its own functional networks/systems,

- implementation of public electronic communications networks based on a broadband wireless access (BWA) and provision of public electronic communications services,
- provision of IP telephony service, return call and information centre services,
- provision of internet access service through wireless access systems in radio-frequency bands of 2.4 GHz and 5 GHz, intended for these systems,
- provision of lease service of digital ducts in national and international lines,
- provision of fiber lease service (dark fiber),
- providing the services of: internet access, voice transmission over internet protocol (VoIP), video streaming, fax, Voice service and ethernet connection (point - point), and IP transit,
- provision of the service of connection to a national Internet exchange point (IXP),
- provision of the service of access and use of the electronic communications network and electronic communications infrastructure lease,
- implementation of electronic communications networks based on TETRA (Terrestrial Trunked Radio) standard and electronic communications services of voice transmission and short text messages via TETRA system,
- provision of public electronic communications services via satellite (internet access and leased line services),
- provision of the service of public telephone box and voice transmission via networks based on internet protocol.

In 2021, the following companies were enlisted in the Register of operators:

1. "RED" d.o.o. Podgorica, entered in the Register of public electronic communications services via its own functional network/system;
2. "REGIONALNI VODOVOD CRNOGORSKO PRIMORJE" d.o.o. Budva, registered for the provision of lease services of optical fiber (*dark fiber*);
3. „PORTONOVI RESORT MANAGMENT COMPANY“ d.o.o. Herceg Novi, registered for the provision of lease services of optical fiber (*dark fiber*) and electronic communications infrastructure lease services.

In 2021, the following operators were deleted from the Register of operators:

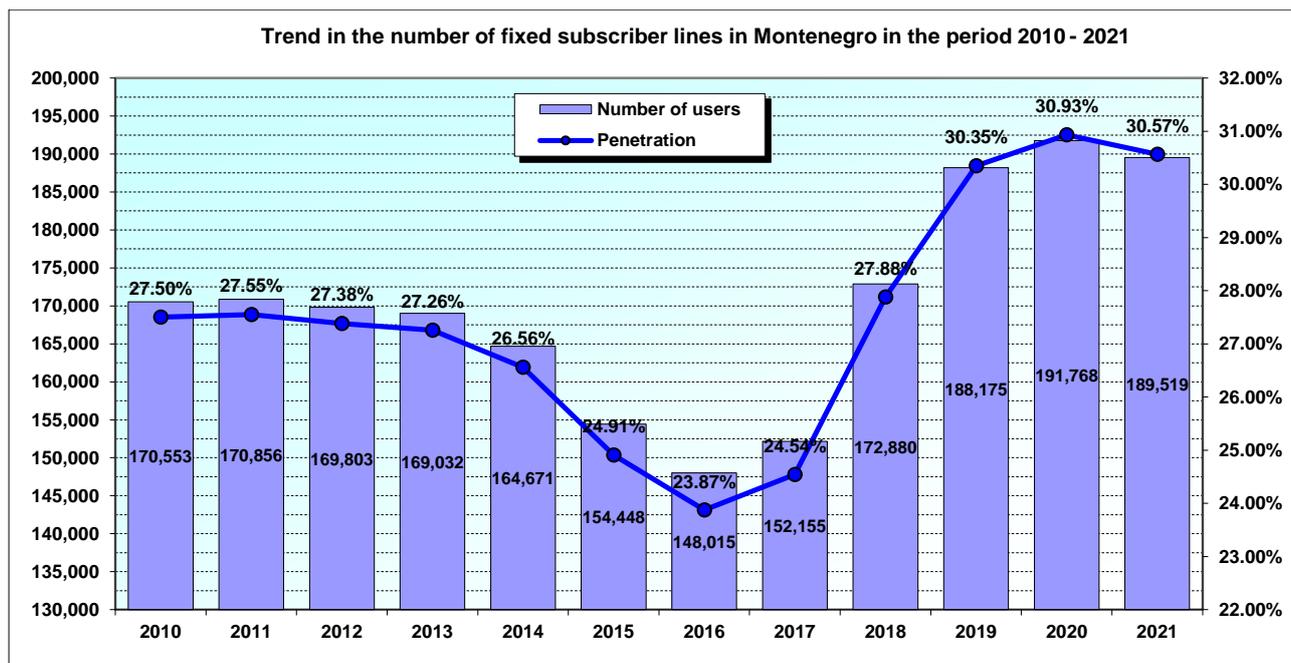
1. „BUM TEK“ d.o.o. Podgorica, registered for the provision of public electronic communications services via its own functional network/system;
2. „NETWORK GARAGE“ d.o.o. Podgorica, registered for the provision of public electronic communications services via its own functional network/system.

1.4. Fixed telephony market

During 2021, services of fixed telephony at the territory of Montenegro were provided by the operators: Crnogorski Telekom, Mtel, Telemach and Telenor.

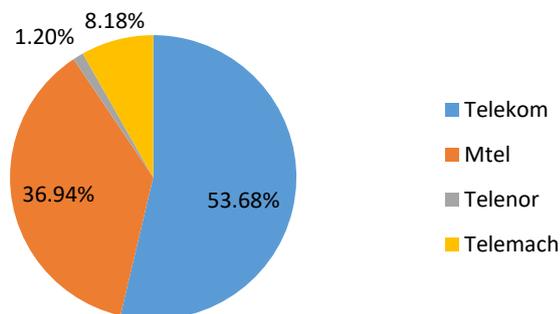
At the end of 2021 there were 189.519 subscriber lines, which is the penetration (number of connections per 100 inhabitants) of 30.57%. Comparing to the year before, it is a decrease of 1.17%.

The following chart shows trend in the number of fixed subscriber lines in Montenegro and the penetration.



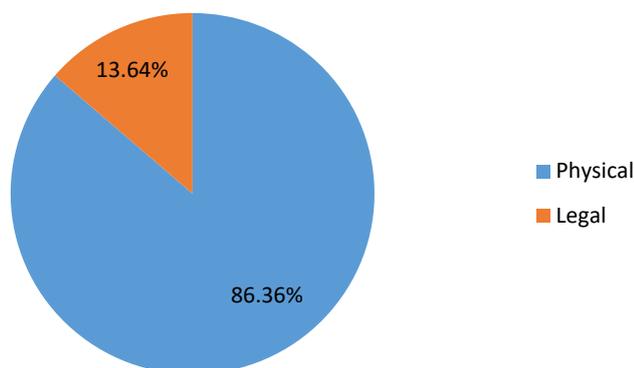
Of the total number of fixed telephony connections, Crnogorski Telekom had 101,731, Mtel 70,009, Telemach 15,505 and Telenor 2,274 connections.

Share of fixed telephony operators per number of connections



The share of physical persons in the total number of fixed telephony connections in Montenegro was 86.36%, while the share of legal persons was 13.64%.

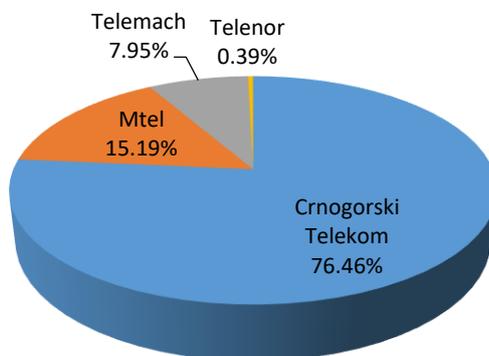
Share of fixed telephony operators per user type



1.4.1. Traffic volume and structure

In 2021, the users of all four fixed operators in Montenegro made 96,235,687 minutes of outgoing traffic. The share of outgoing traffic made from the network of Crnogorski Telekom in the total number of outgoing traffic was 76.46%, while the share of outgoing traffic made from Mtel network was 15.19%, the relevant traffic made from Telemach network was 7.95%, and outgoing traffic made from Telenor network was 0.39%. The chart below shows the market share of operators per number of outgoing traffic minutes:

Share of operators in the total traffic realized in 2021



1.4.2. Comparison of the fixed telephony prices among the operators performing the activities on the market of Montenegro

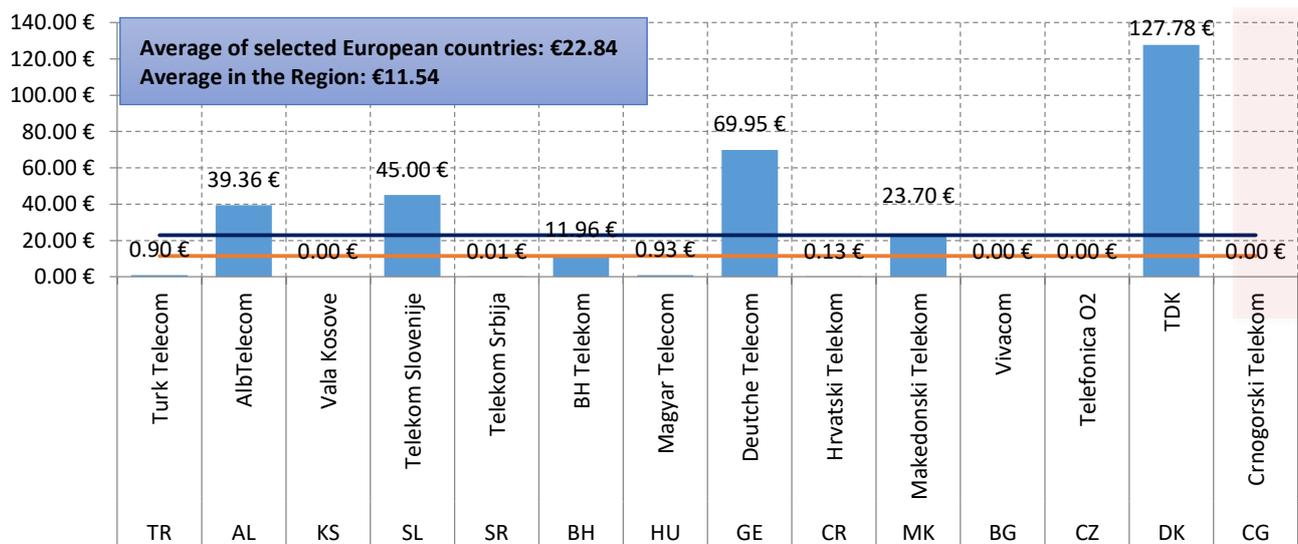
In order to compare the prices of fixed telephony among the operators offering these services in Montenegro (Crnogorski Telekom, Mtel, Telemach), one service package with the largest number of users from each of these operators have been considered. The prices refer to physical persons², and are given on 31.12.2021 in € (eur), with VAT included.

² Telenor operator provides fixed telephony services only for the users from the category of legal entities

Operator	Crnogorski Telekom	Mtel	Telemach
Package name	Standard package (billing: 60+1 s)	Tel BOX 1 (billing: 60 s + 60 s)	Tel package (billing: 60+1 s)
Monthly fee for network access (or for network maintenance)	6.17	-	10.80
Monthly subscription	3.83	6.99	3.90
Calls in the network	Local: 0.0136/0.0097 Intercity: 0.0172/0.0109 Periods: /peak/low traffic)	0.015	0.014
Other fixed networks in Montenegro	0.0311	0.045	0.014
Mobile networks in Montenegro	0.0322/0.0321 (Periods: peak/low traffic)	0.06	0.06
International calls (Serbia, fixed networks)	0.12	0.30	0.11
International calls (Serbia, mobile networks)	0.21	0.30	0.31
International calls (Region, fixed networks)	0.12	0.21 – 0.26	0.12
International calls (Region, mobile networks)	0.27	0.21 – 0.26	0.31
International calls (Europe, fixed networks)	0.09	0.26	0.14
International calls (Europe, mobile networks)	0.23	0.26	0.31
International calls (the USA, fixed networks)	0.05	0.41	0.10
International calls (the USA, mobile networks)	0.05	0.41	0.10

1.4.3. Fixed network connection fee

Connection fee to the network of Crnogorski Telekom was €0 at the end of 2020. This fee refers both to physical and legal persons. In the following chart is given comparison with surrounding countries and selected European countries, with VAT included.

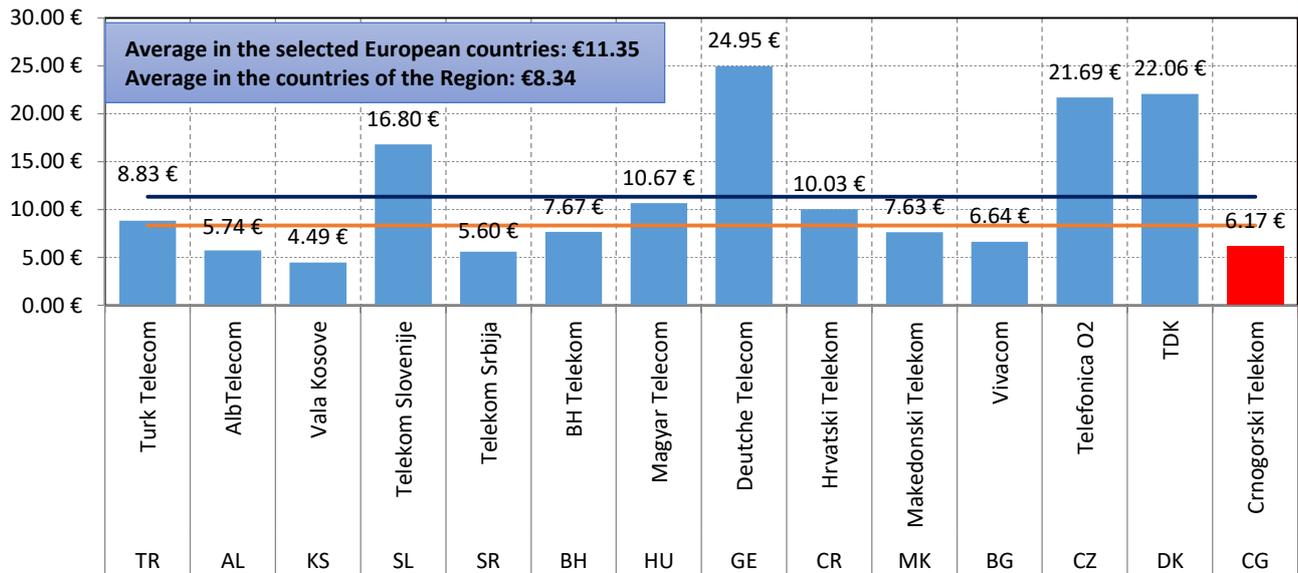


Average price of connections in the countries of the Region amounts to €11.54, while connection fee offered by Crnogorski Telekom is €0.

Average price of connection in the observed selected European countries amounts to €22.84, while connection fee offered by Crnogorski Telekom is €0.

1.4.4. Monthly subscription fee

Monthly subscription fee for the users of fixed telephony services of Crnogorski Telekom is €6.17. In the chart below is given comparison of monthly subscription fee with the ones in the surrounding countries and in selected European countries.

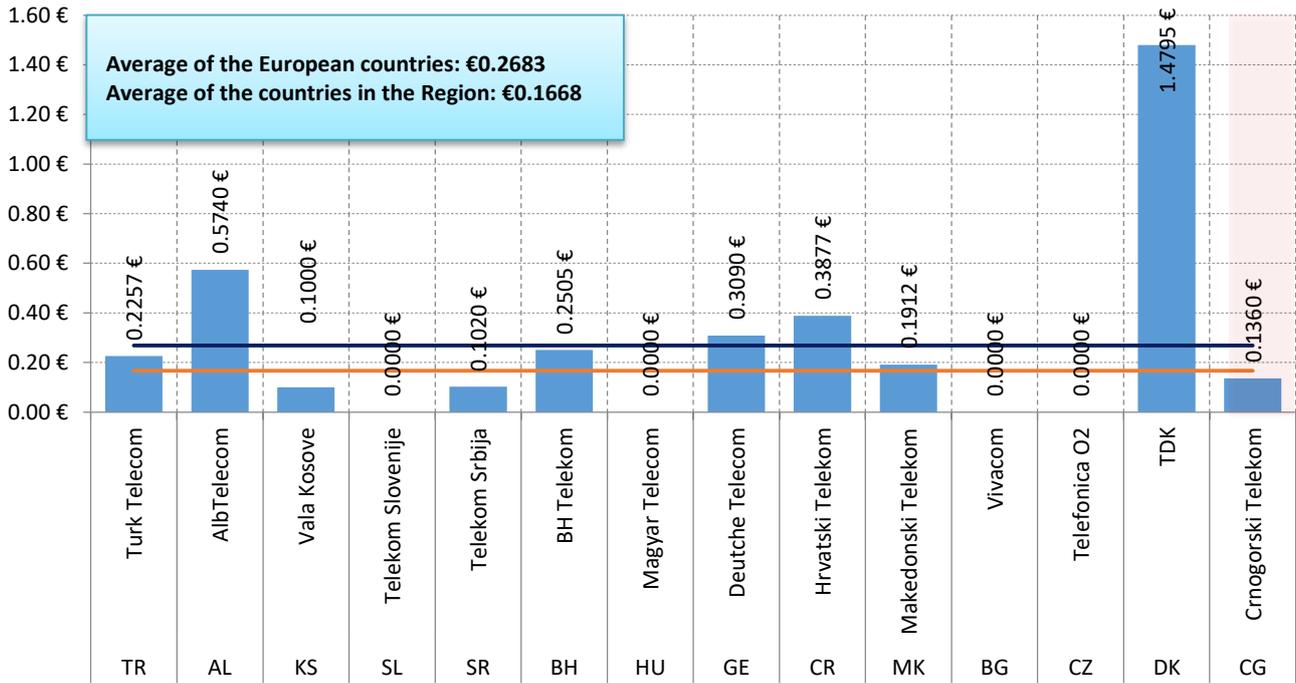


Average monthly subscription fee in the countries of the Region is €8.34, while monthly subscription fee offered by Crnogorski Telekom is €6.17, being 26.02% lower than the respective average in the countries of the Region.

Average monthly subscription fee in the observed selected European countries amounts to €11.35, while a monthly subscription fee offered by Crnogorski Telekom is €6.17, which is 45.64% lower than the respective average in the selected European countries.

1.4.5. Local call fee

The following is the chart of the countries in the Region and selected European countries by a 10-minute local call fee. The prices are in euros, with VAT included.



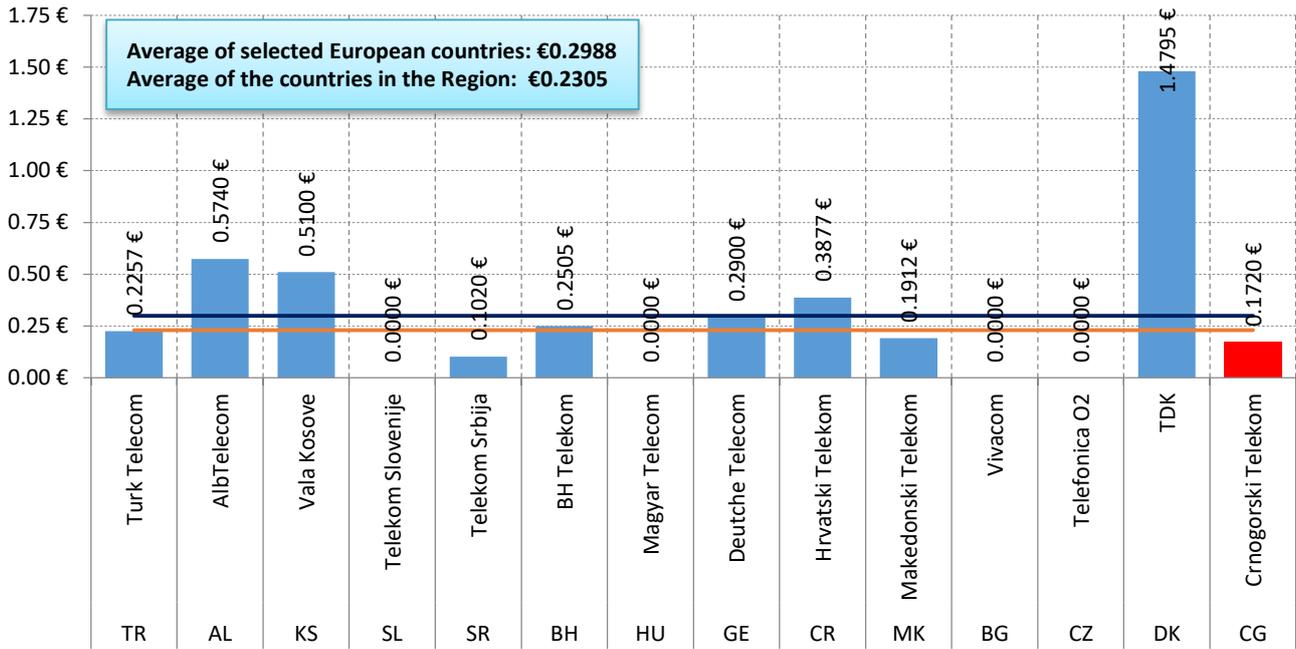
Average 10-minute local call fee in the countries of the Region is €0.1668, while a 10-minute local call fee offered by Crnogorski Telekom is €0.1360, being 18.46% lower than the respective average in the countries of the Region.

Average 10-minute local call fee in the countries of the Region is €0.1668, while a 10-minute local call fee offered by Crnogorski Telekom is €0.1360, being 18.46% lower than the respective average in the countries of the Region.

Average 10-minute local call fee in the observed selected European countries is €0.2683, while a 10-minute local call fee offered by Crnogorski Telekom is €0.1360, i.e. 49.31% lower than in the respective average in the selected European countries.

1.4.6. National call fee

The following chart presents countries of the Region and selected European countries by national (intercity) 10-minute calls in the incumbent network. The fees are in euros, with VAT included.



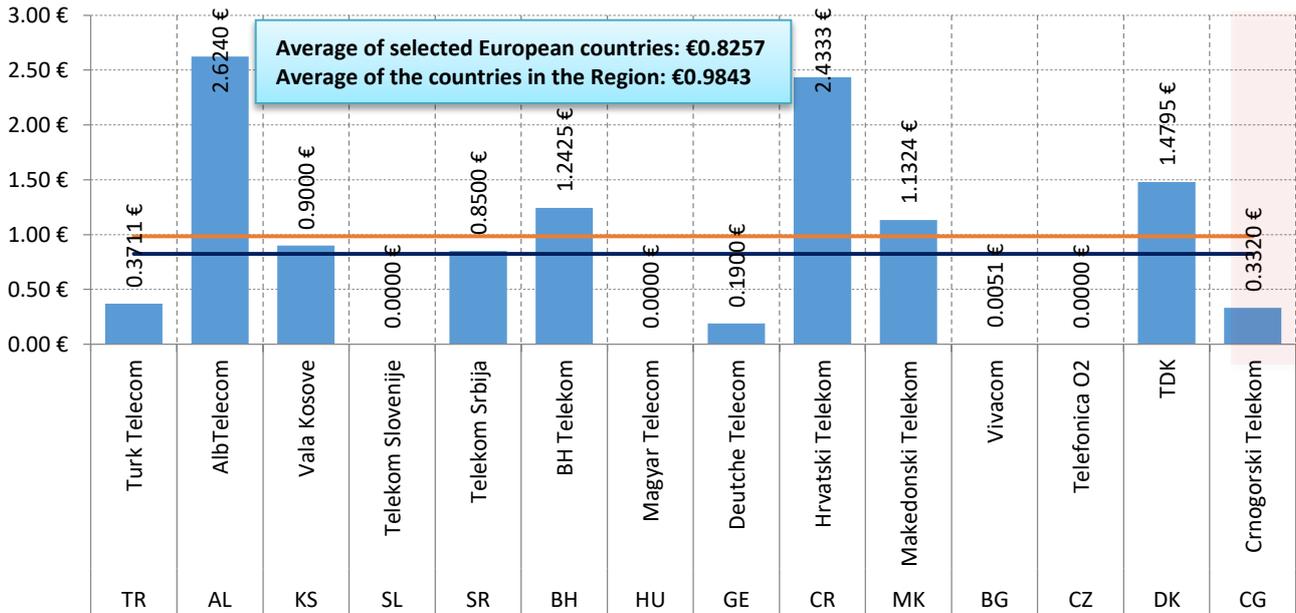
Average fee of a 10-minute national call in the countries of the Region is €0.2305, while a 10-minute national call offered by Crnogorski Telekom is €0.1720, being 25.38% lower than the respective average in the countries of the Region.

Average fee of a 10-minute national call in the selected European countries is €0.2988, while a 10-minute national call fee offered by Crnogorski Telekom is €0.1720, being 42.44 % lower than the respective average in the selected European countries.

1.4.7. Call price for calls to mobile networks in Montenegro

The following chart shows the prices of calls for conversations lasting 10 (ten) minutes from the incumbent operator's network to national mobile networks for a duration of 10 (ten) minutes in the countries of the Region.

of the countries in the Region and selected European countries by a 10-minute call fee for the calls made from incumbent operator networks to national mobile networks. The prices are in euros, with VAT included.



Average 10-minute call fee for the calls made to mobile networks in the countries of the Region is €0.9843, while a 10-minute call fee to mobile networks offered by Crnogorski Telekom is €0.3320, which is 66.27% lower than the mentioned average in the countries of the Region.

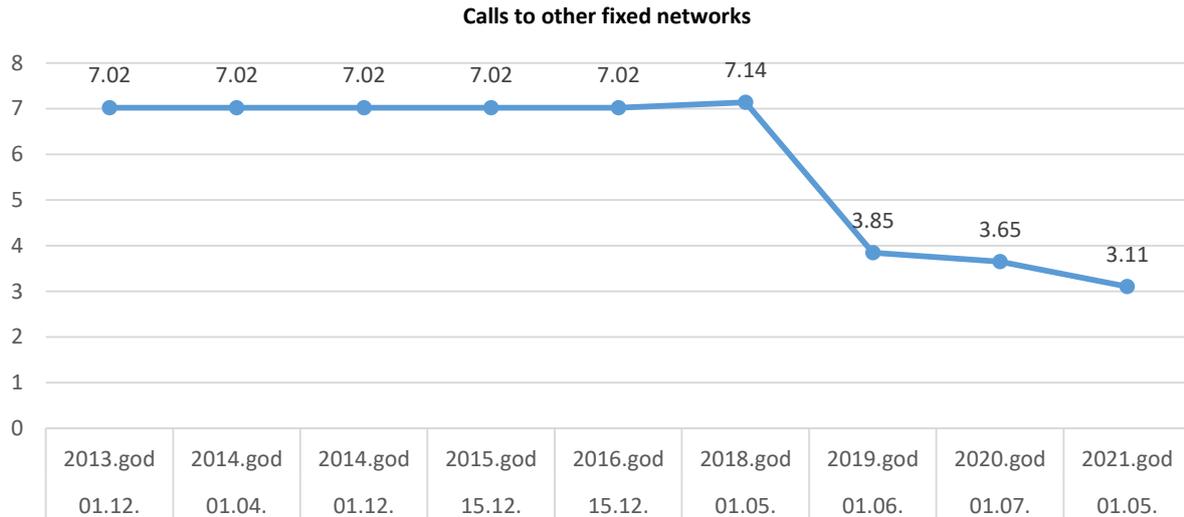
Average 10-minute call fee to mobile networks in the observed selected European countries is €0.8257, while the price of a 10-minute call to mobile networks offered by Crnogorski Telekom is €0.3320, being 59.79% lower than the mentioned average in the selected European countries.

1.4.8. Call price for calls to other networks in Montenegro

In the period 2013-2018, the Agency did not implement regulation of service charges of the calls to another fixed network. In that period, Mtel was the only alternative fixed operator providing services of fixed telephony through WiMax technology and was not providing neither significant network coverage nor a subscription base.

As from 2018, situation on the market changed as the level of competition raised, and the operators: Mtel, Telemach, Telenor and IPMont started to significantly extend their networks with a view to providing service packages at the first place, and within their scope the services of access to public telephone network and calls on fixed location were provided.

Therefore, upon verification of cost model results according to CCA/LRIC methodology for the fixed networks for 2016, the Agency imposed to Crnogorski Telekom to reduce the prices of call services to other fixed networks by 40%, and upon CCA/LRIC cost model verification results for fixed network for 2018, to reduce them by 5%, and upon adoption of the cost model results for 2019, to reduce them by another 15%.



Trend in charges of calls to other fixed networks, in €/cent, in the period 2013-2021

Since the beginning of the application of the results of cost models in the regulation of the price of this service, Crnogorski Telekom applied the highest rate of service price reduction, of about 46%, in the middle of 2019.

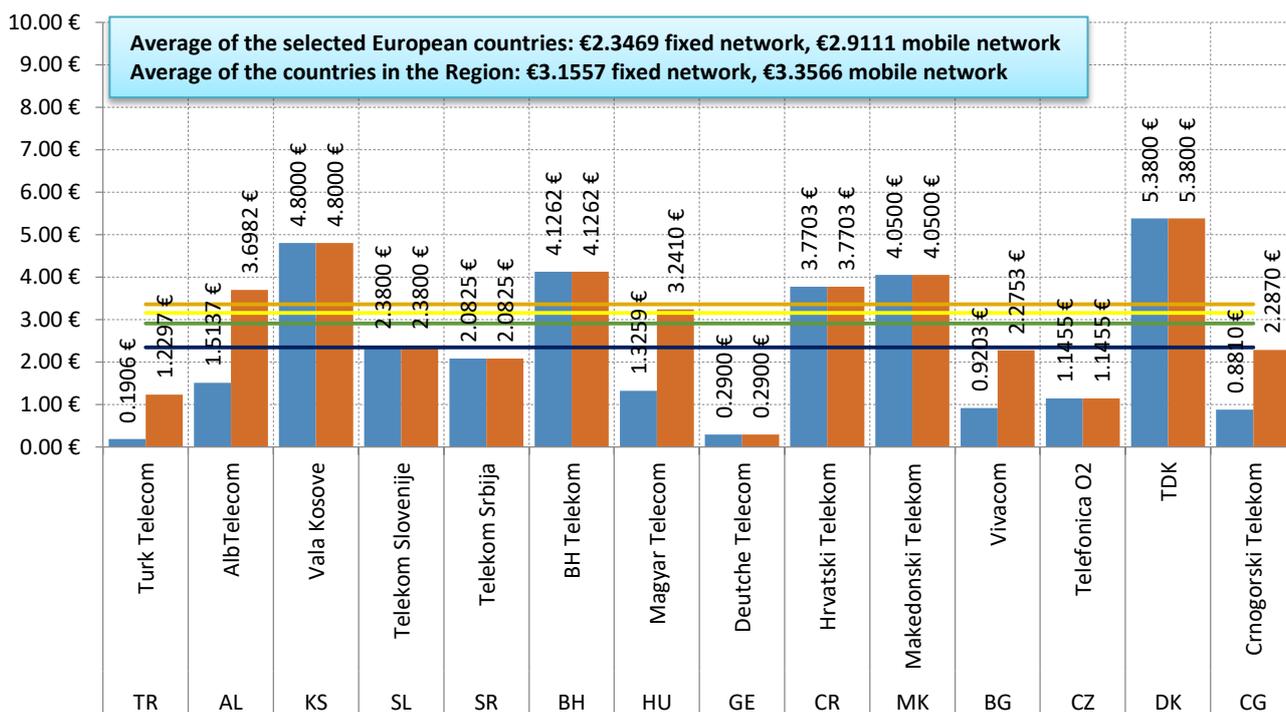
Overview of the reduction of call service charges for the calls to fixed networks in the period 2013-2020

Service type	01.12. 2013	01.04. 2014	01.12. 2014	15.12. 2015	15.12. 2016	01.05. 2018	01.06. 2019	01.07. 2020	01.05. 2021	charge reduction for the total period in %
Calls to fixed networks	7.02	7.02	7.02	7.02	7.02	7.14	3.85	3.65	3.11	
Charge reduction per year in %		0%	0%	0%	0%	2%	-46%	-5%	-15%	-56%

Average annual decrease of local call service charge in the observed period is approximately 8%, and comparing the valid charge in 2021 with the respective charge in 2013, total decrease in service charge is 56%.

1.4.9. Charges of international calls

Charges of calls from the fixed network of incumbent operator to fixed networks in Great Britain (UK) and in the United States of America (USA) are used as a representative example for the analysis of these prices. The chart below shows the price of a 10-minute international calls from the fixed network of Crnogorski Telekom (incumbent operator) to Great Britain, expressed in €, with comparative prices for the same service in the countries of the Region and in selected European countries.



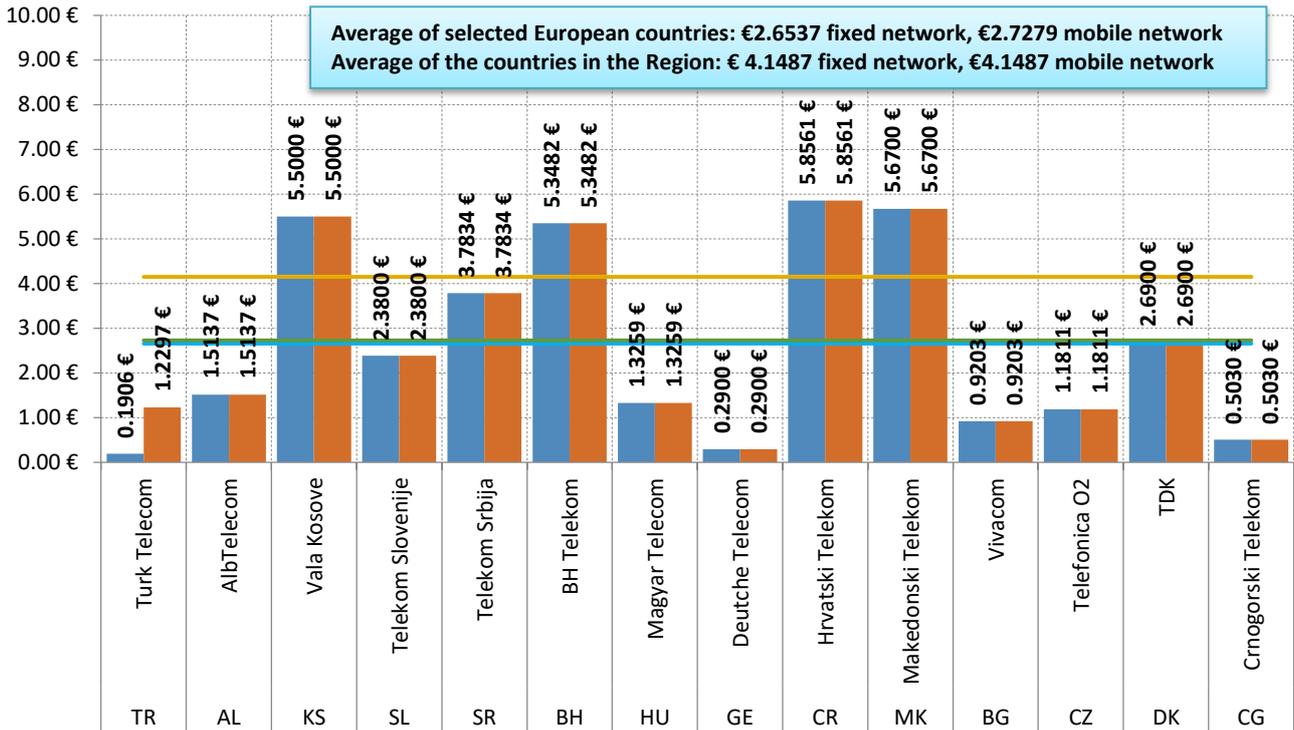
Average price of a 10-minute call to fixed networks in the UK, in the countries of the region, is €3.1557, and the price of a 10-minute call to fixed networks in the UK, offered by Crnogorski Telekom amounts to €0.8810, being 72.8% less than the respective average in the countries of the Region.

Average price of a 10-minute call to mobile networks in the UK, in the countries of the Regiona is €3.3566, while the price of a 10-minute call to mobile networks in the UK, offered by Crnogorski Telekom is €2.2870, being 31.86% less than the respective average in the countries of the Region.

Average price of a 10-minute call to fixed networks in the UK, in the observed selected European countries is €2.3469, and the price of a 10-minute call to fixed networks in the UK, offered by Crnogorski Telekom is €0.8810, i.e. 62.46% less than the observed average in the selected European countries.

As for the observed selected European countries, an average price of a 10-minute call to mobile networks in the UK is €2.9111, and the price of a 10-minute call to mobile networks in the UK, offered by Crnogorski Telekom is €2.2870, i.e. 21.43% less than the mentioned one.

The following chart shows a 10-minute charge of international call from the fixed network to the USA, and the comparable prices of the same service in the countries of the Region and in selected European countries.



Average price of a 10-minute call to fixed networks in the USA, in the countries of the Region amounts to €4.1487, while the price of a 10-minute call to fixed networks in the USA, offered by Crnogorski Telekom is €0.5030, being 87.875% lower than in the countries of the Region.

In the countries of the Region, an average price of a 10-minute call to mobile networks in the USA, amounts to €4.1487, while the price of a 10-minute call to mobile networks in the USA, offered by Crnogorski Telekom is €0.5030, being 87.875% lower than herementioned average in the countries of the Region.

In the observed selected European countries, an average 10-minute call to fixed networks in the USA is €2.6537, while the price of a 10-minute call to fixed networks in the USA, offered by Crnogorski Telekom, is €0.5030, i.e. 81.04% less than herementioned average in the selected European countries. In the observed selected European countries, an average 10-minute call to mobile networks in the USA is €2.7279, while the price of a 10-minute call to mobile networks in the USA, offered by Crnogorski Telekom is €0.5030 which is 81.56% less than herementioned average in the selected European countries.

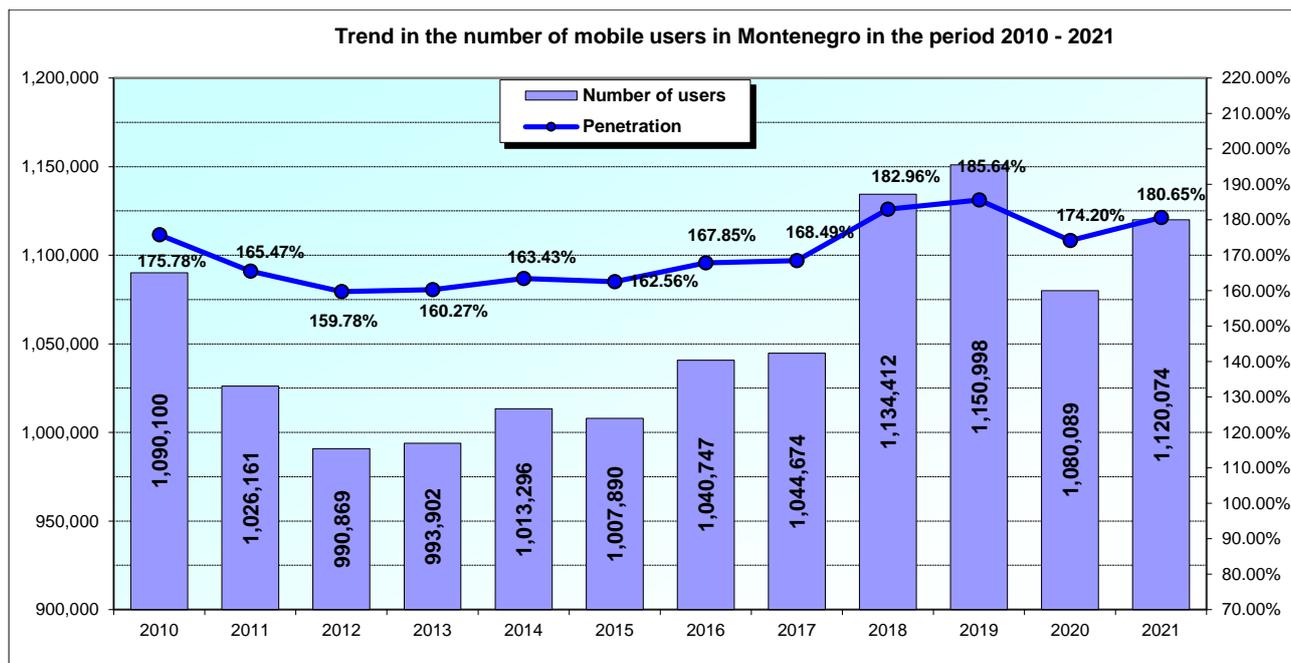
1.5. Mobile Telephony Market

The three telecommunications operators perform their activities at mobile telephony market of Montenegro: Telenor, Crnogorski Telekom and Mtel. At the end of 2021, number of users of mobile telephony in Montenegro was 1,120,074, which is a penetration of 180.65%.

In relation to the same period in 2020, the number of users is 3.70% higher. At the 2021 there were more postpaid users, exactly 59.01% (660,999), while 40.99% (459,075) were prepaid users.

The highest penetration during 2021 on the mobile telephony maket of Montenegro was recorded in August, amounting to 207.26 %, and the lowest wa in March when amounted to 171.81%.

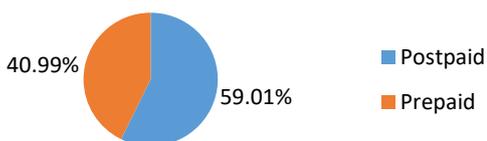
In the chart below is given mobile telephony penetration on an annual level, for the period 2010-2021.



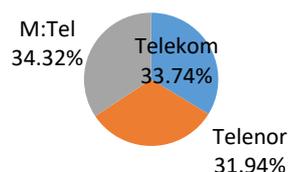
Out of the total number of 1,120,074 mobile telephony users in Montenegro, the largest part had Mtel with 384,456 users, Crnogorski Telekom had 377,917 users, and Telenor 357,701 users, or in percentages: Mtel 34.32%, Crnogorski Telekom 33.74%, and Telenor 31.94%.

Out of the total number of 660,999 postpaid users, Crnogorski Telekom had 261,748, Mtel 221,463, Telenor 177,788, and of the total number of 459,075 prepaid users Telenor had 179,913, Mtel 162,993, and Crnogorski Telekom 116,169 users. Share of postpaid and prepaid users, and share of some mobile telephony operators in the total number of users are shown in the following pie charts:

Share of prepaid and postpaid users in the total number of users

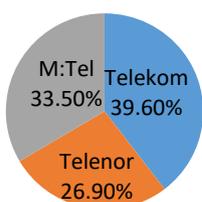


Share of operators in the total number of mobile telephony users

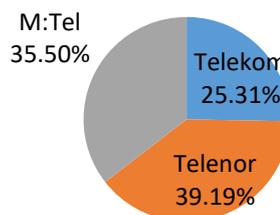


Share level with regard to the number of prepaid and postpaid users of mobile operators are given in percentages in the following pie charts:

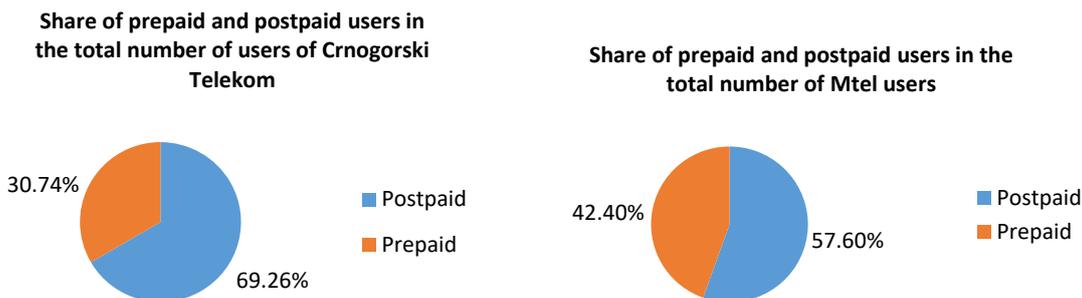
Share of the operators in the total number of postpaid users



Share of the operators in the total number of prepaid users



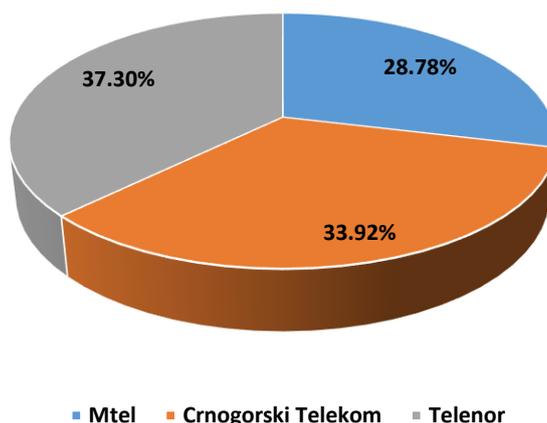
The following pie charts show shares of prepaid and postpaid users in the total number of users, per operator.



1.5.1. Traffic volume and structure

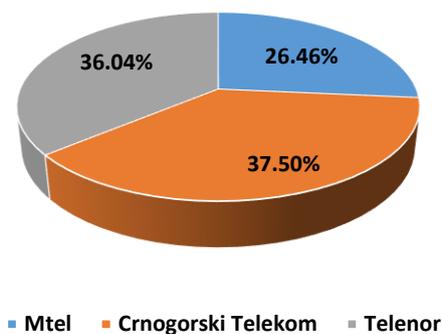
During 2021, users of all three mobile operators in Montenegro realized 2,018,702,480 minutes of outgoing traffic. Share of the total realized outgoing traffic was: from Telenor network 37.30%, from the network of Crnogorski Telekom 33.92% and from Mtel network it was 28.78%. Market share of the operators, per minute of outgoing traffic, is shown in the following pie chart:

Share in the total traffic realized in 2021



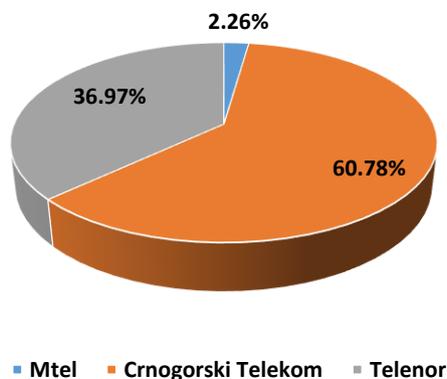
During 2021, a total of 261,668,073 SMS messages were sent, of which the share per sent SMS message were, per operator: Crnogorski Telekom 37.50%, Telenor 36.04 and Mtel 26.46%. Market share of the operators, per SMS message sent in 2021, is given in the following pie chart:

Market share of the operators, per number of SMS messages sent in 2021



In 2021, total of 458,078 MMS messages were sent, of which the share in the sent MMS messages, per operator amounted as follows: Crnogorski Telekom 60.78%, Telenor 36.97% and Mtel 2.26%. Market share of the operators, per number of sent SMS messages in 2021, is shown in the following pie chart:

Market share per number of sent MMS messages in 2021



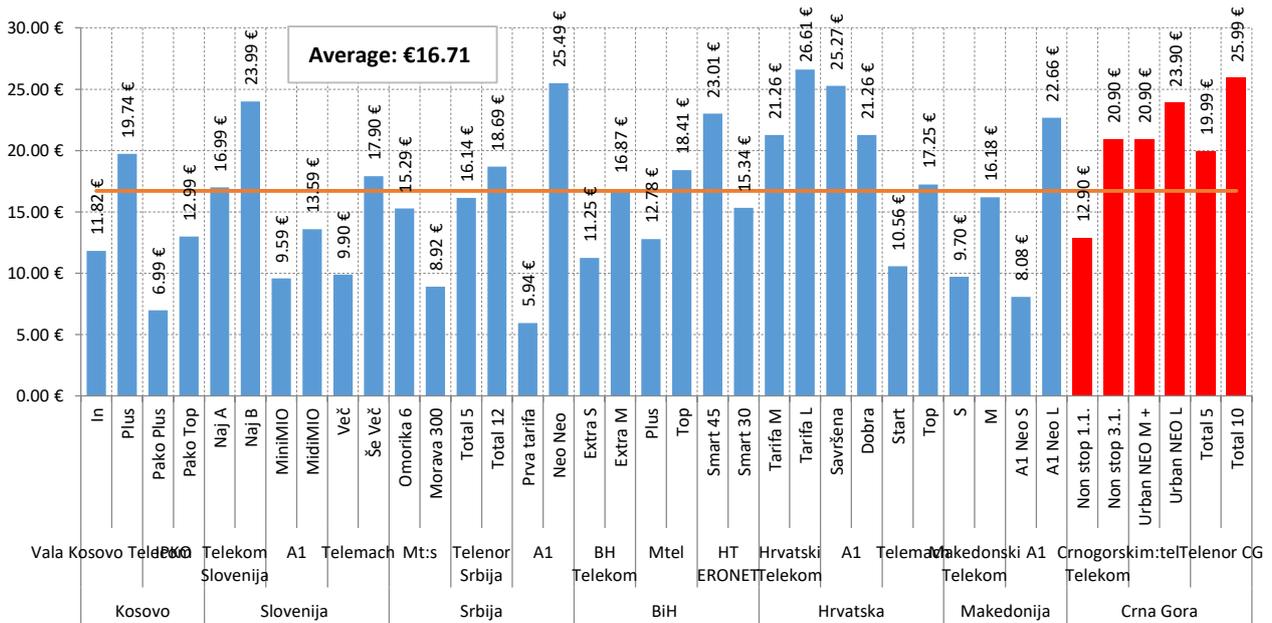
1.5.2. Prices of mobile telephony services

Comparative analysis of mobile telephony services is very complex considering that mobile operators in Montenegro, Region and Europe offer great number of packages different in monthly fee/call/SMS message/traffic data/way of charging and other advantages within the packages.

The above mentioned analysis is an overview of tariff packages of mobile operators from the countries of the Region (Kosovo, Slovenia, Serbia, Bosnia and Herzegovina, Croatia, North Macedonia and Montenegro). For the purposes of comparison, two user packages were taken each, for physical persons, especially postpaid and especially prepaid. In addition to this, the same type of analysis was also performed for the packages of mobile operators in European countries, and the countries were selected so as to include the countries where the owners of the operators - Deutsche Telekom Group, Telenor Group and Telekom Serbia, operate in Montenegro.

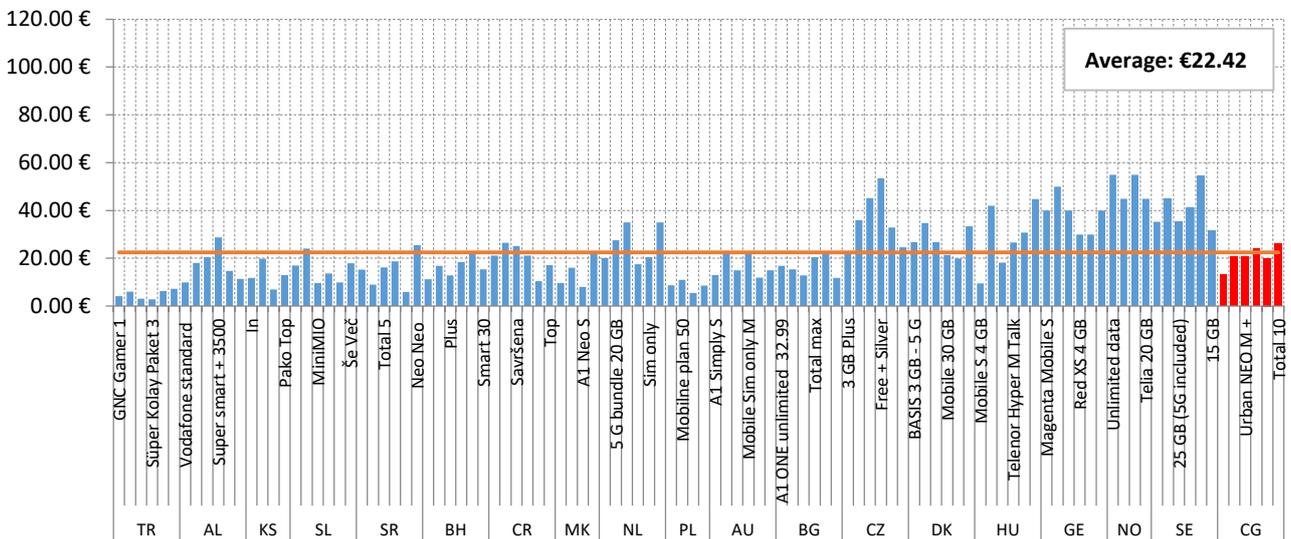
1.5.2.1. Postpaid packages for physical persons

Comparative overview of monthly subscriptions for selected postpaid packages of mobile operators for physical persons, in the countries of the Region, is given in the following chart, where, according to the criterion of monthly subscription fee, only one package of Crnogorski Telekom is below average of the observed countries (€16.71), while other packages of Montenegrin operators are above mentioned average.



Comparative overview of monthly subscription fee for selected postpaid packages of mobile operators of the countries in the Region, for physical persons

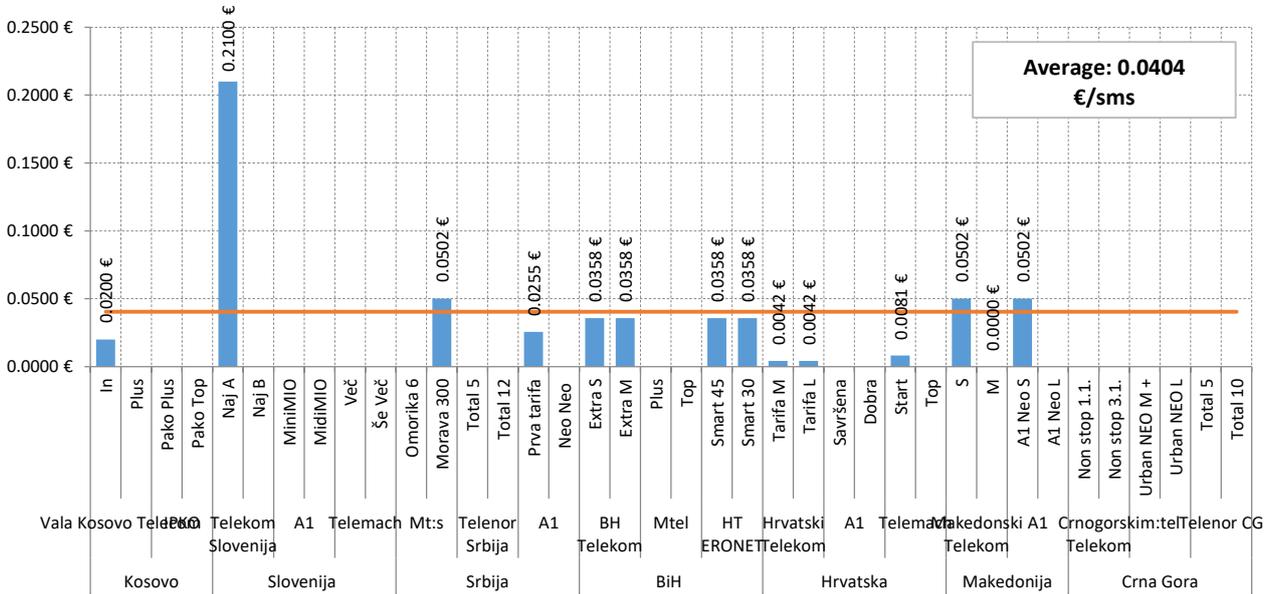
Comparative overview of monthly subscription fee for selected postpaid packages for physical persons of mobile operators in the European countries is given in the following chart; we see that, according to the criterion of monthly subscription fee, packages of Crnogorski Telekom, one package of Telenor and one package of Mtel are below the average of the observed European countries (€22.42), while one package of Mtel and one of Telenor are above mentioned average.



Comparative overview of monthly subscription fee for postpaid packages of mobile operators in the European countries, for physical persons

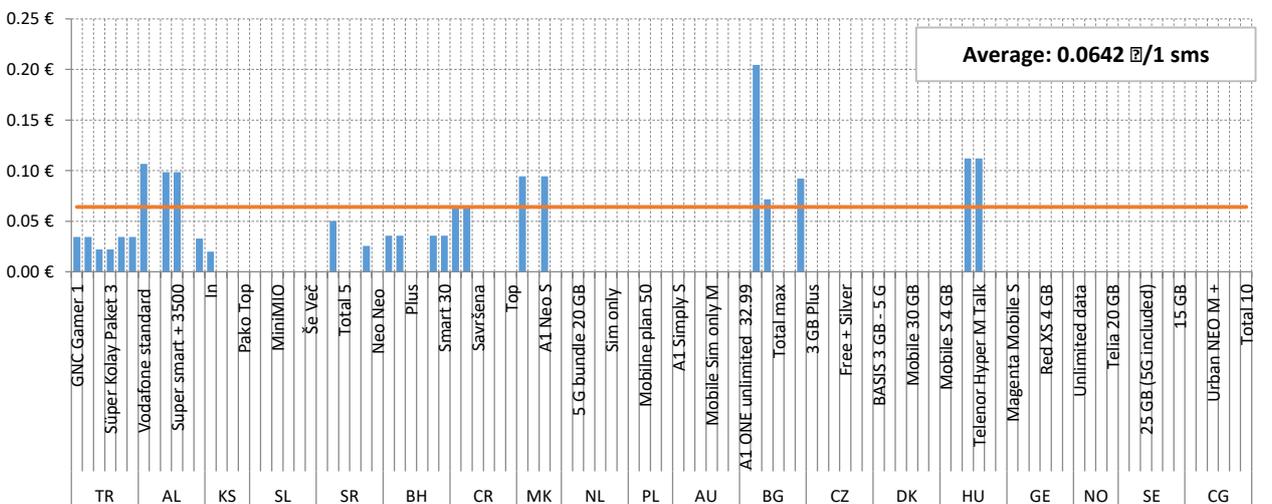
Comparative overview of monthly subscription fee in the countries of the Region (€16.71) is lower than the average in the European countries (€22.42), although there is a significant number of operators which exist both in the Region and in the selected European countries (e.g. Vodafone, T-Mobile, Telenor), meaning that there are different tariff policies in these countries, in line with life standards of population in the countries of the region and of those in more developed European countries.

Comparative overview of the price of SMS service sent to national mobile operators, is given in the following chart, thus we can see that, according to that criterion, package fees of all three Montenegrin mobile operators are below average of the observed countries of the region (€0.0404 per message). Except for the packages with free SMS messages sent to national mobile operators (included in monthly subscription fee), package fees of Montenegrin mobile operators are among the most favourable ones.



Comparative overview of SMS prices of postpaid packages of mobile operators of countries in the Region, for physical persons

Comparative overview of the price of SMS message for selected postpaid packages of mobile operators in the European countries, for physical persons, is given in the chart below; according to that criterion, all three Montenegrin mobile operators are below average of the European countries (€0.0642 per message), i.e. the prices of SMS messages are free of charge, i.e. included in monthly subscription fees. Most of the operators in Europe offer postpaid packages with free minutes and SMS messages to all networks in the country, and among them are also most of the packages of Montenegrin operators processed in this analysis. The prices of all SMS messages free of charge i.e. included in monthly subscription fee, are excluded from calculation of an average value, in order to make better insight in the prices of chargeable SMS messages.

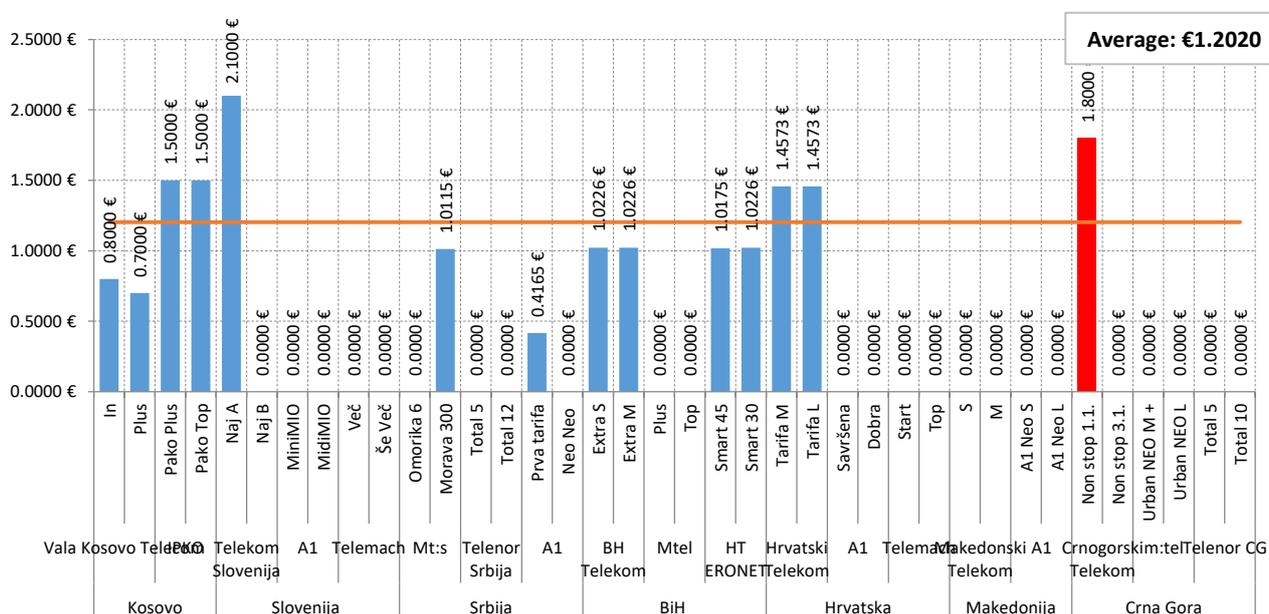


Comparative overview of SMS price of postpaid package of mobile operators of the European countries, for physical persons

Average SMS price in the countries of the Region (€0.0404) is lower than the average in the European countries (€0.0642), although there is a significant number of operators both in the Region and in the EU countries (e.g. Vodafone, T-Mobile, Telenor), which means there are different tariff policies in these countries, in line with life standards of population in the countries of the Region and of those in more developed European countries.

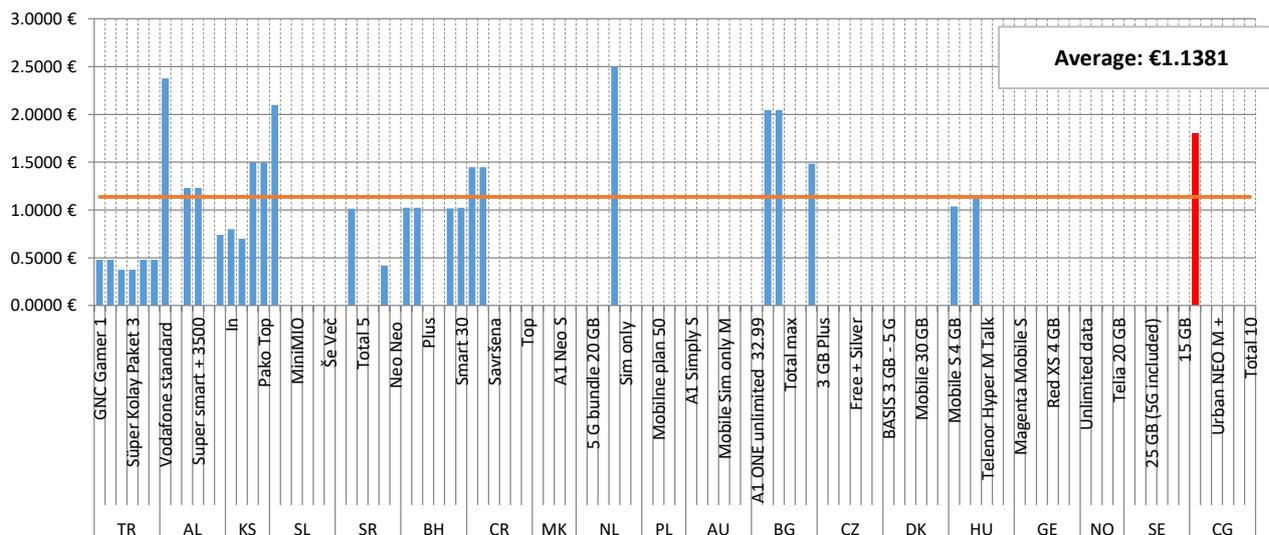
Comparative overview of the price of a 10-minute call to national fixed networks is given in the following chart, and in line with that criterion, only one package of Crnogorski Telekom is above average of the observed countries in the Region (that amounts to €1.2020 for a 10-minute call).

Most of the operators in the Region offer postpaid packages with free minutes to all networks in the country, and among them are also most of the packages of Montenegrin operators processed by that analysis (Crnogorski Telekom Non stop 3.1, Mtel Urban NEO M+ i Urban NEO L i Telenor Total 5 and Total 10). Prices of all free calls are excluded from calculation of an average value, in order to make better insight in the prices of chargeable SMS messages.



Comparative overview of a 10-minute call to national fixed networks of mobile operators' postpaid packages of countries of the Region, for physical persons

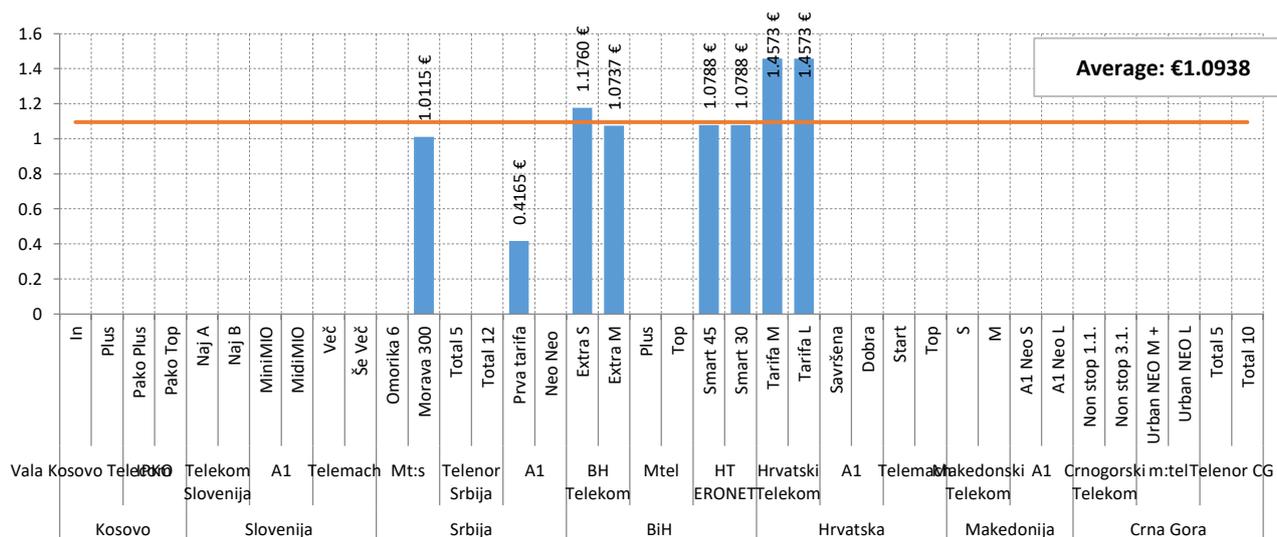
Comparative overview of the price of a 10-minute call in mobile network and the observed European countries, is given in the following chart, and according to that criterion, only one package of Crnogorski Telekom is above average of the observed European countries (€1.1381 for a 10-minute call), while other packages offer free calls to fixed networks. According to that criterion, the packages of Montenegrin operators are competitive with most packages offered on the European mobile telephony market, as they offer free calls to fixed networks in the country. The prices of all free calls are excluded from calculation of an average value in order to make better insight in the prices of chargeable calls.



Comparative overview of a 10-minute call to national fixed networks of mobile operators' postpaid packages of countries in the European countries, for physical persons

Comparative overview of the price of a 10-minute call in mobile network is given in the following chart, and according to that criterion, packages of mobile operators in Montenegro, Crnogorski Telekom are below an average of the observed countries of the Region (€1.0938 for a 10-minute call). In other words, in almost all the processed packages, free calls are offered in their own networks (on-net).

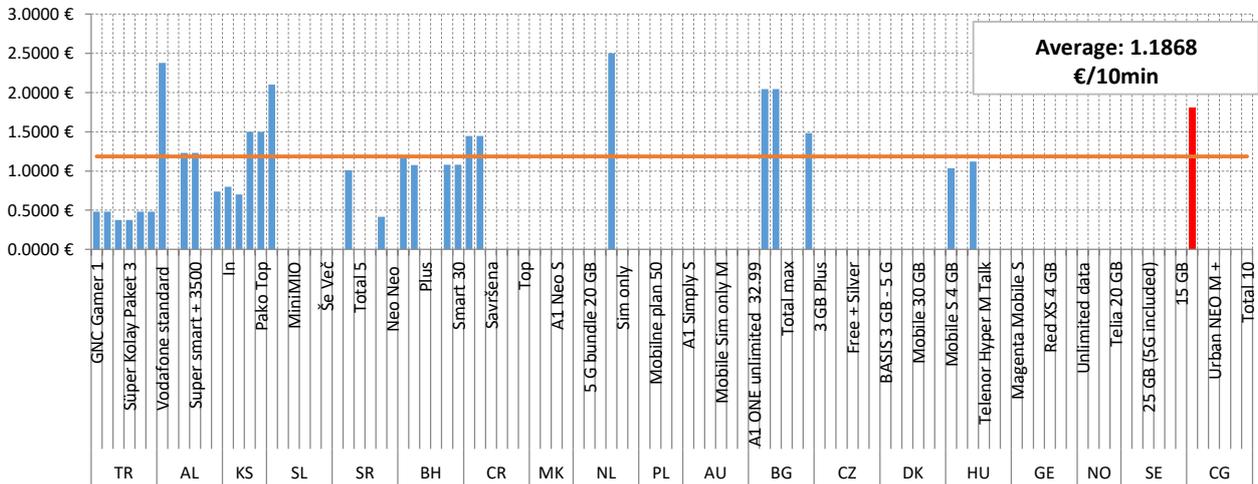
Most of the operators in the Region have in their offer postpaid packages with the minutes to all networks in the country, free of charge, i.e. included in the monthly subscription fee, among which are packages of Montenegrin operators processed in this analysis (Crnogorski Telekom Non Stop 1.1. and Non Stop 3.1., Mtel Urban NEO M+ and Urban NEO L, Telenor Total 5 and Total 10). The prices of all calls free of charge are excluded from calculation of the average value, in order to make better insight in the picture of chargeable call prices.



Comparative overview of the price of a 10-minute call in the network (on-net) of postpaid packages of mobile operators of countries in the Region, for physical persons

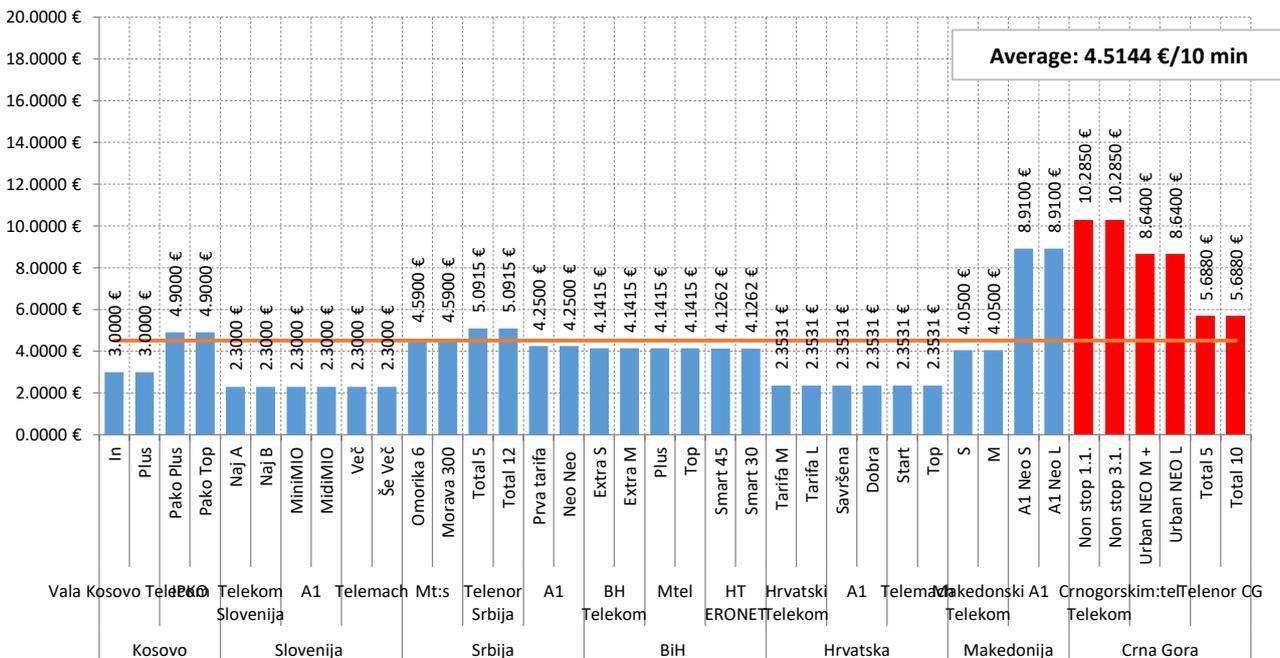
Comparative overview of the price of a 10-minute call in mobile network (on-net) in relation to observed European countries is given in the following chart, where, according to this criterion, all packages of Montenegrin operators are below average of the observed European countries (€1.1341 for a 10-minute call), i.e. the prices within the network of all processed packages are free of charge, in other words, included

Comparative overview of the price of a 10-minute call made to other national mobile networks (off-net), in relation to the observed European countries is given in the following chart, where it is clear that, according to this criterion, 2 packages of Montenegrin operators are above average of the observed European countries (€1.1868 for a 10-minute call) and other processed packages are below average, as the calls are free of charge for national traffic. It should be noted that most of the mobile operators in Europe, as well as in Montenegro, in their offer have packages with calls to all mobile networks free of charge, as they are included in a monthly fee.

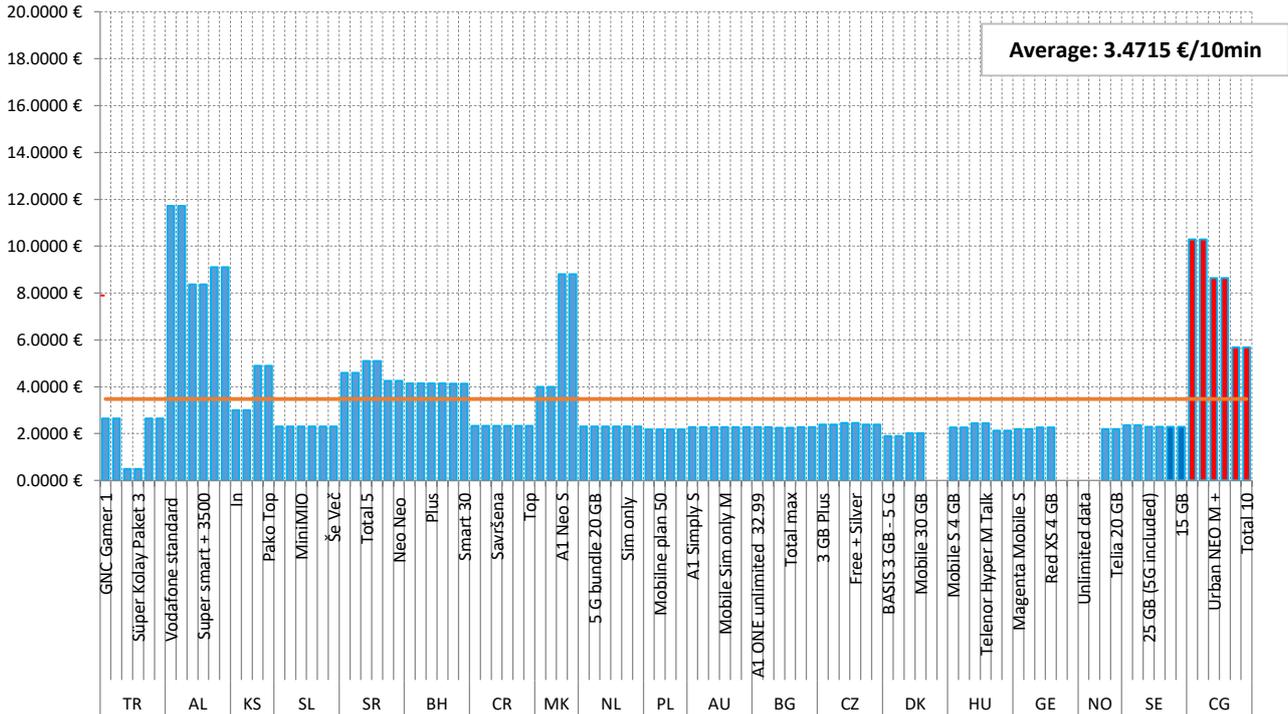


Comparative overview of the price of a 10-minute call to other national mobile networks (off-net) within postpaid packages of mobile operators in the European countries, for physical persons

Comparative overview of the price of a 10-minute international calls to Great Britain, Region and the EU is given in the following chart. It is clear from the next graphic that in all processed packages, the prices of a 10-minute international call to Great Britain is above average of the observed countries of the Region, while the price is below average (€4.5144 for a 10-minute call in the packages of Telenor). Also, in the second graph we see that the prices of a 10-minute call to Great Britain are above average of the observed European countries (which amounts to €3.4715 for a 10-minute call).

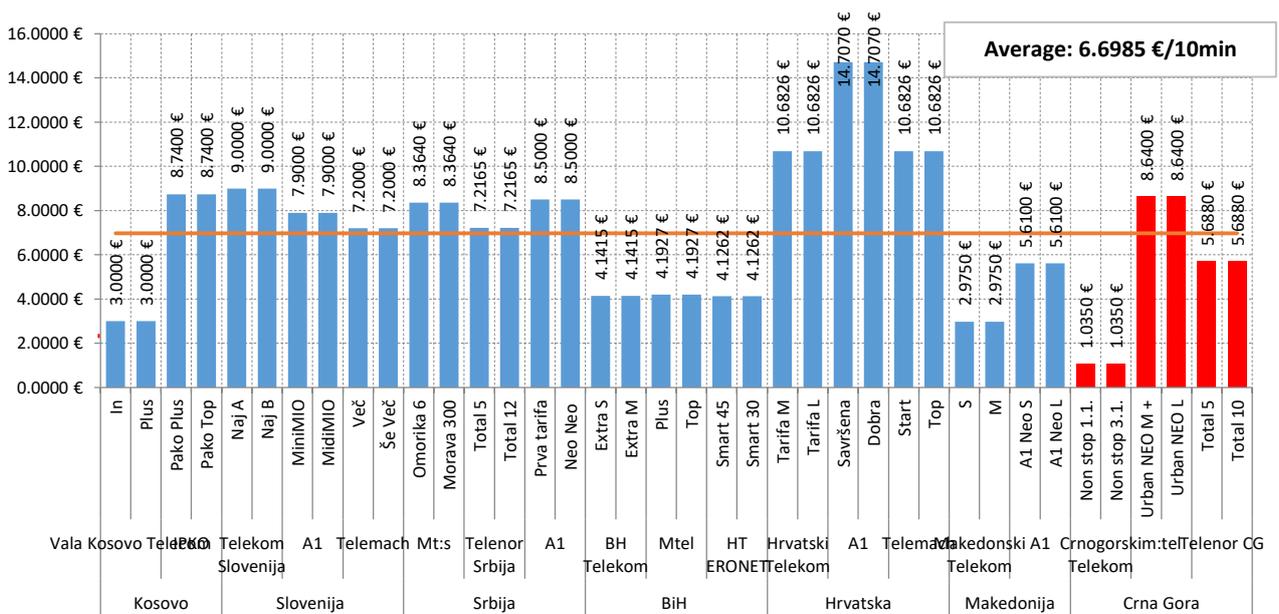


Comparative overview of the price of a 10-minute international call of mobile operators in the Region, made with Great Britain (postpaid, physical persons)

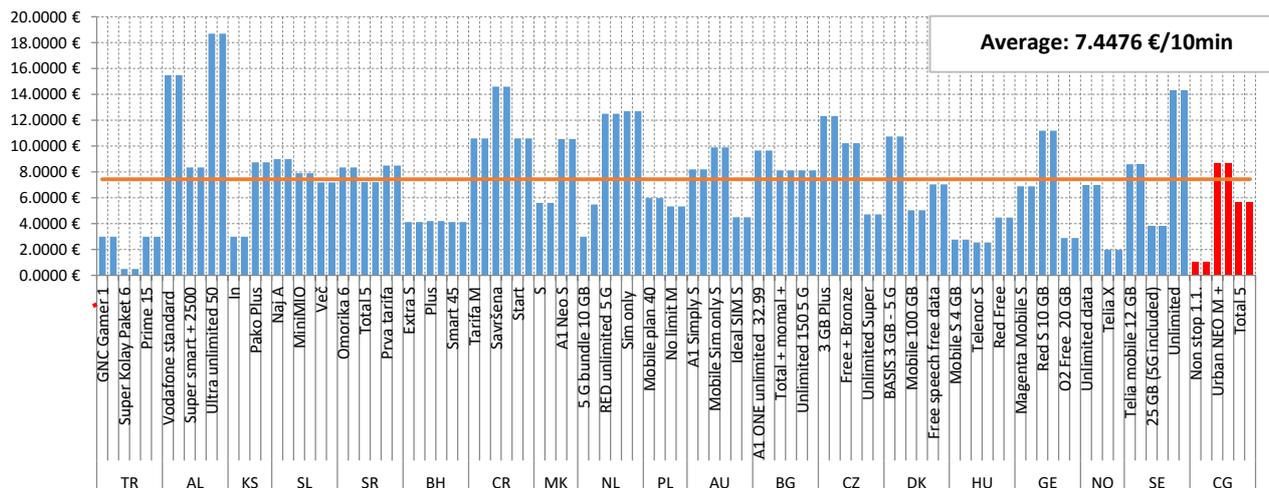


Comparative overview of the price of a 10-minute international call of mobile operators in the Region, made with Great Britain (postpaid, physical persons)

The prices of a 10-minute call to the USA in selected packages of Crnogorski Telekom and Telenor, are below average of the countries in the Region (€6.9685 for a 10-minute call), and below average of the observed European countries (€7.4476 for a 10-minute call), while the price in Mtel package is above both mentioned averages. Comparing individual prices of calls to the USA, the price of Crnogorski Telekom has one of the most favourable relevant prices of calls to the USA, among all observed countries in the Region, even the most favourable among the observed European countries.



Comparative overview of the price of a 10-minute international call of mobile operators in Europe, made with Great Britain (postpaid, physical persons)



Comparative overview of the price of a 10 minute international call of mobile operators in Europe, made with the USA (postpaid, physical persons)

1.5.2.2. Prepaid packages for physical persons

Comparative overview of the fee of SMS message sent to national mobile operators is given in the chart below. We can see that, according to this criterion, packages of all three Montenegrin mobile operators are on an average level of the one in the observed countries (€ 0.0543 per message).

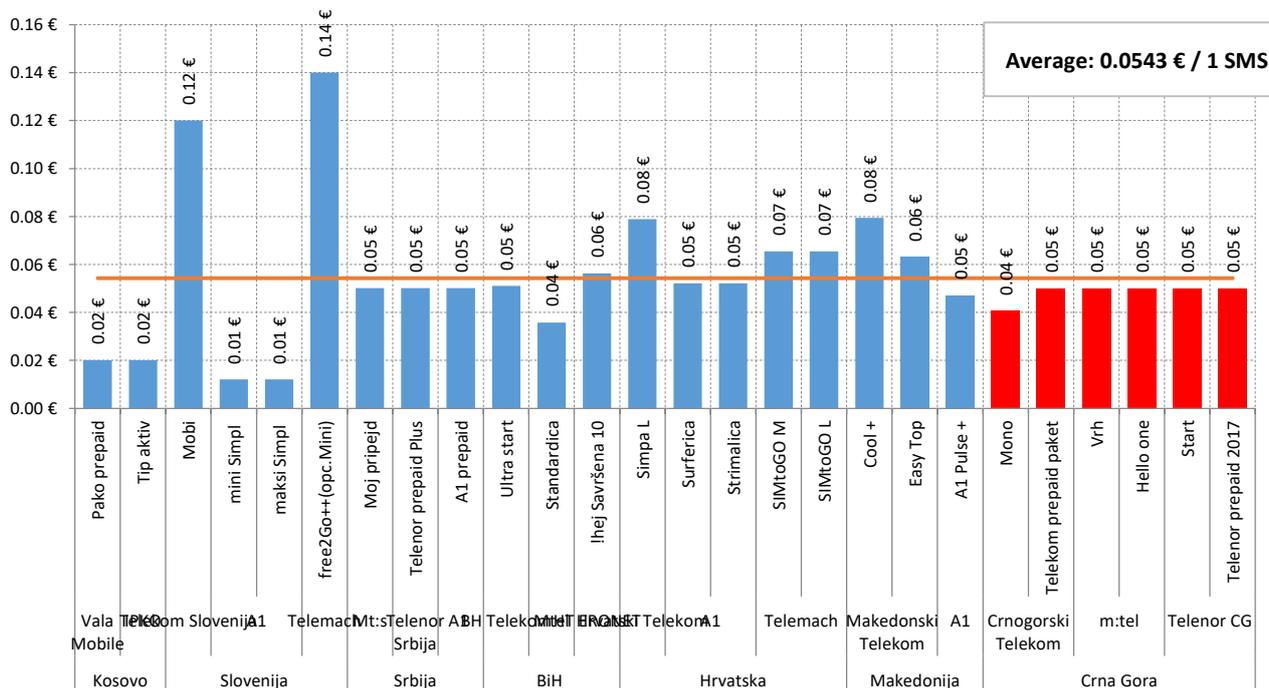


Chart: Comparative overview of SMS fee in prepaid packages of mobile operators of the countries in the Region, for physical persons

Comparative overview of SMS fee in selected postpaid packages of mobile operators for physical persons in European countries is given in the following chart, where it is clear that according to that criterion, packages of all three Montenegrin mobile operators are below average of European countries (€ 0.0872 per message). Referring to this criterion, the prices of mobile operators in Montenegro are more favourable than the ones offered by operators in the region, but also in the most of the European countries.

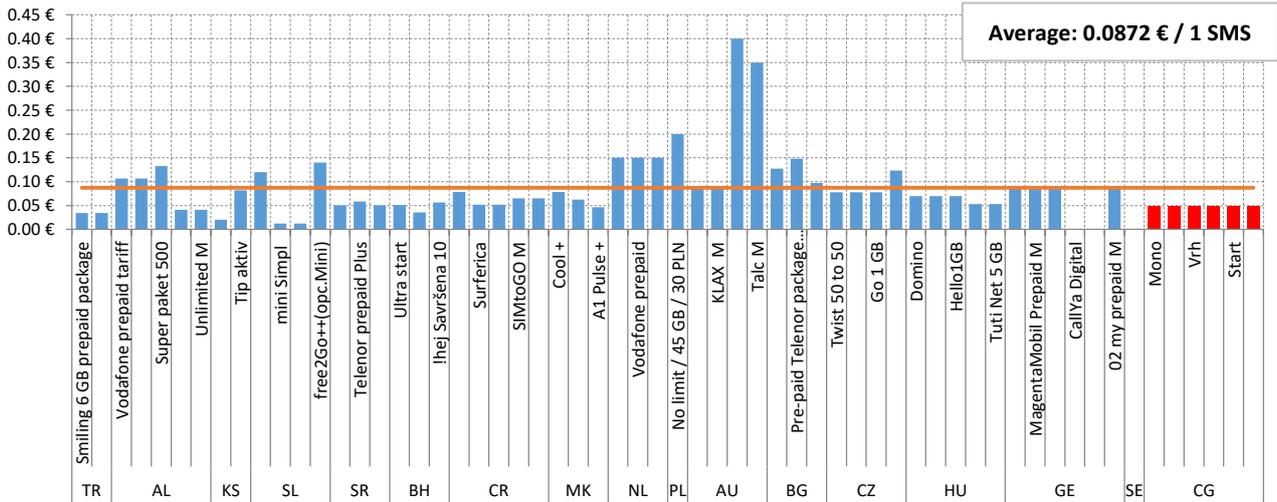


Chart: Comparative overview of the SMS fee within prepaid packages of mobile operators of the European countries, for physical persons

Comparative overview of a 10-minute call to national fixed networks is given in the following chart, where we see that, according to that criterion, the prices of selected prepaid packages of Crnogorski Telekom, Mtel and Telenor are above average of the observed countries of the Region (€1.3630 for a 10 minute call).

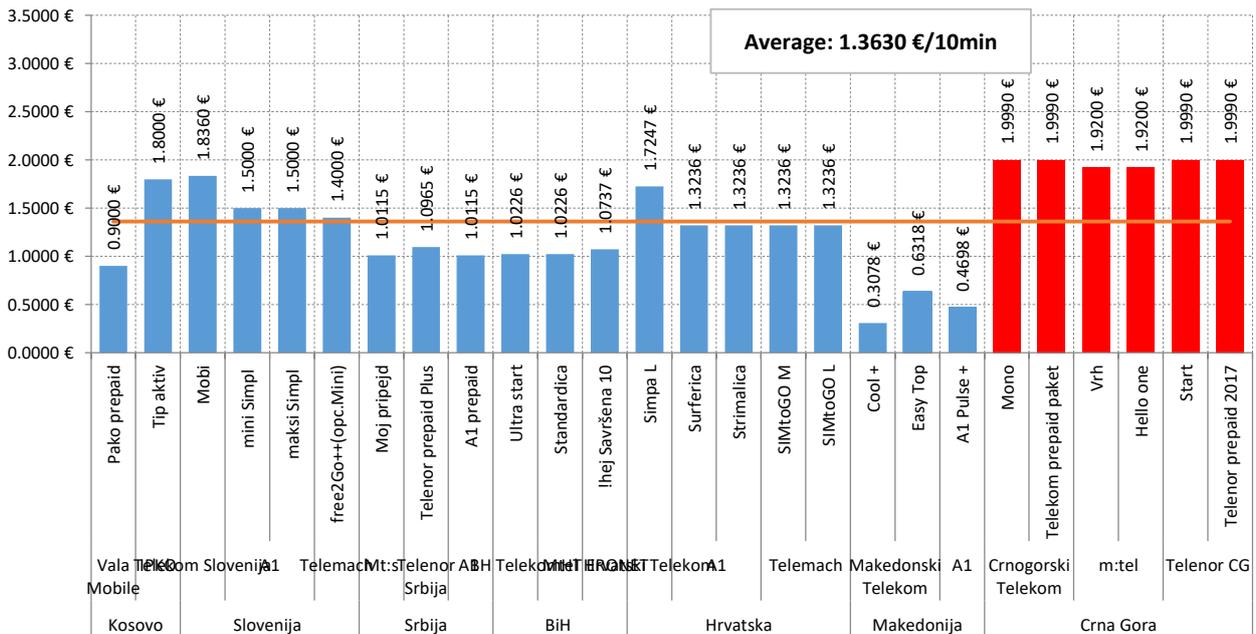


Chart: Comparative overview of the price of a 10-minute call to national fixed networks of countries in the Region, within prepaid packages of mobile operators for physical persons

Comparative overview of a 10-minute call to national fixed networks, with relation to the observed European countries is given in the chart that follows, where it is clear that, according to this criterion, the prices of selected packages of Crnogorski Telekom, Mtel and Telenor are above an average of the observed European countries (€1.3662 for a 10-minute call).

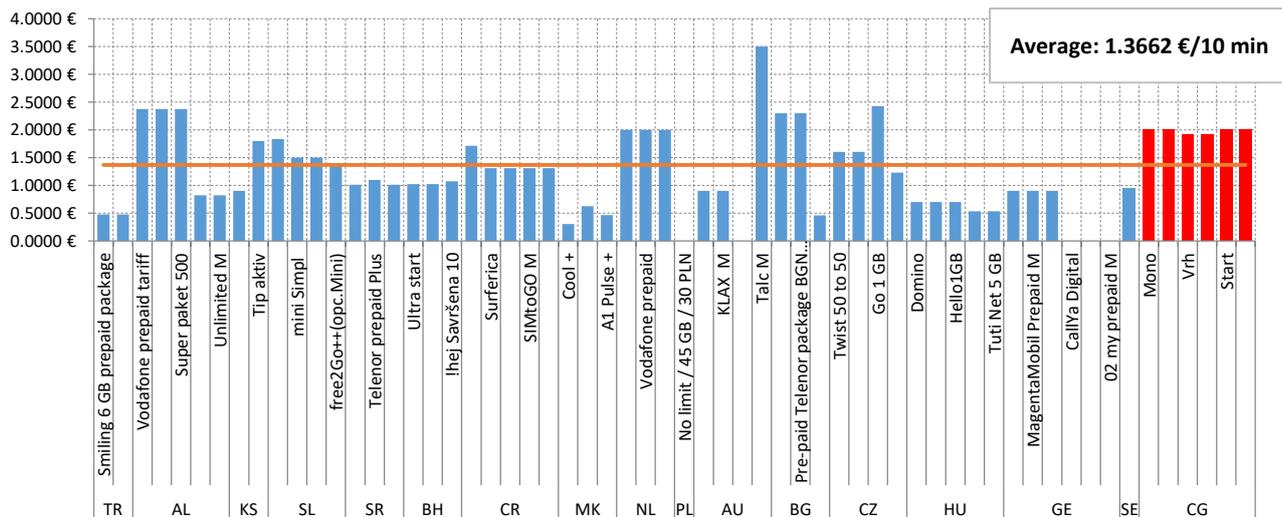


Chart: Comparative overview of the price of a 10-minute call made to national fixed networks of mobile operators of the European countries, for physical persons

Comparative overview of a 10-minute call in the network (on-net) is given in the following chart, where it is clear that, according to this criterion, the prices of selected prepaid packages of Crnogorski Telekom, Mtel and Telenor are above average of the observed countries in the region (€1.3408 for a 10-minute call), except for package „Vrh“, offered by Mtel, with free calls to Mtel mobile and fixed network, i.e. free on-net calls.

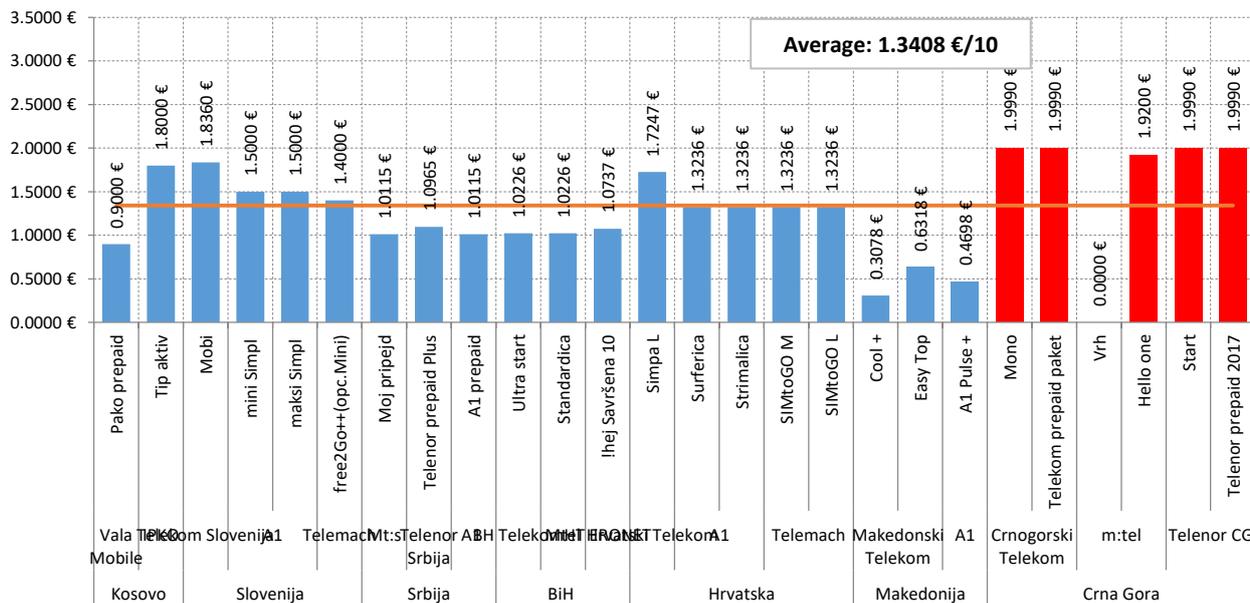


Chart: Comparative overview of the price of a 10-minute call in the network (on-net) for packages of mobile operators (prepaid, physical persons) in the Region

Comparative overview of the price of a 10-minute call in the mobile network (on-net) in relation to the observed European countries, is given in the following chart no 27; we see that observed packages of Crnogorski Telekom, Mtel and Telenor are above average of the observed European countries (€1.3645 for a 10-minute call), except for the package „Vrh“ offered Mtel with free calls to Mtel mobile and fixed network, that is free on-net calls.

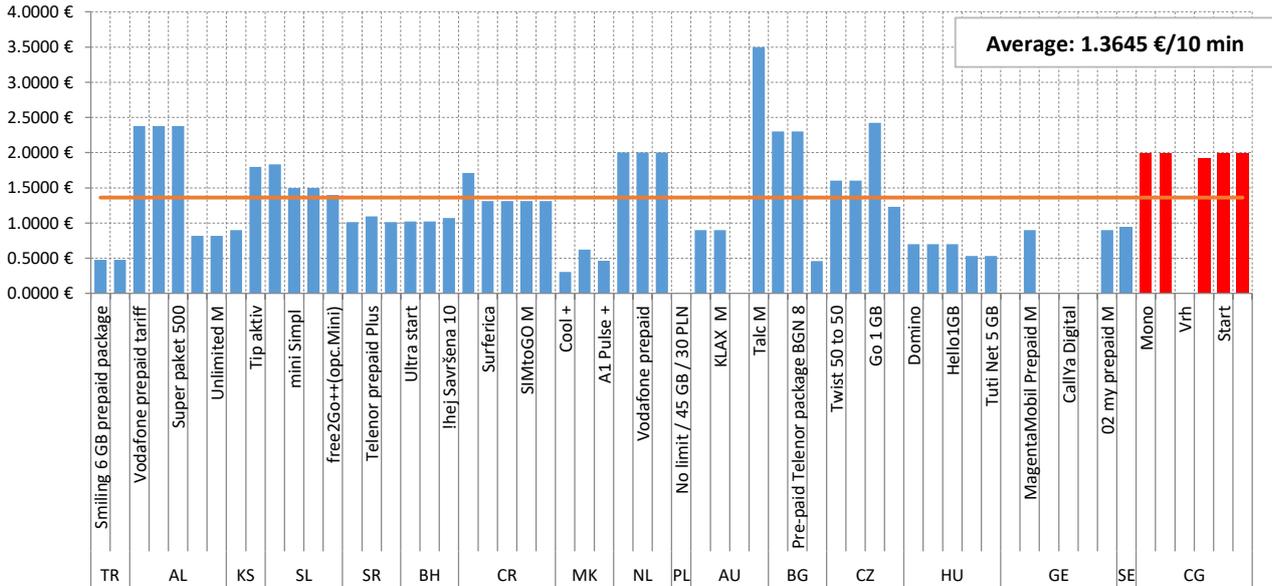


Chart: Comparative overview of the price of a 10-minute call in the network (on-net) for packages of mobile operators (prepaid, physical persons) in Europe

Comparative overview of the price of a 10-minute call to national mobile networks (off-net) is given in the following graph, and, according to that criterion, the prices of selected packages of Crnogorski Telekom, Mtel and Telenor are above average of the observed countries in the Region (€1.3669 for a 10-minute call).

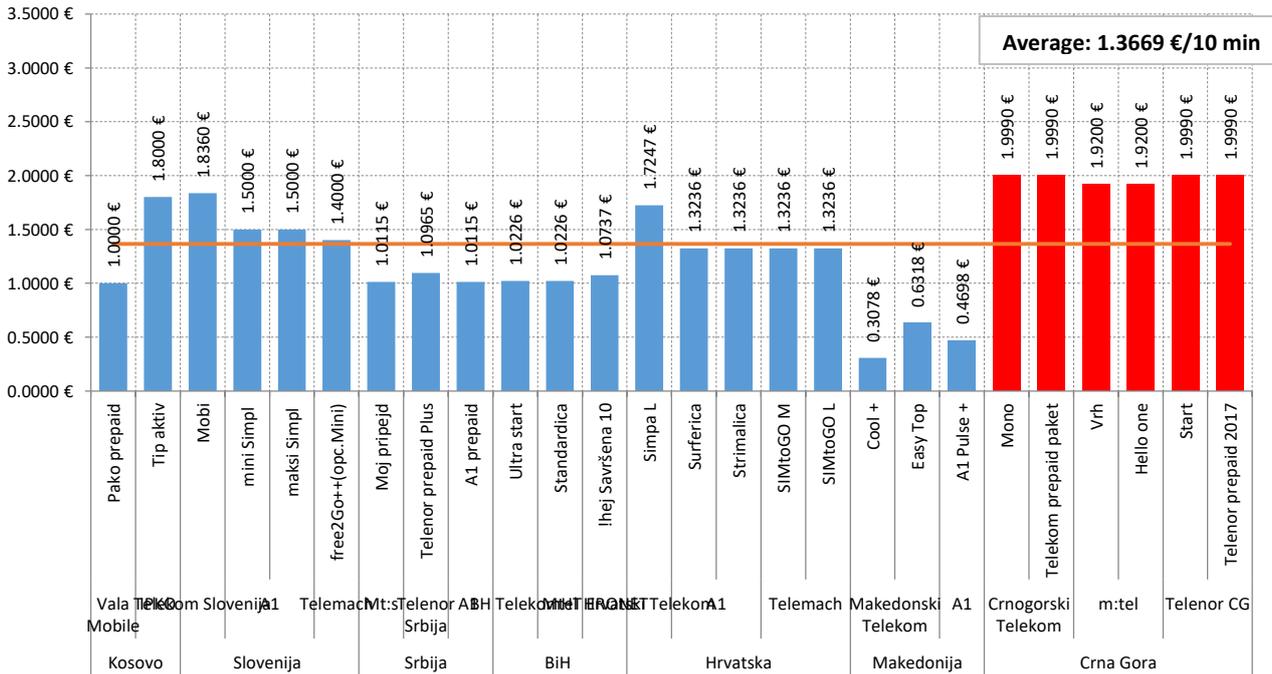


Chart: Comparative overview of the price of a 10-minute call to national mobile networks (off-net) for packages of mobile operators (prepaid, physical persons) in the Region

Comparative overview of the price of a 10-minute call to other national mobile networks (off-net) in relation to the observed European countries, is given in the following graphic; according to that criterion, the prices of packages of Crnogorski Telekom, Mtel and Telenor are above average of the observed European countries (€1.3680 for a 10-minute call).

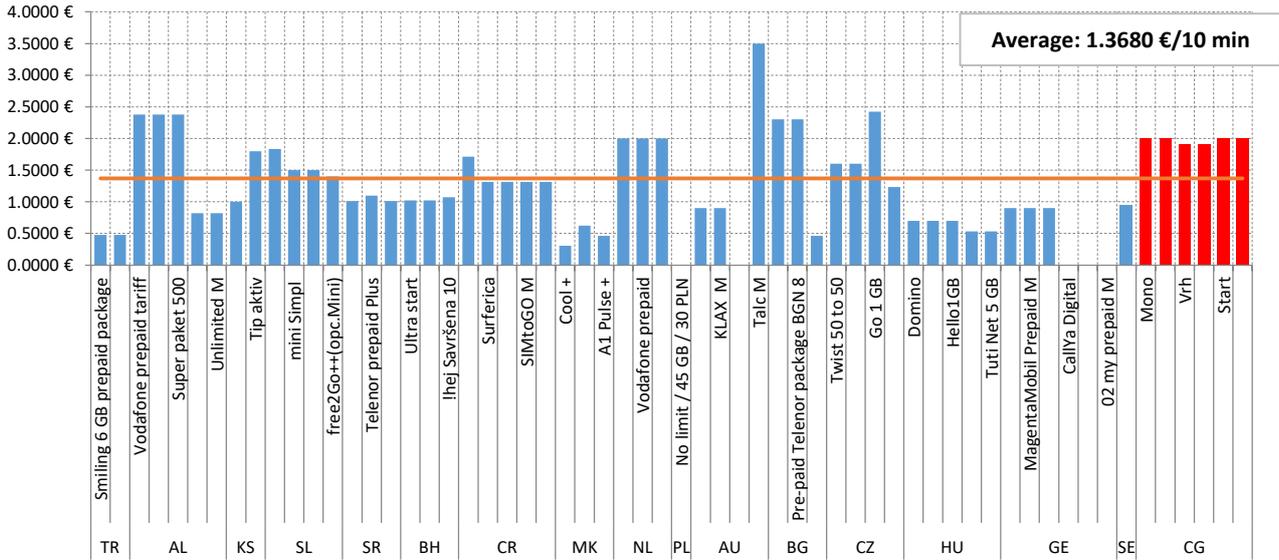


Chart: Comparative overview of the price of a 10-minute call to national mobile networks (off-net) for packages of mobile operators (prepaid, physical persons) in Europe

In the following graphics is given a comparative overview of the price of a 10-minute international call to Great Britain and to the USA; the prices of all three mobile operators in Montenegro, for a 10-minute call to Great Britain, are above average of the observed countries in the region (€5.6472 for a 10-minute call).

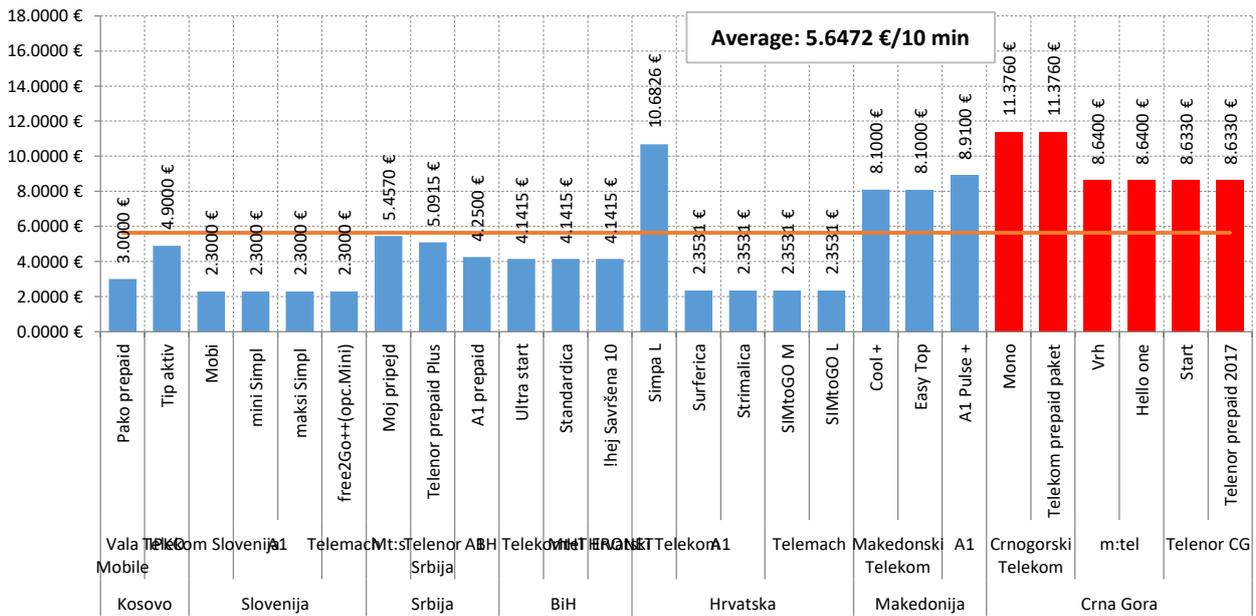


Chart: Comparative overview of the price of mobile operators in the Region, of a 10-minute international call made with Great Britain (prepaid, physical persons)

The prices of Montenegrin operators for a 10-minute call to the USA depend on average price in the observed countries of the region (€8.0156 for a 10-minute call); thus, prices offered by Telenor and Mtel are above average, while prices of Crnogorski Telekom are much below average, so of all observed countries in the Region Crnogorski Telekom offers the most favorable call prices to the USA (charged € 1.2420 for a 10 minute call, regardless of whether the call has been made to fixed networks or to mobile networks in the USA).

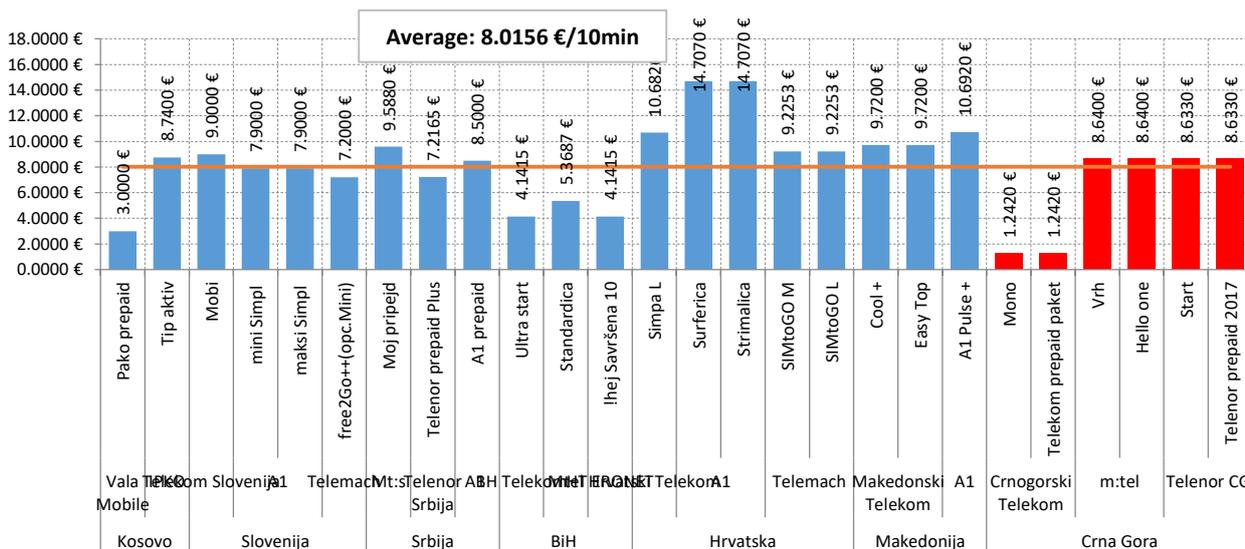


Chart: Compative overview of the price of a 10-minute international call of mobile operators in the Region with the USA (prepaid, physical persons)

In the following charts is given an overview of a 10-minute call to Great Britain and to the USA, and it is clear that the prices in Montenegro of a 10-minute call made to Great Britain is above average of the observed countries of Europe (€4.4084 for a 10-minute call).

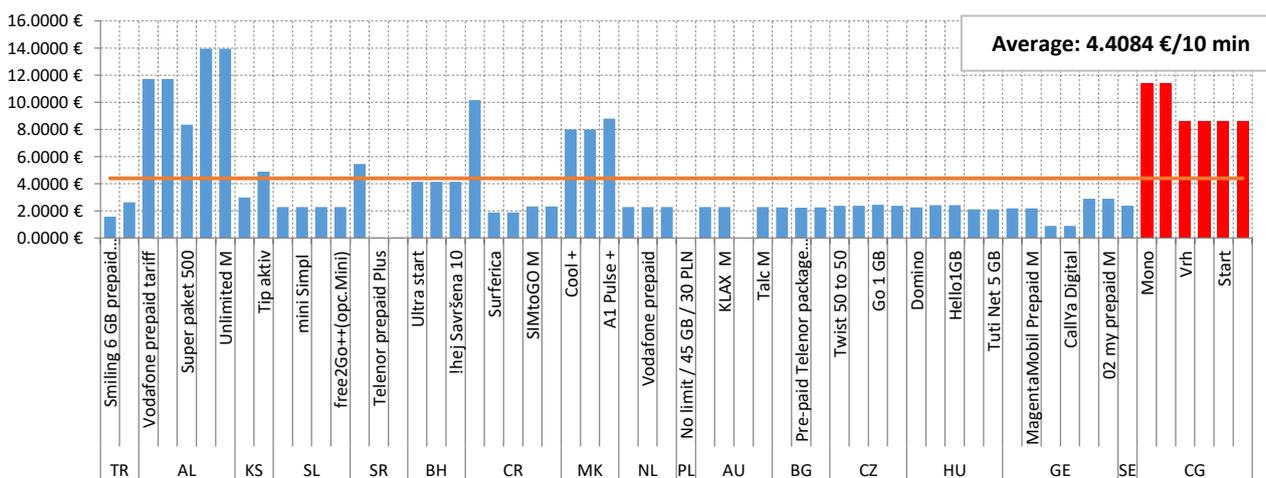


Chart: Comparative overview of the price of a 10-minute international call to Great Britain, of mobile operators in Europe (prepaid, physical persons)

The price of a 10-minute call to the USA varies depending on the average of the observed European countries (€8.0683 for a 10-minute call); prices offered by Telenor and Mtel are above mentioned average, while the prices offered by Crnogorski Telekom are significantly below the average. Individually, among all observed European countries, Crnogorski Telekom offers one of the most favorable call price (charged €1.2420 for a 10-minute call, regardless of whether the calls have been made to fixed networks or to mobile networks in the USA).

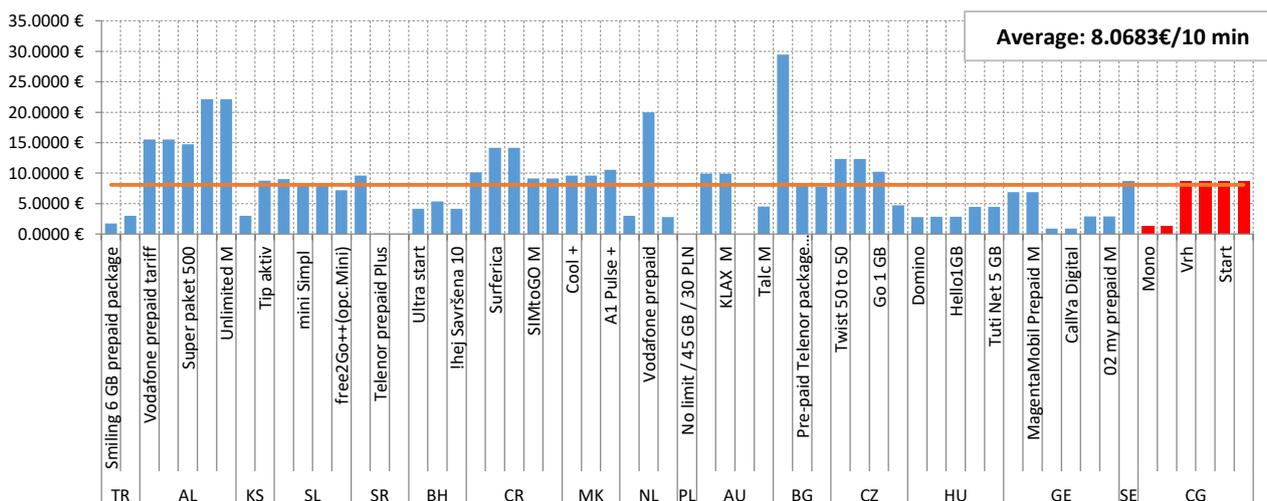
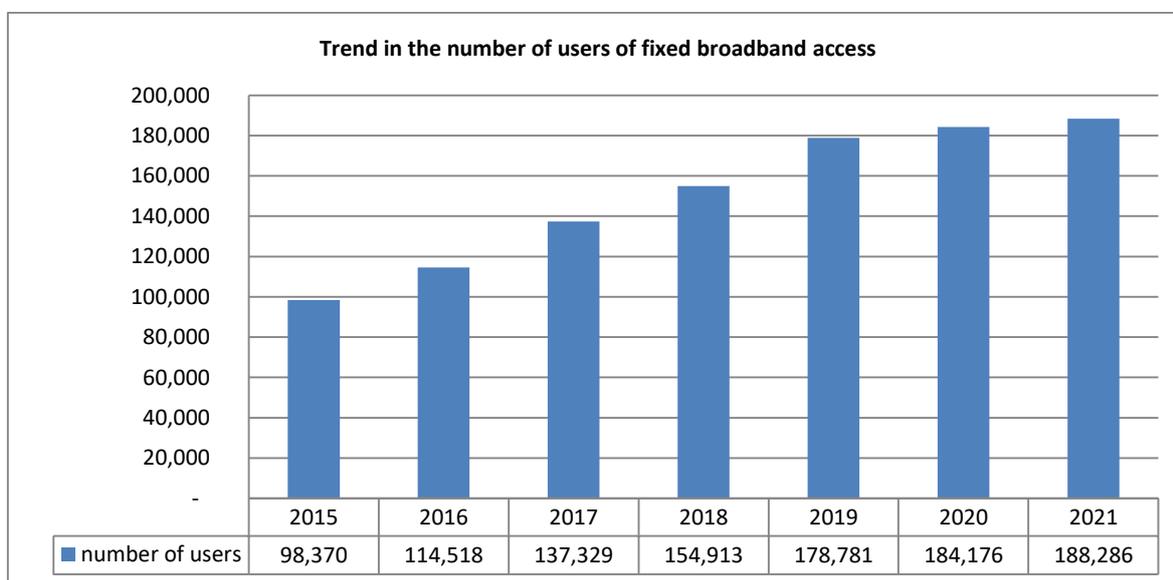


Chart: Comparative overview of the price of a 10-minute international call of mobile operators in Europe, made to Great Britain (prepaid, physical persons)

1.6. Internet and broadband access market

In relation to 2020, during 2021, number of users of fixed broadband access increased by 2.23%. The number of users of mobile broadband access through data SIM cards in 2021 was 0.87% higher compared to 2020, while the number of users who accessed internet through mobile networks in December 2021 was 4.15% higher than in December 2020.

The chart below shows trend in the number of users of fixed broadband access for the period 2015-2021.



Penetration of fixed broadband access at the end of 2021 amounted to 30.37% of the population, while in regard to the number of households, penetration was 96.7%³. Most of the users were the users of networks with fibre optic since they made 42.84%. Share of households in the field of NGA accessibility (30 Mbps)

³ Penetration of fixed broadband connections in relation to the number of households is significantly higher than the NGA availability, since all Internet connections were considered, and in the coastal municipalities and in the central part of Montenegro, the number of connections is significantly higher than the number of households. For example, in Budva there are more than 2,5 connections per household.

amounted to 81.04%. Penetration of mobile broadband access, that is the number of users who accessed Internet via mobile networks, amounted to 90.63% in December 2021.

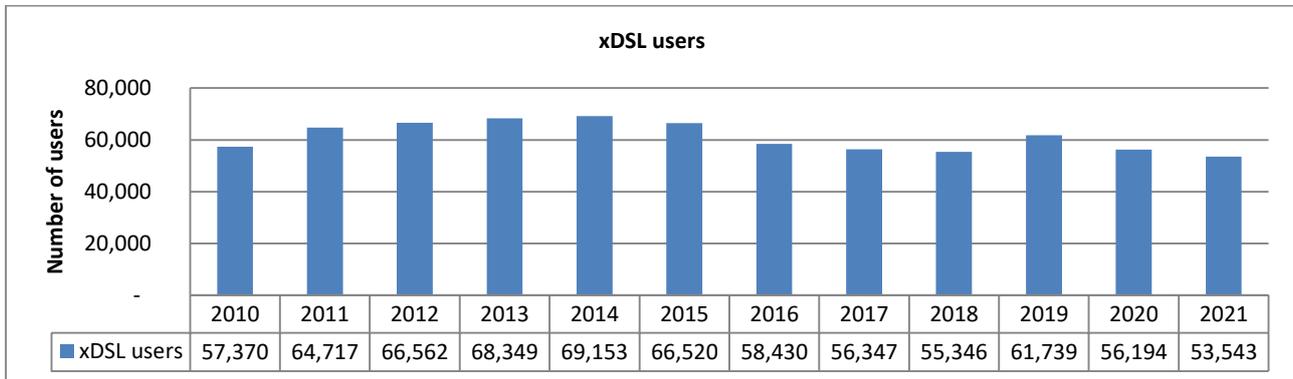
At the end of 2021, total leased capacities of Internet transit leased from the foreign operators (capacity of international Internet transit used by the operators in Montenegro) was 285.25 Gbps, and was 10 Mbps higher than at the end on 2020. Crnogorski Telekom made the connection to Internet access with super providers through the link of 200 Gb/s to Telekom Hrvatske, Mtel through the 65 Gbps link to Telekom Srbije, Telemach 10 Gbps link to SBB, Telenor through 10.24 Gbps link to Telenor Srbija, and IPMont through 10Mbps link to Akton.

1.6.1. Fixed broadband Internet access

1.6.1.1. Internet access through xDSL (ADSL⁴ i VDSL⁵)

Internet access service through xDSL (ADSL and VDSL) in Montenegro is provided by Crnogorski Telekom, which had 53,543 xDSL users at the end of 2021, of which 48,089 users were physical persons, and 5,454 were legal persons. Of the total number of xDSL users 22,546 were ADSL users (20,082 physical persons and 2,464 legal persons), while 30,997 were VDSL users (28,007 physical persons and 2,990 legal persons). In 2021, there had been a decrease in the number of xDSL users, so that at the end of 2021, the number of users was 4.72% lower than a year before. The reason for the decrease was transmission of users to the networks with optical fibers.

In the chart below is given a comparative overview of the number of xDSL users in the period 2010 – 2021.



In the Table below is given the number of xDSL users per municipality, in the period 2018-2021.

Municipality	2018			2019			2020			2021		
	ADSL	VDSL	total									
Andrijevica	104	42	146	156	41	197	143	46	189	132	51	183
Bar	2,740	2,735	5,475	2,601	3,126	5,727	2,071	2,962	5,033	1,758	3,062	4,820
Berane	794	372	1,166	1,070	391	1,461	973	457	1,430	879	511	1,390
Bijelo Polje	996	763	1,759	1,397	813	2,210	1,268	818	2,086	1,176	832	2,008
Budva	2,173	2,095	4,268	1,939	2,483	4,422	1,590	2,395	3,985	1,401	2,488	3,889
Cetinje	529	788	1,317	828	879	1,707	674	861	1,535	551	828	1,379
Danilovgrad	790	670	1,460	863	824	1,687	769	826	1,595	682	826	1,508
Gusinje	301	209	510	310	247	557	282	268	550	267	284	551
Herceg Novi	2,842	3,703	6,545	2,955	4,591	7,546	2,503	4,753	7,256	2,158	5,044	7,202

⁴ ADSL - Asymmetric digital subscriber line

⁵ VDSL (Very-high-bit-rate DSL) - DSL technology offering faster transmission than ADSL, through phone pairs.

Kolašin	251	225	476	369	274	643	346	288	634	324	297	621
Kotor	3,011	2,720	5,731	2,717	3,637	6,354	2,301	3,644	5,945	2,040	3,937	5,977
Mojkovac	303	104	407	523	150	673	445	166	611	400	173	573
Nikšić	1,568	1,589	3,157	2,016	1,790	3,806	1,778	1,821	3,599	1,592	1,788	3,380
Petnjica	60	19	79	50	19	69	45	15	60	41	18	59
Plav	665	402	1,067	744	502	1,246	679	565	1,244	645	617	1,262
Pljevlja	365	332	697	544	412	956	509	416	925	452	416	868
Plužine	46	115	161	66	98	164	62	84	146	55	69	124
Podgorica	7,005	6,089	13,094	7,158	6,835	13,993	5,383	6,278	11,661	4,362	5,862	10,224
Rožaje	1,056	399	1,455	1,063	553	1,616	897	709	1,606	803	814	1,617
Šavnik	26	35	61	81	40	121	71	39	110	65	43	108
Tivat	1,498	1,081	2,579	1,395	1,418	2,813	1,175	1,422	2,597	1,057	1,425	2,482
Tuzi	355	169	524	252	132	384	199	100	299	147	72	219
Ulcinj	1,881	930	2,811	1,680	1,091	2,771	1,397	1,105	2,502	1,266	1,227	2,493
Žabljak	242	159	401	355	261	616	321	275	596	293	313	606
Total:	29,601	25,745	55,346	31,132	30,607	61,739	25,881	30,313	56,194	22,546	30,997	53,543
		55,346		61,739		56,194		53,543				

For residential users, the most popular are flat packages of ADSL on demand, with maximum download speed of 4 Mbps, 35% of ADSL users, and Extra Duo VDSL Internet 20/2, which includes Internet access services with maximum download speed of 20 Mbps, used by 24% of VDSL users. As for business users, 28% of ADSL users use ADSL FI@tB4 package with maximum download speed of 4 Mbps, while 28% of VDSL users use Magenta

Biznis Min-Standard VDSL Internet package with maximum download speed of 40 Mbps.

Availability of xDSL is 99.51%, meaning 99.51% of users with fixed telephone connection can introduce xDSL service. At the end of 2021, Crnogorski Telekom had 253 xDSL nodes.

1.6.1.2. Internet access through access networks with optical fiber (FTTH/B)

In 2021 continued development of access optical fiber networks and installation of optical fiber to end users. Internet access through access network with fiber optic is offered by: Crnogorski Telekom, Mtel, Telemach and FiberCom. The number of users who accessed Internet through optical fiber during 2021, raised by 10.05% in relation to the end of 2020.

At the end of 2021, Crnogorski Telekom had 27,404 users, of which 23,751 were physical persons, and 3,653 were legal users. The number of users of Crogoriski Telekom, with FTTH/B connection, raised by 16.40% in relation to 2020. The most attractive package among residential users was Magenta 1 L v 3 (100/10 Mbps) flat package used by 16% of residential users, while 22% of business preferred Magenta 1 Biznis Min Standard (45/4 Mbps).

At the end of 2021, Mtel had 46,752 users with FTTH/B connection, which is 6.44% more than at the end of 2020. Of that number there were 44,326 residential users and 2,426 business users. The most attractive package with residential users was flat package Box Duo 1+ (50/3 Mbps), used by 23.79% residential users, while the same package used 13.44% business users.

Telemach had 6,479 users with FTTH/B connection at the end of 2021, which is 11.65% more compared to the end of 2020. Of that number 6,142 were residential users, and 337 business users. The most attractive package with residential users was flat package. EON Full (150/6 Mbps) used 33% of residential users, while 30.86% business users had EON Premium package (200/10 Mbps).

At the end of 2021, FiberCom had 29 users, of which 20 residential users and 9 business users. The most popular package with residential users was Internet 5 (5/1 Mbps), used by 50% of residential users, while 55.55% business users had Internet 25 package (25/5 Mbps).

In the following Table is given the number of users per operator and by municipality in which Internet access through access networks with fiber optic.

FTTH/B users					
Municipality	Crnogorski Telekom	Mtel	Telemach	FiberCom	Total
Andrijevića	13	0	0	0	13
Bar	2,127	5,468	121	0	7,716
Berane	183	1,632	0	0	1,815
Bijelo Polje	282	2,401	0	0	2,683
Budva	1,251	1,849	0	0	3,100
Cetinje	729	1,438	0	0	2,167
Danilovgrad	209	1,954	0	0	2,163
Gusinje	1	0	0	0	1
Herceg Novi	1,124	83	5	0	1,212
Kolašin	41	0	0	0	41
Kotor	1,467	901	0	0	2,368
Mojkovac	101	379	0	0	480
Nikšić	1,508	7,525	198	0	9,231
Petnjica	0	214	0	0	214
Plav	19	0	0	0	19
Pljevlja	94	0	0	0	94
Plužine	66	87	0	0	153
Podgorica	16,458	16,81	6,155	29	22,642
Rožaje	63	237	0	0	300
Šavnik	14	0	0	0	14
Tivat	1,179	817	0	0	1,996
Tuzi	281	2,041	0	0	2,322
Ulcinj	113	2,916	0	0	3,029
Žabljak	81	0	0	0	81
Total:	27,404	46,752	6,479	29	80,664

In the following Table is given the number of Internet access users through access networks with fiber optic, in the period 2011-2021.

FTTx users										
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
1,029	4,745	8,610	12,605	17,466	12,971	34,942	47,535	63,113	73,300	80,664

1.6.1.3. Internet access through cable distribution systems (CDS)

Internet access service through cable distribution systems, that is, through hybrid fibre-coaxial (HFC- Hybrid fibre-coaxial) networks is provided in Montenegro by Mtel and Telemach. Both operators implemented DOCSIS 3.0 Standard enabling data transmission high speeds. At the end of 2021, there were 50,427 users, of which 47,115 residential users and 3,312 business users, so that compared to the end of 2020 the number of these users was 2.61% higher.

At the end of 2020, Mtel had 32,498 users, of which 30,276 residential and 2,222 business users. The number of Mtel users in relation with 2020 raised by 3.48%. Also at the end of 2021, in 20 municipalities of Montenegro, Mtel had the users of internet access through cable distribution systems (KDS). The most popular package among residential users was flat BOX duo 1+ (50/3 Mbps) flat package used by 23.79% of users, while the same package was used by 10.04% of business users.

Internet access service through cable distribution systems (KDS), is provided by Telemach in 9 municipalities of Montenegro. At the end 2021, Telemach had 17,929 users, of which 16,839 residential and 1,090 business users. The most attractive package among residential users is EON Full (150/6 Mbps) flat package used by 27.83% of residential users, while among business users was the most popular EON Premium (200/10 Mbps) flat package, used by 15.60% of business users.

The Table below is an overview of the number of users of Internet access provided through cable distribution systems (KDS) at the end of 2021.

2021	HFC/KDS users								
	Mtel			Telemach			Total		
	physical	legal	total	physical	legal	total	physical	legal	total
Andrijevića	302	16	318	0	0	0	302	16	318
Bar	757	59	816	1,747	79	1,826	2,504	138	2,642
Berane	790	66	856	0	0	0	790	66	856
Bijelo Polje	1,191	74	1,265	1,180	52	1,232	2,371	126	2,497
Budva	10,360	918	11,278	72	12	84	10,432	930	11,362
Cetinje	661	15	676	0	0	0	661	15	676
Danilovgrad	1	4	5	0	0	0	1	4	5
Gusinje	0	0	0	0	0	0	0	0	0
Herceg Novi	1,564	108	1,672	2,130	148	2,278	3,694	256	3,950
Kolašin	0	2	2	0	0	0	0	2	2
Kotor	11	10	21	1,194	64	1,258	1,205	74	1,279
Mojkovac	138	7	145	0	0	0	138	7	145
Nikšić	3,170	85	3,255	900	34	934	4,070	119	4,189
Petnjica	0	0	0	0	0	0	0	0	0
Plav	0	0	0	0	0	0	0	0	0
Pljevlja	1,786	70	1,856	1,345	47	1,392	3,131	117	3,248
Plužine	0	1	1	0	0	0	0	1	1
Podgorica	6,053	544	6,597	6,996	570	7,566	13,049	1,114	14,163
Rožaje	751	25	776	0	0	0	751	25	776
Šavnik	0	0	0	0	0	0	0	0	0
Tivat	1,324	69	1,393	1,275	84	1,359	2,599	153	2,752
Tuzi	3	5	8	0	0	0	3	5	8
Ulcinj	1,414	142	1,556	0	0	0	1,414	142	1,556
Žabljak	0	2	2	0	0	0	0	2	2
Total	30,276	2,222	32,498	16,839	1,090	17,929	47,115	3,312	50,427

The following is an overview of the total number of users of Internet access through cable distributions systems (KDS), per municipality, for the period 2015-2021.

Municipality	HFC/KDS users						
	2015	2016	2017	2018	2019	2020	2021
Andrijevića	4	15	90	232	306	334	318
Bar	7	1,158	792	2,429	2,516	2,630	2,642
Berane	471	1,002	1,581	2,004	992	839	856
Bijelo Polje	1	936	2,096	3,784	2,457	2,434	2,497
Budva	3,981	5,026	7,806	9,759	11,069	11,047	11,362
Cetinje	284	845	1,269	736	711	661	676
Danilovgrad	0	2	0	1	3	5	5
Gusinje	0	0	0	0	0	0	0
Herceg Novi	12	214	618	3,086	3,523	3,671	3,950
Kolašin	0	0	0	0	1	2	2

Kotor	0	1	0	868	1,036	1,166	1,279
Mojkovac	0	41	257	283	133	145	145
Nikšić	1,496	4,907	2,515	3,573	3,884	4,039	4,189
Petnjica	0	0	0	0	0	0	0
Plav	0	0	0	0	0	0	0
Pljevlja	1	391	809	2,904	3,071	3,219	3,248
Plužine	0	0	0	0	0	1	1
Podgorica	864	9,837	3,741	11,953	13,073	13,880	14,163
Rožaje	1	3	269	536	679	771	776
Šavnik	0	0	0	0	0	0	0
Tivat	26	570	876	2,235	2,512	2,597	2,752
Tuzi	0	0	0	0	7	9	8
Ulcinj	224	1,407	2,067	2,273	2,039	1,694	1,556
Žabljak	0	0	0	0	0	2	2
Total	7,372	26,355	24,786	46,656	48,012	49,146	50,427

1.6.1.4. Internet access via WiMAX

At the end of 2021, Internet access service via WiMAX⁶ was provided by Mtel. The number of Mtel users who accessed Internet via WiMAX reduced by 67.83% during 2021 in relation to 2020, so that at the end of 2021, there was a total of 728 users of which 618 residential and 110 business users. The most attractive among residential users was New Net High 4M (4/512 Kbps) package used by 36.41% residential users, while New Net High 8M (8/768 Kbps) package used 20.90% business users.

In the Table below is given an overview of the users of WiMAX, for the period 2011-2021.

WiMAX users										
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
7,296	5,769	6,049	7,097	5,645	3,635	2,961	2,307	2,286	2,263	728

Considering that in the last years Internet access via WiMAX technology has been provided only by Mtel, in the following Table is given an overview of Mtel users with WiMAX technology, per municipality, for the period 2011 – 2021.

Municipality	Mtel users with WiMAX technology										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bar	226	213	198	188	144	101	88	84	83	83	29
Berane	315	247	207	204	149	104	84	80	77	76	25
Bijelo Polje	178	107	88	84	73	70	66	63	63	63	22
Budva	1,225	200	28	28	83	114	140	135	146	149	54
Cetinje	421	364	288	280	192	147	132	123	122	118	33
Danilograd	23	31	40	48	48	38	32	29	26	25	7
Herceg Novi	78	85	103	108	90	77	66	61	58	55	13
Kolašin	10	12	14	15	15	15	14	14	14	14	3
Kotor	25	30	38	46	43	43	37	34	34	30	7
Mojkovac	2	4	3	2	2	2	2	2	2	2	2
Nikšić	938	807	719	694	506	370	340	333	333	332	138
Pljevlja	10	10	9	10	10	9	9	8	8	8	2
Podgorica	3,777	3,378	2,972	2,939	2,306	1,535	1,327	1,306	1,288	1,278	381
Rožaje	27	20	19	19	18	18	18	14	14	14	7
Tivat	23	23	25	27	24	20	16	14	12	10	3

⁶ WiMAX - Worldwide Interoperability for Microwave Access

Ulcinj	13	12	14	13	10	9	9	7	6	6	2
Total	7,291	5,543	4,765	4,705	3,713	2,672	2,380	2,307	2,286	2,263	728

The approval for Mtel for the use of radio-frequencies in the 3.4-3.8 GHz band expires in April 2022, and from that date Mtel should not use that technology.

1.6.1.5. Internet leased lines

In 2021, four operators were providing Internet leased lines services, and those are: Crnogorski Telekom, IPMONT, Mtel and Telenor. The total number of Internet leased lines amounted to 238, and as per operator: Crnogorski Telekom 52, Mtel 4, Telenor 178, and IPMONT 4 leased lines.

1.6.1.6. Internet access via MPLS⁷

The Internet access services in 2021, via MPLS, with Crnogorski Telekom used 160 users, while Mtel had 4 users.

1.6.1.7. Internet access via wireless access points (2.4 GHz and 5 GHz)

Total number of wireless access points increased from 599 in 2020 to 604 at the end of 2021. As regards the access points, at the end of 2021, the ASP-BeeNet had 2, Crnogorski Telekom 44, Mtel 99, Net Mont 20, Orion Telekom 113, TeleEye Montenegro 14, Telemach 168, Telenor 81, WiMax Montenegro 21, and Wireless Montenegro 42 access points.

Table below shows the number of wireless access points per municipality, at the end of 2021.

2021	Wireless access points										
	ASP BeeNET	Crnogorski Telekom	Mtel	Net Mont	Orion Telekom	TeleEye Montenegro	Telemach	Telenor	WiMAX Montenegro	Wireless Montenegro	Total
Andrijevića	0	0	0	0	2	0	0	1	0	0	3
Bar	0	2	4	20	3	6	12	2	4	4	57
Berane	0	1	4	0	6	0	0	2	0	1	14
Bijelo Polje	0	1	4	0	2	0	9	1	0	2	19
Budva	0	2	7	0	6	5	3	4	4	5	36
Cetinje	0	1	5	0	5	0	0	11	0	0	22
Danilovgrad	0	1	2	0	6	0	0	1	0	0	10
Gusinje	0	0	0	0	1	0	0	0	0	0	1
Herceg Novi	0	13	3	0	6	0	28	2	3	0	55
Kolašin	0	0	1	0	2	0	0	1	0	1	5
Kotor	0	6	4	0	7	0	4	1	2	2	26
Mojkovac	0	0	1	0	3	0	0	1	0	0	5
Nikšić	0	1	13	0	7	0	3	3	0	2	29
Petnjica	0	0	0	0	1	0	0	1	0	0	2
Plav	0	1	0	0	3	0	0	1	0	0	5
Pljevlja	0	1	2	0	8	0	9	2	0	2	24
Plužine	0	0	0	0	1	0	0	1	0	0	2
Podgorica	0	9	43	0	21	0	89	15	4	18	199
Rožaje	0	1	2	0	6	0	0	1	0	0	10

⁷ MPLS - Multiprotocol Label Switching

Šavnik	0	0	0	0	1	0	0	1	0	0	2
Tivat	1	1	3	0	7	1	11	24	3	1	52
Tuzi	0	0	0	0	1	0	0	0	0	0	1
Ulcinj	0	2	1	0	7	2	0	4	1	2	19
Žabljak	1	1	0	0	1	0	0	1	0	2	6
Total	2	44	99	20	113	14	168	81	21	42	604

The number of users who accessed Internet through wireless access points amounted to 2,459 at the end of 2021, while the ASP BeeNet had 103, NetMont 315, Orion Telekom 1,426, TeleEye Montenegro 40, and WiMax Montenegro had 575 users. Free WiFi service is offered by: Crnogorski Telekom, Telemach, Telenor, Mtel, and Wireless Montenegro.

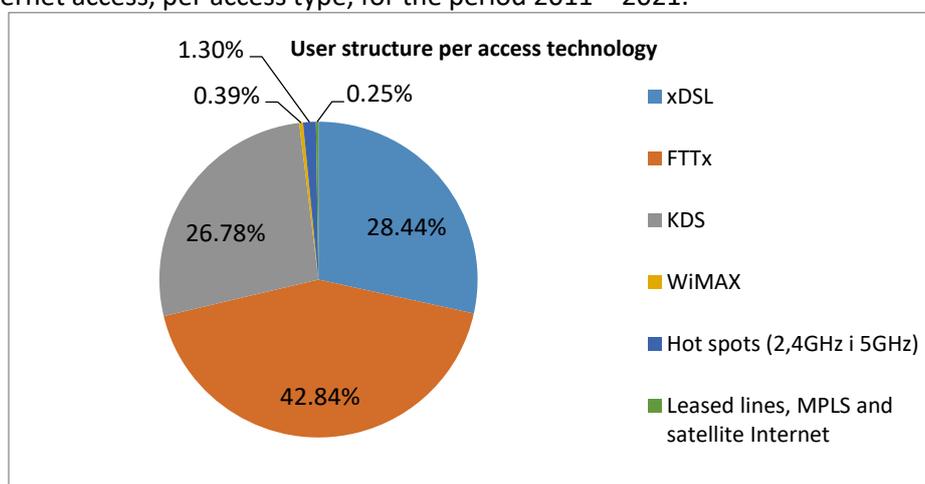
1.6.1.8. Satellite Internet

The services of satellite Internet access are in the offer of the operator SBS Net Montenegro. At the end of 2021 there were 72 users, of which 7 residential users and 65 business users. All packages are in the download speed band from 10 to 30 Mbps. Trend in the number of users of satellite Internet access for the period 2015 – 2021 is shown in the Table below.

Satellite Internet access						
2015	2016	2017	2018	2019	2020	2021
77	85	82	79	76	73	72

1.6.1.9. Structure of the users of fixed broadband Internet access

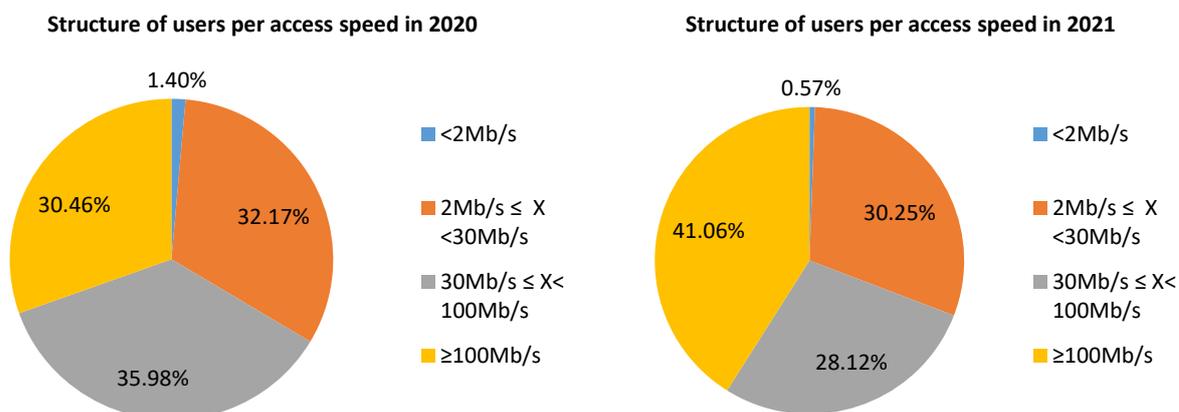
Structure of the users of fixed broadband Internet access, according to the access technology, is given in percentages at the following pie-chart, while the Table that follows it, gives the structure of the users of fixed broadband Internet access, per access type, for the period 2011 – 2021.



Technology	xDSL	FTTx	KDS	WiMAX	Hot spots (2.4GHz and 5GHz)	Leased lines, MPLS and satellite Internet
2010	79.48%	0,00%	2.12%	8.22%	9.72%	0.45%
2011	78.44%	1.25%	4.05%	7.12%	8.41%	0.74%
2012	75.84%	5.41%	4.15%	6.57%	7.40%	0.64%
2013	71.40%	8.99%	5.31%	6.32%	7.62%	0.35%
2014	66.58%	12.14%	5.33%	6.83%	8.79%	0.33%
2015	59.18%	15.54%	5.72%	5.02%	14.14%	0.39%
2016	50.80%	11.30%	31.90%	3.20%	2.40%	0.40%

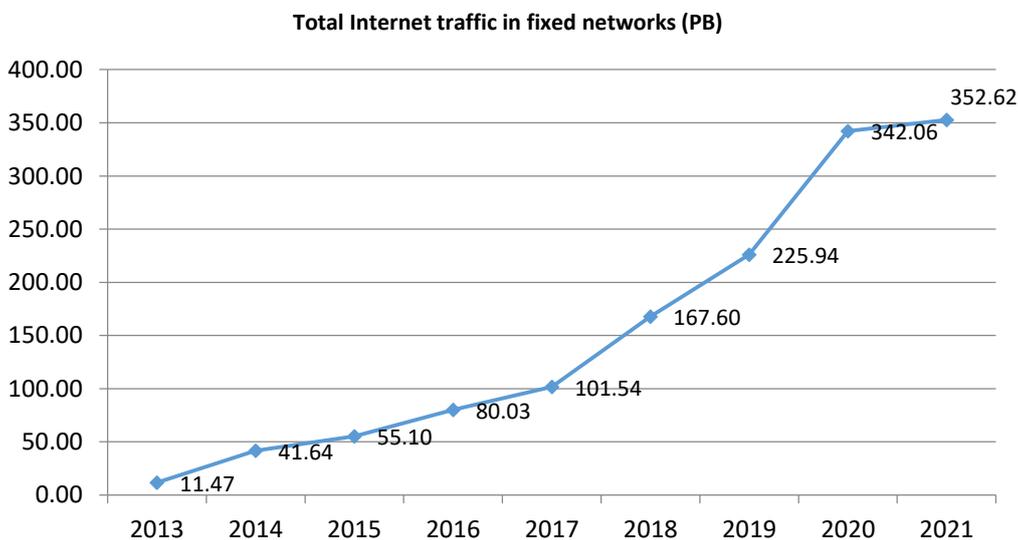
2017	40.90%	25.36%	28.89%	2.15%	2.29%	0.41%
2018	35.73%	30.68%	30.12%	1.49%	1.65%	0.34%
2019	34.53%	35.30%	26.86%	1.28%	1.75%	0.28%
2020	30.51%	39.80%	26.68%	1.23%	1.51%	0.26%
2021	28.44%	42.84%	26.78%	0.39%	1.30%	0.25%

The structure of users of fixed broadband Internet access per access speed, given in percentages for the end of 2020 and for the end of 2021 is given in the following pie-charts.



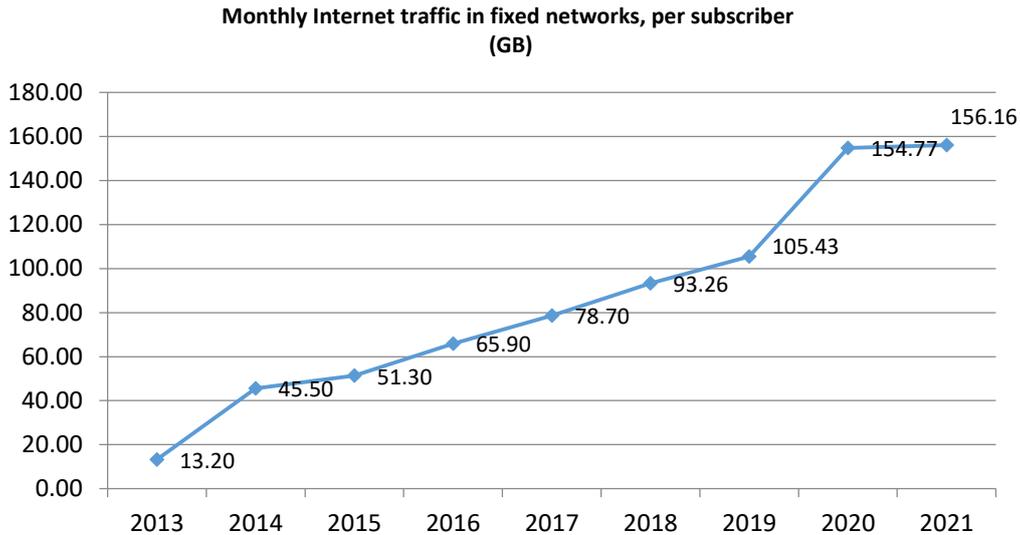
1.6.1.10. Traffic realized via fixed broadband Internet access

Total Internet traffic realized by the users in the fixed electronic communications networks in 2021 amounted to 352.62 PB being 3.09% higher than in 2020. Increase in the trend of the total realized Internet traffic in fixed electronic communications networks is given in the Table below.



Average Internet traffic realized in 2021 by the subscribers in the fixed electronic communications networks was 156.16 GB, on monthly level, being 0.9% higher than in 2020.

Increase in the trend of an average Internet traffic realized by the subscribers in the fixed electronic communications networks on monthly level is shown in the following graphic.



1.6.2. Mobile broadband Internet access

The number of users of mobile broadband access users who accessed Internet via data SIM cards during 2021, raised by 0.87% with relation to 2020. The number of users of Crnogorski Telekom decreased by 4.28%, while the number of Telenor users increased by 11.83%. The Table below gives a structure of data SIM card users in 2021.

	Postpaid	Prepaid	Total
Crnogorski Telekom	30,753	255	31,008
Telenor	14,369	2,669	17,038
Total	45,122	2,924	48,046

In the following Table is given the number of data SIM card users per operator in the period 2015-2021.

Users of data SIM cards							
	2015	2016	2017	2018	2019	2020	2021
CT	21,439	21,068	26,972	28,312	32,093	32,396	31,008
Telenor	32,232	34,220	38,641	26,172	17,711	15,235	17,038
Total	53,671	55,288	65,613	54,484	49,804	47,631	48,046

The users of data SIM cards of Crnogorski Telekom realized the traffic of 12.45 PB, showing an increase of 36.50% with relation to 2020. Telenor users realized the traffic of 5.49 PB, which is an increase of 9.75% with relation to 2020.

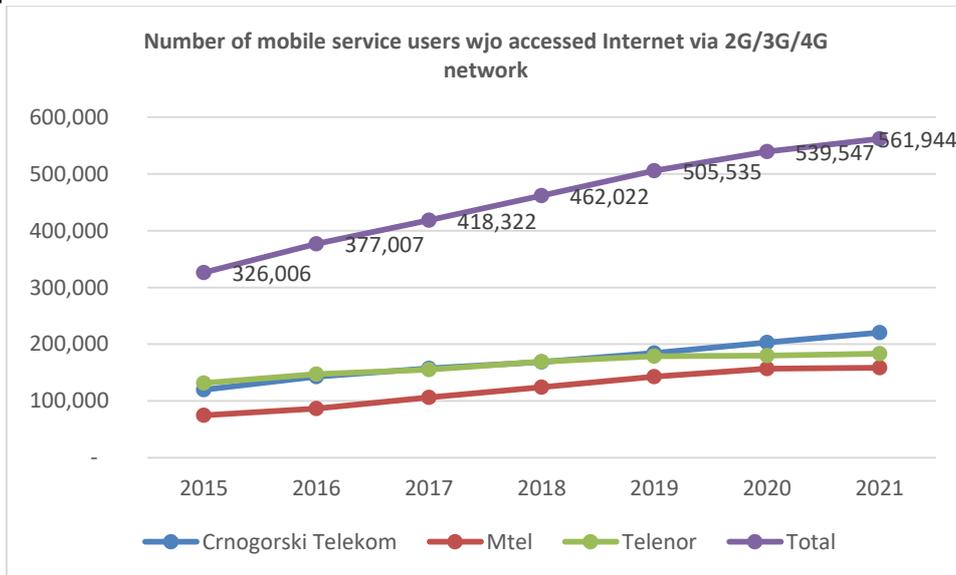
Notwithstanding the fact that Mtel does not offer data SIM card used only for the data transmission service, in 2021, only data transmission traffic in the amount of 2.29 PB was realized with the total of 72,099 SIM cards of Mtel.

The total number of mobile services users (prepaid and postpaid) who accessed Internet (via mobile phones and modems) in December 2021, amounted to 561,944, of which 453,284 persons used 3G/4G, and 450,506 used only 4G access technology. The number of users of Crnogorski Telekom amounted to 220,577 (39.25%), Telenor 183,025 (32.57%), while Mtel had 158,342 users (28.18%). The number of users who accessed Internet in December 2021 via mobile networks, was 4.15% higher than in December 2020.

Increasing trend in mobile services users who accessed Internet (via mobile phones and modems) is shown in the Table below, per year. The figures refer to December of each of the indicated year.

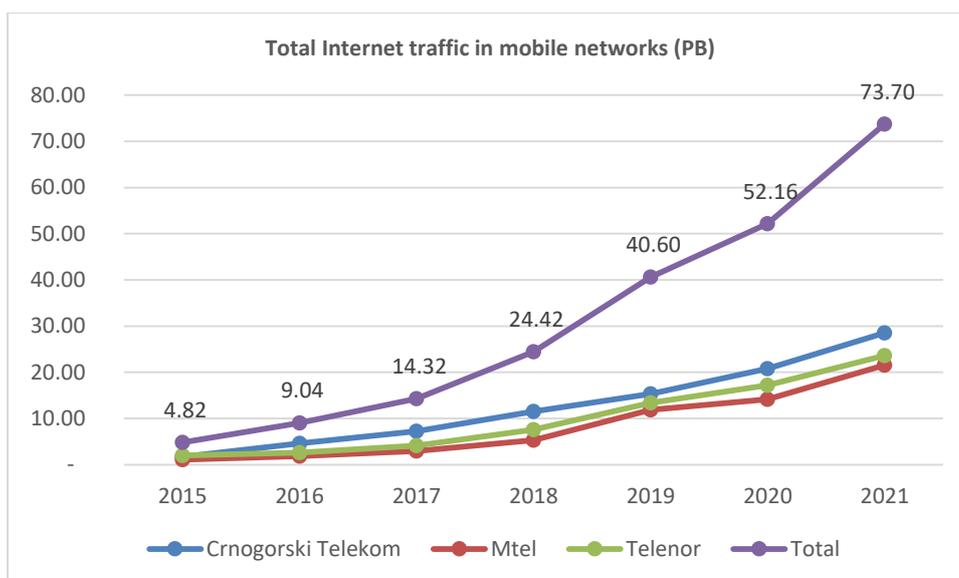
		2015	2016	2017	2018	2019	2020	2021
Crnogorski Telekom	2G/3G/4G	119,482	143,016	157,164	168,893	184,117	202,774	220,577
	3G	91,697	121,125	114,086	114,600	117,096	117,496	111,412
	4G	0	0	63,557	86,069	114,870	160,543	186,815
Mtel	2G/3G/4G	74,834	86,746	106,214	124,001	142,690	156,714	158,342
	3G	57,642	68,169	89,745	114,223	134,350	140,636	144,620
	4G	0	0	4,637	25,215	57,977	77,842	93,121
Telenor	2G/3G/4G	131,690	147,245	154,944	169,128	178,728	180,059	183,025
	3G	121,994	145,613	157,308	176,020	185,966	191,493	197,252
	4G	0	0	65,045	104,651	135,274	153,813	170,570
Total	2G/3G/4G	326,006	377,007	418,322	462,022	505,535	539,547	561,944
	3G	271,333	334,907	361,139	404,843	437,412	449,625	453,284
	4G	0	0	133,239	215,935	308,121	392,198	450,506

The number of users who accessed Internet via 2G/3G/4G networks, per operator and in total, is given in the following graph.



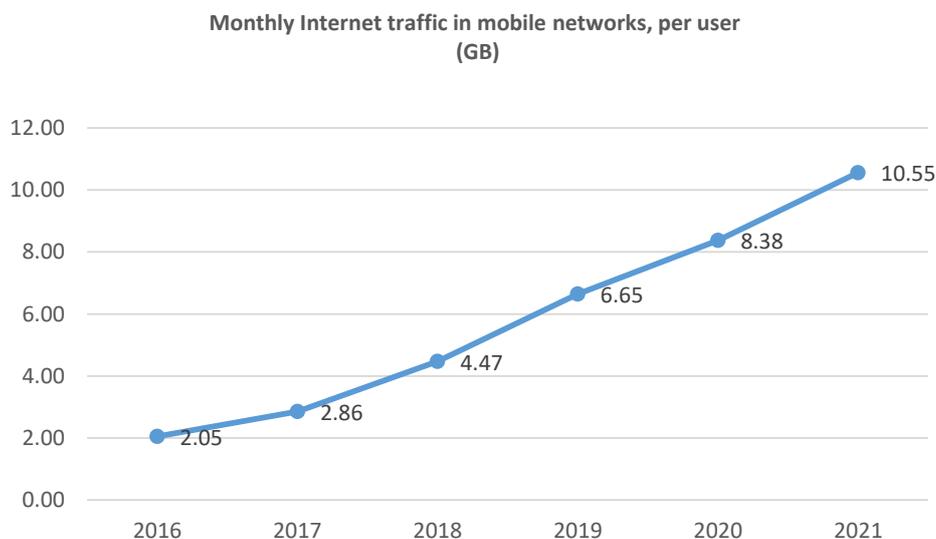
1.6.2.1. Realized traffic via mobile broadband Internet access

Total Internet traffic realized by the users of mobile networks during 2021 amounted to 73.70 PB and was by 41.3% je higher than in 2020. Increasing trend of the total realized Internet traffic via mobile electronic communications networks is given in the following graph.



An average user realized monthly 10.55 GB of Internet traffic through mobile electronic communications network, which is 26% more than in 2020.

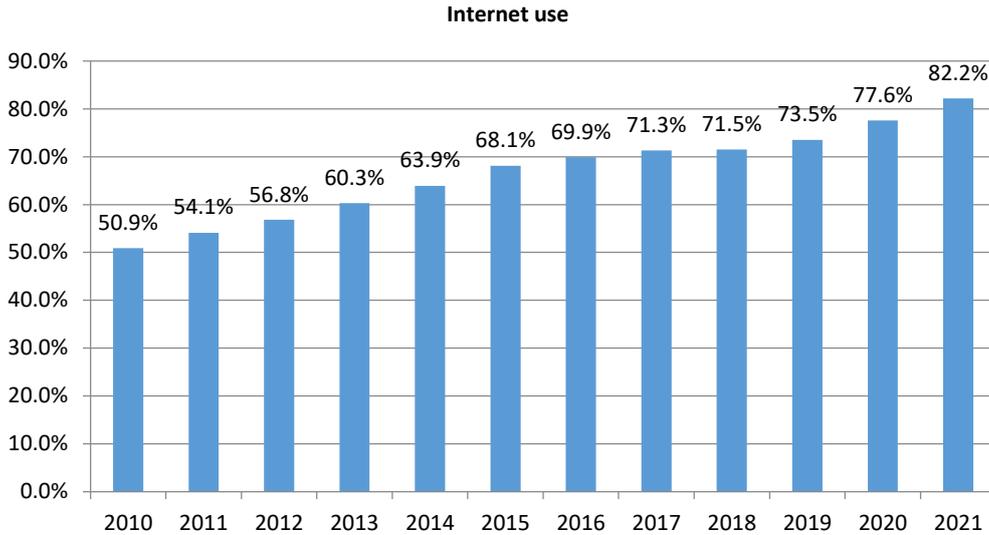
Increasing trend in an average Internet traffic realized by the users through mobile networks, on monthly level, is given in the following graph.



1.6.3. Internet penetration

Based on the research of the use of ICT⁸ in Montenegro, carried out by the Bureau of Statistics of Montenegro (Zavod za statistiku Crne Gore) – MONSTAT, during 2020, 82.2% of the population used Internet in the last three months, which is by 4.6 percentage points more than in 2020. The chart below shows the trend in Internet use in the period 2011-2021.

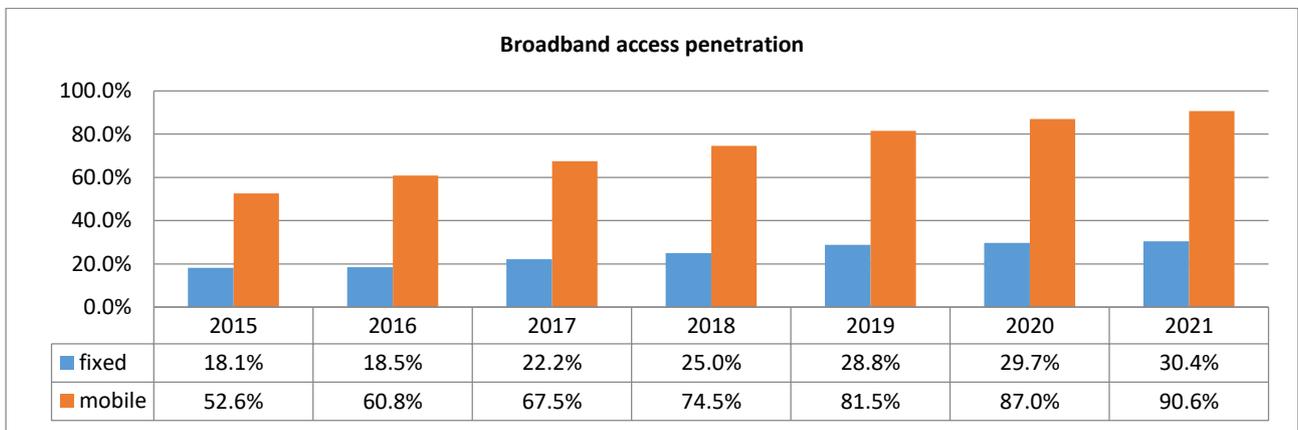
⁸ ICT - Information and communications technologies



At the end of 2021, penetration of fixed broadband access in relation to population number (the users of xDSL, FTTH/B, cable distribution systems, WiMAX, leased lines etc.) was 30.4% which is an increase of 0.7 percentage points with relation to 2020. When the penetration is observed in relation to the number of households, it amounts to 96.7%, which is an increase of 2.2 percentage points compared to 2020.

Penetration of mobile broadband access, that is the number of users who accessed Internet via mobile networks during December 2021, amounted to 90.6% which is an increase of 3.6 percentage points compared to the December 2020.

The chart below gives trend in penetration of broadband access (fixed and mobile) in relation to population number in the period 2015-2021.



During 2021 continued an upward trend in the number of Montenegro population who access Internet, as well as an upward trend in penetration of fixed and mobile broadband access.

1.6.4. Prices of broadband Internet access in Montenegro and comparison with surrounding countries

Comparison of the prices of broadband internet access at retail level with incumbent operators in Montenegro, with the prices of incumbent operators in other countries is hard to be made due to different packages offered by operators in different countries, related to the number of services included in the packages, speed of Internet access, quantity of data included in monthly subscription fee, as well as the way

of acting after certain quantity of data has been transmitted (decrease of the speed or temporary suspension in service delivery). With a view to making comparison as much efficient as possible, performs comparison of the package fee of independent Internet access, though that comparison does not completely reflect real situation.

Incumbent operators in the Region offer stand-alone broadband internet access through packages with different download speeds, and these are from 1 Mbps to 1 Gbps. Comparative analysis of prices of broadband access at retail level is prepared according to offer of Crnogorski Telekom. Therefore, in its offer for physical persons, Crnogorski Telekom has individual packages of broadband internet access, engaging following technologies:

- xDSL, i.e. ADSL and VDSL, and
- FTTx, i.e. fiber access.

Crnogorski Telekom offers individual packages with maximum download speeds from 2 Mbps to 200 Mbps. In the following Table is given an overview of characteristics and prices of individual broadband packages for physical persons, from the offer of Crnogorskog Telekom.

Broadband packages offered by Crnogorski Telekom (for physical persons)

Package name	User type (F/P)	Speed	Flow	Price
ADSL Fl@T 2	F	Up to 2 Mbps / 256 kbps	flat	€11.66
Optika 20	F	Up to 20 Mbps / 1 Mbps	flat	€20.67

By activating "Speed up Internet" extension and after additional fee has been paid, the users can be provided with fixed Internet of higher speeds, while using the above packages.

Name of extension	Speed	Price
ADSL	Speed up to 10/1 Mbps	€1.99
Turbodsl	Speed up to 40/5 Mbps	€2.99
Optika	Speed up to 100/10 Mbps	€2.99
Optika	Speed up to 200/10 Mbps	€9.99

Package name + extension	Speed	Price
ADSL Fl@T 2 + ADSL extension	Speed up to 10/1 Mbps	11.66 + 1.99 = €13.65
ADSL Fl@T 2 + Turbodsl extension	Speed up to 40/5 Mbps	11.66 + 2.99 = €14.65
Optika 20 + Optika 100 extension	Speed up to 100/10 Mbps	20.67 + 2.99 = €23.66
Optika 20 + Optika 200 extension	Speed up to 200/10 Mbps	20.67 + 9.99 = €30.66

1.6.4.1. Price comparison of standalone packages of incumbent operators of the speeds up to 2Mbps, in the countries of the Region/Europe

Comparative overview of the package fees with download speeds up to 2 Mbps in the offers of operators from the countries in the Region and European countries is given in the following charts.

Comparative overview of standalone package fees of incumbent operators, with the speed up to 2 Mb/s in the countries of the Region/Europe



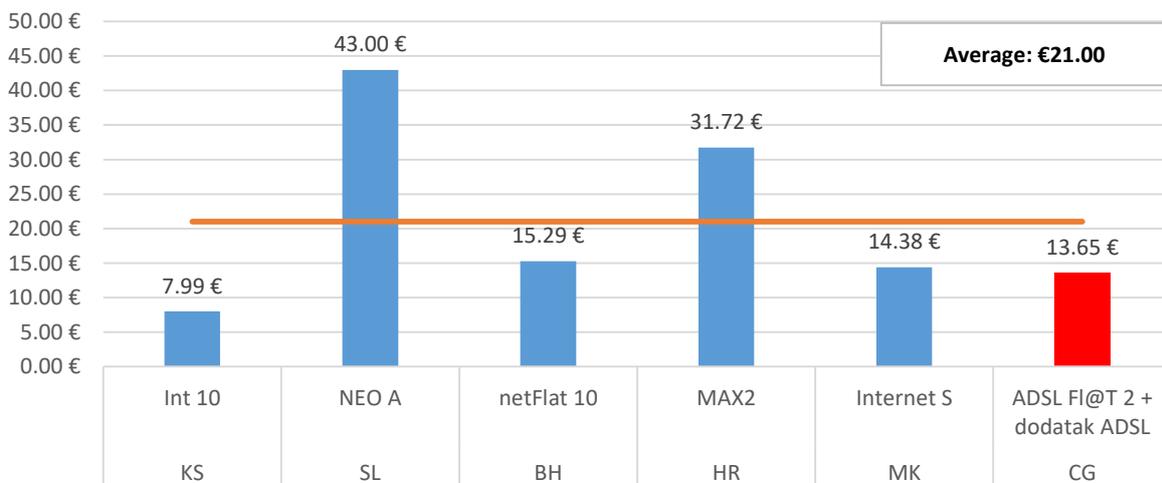
Crnogorski Telekom offers ADSL FL@T 2 with the speed up to 2 Mbps at the price of € 11.66, being more favourable than an average in the Region which amounts to €12.13, meaning that the price of Crnogorski Telekom is 3.88% lower than an average price in the Region.

The comparison cannot be made with regard to the observed European countries, as operators in these countries do not offer Internet access packages of speed up to 2 Mbps.

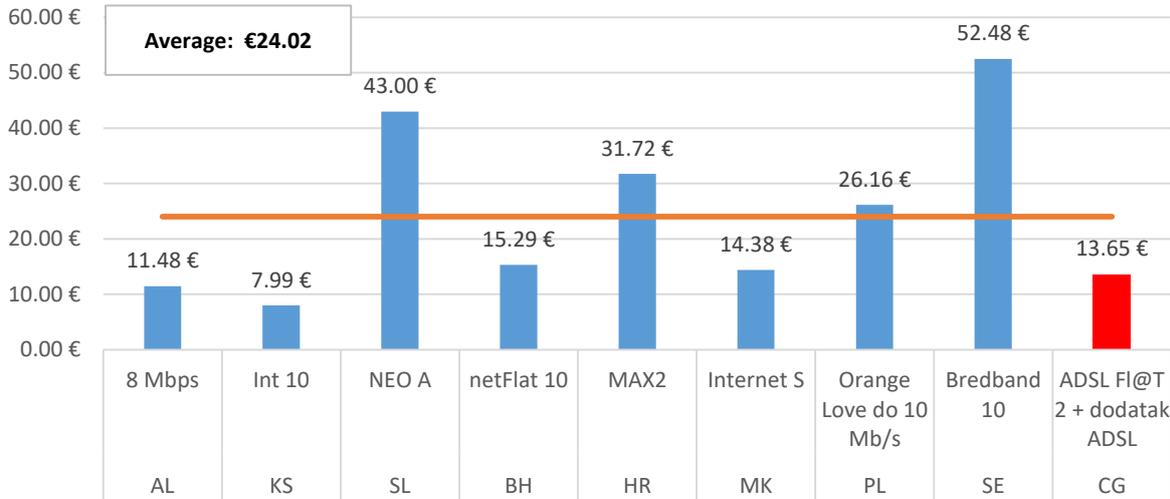
1.6.4.2. Price comparison of broadband Internet access, with maximum speed between 5 Mbps and 15 Mbps in the countries of the Region/Europe

Incumbent operators in the Region offer broadband Internet access of higher speeds via VDSL connections. The charts below present an overview of package with offered speeds between 5 Mbps and 15 Mbps in the Region and in observed European countries.

Comparative overview of standalone package of incumbent operators with maximum speed between 5 Mbps and 15 Mbps in the countries of Europe



Comparative overview of standalone package of incumbent operators with maximum speed between 5 Mbps and 15 Mbps in the countries of the Region



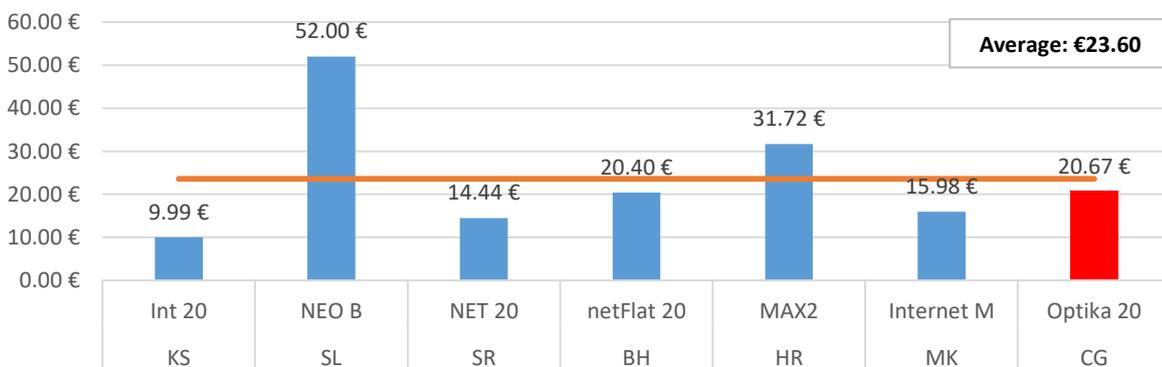
Crnogorski Telekom offers the ADSL FI@t 2 + dodatak ADSL package of speed up to 10/1 Mbps at the price of €13.65, being 32.33 % below the regional average which is €21.00.

With regard to the observed European countries, the fee of that package of Crnogorski Telekom is 43.16% lower than an average which is €24.02.

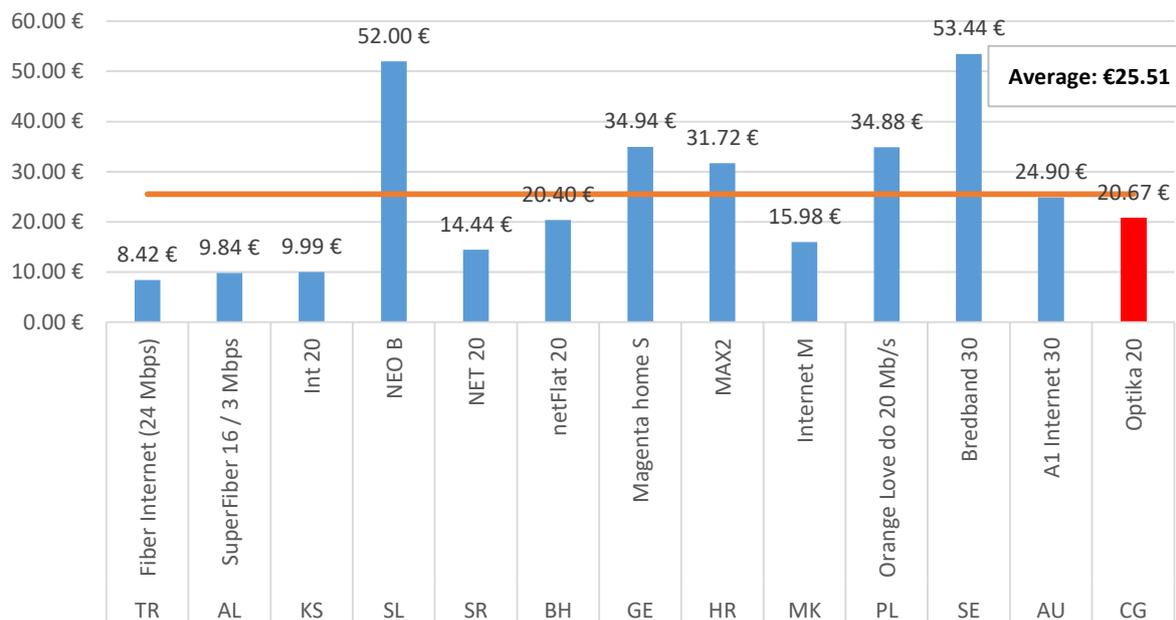
1.6.4.3. Price comparison of standalone packages of incumbent operators with maximum speed between 15 Mbps and 30 Mbps in the countries of the Region/Europe

Incumbent operators in the Region offer broadband Internet access of higher speeds via VDSL and FTTH connections. The charts below give an overview of the package of speeds between 15 Mbps and 30 Mbps in the Region and in observed European countries.

Comparative overview of the price of standalone packages of Incumbent operators with maximum speed of 15-30 Mbps in the countries of the Region



Comparative overview of the price of standalone packages of Incumbent operators with maximum speed of 15-30 Mbps, in the European countries

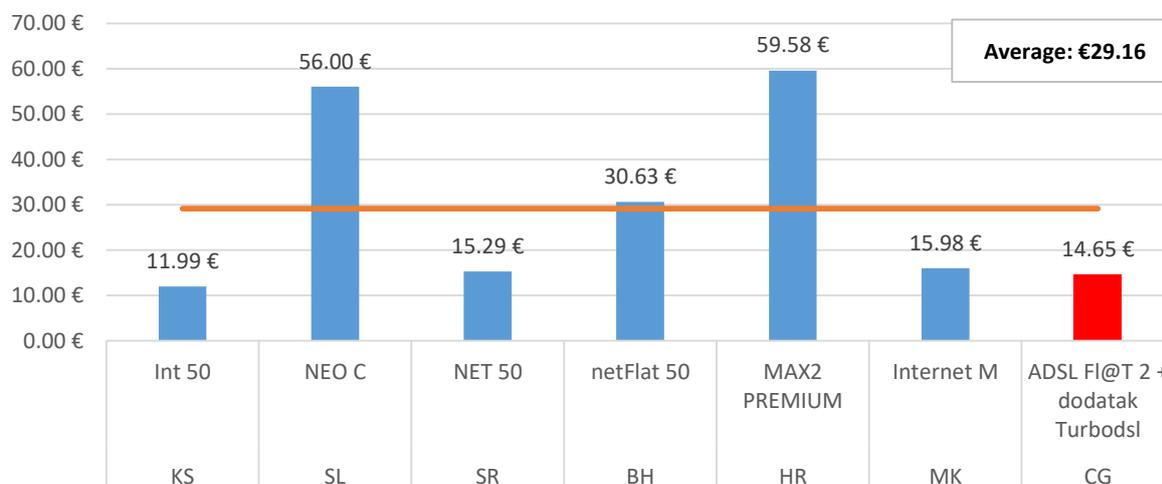


Crnogorski Telekom offers Optika 20 package with the speeds of up to 20 Mbps at the price of €20.67, which is 12.42% more favourable than an average price of reference packages in the Region, which amounts to €23.60. Compared with an average of observed European countries (amounting to €25.51), the price of Optika 20 package is 18.97% lower.

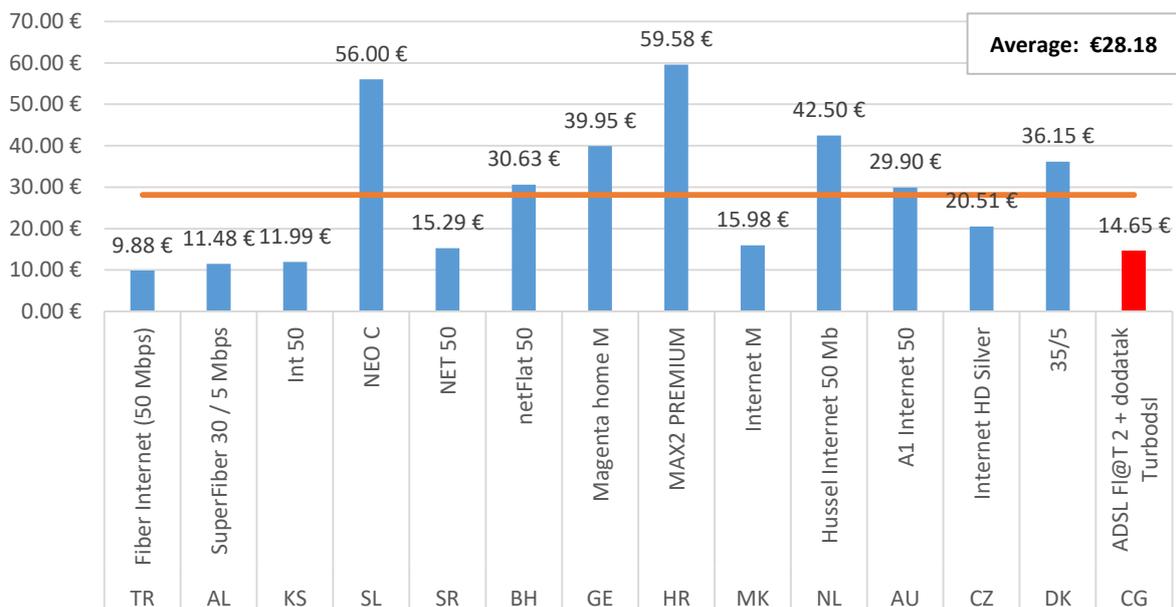
1.6.4.4. Price comparison of standalone package of incumbent operators with maximum speed of 30 Mbps and 50 Mbps in the countries of the Region/Europe

Incumbent operators in the Region offer broadband Internet access of higher speed via FTTH connections. The following charts give an overview of the package of speeds between 30 Mbps and 50 Mbps in the Region and in observed European countries.

Comparative overview of the price of standalone packages of incumbent operators with the speed of 30-50 Mbps, in the countries of the Region



Comparative overview of the price of standalone packages of incumbent operators with the speed of 30-50 Mbps, in the European countries



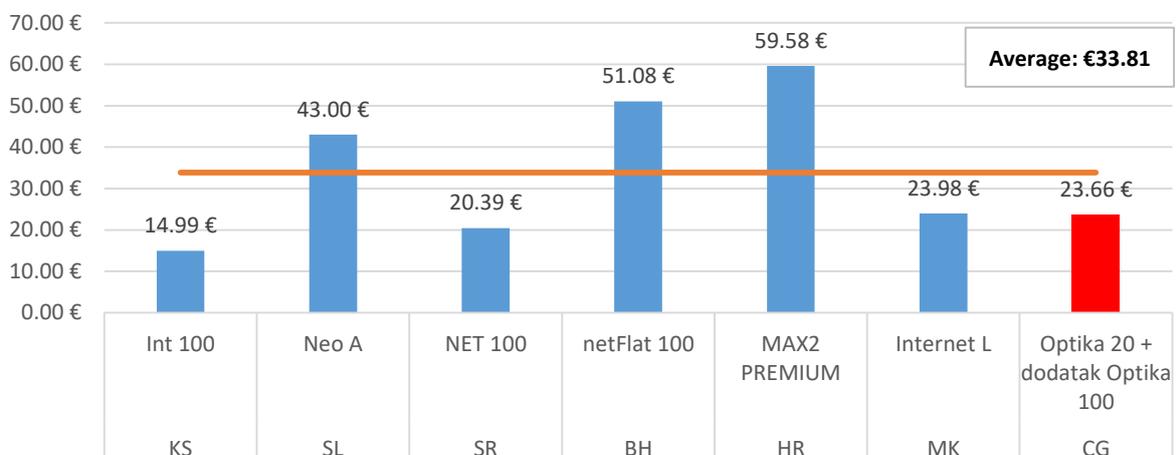
Crnogorski Telekom offers the ADSL FI@T 2 + dodatak TurboDSL package with the speed up to 40/5 Mbps for €14.65, which is 49.76% less than an average in the Region (€29.16).

Comparing with an average in observed European countries, which amounts to €28.18, the price of ADSL FI@T 2 + dodatak TurboDSL-a package is 48.01% lower.

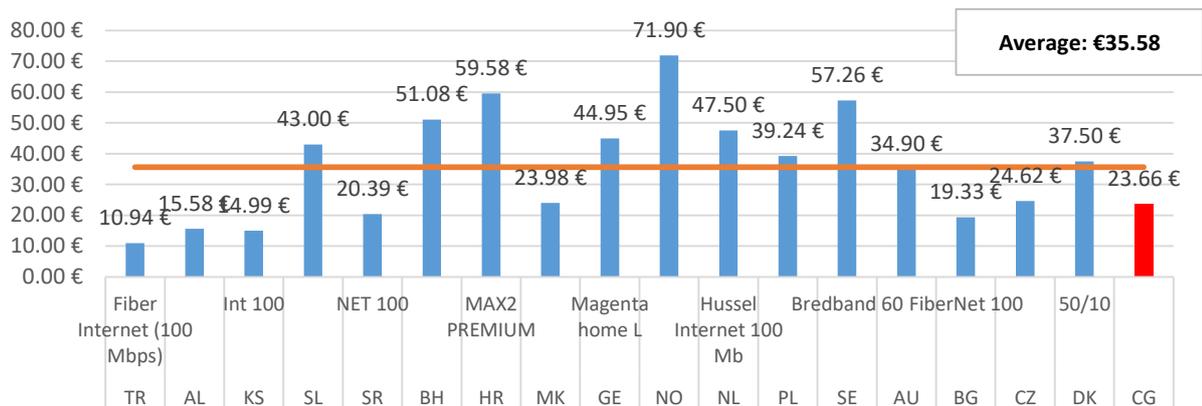
1.6.4.5. Price comparison of standalone packages of incumbent operators with maximum speed between 50 Mbps and 100 Mbps in the countries of the Region/Europe

In the following chart is given the price overview of broadband Internet access with maximum access speed between 50 Mbps and 100 Mbps in the Region and in observed European countries.

Comparative overview of the prices of broadband Internet access at maximum speed of 50-100 Mbps in the countries of the Region



Comparative overview of the prices of broadband Internet access at maximum speed of 50-100 Mbps in the European countries



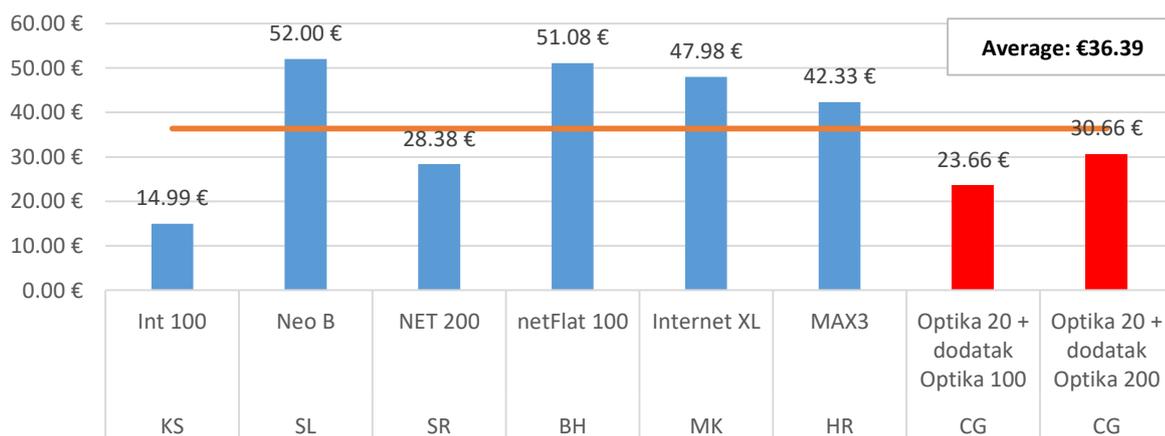
Crnogorski Telekom offers Optika 20 + dodatak Optika 100 Mbps package at the price of €23.66, which is 30.03% lower than the average price of reference package in the Region, amounting to €33.81.

Compared with an average in observed European countries, which amounts to €35.58, the price of Optika 20 + dodatak Optika 100 is 33.50% lower.

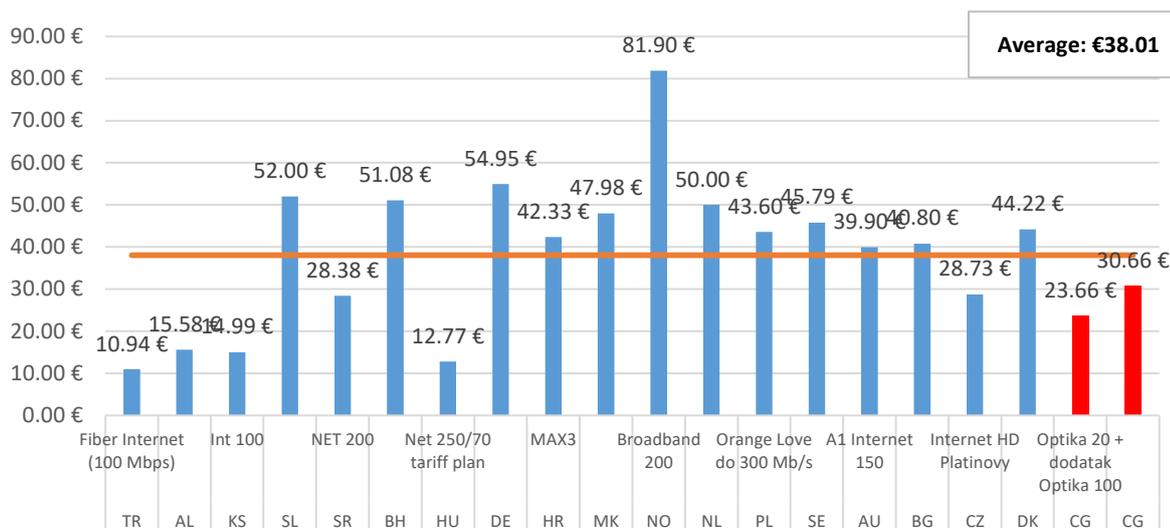
1.6.4.6. Price comparison of standalone package of incumbent operator, at maximum speed of 100 Mbps +, in the countries of the Region/Europe

Incumbent operators in the Region offer broadband Internet access at higher speeds via FTTH connections. In the chart below is presented package offer of the speeds higher than 100 Mbps in the Region and in observed European countries.

Comparative overview of the prices of broadband Internet access at maximum speed higher than 100 Mbps in the countries of the Region



Comparative overview of the prices of Internet access with maximum speed higher than 100 Mbps in the European countries



Crnogorski Telekom offers Optika 20 + dodatak Optika 100 Mbps package at the price of €23.66 which is 34.97% more favourable than an average price of reference packages in the Region that amounts to €36.39.

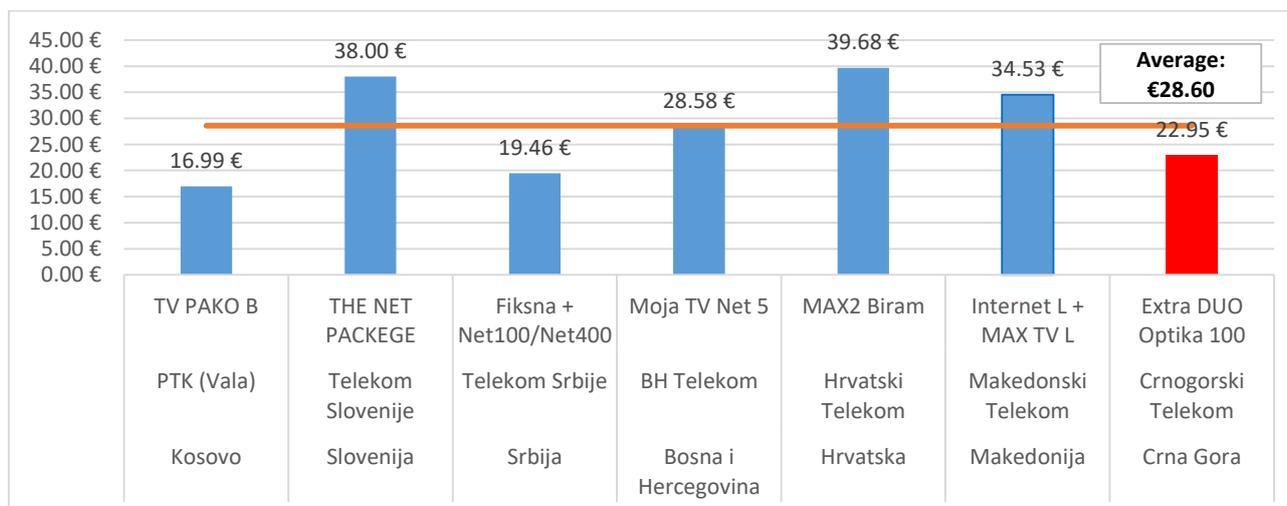
Crnogorski Telekom offers Optika 20 + dodatak Optika 200 Mbps package at the price of €30.66 which is 15.74% more favourable than an average price of reference packages in the Region that amounts to €36.39.

In relation to an average of observed European countries, amounting to €38.01, the fee of Optika 100 package is 37.76% lower, and the fee of Optika 200 package is 19.34% lower.

1.6.4.7. Comparison of duo package prices of incumbent operators in the Region (with the speed of 100 Mbps)

Comparison of the prices of duo package of the operators in the Region, offering the download speed of 100 Mbps is presented in the chart below.

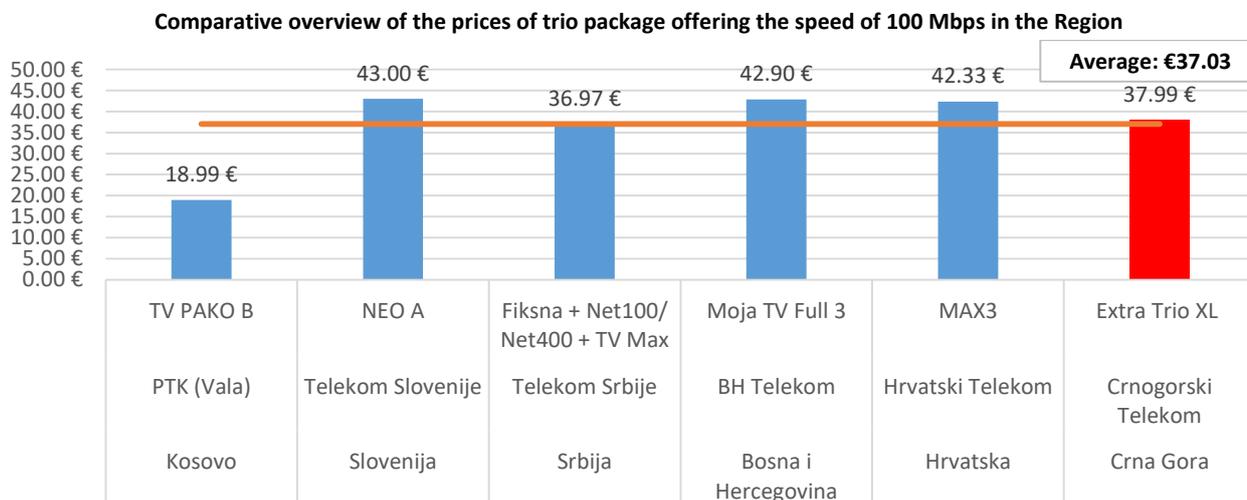
Comparative overview of the duo package prices in the Region (with the speed of 100 Mbps)



Crnogorski Telekom offers Extra DUO Optika 100 package at the price of €22.95 which is 19.75% lower than an average price of reference package of incumbent operator in the Region and amounts to €28.60

1.6.4.8. Comparison of trio package prices (with the speed of 100 Mbps) of incumbent operators, in the Region

Comparison of the prices of trio packages of incumbent operators in the Region offering the download speed of 100 Mbps is presented in the chart below.



Crnogorski Telekom offers Extra Trio XL package at the price of €37.99, which is 2.59% less favourable than an average price of reference packages of incumbent operators in the Region that amounts to €37.03.

1.6.4.9. Price comparison of the packages of fixed broadband Internet access in Montenegro (standalone, duo, trio and quadro packages) by Internet access speed criterion.

Broadband Internet access services with unrestricted flow in fixed networks at Montenegrin market are offered by Crnogorski Telekom, Mtel and Telemach.

Crnogorski Telekom offers standalone package, duo package, trio package and quadro package with the download speed from 2 Mbps (ADSL FI@T 2 package), up to 500 Mbps (Magenta 1 XL v4). The offer of the package of Crnogorski Telekom is given in the table below.

Overview of all Internet packages (standalone, duo, trio and quadro) of Crnogorski Telekom

Name of the package + extension	Speed	Price
Standalone packages		
ADSL FI@T 2	Up to 2 Mbps / 256 kbps	€11.66
Optika 20	Up to 20 Mbps / 1 Mbps	€20.67
ADSL FI@T 2 + dodatak ADSL	Speed up to 10/1 Mbps	11.66 + 1.99 = €13.65
ADSL FI@T 2 + dodatak Turbodsl	Speed up to 40/5 Mbps	11.66 + 2.99 = €14.65
Optika 20+ dodatak Optika 100	Speed up to 100/10 Mbps	20.67 + 2.99 = €23.66
Optika 20+ dodatak Optika 200	Speed up to 200/10 Mbps	20.67 + 9.99 = €30.66
Extra Duo packages (Internet + fixed telephony)		
Extra DUO	Speed up to 8 Mbps / 1 Mbps	€19.95
Extra DUO Hybrid	Speed up to 8 Mbps / 1 Mbps	€19.95
Extra DUO turbo DSL	Up to 20 Mbps / 2 Mbps	€19.95
Extra DUO MI	Unlimited monthly flow	€19.95

Mtel
its
duo

Extra DUO Optika 40	Speed up to 40/10 Mbps	€19.95
Extra DUO Optika 100	Speed up to 100/20 Mbps	€22.95
Extra Trio packages (Internet + fixed telephony+Extra TV)		
Extra Trio M	ADSL: up to 4/1 Mbps Hibrid: ADSL + 200 GB VDSL: up to 40/2 Mbps Optika: up to 50/10 Mbps	€24.99
Extra Trio L	ADSL: up to 5/1 Mbps Hibrid: ADSL + 200 GB VDSL: up to 40/4 Mbps Optika: up to 80/10 Mbps	€28.99
Extra Trio XL	ADSL: up to 10/1 Mbps Hibrid: ADSL + 200 GB VDSL: up to 40/4 Mbps Optika: up to 500/30 Mbps	€37.99
Quadro packages (Internet + fixed telephony+Extra TV+mobile telephony)		
Magenta 1 M	ADSL: 4 /1 Mbps turboDSL: 20/2 Mbps or Optika: 40/4 Mbps	€30.90
Magenta 1 L	ADSL: 5/1 Mbps or turboDSL: 20/2 Mbps or Optika: 60/20 Mbps	€37.90
Magenta 1 XL	ADSL: 10/1 Mbps turboDSL: 40/2 Mbps or Optika: 100/30 Mbps	€51.90
Magenta 1 M v4	ADSL: 4/1Mbps turboDSL: 20/2 Mbps Optika: 100/10 Mbps	€32.95
Magenta 1 L v4	ADSL: 5/1 Mbps turboDSL: 20/2 Mbps Optika: 300/30 Mbps	€39.95
Magenta 1 XL v4	ADSL: 10/1 Mbps turboDSL: 40/4 Mbps Optika: 500/50 Mbps	€53.95

has in
offer

package, trio package and quadro package with download speed between 40 Mbps (FLASH L package) and 200 Mbps (BOX 4.3). The offer of Mtel package is presented in the table below.

Overview of Internet package (standalone, duo, trio and quadro) of Mtel

Package name	Speed	Monthly subscription for 12 months	Monthly subscription for 24 months
Standalone packages			
FLASH L	40 Mbps / 2 Mbps or 50 Mbps / 3Mbps	€23.99	€21.99
FLASH XL	50 Mbps / 3 Mbps or 60 Mbps / 4 Mbps	€27.99	€25.99
FLASH 50M	100 Mbps / 10 Mbps	€39.99	€37.99
FLASH 100M	120 Mbps / 10 Mbps or 200 Mbps / 20 Mbps	€61.99	€59.99
BOX duo packages (Internet and TV)			
BOX 2.1	100/4 Mbps or 120/4 Mbps	€28.99	€24.99
BOX 2.2	120/4 Mbps or 160/6 Mbps	€33.99	€29.99
BOX trio packages (Internet, TV and fixed telephony)			
BOX 3.1	120/4 Mbps or	€32.99	€20.33

	140/4 Mbps		
BOX 3.2	140/4 Mbps or 180/6 Mbps	€37.99	€32.99
BOX all package (Internet + fixed telephony + TV + mobile telephony)			
BOX 4.1	140/6 Mbps or 200/20 Mbps	€49.89	€34.99
BOX 4.2	140/6 Mbps or 200/20 Mbps	€53.89	€38,99
BOX 4.3	140/6 Mbps or 200/20 Mbps	€67.89	€46.99

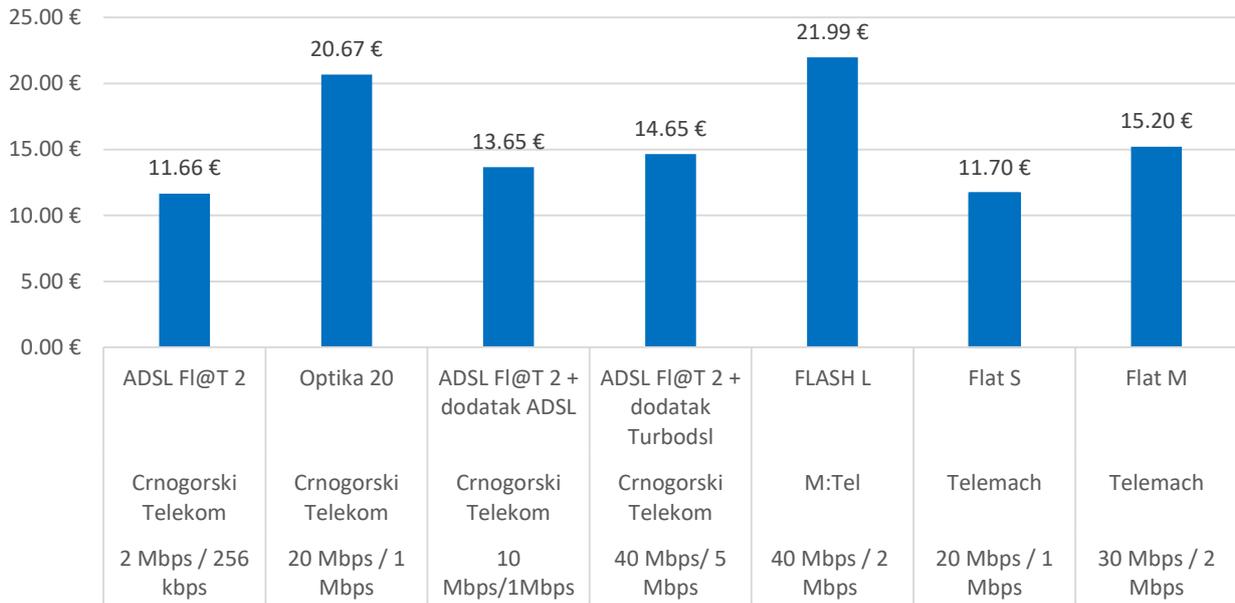
Telemach offers standalone, duo and trio packages with the download speed 20 Mbps (paket Flat S) up to 200 Mbps (EON Premium). The offer of Telemach package is given in the Table below.

Overview of all Internet packages (standalone, duo and trio) of Telemach

Package name	Speed	Flow	Price
Standalone packages			
Flat S	20 Mbps / 1 Mbps	Flat	€11.70
Flat M	30 Mbps / 2 Mbps	Flat	€15.20
Flat L	50 Mbps / 3 Mbps	Flat	€20.30
Flat XL	80 Mbps / 5 Mbps	Flat	€33.50
Flat XXL	100 Mbps / 6 Mbps	Flat	€46.70
EON DUO packages (Internet and TV)			
EON LIGHT DUO	100 Mbps / 3 Mbps	Flat	€24.90
EON FULL DUO	120 Mbps / 4 Mbps	Flat	€29.90
EON PREMIUM DUO	150 Mbps / 5 Mbps	Flat	€36.90
EON paketi (Internet, TV and fixed telephony)			
EON LIGHT	100 Mbps / 4 Mbps	Flat	€26.90
EON FULL	150 Mbps / 6 Mbps	Flat	€32.90
EON PREMIUM	200 Mbps / 10 Mbps	Flat	€39.90

Telemach offers the speed of 1 Gb/s in the EON Premium package, only in Podgorica, and the speed of up to 200 Mbps is offered in other cities, i.e. the speed of 1 Gbps is still not available at the whole territory of Montenegro as an official offer.

Price comparison of standalone packages with the maximum speed of up to 50 Mbps, in Montenegro

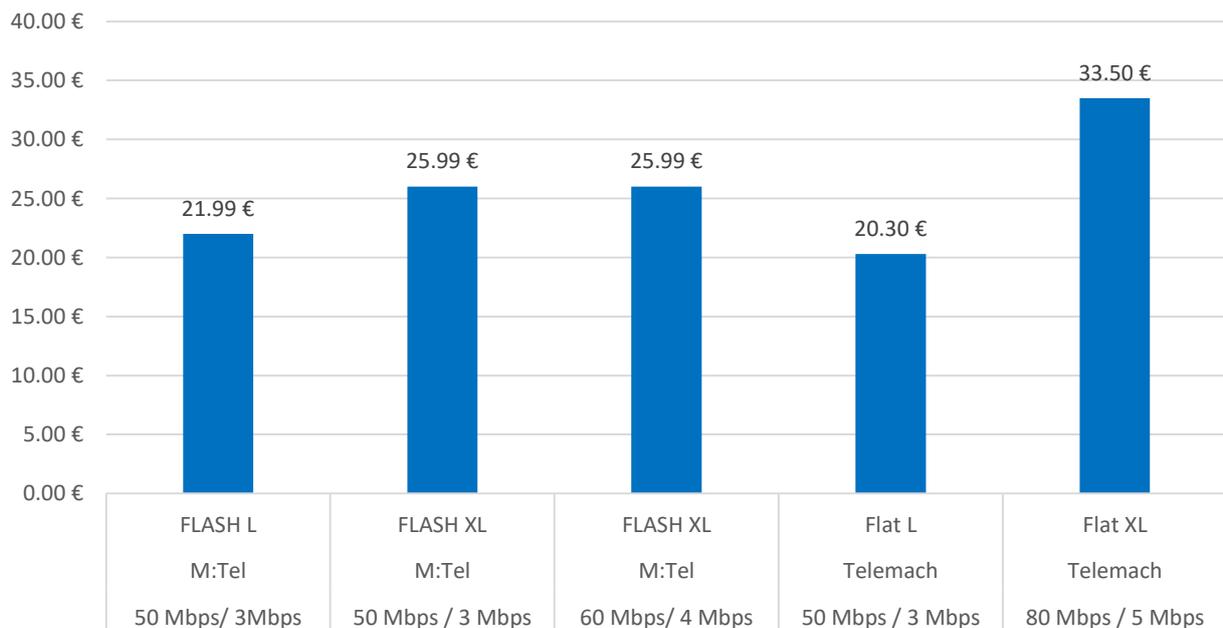


Comparative overview of the prices of standalone packages with maximum speed of up to 50 Mbps, in Montenegro

Average price of standalone package with maximum speed of up to 50 Mbps in Montenegro amounts to €15.64.

Crnogorski Telekom offers Optika 20 package at the price of €20.67 with download speed of 20 Mbps, while Flat S package of Telemach with the same download speed is 43.40% lower than the one of Optika 20 package from the offer of Crnogorski Telekom. Mtel offers Flash L package with download speed of 40 Mbps almost at the same price as it is in the offer of Crnogorski Telekom within Optika 20 package, which has twice lower download speed.

Price comparison of standalone packages with maximum speed between 50 and 100 Mbps, in Montenegro

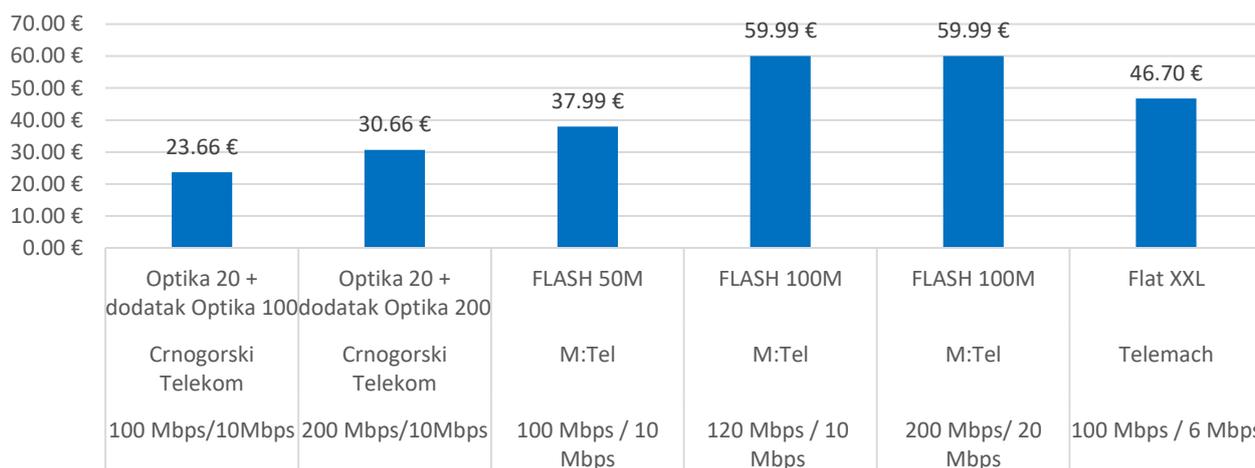


Comparative overview of the price of standalone packages with maximum speed between 50 and 100 Mbps, in Montenegro

Average price of standalone packages with maximum download speed between 50 and 100 Mbps in Montenegro amounts to €25.55.

Telemach offers Flat L package with download speed of 50 Mbps at the price of €20.30, which is 21.89% lower than Flash XL package from Mtel offer, and the package offers the same download speed. Flat L package from Telemach offer is the cheapest package in the standalone package category, with maximum speed between 50 and 100 Mbps, at the price of €20.30.

Price comparison of standalone packages with maximum speed higher than 100 Mbps in Montenegro



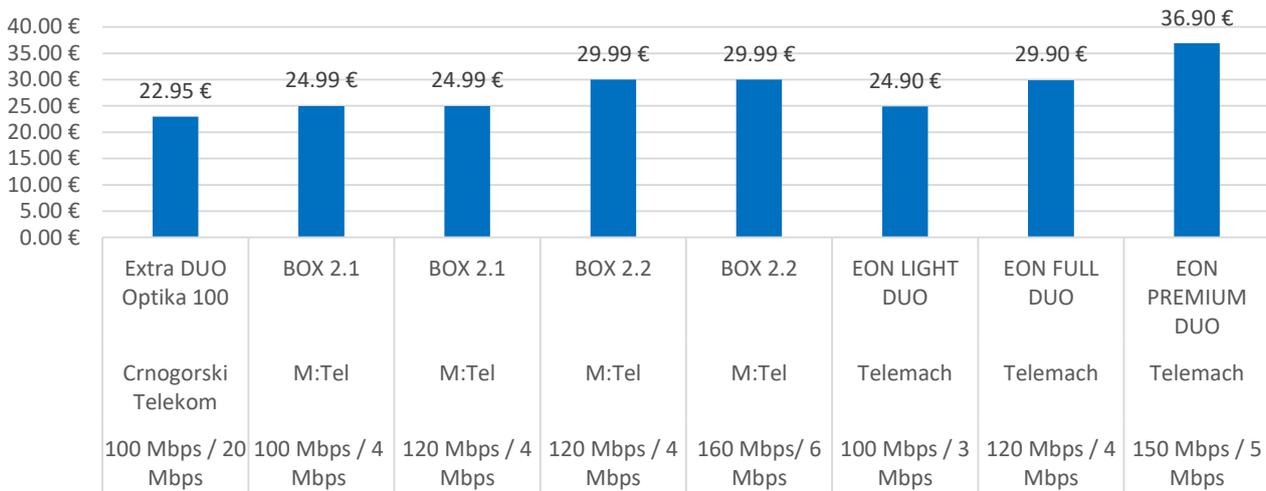
Price comparison of standalone packages with maximum speed higher than 100 Mbps in Montenegro

Average price of standalone package with maximum download speed higher than 100 Mbps in Montenegro amounts to €43.17.

Optika 20 + dodatak Optika 100 package of Crnogorski Telekom with download speed of 100 Mbps at the price of €23.66 is the cheapest package in the category of standalone packages with maximum speed higher than 100 Mbps and offers the price 37.72% lower than it is the price of Flash 50M package with the same speed from Mtel offer, i.e. the price 49.33% lower than it is the price of Flat XXL package with the same speed from Telemach offer.

Optika 20 + dodatak Optika 200 package of Crnogorski Telekom with the download speed of 200 Mbps at the price of €30.66 is the price 48.89% lower than it is the price of Flash 100M package from Mtel offer with the same download speed

Price comparison of duo packages with maximum speed higher than 100 Mbps, in Montenegro



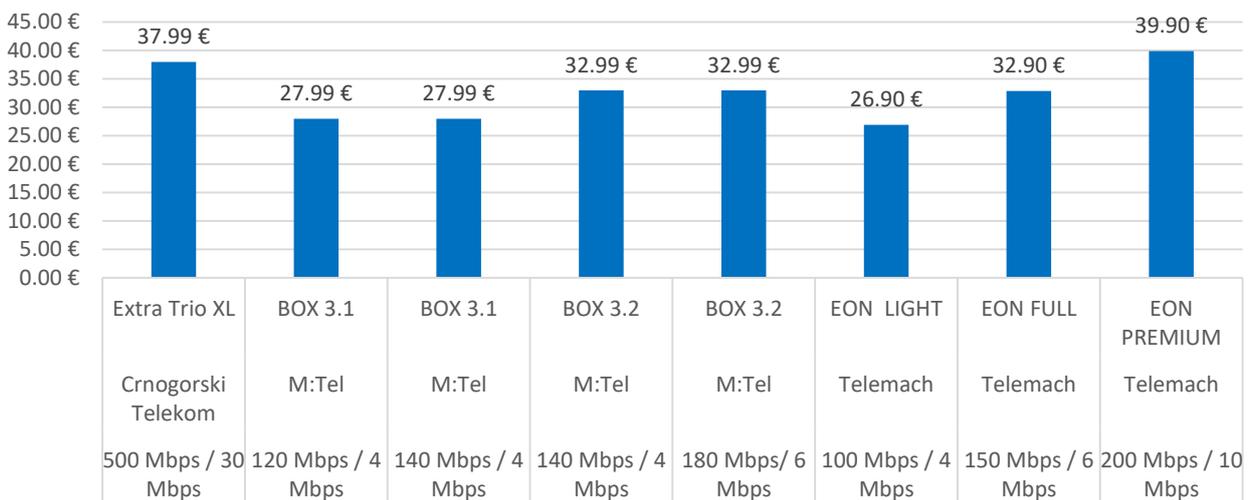
Comparative overview of the prices of duo packages with maximum speed higher than 100 Mbps, in Montenegro

Average price of duo package with maximum download speed higher than 100 Mbps in Montenegro amounts to €28.08.

Extra DUO Optika 100 of Crnogorskog Telekom with download speed higher than 100 Mbps at the price of €22.95 is the cheapest package in the category of duo packages with maximum speed higher than 100 Mbps.

Extra DUO Optika 100 of Crnogorski Telekom, with maximum speed higher than 100 Mbps, at the price of €22.95, offers 8.16% lower price of BOX 2.1 package than it is the price from Mtel offer with the same download speed, i.e. 7.83% lower price than it is the one of EON LIGHT DUO package from Telemach offer with the same download speed.

Price comparison of trio packages with maximum speed higher than 100 Mbps +, in Montenegro

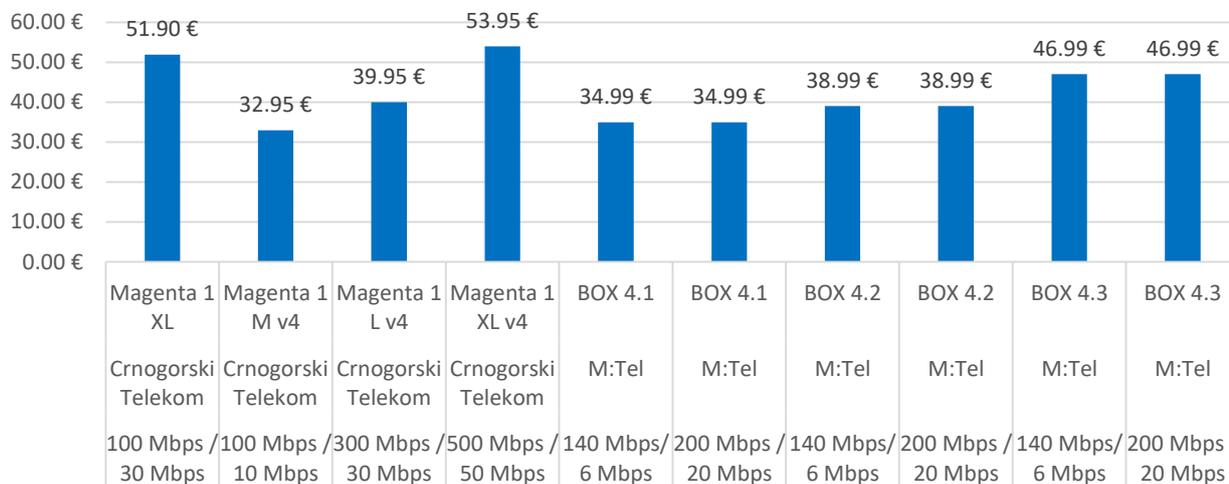


Comparative overview of trio packages with maximum speed higher than 100 Mbps +, in Montenegro

Average price of trio package with maximum download speed higher than 100 Mbps in Crna Gora amounts to €32.46. Extra EON LIGHT package of Telemach, with download speed of 100 Mbps at the price of €26.90 is the cheapest package in the category of trio packages with maximum speed higher than 100 Mbps.

EON LIGHT from Telemach offer with maximum speed higher than 100 Mbps at the price of €26.90, offers 3.89% lower price than it is the price of BOX 3.1 package from Mtel offer, and even higher speeds i.e. the speed of 120 Mbps or 140 Mbps (depending on available technology) at slightly higher price.

Price comparison of quadro packages with maximum speed higher than 100 Mbps +, in Montenegro



Comparative overview of quadro packages with maximum speed higher than 100 Mbps, in Montenegro

Average price of quadro package with maximum download speed higher than 100 Mbps, in Montenegro amounts to €42.07.

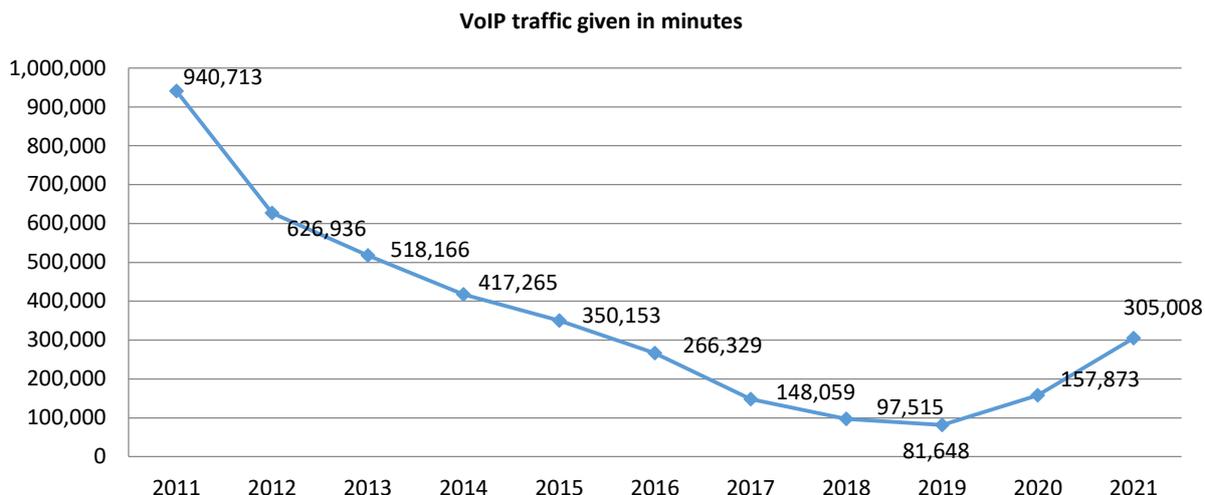
Extra Magenta 1 M v4 package of Crnogorski Telekom with download speed of 100 Mbps at the price of €32.95 is the cheapest package in the category of quadro packages with maximum speed higher than 100 Mbps.

Extra Magenta 1 M v4 package of Crnogorski Telekom with download speed of 100 Mbps at the price of € 32.95 offers 5.83% lower price than it is the one of BOX 4.1 package from Mtel offer, while in the mentioned package is offered the speed of 140 Mbps or 200 Mbps (depending on available technology) at slightly higher price.

1.7. Market of VoIP Service

During 2021, the service of VoIP (Voice over Internet Protocol) was delivered by IPMont. At the end of 2021, IPMont had 15 users and 305.008 minutes of realized traffic, which is 93.20% more in relation to VoIP traffic in 2020. Of the total traffic, 2.17% was made to international destinations, and 97.83% referred to national traffic. IPMont leased Internet link of 225Mbps from Mtel and 10 Mbps from Akton.

In the following graph is presented VoIP traffic generated in the period 2011-2021.



1.8. Market of leased lines

Leased lines are significant public electronic communications service, especially for business users. These lines are intended for connecting locations of business users, whether they are in the country or in several countries, through leased lines of constant and symmetric capacity. Besides, leased lines are the basis for development of alternative operators which directly or indirectly compete with incumbent operator.

In 2021, leased line services at the market of Montenegro were provided by the following operators of public electronic communications services:

- Crnogorski Telekom,
- Mtel,
- Radio-difuzni centar,
- Telenor,
- IPMont.

Except for Radio-difuzni centar which provides leased line service through microwave links, for the provision of leased line services, other operators mostly use optic fibres as physical transmission medium. That is why these operators are able to meet the requests for great capacities of leased lines, both in that country and to other countries.

In the majority of European countries, the operators which are developed within electricity and railway companies are highly competitive with the incumbent operator. The operator which is registered for providing services of leased lines in Montenegro is Crnogorski elektroprenosni sistem (CGES), which laid optical cables and installed broadcasting system equipment, but still it hasn't started to provide the services of leased lines.

1.8.1. Prices of the services of leased lines

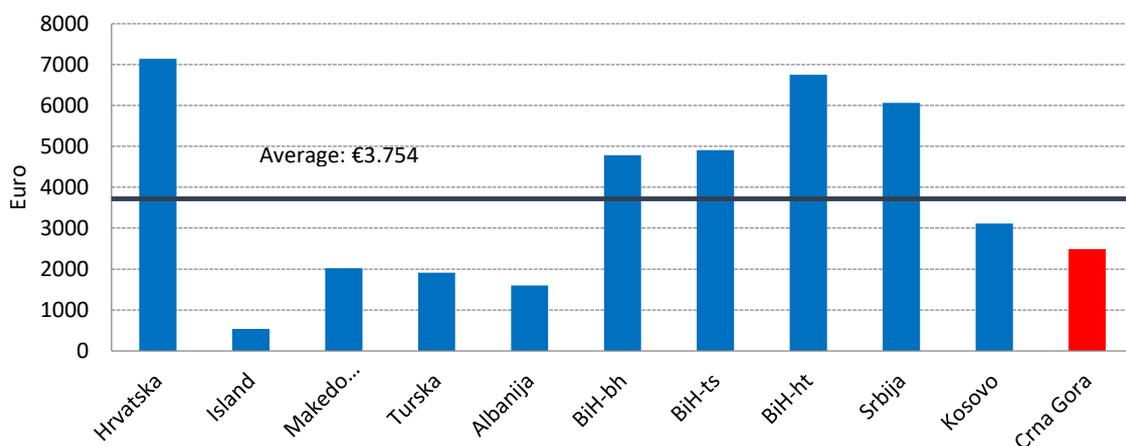
During 2021, there were no changes in the prices of leased lines at retail level of Crnogorski Telekom, as the operator with the highest capacities for the provision of leased line services at the market. Applicable prices of leased lines at retail level, which during 2012, upon request of the Agency, applied Crnogorski Telekom, as the leader in delivering that service with regard to the number of leased lines and total capacities of leased lines, were also applicable in 2021.

As for the wholesale level of leased lines, there have been changes in the prices of these services (for certain capacities of leased lines). Crnogorski Telekom, as an operator with significant market power at the relevant wholesale market of high quality approach provided at fixed location, started to apply lower prices of the services of leased lines at the wholesale level, for the mentioned capacities. New prices are 30% lower in relation to previously applicable prices of these services.

For comparing the prices of leased lines with the prices in the neighbouring countries, data from Report IV were used: Supply of services in monitoring regulatory and market developments for electronic communications and information society services in Enlargement Countries, February 2014. This Report is prepared by consultant company Cullen International for the needs of the European Commission and is the last comparative report with the prices of leased line services in the countries of the region. Comparative prices prove annual prices of leased lines at retail level and do not include VAT and one-time fees.

In the chart below is given a comparative overview of the prices of leased lines of 2Mbps capacity, 2 km long.

Annual price of leased line of 2 Mbps capacity, 2 km long

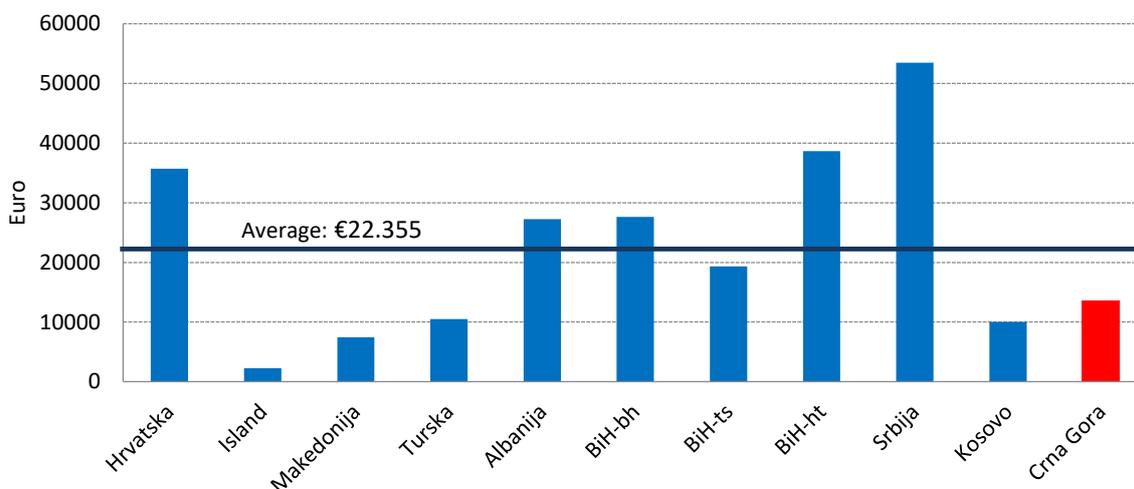


Source: Report 4 - Supply of services in monitoring regulatory and market developments for electronic communications and information society services in Enlargement Countries - February 2014

From the above chart it is clear that the prices of leased lines of 2 Mbps capacity, 2 km long, in Montenegro, at retail level, are lower than the price of the same service with most of the operators in neighboring countries. The price of mentioned service in Montenegro amounts to €2.472, and is significantly lower than the average price of that type of leased line in the countries observed in the subject Report, and which amounts to €3.754.

In the following chart is given a comparative overview of the prices of leased lines of 34 Mbps capacity and 2 km long.

Annual price of leased lines of 34 Mbps capacity, 2 km long



Source: Report 4 - Supply of services in monitoring regulatory and market developments for electronic communications and information society services in Enlargement Countries - February 2014

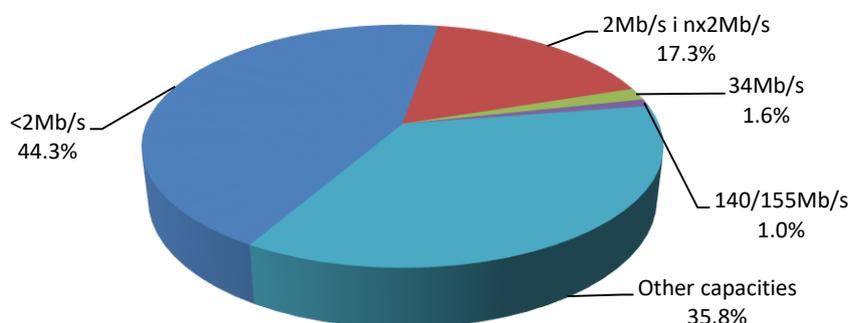
We can see from the above chart that the prices of the service of leased lines with the capacities of 34 Mbps, 2km long, at the retail level in Montenegro, are lower than the prices of the same service of the most of the operators in the surrounding countries. The price of the mentioned service in Montenegro amounts to €13.680 and is significantly lower than an average price of that type of leased lines service in the neighboring countries, being the subject of the mentioned report, which amounts to €22.355.

1.8.2. Market structure

Total number of leased lines at the end of 2021 amounted to 307. This figure covers national and international leased lines of all capacities. Further, it includes leased lines at retail and wholesale level.

Structure of the number of leased lines according to the capacities, at the end of 2021 is given in the pie-chart below.

Structure of the number of leased lines, per capacity - 2021

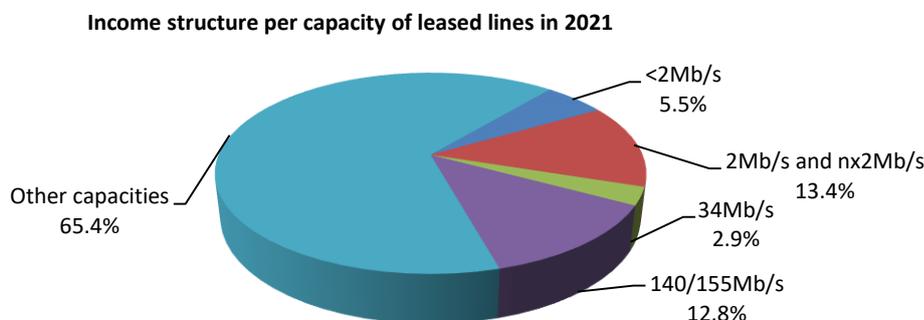


In relation to the end of 2020, at the end of 2021, number of leased lines is 8.4% lower. At the end of 2020, total number of leased lines was 335. Besides, there was a significant decrease in the number of leased lines in relation to the previous year, in the category of leased lines of 2Mbps and nx2Mbps capacities (decrease of 25%), while the number of leased lines of other capacities is slightly lower.

Total income accrued from the provision of services of leased lines in 2021 amounted to €1.225.671.

That income represents the income accrued from the provision of national and international leased lines of all capacities. That also includes the income accrued from leased lines at retail level and income accrued from leased lines at wholesale level. With regard to 2020, total income accrued from the leased line services decreased by 4.4%. In 2020, total income from the leased line services amounted to €1.282.510.

Income structure per capacity of leased lines in 2021 is given in the following pie-chart:



In 2021, there was a decrease of 8.4% in the number of leased lines, which led to 4.4% decrease in the income of operators at the market of leased lines. The greatest income share (~65%) in the provision of leased line services is from the so-called other capacities, which mostly include Ethernet leased lines.

1.9. Distribution market of audio and visual media contents (radio and television programs) to end users

In 2021, for the provision of distribution of audio and visual media (AVM) contents to end users in Montenegro, 5 operators were registered for the provision of AVM contents through one of the following platforms:

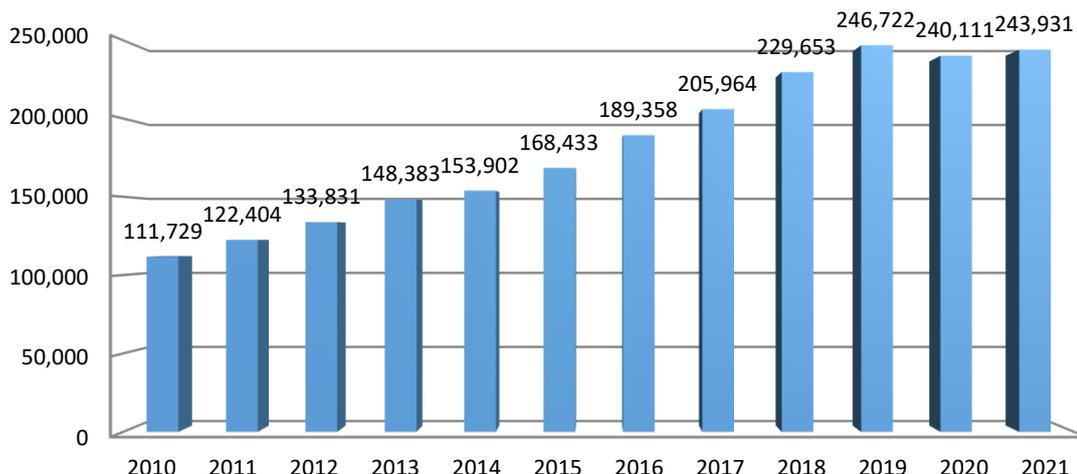
- Mtel and Telemach provided their services via KDS (cable distribution networks which include both analogue and digital KDS),
- Crnogorski Telekom, Telemach and Orion Telekom provided their services via IPTV (public fixed electronic communications networks),
- Through DTH (satellite distribution networks) were provided the services of Telemach (via Total TV platform) and Mtel (via m:SAT platform),
- Radio-difuzni centar provided its services via DVB-T2 (terrestrial digital video broadcasting).

Crnogorski Telekom, Mtel (via m:SAT platform), Telemach (via DTH platform) and Radio-difuzni centar provide that service at the whole territory of Montenegro, while Orion Telekom, Telemach (via KDS and IPTV platform) and Mtel (via KDS platform) deliver that service on local or regional level, i.e. develop their systems at the territory of one or several municipalities, according to the following:

- Telemach via KDS platform at the territory of the municipalities of: Bar, Bijelo Polje, Budva, Herceg Novi, Kotor, Nikšić, Pljevlja, Podgorica and Tivat, and via IPTV platform, in the municipalities of: Bar, Herceg Novi, Nikšić i Podgorica;
- Mtel at the territory of the municipalities of: Andrijevisa, Bar, Berane, Bijelo Polje, Budva, Cetinje, Danilovgrad, Herceg Novi, Kotor, Mojkovac, Nikšić, Petnjica, Pljevlja, Plužine, Podgorica, Rožaje, Tivat, Tuzi and Ulcinj;
- Orion Telekom at the territory of the municipalities of: Bar, Berane, Budva, Cetinje, Danilovgrad, Herceg Novi, Kotor, Nikšić, Pljevlja, Podgorica, Rožaje, Tivat and Tuzi.

At the end of 2021, there were 243.931 connections of distribution of AVM contents. An overview in the trend of connections for the period 2010-2021 is given in the following chart.

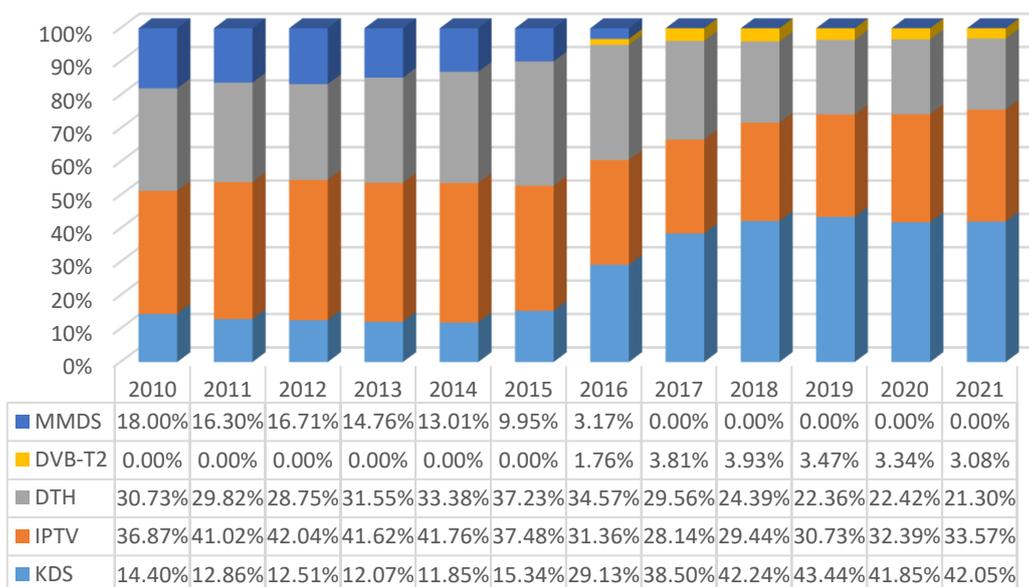
Number of distribution connections of AVM contents in the period 2010-2021



Out of total number of connections (243.931), there were 233,837 (95.86%) connections referring to physical persons. According to data of the Zavod za statistiku Crne Gore (Statistical Office of Montenegro) (2011 Census – Source: Monstat "Census of Population, Households and Dwellings 2011"), the number of households in Montenegro amounts to 194,795. Therefore, penetration of cable TV in relation to the number of households is 120.04%.

The operators delivering the service of distribution of AVM contents have recorded a continuous increase in the number of connections, while the level of penetration varies among the platforms. In the chart below is given the share of individual platforms in the period 2010-2021.

Share per platform in the period 2010-2021



From the structure of connections of AVM contents distribution to end users through various platforms, it becomes clear that overall structure is dominated by KDS, DTH and IPTV users, with market share higher than 96%.

In their offer, the operators usually have Basic Package and various additional packages. The number of TV channels in the Basic Package is 126 TV channels, on average (minimum 18, and maximum 250 TV channels).

In 2021, for monthly subscription to Basic Package, the users paid €12.10 (minimum €5.95, and maximum €15.99), on average.

Throughout the process of follow-up and analysis of AVM contents distribution in Montenegro, there has been a continuous development, so it is to be expected that the trend of quality improvement and raise in the number of services offered by the operators, will continue.

1.10. Interconnection and operator access

During 2021 the Agency did not have any significant activities in the field of adopting the regulation in the field of access and interconnection, since the Agency implemented the obligations required by the Law on Electronic Communications (ZEK) regarding creation of an adequate regulatory framework. In fact, the most important activities of the Agency in the field of interconnection and access had been already realized by implementing the Rulebook on Access and Interconnection (Official Gazette of Montenegro, No. 24/14). The Rulebook was adopted pursuant to Article 57, paragraph 3 of the Law on Electronic Communications. Given the fact that the issues of access and interconnection are of great importance for the development of competition and the interests of end-users, and keeping in mind that the law does not fully define the procedures for obtaining access and interconnection, subject to Article 11 of ZEK, the Agency adopted the Rulebook precisely defining procedures related to these matters. This Rulebook on access and interconnection is, in the part that is applicable, in accordance with the relevant EC Directives (Directive 2002/19/EC and Directive 2009/140/EC). The Rulebook prescribes in detail the main objectives and requirements for obtaining interconnection and access. In addition, the Rulebook prescribes the procedure for submitting requests and responses to the request, their contents, time limits for acting in certain stages of the procedure of implementation of access and interconnection, as well as the conditions when access and interconnection can be restricted. The Rulebook also defines the way in which the Agency shall handle operators' requests, and the principles on which its decisions will be based upon.

In 2021, the Agency initiated the analysis of five relevant markets at the wholesale level. Subject analyses will be completed at the beginning of 2022, and in accordance with the results of the relevant market analyses, the Agency will impose at these markets certain regulatory obligations on the SMP operators.

There has been a decrease of 0.44 €cent/min in the prices of call termination on the fixed network, for all SMP operators, to the level of previously applicable price of call termination on fixed network of SMP operators, amounted to 0.49 €cent/min. Furthermore, in 2021 there has been a decrease in the service of call termination to mobile network of SMP operators, to the level of 0.62 €cent/min. Previously applicable price off the service of call termination on mobile network of the SMP operators amounted to 0.67 €cent/min.

Imposed regulatory measures will help improvement of the conditions for enhancing efficient and sustainable market competition, as the position of current operators will be improved along with new operators entering Montenegro market. This enhancement of efficient and sustainable competition in the market should create benefits for end-users by reducing retail prices of services and by improving the quality of service provision.

Implementation of concluded agreements on the access and interconnection between the operators in Montenegro in 2021 was conducted in compliance with the provisions of these contracts and ZEK (Law on Electronic Communications). In December 2020, all mobile operators addressed to the Agency with mediation requests with regard to termination of international call generated by roaming users of the operators, to ported numbers in Montenegro, when they are in the region of Western Balkans. Upon mediation of the Agency, subject dispute was solved in a way that mobile operators in Montenegro amended actual interconnection agreements for full implementation of the signed agreement on reducing roaming

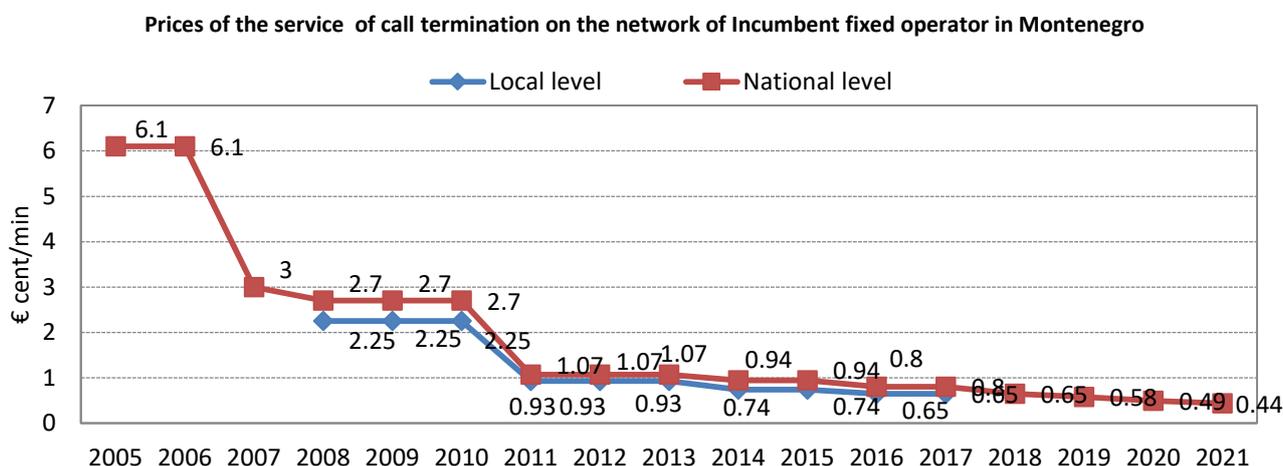
charges in public mobile communications networks in the Region of Western Balkans, as well as of the Agency's Decision.

1.10.1. Prices of interconnection services

1.10.1.1. Prices of call termination on fixed networks

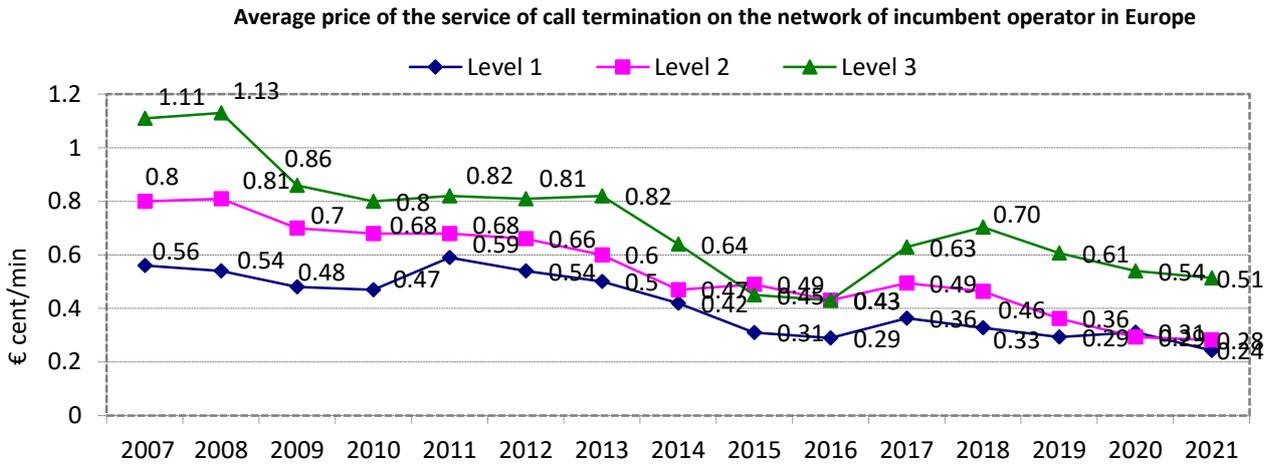
During 2021, there was a decrease in the price of call termination on fixed network of incumbent operator – Crnogorski Telekom. The price of the service of call termination on fixed network of Crnogorski Telekom applicable as of 1 May 2021, amounts to 0.44 €centa/min. The prices of call termination on fixed network of Mtel, Telemach and Telenor, as SMP operators at the relevant market are defined in accordance with the Analysis of relevant market of call termination on individual public telephone networks and provided at fixed location – wholesale level, as symmetric in relation to the price of that service implemented by Crnogorski Telekom, and amounts to 0.44 €centa/min.

The graph below shows trend in the prices of call termination on fixed network of Crnogorski Telekom, in the period 2005-2021.



From the above chart it is clear that prices of the service of call termination on fixed network of incumbent operator were significantly lower in the observed period. Total decrease rate of call termination service on fixed network of Crnogorski Telekom in the period from 2005 till the end of 2021 was 92.8%, for national level of call termination. Due to implementation of new technology and change of the architecture of public fixed electronic communications network of Crnogorski Telekom, termination of calls on local level, previously in the offer of Crnogorski Telekom, is not available any more.

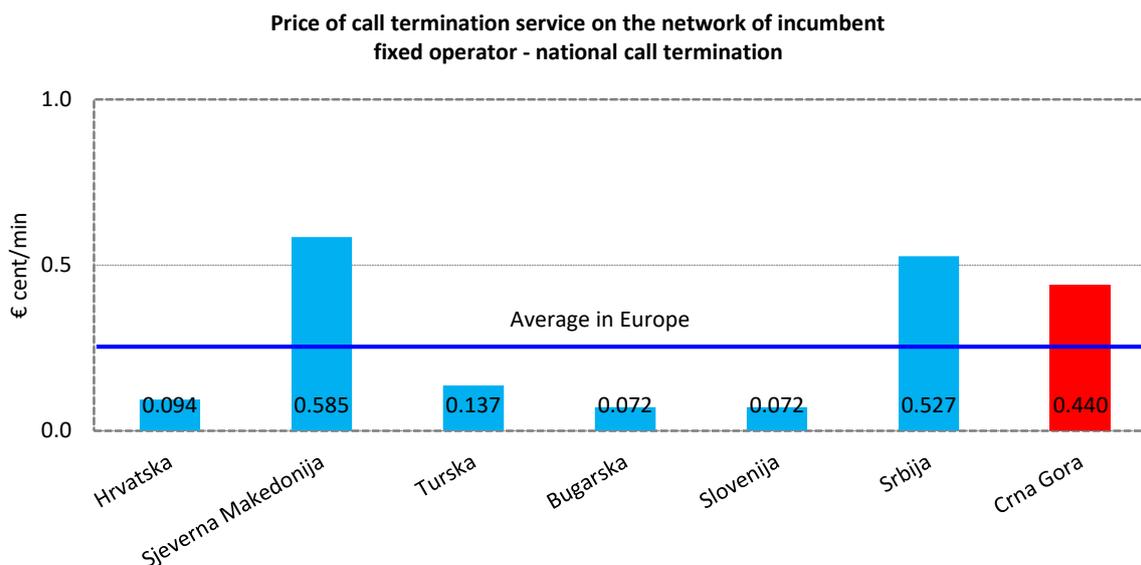
The following graph shows trend in average prices of call termination on fixed networks of incumbent operators in Europe.



Source: Digital Agenda Scoreboard 2011 - Electronic communications market indicators - May 2011; BoR (21) 159 - Termination rates at European level 30 June 2021 - December 2021

Relying on available data from 30 June 2021, the above graph shows a decreasing trend in average price for Level 1⁽⁹⁾, Level 2 and Level 3 of call termination on fixed network of incumbent operators in the European countries during the last year. This is mostly due to the fact that there is only one call termination level with most of incumbent operators, thus only one regulated price of call termination. Besides, only in 5 European countries there are call termination prices for Level 2, and only in 3 countries for Level 3. By comparing average price of call termination of different categories, we see that an average price of call termination for Level 2 in European countries is 16% higher than call termination price for Level 1, while an average price for Level 3 of call termination is 117% higher from the price for Level 1 call termination, in European countries.

For comparing the prices of call termination services on fixed networks, with the prices in neighboring countries, data from BEREC Report on termination rates at European level ('BEREC') 'BoR (21) 159 - Termination rates at European level 30 June 2021', were used, which was published in December 2021. That Report contains call termination rates on fixed networks, valid on 30 June 2021. The chart below shows prices of call termination service on fixed network of incumbent operator for the category of national call termination (i.e. the price of the highest level of call termination) for the neighbouring countries (the price is given per minute, and is an average price of the first three minutes of call in the period of expensive traffic, so-called peak-time). There is a steady increase in the number of European countries where a single rate for call termination on the fixed network of incumbent operator is applied. This price of call termination, for the countries of its validity, has been compared with the price of Level 1 of call termination (national call termination) of *incumbent* operators in Montenegro. Furthermore, in some countries all three types of fee have been applied, depending on the category of call termination (Level 1, Level 2 and Level 3), which is not the case in Montenegro, due to network architecture. In the chart below is given an average price value for call termination Level 1 for 37 European countries, amounting to 0.2427 €cent/min (an average price for call termination Level 1 for the EU countries (28) is 0.197 €cent/min) (Source: Body of European Regulators for Electronic Communications (BEREC) 'BoR (21) 159 - Termination rates at European level 30 June 2021' – published in December 2021).



Source: BEREC 'BoR (21) 159 - Termination rates at European level 30 June 2021' - December 2021

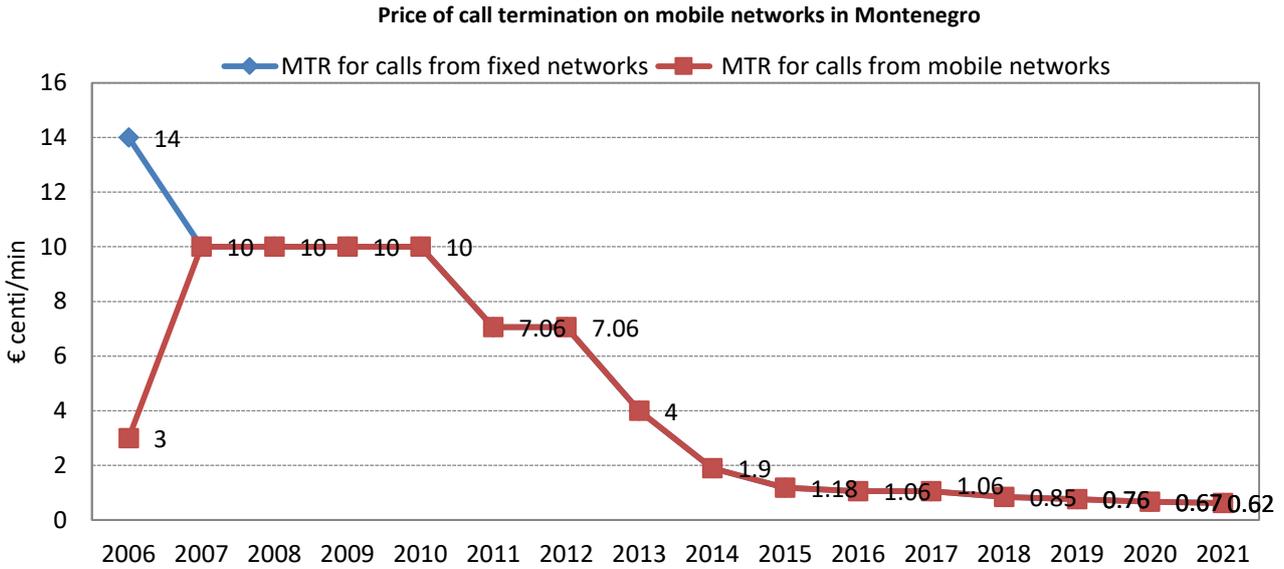
From the above chart we see that despite a great decrease in the last several years, price level of the service of call termination on the fixed network of Crnogorski Telekom is above an average of the prices of these services in the surrounding countries. Prices of this service in Montenegro are even much higher than an average price of these services in the EU member countries, and higher than the average price at the European level.

1.10.1.2. Prices of call termination on mobile networks

In the last several years, the Agency considerably reduced prices of call termination services on mobile networks, by introducing several regulatory measures and by applying cost model results. In 2021 was reduced call termination price on mobile networks as of 01.05.2021, and amounts to 0.62 €centi/min, being 7.5% lower than previously valid price.

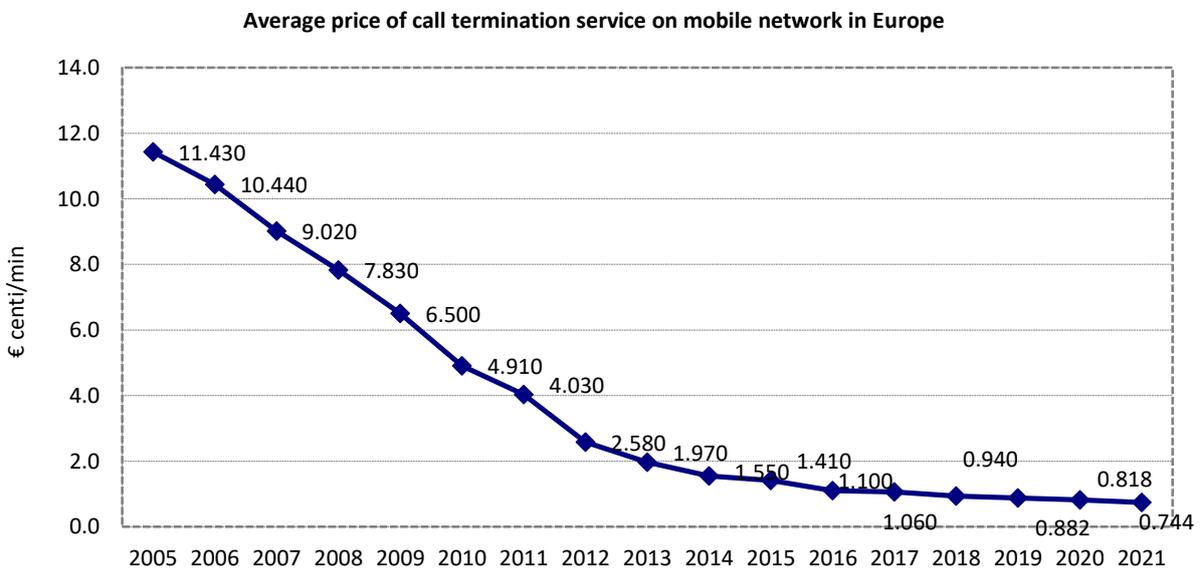
In 2021, the price of SMS termination on mobile network remained to be 1 €centi/SMS and it was also the same case with the price of MMS termination service, which remained at 6.6 €centi /MMS.

The chart below shows price trend of call termination service on mobile networks in Montenegro, from 2006 till the end of 2021.



As presented in the graph, the price of call termination on mobile networks in Montenegro varied depending on whether the call initiated in fixed network or in mobile network. This rather discriminatory practice was removed in 2007, and since that time the price has remained the same for the calls terminating on mobile networks in Montenegro, regardless of electronic communications network the call originated from in Montenegro. There should be also mentioned that from 2012 till the end of 2021, the price of call termination on mobile networks in Montenegro was 91.2% lower.

Decreasing trend of call termination prices on mobile networks continued in European countries, as it is illustrated in the chart below.



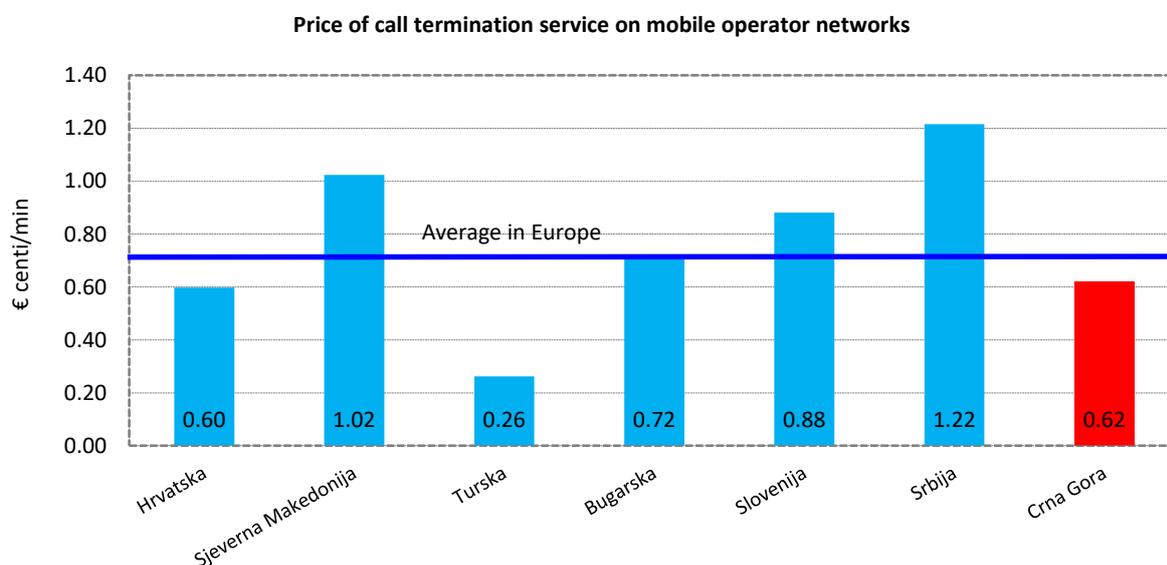
Source: BEREC 'BoR (21) 159 - Termination rates at European level 30 June 2021' - December 2021

As it is clear from the above graph, price of call termination on mobile networks of the operators in European countries was 9% lower than in the previous year. However, the prices of that service still significantly vary among the Member States, from 0.1686 €cent/min in Sweden to 2.89 €cent/min in Switzerland. Although the prices of call termination on mobile networks have had permanent downward trend, they are still significantly higher compared to the prices of call termination on fixed networks.

For comparing the prices of call termination on mobile networks with the prices in the surrounding countries, data from 'BEREC Report on Termination rates at European level 30 June 2021 (BoR (21) 159)' were used, and they were published in December 2021.

The chart below gives comparative data for the prices of call termination on mobile networks for the surrounding countries, based on the first three minutes of call in the peak-time. In case that asymmetric prices of call termination in a country are applied, then given price of call termination as weighted average in relation to the number of users, is the price of call termination on certain mobile networks. In Montenegro are applied symmetric prices of call termination services on mobile networks.

In the event that asymmetric call termination prices are applied in a country, then the call termination price is given as a weighted average of call termination prices in individual mobile networks, in relation to the number of users. In Montenegro are applied symmetric prices of call termination services on mobile networks.



Source: BEREC 'BoR (21) 159 - Termination rates at European level 30 June 2021' - December 2021

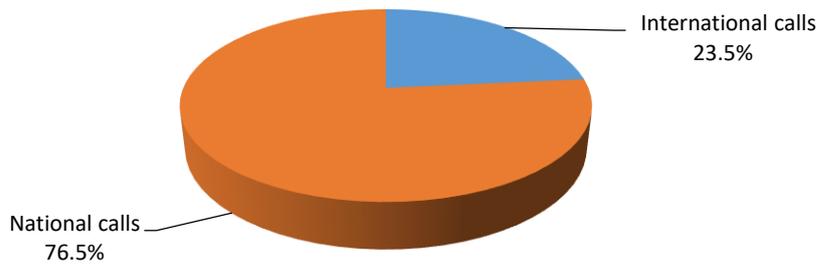
Price level of 0.62 €centa/min of call termination service on mobile networks, charged by operators in Montenegro, was below the price average of that service in European countries, which amounted to 0.7442 €centa/min. Price of that service offered by operators in Montenegro was below weighted average price level of that service in the EU countries, as referred to data given in BEREC Report 'BoR (21) 159 - Termination rates at European level June 2021' - December 2021.

1.10.2. Market of call termination

1.10.2.1. Market of call termination on fixed networks

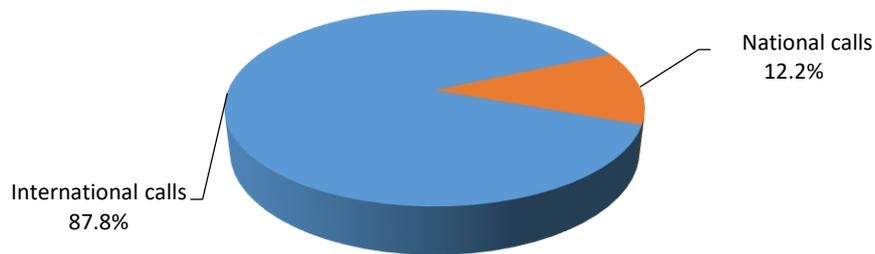
Total traffic volume termination on fixed networks in Montenegro in 2021 amounted to 29,821,917 minutes, which is a decrease of 3% in relation to 2020. In the category of terminated national calls there was an increase in traffic volume of 1.6% in relation to 2020, while there was a decrease of 15.6% in the category of terminated international calls, in relation to 2020. The structure of terminated calls is represented in the pie-chart below.

Structure of volume of terminated calls on fixed networks in Montenegro in 2021



Income generated from call termination on fixed networks of operators in Montenegro in 2021 amounted to €848,546, being 15.1% less in relation to 2020. Income structure of call termination on fixed networks is given in the pie-chart below.

Income structure of terminated calls on fixed networks in 2021

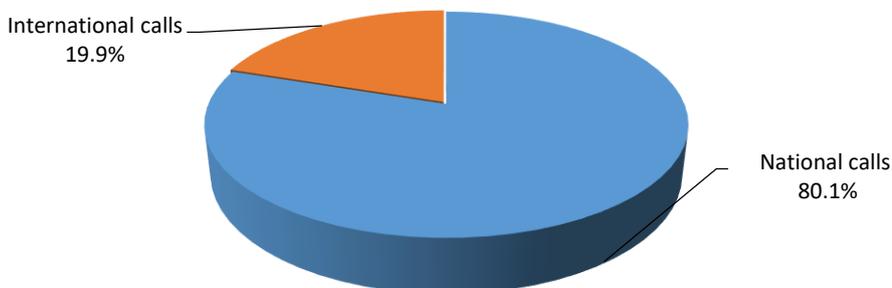


In relation to 2020, there was a 13.7% decrease in income accrued from termination of national calls, while in the same reporting period was noted a 15.2% decrease in income accrued from termination of international calls.

1.10.2.2. Market of call termination on mobile networks

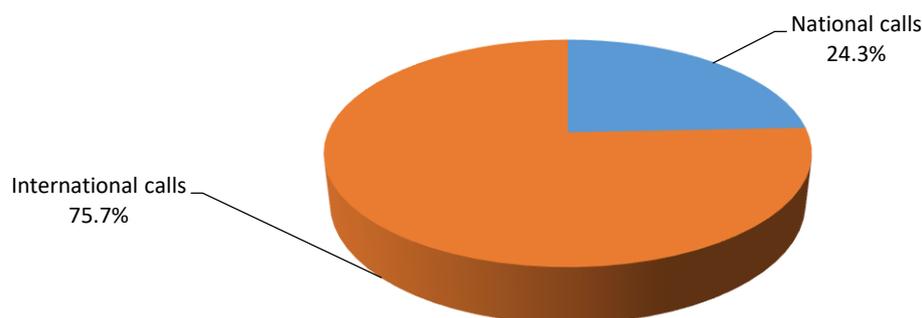
In 2021, total volume of traffic terminated on mobile networks in Montenegro was 608,122,117 minutes, which is an increase of 24.3% in relation to 2020. There was increase of 19.2% in the category of terminated national calls, and an increase of 50.5% in the category of international calls. The structure of terminated calls is shown in the following pie-chart.

Volume structure of terminated calls on mobile networks in 2021



Income from call termination on mobile networks of the operators in Montenegro amounted to €12,550,548, which is an increase of 20.5% in relation to 2020. The structure of income accrued from terminated calls on mobile networks is represented in the following pie-chart.

Structure of income from terminated calls on mobile networks - 2021



Furthermore, the income from terminated national calls increased by 1.6% in relation with 2020, and the income from terminated international calls increased by 28.1% in relation to 2020.

1.10.3. IP Interconnection

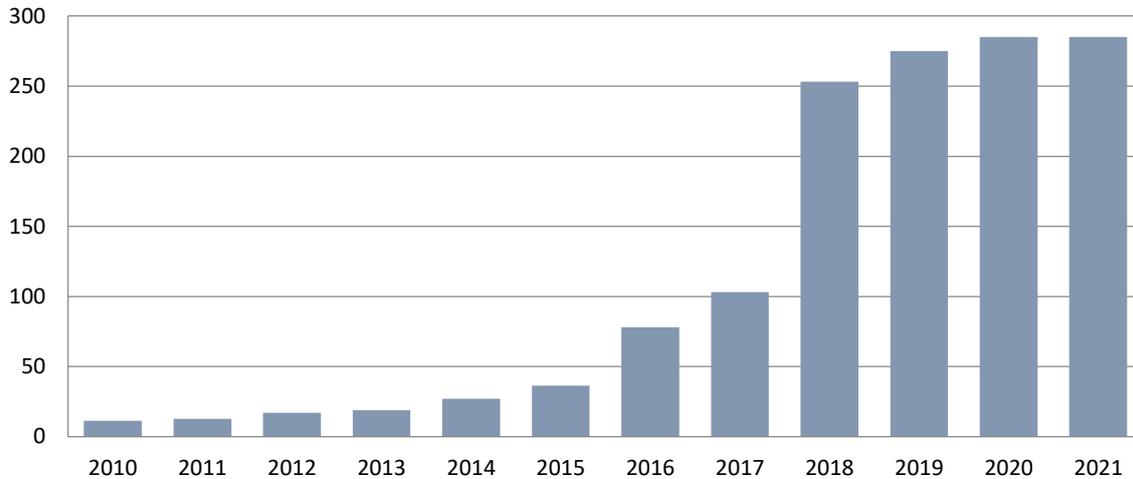
In order to make internet operative as a global network, Internet Service Providers (ISP) need to be interconnected as to be in position to make wide range of contents, services and applications accessible by its users. Connecting the ISPs and traffic exchange may be classified as transit or as peering, while one of the variances of peering is the use of Internet Exchange Point – IXP.

Transit is usually realized by virtue of bilateral agreement when one ISP (up provider) supplies the other ISP (sub provider) with complete connectivity for the transfer of *upstream* and *downstream* traffic for its users, including an obligation of traffic transfer to third parties. Transit is a wholesale service which is chargeable.

Peering is usually performed by virtue of bilateral agreement between ISPs in order to make the traffic between themselves and their users interchangeable. Most often, the peering does not include the obligation of traffic transfer to third parties. Traffic interchange is usually carried out free of charge. In addition to bilateral (private) peering, a multilateral (public peering) can be also performed, when three or more parties decide to interconnect their networks through one point. This public interconnection point is named Internet Exchange Point-IXP.

The operators providing an internet access service (ISP) in Montenegro, deliver Internet Transit Service mostly by the operator (up provider) which is outside Montenegro. However, some operators provide Internet Transit Service by the operators in Montenegro. At the end of 2021, total leased capacity of Internet transit provided by the operators from abroad (capacity of international Internet transit) and used by the operators in Montenegro, was 285 Gb/s. Compared with 2020, total capacity of international internet transit remained at the same level. The following chart shows the trend in capacities of total international Internet transit.

Capacity of Internet transit from up providers from abroad (Gb/s)



For a long period of time, the only way of connectivity realized by the operators supplying with an Internet access service (ISP) in Montenegro was Internet transit. A study on establishing national Internet Exchange Point (IXP) in Montenegro, prepared by the Agency in 2013, proved that thanks to introducing an IXP, development of internet services in Montenegro would be much encouraged, the quality of internet access much improved, the prices of Internet access services would be lower, the links for global internet access would be unburdened, and the communication would be safer.

As the result of a sequence of activities, in July 2015, a MIXP (*Montenegro Internet eXchange Point*) was introduced. In addition to an Internet Service Provider (ISP), education organizations, government bodies, companies etc. can be also connected to MIXP, provided that technical conditions published on the web site: www.mixp.me, have been previously fulfilled. One of the vital technical conditions for connecting to MIXP is that interested legal entity, having its registered office in Montenegro, has been provided with computer network registered as an autonomous system (ASN), supplied with a unique AS number (ASN). Registration of AS is carried out following the procedures of competent international institution.

At the end of 2021, the following entities were connected to MIXP: Crnogorski Telekom, Mtel, Telenor, Telemach and Univerzitet Crne Gore (1 Gbps links). Telecommunications network of the Government of Montenegro is also connected to MIXP, but still does not exchange the traffic with other networks, as it has not been provided with its own ASN which is technical precondition for traffic exchange. Statistics of exchanged traffic between interconnected entities for the whole 2021 proves that total volume of exchanged traffic is not high, yet an increasing trend can be noticed. Details gathered on traffic made by individual operators/institutions, are as follows:

- Crnogorski Telekom: average - downstream 103.5 Mbps; upstream 150 Mbps.
- Telenor: average - downstream 78.6 Mbps; upstream 57.1 Mbps.
- Mtel: average - downstream 186.5 Mbps; upstream 164.4 Mbps.
- Telemach: average - downstream 52.1 Mbps; upstream 15.9 Mbps.
- Univerzitet Crne Gore: average - downstream 9.6 Mbps; upstream 1.7 Mbps.
- ISC F-Root TGD1: average - downstream 89.2 kbps; upstream 14.8 kbps.

Very low volume of traffic exchanged between the entities connected to MIXP proves that operators in Montenegro have not been directly connected to providers of contents and applications offering attractive contents, services and applications, so that their end users do not generate significant traffic volume to other operators in Montenegro.

1.11. Number portability service

Number portability is service which allows each subscriber to keep his/her number when changing the operator. A number can be ported from fixed to fixed network, and from mobile to mobile network. The procedure for providing this service is prescribed by the Law on Electronic Communications (ZEK) and the Rulebook on Number Portability (“Official Gazette of Montenegro”, 28/14).

The Rulebook on number portability adopted in accordance with the Law on Electronic Communications and Directive 2009/136/EC, prescribes 3 working days for number porting. Subscriber who wants to port his/her number submits an application for number porting to the operator which receives the number (the operator to which the subscriber wants to port his/her number), and it is considered as a request for termination of the contract with the donor operator (the operator which is a contracted party with the subscriber). If all the conditions for number porting are met, subscriber gets the date for number porting which may not be longer than 3 working days upon the submission of the application. Subscriber will not be able to use the service on the date of number porting, only in the period from 13.00 to 16.00. The subscriber can port again his/her number 3 months following the latest porting. If the application for porting is denied, the subscriber may file a complaint with the Agency.

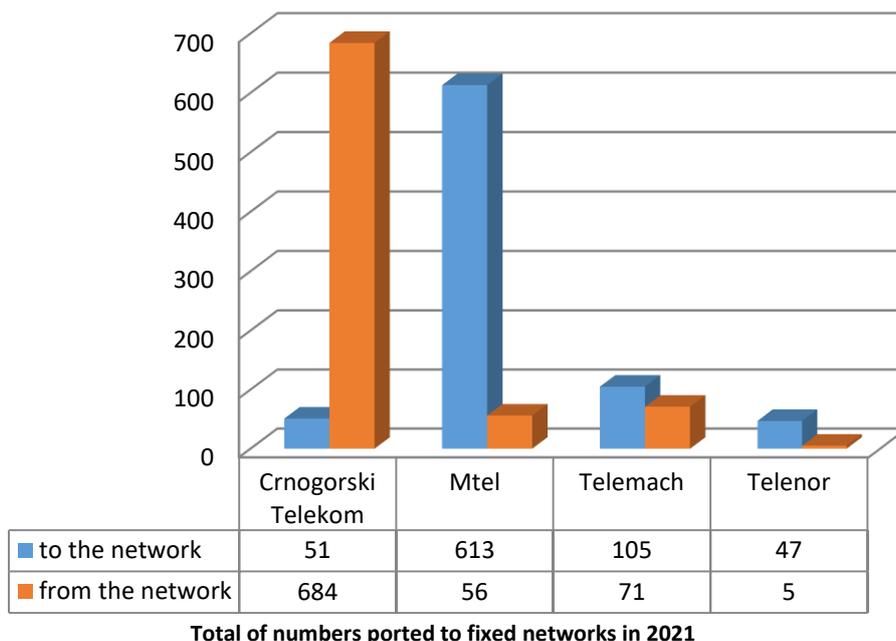
Pursuant to the Law on Electronic Communications (ZEK) and the Rulebook on number portability, the Agency issued a decision on setting one-off fee for number portability service and the way of its distribution. The prescribed fee amounts to € 3.50 and is distributed between the operator donor and the operator recipient of the telephone number in the ratio 80:20, i.e. the operator with the network to which the number is ported from, gets €2.80, and the operator with the network from which the number is ported to, gets €0.70 per ported number. For the time being, subscribers are free from paying any fee for the service of number porting, but according to the Agency’s decision, the operator with the network to which the number is ported shall pay €2.80 per ported number to the operator with the network which the number is ported from.

In 2021, number portability service was used by 7,208 subscribers, being 11.7% less than in the previous year. During 2021, this service was mainly used by mobile subscribers, which amounted to 6,392, while total of 816 numbers were ported to fixed telephony. In the same year, there were totally 3,587 rejected requests for number portability. An average time of number portability procedure was 2.48/3.47 (total number of working days /total number of days).

Out of 816 numbers ported to fixed telephony, most of them were ported to Mtel fixed network (613), as follows: 557 from the fixed network of Crnogorski Telekom, 52 numbers from Telemach network and 4 numbers from fixed Telenor network. Total of 105 numbers were ported to Telemacha networks: 96 numbers from fixed network of Crnogorski Telekom and 9 numbers from fixed Mtel network. Total of 51 numbers were ported to fixed network of Crnogorski Telekom: 31 number from the fixed network of Mtel, 19 numbers from the fixed network of Telemach, and 1 number from the fixed network of Telenor. To the fixed Telenor network were ported 47 numbers: 31 numbers from the fixed network of Crnogorski Telekom and 16 numbers from Mtel fixed network.

A total of 684 numbers were ported from the fixed network of Crnogorski Telekom: 557 numbers to the fixed network of Mtel, 96 numbers to the fixed network of Telemach and 31 numbers to the fixed network of Telenor.

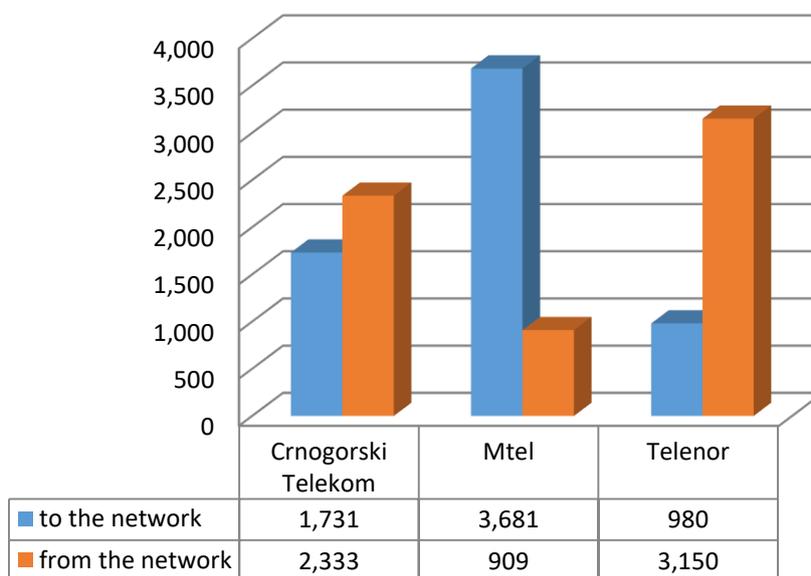
A total of 71 numbers were ported from the fixed network of Telemach: 52 numbers to the fixed network of Mtel and 19 numbers to the fixed network of Crnogorski Telekom. From the fixed network of Mtel was ported a total of 56 numbers: 31 numbers to the fixed network of Crnogorski Telekom, 16 to the fixed network of Telenor and 9 to the fixed network of Telemach. From the fixed network of Telenor were ported 5 numbers : 4 to Mtel fixed network and 1 to the fixed network of Crnogorski Telekom. The chart below shows quantity of ported numbers, per operator.



Total of numbers ported to fixed networks in 2021

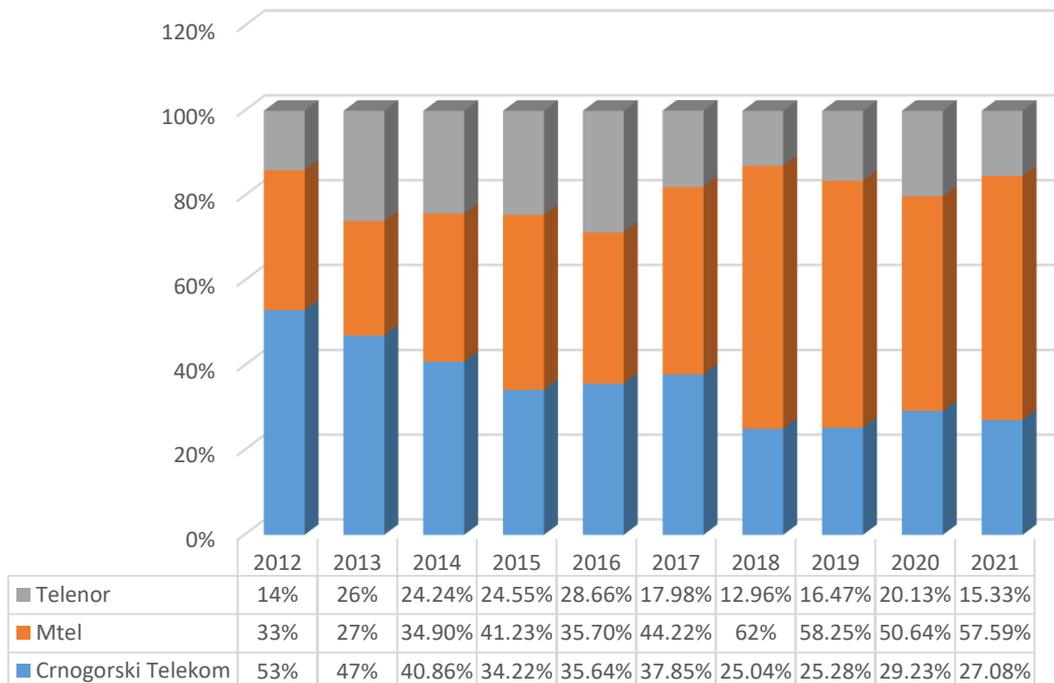
As regards number portability to mobile networks in 2021, the majority of the numbers were ported to Mtel network- 3,681 (57.59%), followed by Crnogorski Telekom – 1,731 (27.08%), while 980 (15.33%) numbers were ported to Telenor network. The greatest share of the numbers in 2021 were ported from Telenor network: 3,150 (49.28%), followed by Crnogorski Telekom – 2,333 (36.50%), while the lowest share was ported from Mtel network - 909 numbers (14.22%).

The chart below is an overview of the numbers ported to mobile networks in 2021, per operator:

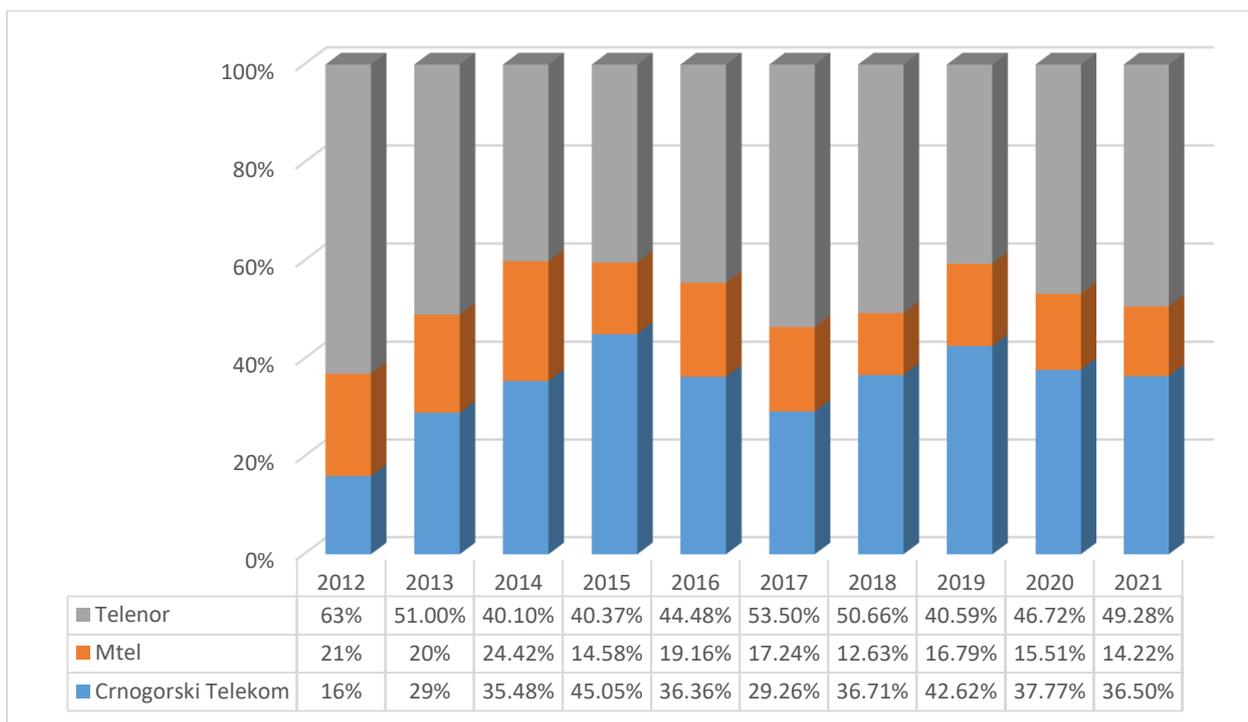


Total of numbers ported to mobile networks in 2021

From the beginning of delivery of number portability service in 2012, till 31 December 2021, with all three mobile operators the share in the total amount of ported numbers varied, which is presented in the following chart, per year.



Share in the total amount of numbers ported to operator network



Share in the total amount of numbers ported from operator network

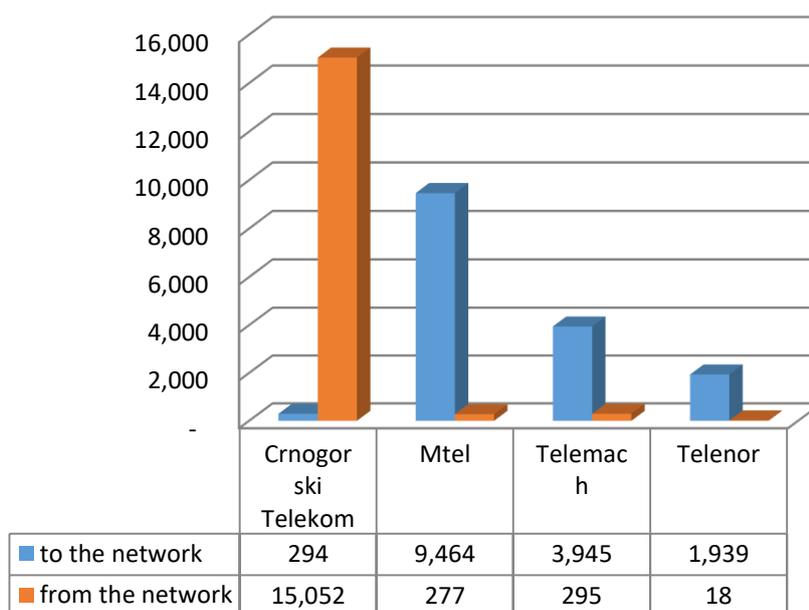
Number portability service was provided from December 1, 2011 till December 31, 2021, in which period a total of 69,567 numbers were ported – 15,642 numbers were ported to fixed networks and 53,925 numbers to mobile networks.

Out of 15,642 ported numbers:

- 15,052 numbers were ported from the fixed network of Crnogorski Telekom: 9,257 numbers to Mtel fixed network, 3,882 numbers to Telemach fixed network, and 1,913 numbers to Telenora fixed network;

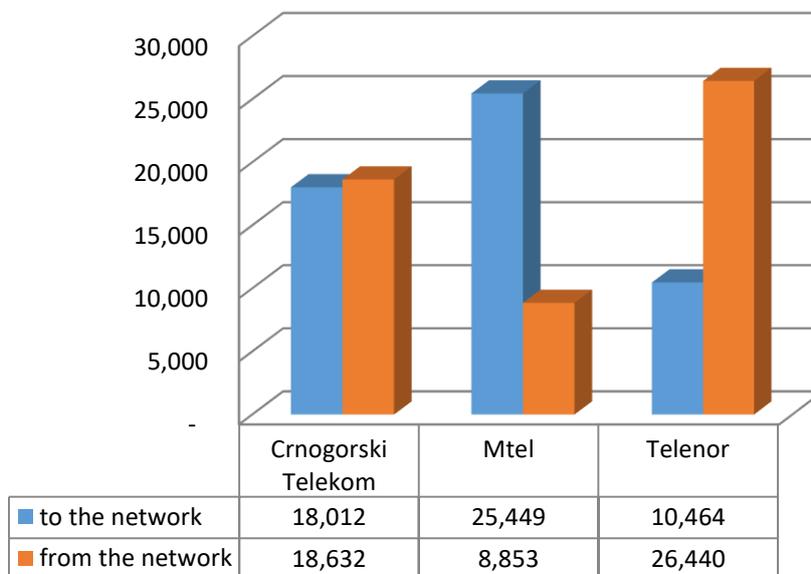
- 295 numbers were ported from Telemach fixed network: 203 numbers to Mtel fixed network, and 92 numbers to fixed network of Crnogorski Telekom;
- 277 numbers were ported from the fixed network of Mtel: 188 numbers to the fixed network of Crnogorski Telekom, 63 numbers to the fixed network of Telemach, and 26 numbers to Telenor fixed network;
- 18 numbers were ported from Telenor fixed network: 14 numbers to the fixed network of Crnogorski Telekom, and 4 numbers to Mtel fixed network.

The greatest part was ported to fixed Mtel network – 9,464, followed by Telemach fixed network – 3,945, while to the fixed network of Telenor were ported 1,939 numbers, and to the fixed network of Crnogorski Telekom 294 numbers. Below is given the appropriate chart.



Total of numbers ported to fixed networks, since the beginning of the delivery of portability service

With regard to mobile networks, out of the total of 53,925 ported numbers, the greatest amount was ported to Mtel mobile network – 25,449 numbers, followed by the network of Crnogorski Telekom – 18,012 numbers, while 10,464 numbers were ported to Telenor network. The greatest part was ported from Telenor network – 26,440 numbers, followed by mobile networks of Crnogorski Telekom – 18,632 numbers, while the smallest amount of numbers were ported from Mtel mobile network - 8,853 users. Here follows the chart reflecting the above data.



Total of numbers ported to mobile networks, since the beginning of the delivery of portability service

Number portability service was successfully implemented and has been continuously improved. This service has been encouraging the competition, and allowing end users to change their user packages, according to their needs (more convenient prices and higher quality of services), while keeping their telephone numbers.

1.12. Joint use of electronic communications infrastruktura

Joint use of electronic communications infrastructure and associated facilities is stipulated by the following acts:

- Law on Electronic Communications ("Official Gazette of Montenegro", 40/13, 56/13, 02/17 and 49/19),
- Rulebook on the joint use of electronic communications infrastructure and associated facilities ("Official Gazette of Montenegro" 52/14, 02/17),
- Rulebook on the type and method of submitting and publishing information on electronic communications infrastructure and associated facilities, that may be of interest for the joint use ("Official Gazette of Montenegro", 48/18).

Mutual rights and obligations of the operators regarding the joint use of electronic communications infrastructure and associated equipment, according to ZEK, shall be regulated by a contract, while more detailed conditions and the way of joint use of electronic communications infrastructure and associated equipment, as well as the measures for increasing the availability of free capacities in this kind of infrastructure, are determined by Agency's regulations.

Information the Agency obtained from the operators helped making an overview of the joint use of electronic communications infrastructure, which includes telecommunications cable (TK) ducts, antenna masts, and facilities/buildings/containers.

1.12.1. Joint use of telecommunications cable ducts

Lease of the space in electronic communications cable ducts has been provided by four operators: Crnogorski Telekom, Komunalne usluge Podgorica (Public Utility Enterprise d.o.o Podgorica), Mtel and Radio-difuzni centar (Broadcasting Center). Considering that the space in cable ducts can be leased by other

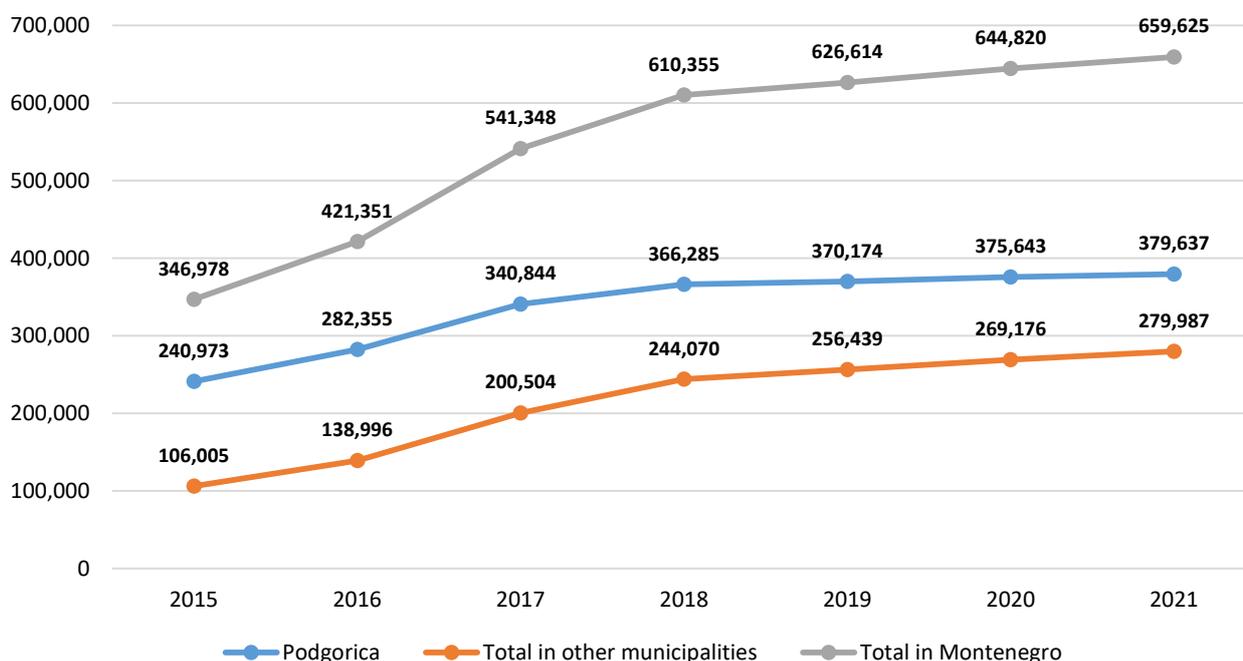
operators, it fostered installation of access networks and development of new services. Electronic communications cable ducts are leased by: 8 operators which leased it from Crnogorski Telekom, 6 operators leased it from Komunalne usluge Podgorica, 1 operator leased it from Mtel, and 1 operator from Radio-difuzni centar.

Joint use of telecommunications cable ducts is applied in 15 municipalities of Montenegro, in the total length of cca. 660 km, being 2% higher than in the same period in the previous year. A detailed overview of leased cable ducts per municipality is presented in the Table below.

Joint use of telecommunications cable ducts per municipality, on 31.12.2021

Municipality	Length of EK cable ducts f40 mm (m)	Length of EK cable ducts f20 mm (m)	Length of EK cable ducts 3xf40 mm (m)	Length of EK cable ducts 2xf20 mm (m)	Total of cable ducts (m)
Podgorica	111.770	258.692	2.783	413	379.637
Herceg Novi	7.811	50.030	0	0	57.841
Tivat	12.809	33.874	0	0	46.683
Kotor	5.450	15.374	0	0	20.824
Pljevlja	1.962	21.030	0	0	22.992
Bijelo Polje	3.945	28.773	0	0	32.718
Budvu	2.520	14.672	0	0	17.192
Bar	1.577	35.934	0	0	37.511
Nikšić	240	22.036	0	0	22.276
Cetinje	0	3.103	0	0	3.103
Berane	0	4.813	0	0	4.813
Ulcinj	0	2.164	0	0	2.164
Mojkovac	0	4.362	0	0	4.362
Danilovgrad	0	5.259	0	0	5.259
Žabljak	0	2.252	0	0	2.252
Total	148.084	502.366	2.783	413	659.625

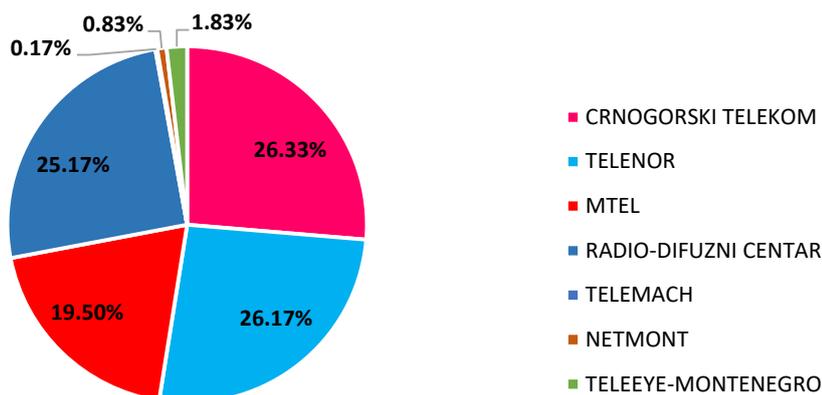
The graph below is an overview of leased telecommunications cable ducts (m) for the period 2015-2021. There is a continuous growth in the total length of leased telecommunications cable ducts, which is presented in the graph.



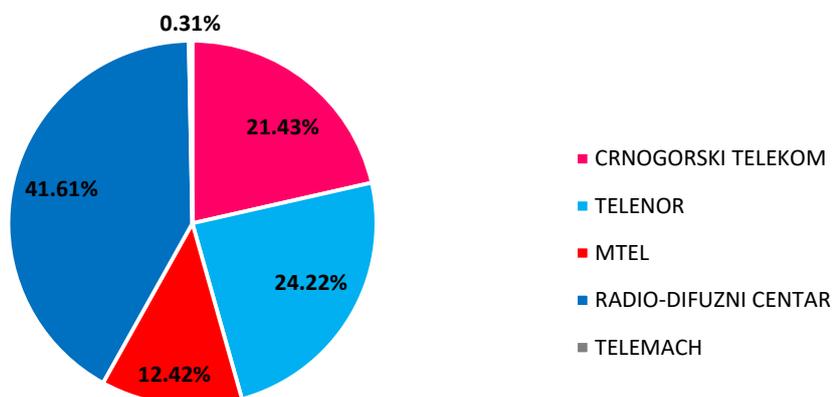
Actual prices of space lease in telecommunications cable duct of Crnogorski Telekom, Komunalne usluge Podgorica, Mtel and Radio-difuzni centar are at the same level and amount to 0.0811 €/m for a duct of 40mm diameter, i.e. 0.0304 €/m for a duct of 20mm diameter.

1.12.2. Antenna masts

Crnogorski Telekom, Telenor, Mtel, Radio-difuzni centar, Telemach, TeleEye Montenegro and NetMont in Montenegro have 600 antenna masts. Individual shares in the ownership of antenna masts of the operators at the end of 2021 is shown in the pie-chart below.



As the owners of antenna masts, the operators rent the space on antenna masts on 322 locations, being cca. 54% of the total number of antenna masts. Individual shares in the ownership of antenna masts of the operators is given in the pie-chart below.



Mobile operators (Crngorski Telekom, Telenor and Mtel) use their own antenna masts and those of other operators at approximately the same level, and the share of antenna masts of Radio-difuzni centar in the networks of Cnogorski Telekom, Telenor and Mtel is 23-36%.

1.12.3. Facilities/Buildings

There are 711 locations of Crnogorski Telekom, Telenor, Mtel and Radio-difuzni centar, with facilities/buildings/containers in which their equipment is stored. Joint use is applied at 213 location, which makes 30% of the total number of facilities/buildings/containers.

1.12.4. Joint use of public lighting masts and power masts

Joint use of public lighting masts and power masts (35kV, 10kV and 0.4kV) is provided by Komunalne usluge Podgorica and Crnogorski elektrodistributivni sistem (CEDIS). Komunalne usluge Podgorica signed agreements with Mtel, Crnogorski Telekom and Fibercom. Crnogorski elektrodistributivni sistem (CEDIS) signed agreements on business and technical cooperation with Mtel and with Crnogorski Telekom.

1.12.5. Mapping of electronic communications infrastructure

The mapping system is built on Java Platform and have used software application Geoserver, while all data are stored in a database space PostgreSQL. This new system is also provided with additional functions, in relation to previous one, so that along with electronic communications infrastructure, it allows mapping of broadband Internet access and mapping of plans for the construction of electronic communications and other infrastructure. Except for the above mentioned mapping, a new system allows certain user group to upload data on electronic communications infrastructure, equipment, networks, and planned routes, individually and directly through web portal. Furthermore, a new system is supplied with atlas demographic data so that within the facilities/buildings with dwelling purpose approximate data on the number of households and population, list of operators providing electronic communications services and technologies available, are entered. New functionality also provides an insight to capacity availability within cable ducts and accordingly calculation on drawing cables or ducts of certain radius, along them. Certain group of users can upload boundaries in spatial planning documents, based on which from the new system they can get/download all data needed for their further work. One of the future options of the system is the selection of one or more cadastral plots and export of data on electronic communications infrastructure stored in the field of the selected cadastral plot/s.

That system is used by the operators, processors of spatial planning documents, state, local and other institutions and administrations, investors and other interested physical and legal entities. The operators use that portal to submit data on their electronic communications infrastructure, as defined by ZEK and the Rulebook on the type of submission and disclosure of data on electronic communications infrastructure and associated facilities, which may be useful for the joint use. Also, by implementing the new system, operators are enabled to submit plans for the construction of electronic communications infrastructure, and the investors can submit information on planned construction of roads.

Substrates in the form of maps and services are provided by Uprava za nekretnine Crne Gore. Mapping of electronic communications infrastructure provides optimal use of existing capacities and minimal damages during its construction. Moreover, this system allows efficient network and services planning, preparation of planning documentation, and in the same time it enables investors to make their investments based on real data. Mapping system is built in a way that it can be continuously upgraded and developed.

In the georeferenced base of electronic communications infrastructure there is data about telecommunications cable ducts, antenna masts, facilities/buildings/storage for storing electronic communications equipment, as well as the data about high-voltage energy masts and antenna carriers.

Data about telecommunications cable ducts provide information about routes, shafts, cables, extensions, and endings. Operators successively deliver this data, and so far the data has been delivered by:

- Crnogorski Telekom submitted data for 6,956 km of telecommunications cable ducts, making appr. 100% of their local underground tk infrastructure,
- Komunalne usluge Podgorica submitted data for 162 km of telecommunications cable ducts, i.e. appr. 80% of their underground tk infrastructure,
- Telenor submitted data for 16 km telecommunications cable ducts, i.e. 100% of their underground infrastructure,

- Siol submitted data for 182 km of telecommunications cable ducts, i.e. 100% of their underground tk infrastructure,
- Mtel submitted data for 439 km of telecommunications cable ducts, i.e. 100% of their underground tk infrastructure,
- Telemach submitted data for 23 km of telecommunications cable ducts, i.e. 100% of their underground tk infrastructure,
- Željeznička infrastruktura Crne Gore submitted data for 111 km of telecommunications cable ducts, i.e. appr. 80% of their underground tk infrastructure,
- Regionalni vodovod Crnogorsko primorje submitted data for 26 km of telecommunications cable ducts, i.e. appr. 80% of their underground tk infrastructure.

Data on antenna masts provide information on the characteristics of the masts, antennas and equipment placed on the masts with underlying photographs and drawings. The operators have successively submitted this data and so far the following have been submitted:

- Crnogorski Telekom – for 158 masts (100% of the total number of masts),
- Radio-difuzni centar – for 151 masts (100% of the total number of masts),
- Telenor – for 157 masts (100% of the total number of masts),
- Mtel – for 117 masts (100% of the total number of masts),
- Telemach - 1 mast (100% of the total number of masts),
- NetMont – for 5 masts (100% of the total number of masts),
- TeleEye Montenegro – for 11 masts (100% of the total number of masts).

Data on facilities/buildings/containers, providing information on their size, as well as the schedule of the equipment with underlying photographs and drawings. The operators have successively submitted this data, and so far, the following have been submitted:

- Crnogorski Telekom – for 283 buildings/facilities/containers (100% of the total number of facilities),
- Radio-difuzni centar – for 130 buildings/facilities/containers (100% of the total number of facilities),
- Telenor – za 182 buildings/facilities/containers (100% of the total number of facilities),
- Mtel – for 69 buildings/facilities/containers (100% of the total number of facilities),
- Telemach – for 10 buildings/facilities/containers (100% of the total number of facilities),
- TeleEye Montenegro – for 13 buildings/facilities/containers (100% if the total number of facilities),
- Siol – for 2 buildings/facilities/containers (100% of the total number of facilities).

Data on antenna carriers provide information on the antennas and equipment placed on the carrier with underlying photographs and drawings. The operators have successively submitting this data and so far the following have been submitted:

- Crnogorski Telekom – for 77 carriers (100%),
- Radio-difuzni centar – for 1 carrier (100%),
- Telenor – for 89 carriers (100%),
- Mtel – for 107 carriers (100%),
- NetMont – for 16 carriers (100%),
- TeleEye Montenegro – for 7 carriers (100%).

Data on the overhead lines provide information about the routes, cables, extensions, as well as the masts on which overhead lines are attached. The operators have successively delivered this data, and so far, the following have been submitted:

- Crnogorski elektrodistributivni sistem submitted geographic data for 1,903 km of overhead telecommunications cables, i.e. 90% geographic data on the same,
- Crnogorski elektroprenosni sistem submitted geographic data for 674 km overhead telecommunications cables, i.e. for 100% geographic data on the same,
- Crnogorski Telekom submitted data for 28 km of overhead telecommunications cables, i.e. for appr. 80% data on the same,

- Željeznička infrastruktura Crne Gore submitted data for 58 km of overhead telecommunications cables, i.e. for appr. 80% data on the same.

There are 118 active users registered in the system, and they are from the following entities:

- 15 operators,
- 11 planners – developers of planning documents, and
- 3 state authorities.

1.13. Monitoring of the quality of electronic communications services

Pursuant to Article 155 of ZEK (Law on Electronic Communications) the operators shall submit to the Agency measured quality parameters in the fixed and mobile networks. In December 2017, the Agency adopted a new Rulebook on the quality of public electronic communications services, which was published in the “Official Gazette of Montenegro”, 02/18. The Rulebook was amended with measurement of accessibility parameters and signal quality of digital terrestrial radio broadcasting systems for broadcasting television programs of the second generation, and this Rulebook repealed the Rulebook on the quality of public electronic communications services dated from 2014. The Rulebook prescribes parameters of the quality of public electronic communications services in the fixed and mobile networks, as well as measurement methods and method for disclosing measurement results and the periods when measurements shall be made.

In order to make data on the quality of services provided by the operators in Montenegro publicly available, subject to the provisions of Article 155 of ZEK, the Agency publishes on its website comparative overview of measured values of the quality parameters for the public electronic communications services in fixed and mobile electronic communications networks. Pursuant to the same Article of the Law, the operators shall make publicly available measured parameters of the quality in their networks with a view to informing the users about the quality levels of the services from their offer.

The operators providing services in a public mobile electronic communications network (Crnogorski Telekom, Telenor, and Mtel), during 2020, were regularly delivering their reports on measured values of the quality of electronic communications service parameters. With regard to the fixed network operators, the mentioned reports were submitted by ASP CO, Crnogorski Telekom, FiberCom, Mtel, Net Mont, Orion Telekom, Radio-difuzni centar, SBS Net Montenegro, TeleEye Montenegro, Telemach and Telenor.

Based on submitted reports, the Agency made comparative overviews of measured values of the quality parameters for public electronic communication services on the fixed and mobile electronic communications networks, and published them on its website address: <https://ekip.me/page/users/elektronske-komunikacione-usluge/quality-of-service>. Comparative overview of these parameters of quality supplied the users with necessary information on the quality of services and helped them select electronic communication services of better quality and as well as a more reliable operator. Operators used these overviews to compare the parameters of their network with the ones of their competitors, and to take measures for the improvement of certain parameters of quality on fixed and mobile networks in order to offer their users services of improved quality.

The analysis of parameters of the service quality shows that the quality of services is not uniform and that some parameters of quality on fixed and mobile networks significantly vary from operator to operator. Being aware of the fact that the values of certain parameters of quality are not satisfactory, the Agency addressed to the operators, indicating that the value of some parameters diverts from the expected one and that they should take measures on its improvement. When parameter of the quality of service on the public telephone network at a fixed location is concerned, the Agency reminded the operators of the parameters of “Failure repair time for access lines” and “Customer service response time”.

As regards the parameter “Failure repair time for access lines” - for 80% failures at the access line in the observed period” with Crnogorski Telekom, was very high, and it ranged from 24.33 hours (service of distribution of AVM contents), 33.69 hours (Internet access service) and 38.06 hours (fixed telephony service). It was especially high in the 3rd quarter, when these values were in the range from 25.08 hours to 49.16 hours. The reason why this parameter was so high lies in the fact that failure repair time for access lines usually rises every year in the third quarter, considering that during the summer months the operator has an increased number of trips to the field, i.e. a greater number of installations and disturbances (seasonal, holiday packages, rental of accommodation, etc.). The parameter “Failure repair time for access lines” - in the first quarter of 2021, for 80% failures at the access line in the observed period” with Mtel, significantly increased for each service on the fixed location individually. In the fourth quarter of 2020 these values were in the range from 26.13 hours to 27.39 hours, so that in the first quarter of 2021 they reached the range from 37.43 hours to 40.03 hours, depending on the service. The reason of the increase of the time values was reorganization of the operator’s operations. In the very next quarter, these values reached the level from the previous quarters.

In 2021, the value of the parameters for the “Response time of the customer service” with Crnogorski Telekom, amounted to 26 seconds (fixed telephony service), 33 seconds (AVM contents distribution service) and 34 seconds (Internet access service). A particular increase was recorded in the first quarter of 2021, when compared to the fourth quarter of 2020, it was increased from 19-27s to 25-36s, depending on the type of service. The deterioration of the value of this parameter was due to the fact that in the first quarter of 2021, a large number of employees in the Call Center suffered from COVID-19, and there were not enough people to respond to user requests. The response time of the customer service at Crnogorski Telekom was also high in the third quarter of 2021, when it ranged from 32 to 39 seconds. The reason for the increase in the customer service response time is the redesign of the IVR (Interactive voice response) system, which Crnogorski Telekom made more accessible to users for direct contact with the operator, the number of answered calls increased, which then led to an increase in the customer service response time.

Parameter values for the Internet access services is not easy to compare with others, as the operators do not offer packages of the same characteristics. That is why only certain parameters are compared, as for example the parameter “Time of setting up a service at a fixed location”, which ranged from 1 day to 9.20 days. As for the parameter “Failure repair time for access lines”, it ranged from 4 hours to 41 hours; “Response time of the customer service” parameter values were in the range from 10 seconds to 58 seconds. Compared to the values in 2020, with most of the operators, values of these parameters remained at the same level or were improved, except for “Failure repair time” and “Response time of the customer service” which raised with Crnogorski Telekom.

By analysing the Report on the quality parameters of publicly available electronic communications services in 2021, it is concluded that during that year the values of quality parameters of the services in mobile electronic communications networks slightly varied on quarterly basis.

Value of the parameter “Response time of the customer service” in mobile network of Crnogorski Telekom amounted to 26 seconds, in mobile network of Mtel it amounted to 22.1 seconds, while in Telenor mobile network it reached 40.99 seconds. “Frequency of appeals/complaints related to bill regularity” ranges from 0.02% with Mtel, 0.07% with Crnogorski Telekom, and 0.20% with Telenor; “Frequency of disconnected links” ranges from 0.09% with Telenor, 0.17% with Crnogorski Telekom, and 0.21% with Mtel. It is concluded that compared with the values of mentioned parameters in 2020, during 2021 “Frequency of disconnected links” with all operators was decreased, “Frequency of appeals/complaints related to bill regularity” was increased with Mtel, while it was decreased with Crnogorski Telekom, while “Response time of the customer service” was slightly increased.

Compared to the reports from the previous period, in 2021 the operators improved the values of certain parameters of service quality offered to the users, but despite these achievements and the efforts of the operators to reach as much good parameter values as possible, some parameter values remain higher than

expected. This mainly refer to the parameters indicated by the Agency to the operators, like: “Time of setting up a service at a fixed location”, “Failure report time for access lines”, and “Response time of the customer service”.

In order to keep the users of electronic communications services informed about the quality of services offered by operators so they can select electronic communications services that meet their needs, the Agency will continue to publish on its website comparative values of the parameters of the service quality in the fixed and mobile electronic communications networks. The Agency will keep on monitoring the quality of electronic communications services, continue with detailed analysis of the values of service quality parameters, and will impose the operators to improve those parameters of electronic communications services that have not been achieved at the sufficient level.

1.13.1. Measurement of Internet access speed

At the beginning of June 2019, the Agency put into service the system for measurement and analysis of “EKIP NetTest” Internet access. The System EKIP NetTest allows measurement of parameters of Internet access service quality in fixed and mobile electronic communications networks in Montenegro.

EKIP Net Test is available to:

- all modern web browsers at the address:
<https://nettest.ekip.me/>,
- mobile devices with Android operations system (version 6.0 or later) and iOS (version 10 or later). Mobile applications can be downloaded from Google Play for Android OS and App Store for Apple iOS.

With more than 80 measurable parameters, this is probably the most complete measuring tools available at the market. The System is completely in line with BEREC (Body of European Regulators for Electronic Communications) Report from 2014, recommending quality parameters for the quality of Internet connection.

Measuring server is located in the Internet exchange point (MIXP) in Montenegro, so the users of all operators would be in the same position when measuring the quality of Internet access service, i.e. in order to make the measuring results comparable.

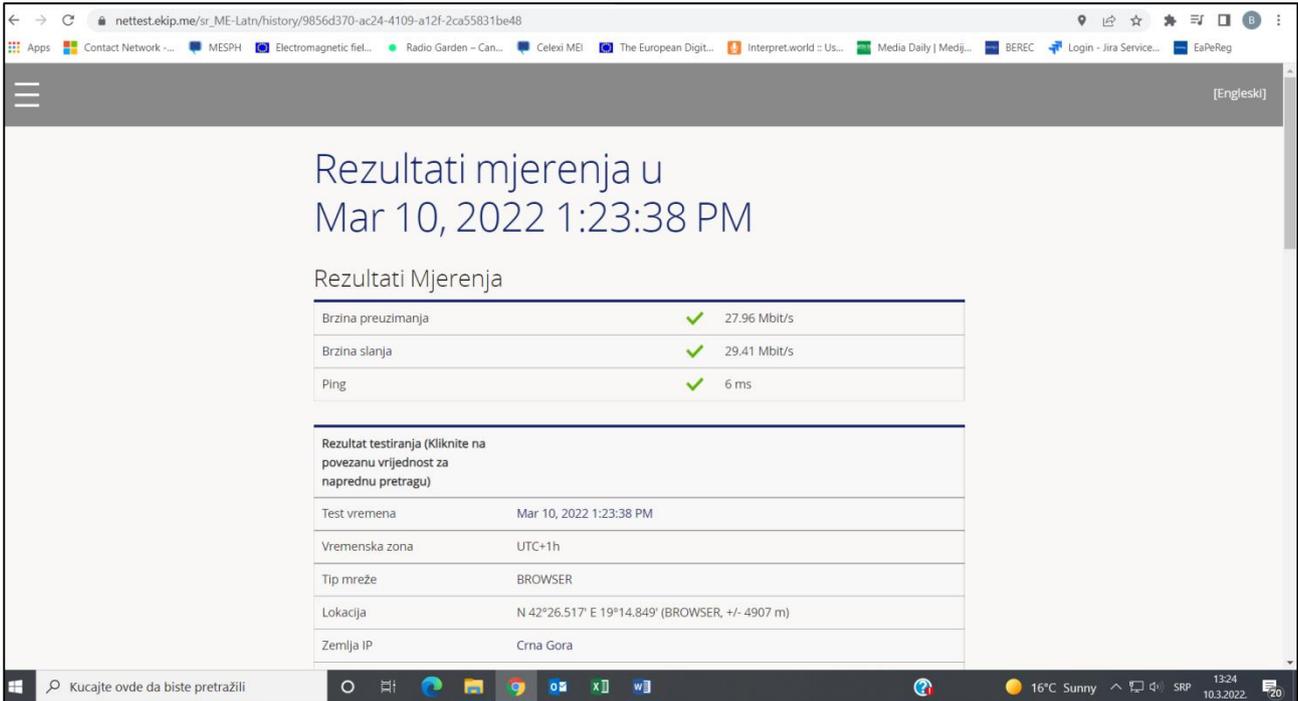
In 2021, the IPv6 was implemented on the EKIP NetTest.

By using EKIP NetTest, among other options, the users can test the parameters of Internet access quality

- Download speed (of data download – measuring from server to user),
- Upload speed (of data upload – measuring from user to server),
- Ping (latency),
- Parcel loss,
- Transparency and connection quality, and
- Signal power (depending on device and operations system).

By using mobile application, large amount of data can be transmitted. Amount of data transmitted in 3G network in the course of performing one test, amounts to 5MB – 10MB, while in 4G the quantity of data network transmitted in the course of performing one test amounts over 100MB.

Along with ordinary parameters, as upload and download speed, the system performs more than 70 single tests with a view to assessing quality of Internet connection and check if the operators respect the principle of network neutrality. EKIP Net Test system also gives detailed graphic and statistical overview of measuring results.



The Agency will also use this system to control the fulfilment of obligations of the operators of mobile services with regard to dynamics and volume of coverage of the population of Montenegro with the signal of mobile networks, in line with the approvals for radio frequency use.

The subscribers can use EKIP NetTest system for testing the quality of Internet access service, in the context of the service quality parameters stipulated by subscriber agreements. If the measured quality parameters of Internet access service are below the quality stipulated by the subscriber agreement, the user may use the measuring results and file an appeal to the operator, and if the user is not satisfied with the response of the operator, he/she can file an appeal to the Agency, along with the results received from EKIP NetTest system.

During 2021, according to measuring server of the system EKIP NetTest, a total of 3,102 separate measurements were carried out by the users from Montenegro. The users of mobile communications networks carried out 547 measurements, while an average download speed amounted to 45.51 Mbps. The number of measuring performed in the same period, amounted to 2555. An average measured download speed was 39.29 Mbps.

1.14. Safety and integrity of electronic communications networks and services

1.14.1. Measures to ensure safety and integrity of electronic communications networks and services

Following the Rulebook on the method and terms for performing the measures on safety and integrity of electronic communications networks and services (“Official Gazette of Montenegro” 41/15 and 81/16) (hereinafter referred to as: the “Rulebook”), the operator shall implement relevant measures in the following fields:

- Risk Management,
- Human Resources Safety,
- System and Facilities Safety,
- Operations Management,

- Incidents Management,
 - Business Continuity Management,
 - Survey, Inspection and Testing, and
- within the competence of each of the above-mentioned fields of the operations, to reach appropriate safety goals and to undertake safety measures.

The operators carried out most of the measures for safety and integrity protection of electronic communications networks and services included in the subject fields. Through their respective Network Operations Centers (NOC), as defined by the Rulebook, the operators submit notifications and reports on the latest safety incidents.

It is stipulated by the Report that the operators with more than 10,000 users (telephony, Internet) shall implement DRS (Disaster Recovery Site) at the geo-redundant location in the territory of Montenegro, which would enable continuous supply with the services (telephone, SMS, Internet).

In accordance with the reports received from the operators and based on the control performed by the Agency, the implementation level of DRS is as downstated:

- Crnogorski Telekom carried out all the obligations prescribed by the Rulebook and put into operations the DRS in Bijelo Polje. Part of signalization was replaced, and No7 was replaced with SIP interconnection, through which it was connected to Telemach (the main and DRS Site), while tests with the main Telenor Site are in course;
- Telenor implemented DRS in Pljevlja, but it works as a passive network element and for its activation is necessary to execute the procedure over remote access from Podgorica. Modernization of the Core part in Podgorica and Pljevlja was completed. The existing No7 signalization is being replaced with SIP signalization. The main site is connected to the site of Crnogorski Telekom through SIP signalization and the tests are in course. It is also planned to connect them with Mtel, through SIP interconnection, in the first quarter of 2022. They planned to implement the LI system in the first half of 2022, after which they would continue work on connecting DRS with other operators in the third quarter of 2022. When they complete the activation of the LI solution, DRS should switch from a passive element to an active element, i.e. that a part of Telenor's traffic takes place through DRS and that DRS automatically takes over all traffic in the event of an outage of the main site in Podgorica;
- Mtel completed installation of the equipment and carried out tests of the part of mobile networks (Cs and Ps Core). The integration vN – SBC is completed, along with the connection to Orion Telekom through SIP interconnection. The montage is completed and implementation of vIMS (fixed network) is in course. It is planned to perform SIP interconnection with Telenor during the first quarter Of 2022. Now, through DRS Nikšić is performed 10% of package (Internet) traffic and 10% of call (mobile) traffic;
- Telemach completed DRS Pljevlja and it is connected to the main Site and DRS Site of Crnogorski Telekom through SIP interconnection. A part of IP (Internet) traffic is conducted through DRS Pljevlja. DRS is put into function for *voice*, but the traffic is not conducted through it. In case of a failure of the main site in Podgorica, IP traffic is automatically directed to DRS, while the voice traffic needs to be manually directed, which lasts for about 60 minutes. They have an agreement with Crnogorski Telekom stipulating that, when needed, they can divert the traffic to Mtel and Telenor.

In order to ensure better system reliability of the operators that are in obligation to deploy DRSES, it has been imposed to the operators to completely implement their DRSES in the shortest time, and to connect them to DRS of other operators and put them into function.

Pursuant to the criteria from the Rulebook, for the time being, other operators are not in obligation to deploy DRSES.

In 2021, according to the reports received by the operators, it was determined that failures occurred in a large scale (in more than 10 base stations) in all networks, and in most cases the reasons were bad weather conditions or outages in power supply caused by bad weather. There were also some failures caused by the problems in certain system parts, making operational problems in the work of SMS service (Telenor), mobile and fixed network (Mtel and Crnogorski Telekom). There was also a problem in the functioning of Telenor network in the Municipality of Šavnik that was solved after winter period by calibration of mini links on the following broadcasters: Stojkovic, Mljetičak and Šavnik. There was also made calibration of a passive reflector on Mljetičak. Since then there were no problems in the work of Telenor network in the territory of the Municipality of Šavnik.

1.14.2. Plan of Emergency Response Measures

Pursuant to Article 61 (1) of ZEK (Law on Electronic Communications and Postal Services) and Article 8 of the Regulation on the contents of the Measures plan for providing integrity of public electronic communications networks and use of electronic communications services in emergency situation ("Official Gazette of Montenegro" 50/14), in November and December 2021, the operators submitted to the Agency the Emergency Response Measures Plan for 2022. The Plans for 2022 were submitted by: Crnogorski Telekom, Telenor, Mtel, Wireless Montenegro, Telemach, RDC, IPMont, Orion, Telekom and Wimax Montenegro.

A common list of the operators and emergency services with contact persons was updated and submitted to each operator and to Directorate for Emergency Situations. That list is duly updated upon any change or update thereof sent by the operators.

1.14.3. User Registration

Pursuant to Article 174 of ZEK, an operator is obliged to make registration of all users of fixed and mobile telephony as well as of internet, with no delays.

Considering that during the paper registration of the users (2015-2016) some irregularities with mobile operators were identified, in order to overcome detected irregularities, the operators agreed with an access improvement of user registration process, so an electronic registration of users was introduced. According to the above said, the amendments to the Rulebook on the way of registration of users of electronic communications services ("Official Gazette of Montenegro", 60/16) were made, allowing also an electronic registration of users which started to apply as of 20 May 2017.

Introduction of electronic registration of users has so far proved all expectations of the state bodies, the Agency and the operators. During 2021 there were no complaints by the state bodies regarding the registration of users.

1.14.4. Unsolicited communications by abuse of electronic mail

In 2019 the Agency introduced the Register "Ne zovi me" ("Do Not Call Me") in electronic form. The Register are telephone numbers and e-mail addresses of the users who do not want to receive electronic messages i.e. telephone calls with the purpose of direct marketing. Entering in or deleting data from the Register, upon the users' requests, is free of charge, and is done by the operator with whom the user signed subscriber agreement.

Entering data in the Register is done by:

- submitting request by post or in the business office of an operator,
- submitting request by electronic mail, from the address previously registered with an operator, as the electronic mail address of the user submitting the request,

- sending SMS to the number 14876 from telephone number of the user who wants to be entered in the Register.

Telephone number, i.e. e-mail address from the request, the operator shall enter in the Register within 2 working days as of the date of receipt of a regular request of the user. The data will be accessible to all interested parties. The person sending electronic mails, or making telephone calls, or in whose name electronic mails are sent or telephone calls are made with the purpose of direct marketing, shall obtain the user's approval, i.e. check the user's status in the Register before sending the electronic mails or making telephone calls. Enlisting in the Register "Ne zovi me" annuls all previously given approvals mentioned herewith, meaning that neither electronic mails nor telephone calls with the purpose of direct marketing shall be made to the e-mail addresses or to telephone numbers enlisted in the Register. More detailed information referring to the Register are available on the following address: nezovime.ekip.me.

The screenshot shows the website nezovime.ekip.me. The header includes the logo 'NE ZOVI ME' and the name of the agency: 'CRNA GORA AGENCIJA ZA ELEKTRONSKE KOMUNIKACIJE I POŠTANSKU DJELATNOST'. The main content area on the left contains text explaining the register and a notice titled 'Obavještenje'. On the right, there is a registration form with the following sections:

- UNESITE VAŠ TELEFONSKI BROJ ILLI E-MAIL ADRESU DA PROVERITE DA LI SU UPISANI U REGISTAR**: A section for entering a phone number or email address for verification.
- UNESITE VAŠ TELEFONSKI BROJ U FORMATU 06XXXXXXX ZA MOBILNI ILLI 0YYZZZZZ ZA FIKSNI BROJ**: A section for entering a phone number in a specific format.
- UNESITE VAS EMAIL**: A section for entering an email address.
- ULOGUJTE SE**: A button for logging in.

Till the end of 2021, 514 users were enlisted in the Register, of which 39 were new users. At the end of 2021, the Register was accessible to nine more companies dealing with sending marketing messages. In 2021, the access to two business companies was allowed. During the same year, the users filed four complaints to the Agency, regarding unsolicited SMS marketing messages which were then processed, resolved and the users duly informed about it. Two complaints were filed with regards to SMS messages and short calls. The one which regarded SMS messages was made from the number in Ukraine (Simens award in the amount of 750.000 \$) and the other was a short call made from the number: +43 676 31x xxxx (interrupted immediately upon the first ringing).

1.14.5. Retaining traffic data

Subject to Article 181 of the Law on Electronic Communications, the operator shall in its network and at its own costs retain particular data on traffic data (for successful and unsuccessful call attempts), as well as relevant data required for identification and registration of subscribers to the extent to which such data were generated to provide technical and organizational conditions which enable relevant state bodies to take over the retained data on traffic. Categories of retained data from Article 182(1) of the Law on Electronic Communications are defined in more details by the Rulebook on Technical and Organizational Conditions for taking over retained data ("Official Gazette of Montenegro" 54/15) and by the Directive on Categories of Data of Electronic Communications ("Official Gazette of Montenegro" 52/14), which are to be retained.

Reasons for incomplete performance of required technical and organizational conditions which enable relevant state bodies to take over retained data on traffic and location, as well as required data for identification and registration of subscribers, were overcome by the Rulebook on amendments to the Rulebook on technical and organizational conditions for taking over retained data ("Official Gazette of Montenegro" No. 59/16); this is supported by the opinion of the Agency for Personal Data Protection and Free Access to Information (No. 06-11-2273-3/16 as of 3 June 2016), giving reply to the question of the operators asking to which relevant state bodies i.e. relevant state governing bodies the operators shall proceed retained data, respecting positive regulations of Montenegro.

The operators of electronic communications: Telenor, Mtel, Crnogorski Telekom and Telemach submit retained data by electronic means to competent state bodies, in accordance with the Law. In 2021 there were complaints by the state bodies on retaining and receipt of retained data, which regarded the issue that the operators do not provide them with all data prescribed by the Rulebook and Directive (MAC address and time advance). After the supervision, the operators were instructed by the supervisor to provide necessary technical and organizational conditions to allow retaining of "MAC addresses" and "time advance" data, and the manner for retaining data on the IP addresses.

2. IMPOSED REGULATORY MEASURES

2.1. Analysis of relevant markets with the aim of assessing the level of market competitiveness

The Agency carries out procedure for analysing relevant markets with a view of assessing level of market competitiveness. The main goal of the analysis of relevant markets is to determine presence of the operators with individual or collective market power in the relevant market. The Agency imposes regulatory remedies to the operators with significant market power if the method of analysis and/or the Three- Criteria Test defines that the competition in the relevant market is not efficient, or the Agency withdraws the remedies, if otherwise determined. Furthermore, the Agency monitors the implementation prescribed regulatory remedies by the operators with significant market power.

2.1.1. The European Union regulatory framework for electronic communications

The European Union regulatory framework for electronic communications aims to provide unhindered accomplishment of efficient functioning of the European single market of electronic communications networks and services. Today, this framework represents regulatory model which is accepted as the best-known model, even in many non-EU countries.

Five directives were included in Regulatory Framework 2002:

- Access Directive 2002/19/EC on access to, and interconnection of electronic communications networks and associated facilities ("Access Directive")¹⁰,
- Authorization Directive 2002/20/EC on authorization of electronic communications networks and services ("Authorization Directive")¹¹,
- Framework Directive 2002/21/EC on common regulatory framework for electronic communications networks and services ("Framework Directive")¹²,
- Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services ("Universal Service Directive")¹³,
- Directive 2002/58/EC on protection of privacy and secrecy of communications in the electronic communications sector ("Directive on privacy in electronic communications")¹⁴.

⁰ Directive 2002/19/EC Access directive (OJ of the ECL 108/7 from 24.02.2002)

¹ Directive 2002/20/EC Authorisation directive (OJ of the ECL 108/21 from 24.02.2002)

² Directive 2002/21/EC Framework directive (OJ of the ECL 108/33 from 24.02.2002)

³ Directive 2002/22/EC Universal service directive (OJ of the ECL 108/51 from 24.02.2002)

⁴ Directive 2002/58/EC Directive on privacy and electronic communications (OJ of the ECL 201/37 from 31.07.2002)

The European Commission published in 2002 Commission guidelines on market analysis and the assessment of the status of the SMP operator and introduction of regulatory measures¹⁵. By introducing the above-mentioned guidelines, the main intention was to support harmonization while implementing regulatory principles and ensuring consistency of regulation. The use of consistent methodology for market definition and analyses would ensure that most of the markets defined for the needs of sector-specific regulation comply with definitions which would be applied according to the rules for the protection of competition.

As referred to in Article 15 of the Framework Directive (Directive 2002/21/EC), European Commission adopted following recommendations on relevant markets in the field of electronic communications:

- Recommendation (2003/311/EC)¹⁶ dated on 11 February 2003, on relevant markets in the field of electronic communications, including 18 markets subject to ex-ante regulation,
- Recommendation (2007/879/EC)¹⁷ dated on 17 December 2007, on relevant markets in the field of electronic communications, including 7 markets subject to ex-ante regulation.

At the initiative of the European Commission, in December 2009 the European Parliament and EU Council of Ministers adopted new Regulatory Framework in the field of electronic communications, which includes two directives and one regulation, as follows:

- Regulations 1211/2009 of the European Parliament and European Council regarding the establishment of the Body of European Regulators for Electronic Communications (BEREC)¹⁸,
- Directives 2009/136/EC of the European Parliament and European Council¹⁹ on changing Directive 2002/22/EC on universal service, Directive 2002/58/EC on using personal data, and Rulebook No. 2006/2004 on the cooperation of national authorities competent for implementation of legislation on protection of user rights,
- Directive 2009/140/EC of the European Parliament and European Council²⁰ on amending Directive 2002/21/EC regarding common framework, Directive 2002/19/EC on the access and interconnection, and Directive 2002/20/ EC on issuing approvals for networks and services.

⁵ Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (OJ of the ECC 165/6 from 11.07.2002)

⁶ Commission recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European parliament and of the Council on a common regulatory framework for electronic communication networks and services (OJ of the EC L 114/456 from 08.05.2003)

⁷ Commission recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services.

⁸ Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009, establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office

⁹ Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009, amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws

²⁰ Directive 2009/140/EC of the European Parliament and of the Council of 25 November 2009, amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services

The European Commission Recommendation on relevant markets subject to ex-ante regulation (2014/10/EU) was adopted on 9 October 2014. As defined by that Decision, five wholesale markets are subject to ex-ante regulation.

At the end of 2018, the European Union adopted the rules of the EU regarding electronic communications with a view to promote fast deployment of 5G technologies and other next generation technologies, throughout Europe, promoting the latest innovations and strengthening consumers protection in the field of electronic communications. Two legislative acts were adopted:

- Regulation (EU) 2018/1971 of the European Parliament and Council dated 11 December 2018, regarding foundation of Body of European Regulators for Electronic Communications (BEREC) and the Agency for BEREC support (BEREC Office), amending the Regulation (EU) 2015/2120 and Regulation (EC) No 1211/2009, and
- Directive (EU) 2018/1972 of the European Parliament and Council dated 11 December 2018 on the European framework of electronic communications.

The European Commission adopted the directives for market analysis and assessment of the significant market power based on the EU regulatory framework for electronic communications networks and services (2018/C 159/01)²¹.

On 18 December 2020, the European Commission adopted the Recommendation (EU) 2020/2245²² on the relevant markets in the electronic communications sector subject to ex ante regulation in accordance with the Directive (EU) 2018/1972 of the European Parliament and Council of December 11, 2018, on the European Electronic Communications Code. Two relevant service markets are defined by the Recommendation.

2.1.2. Legal grounds for conducting the process of defining and analyzing relevant markets in Montenegro

The Law on Electronic Communications, Chapter VI - Protection of competition in electronic communications, stipulates criteria and methods for determining the presence of operators with significant market power in the relevant market, the process of market analysis, identification and definition of relevant markets and imposition of appropriate regulatory measures imposed on the operator with significant market power in the relevant market.

An important remedy to this Chapter of ZEK refers to new regulatory remedies of functional separation of the activities related to the provision of certain wholesale services of the access to separate business unit (Article 79), which the Agency may impose on vertically integrated operator, provided that implementation of regulatory remedies has not resulted in effective market competition and if there are significant and persistent barriers to market competition or gaps in the market regarding provision of certain wholesale access services on the relevant access market. By ZEK is also defined an obligation of notifying the Agency in the event of voluntary separation of vertically integrated operator (Article 80).

²¹ Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services (Text with EEA relevance) (2018/C 159/01)

²² COMMISSION RECOMMENDATION on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code {SWD (2020) 337 final

2.1.3. Monitoring the implementation of regulatory obligations imposed to operators with significant market power, in accordance with the Agency's decisions on relevant markets

During 2021, the Agency was monitoring the implementation of measures and obligations imposed by decisions from previous years, which determined significant market power operators upon performed relevant market analysis.

2.1.3.1. Relevant market analysis in accordance with the Agency's decision on relevant markets ("Official Gazette of Montenegro" No.2/17)

At the beginning of 2017, the Agency made a decision on the relevant markets, in accordance with the European Commission Recommendation on the relevant markets subject to ex-ante regulation (2014/10/EU), after the consultations were made, the Agency adopted Decision on the relevant markets:

- Wholesale market for call termination in the fixed telephony on its own telephone network provided at a fixed location;
- Wholesale market for call termination on its own mobile telephone network;
- Wholesale local access provided at a fixed location;
- Wholesale central access provided at a fixed location for the products intended for the mass market;
- Wholesale high-quality access provided at a fixed location.

Wholesale market of call termination on its own telephone network, provided at a fixed location

On the wholesale market of call termination on its own telephone network, provided at a fixed location, in the period covered by the analysis, four operators were present: Crnogorski Telekom, Mtel, Telemach and Telenor. The analysis proved that on the observed market there is no substitution in the field of demand and supply, neither eventual competition. Based on that, the Agency determined that the relevant market includes:

- Wholesale market of call termination on a public communications network provided at a fixed location of Crnogorski Telekom regardless of location of the call initiation,
- Wholesale market of call termination on a public electronic communications network provided at a fixed location of Mtel regardless of location of the call initiation,
- Wholesale market of call termination on a public electronic communications network provided at a fixed location of Telemach regardless of location of the call initiation, and
- Wholesale market of call termination on a public network provided at a fixed location of Telenor regardless of location of the call initiation.

Furthermore, the Agency defined relevant market in the geographical dimension – territory of Montenegro, intended for a wholesale service of call termination on its own telephone network provided at a fixed location and offered by previously mentioned operators of fixed networks.

Bearing in mind a relative power of the operators and eventual barriers in the development of the market competition, the Agency imposed the following obligations on the operators with significant market power: For Crnogorski Telekom:

- Obligation of data disclosure;
- Obligation of providing non-discrimination;
- Obligation of keeping accounting records;
- Obligation of accessing network elements and their use, and
- Obligation of price control and keeping cost accounting.

For Mtel, Telemach and Telenor:

- Obligation of data disclosure;
- Obligation to ensure non-discrimination;
- Obligation to access network elements and their use, and
- Price control obligation.

Crnogorski Telekom, as the operator with significant market power on the relevant market of call termination at its own fixed telephone network and call origination from its own public fixed telephone network, in accordance with the Agency Decision from 18 March, 2021, decreased prices of the following relevant services:

- Wholesale price of national termination, by 10%, and
- Wholesale price of national origination, by 10%.

Telenor, Mtel and Telemach, as SMP operators on the relevant market of call termination in their own telephone networks provided at fixed locations, in line with the Agency's decisions made in 2021, have applied identical i.e. symmetrical wholesale prices of call termination on their own networks, as the ones applied by Crnogorski Telekom.

SMP operators on that relevant market have applied the prescribed unit price since May 1, 2021, and in line with that they have revised their reference interconnection offers.

During 2021, the Agency monitored the implementation of the imposed regulatory measures.

Wholesale market of call termination on its own telephone network, provided at a fixed location

On the market of call termination on its own mobile telephone network, in the whole period of the Analysis, three operators are present: Crnogorski Telekom, Telenor and Mtel. Analysis of a wholesale market of call termination on its own mobile telephone network has been divided into several parts. The first part tries to define relevant market. The procedure of defining includes the analysis of substitution at the part of the supply, the analysis of substitution at the part of the demand, identifying the presence of possible competition and determining geographical dimensions of the market. The analysis proved that there had been neither substitution on the part of the demand and supply, nor possible competition. Relying on the here said, the Agency defined 3 relevant markets of a wholesale call termination on its own mobile telephone network:

- Call termination on Telenor network regardless of the network of call initiation;
- Call termination on Crnogorski Telekom network regardless of the network of call initiation, and
- Call termination on Mtel network regardless of the network of call initiation.

Furthermore, the Agency defined relevant market in the geographical dimension – territory of Montenegro, intended for a wholesale service of call termination on its own mobile telephone network.

For identified SMP operators, considering a relative power of the operators and eventual barriers in the development of the market competition, the Agency defined the following obligations on the operators with significant market power:

- Obligation of data disclosure;
- Obligation of accessing network elements and their use;
- Obligation of providing non-discrimination;
- Obligation of keeping separate accounting records;
- Obligation of price control and keeping cost accounting.

Upon verification of cost model results, according to CCA/LRIC methodology for mobile networks, the Agency, by its Decision of 04.02.2021 imposed to Crnogorski Telekom, Telenor and Mtel to reduce the prices of call termination on mobile networks by 7.46%.

SMP operators on that relevant market applied the prescribed unit price since 1 March, 2021, and in line with that they revised their reference interconnection offers.

On that relevant market, SMP operators have applied prescribed unit price as from May 1, 2021, and in accordance with that they revised their reference interconnection offers.

The Agency monitored the implementation of imposed regulatory remedies in 2021.

Wholesale market of call termination provided at its own mobile telephone network

On the market of call termination at its own mobile telephone network, throughout the analysis three operators were present: Crnogorski Telekom, Telenor and Mtel. Relying on the here-said, the Agency determined the following to be comprised by that relevant market:

- Call termination on Telenor network regardless of network of call initiation;
- Call termination on Crnogorski Telekom network regardless of network of call initiation, and
- Call termination on Mtel network regardless of network of call initiation.

Furthermore, the Agency defined relevant market in the geographical dimension – territory of Montenegro, intended for a wholesale service of call termination on its own mobile telephone network.

For identified SMP operators, considering relative power of the operators and possible barriers in the development of the market competition, the Agency defined the following obligations on the operators with significant market power:

- Obligation of data disclosure;
- Obligation of accessing network elements and their use;
- Obligation of providing non-discrimination;
- Obligation of keeping separate accounting records;
- Obligation of price control and keeping cost accounting.

Upon cost model results verification according to CCA/LRIC methodology for mobile networks, the Agency, in its Decision dated 04.02.2021, imposed to Crnogorski Telekom, Telenor and Mtel to reduce the prices of call termination on mobile networks, by 7.46%.

On that relevant market, SMP operators apply prescribed unit price as from 01.03.2021, and in accordance with that they revised their reference interconnection offers.

In 2021 the Agency monitored the implementation of imposed regulatory remedies.

Wholesale local access provided at a fixed location

Based on the conducted analysis, the Agency concludes that relevant wholesale market of local access provided at a fixed location, includes:

- Service of access to unbundled local loop and local sub-loop, according to copper pair;
- Service of access to local loop according to optical fiber;
- Service of local access provided by Crnogorski Telekom for its own needs.

The Agency also defined relevant wholesale market of local access provided at a fixed location, in geographical dimensions – territory of Montenegro.

Upon determining SMP operator (significant market power operator), the Agency imposed on Crnogorski Telekom as the operator with significant market power, the following obligations:

- Obligation of data disclosure, with obligation of changing and issuing reference interconnection offer;
- Obligation of providing non-discrimination;
- Obligation of maintaining separate accounting records;
- Obligation to provide the access to network elements and their use, and
- Obligation of price control and keeping cost accounting.

The Agency monitored the implementation of imposed regulatory remedies during 2021.

Wholesale central access provided at a fixed location for the mass-market products

Based on the conducted analysis, the Agency concluded that relevant market of a wholesale central access provided at a fixed location for the mass market products includes the following services, regardless of the technology used:

- Bitstream ADSL service, with the points of traffic download between the operator providing the service and the provider using the service:
 - Access point at the IP level,
 - Access point at the Ethernet level,
 - Access point at the DSLAM/OLT or at an appropriate point;
- ADSL access service provided by Crnogorski Telekom for its own needs.

Also, referring to conducted analysis, the Agency determined that relevant market of the wholesale central access provided at a fixed location for the mass market products, is in geographical dimension of the whole territory of Montenegro.

Upon designating Crnogorski Telekom to be SMP (significant market power) operator, the Agency imposed on Crnogorski Telekom, the following regulatory obligations:

- Obligation of data disclosure, with an obligation of changing and issuing reference interconnection offer;
- Obligation of providing non-discrimination;
- Obligation of maintaining separate accounting records;
- Obligation of providing the access to the network elements and their use, and
- Obligation of price control and keeping cost accounting.

Following the Agency's Decision dated 18.03.2021, Crnogorski Telekom was imposed to reduce wholesale monthly fees, according to the following:

- Bitstream service for ADSL FI@t 5 package, by 25%;
- Bitstream service for ADSL FI@t B4 package, by 15%;
- Bitstream service for ADSL FI@t B8 package, by 40%;
- Bitstream service for FI@t B10 package, by 45%.

During 2021, the Agency monitored the implementation of imposed regulatory remedies.

Wholesale high quality access provided at a fixed location

Based to the conducted procedure of definition, the Agency determined that relevant market of wholesale high quality access provided at a fixed location within dimension of service, had involved publicly offered

service of leased lines offered to other operators, entailing traditional leased lines and Ethernet leased lines, regardless of transmission capacity and medium used for transport, comprised of the following services:

- Services of wholesale leased lines;
- Services of the part of wholesale leased lines, and
- Services of leased lines provided by operators for their own purposes.

Furthermore, the Agency defined relevant geographic market for the provision of subject services within national borders, considering that main competition requirements, legal and regulatory frameworks and pricing policy are equal on the whole territory of Montenegro.

After the analysis of relevant market, the Agency concluded that Crnogorski Telekom is the operator with significant market power on that relevant market, and imposed it the following regulatory remedies:

- Obligation of data disclosure;
- Obligation to ensure non-discrimination;
- Obligation of maintaining separate accounting records;
- Obligation of providing the access to the network elements and their use, and
- Obligation to control the prices and maintain the cost accounting.

As the operator with significant market power on the relevant wholesale market of high-quality access provided at a fixed location, following Agency's Decision dated on March 18, 2021, Crnogorski Telekom has applied unit prices of the wholesale terminal and trunk segments of the leased lines, decreased by 45%.

The Agency monitored the implementation of imposed regulatory remedies during 2021.

2.1.3.2. Analysis of relevant markets in accordance with the Agency's Decision on relevant service markets that are subject to verification of the fulfillment of the Three Criteria Test with the aim of proving the justification for further application of ex-ante regulation ("Official Gazette of Montenegro", 31/19)

The Agency Council, on its meeting held on May 28, 2019, adopted decision on relevant service markets that are subject to verification of the fulfillment of the Three Criteria Test with the aim of proving the justification for further application of ex-ante regulation ("Official Gazette of Montenegro", 31/19).

According to the Decision, the following relevant markets of services on which the Agency carried out fulfilment of Three Criteria Test are:

- 1) Retail market of the access to public telephone market at a fixed location, for physical and legal persons;
- 2) Retail market of the access to publicly available service of local and intercity calls for legal and physical persons, provided at a fixed location;
- 3) Retail market of publicly available international call service for legal and physical persons, provided at a fixed location;
- 4) Wholesale market of the market of calls originating from public fixed telephone network;
- 5) Wholesale market of access and call origination from public mobile telephone networks.

Retail market of access to public telephone network at a fixed location, for physical and legal persons

After performing the analysis of substitution level on the demand side, substitution level on the side of supply and analysis of potential competition pressures, the Agency concludes that the following relevant in the scope of this relevant market are services:

- Service of access to public telephone network provided at a fixed location for physical and legal persons, provided through POTS connections, notwithstanding the mentioned access, is offered separately or as a part of the service package,
- Service of access to public telephone network provided at a fixed location for physical and legal persons, provided through ISDN connections, notwithstanding the mentioned access is offered separately or as a part of the service package,
- Service of access to public telephone network provided at a fixed location for physical and legal persons, provided through IP Internet Protocol (IP), notwithstanding the mentioned access is offered separately or as a part of the service package,
- Service of access to public telephone network provided at a fixed location for physical and legal persons, provided through cable networks, notwithstanding the mentioned access is offered separately or as a part of the service package,
- Service of access to public telephone network provided at a fixed location for physical and legal persons, provided through wireless networks in a fixed network, notwithstanding the mentioned access is offered separately or as a part of the service package.

The Agency determined that retail market of access to public telephone network at a fixed location for legal and physical persons in Montenegro is the entire territory of Montenegro in the geographical dimension.

During control with Three Criteria Test, the Agency concluded that all three criteria were cumulatively fulfilled on that relevant market, and conducted market analysis procedure. In the market analysis procedure, the Agency determined Crnogorski Telekom as the SMP operator and imposed it the following regulatory remedies:

- Obligations at the wholesale level:
 - Obligation of having the right to choose/pre-choose the operator:
 - a) Obligation of data disclosure,
 - b) Obligation of providing non-discrimination,
 - c) Obligation of price control and cost accounting,
 - d) Obligation of keeping separate accounting records.
 - Obligation of leasing the lines at the wholesale level:
 - a) Obligation of data disclosure,
 - b) Obligation of providing nondiscrimination,
 - c) Obligation of price control and cost accounting,
 - d) Obligation of keeping separate accounting records.
- Obligations at the retail level:
 - Obligation of keeping separate accounting record.
 - Obligation of regulation of the prices of retail services,
 - a) Prohibition of calculating over-pricing,
 - b) Prohibition of obstructing market entry,
 - c) Prohibition of restricting competition by introducing underpricing,
 - d) Prohibition of giving unduly advantages to certain end user,
 - e) Prohibition of unduly connection of certain services.

The above measures are imposed respecting the principles of proportionality and rationality as referred to in Article 69(3) of the Law.

The Agency monitored the implementation of imposed regulatory remedies during 2021.

Retail market of publicly available service of local and intercity calls for legal and physical persons, provided at a fixed location

After performing analysis of the substitution level on the demand side, substitution level on the side of supply and analysis of potential competition pressures, the Agency concluded that in the scope of this relevant market are also included the following relevant services:

1. Calls to geographic numbers (to national fixed networks),
 - Calls to the numbers in national mobile electronic communications networks, weather the main subject is standard publicly available telephone service, calls through the service of selection and pre-selection of the operator, administered VoIP calls providing separate virtual channel for voice transmission, or the service provided via WiMAX technology.

The Agency established that retail market is the entire territory of Montenegro in the geographical dimension.

During the Three Criteria Test, the Agency concluded that all three criteria were cumulatively fulfilled on that relevant market, and conducted market analysis procedure. In the market analysis procedure, the Agency determined Crnogorski Telekom as the SMP operator and imposed on it the following regulatory remedies:

- Obligations at the wholesale level:
 - Obligation of having the right to choose/pre-choose the operator:
 - a) Obligation of data disclosure,
 - b) Obligation of ensuring non-discrimination,
 - c) Obligation of price control and cost accounting,
 - d) Obligation of keeping separate accounting records.
 - Obligation of leasing the lines at the wholesale level:
 - a) Obligation of data disclosure,
 - b) Obligation of providing non-discrimination,
 - c) Obligation of price control and cost accounting,
 - d) Obligation of keeping separate accounting records.
- Obligations at the retail level:
 - Obligation of keeping separate accounting records,
 - Obligation of regulation of the prices of retail services,
 - a) Prohibition of calculating over-pricing,
 - b) Prohibition of obstructing market entry,
 - c) Prohibition of restricting competition by introducing underpricing,
 - d) Prohibition of giving unduly advantages to certain end user,
 - e) Prohibition of unduly connection of certain services.

Upon cost model results verification according to CCA/LRIC methodology for fixed networks, according to Agency's Decision dated 18.03.2021, Crnogorski Telekom was in obligation to reduce the prices of that relevant market, according to the following:

- Call services to mobile networks, by 30%, and
- Call services to other fixed networks, by 15%.

Crnogorski Telekom has applied unit prices determined by Decision, as from 01.05.2021.

Retail market of publicly available service of international calls for legal and physical persons, provided at a fixed location

The Agency has determined that the following relevant services are also included in the relevant market:

- Calls to geographic numbers (to international fixed networks),
- Calls to the numbers in international mobile electronic communications networks, whether the main subject is standard publicly available telephone service, administered VoIP calls providing separate virtual channel for voice transmission (with voice transmission provided via Internet Protocol, which is completely transmitted through the operator's network, while providing special virtual voice channel), or it is the service provided via WiMAX technology.

The Agency established that retail market is the entire territory of Montenegro in the geographical dimension.

By applying Three Criteria Test, the Agency concluded that all three criteria are cumulatively fulfilled on this relevant market, and after that conducted the procedure of market analysis. Based on certain criteria as referred to in Article 68 of ZEK (Law on Electronic Communications), the Agency determined Crnogorski Telekom to be SMP operator on the relevant market "Retail market of the services of international calls provided at a fixed location, for legal and physical persons".

With reference to obstacles on the market competition development which may occur on the relevant market, the Agency imposed to Crnogorski Telekom the following regulatory remedies:

- Obligations at the wholesale level:
 - Obligation of having the right to choose/pre-choose the operator:
 - a) Obligation of data disclosure,
 - b) Obligation of providing non-discrimination,
 - c) Obligation of price control and cost accounting,
 - d) Obligation of keeping separate accounting records.
 - Obligation of leasing the lines at the wholesale level:
 - a) Obligation of data disclosure,
 - b) Obligation of providing non-discrimination,
 - c) Obligation of price control and cost accounting,
 - d) Obligation of keeping separate accounting records.
- Obligations at the retail level:
 - Obligation of keeping separate accounting records,
 - Obligation of regulation of the prices of retail services,
 - a) Prohibition of calculating over-pricing,
 - b) Prohibition of obstructing market entry,
 - c) Prohibition of restricting competition by introducing underpricing,
 - d) Prohibition of giving unduly advantages to certain end user,
 - e) Prohibition of unduly connection of certain services.

Upon cost model results verification according to CCA/LRIC methodology for fixed networks, according to the Agency's Decision of 18.03.2021, the Agency imposed to Crnogorski Telekom to reduce the prices of that relevant market, according to the following:

- services of international calls to fixed networks of Zone II, by 20%;
- services of international calls to fixed networks of Zone III, by 20%;
- services of international calls to fixed networks of Zone IV, by 40%, and

- services of international calls to mobile networks of zone IV, by 30%.

Crnogorski Telekom has applied unit prices determined by Decision, as from 01.05.2021.

Wholesale market of calls originating from public fixed telephone networks

After performing analysis of substitution level on the demand side, substitution level on the side of supply and analysis of potential competition pressures, the Agency concludes that in the scope of this relevant market are also the following relevant services:

- Service of call originating from the network of all operators for the purpose of termination on the numbers of end users, including origination provided for their own needs;
- Service of call origination for the services of selecting the operator;
- Service of call origination for the access to numbers of operators, to numbers for the value-added services, services delivered by special services, emergency services and services of social importance in the network of another operator.

The Agency established that retail market is the entire territory of Montenegro in the geographical dimension.

The Agency determined national territory of Montenegro to be the relevant market within geographic dimensions.

By applying Three Criteria Test, the Agency concluded that all three criteria are cumulatively fulfilled on that relevant market and after that conducted market analysis procedure. The Agency determined Crnogorski Telekom to be SMP operator on that relevant market and imposed on it the following remedies:

During 2021 the Agency monitored implementation of imposed regulatory obligations.

Wholesale market of access to and call origination from public mobile telephone networks

After conducted analysis of the substitution level on the demand side, substitution level on the side of supply and analysis of potential competition pressures, the Agency concludes that within this relevant market are also included the following relevant services:

- Service of enabling every kind of the access by mobile network operator;
- Service of access for its own purposes and service of call origination from its own network and from the networks of other operators provided for their own needs.

Relevant market of call origination is single market for all mobile network operators and it includes call origination from mobile networks, whether the call is made from mobile device supporting 2G, 3G or 4G technology. The Agency established that retail market is the entire territory of Montenegro in the geographical dimension for the access services and call origination from public mobile communications networks offered by Crnogorski Telekom, Telenor and Mtel.

By applying Three Criteria Test, the Agency concluded that all three criteria are cumulatively fulfilled on that relevant market and after that conducted market analysis procedure. The Agency determined Crnogorski Telekom, Telenor and Mtel to be SMP operators on that relevant market and imposed on it the following remedies:

- Obligation of data disclosure;
- Obligation of providing non-discrimination;
- Obligation of keeping separate accounting records;
- Obligation of providing the access to network elements and of their use;

- Obligation of price control and keeping cost accounting.

Upon verification of the results of cost models according to CCA/LRIC methodology for mobile networks, on February 4, 2021, the Agency made Decision on imposing on Crnogorski Telekom, Telenor and Mtel to reduce the prices of the service of call origination from mobile networks, by 7.46%.

SMP operators on that relevant market applied prescribed unit price as from March 1, 2021, and in line with that they revised their reference interconnection offers.

2.1.4. Activities on analyses of relevant markets in 2021 in accordance with the Agency's decision on re-initiating analysis of relevant markets

The Agency Council, on its meeting held on March 18, 2021, made decision on initiation of re-evaluation of relevant markets ("Official Gazette of Montenegro", 32/21). Before adopting subject decision, pursuant to Article 65 of the Law, the Agency provided positive opinion of the Agency for Protection of Competition, act no: 01-354/21-177/4 of 15.03.2021, on the reasonableness of initiation of re-evaluation of the market analysis. Relevant markets defined by the Agency's decision ("Official Gazette of Montenegro", 32/21) were subject of the analysis completed in 2017, respecting the decision on relevant markets ("Official Gazette of Montenegro", 2/17), strictly respecting Article 64(4) of the Law on Electronic Communications prescribing that the Agency shall conduct the procedure of relevant market analysis at least once in a three-year period.

A list of relevant markets is determined by the Agency's decision on relevant markets, in accordance with the European Commission Recommendation 2014/710/EC on relevant markets in the sector of electronic communications subject to ex-ante regulation, and not in accordance with valid Recommendation of the European Commission regarding the services of relevant markets, dated on December 18, 2020, considering that valid Law on Electronic Communications includes transposed provisions of the EU regulatory framework from 2009.

Relevant markets determined by the Agency's Decision are the following:

- Wholesale market of call termination on its own telephone network provided at a fixed location;
- Wholesale market of call termination on its own mobile telephone network;
- Wholesale market of local access provided at a fixed location;
- Wholesale central access provided at a fixed location for the mass market products;
- Wholesale high-quality access provided at a fixed location.

Chronological order of the Agency's activities in the procedure of relevant market analysis

At the session of January 28, 2021, the Agency Council adopted the Draft Decision on the initiation of the reanalysis procedure on relevant service markets, in accordance with the Decision on Relevant Markets from 2017 ("Official Gazette of Montenegro", 2/17), pursuant to Article 64(4) of ZEK which defines the obligation of the Agency to conduct the procedure of relevant market analysis at least once in a three-year period.

During public consultation procedure on Draft Decision on initiating re-evaluation of the analysis on the relevant markets of services, which lasted till 01.03.2021, only Crnogorski Telekom submitted the comments on Draft Decision.

Upon receiving the Opinion No. 01-354/21-177/4 dated 15.03.2021 of the Agency for Protection of Competition, the Agency Council adopted Decision on initiating the procedure of reanalysis on the relevant markets of services ("Official Gazette of Montenegro", 32/21).

The questionnaires for the operators, specifying technical, statistical, operational and financial data covering the period of the last three years (2018-2020) were prepared (on a half-yearly basis), and were necessary to carry out the procedure for determining and analyzing relevant markets.

The Agency Council, at the session held on October 28, 2021, adopted Draft Analysis of the relevant markets, pursuant to Article 65(2) of the Law on Electronic Communications ("Official Gazette of Montenegro", 40/13, 56/13, 2/17 and 49/19), in the period 29.10-29.11.2021, the Agency conducted public consultations procedure. In the public consultation procedure were received the remarks, comments and suggestions from Crnogorski Telekom and Crnogorski Elektroprenosni sistem. The Agency for Protection of Competition of Montenegro submitted its explanation and opinion No: 04-354/21-866/4 dated 22.11.2021, regarding the texts of draft relevant market analysis, subject of public consultations, where, within its competences, completely agreed with submitted draft documents.

The report on conducted consultation process regarding draft analysis of three relevant markets accompanied with the Agency's replies was adopted on the Council session, on 13.01.2022, and published on the Agency's web site. At its session held on 20.01.2022, the Agency Council made decision on adopting the relevant market analysis ("Official Gazette of Montenegro" No. 9/22), and adopted final texts of three analysis of relevant markets, as well as an overview of the Agency's replies with detailed professional analysis of the operators' remarks, comments and suggestions, and the reasons why they accepted or did not accept them, accompanied with explanations.

At the session held on 17.02.2022, the Agency Council made decisions on the designation of SMP operator in the following relevant markets:

- Wholesale market of call termination on its own telephone network provided at a fixed location;
- Wholesale market of call termination on its own mobile telephone network;
- Wholesale high-quality access provided at a fixed location.

2.2. Project of accounting separation and cost accounting

2.2.1. Legal grounds for fulfilling the obligations of accounting separation and cost accounting

After the process of relevant market analysis has been conducted, in accordance with ZEK, (Law on Electronic Communications), the Agency may also impose on the operator with significant market power regulatory to implement at least one of the measures as referred to in Article 71 – 78 of ZEK.

- Obligation of data disclosure;
- Change of the reference offer;
- Obligation of providing non-discrimination;
- Keeping separate accounting records;
- Access to network elements and their use;
- Price control and keeping cost accounting;
- Control of carrying out the measures;
- Regulation of the prices of retail services.

Keeping separate accounting records and price control, and keeping cost accounting are stipulated by Article 74 (refers to the measure of keeping separate accounting records), Article 76 (refers to the measure of price control and keeping cost accounting), and Article 77 (refers to the measure of control of carrying out the measures) of ZEK.

2.2.2. The purpose for introducing the measures of keeping separate accounting records and cost accounting

SMP operator may undermine the principle of equal market conditions in several ways: overcharging the wholesale services, by discrimination while determining the prices, mutual subsidization and predatory pricing. By these actions, SMP operator may limit the competition and prevent the operators from entering the market. Accounting separation is the most common instrument used for determining the activities which disable the market competition. The implementation of accounting separation does not impose on SMP operator the rules or the recommended business organization, but only the contents and form of collecting accounting information and regulatory reporting. In order to prevent discrimination on the market and to enable monitoring of the profitability of certain market segments or services provided by SMP operator, as well as to ease determination of mutual subsidizing, it is necessary to define unequivocally the prices, i.e. the fees for transfer services between certain business segments of SMP operators. Accounting separation will thus enable supervision of the model of cost allocation at the retail and wholesale level.

The purpose of introducing the obligation of price control and keeping cost accounting is to provide equal, transparent criteria and the criteria which promote competition, and which should be applied by SMP operator during cost allocation to the services it provides.

In line with the above said, cost accounting refers to the group of rules and procedures ensuring allocation of costs, income, assets, obligations and capital to certain activities and services, particularly considering direct and indirect costs.

Cost accounting model defines the mechanism of monitoring of and keeping accounting records, identification and monitoring of operational costs, as are the costs of maintenance of facilities, which will result in transparent cost-price relation of certain services. Cost accounting model ensures carrying out of accounting separation obligation and control of the cost orientation of the prices with a view to prevent from mutual subsidizing, overcharges or from inefficient behavior of SMP operator.

Obligation of price control and keeping cost accounting are introduced both for the wholesale and retail market, in order to ensure implementation methodology of certain cost accounting model, i.e. SMP operators on relevant market should be provided with acceptable income rate on the capital engagement considering included rate of investment risk, meaning that capital cost needs to be determined as Weighted Average Cost of Capital –WAC.

As from 2013, the Agency has been the regulation procedure of the service price on relevant markets referring to the results of cost accounting and separate accounting.

2.2.3. The Agency's activities on implementation of the project of accounting separation and cost accounting in 2021

During 2021 continued the activities on implementation of the Project of accounting separation and cost accounting, in line with the dynamics defined by Methodology of accounting separation and cost accounting. Adopted Methodology of cost accounting enables implementation of cost accounting obligation, as well as verification of cost-orientation of prices in order to prevent cross-subsidies, excessive prices or inefficient behavior of SMP operators in the relevant market. Furthermore, accounting separation and cost accounting are intended to monitor the implementation of the obligations of transparency, in terms of monitoring the profitability of individual market segments, non-discrimination and transfer services between business segments.

By introducing the obligation of accounting separation, the operator with significant market power on the relevant market shall follow the content and form of collecting accounting data for regulatory reporting. These models serve as a support in taking regulatory decisions and provide reliable information for price control implementation.

2.2.3.1. Top-down cost models for 2019

On its session of 14.01.2021, the Agency Council adopted final decisions on accepting the activities performed by the operator on the project of accounting separation and cost accounting according to CCA/LRIC methodology for mobile and fixed network for 2019.

After conducting public consultations procedure, at its session of 04.02.2021, the Agency Council adopted the following decisions:

- 1) the Agency imposed on Crnogorski Telekom, Telenor and Mtel, as SMP operators on the relevant wholesale market of call termination in its own mobile network and on the wholesale market of call origination from public mobile networks, to implement the following prices, as from 1 March, 2021:
 - price of call termination on mobile network in the amount of 0.0062 €/min,
 - price of call origination from mobile network in the amount of 0.0062 €/min.

After conducting public consultations procedure, at its session of 18.03.2021, the Agency Council adopted the following decisions:

- 1) the Agency imposed on Crnogorski Telekom, as SMP operator on the relevant retail market of publicly available services of local and intercity calls for legal and physical persons provided at a fixed location, to implement the following prices, as from May 1, 2021:
 - price of call termination to all other fixed networks in Montenegro in the period of heavy traffic of 0.0257€/min, and
 - price of call service to mobile networks in the period of heavy traffic, of 0.0274€/min.
- 2) the Agency imposed on Crnogorski Telekom, as SMP operator on the relevant retail market of publicly available services of international calls for legal and physical persons, provided at a fixed location, to implement the following unit prices, as from 1 May 2021:
 - price of the call service to fixed networks of the Zone 2, in the amount of 0.0728€/min;
 - price of the call service to fixed and mobile networks of the Zone 3, in the amount of 0,0416€/min;
 - price of the call service to fixed networks of the Zone 4, in the amount of 0.1818€/min;
 - price of the call service to mobile networks of the Zone 4, in the amount of 0.3185€/min;
- 3) the Agency imposed on Crnogorski Telekom, as SMP operator on the relevant wholesale market of central access, provided at a fixed location for the mass-market products, to implement the following unit prices, as from 1 May 2021:
 - wholesale price of monthly subscription for ADSL FI@t 5 package, in the amount of od €3.88;
 - wholesale price of monthly subscription for ADSL FI@t B4 package in the amount of €3.75;
 - wholesale price of monthly subscription for ADSL FI@t B8 package in the amount of €4.27;
 - wholesale price of monthly subscription for ADSL FI@t B10 package in the amount of €4.66.
- 4) the Agency imposed on Crnogorski Telekom, as SMP operator on the relevant wholesale market of call termination in its own fixed telephone network and relevant market of call origination from its own public fixed telephone network, to implement the following unit prices, as from 1 May 2021:
 - wholesale price of national termination in the amount of 0.0044 €/min;
 - wholesale price of national origination in the amount of 0.0044€/min.
- 5) the Agency imposed on Crnogorski Telekom, as SMP operator on the relevant wholesale market of call termination in its own fixed telephone network and relevant market of high-quality access provided at a fixed location, to implement the following unit prices, as from 1 May 2021:

- wholesale price TDM LL 64 kbps 15 km, in the amount of €22.46;
- wholesale price TDM LL 64 kbps 50 km, in the amount of €22.46;
- wholesale price TDM LL 2 Mbps 2 km, in the amount of €41.07;
- wholesale price TDM LL 2 Mbps 5 km, in the amount of €50.83;
- wholesale price TDM LL 2 Mbps 15 km, in the amount of €60.21;
- wholesale price TDM LL 2 Mbps 50 km, in the amount of €82.77;
- wholesale price TDM LL 34 Mbps 2 km, in the amount of €97.52;
- wholesale price TDM LL 34 Mbps 5 km, in the amount of €106.47;
- wholesale price TDM LL 34 Mbps 15 km, in the amount of €124.24;
- wholesale price TDM LL 34 Mbps 50 km, in the amount of €203.36;
- wholesale price TDM LL 155 Mbps 2 km, in the amount of €362.21;
- wholesale price TDM LL 155 Mbps 5 km, in the amount of €403.54;
- wholesale price TDM LL 155 Mbps 15 km, in the amount of €546.84;
- wholesale price TDM LL 155 Mbps 50 km, in the amount of €1,011.28;
- wholesale price IP LL 10 Mbps 2 km, in the amount of €61.93;
- wholesale price IP LL 10 Mbps 5 km, in the amount of €68.57;
- wholesale price IP LL 10 Mbps 15 km, in the amount of €73.32
- wholesale price IP LL 10 Mbps 50 km, in the amount of €122.87;
- wholesale price IP LL 100 Mbps 5 km, in the amount of €371.03;
- wholesale price IP LL 100 Mbps 15 km, in the amount of €484.88;
- wholesale price IP LL 100 Mbps 50 km, in the amount of €897.98.

2.2.3.2. Top-down cost models for 2020

Accounting separation and cost accounting methodology for fixed networks, dated on May 30, 2011, and accounting separation and cost methodology accounting for mobile networks, dated on October 17, 2012, were based on Fully Allocated Costing – FAC, with a later transition to Long Run Incremental Costs – LRIC, whereas the cost calculation was carried out based on Historic Cost Accounting – HCA), or based on Current Cost Accounting – CCA, as a cost base.

In accordance with international practice, the Agency first applied a top-down approach when creating the cost model, where input data on costs is based on the operator's accounting data and distributed to different services based on the causal relationship between costs and services.

The Agency is obliged to calculate the weighted average cost of capital (WACC) every year in accordance with the WACC calculation methodology from 2012.

At the session held on June 24, 2021, the Agency Council adopted Decision on the value of the weighted cost of capital for 2020, which determines that the value of the weighted cost of capital before taxation is at the level of 6.91%, which when calculating the costs for providing regulated retail and wholesale services, required to be applied by operators with significant market power.

Until the end of June 2021, the operators submitted top-down cost models and regulatory accounting documentation (document on the allocation method, regulatory accounting document and regulatory financial reports accompanied with the opinion of an independent auditor).

In line with the Methodology, the operators submitted top-down cost models and regulatory accounting documentation (document on the allocation method, regulatory accounting document and regulatory financial reports with the opinion of an independent auditor). In the public tender procedure, the Agency engaged selected consultant for the provision of consulting services on supervision of the implementation of accounting separation and cost accounting bas on the CCA/LRIC Methodology for fixed and mobile networks of the operators for 2020.

The Agency is in the final phase of top-down model for 2020, and after that it will prepare the report on the supervision of the implementation of accounting separation and cost accounting, based on the CCA/LRIC methodology for the fixed and mobile networks of the operators and the decision on giving consent to the operator's activities on the implementation of cost accounting, and will initiate the price regulation.

2.2.4. Preparation and implementation of the bottom-up cost models of the Agency

In February 2019, the Agency prepared the „Feasibility Study on the Cost Models of the Agency, according to Bottom-up LRIC Methodology“, and in October of 2020, it initiated the Project „Preparation and implementation of the bottom-up LRIC cost models for the fixed and mobile electronic communications networks“, based on the „bottom-up“ approach and the Long Run Incremental Costs (LRIC) methodology, in cooperation with the selected consultant. In the „bottom-up“ approach are used data on the demand as the initial point and an efficient network which can meet subject demand by using economic and engineering rules. According to that approach the model „hypothetically rebuild“ (according to current asset prices) an efficient network that to a certain extent reflects the operator's network.

First phase of the Project which refers to initiating the Project, ie preparation of the activity plan, preparation of the questionnaire and collection of data from the operators was completed in the first quarter of 2021.

Second phase of the project covered preparation of methodology for bottom-up LRIC cost model for the fixed electronic communications network and preparation of methodology for bottom-up LRIC cost model for mobile networks, which upon conducted public consultation procedure, were adopted by the Decision made on the Council meeting held on 27.05.2021, regarding the adoption of the Methodology for preparation and implementation of bottom-up LRIC cost models.

Third phase of the preparations and testing of the cost models, considered to be the most demanding, initiated in the end of 2021. The selected consultant prepared the drafts of bottom-up LRIC models for an ideal operator for the fixed network and an ideal operator for mobile network, according to mentioned methodologies for the preparation and implementation of bottom-up LRIC cost model. That process included preparation of the model design, topology definition, definition of the components in the network and propositions on the technology applied by the operator. Draft bottom-up LRIC models contain algorithms, calculations and parameters referring to the input, data processing and calculation and model output/results. The model is based on the principals of: model linearity, consistency of formulas, integrity control and stability of the model structure.

The models are specified from entering input data, determination of cost carriers and homogeneous cost groups and their allocation to network components and regulated services. Cost bases, cost criteria, drivers of costs and volume of traffic, as well as methods of calculating depreciation were determined. The drafts of the model contain appropriate benchmarking and data and percentage factors for the ideal operator.

The selected consultant submitted the documentation for the creation and implementation of the bottom-up LRIC cost model for fixed electronic communication networks and the documentation for the creation and implementation of the bottom-up LRIC cost model for mobile electronic communication networks.

Activities are underway to harmonize the applied concepts from the Methodology in the drafts of bottom - up LRIC cost models, as well as several iterations of testing, in order to ensure that the results are consistent in the models and the formulas used.

Upon completion of the Project on the “Preparation and implementation of bottom-up LRIC cost models for the fixed and mobile electronic communications networks“, which is an important tool, and along with actual regulatory instruments, top-down cost models, the Agency will perform activities from its competences in accordance with ZEK, in a more efficient and transparent manner. Analyzing the costs from the perspective

of top-down and bottom-up methodology, the Agency will be able to make a more realistic picture, detailed information on the operators' costs and in general, have better understanding of the operators' business activities, thus ensuring higher security level in decision making in the procedure of price regulation for the services.

2.3. Margin squeeze study and implementation methodology regarding bundled services in the fixed telephony

At the end of 2019, the Agency prepared Margin squeeze feasibility study regarding bundled services in the fixed electronic communications network, and with regard to that obligation, the Agency conducted public consultations procedure and adopted the subject study.

Feasibility Study on the margin squeeze and methodology for its implementation regarding bundled services in the fixed electronic communications networks, comprises the following parts:

- "Margin squeeze" test – defining the term "Margin Squeeze", and explaining different elements of margin squeeze test. Pre-conditions to be met in order to determine whether it is necessary to perform the margin squeeze test. At the end, the principles for margin squeeze test implementation are described in the ex-ante and ex-post context;
- Implementation of the margin squeeze test – explaining how margin squeeze test is implemented. Besides, the elements which should be considered during implementation of margin squeeze test are stated as are the advantages and disadvantages in different approaches for individual elements;
- Overview of the European Union Regulatory framework based on which is implemented margin squeeze test in the electronic communications sector, giving an overview relevant EU regulation based on which is implemented margin squeeze test;
- Experience in implementation of margin squeeze test in the EU countries and in neighboring countries – giving an overview of the situations concerning implementation of margin squeeze test in these countries, with an overview of the market i.e. services undergoing the tests;
- The analysis of actual situation of price regulation in the electronic communications sector – giving an overview of the current situation with regard to price regulation on the relevant markets in Montenegro implemented by the Agency;
- Proposed approach – analyzing certain methodology issues to be applied in the margin squeeze methodology, regardless of technology (e.g. copper or fiber optics) used for the provision of the retail products undergoing the test. Moreover, certain proposals have been given for the implementation of margin squeeze test.

2.4. The activities on implementation of the Agreement on reducing the prices of roaming services in public mobile communications networks in the Western Balkans region

Government representatives of the Western Balkan countries – WB6 (Albania, Bosnia & Herzegovina, Montenegro, Kosovo, North Macedonia and Serbia) within the Digital Strategy for the Western Balkans shall work on reducing the prices of international roaming services in the above countries, in accordance with the EU Regulation. In line with the goals and priorities defined by Digital Agenda for the Western Balkans, and in coordination with the Regional Coordination Council and with participation of the EC Directorate General for Communications Networks, Content and Technology (DG Connect) and Directorate General for Neighborhood and Enlargement Negotiations, were carried out the activities on the compliance of the new Agreement on reducing the prices of roaming services in the public mobile communications networks in the Western Balkans region. The Agreement is in its greatest part in compliance with the relevant EU Regulative in this field, and especially with: the EU Regulation No 2015/2120 and the EU Regulation No 2017/920.

The Agreement on reducing the prices of roaming services in the public mobile communications networks in the Western Balkans region was signed on 4 April 2019 in Belgrade, between the ministries of the bodies competent for the field of electronic communications of the following countries: Albania, Montenegro, Kosovo, Republic of North Macedonia and Republic of Serbia. On behalf of Montenegro the Agreement was signed by the Ministry of Economy.

The Agreement imposes reduction of the roaming prices between signatory countries, as from July 1, 2019. Besides, the Agreement stipulates an additional price reduction of roaming services for regulated incoming calls and data transfer service, to be implemented as from July 1, 2020. As the most important step, the Agreement stipulates that, from July 1, roaming services for the users from signatory countries are charged as if the users were in their home country (the so called “roaming like at home” – RLAH charging regime). Not only that this Agreement stipulates completely different principles for charging the roaming services than those stipulated by the previous Agreement, but it also defines the amounts of the maximum retail and wholesale prices to be applied for roaming services of signatory countries. Furthermore, the signatory countries are in obligation to amend their legal acts and/or bylaws in order to introduce planned price reductions in accordance with the regulation in force in the European Union. Regulatory authorities of the signatory countries shall implement this regional roaming agreement.

On July 1, 2021 initiated the most important step in the price reduction of roaming services in the Western Balkans region. This step included reduction of the roaming price services in the Western Balkans region. The main characteristics of this phase in the reduction of prices of roaming service in the Western Balkans region is the application of the so called “roaming like at home” – RLAH charging regime. In order to implement this phase in the price reduction of roaming services, the Agency carried out all the activities provided for by the Agreement on the price reduction of roaming services in the mobile communications networks in the Western Balkans region. That means that the Agency, in the coordination with regulatory bodies from the region, adopted appropriate acts necessary for a complete implementation of this phase, in accordance with signed Agreement and appropriate regulations of the European Commission. The Agency made the following acts:

- Decision on imposing on Crnogorski Telekom, Telenor and Mtel to apply the following step in the reduction of roaming service charges in the Western Balkans countries, as from July 1 2021;
- The Rulebook on determining detailed rules on the implementation of the “fair use policy”, the methodology on assessing the viability of abolition of extra charges for regulated retail roaming services, and the request submitted by the operator, necessary for the assessment, stipulating the situation in which the operators may deviate from charging regime defined by the Decision;
- The guidelines for the implementation of the above Decision and Rulebook are at the retail level (guidelines for the retail roaming in the Western Balkans region), in order to facilitate the implementation of these regulations.

The Decision, Rulebook and Guidelines follow the Agreement on the price reduction of roaming services in the public mobile communications networks in the Western Balkans region, and the relevant EC and BEREC (Body of European Regulators of Electronic Communications) regulations, based on which the subject charging regime is implemented in the EU member countries.

Reduction of the prices of roaming services in the Western Balkans countries to be introduced as from 1 July 2021, will bring a lot of benefit to private and business users which will use the roaming services in our region. These benefits will at the first place refer to greater use of roaming services having no fear of receiving high invoices for their use. This kind of roaming services in the Western Balkans countries will benefit both to physical persons who will find their stay in the above countries more attractive and to legal persons as this kind of unhindered use of roaming services will much facilitate performance of their business activities in the region.

Along with regulated prices of retail roaming services, the operators may offer to their roaming users certain amount of regulated roaming services for the fee on daily basis or some other fixed fee on periodical basis.

Besides, the operators may offer to the users the prices different from those stipulated by the Agreement on reducing the prices of roaming services and by the Agency's Decision, and the user may select the price which he/she finds to be the most favorable. Changing regulated price with an alternative price of roaming services is carried out within one working day and is free of charge for the user.

2.5. The initiative on reducing the prices of international call termination in the region

Based on several performed analysis and follow-up of the situation on the market of international phone calls, in 2018, the Agency for Electronic Communications and Postal Services of Montenegro launched an initiative on reducing the prices of roaming services of international call termination on the fixed and mobile networks in the region.

The reasons why the Agency took this initiative are as follows:

- International telephone traffic (outgoing and incoming) with the region is a significant part of the total international telephone traffic realized by the users of the operators in Montenegro,
- The prices of international call termination from the region to the networks of the operators in Montenegro (fixed and mobile), are mostly much higher (up to 30 times) than the prices of national call termination which are determined by the Agency, on the basis of cost models,
- The prices of call termination from the network of the operator in Montenegro (fixed and mobile) to the networks of the operators in the region are reciprocal and are mostly much higher (up to 30 times) than the prices of national call termination, which are determined by the regulatory bodies of the countries from the region, on the basis of cost models.

Such high prices of call termination of international calls between the countries in the region led to much higher prices of the phone calls, with certain operators, made from Montenegro to the countries in the region, than those of the calls made to other European countries and to certain countries in the world (i.e. to the USA). Similar situation is in other countries in the region. This level of retail prices has been caused by the price increase of international call termination in the region, which was initiated by the regional operators themselves with a view to keep the income during the lower volume of realized traffic. High retail prices of international calls in the region, introduced by the operators in Montenegro and in the countries of the region, highly affect the volume of international traffic in the region.

Due to the above-mentioned reasons, the Agency has considered this situation as illogical and non-sustainable for a long-term. Because of this, the Agency finds as necessary to abort the process of increasing the prices of international calls in the fixed and mobile networks in the region and to redirect it, i.e. initiate to decrease the prices.

This is why the Agency launched the initiative to regulatory authorities from Bosnia and Herzegovina, Serbia and North Macedonia, on reducing the prices of the services of international call termination in the fixed and mobile networks in the region. The regulators from these countries accepted the initiative as a quite reasonable. As the result of common work on this issue was prepared draft agreement stipulating gradual and reciprocal decrease of the service prices of international call termination in the fixed and mobile networks in the region. Due to differences between legal regulations, and different competencies of the regulators and the ministries in charge in the above countries, it is concluded that the regulators do not have authorities to sign the subject agreement.

At a joint meeting of the representatives of regulators from Bosnia and Herzegovina, Serbia, North Macedonia and Montenegro, held in November 2019 in Sarajevo, it was concluded that the best way for launching the initiative on reducing the prices of international call termination services in the fixed and mobile networks in the region, on a reciprocal basis, would be to make the amendments to the Agreement on interconnection between the operators in the region, stipulating reduction of the prices of international call termination services in the fixed and mobile networks in the region, on a reciprocal basis. This was also

the occasion where the representatives arranged that each regulator should contact the operator in its domicile country, asking it to initiate the process of reciprocal price reduction of international call termination.

In December 2019, the Agency organized the meeting with the operators in Montenegro and presented the arrangement made between the operators regarding this issue. That was only one of many other meetings the Agency organized with the operators regarding that issue. Thus, was achieved a full transparency in the work of the Agency, enabling the operators to give their opinions on the subject matter.

Relying on the achieved arrangement, in February 2020, three biggest operators in Montenegro (Crnogorski Telekom, Telenor and Mtel) sent their common letter to the operators in Bosnia and Herzegovina, Serbia and North Macedonia, with the proposal for a gradual and reciprocal price decrease of international call termination in the fixed and mobile networks. Nevertheless, according to their replies they were not ready to accept the proposals of the operators from Montenegro.

During 2021, there were no significant joint activities between regulators from the region regarding the reduction of the prices of international call termination services in fixed and mobile networks. In the process of public consultations on the occasion of the analysis of the relevant markets for call termination in fixed networks and call termination in mobile networks, the agency once again drew the attention of the largest operators in Montenegro (Crnogorski Telekom, Telenor i Mtel), to the issue of excessive prices for international call termination services in fixed and mobile networks. In this context, the Agency requested that operators in Montenegro relaunch initiatives for reciprocal price reduction of international call termination services in fixed and mobile networks with all operators with whom they have concluded interconnection agreements, which include the aforementioned wholesale services.

The Agency still considers as necessary the reduction of prices of international call termination in the fixed and mobile networks, both on the regional and global level. In this context, further activities regarding this important issue will continue. These activities will be predominantly focused on searching for a solution which will be generally acceptable by all stakeholders (ministries, regulators and operators) in the countries of the region, which will result in the price decrease of international call termination in the fixed and mobile networks.

3. IMPLEMENTATION AND QUALITY OF UNIVERSAL SERVICE IN ELECTRONIC COMMUNICATIONS SECTOR

3.1. Regulatory framework for the provision of Universal Service

3.1.1. Regulatory framework of the European Union

Universal Service in electronic communications is defined by the following regulations of EU acquis:

- Directive 2002/58/EC of the European Parliament and Council dated July 12, 2002, which refers to processing personal data and privacy protection in electronic communications sector (Directive on privacy in electronic communications);
- Regulation (EU) No 2017/2394 of the European Parliament and Council dated December 12, 2017, on the cooperation among national regulatory authorities competent for implementation of the regulations on the consumer protection;
- Directive 2009/136/EC of the European Parliament and Council dated November 25, 2009, with the amendments to the Directive 2002/22/EC, which refers to basic services and user rights in relation with electronic communication networks and services, Directive 2002/58/EC which refers to personal data processing and privacy protection in electronic communications and Regulation (EC) No 2006/2004 on the cooperation among national regulatory authorities in the implementation of the Law on Consumer Protection, and
- Directive (EU) 2018/1972 of the European Parliament and Council dated December 11, 2018, on the European Code on electronic communications.

3.1.2. Regulatory framework in Montenegro

Chapter VII (Article 81-95) of the Law on Electronic Communications includes Universal service in electronic communications in Montenegro. Under Article 81 of ZEK, Universal Service is defined as a set of basic electronic communications services of prescribed quality, available on the territory of Montenegro at affordable prices, regardless of their geographical location.

Provision of Universal Service in electronic communications in Montenegro is defined by the Law on Electronic Communications (ZEK) and by secondary legislation which are adopted in line with that Law by: The Government of Montenegro, Ministry of Economic Development, Ministry of Finance and Social Welfare, and these regulations are as follows:

- Regulation on the minimum set of services included in Universal Service (Official Gazette of Montenegro, 46/14 and 72/20),
- Rulebook on the quality of Universal Service (Official Gazette of Montenegro, 23/14),
- Rulebook on the types of benefits and special measures for the access to public electronic communications services for the persons with disabilities (Official Gazette of Montenegro, 43/14 and 26/17),
- Rulebook on determining the rate of data transmission for ensuring functional internet access via Universal Service (Official Gazette of Montenegro, 46/14 and 80/18),

- Rulebook on establishing a list of categories of the users eligible for special advantages in the use of Universal Service (Official Gazette of Montenegro, 52/14 and 75/15),
- Rulebook on the criteria for assessing the justification of requests for the access to public electronic communications network via Universal Service (Official Gazette of Montenegro, 56/13),
- Rulebook on the methodology of calculating net cost of providing services within Universal Service (Official Gazette of Montenegro, 12/14 and 101/20),
- Rulebook on the assessment of affordability of services and special packages of Universal Service for socially disadvantaged persons and persons with disabilities (Official Gazette of Montenegro, 33/14 and 13/17), and
- Rulebook on the implementation of public competition and requirements for designating the Universal Service Operator (Official Gazette of Montenegro, 45/14).

Public consultation processes were conducted for all regulations adopted by the Agency, in line with the Law on Electronic Communications and the reports were submitted to the bodies involved in the public consultation process.

Regulations in Montenegro which determine Universal Service in electronic communications are adopted based on the Directive (EU) 2002/22/EC of the European Parliament and Council dated on March 7, 2002, on the universal services and users rights with regard to electronic communications networks and services (Universal Service Directive) and Directive 2009/136/EC of the European Parliament and Council dated on November 25, 2009. Directive (EU) 2002/22/EC of the European Parliament and Council dated on March 7, 2002, with the date of entry into force 21.12.2020, without prejudice to the obligations of member countries regarding the terms for transposing into national legislation and the date when started implementation of the directives.

3.2. Activities on the realization of Universal Service

In accordance with the Regulation on the minimum set of services included in the Universal Service and in the Law on Electronic Communications, the Universal Service in Montenegro comprises:

- Fulfillment of reasonable users' requests for the access to public electronic communications network and publicly available electronic communications services at fixed locations, for enabling voice communication and data rates that allow functional Internet access,
- Provision of the service of Universal Telephone Directory and Universal Enquiry Service to provide information on the phone numbers of subscribers, and
- Special measures and benefits for the persons with limited mobility and for the persons with disabilities, including the access to emergency services, telephone enquiry service and telephone directory service, allowing equal opportunities to access publicly available telephone services which are made available to other end users, as well as to choose the appropriate operator available to the majority of end users.

The Universal Service/the universal access to electronic communications is provided through three key elements:

- Geographical availability – the service is available within the observed geographical area;
- Infrastructure accessibility – the service is accessible to the people with different abilities (mental and physical abilities), and
- Affordability – price of the service should be affordable to most of the users.

Geographical availability of the services is the main feature of the Universal Service and it means that provision of the basic set of services within the whole territory for which the Universal Service is planned. The principles of infrastructure accessibility and affordability in this context mean that the users with disabilities would have available necessary equipment (specialized tools, devices etc.) which is following their needs/abilities, as well as available special tariffs for the persons with disabilities and for socially vulnerable persons.

3.2.1. Provision of the Universal Directory Enquiry and Universal Telephone Directory Service

Based on the results of the public bidding, the Council of the Agency issued Decision No: 0405-2368/18 dated on 29 October 2020, selected telecom operator Mtel as the Universal Service Operator providing Universal Directory Enquiry and Universal Telephone Directory Service. On 25 January 2021 expired validity of the Agency's Decision No: 0402-3993/15, by which Mtel assigned Mtel as the operator of Universal Services for the provision of Universal Telephone Directory and Universal Directory Enquiry Service for a period of 5 years. In order to ensure the continuance in the provision of Universal Service, Mtel carried on with the provision of Universal Telephone Directory and Universal Directory Enquiry Service, as of January 25, 2021, and these will be provided for in the period of the next 5 years.

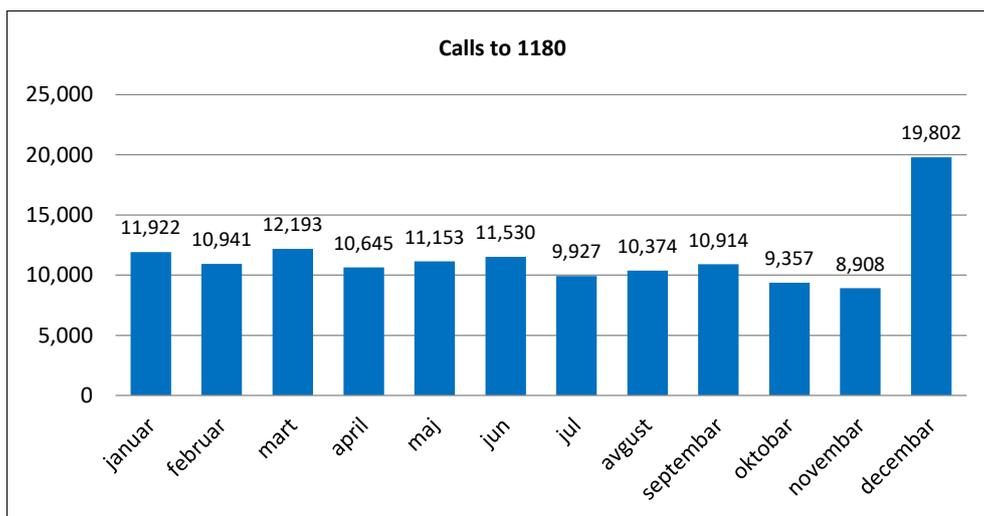
Mtel offer No. 43250 dated on September 29, 2020, provides for that:

- users can access web portal of Mtel for the search in Universal Directory through the page for searching the name and surname regardless of the use of dialectic signs and page for the search per telephone number;
- In 2021 there will be 28 operators in the Universal Directory Enquiry Service, while 36 operators in 2025, and in case there are more than 240,000 calls per year, every next year there will be 2 more operators;
- net costs for the provision of Universal Directory Enquiry Service calculated for the provision of services for more than 240,000 calls per year for the next 5 years, is planned to be in the total amount of €140,688.00, VAT excluded, and in case the number of calls is below 240,000 per year, Mtel will not require refund of net costs, and
- the price of calls to Universal Directory Enquiry Service will be €0.08, VAT excluded, and €0.0968, VAT included.

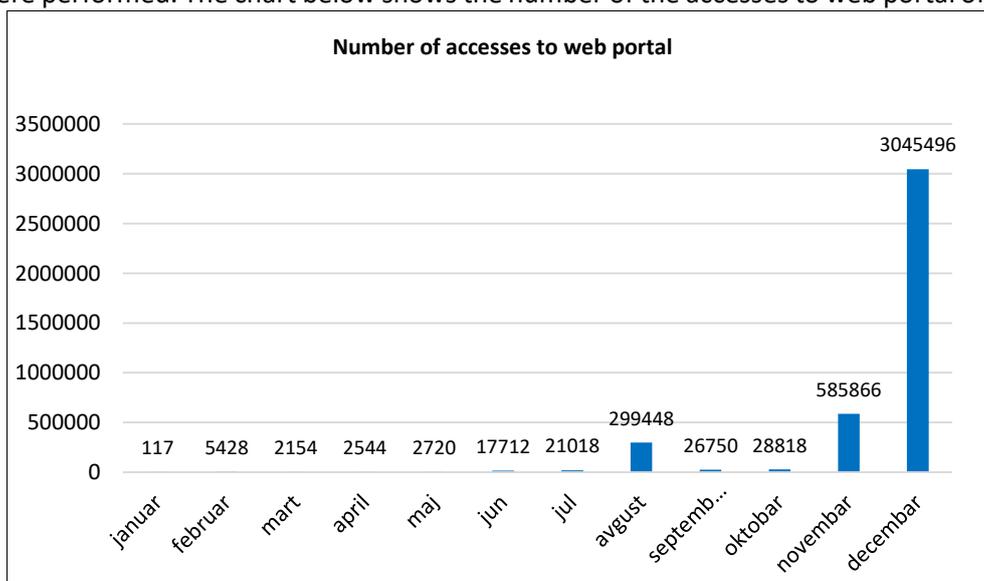
Mtel allowed users to access web portal of Mtel for the search in the Universal Telephone Directory (dual search: by first and last name and by phone number). It is to expect that the citizens will mostly use online services for this service, which will lead to a great decrease in the number of calls to Universal Directory Enquiry Service.

The number 1180 is available from all public electronic communications networks in Montenegro. By calling 1180 number, it is possible to be informed on fixed and mobile (*post-paid and pre-paid*) telephone numbers of all subscribers who did not demand a ban on the publication of such data, by subscriber number or user of the number.

In the period from January 1, 2021, till December 31, 2021, the users made 137,666 calls to number 1180 (the income in the amount of €11.013,28 was made, VAT not included), in order to obtain the information on telephone number of a desired user or the user of telephone number, according to telephone number. Trend in the number of calls to 1180 number during 2021, is given in the following chart.



During 2021, the users made 137,666 calls to 1180, which is 13.96% less than in 2020, when 160,005 calls were made. Decrease in the number of calls to Universal Directory Enquiry Service caused Mtel by allowing the users to access web portal of Mtel for the search in the Universal Telephone Directory (dual search: by first and last name and by phone number). During 2021, 4,038,071 searches in the Universal Telephone Directory were performed. The chart below shows the number of the accesses to web portal of Mtel in 2021.



3.2.2. Provision of the services of access to electronic communications network, telephone calls and Internet access

Universal Service is a safeguard mechanism for the provision of a set of minimum electronic communications services which is available to all end users, in order to prevent their isolation from society. Along with socially vulnerable persons and persons with disabilities, it primarily refers to people living in rural and isolated areas where electronic communications network is purely developed. Due to low density of population, the expansion of electronic communications networks to these areas implies the investments which are not economically viable to the operator.

In accordance with Article 11 (1) (16) and Article 86 of the Law and the Rulebook on conducting public tender and the conditions for assigning Universal Service operator in the area of electronic communications in the

period from July 30, 2020 till September 30, 2020. Public competition for the selection of Universal Service operator was conducted for:

1. Universal Service operator for the provision of the following services:
 - Meeting reasonable request of the user to access public electronic communications network and publicly available electronic communications services at a fixed location, thus enabling voice communications and the speed of data transmission that allows a functional Internet access, and
 - Special measures and benefits for the persons with disabilities, including the access to emergency services, Universal Directory Enquiry Service for the provision of information on the number of subscriber and name of subscriber, ensuring equal conditions for the access to publicly available telephone services provided also to other end users, and appropriate selection of the operators available to the greatest number of end users.
2. Universal Service operator for the provision of the following services:
 - Provision of Universal Telephone Directory Service (hereinafter referred to as the Universal Telephone Directory) and Universal Directory Enquiry Service for the provision of telephone numbers of the subscribers (hereinafter referred to as the Universal Directory Enquiry Service), and
 - Special measures and benefits for the persons with disabilities, including the access to emergency services, Directory Enquiry Service on the number of subscriber and Telephone Directory Service, ensuring equal opportunities both to the access to publicly available telephone services provided also to other end users, and appropriate selection of the operators available to the greatest number of end users.

No offers from operators that provide services to users in the field of electronic communications were received at the Public tender for the selection of Universal Service operators for service 1.

Pursuant to Article 86 of the Law, the Agency by decision appoints one or more Universal Service operators for a period of five years, in a manner that ensures the provision of Universal Service services on the territory of Montenegro. Also, Article 86 paragraph 4 of the Law stipulates that: "If in the public tender procedure it cannot determine the operator of the Universal Service, the Agency conducts a market analysis of publicly available electronic communication services at a fixed location and for the operator of the Universal Service, determines the operator with the largest participation by decision on that market, applying the principles of efficiency, objectivity and transparency."

Based on the data it receives from the operators of public electronic communication services, the Agency has conducted an Analysis of the market of publicly available electronic communication services at a fixed location for the purposes of selecting the operator of the Universal Service (hereinafter referred to as the Analysis), and on the basis of the same determined that Crnogorski Telekom is the operator with the largest participation in that market, and accordingly decided to appoint it as the operator of the Universal service for the provision of service number 1 by Decision No. 0405-2368/25 of November 26, 2020.

Newly assigned operator of Universal Service (also the previous operator) continued to provide the services to actual users of Universal Service under the same or under more favourable conditions from those provided within mandate of previous Universal Service operator.

According to the Pricelist for Universal Service of Crnogorski Telekom, No. 03-1421/4 dated January 31, 2020, Universal Service have been provided under the following conditions:

- Connection fee at a fixed location: €0;
 - Monthly subscription fee: €4.0;
- In the monthly subscription fee are included 120 minutes of calls to fixed networks in Montenegro, 10 minutes of calls to mobile networks in Montenegro, 15 minutes of calls to FOREIGN COUNTRIES

- and 1 GB for the use of Internet;
- Call fee to fixed networks in Montenegro: 0.0136 €/min,
- Call fee to mobile networks in Montenegro:
 - to its own network 0.0136 €/min,
 - to other mobile networks 0.0357 €/min;
- fee for the amount of transferred data: 0.0051 €/MB;
- persons with disabilities as the users, the fees for conversation and data transfer are 50% lower, monthly subscription is free of charge and 2GB of transferred data are free of charge;
- socially vulnerable persons as the users, fee for conversations and data transfer are 33% lower, monthly subscription is free of charge and 2GB of transferred data are free of charge;
- all other fees for the calls, Universal Service users will pay according to actual Pricelist of Crnogorski Telekom in the public electronic communications network at a fixed location;
- tariff interval for voice traffic: 1 second, and
- tariff interval for data transfer: 1 kB.

Pursuant to Article 95 (5) of the Law, the Agency may, for the purpose of reducing net costs for the provision of the Universal Service, require the Universal Service operator to apply certain technical or other solutions or to conclude the offered interconnection contracts or cooperate with other operators, or it may acknowledge net costs up to the amount that would result from application of the requested technical and other solutions.

On January 25, 2021, expired a five-year assignment period of Crnogorski Telekom as the Universal Service operator for the provision of subject services of Universal Service, determined by Decision No. 0402-3993/15 date on September 10, 2015 of the Agency Council. Since that date, Crnogorski Telekom, in order to ensure continuance in the provision of services of Universal Service, continued to provide subject services, which it will perform until January 25, 2026.

As Universal Service operator, Crnogorski Telekom shall provide connection at a fixed location, based on a reasonable request of any citizen of Montenegro, notwithstanding geographical position of the building that citizen lives in, following the Rulebook on criteria for reasonableness of the user's request for the access to public electronic communications network through Universal Service.

Crnogorski Telekom provides socially vulnerable persons and persons with disabilities with the services of Universal Service at more favourable conditions from the above said. Persons with disabilities and socially vulnerable persons receive 120 minutes free of charge to fixed networks in Montenegro, 10 minutes to mobile networks in Montenegro, 15 minutes of calls abroad and 2 GB of transferred data. Upon realized traffic which is free of charge, a discount to telephone call fee and fee of transferred data for persons with disabilities will be 50%, and for socially vulnerable persons will be 33% in relation to the abovementioned service fees of the services of Universal Service for commercial users.

Radio base stations for the needs of the Universal Service are in the construction phase at the locations of MZ Jelovica Berane Municipality and MZ Pometenici Žabljak Municipality. According to the requests of users for connection through the Universal Service, the Agency approved the construction of radio base stations in these local communities by Crnogorski Telekom. Crnogorski Telekom defined technical solutions for these locations, but did not build them due to problems with the documentation they should receive from local governments, as well as considering the possibility of providing the service in an alternative way.

Crnogorski Telekom informed the Agency that it turned out that there is no real interest of users in services at a fixed location, but that it is about the interest of users in improving the mobile network signal in certain locations. They pointed out that they entered into discussions with the operator SBS Net Montenegro, which is a provider of Internet access services via satellite, in order to check the possibility of using the services of that operator to provide services of Universal Service, for the segment of voice services and Internet access

at a fixed location, to which they are obliged by the respective Decision of the Agency. Testing of the package „Connect 10” (with characteristics 15/3 Mbps-10GB) of the operator SBS Net Montenegro was agreed with that operator, at a monthly subscription fee of €45.98, VAT included. They will test the service, so if it turns out that voice services of adequate quality could be provided, the service could be provided in 2022, when they will have new technology in production (a new voice platform that enables VOLTE and Voice over WiFi). Crnogorski Telekom would inform the Agency and the operators participating in the financing of the net cost of the USO in order to proceed with the harmonization of the new technical solution for the two locations of MZ Jelovica, Berane Municipality and MZ Pometenici, Žabljak Municipality.

The services of Universal Service would be provided at significantly lower costs than the solutions already approved for those two locations, which included the implementation of new mobile network radio base station locations. The first tests have been completed and it has been concluded that, basically, the service can be enabled in the planned way, but they are still working on finding a way to solve some segments of the service, such as numbering, providing information about the location of the caller of the number 112 to OKC, i.e. the address or location connection. Although it is a service at a fixed location for which OKC is provided with the connection address in accordance with the regulations, the problem is that for now they cannot restrict the user from using the device only at that location. So, he can make a call from any other location, because for now there is no technical solution to limit it. An additional check is done on the side of the partner SBS Net Montenegro.

On December 31, 2021, Crnogorski Telekom had 19 active users of Universal Service: 5 users in MZ Trešnjevo, Royal City of Cetinje, 1 user in MZ Gostilje, Danilovgrad Municipality, 1 user in MZ Prisoje, Žabljak Municipality, 2 users in MZ Nudo, Nikšić Municipality, 3 users in MZ Medun Capital City of Podgorica, 1 user in Zaglavak village, MZ Glibači, Pljevlja Municipality, 1 user in MZ Mosori, Danilovgrad Municipality, 2 users in MZ Vinići, Danilovgrad Municipality, 1 user in MZ Barice, Bijelo Polje Municipality, 1 user in MZ Fundina, Capital City of Podgorica, and 1 user in MZ Čukovići, Cetinje Municipality. Crnogorski Telekom addressed the Agency with the request for the compensation of net costs for 2020 business year, dated 30.06.2021, asking for the reimbursement in the total amount of €11,367.11. The invoices of the service supplier and service provider for all items from the request are attached to the request.

The invoices referred to the costs for the provision of services of Universal service in 2020, for the users who used those services at the locations of Nudo, Gostilje, Trešnjevo, Medun, Lever Tara and Vinići.

According to submitted invoices, Crnogorski Telekom asked for the amount of €11,367.11 in the Request for net cost reimbursement which includes all the activities taken to fulfill reasonable requests of the users for the access to public electronic communications network and publicly available electronic communications services at a fixed location. Out of requested net costs, net costs in the requested amount of 11.367,11 € was recognized to Crnogorski Telekom.

While providing the services for the users of Universal service in 2020, Crnogorski Telekom had net costs in the amount of €23,120.372, for the location of Nudo €2,618.726, for the location of Gostilje €3,034.448, for the location of Trešnjevo €2,937.096, for the location of Medun €1,220.274, for the location of Barice €2,238.888, for the location of Lever Tara €272.272, for the location of Fundina €2,297.766, for the location of Bijele Poljane €3,794.918, for the location Vinići €2,485.706 and for the location Čukovići €2,220.278. When from the net costs in the amount of €23,120.372 we subtract the revenues in the amount of €1,201.413 and the costs at the locations of Bijele Poljane, Barice, Fundina and Čukovići, as at those locations there were no users of Universal service in the total amount of €10,551.85, we come to the allowed net costs in the total amount of €11,367.11.

The Agency made Draft Decision for the reimbursement of net costs for 2020 business year, and submitted it to the Universal service operator, and to all electronic communications operators whose share in the total

annual income in the field of electronic communications is higher than 2%, in giving the comments, remarks, opinions and suggestions.

Having considered Draft Decision of Crnogorski Telekom for the reimbursement of net costs for 2020 business year, the Agency stated that there are the grounds for approving the amount for covering net costs of Crnogorski Telekom for the provision of the services of Universal Service, in the amount of €11,367.11. All operators, being in obligation to pay the net costs, made the payments according to the Decision.

Information on the Universal Service in Montenegro are on the Agency's web site: <https://ekip.me/page/electronic-communications/univerzalni-servis/about-us/content>.

The services of Universal Service are provided by the selected operators, in accordance with the regulations determining the provision of Universal Service in Montenegro. If any of the above regulations referring the Universal Service, selected operators of Universal Service shall follow the new regulations.

3.3. Quality of Universal Service in the sector of electronic communications

As laid down by ZEK, the operators designated for the provision of the Universal Service, shall submit to the Agency information regarding measured quality parameters of the Universal Service for the service they provide, as laid down by the decision on designation of the Universal Service Operator, in accordance with the Rulebook on the quality of the Universal Service, they shall submit an annual report on the values of quality indicators of the Universal Services they provide. With this regard and pursuant to Article 3 of the Rulebook on the quality of services provided within the Universal Service, quality parameters of the US services are defined. Universal Service operators performed measurement of quality parameters of the services within the Universal Service provided in accordance with definitions and methods specified in technical instructions: METI ETSI EG202 057-1, METI ETSI EG 201 769-1 and METI ETSI EG 202 057-4.

As the operator of Universal Telephone Directory Service and Universal Enquiry Service, Mtel submitted to the Agency the following data for the period from 1.1.2021 – 31.12.2021:

- Average response time of the operator's contact person (telephone operator) was 11.00 seconds;
- Total of 143,679 calls were made to the Universal Enquiry Service number, of which 137.666 calls were successful (connection with the operator was established and requested information was received). Out of those calls:
 - 130,723 calls i.e. 90.78% of the calls were made with the response time of Universal Enquiry Service shorter than 20 seconds;
 - 6,943 calls i.e. 9.22% of the calls were made with the response time of Universal Enquiry Service longer than 20 seconds, and
 - 6,013 calls $((143,679 - 137.666)/143.679) * 100$) i.e. 4.18% of the calls were interrupted.

The Rulebook on the quality of Universal Service defines that an average response time of the Universal Enquiry Service shall not exceed 15 seconds within a year, and the percentage of calls to which the Universal Enquiry Service responds within 20 seconds shall not be lower than 80 % on a yearly basis. Based on the above-mentioned data, it can be concluded that the Universal Enquiry Service and Mtel as a designated operator, met all the criteria defined by the Rulebook on the quality of services of the Universal Service for the service they provide.

For the period from 1 January 2020 to 31 December 2020, Crnogorski Telekom submitted to the Agency the following information on quality parameters of the Universal Service provided: service set-up time, frequency of malfunctions on an access line, time needed for removing malfunctions, frequency of unsuccessful calls, time needed for setting the call, frequency of complaints against the bill for services provided under the Universal Service, and minimum data transmission speed necessary for Internet access (output "upload")

speed and input "download" speed). Values of measured parameters are within the values indicated in the Rulebook on quality of services of the Universal Service. Some of them are as follows:

- Frequency of unsuccessful calls related to:
 - % of all national calls was 0.09%.
- Call set-up time:
 - An average time for all national calls is 4.09 seconds.
- Frequency of complaints on the bills of services of the Universal Service:
 - % within one year is 0%.
- Frequency of malfunctions on an access line:
 - % within one year is 3.85%.
- Minimum data transmission speed necessary for Internet access:
 - Upload speed means maximum upload speed achieved in 95% cases, expressed in Kb/s, amounts to 599 kb/s, and
 - Download speed means maximum download speed achieved in 95% of cases, expressed in kb/s and it amounts to 4,079 kb/s.

Users of the part of Universal Service provided by Crnogorski Telekom expressed their satisfaction with the prices and quality of the Universal Service as well as with telephone connections they had (used for a voice telephony and data transmission). According to them, this system was very useful and actually the only one available for the people living in a remote and inaccessible area, where communication is difficult to be made in any sense.

In May 2021, for the needs of the Agency, the Agency for Public Opinion Research "Damar Plus" from Podgorica, carried out a survey on 1,008 respondents 15 years old and above, of the degree of their satisfaction regarding electronic communications services in Montenegro. The study referred to citizens' awareness of the number 1180 and of the Universal Enquiry Service, as well as to satisfaction degree with the service. According to the results about the service which allows the citizens to obtain information about the telephone number in a fixed and mobile telephony (number 1180), 37.00% heard of this service which is more than in 2019 when it was 37.6%, which is 0.6 percentage points more than in 2020, when it was 37.00%. Out of those who heard of the number 1180, 92.5% of the respondents said they knew which information might have been obtained by dialing the above number, being 4.80 percentage points more than in 2020, when that rate had been 87.7%. Out of those who heard of the number 1180, 29.8%, asked for information through that service in the previous year (previous report on public opinion research comprised the period from the beginning of putting into operation the 1180 service), and in 95.3% they were satisfied with the service provided, which is an increase of 20.90 percentage points in the satisfaction level of the respondents, compared to 2020, when there were 74.4% of satisfied respondents.

4. ASSIGNED LIMITED RESOURCE

4.1. Carrying out the assignment procedure for available radio frequencies for MFCN systems

For the realization of radio access part of public mobile electronic communications networks by Radio Frequency Spectrum Allocation Plan in Montenegro, the following radio frequency bands were allocated: 694-790 MHz (700 MHz band), 790-862 MHz (800 MHz band), 880-915/925-960 MHz (900 MHz band), 1427-1518 MHz (1500 MHz band), 1710-1785/1805-1880 MHz (1800 MHz band), 1920-1980/2110-2170 MHz (2 GHz band), 2300-2400 MHz (2.3 GHz band), 2500-2690 MHz (2.6 GHz band), 3400-3800 MHz (3.6 GHz band), and 24.25-27.5 GHz (26 GHz band).

Radio frequencies from the 800 MHz band, as well as the parts of the 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz bands were assigned in the spectrum auction procedure in 2016, with the approval valid until September 1, 2031. The approvals for one of the mobile operators (Mtel) for the remaining parts of 900 MHz (2x10 MHz wide block), and 1800 MHz (2x20 MHz wide block), and for 2x15 MHz wide block from 2 GHz band, will expire in April 2022. Total resources in the 700 MHz, 1500 MHz, 2.3 GHz and 3.6 GHz bands, as well as 2x5 MHz wide block from 2 GHz band, 2x40 MHz and 40 MHz wide blocks from 2.6 GHz band and 1000 MHz wide block (possibly two more blocks, each 600 MHz wide) from 26 GHz band are free for the allocation. In order to achieve maximum transparency in the preparation of public bidding for the allocation of radio frequencies for the realization of public mobile electronic communications networks, the Agency conducted preliminary consultations with mobile operators regarding the interest for the allocation and a key strategic element for spectrum allocation for MFCN systems, including 5G mobile communications networks. According to the results of preliminary consultations, the Agency decided to perform the procedure of available radio frequencies from the above bands, in two phases.

Having in mind legal obligation to initiate the public competition procedure for reallocation of radio frequencies at least six months prior to expiration of the actual approvals, in the first phase which would be conducted in 2021, the Agency decided to carry out reallocation of radio frequencies in the 900 MHz, 1800 MHz and 2 GHz bands for which the approvals given to Mtel would expire in April 2022, along with the allocation of free radio frequencies in the 2 GHz and 2.6 GHz bands.

Considering that mobile operators were not ready to invest in the spectrum suitable for the implementation of 5G mobile networks during 2021, due to COVID-19 pandemic effects on the businesses, then still unclear situation with regard to resolving the interference problems in the 700 MHz band by the Albanian DTV transmitter, and a poor interest in vertical sectors in introducing ICT solution based on 5G networks, the Agency decided to carry out the second phase of the allocation during 2022, which included radio frequencies in the 70 MHz and 3.6 GHz bands and possibly in the 1500 MHz, 2.3 GHz and 26 GHz bands (the operators did not express the interest in their allocation).

The procedure of allocation of radio frequencies in the 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz bands is designed in a way to ensure the realization of the following goals:

- keeping and strengthening the effective competition at the mobile electronic communications market;
- ensuring consistent business environment for mobile operators and other investors;

4. ASSIGNED LIMITED RESOURCES

- creating conditions for further development of mobile electronic communications networks and services and ensuring implementation and development of advanced technologies (i.e. 5G NR) through appropriate and timely allocation of frequency resources;
- ensuring availability of broadband data transmission services of adequate quality in the largest possible part of the territory of Montenegro;
- ensuring development of electronic communications services and infrastructure for the development of electronic communications services and infrastructure for the support to social and economic progress of Montenegro;
- generating revenue for the budget of Montenegro, from the allocation of radio frequencies that reflect the market value of the spectrum.

Subject of the allocation were paired frequency blocks 2x5 MHz wide and unpaired frequency block 5 MHz wide, as given in the Table below:

Band	Block width	Number of blocks to be allocated	Validity period of the approval	Description	Initial fee per block [EUR]
900 MHz	2x5 MHz	2	from 21.4.2022 till 1.9.2031	Blocks B1 and B2 (reserved spectrum for the actual mobile operators, subject in the pre-auction phase)	946,000.00
1800 MHz	2x5 MHz	4	from 21.4.2022 till 1.9.2031	Frequency generic blocks in the C12 - C15 bands (reserved spectrum for the actual mobile operators, subject of allocation in the pre-auction phase)	440,000.00
2 GHz	2x5 MHz	3	from 21.4.2022 till 1.9.2031	Frequency generic blocks in the D2 - D4 (reserved spectrum for the actual mobile operators, subject of allocation in the pre-auction phase)	406,000.00
	2x5 MHz	1	from the date of issuance of the approval till 1.9.2031	D1 block (subject of allocation in the main auction phase)	406,000.00
2.6 GHz	2x5 MHz	8	from the date of issuance of the approval till 1.9.2031	Frequency generic paired blocks in the F7 - F14 bands (subject of allocation in the main auction phase)	175,000.00
	5 MHz	8	from the date of issuance of the approval till 1.9.2031	Frequency generic unpaired blocks in the G1 - G8 bands (subject of allocation in the main auction phase)	48,000.00

The decision to launch a public bidding process for granting approval for the use of radio frequencies in the 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz bands for the realization of public mobile electronic communication networks was announced on October 26, 2021. The decision stipulates that the public bidding is conducted by the spectrum auction method in the combined format of adjusted multi-round "clock" bidding and adjusted single-round bidding through sealed bids. The auction process took place in two phases: bidding for reserved spectrum (pre-auction phase) and bidding for unreserved spectrum (main auction phase). Bidding in the pre-auction phase included one primary round in the "clock" format, and in the main auction phase one or more primary rounds of bidding in the "clock" format and one additional round of bidding through closed bids, which is carried out only if in the last not all frequency blocks are assigned to the primary round. The documentation for public bidding defines the conditions, requirements and other elements from the decision to initiate the public bidding process, the public bidding procedure, the format and rules of the auction, the deadlines of individual stages of the procedure, as well as the criteria for the selection of bidders and the method of their evaluation.

The right to participate in the public bidding procedure had each interested legal person who the documentation for public bidding, and has at least five-year experience in the implementation of public mobile electronic communications networks and provision of public mobile electronic communications services (condition for qualification). In order to achieve the status of qualified bidder at the spectrum auction, the applicants for the participation in the spectrum auction (in the amount of €30,000.00). The status of qualified bidder in the spectrum auction gained the actual mobile operators in Montenegro: Mtel, Crnogorski Telekom and Telenor.

According to the Public Bidding Documentation, qualified bidders were obliged to submit a bid guarantee to the Agency, before pre-auction phase (Zero Primary Round), i.e. before the start of the First Primary Round of the main auction phase, submit to the Agency the guarantee of the offer in the amount that covers at least 100% of the total amount of the bid submitted in that round. In subsequent rounds of the main auction phase, the amount of the submitted guarantee, which refers to the offer in the First Primary Round of the main auction phase, had to cover at least 25% of the total amount of the offer submitted in the primary round, i.e. at least 25% of the total amount of the offer submitted in the Additional Round, increased for the total bid amount submitted in the last primary round.

After all the foreseen procedural prerequisites were met, including conducting of a trial (MOCK) auction, the spectrum auction was started, in the format, according to the procedure and according to the rules prescribed by the Decision on the initiation of the public bidding procedure and the Documentation for the public bidding. The spectrum auction was conducted respecting the originally developed procedure, according to which in each auction round, data important for conducting the round and making a bid, as well as the results of the round, were sent to qualified bidders via e-mail, while the bids were delivered by direct delivery to a room designated for that purpose, whereby bidders had the option of following the bid opening procedure via a video link. The spectrum auction was prepared and conducted without the use of specialized software solutions and without any external assistance.

Pre-auction phase (Zero Primary Round) is done on 20.12.2021. The subject of pre-auction phase was reserved spectrum for the actual operators in the bands: 900 MHz, 1800 MHz and 2 GHz. In the Zero Primary Round only the qualified bidder Mtel submitted the bid, and based on that bid, two paired frequency blocks 2x5 MHz wide in the 900 MHz band and three paired frequency blocks 2x5 MHz wide in the 1800 MHz and 2 GHz band were assigned to that operator, at the one-time fee amounting to €4,430,000.00.

Spectrum auction was continued in the main auction phase on 22.12.2021. The subject of the main auction phase was a non-reserved spectrum in the 2 GHz and 2.6 GHz bands, as well as nonassigned frequency block in the 1800 MHz band from the pre-auction phase. In the primary rounds of the main auction phase, the bidders submitted the requests for the frequency blocks per category, at the price valid for the current round, whilst the price per a block was increased for 5% in relation to the initiating one, after each round in which an excess demand was shown in that category.

In the First Primary Phase of the main auction, the bidder Telenor offered the invalid bid, so that, according to the auction rules, that bidder was not allowed to offer its bids in the next primary rounds. Bidding in the primary rounds of the main auction phase ended on 23.12.2021, as in the Sixth Primary Round for the first time an excess demand was not shown in any of the categories of the frequency blocks which were the subject of the primary phase of the main auction. On the basis of the offered bids in the last primary round of the main auction phase, Crnogorski Telekom was assigned two paired frequency blocks 2x5 MHz wide in the 2.6 GHz at the one-time fee amounting to 350,000.00, and one paired frequency block 2x5 MHz in the 1800 MHz and 2 GHz band, and three paired frequency blocks 2x5 MHz wide in the 2.6 GHz band, at the amount of €1,481,000.00 for the one time fee.

Having in mind that in the primary rounds of the main auction phase three paired frequency blocks 2x5 MHz wide and eight unpaired frequency blocks of the category 5 MHz wide in the 2.6 GHz band, the spectrum auction procedure continued on 27.12.2021, in an Additional Round of the main auction phase. In the Additional Round of the main auction phase, the bidders Mtel and CRnogorski Telekom offered "Zero Bids", while Telenor offered five additional bids. Based on the offered bids in the Additional Round of the main auction phase, Telenor was assigned three paired frequency blocks 2x5 MHz wide and four unpaired frequency blocks 5 MHz wide in the 2.6 GHz band, at the one-time fee amounting to €825,011.00. With the Additional Round auction spectrum procedure was completed.

Total results of the auction spectrum for the blocks, per category, assigned to each of the winner at the auction and total amount of a one-time fee for the assignment of approval for the use of those blocks are given in the Table below.

Band	Number of assigned blocks		
	Mtel	Crnogorski Telekom	Telenor
900 MHz	2	0	0
1800 MHz	4	0	0
2 GHz	4	0	0
2.6 GHz – paired	3	2	3
2.6 GHz – unpaired	0	0	4
Total amount of a one-time fee for issuing the approval [€]	5,911,000.00	350,000.00	825,011.00

According to the results of the spectrum auction with regard to the number of blocks assigned to each of the winner, applying the criteria prescribed by the Documentation for public bidding, physical limitations of the assigned blocks were determined in each of the band, taking in consideration the actual allocations (allocations after 2016 Spectrum Auction) valid as from April 20, 2022. The continuity of allocations to each of the mobile operators in the relevant bands are provided thus enabling maximum valorization of the available spectrum.

Decision on the selection of bidder in the public tender procedure was adopted on January 13, 2022. After the selected bidders paid the total amount of a one-time fee for issuing the approval for the use of radio frequencies and submitted the appropriate requests on February 3, 2022, the Agency issued the appropriate approvals for the use of radio frequencies in the 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz band for the realization of public mobile electronic communications networks, which formally ended the allocation procedure.

Total revenue accrued from the radio frequency allocation in the subject public tender procedure, which are the revenue of the budget of Montenegro, amount to €7,086,011.00. Out of the allocation of reserved spectrum (pre-auction phase), the revenue amounts to €4,430,000.00 and is equal to the initial price for the comprised blocks. The value of unpaired spectrum at the initial price is €192,000.00.

As already mentioned, the Agency plans to conduct tender procedure for radio frequency allocation in the 700 MHz, 3.6 GHz and 26 GHz bands, considered as significant for the implementation of 5G mobile networks in the full capacity, and eventually radio frequencies in the free 1500 MHz and 2.3 GHz bands. For the needs of preparation and implementation of that procedure the Agency conducted public tender procedure for the consulting services, along with the service for the use of software for the electronic spectrum auction implementation. At the end of 2021, the Agreement on the service provision was signed with the SPECURE GmbH Company from Vienna, which was also the consultant to the Agency during 2016 Spectrum Auction.

4.2. Assigned limited resources

4.2.1. Radio frequency spectrum management

Radio-frequency spectrum is a limited natural resource that represents an asset of general interest over which ownership rights and powers are exercised by Montenegro. Competent state authorities, in accordance with international regulations that apply in Montenegro, ensure efficient and unhindered use of the radio frequency spectrum and ensure Montenegro's rights in orbital positions. Radio frequency spectrum is a limited natural resource which represents the property of general interest over which Montenegro has the ownership rights and exercises its authorities. Competent state authorities, in compliance with international regulations which are applied in Montenegro, provide efficient and unhampered use of radio-frequency spectrum and ensure the rights of Montenegro in orbital positions. The Agency shall manage, supervise and control the use of radio frequency spectrum in compliance with the ZEK (Law on Electronic Communications), Radio Frequency Allocation Plan and radio frequency assignment plans, and international agreements.

Radio Frequency Spectrum Allocation Plan (Official Gazette of Montenegro, 89/20 and 104/20), which was adopted by the Government of Montenegro in October 2020, defines the purpose of radio- frequency bands for individual radio communication services, in compliance with the ITU RR. Along with RF Allocation Plan, the adoption of corresponding RF allotment plans is very important for administering RFS.

Allocation plan for radio frequencies from certain band defines a division of a band into radio frequency channels, more detailed conditions, manners of use and the manner of RF assignment to one or more radio-communication services, in compliance with the Radio Frequency Spectrum Allocation Plan.

In 2021, the Agency adopted the following radio frequency allocation plans:

- 1427-1518 MHz (1500 MHz band) for MFCN system implementation, in accordance with the Radio Frequency Allocation Plan in the 1427-1518 MHz band for MFCN systems („Official Gazette of Montenegro”, No. 22/21);
- 3400-3800 MHz (3.6 GHz band) for MFCN system implementation, in accordance with the Radio Frequency Allocation Plan in the 3400-3800 MHz band for MFCN systems („Official Gazette of Montenegro”, No. 22/21);
- 24.25-27.5 GHz (26 GHz band) for MFCN system implementation, in accordance with the Radio Frequency Allocation Plan in the 24.25-27.5 GHz band for MFCN systems („Official Gazette of Montenegro”, No. 22/21).

4.2.2. Assigned radio frequencies

Physical and legal persons may use radio-frequencies on the basis of the approvals for using radio-frequencies issued by the Agency. The exception refers to the frequencies used in compliance with the Rulebook on radio frequencies and conditions under which radio frequencies can be used without approval (“Official Gazette of Montenegro”, 47/14, 50/14, 64/18 and 66/19).

In 2021 the Agency issued 1,038 approvals for the use of radio frequencies, decisions on establishing technical and operational requirements for the use of approved radio frequencies and decisions on assigning call sign/MMSI number. In that reference period, 179 approvals for the use of radio frequencies and decisions on defining technical and operational conditions for the use of approved radio frequencies, were revoked. In the Table below is given an overview of issued and revoked approvals/decisions per radio communications services during 2021.

Overview of issued approvals and decisions per radiocommunications service

Radio communications services		Number of issued approvals/decisions	Number of revoked approvals/decisions
FIXED	Radio-relay links	194	9
	Exclusive use of radio frequencies on the territory of Montenegro	0	0
MOBILE	Functional systems	10	5
	Exclusive use of radio frequencies on the territory of Montenegro	0	0
	Technical requirements for GSM/DCS1800/UMTS/LTE radio base stations	622	48
	Technical requirements for TETRA radio base stations	2	0
MARITIME	Terrestrial radio stations for the support to sailing vessels and radio stations on the vessels	39	30
	Technical conditions for the stations for supporting sailing of vessels and radio stations on the vessels.	110	65
	Call sign/MMSI number	27	14
AERONAUTICAL	Radio stations on the aircraft	2	6
	Technical requirements for radio stations on the aircraft.	0	0
RADIO-AMATEUR	Radio-amateur radio stations	22	0
SATELLITE	Fixed satellite, VSAT or SNG station	0	0
RADIO-BROADCASTING	DVB-T2 transmitters	0	0
	T-DAB+ transmitters	2	0
	FM transmitters	6	2
	Links for delivery of modulation signal	2	0
Total		1,038	179

4.2.3. Analysis of the occupancy of the most important radio frequency blocks

4.2.3.1. Fixed and mobile services

Public mobile electronic communications networks

Radio frequency resources were assigned on an exclusive basis on the entire territory of Montenegro, For implementation of public mobile electronic communications networks in Montenegro in the following radio-frequency bands:

- 790-862 MHz (800 MHz band) for implementation of TRA-ECS systems, in accordance with Allocation Plan for radio frequencies in the band 790-862 MHz for TRA-ECS systems ("Official Gazette of Montenegro", 55/14),
- 880-915/925-960 MHz (900 MHz band) for implementation of GSM and TRA-ECS systems, in accordance with Allocation Plan for radio frequencies in the band 880-915/925-960 MHz for GSM and TRA-ECS systems ("Official Gazette of Montenegro", 53/14),
- 1710-1785/1805-1880 MHz (1800 MHz band) for implementation of DCS1800 and TRA-ECS systems, in accordance with Allocation Plan for radio frequencies in the band 1710-1785/1805-1880 MHz for GSM/DSC1800 and TRA-ECS systems ("Official Gazette of Montenegro", 53/14),

- 1920-1980/2110-2170 MHz (2 GHz band) for implementation of TRA-ECS system, in accordance with Allocation Plan for radio frequencies in the band of 1920-1980/2110-2170 MHz for MFCN systems ("Official Gazette of Montenegro", 127/20),
- 2500-2690 MHz (2.6 GHz band) for implementation of TRA-ECS system, in accordance with Allocation Plan for radio frequencies in the band of 2500-2690 MHz for MFCN systems ("Official Gazette of Montenegro", 127/20).

Radio frequencies in the 790-862 MHz, 880-915/925-960 MHz, 1710-1785/1805-1880 MHz, 1920-1980/2110-2170 MHz, and 2500-2690 MHz bands, intended for the implementation of public mobile electronic communications networks were assigned to mobile operators: Crnogorski Telekom, Telenor, and Mtel.

In the 800 MHz band Crnogorski Telekom is allocated 2x20 MHz wide block and Mtel 2x10 MHz wide block. Both allotments are valid until September 1, 2031. Both mobile operators use radio frequencies from that band for implementing the access part of LTE mobile network at the national level.

In the 900 MHz band Telenor is allocated 2x15 MHz wide block, while Crnogorski Telekom and Mtel 2x10 MHz wide block. Considering the extension of the validity of the approval to Mtel, which expires on April 20, 2022, and which was extended in the completed spectrum auction procedure in 2021, all allocations in that scope are valid until September 1, 2031. Crnogorski Telekom and Mtel use the 900 MHz band for the implementation of the access part of the GSM mobile network, and one part of it (a 2x4.2 MHz block) also for the implementation of the access part of the UMTS network, but only in rural areas. Operator Telenor, apart from GSM and UMTS in rural areas, used part of the resources in the 900 MHz range (a 2x10 MHz block in locations where UMTS900 technology was not implemented, i.e. a 2x5 MHz block in locations where UMTS900 technology was implemented), and used it for the realization of the access part of the LTE network at the national level.

In the 1800 MHz band, all three operators have 2x25 MHz wide blocks. Related approvals are valid until September 2031, except for approval for Mtel for the block 2x20 MHz wide valid until 20 April 2022. All three operators use the block 2x5 MHz for the realization of the access part of DCS1800 network, and the block 2x20 MHz for the realization of the access part of mobile LTE network at the national level.

In the 2 GHz band, Crnogorski Telekom and Telenor were assigned 2x20+5 MHz of spectrum, and Mtel 2x15 MHz. The approvals given to Crnogorski Telekom and Telenor for all assigned resources from that band are valid until September 1, 2031 and the approval given to Mtel is valid until April 10, 2022. All three mobile operators use radio frequencies from 2 GHz band for the implementation of the access part of the UMTS network at the national level, while Telenor and Mtel performed refarming of the part of assigned resources from that band in order to implement LTE technology. Telenor and Mtel engaged all assigned resources from that band (Telenor four UMTS bearers, or two UMTS bearers and one 10 MHz wide LTE bearer, and Mtel three UMTS bearers), while Crnogorski Telekom has currently engaged three of four assigned blocks – one 2x5 MHz wide block that belongs to the part of the band exposed to interferences from non-standard DECT 6.0 terminals, is not currently in use.

In the 2.6 GHz band, Crnogorski Telekom was assigned 2x10+5 MHz spectrum, and Mtel 2x20 MHz wide frequency block. At the completed auction spectrum in 2021, Crnogorski Telekom was assigned additional 2x10 MHz, and Mtel additional 2x15 MHz, while for the first time, Telenor was assigned a paired block 2x15 MHz wide and 20 MHz wide unpaired block. Crnogorski Telekom implemented LTE technology in about 30 locations with heavy traffic, while unpaired block is still not in use. Till the end of 2021, Mtel implemented more than 20 LTE radio base stations in the 2.6 GHz, mostly in the highly populated areas.

Having in mind the results of the recently completed spectrum auction carried out in 2021, in the 800 MHz, 900 MHz, 1800 MHz, 2 GHz and paired part of the 2.6 GHz band, all available resources have been assigned. In the unpaired part of the 2 GHz band, four unpaired blocks 5 MHz wide have not been assigned.

Based on the mentioned, it is concluded that assigned radio frequencies from the bands: 800 MHz, 900 MHz, 1800 MHz, 2 GHz, and paired part of 2.6 GHz band have been intensively and rationally used for the implementation of public mobile electronic communications networks by GSM, UMTS and LTE/LTE Advanced technology, according to the dynamics of network development and users' requirements. Furthermore, it is expected that in the period ahead the mobile operators will implement 5G technology in the 2GHz band and/or 2.6 GHz on the basis of DSS technology (prior to radio frequency assignment in the 3.6 GHz band).

In accordance with Radio Frequency Spectrum Allocation Plan, along with the above-mentioned bands, radio frequencies from the free bands can be used for the implementation of mobile electronic communications networks in Montenegro:

- 694-790 MHz (700 MHz band) for the implementation of MFCN systems, in accordance with Radio Frequency Allocation Plan in the 694-790 MHz band for MFCN (TRA-ECS) systems ("Official Gazette of Montenegro", 16/18),
- 1427-1518 MHz (1500 MHz band) for the implementation of MFCN systems, in accordance with Allocation Plan for radio frequencies in the 1427-1518 MHz band for MFCN (TRA-ECS) systems ("Official Gazette of Montenegro", 22/21),
- 2300-2400 MHz (2.3 GHz band) for the implementation of MFCN systems, in accordance with Radio Frequency Allocation Plan in the 2300-2400 MHz band for MFCN (TRA-ECS) systems ("Official Gazette of Montenegro", 25/18),
- 3400-3800 MHz (3.6 GHz band) for the implementation of MFCN systems, in accordance with Radio Frequency Allocation Plan in the 3400-3800 MHz band for MFCN (TRA-ECS) systems ("Official Gazette of Montenegro", 22/21),
- 24.25-27.5 GHz (26 GHz band) for the implementation of MFCN systems, in accordance with Radio Frequency Allocation Plan in the 24.25-27.5 GHz for MFCN systems ("Official Gazette of Montenegro", 22/21).

The following bands: 694-790 MHz, 3400-3800 MHz, and 24.25-27.5 GHz, globally identified for the IMT systems by the WRC²³-19 Conference, are considered the bands suitable for the initial implementation of future 5G mobile systems.

As regards 3.5 GHz band, the frequencies are currently assigned to Mtel, which uses the band for the implementation FWA/BWA systems at the national level. Mtel uses 2x25 MHz wide frequency block, and the assignment is valid until April 22, 2022. After expiry date of the actual approval for BWA, the band can only be used for MFCN systems in accordance with the Radio Frequency Allocation Plan in the 3400-3800 MHz for MFCN systems. Mtel was informed one year in advance to be in the obligation to shut down its WiMAX network in the 3.5 GHz band and to transfer the users of that network to other platforms.

²³ WRC – World Radio-communications Conference

Fixed connections

For implementation of two-way fixed connections of a "point-to-point" type, the following radio frequencies are in the use in Montenegro:

- 3800-4200 MHz (4 GHz band), in accordance with Allocation Plan for radio frequencies from the 3800-4200 MHz band for fixed connections ("Official Gazette of Montenegro", 77/18),
- 5925-6425 MHz (L6 GHz band), in accordance with Allocation Plan for radio frequencies from the 5925-6425 MHz band for fixed connections ("Official Gazette of Montenegro", 09/16),
- 6425-7125 MHz (U6 GHz band), in accordance with Allocation Plan for radio frequencies in the 6425-7125 MHz band for fixed connections ("Official Gazette of Montenegro", 09/16),
- 7125-7425 MHz (L7 GHz band), in accordance with Allocation Plan for radio frequencies in the 7125-7425 MHz band for fixed connections ("Official Gazette of Montenegro", 28/16),
- 7425-7725 MHz (U7 GHz band), in accordance with Allocation Plan for radio frequencies in the 7425-7725 MHz band for fixed connections ("Official Gazette of Montenegro", 28/16),
- 7725-8275 MHz (L8 GHz band), in accordance with Allocation Plan for radio frequencies in the 7725-8275 MHz band for fixed connections ("Official Gazette of Montenegro", 28/16),
- 10.700-11.700 GHz (11 GHz band), in accordance with Allocation Plan for radio frequencies in the 10.700-11.700 GHz band for fixed connections ("Official Gazette of Montenegro", 05/16),
- 12.750-13.250 GHz (13 GHz band), in accordance with Allocation Plan for radio frequencies in the 12.750-13.250 GHz band for fixed connections ("Official Gazette of Montenegro", 70/15),
- 14.500-15.350 GHz (15 GHz band), in accordance with Allocation Plan for radio frequencies in the 14.500-15.350 GHz band for fixed connections ("Official Gazette of Montenegro", 15/16),
- 17.700-19.700 GHz (18 GHz band), in accordance with Allocation Plan for radio frequencies in the 17.700-19.700 GHz band for fixed connections ("Official Gazette of Montenegro", 05/16),
- 22.000-23.600 GHz (23 GHz band), in accordance with Allocation Plan for radio frequencies in the 22.000-23.600 GHz band for fixed connections ("Official Gazette of Montenegro", 07/16),
- 24.500-26.500 GHz (26 GHz band), in accordance with Allocation Plan for radio frequencies in the 24.500-26.500 GHz band for fixed connections ("Official Gazette of Montenegro", 07/16),
- 27.500-29.500 GHz (28 GHz band) in accordance with Allocation Plan for radio frequencies in the 27.500-29.500 GHz band for fixed connections ("Official Gazette of Montenegro", 77/18),
- 37.500-39.500 GHz (38 GHz band), in accordance with Allocation Plan for radio frequencies in the 37.000-39.500 GHz band for fixed connections ("Official Gazette of Montenegro", 15/16).

Along with the listed bands, for the realization of two-way fixed connections of a "point-to-point" type, the following bands are also planned in Montenegro:

- 8275-8500 MHz (U8 GHz band) in accordance with Allocation Plan for radio frequencies in the 8275-8500 MHz band for fixed connections ("Official Gazette of Montenegro", 28/16),
- 48.500-50.200/50.900-52.600 GHz (50 GHz band) in accordance with Allocation Plan for radio frequencies in the 48.500-50.200/50.900-52.600 GHz band for fixed connections ("Official Gazette of Montenegro", 02/19),
- 55.780-57.000 GHz (55 GHz band) in accordance with Allocation Plan for radio frequencies in the 55.780-57.000 GHz band for fixed connections ("Official Gazette of Montenegro", 77/18),
- 57-64 GHz (60 GHz band) in accordance with Allocation Plan for radio frequencies in the 57-64 GHz band for fixed connections ("Official Gazette of Montenegro", 65/19),

- 64-66 GHz (65 GHz band) in accordance with Allocation Plan for radio frequencies in the 64-66 GHz band for fixed connections ("Official Gazette of Montenegro ", 65/19), and
- 71-76/81-86 GHz (70/80 GHz band) in accordance with Allocation Plan for radio frequencies in the 71-76/81-86 GHz band for fixed connections ("Official Gazette of Montenegro", 65/19),

but radio frequencies in those bands have still not been used for the implementation of fixed connections.

The bands below 10 GHz are mostly used for implementation of the backbone of transmission part of electronic communications networks. Backbone of transmission network of Telenor is completely based on a two-way system of digital radio relay connections implemented in the form of rings. In this segment, Telenor uses L6 GHz bands (32 segments), and 11 GHz (4 segments) in 4+0 configuration. The backbone of transmission network of Mtel is based on transmission by optical fibers and on digital radio relay connections, using the L8 GHz (14 segments), and the 11 GHz (2 segments) band in 2+0 configuration, or 3+0, depending on the route. Mtel changed one number of radio relay connections in the backbone of transmission network with connections by optical fibers. The backbone of transmission network of radio broadcasting center is based on the use of the U6 GHz (34 segments), and U7 GHz (30 segments) band, with one connection (Podgorica-Lovćen route) implemented in the 4 GHz band. In the backbone of transmission network Crnogorski Telekom uses optical transmission infrastructure, with only one segment (Podgorica-Lovćen route) implemented in the form of a two-way digital radio relay connection, in the band of U6 GHz with 4+0 configuration.

The bands above 10 GHz are mostly used for implementation of access connections on the backbone of transmission part of electronic communications networks and for individual connections of other users. Connection of radio base stations on the most suitable connection point of backbone transmission systems is implemented through optical fiber connections (in smaller part) and by two-way digital radio relay connections. In this segment, Telenor uses the following bands: 13 GHz, 15 GHz, 18 GHz and 23 GHz, with some access links on longer routes, implemented in the L7 GHz and 11GHz, Mtel uses the bands: 13 GHz, 18 GHz, 23 GHz, and 26 GHz, with several connections in each of the following bands: L7 GHz, 15 GHz, 18 GHz, 28 GHz and 38 GHz. Radio difuzni centar uses the 18 GHz band for the access links up to radio broadcasting transmitters, while Wireless Montenegro uses the: 18 GHz, 23 GHz and 38 GHz band for connecting dispatch centers of the users on TETRA network.

Apart from the above mentioned operators, the approvals for fixed connections were assigned to Simes d.o.o. (12 links in the 18GHz band for connecting the border crossing), Elektroprivreda Crne Gore (three connections for connecting the elements of functional network in the band of L8 GHz), Uprava pomorske sigurnosti i upravljanje lukama (three connections in the bands: L7 GHz, 4 connections in the 18 GHz band and one connection in the 23 GHz band for connecting the elements of VTMIS systems), SMATSA (one connection in the band of 23 GHz for connecting radars on Srpska Gora with Control Tower in Podgorica), and to the Parliament (Skupština) of Montenegro (one connection in the band of 23 GHz for the transmission of signal from the building of Parliament up to RTV dom for the needs of direct TV transmissions of the Parliament sessions).

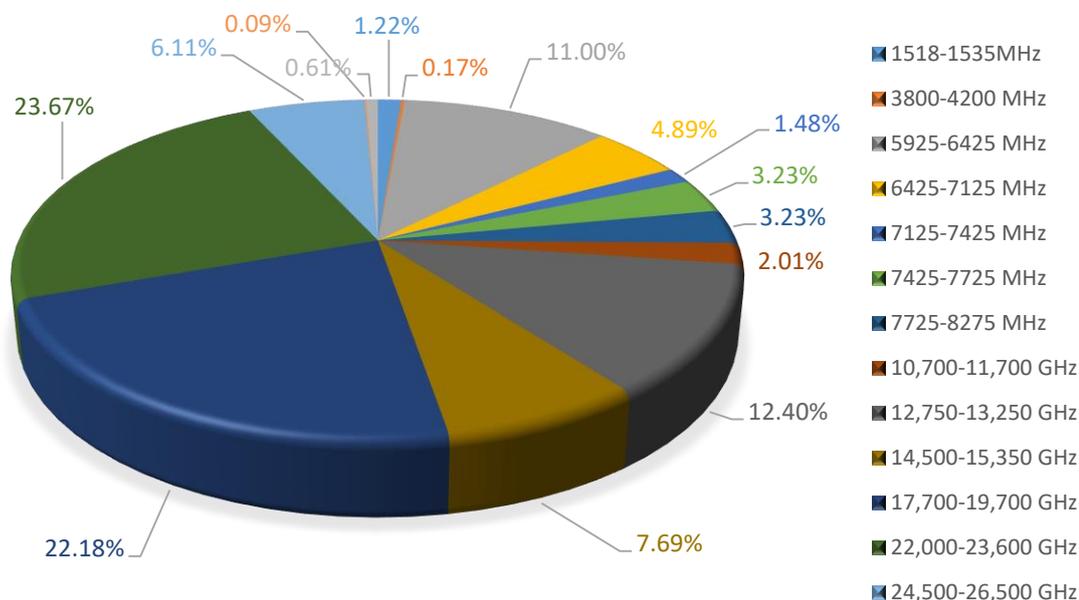
The 1525-1535 MHz band is used for the implementation of one-way radio-relay links for the needs of getting modulation signal from the studio to the transmitter for the needs of FM radio transmitter. 10 radio relay links were realized.

In the table below is given the overview of the assigned radio channels, per width and per band.

Overview of assigned radio channels per width and per band

Band	Channel width	Number of the assigned channels per width	Number of the assigned channels per band
1525-1535 MHz	0,5 MHz	10	10
3800-4200 MHz	2x29 MHz	2	2
5925-6425 MHz	2x29,65 MHz	126	126
6425-7125 MHz	2x40 MHz	56	56
7125-7425 MHz	2x28 MHz	17	17
7425-7725 MHz	2x28 MHz	37	37
7725-8275 MHz	2x29,65 MHz	36	37
	2x59,3 MHz	1	
10.700-11.700 GHz	2x40 MHz	23	23
12.750-13.250 GHz	2x7 MHz	16	142
	2x14 MHz	15	
	2x28 MHz	82	
	2x56 MHz	29	
14.500-15.350 GHz	2x7 MHz	18	88
	2x14 MHz	16	
	2x28 MHz	50	
	2x56 MHz	4	
17.700-19.700 GHz	2x7 MHz	37	254
	2x13,75 MHz	53	
	2x27,5 MHz	135	
	2x55 MHz	29	
22.000-23.600 GHz	2x7 MHz	42	271
	2x14 MHz	24	
	2x28 MHz	169	
	2x56 MHz	36	
24.500-26,500 GHz	2x7 MHz	10	70
	2x14 MHz	3	
	2x28 MHz	50	
	2x56 MHz	7	
27.000-29,500 GHz	2x28 MHz	1	1
37.500-39.500 GHz	2x28 MHz	7	7
Total			1141

The chart below shows the structure of the approved radio frequency channels for the implementation of fixed connections per band at the end of 2021.



Structure of the assigned radio frequency channels for the realization of fixed connections per band at the end of 2021

In 2021 continued an increasing trend in the capacity of transmission systems of mobile operators, by using new solutions that increase spectral efficiency, which is a support for the development of the access part of LTE networks and a good basis for starting 5G implementation. The trend of switching to optical fiber transmission in the "last mile" part of transmission networks also continued.

At the World radio communications conference WRC-19, the 26 GHz (24.25-27.5 GHz) band was globally identified for IMT systems, and by mobile industry this band was, along with 694-790 MHz and 3400-3800, MHz recognized as one of key bands for an early implementation of 5G systems. Part of this band, i.e. 24.5-26.5 GHz has been used for fixed connections, and in Montenegro is currently in use 70 fixed connections used by two operators (Crnogorski Telekom and Mtel). The deadline for the migration of fixed connections to alternative bands (i.e. 23 GHz, 28GHz and 38 GHz) was defined to be 30.06.2027. After the given deadline, the 26 GHz band will not be possible to use for those purposes.

TETRA system

Radio frequencies in the 380-385/390/395 MHz bands (400 MHz band) for the implementation of TETRA System are assigned to the company Wireless Montenegro. The System was implemented in order to provide communications channels for the needs of state administration (police, military, security, protection services and other emergency services). The approval is valid until the end of May 2022. Two paired 2x2 MHz wide radio frequency blocks (80 two-way radio channels 2 x 25 kHz wide). TETRA radio base and transmitter stations are introduced at the total of 44 locations. TETRA signal is available in all municipalities of Montenegro.

PMR systems

PMR (*Professional (Private) Mobile Radio*) is a part of the land mobile service based on the use of a simplex, half duplex, and if applicable, duplex type of work, at the level of terminal with the purpose of providing communications to a closed users group. PMR is commonly used by commercial entities in performing their activities i.e. their functional systems, but also in some cases PMR systems are used for the provision of public EK services (most often dispatch services in taxi services).

As set out by Radio Frequency Spectrum Allocation Plan for PMR systems, the following bands are intended for PMR systems: 29.7-68 MHz, 68-87.5 MHz, 146-174 MHz, 380-400 MHz, 406.1-410 MHz, 410-430 MHz, 440-470 MHz and 870-876/915-921 MHz. In Montenegro, PMR systems are implemented in the following bands:

- 146-174 MHz (VHF PMR band), according to Radio Frequency Allocation Plan in the 146-174 MHz for PMR/PAMR systems ("Official Gazette of Montenegro", 81/16),
- 440-470 MHz (UHF PMR band), according to Radio Frequency Allocation Plan in the 440-470 MHz band for PMR/PAMR systems ("Official Gazette of Montenegro", 24/17).

Due to improved propagation characteristics and sensitivity of the receivers, the use of VHF band is still dominant in relation to UHF band.

The largest system of functional links in Montenegro is used by the Ministry of Interior (MUP), which mostly uses VHF PMR band. The equipment used by MUP has no technical characteristics for setting up to a new channel arrangement defined by Radio Frequency Allocation Plan in the 146-174 MHz band for PMR/PAMR systems, based on the CEPT/ECC Recommendation T/R 25-08. The use of radio frequencies in these cases cannot be considered as rationale, having in mind that a new arrangement also allows additional resources both for simplex and half duplex/duplex way of work.

In line with the appropriate allocation plans, the old channel arrangement is allowed for use until 1 March 2021, with the possibility of extension of this period when needed due to the reasons of national and public safety and security. Safety and security agencies (MUP, UP, ANB) do not have appropriate approvals for the use of radio frequencies for their PMR System, but the Agency has been informed by these institutions regarding the part of spectrum for using radio frequencies; so, there is no possibility for interferences to the safety/security systems neither to other civil users, thus attaining respective secrecy levels with regard to the use of radio frequencies. Moreover, as these services, while carrying out activities from their competences, are frequently using TETRA System as a main communications system, in the future is expected a decrease in the use of PMR installations.

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4.2.3.2. Maritime and aeronautical service

During 2021, as laid down by the Law, Radio Frequency Spectrum Allocation Plan and Radio Frequency Allotment Plan in the band 156-162.05 MHz for maritime communications ("Official Gazette of Montenegro", 73/17) with regard to the use of radio frequencies on the vessels, the Agency adopted 149

approvals/decision for the use of radio frequencies on the vessels and 65 decisions on the termination of validity of approvals for the use of radio frequencies on the vessels and 30 decisions on revoking approval/decision for the use of radio frequencies on the vessels.

In 2021, following the Rulebook on the mode, conditions and procedure in determining a call sign and international maritime radio communications id number ("Official Gazette of Montenegro", 24/14) the Agency adopted 27 decisions on determining a call sign and/or MMSI number and 14 decisions on the termination of validity of decisions on determining a call sign and/or MMSI number.

In the same period, the Agency issued 2 approvals for the use of radio frequencies on the aircraft, 1 decision on the termination of validity of approval/decision for the use of radio frequencies on the aircraft, 4 decisions on revoking approval/decision for the use of radio frequencies on the aircraft and 1 decision on revoking approval for the use of radio frequencies by terrestrial radio station.

4.2.3.3. Radio-amateur service

Radio frequencies for radio-amateur service are awarded in accordance with the Law on Electronic Communications, Radio Frequency Spectrum Allotment Plan, Rulebook on Radio-amateur communications ("Official Gazette of Montenegro" 08/20) and Allocation Plan for Radio Frequencies intended for radio-amateur service ("Official Gazette of Montenegro" 25/12).

In 2021 a total of 22 approvals were issued to physical persons, radio-amateur clubs or associations.

4.2.3.4. Satellite service

In 2021, no requests were submitted for the use of radio frequencies in the satellite service.

4.2.4. Broadcasting service

Allocation of radio frequencies in radio broadcasting service is performed pursuant to ZEK, Law on Electronic Media ("Official Gazette of Montenegro" 46/10, 40/11, 53/11, 6/13, 55/16, 92/17 and 82/20), Radio Frequency Spectrum Allotment Plan, and appropriate allocation plans, as follows:

- Allocation Plan for Radio Frequencies in the band 87.5-108 MHz for FM radio ("Official Gazette of Montenegro" 34 /17, 57/17, 51/18 16/19, 11/20 and 116/20),
- Allocation Plan for Radio Frequencies in the band 526.5-1606.5 kHz for AM radio ("Official Gazette of Montenegro" 34 /17), and
- Allocation Plan for Radio Frequencies in the band 174-230 MHz, and 470-694 MHz for DTT and T-DAB systems ("Official Gazette of Montenegro" 16/18, 70/18, 16/19 and 116/20).

During 2021, the Agency issued approvals for the use of radio frequencies, according to the requests submitted by electronic media companies and the operators of electronic communications networks.

Upon receiving the requests, the Agency issued 6 approvals for the use of radio frequencies in the band 87.5-108 MHz for broadcasting FM radio signals to public companies, business companies and non-governmental bodies.

Radio-difuzni centar addressed the Agency in order to determine the appropriate radio-frequency block and operating parameters for the purpose of starting the implementation of the pilot project for the introduction of digital radio, which includes test broadcasting of DAB+ signals on the territory of the capital city of Podgorica, from the broadcast location in Sjenica. For commissioning the transmitter from the Sjenica location for test broadcasting of T-DAB+ signals, the Agency suggested that the Radio-Diffusion Center use

radio-frequency block 11C for this purpose, whose central frequency is 220.352 MHz, radio-frequency range of the block 219.584-221.120 MHz, taking into account that the area of the Capital City represents an integral part of the allotment zone called Lovćen, for which the mentioned block is provided by the international GE06 Plan and Distribution Plan as one of the three possible radio-frequency blocks for T-DAB, and that the same block is also provided by the proposal of the new distribution plan in the process of international coordination for the suballotment zone "MNE Central" specifically for the area of the Capital City of Podgorica. For this purpose, during 2021, at the request of Radio-difuzni centar, temporary authorizations for the use of radio frequencies were issued twice for the purpose of testing radio communication equipment for the needs of the pilot project with a validity period of 90 days each. At the end of 2021, the test broadcasting of the T-DAB+ signal stopped, but it is expected that this operator will continue promoting and broadcasting digital radio signals during 2022.

4.3. Control of the compliance with the requirements for the coverage with mobile network signal

The approvals for the use of radio frequencies in the 800 MHz, 900 MHz, 1800 MHz, 2 GHz and 2.6 GHz bands for the implementation of public mobile electronic communication networks prescribe appropriate requirements for the holders of the approval regarding the scope and dynamics of coverage of the population of Montenegro with the network signal, including and requirements related to the quality of service. The fulfillment of these requirements is verified by the Agency through software prediction of the strength of the reception field and through the measurement of service quality parameters with specialized measuring equipment.

The requests regarding the coverage of population in Montenegro with network signal are defined separately for the voice telephony service and SMS, and for data transmission service. Network signal coverage means ensuring the provision of functional service of voice transmission and SMS messages i.e. data transmission service with a minimum downlink flow of 10 Mbps based on the user experience, which means with a guaranteed downlink of 2 Mbps and uplink flow of 1 Mbps, in case of mobile receipt in an outdoor space.

It is considered that a request for a minimum flow to the user of 10 Mbps based on the user experience is met if a measured speed of data transmission to the user is 10 Mbps or more in at least 90% of the measurements carried out during the day (00-24h), with the rate of successfully initiated and completed measurement sessions is at least 95%, whereas measurements carried out during a two hour of maximum network burden shall not be included. Subject requirement does not refer to the measurements executed in the period of 45 days during the summer season.

It is considered that a request for guaranteed flow to the user of 2 Mbps (condition 2 Mbps DL), i.e. from the user 1 Mbps (condition 1 Mbps UL), has been fulfilled if in at least 95% of the measurements carried out within any timeframe of 120 min, measured speed of data transmission to the user is 2 Mbps or more, i.e. from the user 1 Mbps or more, with the share of successfully initiated or completed measuring sessions of at least 95%.

With regard to the volume and dynamics of network signal coverage, mobile operators had the obligation to meet the requirements after 2019, as given in the Table below.

Crnogorski Telekom	Telenor	Mtel
99% population of Montenegro, as regards the availability of voice telephony service and SMS service	99% of the population of Montenegro, as regards the availability of voice telephony and SMS	99.5% population of Montenegro with GSM/DCS1800 network signal (request stipulated by a Special License from 2007)
95% population of Montenegro with TRA-ECS network providing broadband	50% population of Montenegro is covered with signal of TRA-ECS network that allows provision of broadband	91.6% population of Montenegro with IMT-2000/UMTS network signal (request stipulated by a Special License from 2007)

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services of data transmission of required quality	services of data transmission of required quality.	
		75% population of Montenegro with TRA-ECS network signal providing broadband services of data transmission with defined quality

Along with the above requirement, Crnogorski Telekom, as the holder of approvals for using radio frequencies in the 800 MHz band with specific requirements with regard to the volume and dynamics of covering with network signal, had the obligation to implement five new LTE radio base stations in the 800 MHz band in rural areas where there is no other way of providing broadband data transmission services, of 15 rural areas determined by the Agency, within the second year of approval validation.

For determining level of coverage with network signal as regards the availability of voice telephony service and SMS, GSM technology in the bands: 900 MHz and 1800 MHz, and UMTS technology in the bands: 900 MHz and 2 GHz were considered, while for determining level of coverage with network signal as regards the availability of data transmission service with a minimum downlink flow of 10 Mbps based on the user experience, LTE technology in the following bands: 800/900 MHz, 1800 MHz and 2/2.6 GHz, was considered.

In the table below is given a review of the results of software prediction on the level of coverage of the population and territory of Montenegro with mobile operators' network signal, per technology, carried out by the Agency, considering data on radio base stations for which the Agency stipulated technical and operations conditions, till the end of 2021, which were also verified as active by mobile operators.

Tehnologija	Kriterium	Crnogorski Telekom	Telenor	Mtel
GSM – population	RxLev \geq -99 dBm	97.58%	97.76%	97.19%
GSM – territory	RxLev \geq -99 dBm	79.04%	80.16%	73.30%
UMTS – population	RSCP \geq -99 dBm	96.48%	96.89%	95.07%
UMTS – territory	RSCP \geq -99 dBm	72.79%	76.11%	61.79%
GSM/UMTS komposite (Voice/SMS) – population	RxLev \geq -99 dBm & RSCP \geq -99 dBm	97.78%	97.78%	97.30%
GSM/UMTS composite (Voice/SMS) – territory	RxLev \geq -99 dBm & RSCP \geq -99 dBm	80.05%	80.24%	73.86%
LTE (basic) - population	RSRP \geq -120 dBm	97.04%	96.63%	94.87%
LTE (osnovno) – territory	RSRP \geq -120 dBm	76.96%	73.21%	55.36%
LTE (10 Mb/s DL) - population	RSRP \geq -106 dBm@10 MHz & RSRP \geq -112 dBm@20 MHz	96.80%	94.95%	93.31%
LTE (10 Mb/s DL) - territory	RSRP \geq -106 dBm@10 MHz & RSRP \geq -112 dBm@20 MHz	75.50%	61.79%	48.49%

On the basis of the achieved results, it is clear that all three mobile operators met the requirements concerning the coverage of population with LTE network signal, enabling data transmission service with minimum downlink flow of 10 Mbps on the basis of user experience, while Crnogorski Telekom fulfilled very demanding request for covering 95% of the population of Montenegro. Furthermore, Mtel also fulfilled the request regarding coverage of population of Montenegro with signal of UMTS network, while an estimated coverage level with the signal of GSM network of this operator, as well as composite coverages with the signal of GSM/UMTS networks of other two operators is slightly lower than the requested one. Nevertheless, when evaluating the results received, it is also necessary to observe the fact that evaluation of population coverage with network signal is based on the propagation models of limited accuracy, and assuming harmonized population density within unit territory (the Agency applies *clutter* with regard to population, which is based on the so called census circles), which in some cases, especially in the mountain areas, may result in lower values than the actual coverage really is (for example in case when half of census circle inhabited with all population of census circle is covered, the model will show the coverage of 50% of population, although an

actual coverage is 100% of population). Therefore, on the basis of results received, considering a small difference between estimated and required coverage level, it cannot be concluded 'ad hoc' that a requirement for the level of network signal coverage, as regards the availability of voice telephony service and SMS, and/or for the level of GSM network signal coverage, has been fulfilled; this due to the fact that mobile operators in their reports state that the level of GSM network signal coverage is over 99% of the population of Montenegro.

With a view to covering relevant rural areas, during the first three years of license validity, for using radio frequencies from 800 MHz band, Crnogorski Telekom implemented LTE radio base stations and provided coverage in the appropriate volume, in 11 rural areas of 15 mandatory rural areas where no other way of the provision of broadband services was possible. So, the following rural areas were covered:

- (1) Vilusi, Spila, Balosave i Riječani in the Municipality of Nikšić,
- (2) Poda, Trubine and Srđevac in the Municipality of Bijelo Polje and Bubanje, and Štitari in the Municipality of Berane,
- (3) Jablanica and Bać in the Municipality of Rožaje,
- (4) Metanjac, Milovo, Dobrakovo, Kanje and Mioče in the Municipality of Bijelo Polje,
- (5) Kravari and Sukobin in the Municipality of Ulcinj,
- (6) Vrulja, Potkrajci and Podborova in the Municipality of Pljevlja,
- (7) Majstorovina and Rakita in the Municipality of Bijelo Polje,
- (8) Arbnež and Veliki Ostros in the Municipality of Bar,
- (9) Čevo, Donja Zaljut, Gornja Zaljut, Grab, Gradina, Lastva, Lipa, Ožegovice, Pejovici, Prentin Do, Ržani Do, Trnjine and Ubli in the Royal Capital of Cetinje,
- (10) Đalovići, Mokri lug, Negrobatina, Osmanbegovo Selo and Vrh in the Municipality of Bijelo Polje, and
- (11) Sipanje, Crhalj and Godijevo in the Municipality of Bijelo Polje.

Due to the problems of resolving property-legal relations and getting the approvals for building infrastructure, Crnogorski Telekom did not provide coverage of four rural areas, and this was the reason why the Agency made decision at the end of 2020, imposing the operator to implement radio base stations in the 800 MHz band for covering rural areas Vusanje in the municipality of Gusinje, Jahovici, Lugovi, Romac, Kovačevići, Tatarovina, Cestin, Nange, Petine and Pračica in the Municipality of Pljevlja, Stožer and Bliškovo in the Municipality of Bijelo Polje, and Bobovo, Kolijevka, Moraice, Ograđenica and Slatina in the Municipality of Pljevlja.

During 2021, the Agency did not carry out measuring of service quality parameters provided by mobile electronic communications networks only in Mtel network. These measurements were performed in order to check if Mtel rectified deficiencies in mobile network of that operator, detected in the process of measurements done at the end of 2019 and beginning of 2020. Based on the measuring results of quality parameters in data transmission service and the analysis conducted by the Agency, it has been determined that Crnogorski Telekom and Telenor met the requirements laid down by the approval requests relating to quality of data transmission service, and that Mtel did not meet imposed requirements; it was also determined that these had not been local problems, but that the problem was in limited network capacity to supply with data transmission at the requested level. Therefore, in July 2020, the Agency brought decision on imposing Mtel to rectify deficiencies in its public mobile electronic communications network within 10 months in order and thus meet the requirements laid down by the approval for the use of radio frequencies in the 800 MHz band, relating to coverage of at least 75% of the population of Montenegro with network signal that enables provision of data transmission services with minimum downlink speed of 10 Mbps based on the user experience, that is with guaranteed downlink flow of 2 Mbps and guaranteed uplink flow of 1 Mbps, in case of slučaj mobile receipt outdoor. In order to rectify subject deficiencies, from the mid 2020 till the end of May 2021, Mtel put into work 117 LTE radio base stations on 91 locations, of which 10 new stations, thus increasing capacities in the access part of the network by over 60%.

Measurements of quality parameters of data transmission in Mtel network were carried out in the period 26.05 - 29.06.2021. Measuring route was selected within the polygon covering 75% of the population of Montenegro (city centers and suburban settlements). Based on measuring results and the conducted analysis it was concluded that the deficiencies were rectified in the network of that operator, the increase in the network performances is seen by comparing the measuring results reached in 2021 and at the end of 2019. For example, observing all the samples collected in all measuring polygons, data transmission speed was 17.7 Mbps or higher in 90% sessions, while in 2019 the reference speed was 4.97 Mbps. In 2021, an average speed of data transmission per FTP session in downlink was 60.93 Mbps, while in 2019 it amounted to 14.67 Mbps, and in the same comparable periods in uplink it was 33.94 Mbps versus 19.52 Mbps.

4.4. International coordination of radio frequencies

One of the segments of radio-frequency spectrum management is coordination of radio frequencies which ensures continuous provision of the service throughout Montenegro, meaning the use of this limited resource without harmful interference. The Agency performs coordination in the use of radio frequencies in the field of electronic communications in line with the relevant international recommendations and other documents. The coordination of radio frequencies is done in a direct bilateral and multilateral coordination and on the coordination meetings with the authorities and/or organizations from other countries and also by participating in the work of administrative and working bodies, competent European and international organizations and institutions in the field of electronic communications.

In accordance with the Procedure of the International Geneva Agreement 84 (GE84) Article 4 and 5, the administrations carry out the coordination of radio frequencies in the 87.5-108 MHz for FM radio, and after obtaining all required approvals of potentially affected administrations, they perform notification of coordinated requests issued by the ITU Bureau in special sections of BRIFIC, with a view to updating i.e. modifying GE84 Plan and registering in the Main International Frequency Register (MIFR). During 2021, along with the procedure of frequency harmonisation in the 87.5-108 MHz band, the Agency obtained relevant approvals of potentially affected administrations of Bosnia and Herzegovina, Croatia and Serbia, through correspondence for obtaining the requests for the use of 103.4 MHz frequencies from the Spas location in the Municipality of Budva. The Italian administration, Ministry of Economic Development (MISE) did not reply to several letters and reminding letters sent by the Agency in regard to that coordination request. With regard to that coordination request, the Albanian administration replied in August 2021 informing that it kept its previously given standing that the station in Albania broadcasting from the location of Fushe Dajt at 103.3 MHz frequency would cause interferences to a proposed radio frequency for Spas, adding that according to given parameters, the stations which would broadcast from the location of Spas would not make interferences to the mentioned station in Albania which already operates at a non-coordinated radio frequency. Although the Albanian administration did not accept that proposal it was neither explicitly rejected by the administration, considering that Fushe Dajt 103.3 MHz is not included in the GE84 Plan neither it was previously coordinated with the Montenegrin administration, thus having no relevant basis for rejecting it. Having in mind the above circumstances and that the conditions for sending the register request directly to the ITU, in the early 2022 the Agency sent the request to the ITU Bureau. In this way, the administrations, which on several occasions did not express themselves or which did not have valid arguments for rejecting this request, and did not either accept it, have the obligation to respond to it in accordance with the procedure of the GE84 Agreement, by accepting or rejecting it, which during 2022 will finally bring the coordination procedures for radio frequency to end for radio frequency 103.4 MHz at the location of Spas in Budva.

International Geneva 2006 Agreement (GE06) provides for the right for the use of radio frequencies for digital terrestrial broadcasting systems, inter alia for the 174-230 MHz band for which is evident a great interest showed by electronic media and by the operators during the last years. Available resources have been divided among the channels usable for DTT, i.e. for the blocks for digital terrestrial radio (T-DAB). GE06 Agreement

also provides for the opportunity for the conversion of the record from the plan for digital television to the records for digital radio vice versa, under determined conditions.

Along with the activities carried out relating to commencing the implementation and/or further development of digital radio at the level of all European countries, during 2020 were continued the activities of international coordination in the use of radio frequencies in the 174-230 MHz band with the purpose of re-planning the mentioned band in order to efficiently use it and to eliminate potential interferences, including parameter coordination for individual locations to be used during registration of allotment zones from the actual plan that is from multilateral and bilateral coordination agreements which will be concluded by the administrations in the period ahead. For the purpose of revision of GE06 Plan to the mentioned band in 2019 was formed the Adriatic-Ionian Coordination Group. The activities of that group participated by Albania, Bosnia and Herzegovina, Montenegro, Greece, Croatia, Italy and Slovenia, with the purpose of replanning the assignments determined by GE06 Plan in order to use radio frequencies more efficiently and to eliminate potentially damaging interferences in the Adriatic-Ionian region, including coordination of the parameters for individual broadband locations continued in 2021.

The main idea of sharing the rights to use the frequencies in the 174-230 MHz band within the coordination zone (Adriatic Ionian polygon) is sharing 32 blocks of the subject band in the ratio 13:19 in the exclusive zones of the polygon, whereby 13 blocks will be used by Italy and San Marino, and 19 blocks will be used by Albania, Bosnia and Herzegovina, Montenegro, Greece, Croatia and Slovenia. In addition to the exclusive use of blocks, it was also proposed that administrations can, on the principle of joint use, also use certain blocks in specially defined coordination zones of the polygon, based on the fulfillment of technical requirements. Technical requirements must be met for individual locations located in allotment zones outside the exclusive area, but within the coordination area. The requests will be considered compatible if the agreed levels were achieved (a cumulative effect) of the signals i.e. the limits to be defined in the period ahead in order to protect T-DAB/DTT service with regard to another unwanted T-DAB/DTT service in the allotment area of any of the zones, when the agreed block is used in another country.

After several iterations based on resource allocation proposals using the compatibility matrix, a result was reached that, from the point of view of the group participants, can be considered an acceptable version of the new plan proposal, bearing in mind that it represents significant improvements in qualitative and quantitative terms compared to the original GE06 Plan for the subject scope from the aspect of each administration individually, and also from the aspect of the entire Adriatic-Ionian region. However, as all the segments of a new proposal plan of that group were not accepted during 2021 by several administrations which do not participate in the operations of the working group, but which shall be approved following the GE06 provisions, the Adriatic-Ionian Group will continue to work expecting that the final frequency block allotment will be agreed during 2022, along with the text of a multilateral agreement.

In the preparation of a new allotment plan in the 174-230 MHz band which was an integral part of a future multilateral agreement and based on which a modification of GE06 Plan for Montenegro would be carried out, the Agency paid attention to the assignments from GE06 Plan of Serbia (SRB) in order to avoid domino effect, considering that Serbia is the only neighbour to Montenegro which is not involved in the work of the Adriatic-Ionian coordination group, so it is necessary to make a new plan harmonized through bilateral coordination between Montenegro and Serbia. The Agency initiated the coordination with Serbia during 2021, anticipating its completion in 2022 by concluding bilateral agreement.

Taking into account that Decision (EU) 2017/899 of the EU Parliament and Council provides for that the EU member countries shall complete the release of the 694-790 MHz band (700 MHz band) from the terrestrial broadcasting system no later than June 6, 2022, and that the countries in which the deadline will be extended but no longer than for two years, i.e. until June 30, 2022, will coordinate the release of bandwidth for mobile communications systems, during 2021 the Agency continued the consultations with the administrations of the neighbouring countries regarding the deadline for the release from the 694-790 MHz band, whereby a

complete valorisation of that band for mobile communications systems (MFCN) in Montenegro is not possible until digital television system (DDT) in the neighbouring countries.

Taking into account that Decision EU 2017/899 and that the 694-790 MHz band in Croatia and Montenegro is available for MFCN implementation, the Croatian Regulatory Agency for Communications Networks (HAKOM) expressed its initiative to conclude technical agreements with the Agency with regard to coordination of radio frequencies in the 694-790 MHz and 790-862 MHz bands for MFCN systems. It is expected that these agreements between the administrations of Montenegro and Croatia will be completed in 2022.

Considering that the 694-790 MHz band in Italy and Serbia is also released by broadcasting service, and that the terrain configuration, propagation requirements and DTT transmitters which were active in the subject band during 2021 in other neighbouring countries, MFCN system in Montenegro can be affected by DTT transmitters from Albania, so that the release of the 694-790 MHz from DTT in Albania is a prerequisite for a complete valorisation of the band for MFCN systems in Montenegro.

Competent administrations of Albania and Montenegro held two meetings in October 2021, where the use of radio frequencies in the 470-694 MHz band for DTT and release of the 694-790 MHz for the MFCN needs was considered. Competent administration of Albania, Audiovisual Media Agency, presented draft of a new Radio Frequency Allotment Plan for DTT in the 470-694 MHz band, prepared with the support of engaged ITU experts and the regulatory agency of Hungary, as Albania is not a signatory country to the Adriatic-Ionian Agreement and SEDDIF Agreement from 2017 which refers to replanning in the subject band. The Albanian administration expressed that it intends to keep the same number of operators at the market and the same network capacities, and the actual frequency assignment from GE06 Plan as much as possible for each covering area, which implies 7 national coverages (layers) for DTT in the 470-694 MHz band as well as per each one additional local layer. Supporting the efforts of the administration of Albania to carry out the release of the mentioned band from DTT until the end of June 2022 and to make it available for mobile service, in accordance with its national plan for a broadband access that shows the interest for implementation of mobile services in the 700 MHz band, the Agency expressed its willingness for a detailed review of that new proposal of Albania after delivery of specific parameters of individual frequency assignments for DTT.

Being aware that qualitative and quantitative requests of both administrations can be only fulfilled through certain modifications of the assignments of Montenegro from GE06 Plan and certain modifications to SEDDIF Plan, the Agency also expressed its readiness to prepare the amendments to the Plan of Montenegro in order to make the harmonisation with a proposed new plan of Albania, as well as with the plans of other administrations from the relevant field. One of Albania's proposals implies the modification of the Plan of Montenegro for the assignment on the channel 21 used by DTT local network within the area of the Capital City of Podgorica, for broadcasting the Albania's plan notwithstanding that the subject modification implies the acquisition of a new transmitter, and therefore a burden for Radio-difuzni centar as an operator of that local network.

The final position of the Agency regarding Albania's new plan for DTT is conditioned by the acceptance of modifications to the Plan of Montenegro by other affected administrations, that is necessary to be done in order to achieve the compatibility with Albania's plan, and by Albania's acceptance of the end of June 2022 as the deadline for release of the 700 MHz band by broadcasting service, or at least on the part of the ALB territory from which DTT transmitters may cause interferences to mobile service in Montenegro, especially transmitters that broadcast in the part of the 694-790 MHz band which will be used for MFCN uplink, i.e. through 50-53 channels. In all communications with the Albanian administration, the Agency stated the above mentioned as a prerequisite, considering that the assignment of the 694-790 MHz band is planned to be realized in Montenegro during 2022 and that for the appropriate valorisation of that band is necessary to provide its unhindered use for the MFCN needs. The administrations are expected to continue intensive cooperation to achieve common goals, i.e. to provide efficient, rationale and unhindered use of frequency

spectrum for DTT and MFCN in the 470-694 MHz and 694-790 MHz bands respectively during 2022, while ensuring that DTT transition will be completed till the end of June 2022, i.e. within the deadline given to the EU countries.

As regards the use of other bands for mobile service, as are the 900MHz, 2.1 GHz and 3.4-3.6 GHz bands, competent administration of Albania expressed its readiness to align the agreement on the use of the mentioned bands with the neighbouring countries, which was supported by the Agency which also proposed that the competent authorities be involved in drafting regional agreement for 5G bands, i.e. 700 MHz, 3.6 GHz and 26 GHz band.

As set out by the provisions of the Radio Regulations – RR, an international instrument regulating the use of frequency spectrum, geostationary-satellite (GSO) and non-geostationary-satellite (non-GSO) orbits, the Agency submitted a coordination request from Montenegro for registering MNE00000 satellite network in the Appendix List 30B RR, published in a Special Section AP30B/A6A/243 as Appendix BR IFIC 2742 dated 16. 4. 2017. The Appendix List 30B RR refers to a fixed satellite service in the 4500-4800 MHz bands, 10.7-10.95 GHz, 11.2-11.45 GHz, 6725-7025 MHz and 12.75-13.25 GHz, and in accordance with the provision 6.5 AP30B RR, the ITU Bureau identified that the allocations of Dutch administration which are included in the mentioned List are affected by Montenegro's request and for enlisting that Montenegro's request it is necessary to obtain an explicit approval by Dutch administration within 8 years from the date of submitting the request, which is a total regulatory period for satellite network coordination in the above bands. For that purpose, the Agency addressed Dutch administration which accepted Montenegro's request after the analysis performed in 2021. That agreement with Dutch administration allowed Montenegro to have equal access to geostationary satellite orbit in the frequency bands of a fixed satellite service included in the Appendix List 30BRR.

In 2021, the Agency carried out the activities in relation to international radio frequency coordination, i.e. satellite systems in accordance with relevant international regulations which imply the analysis and preparation of standings of Montenegro's administration on the coordination requests submitted by the administration and on the administrative circular letters submitted by ITU which referred to special sections of BRIFIC publication with regard to coordination requests of other administrations in all situations relevant for the compatibility analysis of other administrations in all situations relevant for compatibility analysis for the assignments of Montenegro encompassed by appropriate international radio frequency plans.

4.5. Introduction of digital radio in Montenegro

Radio has a very important social, cultural and democratic role throughout Europe, and the digitalization of radio responded to the needs of listeners and provided an economic stimulus to the industry of European Union countries that have advanced in this process. The richer and more diverse radio offer that can be offered by these systems strengthens the democratic, social and economic value of radio, emphasizing pluralism, diversity and universal service. Digital terrestrial broadcasting is more efficient and cheaper than analog, bearing in mind that the operating cost of a digital radio network which enables the broadcasting of radio content by a large number of stations of the same order of magnitude as an equivalent analog radio network for broadcasting a single radio program, which ultimately dramatically reduces the financial exposure of individual radio stations. The terrestrial broadcast network is resilient during natural disasters, national emergencies and when mobile connectivity is limited.

Taking into account the above said, during 2021, the Agency, within its competences, continued the activities on introducing digital radio in Montenegro, which began in 2015, when the Agency prepared a Study on the opportunities of using digital radio in Montenegro, and then in 2019, when the interdepartment working group made up of representatives of the Agency and the Agency for Electronic Media, line ministries, Radio-difuzni centar and Radio Television of Montenegro, prepared a Proposal for strategic starting points and guidelines for the deployment of digital radio in Montenegro. That document gives the guidelines and

recommendations from regulatory, technical, program, economic and information aspect of the proces of deployment of digital radio, opinions and attitudes of state bodies, regulators and subjects who are the most important actors of the mentioned process.

Considering the fact that radio frequencies in the 87.5-108 MHz band used for FM radio in Montenegro used to the greatest extent possible by numerous radio stations and that there is a lack of available frequencies the interest that are of great interest to certain media, was evidenced in a large number of municipalities of Montenegro, Radio-frequency Allocation Plan in the 174-230 MHz and 470-694 MHz band for DTT and T-DAB systems, the Agency intended certain resources for digital radio, and during 2021, the initiated activities of international coordination on the use of subject resources, as determined by that Report (paragraph 4.4), were continued.

Bearing in mind there is no obligation for broadcasters and operators, the introduction of digital radio is about using the possibilities offered by new technologies and overcoming the limitations of existing FM systems in terms of available radio-frequency resources in the 87.5-108 MHz band, which is efficient but already maximally used, it was necessary to foresee the sources of financing the implementation of the first network with national coverage. The proposal of strategic starting points and guidelines for the introduction of digital radio in Montenegro provides an approximate estimate of the costs for transmitters and antenna systems of the DAB+ network with national coverage in the amount of €2,427,000.00, which would be used by 12 radio stations in such a way that the reception of radio the signal of these stations can reach more than 90% of the population of Montenegro. Considering the above, in March 2021, the Agency submitted to the Ministry of Economic Development a proposal for a project to support the digitization of radio in Montenegro from the funds of the IPA III fund related to connectivity and broadband access. This project was proposed by the Agency primarily in order to provide a source of financing for the implementation of the first DAB+ digital terrestrial radio network with national coverage.

In the context of introduction of digital radio, the provision of Article 113 of the Directive of the European Parliament and of the Council (EU) 2018/1972 on the establishment of the European Law on Electronic Communications (EECC Directive), which stipulates that all car receivers installed in a new vehicle of category M (passenger motor vehicle) with at least four points) for the purpose of sale or rental placed on the Union market starting from 21 December 2020, must contain a receiver with the ability to receive and reproduce at least digital radio services provided through digital terrestrial radio broadcasting. Although this provision has not yet been transposed into the Montenegrin legislation, as provided for in the Proposal of strategic starting points and guidelines for the introduction of digital radio in Montenegro, the Agency has informed car distributors and device sellers about the entry into force of the aforementioned provision in the European Union countries, taking into account that the timely implementation of the relevant provisions is very significant from the aspect of protecting the interests of consumers in Montenegro.

Recognizing the differences in the application and development of DAB in European countries compared to the countries of the region, including Montenegro, and that there is evidently a need for a regional initiative through which administrations can be helped in the process of introducing digital radio, the Agency, in accordance with Resolution 17, ITU of the World Telecommunication Development Conference (WTDC-17), as a contribution to the Regional Preparatory Meeting for WTDC-22 for Europe (RPM-EUR) held in January 2021, submitted a proposal to establish a Regional Initiative to Improve the Implementation and Development of DAB (DAB Initiative). General goal of the DAB Initiative is to harmonize activities in the target region in connection with the introduction of DAB services, which will:

- a) Foster a whole process of DAB implementation and further development of the advanced technologies;
- b) Support a maximum harmonisation between legal and technical framework with digitalisation process in EU countries;
- c) Prevent from fragmentation of the politics, technologies and markets;

- d) Contribute to the sustainable development of the environment, considering that the new technology of digital broadcasting on the transmitting and receiving side significantly reduces energy consumption.

This Agency's contribution has been adopted and will be considered for further steps and achieving a consensus on mutual proposals of regional initiatives that will be finally adopted on WTDC-22.

One of the initial conditions for the digitization of radio is the test broadcasting of DAB+ signals via the terrestrial network of transmitters, and as the proposal for strategic starting points and guidelines for the introduction of digital radio in Montenegro proposed the Radio Diffusion Center as the pilot project holder, the Agency, at the request of this company, issued a Temporary Approval for testing radio communication equipment on March 4, 2021 with a validity period of 90 days. After the expiration of this period, at the request of the Broadcasting Center, a new temporary authorization was also issued for a period of 90 days, i.e. until October 27, 2021. The activities for the realization of this project were financed from the company's own funds in order to contribute to the development of digital radio, however, after the expiration of the second temporary approval, the operator stopped with test broadcasting, and all further activities in this regard depend on the strategic guidelines for the development of this technology at the level of Montenegro and the financial support provided for this purpose.

As part of the information campaign aimed at improving the awareness of the general public in Montenegro about digital radio, together with the Agency for Electronic Media, an international seminar was planned, but due to unfavorable conditions caused by the COVID-19 pandemic, the organisation of this seminar was postponed to 2022.

4.6. Assigned numbers/addresses and assessment of their rationale use

The Agency's obligations regarding the management of numbers and addresses as limited resources, based on the Numbering Plan and the Addressing Plan adopted by the Agency, are determined by the Electronic Communications Act. The numbering plan is based on the E.164 recommendation of the International Telecommunication Union (ITU). The numbering plan contains definitions, structure and list of numbers and codes for the numerical area of Montenegro. The addressing plan contains the definitions and structure of the codes: international signaling points, national signaling points and mobile networks, as well as the identification code of the data transmission network and the method of managing it. The agency manages numbering and addresses in order to meet the needs of operators who have the right to assign numbers and addresses in accordance with the Electronic Communications Act, taking care that the assignment is done in a fair and non-discriminatory manner. Based on requests for authorization for the use of numbers and/or addresses submitted by operators, the Agency issues authorizations for the use of these limited resources.

In 2021, the operators submitted a total of 24 requests for the approval of numbers and/or addresses and 1 request for revoking the rights to use these resources. The approval requests for the use of numbers and/or addresses were submitted by the following operators:

- Crnogorski Telekom - 12 requests: 1 request for a short four digit code, 7 requests for a short five-digit code, 1 request for non-geographic numbers for added value service, 2 requests for geographic numbers with access code 080 (free phone) and 1 request a National signalling points. Based on the submitted requests, 12 approvals were issued to this operator;
- Mtel - 8 requests: 2 requests for short four-digit codes, 3 requests for short five-digit codes and three requests for five-digit codes, and 3 requests for geographic numbers. Based on these requests, 8 approvals were issued to this operator;

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- Telenor - 3 requests: 1 request for short four digit and five-digit code, 1 request for short five-digit code and 1 request for National Signalling Point. Following the submitted requests, 3 approvals were issued to Telenor;
- Radio-difuzni centar - 1 request for short five-digit code. Following the requests, one approval was issued to this operator;

In 2021, Telenor submitted to the Agency one request for the expiry of validation of the approval for the use of 8 National Signalling Points. Following this request, one decision on validation expiry was issued. Overview of numerical resources for which the usage approval was issued in 2021, is given in the Table below:

Numbering Type	Operator					Total of numbers
	Crnogorski Telekom	Telenor	Mtel	Telemach	Orion Telekom	
Geographic numbers			12000			12000
Non-geographic numbers 078						
Geographic numbers 077						
Non-geographic numbers 080	3					3
Non-geographic numbers 094 and 095	4					4
Short codes – three-digit number						
Short codes – four-digit number	1	2	2			5
Short codes – five-digit number	7	1	3		1	12
Non-geographic numbers for mobile networks						

In the following Table is given an overview of the address resources for which the usage approval was issued:

Type of Signalling Point/Code	Operator			Total of codes
	Crnogorski Telekom	Telenor	Mtel	
International Signalling Point				
National Signalling Point	11	4		15
Mobile Network Code (MNC)				
Data Network Identification Code (DNIC)				

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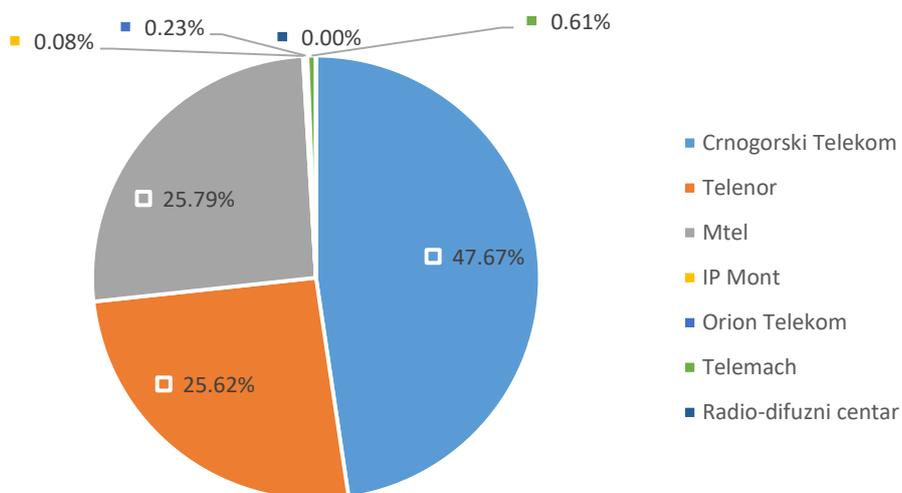
Overview of the addresses for which use the approval in 2021 was revoked, is given in the following Table.

Type of Signalling Point/Code	Operator			Total of codes
	Crnogorski Telekom	Telenor	Mtel	
International Signalling Point				
National Signalling Point		8		8
Mobile Network Code (MNC)				
Data Network Identification Code (DNIC)				

Overview of the approved numbers on 31.12.2021 is given in the Table below.

Numbering type	Operator								Total of numbers
	Crnogorski Telekom	Telenor	Mtel	IP Mont	Wimax Montenegro	Orion Telekom	Telemach	Radio-difuzni centar	
Geografic numbers	846.000	10.000	98.000	1000		11.000	24.000		990.000
Non-geografic numbers 078			20.000	3.000			5.000		28.000
Non-geographic numbers 077	5300								5300
Non-geographic numbers 080	49		5			1			55
Non-geographic numbers 094 and 095	24								24
Short codes – three-digit number	2								2
Short codes – four-digit number	20	11	7				1		39
Short codes – five-digit number	236	68	77			2	1	1	385
Short codes – six-digit number	2								2
Non-geographic numbers for mobile networks (assigned)	1.400.000	1.200.000	1.100.000						3.700.000

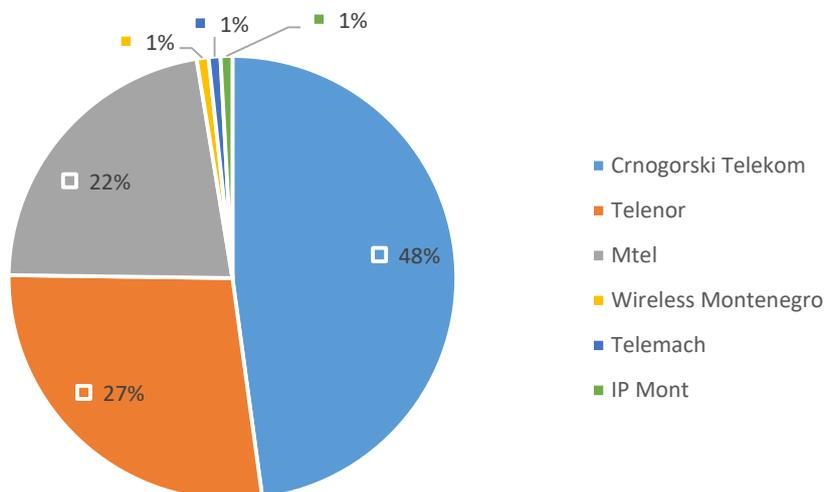
Overview of the approved numbers on 31.12.2021 is given in the following pie-chart.



Overview of the approved addresses on 31.12.2021 is given in the Table below:

Type of Signalling Point/Code	Operator						Total of codes
	Crnogorski Telekom	Telenor	Mtel	Wireless Montenegro	Telemach	IP Mont	
International Signalling Point	4	2	4				10
National Signalling Point	50	29	21		1	1	102
Mobile Network Code (MNC)	1	1	1	1			4
Data Network Identification Code (DNIC)	1						1

Overview of the approved address resources on 31.12.2021 is given in percentages in the pie-chart below.



Data on the assigned resources of numbers and addresses, procedure for acquiring the approvals for the use of numbers and addresses, and form of request are announced on the web page of the Agency. The operators of electronic communications services have enough available resources of numbers and addresses. In 2020, the Agency fulfilled requests of the operators for issuing the approvals for the use of numbers and addresses.

4.7. The use of single European number "112" for emergency calls

Legal basis for establishing Single European Emergency Number "112" has been laid down in the Council Decision 91/396/EEC of 29 July 1991 on introducing Single European Emergency Number. The number "112" is the only number for emergency calls available in all Member States of the European Union which has been introduced to enable citizens to have access to all services in the event of emergency, such as a fire department, police and health service.



Organization of the work of emergency services in each country of Europe varies. Also, among emergency services (police, fire service, and ambulance) there are often significant differences in their functioning. Applying new information-communication technology solutions in order to improve the operation of the service for emergency response has to certain extent, changed the work of emergency services and their operating procedures; but essentially, technical items is what needs to be adjusted to the procedures and methods of the work of these services. Due to the above said, there are no two "112" services operating in Europe in the same way, and often within one country there are several models of functioning in different regions. Therefore, there is no standard clue, but the tendency is on standardization of certain components of the system. The European Emergency Number Association - EENA defined five basic models of emergency services, which are applied in the European countries, with small variations among them.

According to ZEK, the operators of public telephone networks shall provide free calls to the Single European Emergency Number "112" to all users of the services. The operator shall forward all available information about the calls made to the number "112" and to other emergency numbers, to the Operational Communication Centre, without delay and without charge. The operator shall also to enable the user to make a call to the Single European Emergency Number "112" in another way, especially through short text messages (SMS).

In Montenegro, the calls to the number "112" are received in the Operational Communication Centre 112 (OCC 112), located within the Directorate for Emergency Situations of the Ministry of Interior. They forward the calls to the appropriate emergency services, as for example: police, protection and rescue service, and emergency medical help. These services can still receive calls through national emergency numbers 122, 123, 124, and 129. This method of work corresponds to the combination of the models 1 and 2. In order to better coordinate the work of emergency services and use of the capacities, the Minister of Internal Affairs, in the Decision No: 01- 113/13-60010 of 7 October 2013 formed a working group with the task to examine the possibilities of unifying the centers to use the numbers 112, 122, 123, 124, and 129 within single Operational Communication Centre 112.

122
POLICIJA



123
VATROGASCI

124
HITNA POMOĆ



129
POMOĆ NA MORU

4. ASSIGNED LIMITED RESOURCES

As set out by adopted plan, OCC 112 shall be at the locations of regional centers in Podgorica, Bijelo Polje and Bar. New OCC 112 system was established, supplied with new equipment and new version of CoordCom software, covering the territory of Montenegro, according to appropriate regions.

The premises of OCC 112 in Bijelo Polje and Bar were prepared in 2014, and their connection through the network of the Ministry of Interior was implemented as well. Protocol on cooperation with the Ministry of Finance on exchanging data with the Real Estate Administration and on using their spatial data for geographic-information system of OCC 112 was signed. In April 2015 in Zagreb was performed factory acceptance of the application Coordcom 6.0, and it was agreed that during June 2015, "Ericsson Nikola Tesla" would deliver equipment for OCC 112 to the Ministry of Interior.

For submitting data on the users and location, Crnogorski Telekom, Mtel and Telenor generally use fiber links, and as an alternative, the operators use radio links. Telemach is in the process of link connection with OCC centers in Podgorica, Bijelo Polje and Bar.

As from 20.01.2016, the calls made to "112" number have been received through the centers located in Podgorica, Bijelo Polje and Bar. Terminal equipment of OCC 112 for receiving the calls from fixed and mobile networks has been connected to the IMS of Crnogorski Telekom through two E1 links in Podgorica (copper), two E1 links in Bijelo Polje (fiber and copper), and E1 link in Bar (copper).

In 2021, OCC 112 received 219,374 calls which is 7.33% more than in 2020. Overview of the calls per month is given in the Table below.

Frequency of the calls to 112 in 2021	
Month	Number of calls
January	16,739
February	15,963
March	18,982
April	17,476
May	17,301
June	17,788
July	23,650
August	26,762
September	18,168
October	16,514
November	14,731
December	15,300
Total in 2021:	219,374

Because of a large number of tourists, frequency of calls increased during the summer. The operators began to submit data on the location still in 2016, but not yet met the all the requirements regarding precise data submission regarding user location, stipulated by the Regulations on the Unique European Number "112" for emergency calls ("Official Gazette of Montenegro" 44/14).

Due to problems with the application of the Rulebook on the unique European number "112" (accuracy of data on the located user), during 2019, activities were started, and during 2020 and 2021, activities were started to implement the AML method of locating callers of the number "112", which provides high precision for new generation Android phones and IP phones. Starting from the data that there are more than 70% of

such phones in the networks of mobile operators in Montenegro, that a significantly higher percentage of these phones are used by tourists-roamers, taking into account that almost all countries of the European Union have decided to introduce this method (AML), an initiative was launched to introduce this method of locating in mobile networks in Montenegro, especially since in the countries of the European Union that have already introduced this method, it gives excellent results. We should also not ignore the fact that according to the old method of locating, existing mobile networks should be improved (construction of new base stations), which would require significant financial resources that operators would have to invest in increasing the density of base stations in existing networks. Even if this were to be done, the precision of locating according to the existing Rules could hardly be achieved within the limits prescribed by it.

While initiating the call to "112" number, depending on the condition of the mobile phone battery, the activation of positioning the user is as follows:

- As the first step, the AML method based on GNSS is activated when the mobile phone is supplied with enough battery reserve (needed at least 5% of power reserve);
- Locating is performed by virtue of Wi-Fi connection with SSID or MAC address of the device, which the user is connected to;
- Locating is performed based on the network configuration of mobile network (by virtue of base cell).

If the location is not defined by virtue of AML, before expiration of pre-defined time frame, the location defined by Wi-Fi shall be sent, and even when this is not possible, the location based on data from mobile network configuration shall be sent, i.e. data now in use (base station with additional information on the distance between the base station and the position). In case that the location is not detected by virtue of any of the above methods, then is sent: "no message data".

When bearing in mind that introducing AML will not cause nearly no costs with mobile operators, and how important it is to determine as precise location of the user as possible for an efficient work of the emergency services (MUP, Gorska služba spsa, Hitna medicinska pomoć, Vatrogasna služba....) in saving people's lives, a decision to implement AML proved as reasonable.

In the middle of 2019, the first steps for AML introduction were made in the middle of 2019 through contacts with Ericsson as the vendor and OCC "112", by introducing the AML method in Montenegro and Google (procedures for introducing the service). After completing the organization and receiving test applications at the end of August and beginning of September, commenced testing in the mobile network of Crnogorski Telekom.

Test results proved the expectations, and being aware that introduction of AML will not incur almost any costs with the mobile operators and that the number of users of „smart phones“ has a continuous upward trend, decision for introducing AML methods in Montenegro proved as reasonable

In the course of 2020, the renewal of software and hardware was carried out in OCC 112, which created the conditions for the introduction of AML and advanced services such as e-Call. At the beginning of 2021, the administrative procedure was completed, certain numbers (14678 for SMS messages and +38267114512 for calls) and a contract with Google on the provision of services for the operation of the AML service were signed. Google has approved a one-year free license for the operation of the AML service. Currently, AML is operating thanks to a test license until mid-June 2022. As funds from the budget for 2022 have not been provided for a permanent license, there may be problems with the work of AML, which would significantly degrade the AML service and threaten the accuracy of locating users when calling the number 112 by users using new generation phones that have the ability to locate and send the coordinates of your location. For old phones, remains the old method of locating the users, but work will continue to be done to improve it.

At the beginning of 2021, e-Call testing was completed, and after that the service was put into operation within OCC 122. In the middle of 2021 was one real e-Call, automatically initiated during a traffic accident after which OCC immediately informed local police center with precise data on the place of accident.

In order to increase the reliability of the work of OCC 112 center, a redundancy of the actual optical line was successfully implemented through optical network of Crnogorski Telekom. In 2022 is planned an increase in improving of the work of OCC 112 by all operators. It was also planned to make Telenor and Mtel directly connected OCC 112 for voice call via the SIP Protocol so that the first choice of calls to the number 112 would end up within its own network, which would avoid the situation from October 2021, when due to problems in the operation of the Crnogorski Telekom network, calls to numbers were difficult or interrupted for almost a day emergency services. Already at the end of 2021, Mtel was connected via SIP to OCC 112 and testing began. After the end of testing, commissioning is planned, followed by connection, testing and commissioning with Telenor via the SIP protocol. When this is finished, there will be a change in the routing of calls to the number 112, so that the first choice would be through the own network, and the second choice would be through another operator.

When OCC 112 Bar creates the conditions for connecting links for data communication, the operators: Crnogorski Telekom, Telenor and Mtel will be notified to fulfill their obligation to send data according to OCC 112 Bar. Telenor has withdrawn the router that was intended for Bar (the connection has not yet been released because OCC 112 is not ready) and is keeping it as a reserve, with another one that was in the reserve set, in case of failure of the router towards Podgorica and Bijelo Polje. Telemach should be connected by links with OCC center

5. DEVELOPMENT OF THE POSTAL SERVICES MARKET

5.1. Regulatory framework

The Law on Postal Services (Official Gazette of Montenegro, 57/11, 55/16 and 55/18) regulates the conditions and manner of performing universal and other postal services, and other issues relevant for the provision of postal services. The Law on Postal Service defines the competences of the Agency's responsibilities as an independent regulatory authority in the postal service market, especially in the part related to the issuance and revocation of licenses, issuance of extracts from the Registry, definition of the criteria for determining the prices of the universal postal services, reserved postal services, verification of calculation of net costs of the universal postal service, monitoring the state and development of the postal services market, taking measures to ensure competitiveness on the market, expert supervision of the work of postal operators, deciding on user complaints, international cooperation with institutions and bodies of the World Postal Union and the European Union, as well as with regulatory bodies competent for the regulation of postal services.

In December 2018, the Government of Montenegro adopted new strategy of postal services development in Montenegro for the period 2019-2023 with an Action Plan 2019-2020. The goals as well as medium-term policy of development of the postal market are defined pursuant to the Strategy and to Article 62 of the Law on Postal Services. With a view to performing strategic goals was defined the Action Plan 2021-2022, which along with operations goals with results indicators determines the measures, competitive bodies and timeframe for their realization, and also indicators of the effectiveness of the measures.

5.2. Development of secondary legislation

During the implementation of the existing by-laws in 2021, the Agency did not recognize the need for changes or amendments to the existing by-laws. In addition, the planning and strategic documents adopted by the Government of Montenegro, such as the Action Plan 2021-2022 and the Program for the Accession of Montenegro to the European Union 2021-2023, did not define changes to the existing ones, or the adoption of new legal or by-law regulations in 2021. In the Report on the Implementation of the Program for the Accession of Montenegro to the European Union 2021-2023 for the year 2021, which was adopted by the Government in January 2022, in relation to Chapter 3 - Right to establish a company and freedom to provide services, which includes postal services, it was stated 100% implementation in terms of the strategic framework, because the Action Plan 2021-2022 was adopted, but nothing is planned for 2021 with regard to the legislative framework.

5.3. The analysis of the postal services market

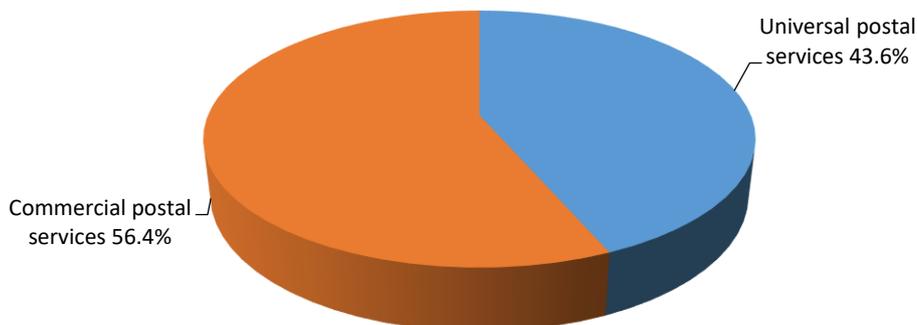
5.3.1. Pošta Crne Gore

Pošta Crne Gore, as the universal postal operator, has a right and obligation to conduct universal postal services throughout Montenegro.

In 2021, Pošta Crne Gore provided in total 34,743,988 postal services, which is 4.2% less than in the previous year, when 36,253,215 postal services had been provided. Out of the total of delivered postal services, 15,146,125 were universal postal services, and 19,597,863 commercial postal services, or in percentages 43.6% services referred to universal services, while 56.4% referred to commercial postal services.

In 2021, Pošta Crne Gore carried out 4.1% less universal postal services, which is 4.2% less commercial postal services in relation to 2020.

Share of universal and commercial postal services in the total of postal services carried out by Pošta Crne Gore in 2021



The analysis of the volume of postal services provided by Pošta Crne Gore in 2021 shows an increase in cash operations, money orders and telegraph services, as well as in letter-post services and hybrid mail services, while parcel services and express services stayed at the level from the previous year.

In the structure of service volumes for 2021, the largest share in the amount of 44% refers to letter-post services. In 2021, Pošta Crne Gore handled 15,283,752 letter-post services, which is 6.1% less than its volume in the year before. With regard to the volume, it is followed by hybrid postal services, with the share of 31.6% in the volume of services handled during 2021 by Pošta Crne Gore, which is 10,972,449 hybrid postal services, and is 6.1% less than the volume of hybrid postal services in 2020.

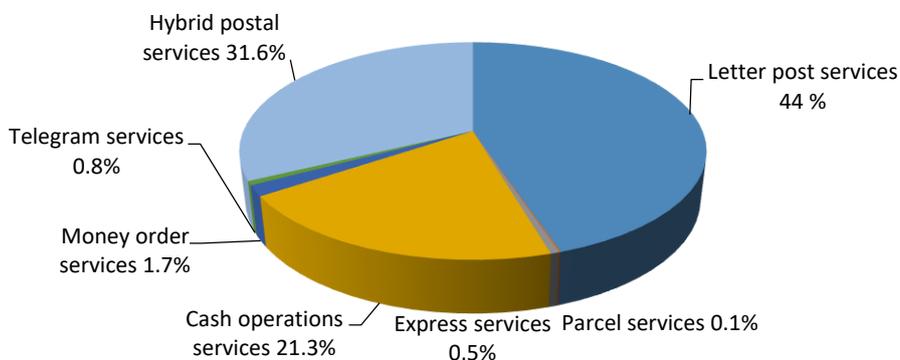
Share of cash operations services for 2021 in the service volume of Pošta Crne Gore amounts to 21.3%. More exactly, Pošta Crne Gore carried out 7,420,487 cash operations services, which is 1.9% more than in the previous year. In the total volume of cash operations services, payment operations CASH FLOWS (incoming and outgoing cash deposits and withdrawal) make 55.4%, billing makes 40.6%, and money transfer makes 4%.

In 2021, Pošta Crne Gore rendered 590,936 money order services, which is an increase of 3.9% compared with the year before, when 572,569 money order services were rendered.

During 2021, Pošta Crna Gore rendered 157,113 express services, which is a decrease of 11.4% compared to the year before, when 177,341 express services were rendered.

Pošta Crne Gore carried out 49,891 package services in 2021, making a decrease of 0.3% in relation to 2020, when 50,027 referral services were carried out.

Share of individual postal services in the total of postal services rendered by Pošta Crne Gore in 2021

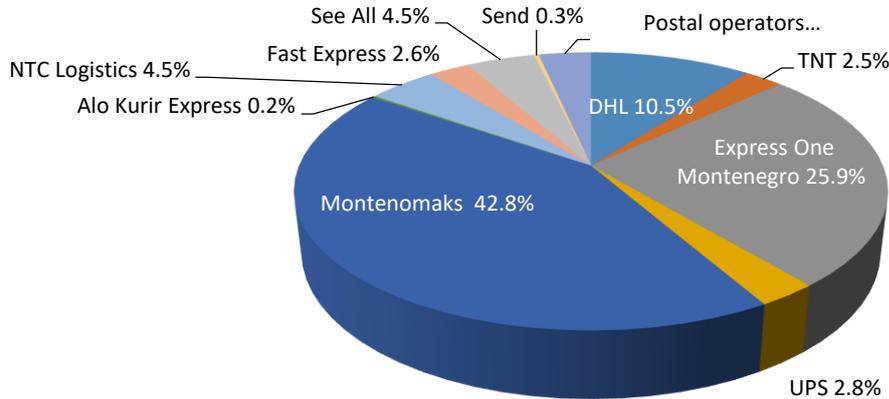


5.3.2. Other operators

In 2021, along with Pošta Crne Gore postal services in Montenegro were also provided by the following operators:

- Kingscliffe Distribution Montenegro d.o.o. Podgorica;
- Montenomaks Control & Logistics d.o.o. Danilovgrad;
- Express One Montenegro d.o.o. Podgorica (ex City Express Montenegro, that changed the name in 2021);
- Express Courier d.o.o. Bar;
- Tim Kop d.o.o. Podgorica;
- NTC Logistics d.o.o. Nikšić;
- Alo Kurir Expres d.o.o. Plav;
- Fast Express d.o.o. Danilovgrad;
- Purić Trade d.o.o. Podgorica;
- See All d.o.o. Podgorica;
- Arde Com Pljevlja;
- Exclusive Mobile d.o.o. Podgorica;
- Go Express - Braća Kastratović d.o.o. Podgorica;
- Italicom d.d. Podgorica;
- Lancer d.o.o. Kolašin;
- Mg Express d.o.o. Podgorica;
- Post Express Padrino d.o.o. Tivat;
- Pro Express d.o.o. Podgorica;
- Rabbit Courier Express d.o.o. Podgorica;
- Royal Express d.o.o. Podgorica;
- Transporter Courier Montenegro d.o.o. Podgorica;
- Žvaka d.o.o. Podgorica;
- Congress Support Team d.o.o. Podgorica;
- Naš Express d.o.o. Podgorica;
- Premium Express d.o.o. Bar;
- TT Phoenix d.o.o. Budva;
- Wolf Express d.o.o. Podgorica;
- DMC Logistics d.o.o. Podgorica;
- Halo Dostava d.o.o. Podgorica;
- Post Express d.o.o. Bar.

The pie-chart below shows a total physical volume of postal services realized by other postal operators in 2021.

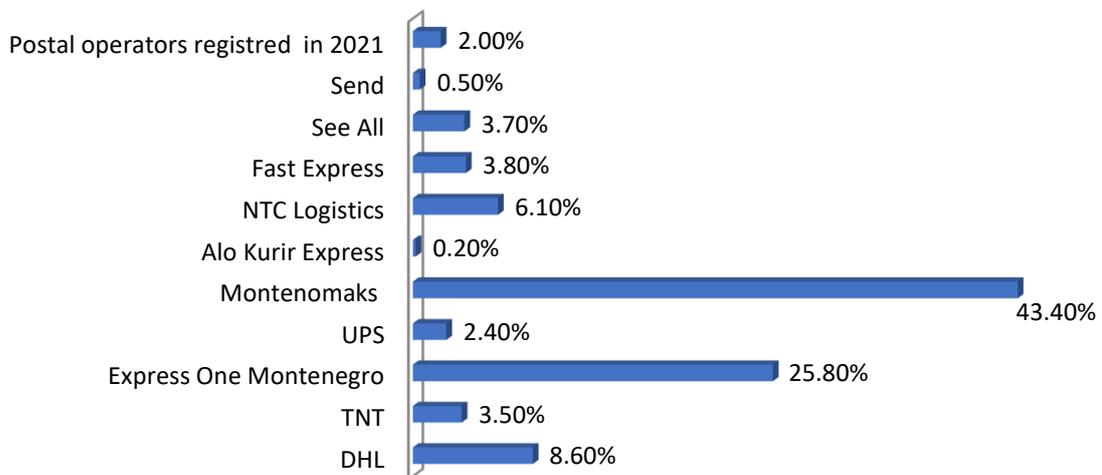


Total physical volume of postal services realized by other postal operators in 2021 amounted to 593,419 delivered postal services, which is 27% more than in 2020, when realized physical volume of postal services was 466,674.

During 2021, twenty new postal operators were registered. These operators were registered and started to deliver their services in different periods of 2021. We should be aware that data on the volume of delivered postal services of these operators do not refer to whole 2021, but only to the period when these operators provided the services, and it is a period less than twelve months for all the operators. Considering the fact that these operators, in percentages, did not deliver a great service volume in relation to total number of all provided services, all of them are presented together in the above and all further charts, under the title: "Postal operators registered in 2021".

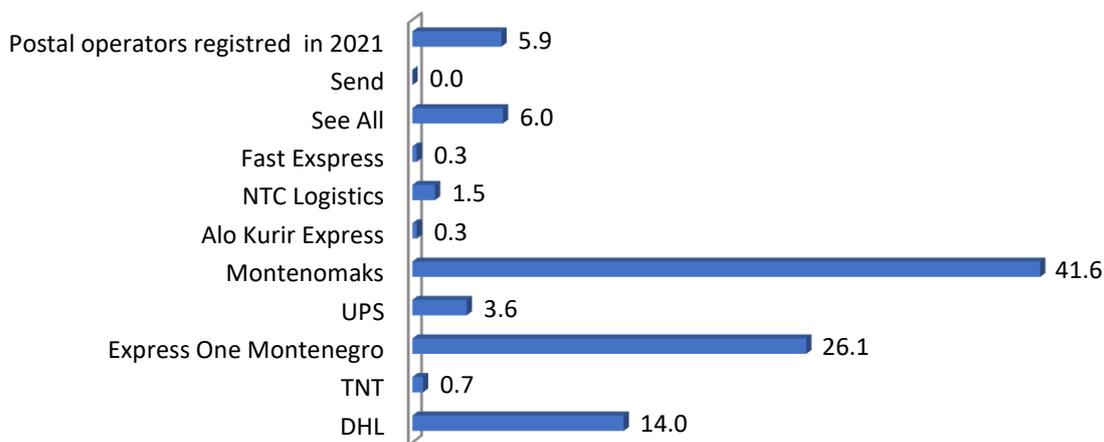
The greatest share in the total physical volume of all postal services provided by other operators, leading position holds Montenomaks, as its volume of delivered postal services is 42.8% and Express One Montenegro, with the volume of delivered postal services of 25.9% of the total of delivered postal services of other operators.

In the graphic below is given an overview of the share of express services delivered by other operators in 2021.



In the structure of parcel services rendered by other operators, Montenomaks holds the leading position, as it covers 43.4% of the market of express services of other operators in 2021, followed by Express One Montenegro 25.8% and DHL, which covers 8.6% of that market.

In the graphic below is given an overview of the share of operators in parcel services rendered by other operators in 2021.



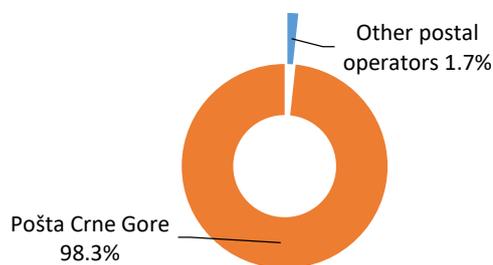
In the structure of parcel services with other operators, Montenomaks holds leading position, as it covers 41.6% of the market of parcel services of other operators in 2021, City Express One Montenegro 26.1% and DHL 14%.

5.3.3. Comparative analysis of the postal services market

In 2021, all operators rendered a total of 35,337,407 postal services, which is 3.8% less than in 2020.

Out of that number, Universal Postal Operator rendered 34,743,988 postal services, which is 98.3% of the total volume of rendered services, while other postal operators rendered 593,419 postal services, or 1.7% of the total volume of rendered services.

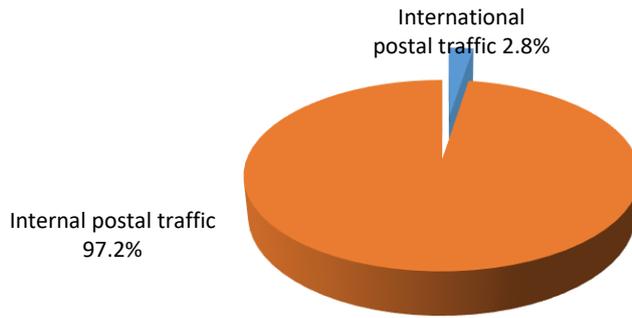
The pie-chart that follows shows a total of physical volume of postal services in 2021.



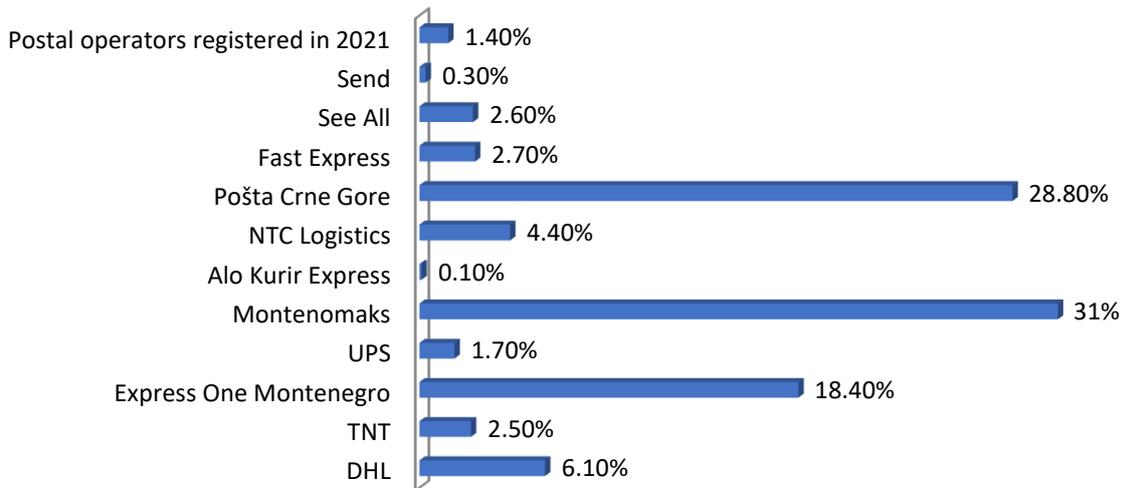
Pošta Crne Gore is still at the leading position on the postal services market and its participation, given in shares, amounts to 98.3%, while the share of other operators is 1.7%.

Out of the total number of postal services rendered by all operators (which amounts to 35,337,407), in the internal postal traffic a total of 34,340,145 postal services rendered, i.e. 97.2%, while in international postal traffic a total of 997,262 postal services, i.e. 2.8%.

Pie-chart that follows shows postal services rendered in international and internal postal traffic in 2021.

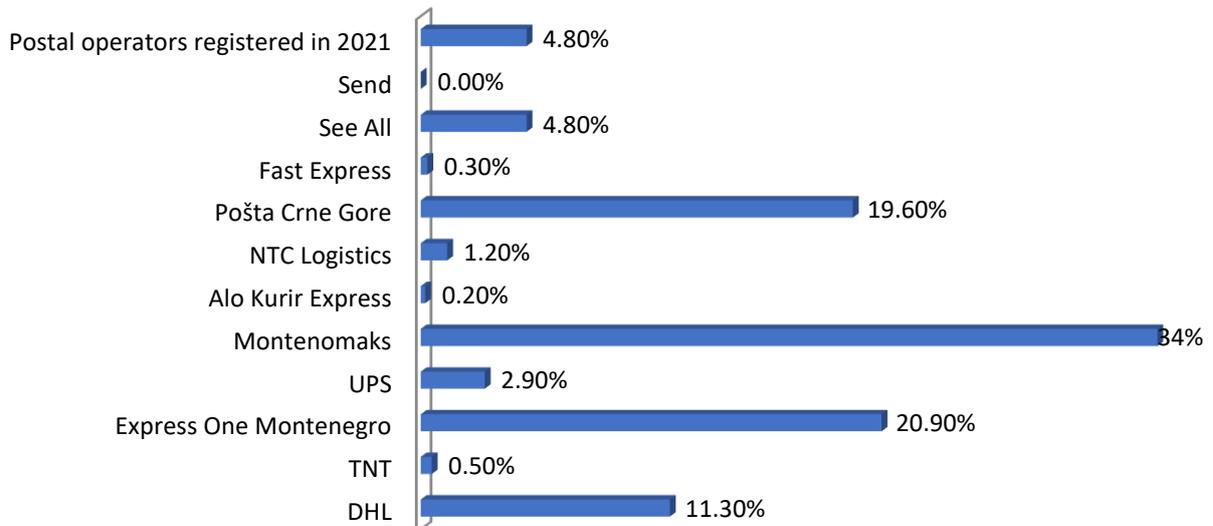


Share of the postal service operators at the market of express services in 2021 is given in the following chart.



The leading position in the provision of express services in 2021 holds Montenomaks with 31% market share, Pošta Crne Gore with 28.8%, Express One Montenegro 18.4%, DHL 6.1%, NTC Logistics 4.4%, Fast Express 2.7%, TNT 2.5%, See All 2.6%, UPS 1.7% postal operators registered in 2021 1.4%, Send 0.3%, and Alo Kurir Express 0.1%.

Share of the postal service operators in the parcel service market in 2021 is given in the chart below.



A dominant position in the provision of parcel services in 2021 holds Montenomaks, with a 34% market share, followed by Express One Montenegro with 20.9%, Pošta Crne Gore with 19.6%, DHL with 11.3%, See All and

postal operators registered during 2021 that have 4.8%, UPS with 2.9%, NTC Logistics with 1.2%, TNT with 0.5%, Fast Express 0.3% and Alo Kurir Express with 0.2%.

5.4. Implementation of the Rulebook on the manner of keeping accounting records and calculation of the net cost of the universal postal services

During 2021, in coordination with external Konzorcijum Ernst&Young Montenegro d.o.o. Podgorica, the Agency continued to control implementation of the Rulebook on the manner of keeping accounting records and calculation of net costs of the Universal Postal Operator (hereinafter referred to as the Rulebook).

Implementation of separate accounting records, pursuant to Article 96 of the Law on Postal Services, and/or internal calculation system complied with the requirements of the Rulebook are pre-conditions and the base both for calculation of net costs for providing universal postal services and for the pricing of these services which would be based on the real costs and criteria stipulated by the Postal Services Act and the acts of the Agency.

During 2021, the procedure of control regarding implementation of the subject Rulebook included control by the universal postal operator Pošta Crne Gore, of the manner of keeping accounting, accounting records, and/or control of the implementation of the cost model based on HCA/FAC methodology, pricing of the universal services based on the criteria defined by the Agency, especially the criteria stipulating that these prices shall be based on the actual costs in order to have the services efficiently performed.

Postal Services Act lies down that, if the performance of universal postal services is unjustified financial burden for the universal postal operator, it has the right for reimbursement if the calculation of net costs, proved to be an unjustified financial burden. Based on the above said, Pošta Crne Gore submitted the request for verification of net cost calculation for 2020 in the amount of € 648,114.99. Upon receipt of the request of Pošta Crne Gore, in line with Postal Services Act, in the verification procedure of net cost calculation of universal postal services for 2020, the Agency was assessing whether Pošta Crne Gore fulfilled a set of laws and bylaws relating to the way of keeping accounting records and the way of calculation of determined amount itself; this was intended to check if the submitted request and net cost amount being the subject of the request have been reasonable. In performing the verification process of net cost calculation of universal postal service for 2020, the Agency also engaged an independent auditor HLB Mont Audit, respecting Article 100 (3) of the Postal Services Act.

Based on the assessment being the result of detailed analysis of the request submitted by Pošta crne Gore for the verification of net costs for 2020, and accompanying accounting documentation, the analysis of the Report of Ernst&Young Montenegro, as well as the appraisal of independent auditor HLB Mont Audit, by its Decision No 0102-2876/23 from 25.11.2021, the Agency determined that the net costs of universal postal service to be € 400,126.95.

5.4.1. Regulation of the prices of universal postal services

As laid down by Postal Services Act, price of universal postal service shall be equal to all the users throughout the territory where the universal postal operator renders its services, and shall be affordable, based on real costs and for efficient performance of universal postal services, free of charge for certain kind of services used by visually impaired persons and persons with partially impaired vision, shall be transparent and determined in a way not to give advance to certain users in relation to other users, under the same or similar conditions.

Prices of universal postal service shall be determined by the postal operator under criteria stipulated by the Agency. Based on the authorizations as referred to in Article 15 paragraph 1 and 2 of the Postal Services Act, the Agency adopted Rulebook on the criteria for determining the prices of universal postal service.

In order to follow the status, changes within it, i.e. development of the postal services market and its regulation, the Agency has performed the analysis of postal market periodically, so for 2021 was also done the analysis of prices of universal postal services of Pošta Crne Gore, where these prices were compared with the prices of the same services rendered in the countries of the region and in certain EU countries.

For the purpose of supervision of the implementation of the Rulebook on the way of keeping accounting records and net cost accounting, and after conducting public procurement procedure, the Agency engaged Ernst&Young Montenegro as an external consultant, and one of the project assignments laid down by tender documentation was to analyze the basis for the pricing of universal postal service on the territory of Montenegro. This is why was performed the analysis of the actual pricelist of the postal services of Pošta Crne Gore, being an universal postal operator, data submitted by Pošta Crne Gore to the Agency, with net cost calculation for 2019, as well as the prices of universal postal services on the territories of the surrounding countries, the EU countries, along with an additional analysis of the criteria for determining the prices.

The analysis was done by benchmark method and on the results of the analysis, considering data available from selected group of the countries in the region, that is data on the European countries for certain categories and rate of the mass of universal postal service, it is to conclude that prices of universal postal service do not deviate systematically in relation to prices of selected set in the comparable countries and that through the greatest number of observed parameters, these prices are at medium value. However, in the case of international traffic prices, the prices deviate for different zones and mass rates in relation to the medians of the observed countries.

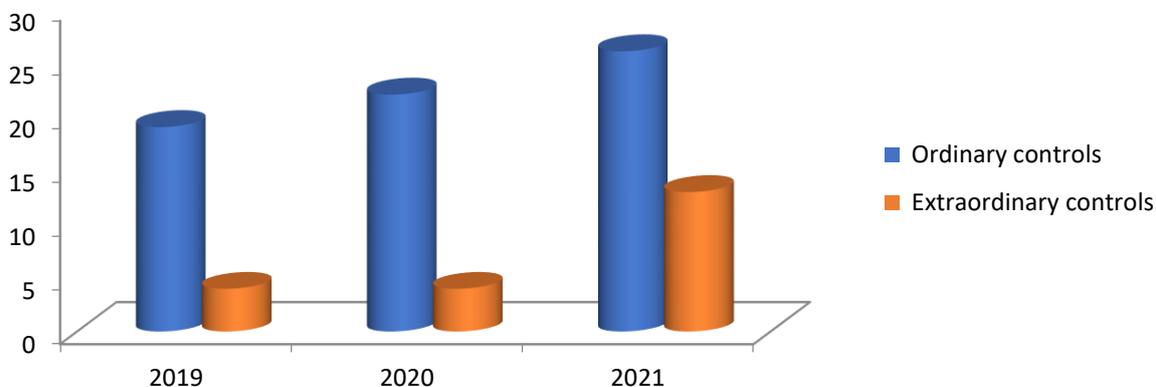
The prices of universal postal services provided by the Pošta Crne Gore have not been changed since 2012, despite the changes in the market of postal services and the Agency's constant requests that the Pošta Crne Gore determine and submit the Price List of the universal postal service, in which the proposed prices will be based on defined criteria, and above all, based on real costs for their efficient performance.

In the previous year, the progress of the Post of Montenegro in keeping separate accounting was recorded, which resulted in the verification of the net cost of the universal postal service for the year 2020. Given that adequate separate accounting is a prerequisite, not only for calculating the net cost of providing universal postal services, but also for forming the prices of these services, which would be based on real costs and criteria defined by legal and by-laws, the Agency indicated to the Post that they had necessary prerequisites for the intensification of the Post's activities related to the preparation of the proposal for the Price List of the universal postal service. Therefore, the price list of the universal postal service was one of the topics of the meeting held at the beginning of November 2021 between representatives of the Agency and Pošta CRne Gore, after which Pošta informed the Agency in writing that it would submit a proposal to the Agency for approval by June 15, 2022. Price list of the universal postal service.

5.5. Professional supervision in the field of postal services in 2021

Professional supervision over the work of postal operators registered with the Agency for electronic Communications and Postal Services, according to the Law of Postal Services, shall conduct the Agency by its inspectors for postal services. Inspectors for postal services perform their inspection activities in line with the Law on Postal Services, Law on Inspection ("Official Gazette of Montenegro", 39/03, 76/09, 57/11, 12/14, 11/15, 52/16), and Law on prevention of money laundering and terrorism financing ("Official Gazette of Montenegro" 33/14, 44/18, 73/19, 70/12), and with the Plan for professional supervision in the field of postal services for 2021.

In 2021, regular and extraordinary professional inspections were carried out. A total of 39 inspections of the work of postal operators were carried out, of which 26 regular inspections and 13 extraordinary inspections. Minutes were made of the performed inspections. The authorized representatives of the subjects of supervision had no objections to the prepared minutes. Copies of the minutes were delivered to the authorized representatives of the subjects of supervision. The comparative presentation of the number of regular and extraordinary controls performed for the last 3 years is given in the following graphic.



In the focus of the professional supervision conducted during 2021 were:

- Control of the provision of postal services of the operator;
- Control of the compliance of performing postal services with Postal Services Act, bylaws, and especially with general conditions for conducting postal services;
- Control of the pricelist for the provision of postal services;
- Control of keeping the records and type of postal services records, and
- Control of the measures taken for identifying and preventing money laundering and terrorism financing (SPNFT).

In case the irregularities are identified during the professional supervision, lady supervisors of the Agency warn about these irregularities and determin the deadlines for carrying out corrective actions. Corrections of determined irregularities or submission of additional data and information were required in 21 cases. Identified irregularities regarded the following:

- Compliance of general conditions with Postal Services Act;
- Publishing general conditions on the official web site of the operator;
- Publishing the pricelist on the official web site of the operator;
- Irregularities with regard to total revenues collected from postal services in the previous year, based on which an annual fee for the provision of postal services is calculated;
- Irregularities with regard to preparation and update of the official web site of the postal operator;
- Keeping the evidence on the rendered postal services, daily and annualy;
- Delivering data to the Agency with regard to the provision of postal services, expending postal network of operators, i.e. familiarising the Agency with the cooperation agreement pf certain postal operators;
- Preparing the act on appointing an authorized person responsible to carry out SPNFT measures and appointing his/her deputy, and its delivery to the Agency;
- Submitting to the Agency the information on improving the information system of the universal postal operator with a view to implementing SPNFT measures.

Postal operators with the irregularities were given a deadline to rectify them, and was established by the checks that the irregularities were rectified.

The check was conducted by supervising the measures taken to detect and prevent money laundering and terrorist financing at Pošta Crne Gore, during which it was established that Pošta Crne Gore, after the election of new management, appointed and drew up an act on the appointment of an authorized person and his/her deputy, as provided for in Article 43 of the Law on Prevention of Money Laundering and Terrorist Financing, but that it was not submitted to the Agency, which supervises the implementation of measures for the prevention of money laundering and terrorist financing at Pošta Crne Gore. The supervision also determined that the Pošta Crne Gore continues to work on improving the information system in terms of innovating and adapting existing counter applications for the implementation of measures to prevent money laundering and terrorist financing, i.e. software solutions for client risk assessment, monitoring of client business relationships and control monetary transactions. Deadlines have been set for the subject of supervision (Pošta Crne Gore) for the submission of the act on the appointment of the authorized person and his deputy, as well as for the submission of Information on the further improvement of the information system of the Pošta Crne Gore (over-the-counter applications), which is carried out in order to apply measures to prevent money laundering and terrorist financing, which this postal operator did within the prescribed time limit.

6. REALISATION AND QUALITY OF UNIVERSAL POSTAL SERVICES

Universal postal service is a postal service of general interest continuously conducted on the whole territory of Montenegro. That is the service of specified quality and standard, provided at affordable prices and under the same conditions for all customers in internal and international postal traffic. The users shall be provided with universal postal service every working day, not less than five days a week, with at least one receipt and one delivery of postal items from the scope of universal service.

Quality of universal postal service is defined based on the following:

- Availability of postal services,
- Speed and reliability of transfer and delivery of postal items, and
- Safety of postal parcels.

6.1. Availability of postal services

Availability of postal services is reflected in the availability of postal network units (JPM) and mailboxes, working time of postal network units, as well as in the population coverage with postal items.

Pošta Crne Gore has 157 postal network units, of which 107 permanent postal network units, 47 franchise units (i.e. 164 postal network units for the provision of services to the users), and 3 postal network units are for processing postal items (Alternating Mail, Customs Clearance Mail and Postal Center).

As laid down by Article 9 of the Rulebook on more detailed conditions required for performing the universal postal service ("Official Gazette of Montenegro" 29/17 and 114/20), the operator of universal postal service shall provide JPM network so that one JPM comprises the area of maximum 100 km² and for up to 5,000 inhabitants.

By comparing the area and number of inhabitants of Montenegro with the number of JPM, it is concluded that one post office covers an average of 90.15 km² and serves 4,034 inhabitants, which is in accordance with the prescribed standards.

In 2021, the Post Office of Montenegro had 170 mailboxes in operation, which is 28 mailboxes more than in the previous year.

Comparing this number with the number of inhabitants in Montenegro, the data shows that there are 3,655 inhabitants per mailbox, which is still not in accordance with the standard prescribed by Article 8 of the Ordinance on closer conditions for the provision of universal postal services, which requires that one sets a mailbox for 1,500 inhabitants.

Non-compliance with that standard (even though the deviation from it is less than in the previous year) is still explained by the Post of Montenegro with the statement that practice for years has shown that mailboxes are used more intensively only in larger cities and tourist places, while in other areas their use has been reduced to minimum.

Pošta Crne Gore makes regular changes in working hours JPM - post. These changes refer to the beginning and end of work, the duration and schedule of working hours during the day, week and year. This is particularly important for the operation of post offices in tourist centers, but, if there is a need for it, it is also applied to other post offices. Working hours are displayed on the entrance doors of postal network units. Post office hours on holidays are highlighted on the website of the Post of Montenegro and in post offices.

The management of post office working hours is carried out on the basis of monthly analyzes of data on post office operations, on the basis of the number of services performed, data on business results and data obtained through various forms of communication with users of postal services and feedback obtained from these communications (e.g. working hours in larger shopping centers, which, due to the expressed needs of users, are mostly all day, until 10 p.m, with the exception of Sundays when post offices are closed).

Determining the working hours and shifts of all post offices - JPM, the Post of Montenegro determines based on the criteria prescribed in Article 12 to Article 16 of the Rulebook on closer conditions for the provision of universal postal service.

In the course of 2021, due to the still current situation with the Covid-19 virus pandemic and based on the measures prescribed by the competent authorities in Montenegro, the Post of Montenegro adjusted its working hours several times and informed in a timely manner the users and the Agency as a regulator in the market of postal services.

The coverage of the population by delivery is evaluated by looking at the number and distribution of delivery post offices, as well as the organization of the delivery of postal items.

The Post of Montenegro has 89 delivery post offices (45 permanent and 44 franchise post offices), with 240 delivery areas, which are defined as narrow, wide and the widest, as well as a combination of these three basic types, depending on the topography, traffic network, population density, quantity shipments for delivery and others. In this way, the entire territory of Montenegro was divided and covered.

There are 1,259 mailboxes active (in use) in the Post Office of Montenegro.

6.2. Speed and reliability of transfer and delivery of postal items

Speed and reliability are the criteria of the quality of transferring postal items, which means that the consignment is safely transferred and delivered within transfer time from the date of receipt until the date of delivery.

Postal Services Act and the Rulebook on detailed conditions for performing postal services determine quality standards in internal and international postal traffic. Under the term quality of universal postal service in internal postal traffic is considered delivery of minimum 95 % postal items within 3 working days.

The quality of universal postal services in international postal traffic means delivery of 85% of letter post items within a maximum period of 3 working days and an average of 97% of letter post items within a maximum of 5 working days.

Speed and reliability are measures of the quality of the transfer of postal items, which imply that the shipment is safely transferred and delivered within the delivery time measured from the date of receipt to the date of delivery.

The deadline for delivery of postal items is considered the time from the receipt of postal item until its delivery to the recipient. Deadlines in domestic and international postal services do not include:

Delays due to incorrect or incomplete address of the recipient,
 Delays due to *force majeure*, or traffic delay which has not been caused by the postal operator,
 Non-working days and days when delivery of postal items is not performed.

Deadlines for delivery of postal items in international postal traffic depend on the distance of the recipient country, traffic connections and quality standards of national operators of the universal postal services.

The quality of delivery of postal items ensures the competitiveness on the postal services market and the user confidence.

Postal Services Act laid down the obligation of the universal postal operator to provide an annual quality measurement of the delivery of postal items, in order to determine the ratio of delivered items, and other data necessary for determining the quality of performing universal postal services, by engagement of an independent institution for the research and/or monitoring.

In the course of 2021, Pošta Crne Gore engaged an independent institution for measuring the quality of delivery of postal items, which made the control and measurement of the quality of transfer and delivery of ordinary and registered letter-post items in the territory of Montenegro, in the period from 19.10 till 12.11.2021.

6.2.1. Quality measurement of the transfer of ordinary letter-post items over the counters of post office boxes, in internal postal traffic

Measuring the quality of transfer of ordinary letter-post items in domestic postal traffic is conducted on the sample of 701 test letters.

***Control of the quality of transfer and delivery of ordinary postal items
 (the results achieved for D+3 i for standard higher than D+3)***

Transfer and delivery time	Number of consignments	%
1 day	264	37.7%
2 days	200	28.5%
3 days	123	17.5%
Total up to 3 days	587	83.7%
More than 3 days	114	16.3%
Total of samples	701	100%

Regarding the delivery deadlines of ordinary letter items for D+3 Standard, with achieved result of 83.7% there is a small increase of 3.4% in relation to measuring results from the previous year, when it had been 80.3%.

Out of 701 ordinary postal items, within a 3-day period 587 postal items were delivered, or in percentages 83.7%, being 95% below the prescribed standard (Article 59 of the Postal Services Act). This result is better than the one from the previous year, when delivery of the letter-post items in a 3-day was 80.3%.

In its reports, Pošta Crne Gore, in order to explain the reasons for not achieving the prescribed standard, notes that there are still long-standing problems of anonymity and insufficient marking of streets and buildings, buildings not being equipped with mailboxes, and where there are in new buildings, the absence of data on tenants of these buildings, the emergence of new suburban settlements without street names and numbers, which still significantly affects the quality of service and makes it impossible to achieve those results of a universal postal operator that would be within the prescribed standards.

It is also pointed out that in the course of 2021, many streets and buildings in suburban settlements have received numerical designations instead of names, but that the invoice issuers and other users of postal services continue to use designations bb, or only the names of settlements. Pošta Crne Gore especially points out that an additional aggravating factor in 2021 was still the Covid-19 Pandemic.

6.2.2. Quality measurement of transfer and delivery of registered postal items in internal postal traffic

Quality measurement of transfer and of delivery of registered postal consignments in internal postal traffic was carried out on the sample of 587 registered consignments.

Quality control of the transfer and delivery of registered postal items
(the results achieved for D+3 Standard and for the standard higher than D+3)

	Pattern	Up to 3 days	More than 3 days
Number of consignments	587	565	22
In percentages	100%	96.3%	3.7%

Processing the samples in 96.3% of registered postal items delivered in the period of three days, meaning that the quality of 95% of internal postal traffic defined by D+3 Standard was achieved (Article 59 of the Postal Services Act).

6.2.3. Quality measurement of transfer and delivery of letter-post items from international traffic

During 2021, in Pošta Crne Gore were carried out two quality measurements of letter-post items in international postal traffic, according to following:

- Quality measurement of transfer and delivery of postal items from international traffic by participating in the GMS Project (*Global Monitoring System*) E2E Internal, in the organization of the World Postal Union. The measurement was carried out through exchange of test letters with postal administrations of: Croatia, Serbia, and all three administrations of Bosnia and Herzegovina, Ukraine and Singapore,

- Quality measurement of transfer and delivery of registered postal items from incoming international traffic, relying on data from application of the World Postal Union, referring to Montenegro.

6.2.3.1. Measurement of the quality of the transmission of postal items organized by the Universal Postal Union for ordinary postal items

In August 2014 Pošta Crne Gore started to carry out quality measurement of transfer of ordinary postal items in international traffic, by participating in the GMS project E2E Internal, organized by the Universal Postal Union. In the first cycle, the measurements included Bosnia and Herzegovina, Croatia, Serbia and Turkey.

The first cycle was till the end of December 2015.

The second cycle started in January 2016 and ended in December 2017. Exchange of test letters done in this cycle was conducted with postal administrations of: Croatia, Serbia and Turkey.

The third cycle started in 2018 and ended in December 2019. Exchange of test letters is in this cycle done between postal administrations of: Croatia, Serbia, Turkey and Bosnia and Herzegovina–Hrvatska pošta Mostar.

The fourth cycle commenced in January 2020, and will end in December 2021. Exchange of test letters in this cycle is done with postal administrations of Croatia, Servica, all three administrations of Bosnia and Herzegovina, Ukrania and Singapore.

This measurement is conducted based on determined international routes in the air traffic, with its defined scheduled routes and time of movement. Analyzing the achieved results during 2021 the following conclusions are made:

- With regard to import, request for meeting D+3 Standard (85%) was not achieved with any of postal administrations involved in exchange of test letters, while for D+5 Standard (97%) the request was met with Pošta Srbije (100%), Pošta Sarajevo (100%), Pošta Ukrajine (100%) and with Pošta Srpske Banja Luke (97.3%), but was not met with Hrvatska Pošta neither with Hrvatska Pošta Mostar.
- With regard to export, the request for meeting D+3 Standard (85%) and for meeting D+5 Standard (97%) was not achieved with any of postal administrations involved in the exchange of test letters.

Pošta Crne Gore considers that the achieved results are as such due to limiting factors defined by mentioned Article 58 of the Postal Services Act, stating that deadlines in consignment transfer in international postal traffic depend on the distance of receiving country, traffic connections and quality standards of national operators of universal postal services. Pošta Crne Gore also sees Covid-19 Pandemic as a complicating factor in 2021.

6.2.3.2. Measurement of the quality of transfer and delivery of registered postal items from incoming international traffic based on data from application of the Universal Postal Union relating to Montenegro

Pošta Crne Gore conducted measurement, for the control of transfer of registered letter - post consignments coming from international traffic, using data prepared in cooperation with the Universal Postal Union (data from Quality Control System application of the Universal Postal Union).

Ovi podaci ne omogućavaju mjerenje kvaliteta u rokovima kako to propisani standardi nalažu, jer u predmetnoj aplikaciji nema podataka za rok od najviše 3 dana, ali ipak daje rezultat mjerenja brzine prenosa od kraja do kraja (od mjesta slanja do mjesta prijema) za vremenski rok do 5 dana.

Timeframe for the measurement covers the period from 01.01 - 31.12.2021.

**Quality control of transfer and delivery of registered letter-post items
from incoming international traffic**

Number of consignments	Up to 5 days	More than 5 days
89,762	41,108	48,654
100 %	45.30 %	54.70 %

Quality measurement of transfer and delivery of registered letter-post items from incoming international traffic prove that within five days are delivered 45.30% of the consignments, thus showing that the quality does not meet the prescribed quality standard for performing universal postal services in international postal traffic for the term/deadline D+5, which approximately amounts to 97% of letter-post items, and it decreased in relation to the previous year, when the measuring results for the period up to 5 days had amounted to 65.45 %. As it was the case in the transfer of ordinary letter-post consignments, Pošta Crne Gore considers that the achieved results are caused by limiting factors defined by mentioned Article 58 of the Postal Services Act, stating that deadlines in consignment transfer in international postal traffic depend on the distance of the recipient country, traffic connections and quality standards of national operators of universal postal services. Pošta also sees Covid-19 Pandemic as an additional complicating factor in 2021.

6.3. Safety of postal items

One of the most important criteria of the quality is the safety of postal items.

Pošta Crne Gore undertakes the following measures aimed at safety of postal items:

- Control of the contents of postal items, at the stage of receipt, for internal and international traffic, to prevent from sending the contents prohibited by the law, which might endanger human health and life. Additional control measures of the contents of consignments performed at the Airport Podgorica;
- Tracking of registered postal items in internal and international traffic;
- Training of the employees on the implementation of measures for the safety of postal items.

At the request of the Civil Aviation Authority, Pošta Crne Gore prepared the Procedure for working with postal items on preventing despatch of dangerous goods through Pošta. The Procedure provides for a special training for treating dangerous goods for certain employees in Pošta Crne Gore.

6.3.1. Postal services customer care

In Pošta Crne Gore there is a Quality Department with a Customer Care Service which was , in 2021 renamed into Call Centre of Pošta Crne Gore.

The users can send their requests, according to the following:

- Via the operational number 19895;
- Via an official e-mail of Pošta Crne Gore: infor@postacg.me;
- Via 3 official Call Centre e-mails.

In the period from 1 January till 31 December 2021, Customer Care Service received 27,020 enquiries – requests from the users of postal services of Pošta Crne Gore, which is a decrease of 7.9% in relation to the previous year.

6.3.2. Received and completed enquiries in internal and international traffic

Internal traffic

Total of received enquiries in the internal traffic is **363**.

Successfully resolved **363** – 100%.

International traffic

Total of received enquiries in international traffic is **319**.

Successfully resolved **317** – 99.37%, unsuccessfully resolved 2 – 0.63%.

The achieved results in 2021 are better than in the previous year, in the part which refers to internal traffic, as in 2020 the percentage of successfully resolved enquiries was 99.75%, while in 2021 it was 100%.

During 2021 the Agency continued to perform the activities on implementation of the Rulebook on more detailed conditions for the performance of universal postal services, indicating to Pošta Crne Gore on the importance of timely and adequate preparation of the universal postal operator for the application of regulated quality standards for the performance of universal postal services.

7. EXERCISE OF RIGHTS AND PROTECTION OF USERS OF ELECTRONIC COMMUNICATIONS AND POSTAL SERVICES

7.1. Exercise of rights and protection of interests of the users of electronic communications services

The issue regarding protection of interests of users of public electronic communication services is stipulated by Chapter X of ZEK, so the rights of users of public communications services are as follows:

- Access to public electronic communications network within eight days from the day of the submission of a request, if it is technically feasible;
- Undisturbed use of public electronic communications services of specified quality, availability and safety, at publicly available prices;
- Bill for services provided, given in details and itemized so that it allows a clear insight to separate items and control of calculated amount for the provided service, or a non-itemized bill if so required by the user;
- Protection of secrecy of electronic communications in accordance with this law and the law that regulates confidentiality of data, protection of personal data and protection of unpublished data, and
- Exercise of other rights, in compliance with the Law.

The same Law provides for the procedure as well as the deadline for resolving user complaints regarding the access, quality and invoice for the delivered services.

During 2021, 447 submissions from users of public electronic communication services were submitted to the Agency, of which 379 were appeals against operator decisions made in procedures based on user complaints.

A number of submissions by users (68 in total) related to user questions and were answered by letters, some related to issues whose solution is not within the competence of the user protection service, so they were forwarded to supervisors for electronic communications, and some to malfunctions and servicing of telephone devices, so they were forwarded to the Directorate for Inspection Affairs, since they are within their jurisdiction.

Total number of users' enquiries and the manner of resolving, per municipality, is given in the Table below:

Municipality	Adopted	Refused	Resolved in some other way: responded, refused as messy, forwarded to Inspection Administration	Decision on suspending the procedure due to withdrawal of complaint and absence of a reason for further processing	Total in 2021
Podgorica	33	44	23	149	249
Nikšić	4	8	7	9	28
Cetinje	4	1	1	3	9

Herceg Novi	3	5	1	10	19
Bijelo Polje	-	7	2	9	18
Bar	4	5	6	6	21
Danilovgrad	-	2	5	2	9
Budva	5	3	2	3	13
Kotor	4	-	4	4	12
Kolašin	-	-	2	3	5
Berane	1	3	1	4	9
Tivat	1	4	4	3	12
Rožaje	1	2	-	2	5
Pljevlja	1	2	-	-	3
Žabljak	-	-	2	3	5
Plav	2	5	1	-	8
Andrijevica	-	-	-	2	2
Mojkovac	-	-	-	3	3
Ulcinj	-	2	-	-	2
Gusinje	-	-	1	-	1
Tuzi	2	1	6	-	9
Plužine	1	-	-	4	5
Total:	66	94	68	219	447

Out of 447 submissions received by the Agency, 379 procedures upon user appeals were processed, of which 66 procedures were completed by adopting decision on accepting the appeal, and 94 procedures were completed by making decision on refusing appeal as a result of a non-grounded appeal.

A large number of procedures initiated by user complaints were ended by decisions on the suspension of the procedure (219), for the reason that, in the meantime, after submitting the complaints, and with the mediation of the Agency, the operator changed its decisions, i.e. adopted the user's objections, which is why the users gave up the complaints. In the aforementioned situations, referring to the provisions of Article 102 of the Law on Administrative Procedure, the procedure was suspended.

This number of decisions on the suspension of proceedings, together with the number of accepted appeals, indicates that 285 appeals were resolved in favor of subscribers, which accounts for 75.2% of the total appeals filed.

During 2021, 21 lawsuits were filed against the Agency's decisions, which were answered within the legal deadline. According to the judgments of the Administrative Court, which accepted the lawsuits and annulled the Agency's decisions, 4 decisions were made in the retrial.

During 2021, as well as during 2020, users addressed the Agency via electronic means, telephone calls, as well as complaints, in which they requested appropriate protection, since the newly created circumstances caused by the COVID-19 virus directly affected their economic status, which is why requested early unconditional termination of the contract or switching to a package with a lower monthly subscription. In all situations, the Agency provided the necessary information and decided on appeals, following its competences prescribed by the provisions of the Law.

During 2021, there were appeals against the decisions of operators who, in order to terminate the contract before the end of the agreed term, made the users conditional on the payment of realized benefits or the payment of appropriate penalties until the end of the agreed term. Namely, as in most cases users are in a contractual relationship with a minimum contract duration of 12 or 24 months, requests for unilateral termination of the contract are conditional on the fulfillment of contractual obligations, i.e. payment of

subscriptions until the end of the contracted term or benefits realized by signing the contract, in accordance with the provisions of the Article 152 of the Law on Electronic Communications.

Since the aforementioned Article of the Law clearly states that the user is allowed to unconditionally terminate the subscription contract, without the obligation to pay the subscription until the end of the agreed period or the benefits realized by signing the contract, in the event that the operator is unable to fulfill the agreed obligations, as well as in the event that changes to the conditions established in the subscription contract that are less favorable for the user, the Agency accepted appeals in cases where it had evidence that the users, in continuity, did not have the contracted quality of services or in cases of changed contracted conditions - whether they were not informed about them by the operator at least 30 days before any changes, whether or not the operator disputes this right.

The Agency acted in the stated manner until the Supreme Court Judgment Uvp. No. 531/21 of 13.10.2021 and Judgment Uvp. No. 587/21 of 02.11.2021 in which it was stated that the Agency is not competent to state the termination of the contract according to the Law on Electronic Communications, but the termination is regulated by the Law on Obligations. Namely, the aforementioned judgments were rendered by the Supreme Court at the operator's request for examination of the court decision - the Judgment of the Administrative Court, which rejected the operator's lawsuit against the Agency's Decision which accepted the user's appeal and the same concluded that the operator had the obligation to allow the unconditional early termination of the contract due to changes in the agreed conditions. The aforementioned judgments of the Supreme Court stated that the Administrative Court had to determine that the Agency is not competent to determine the termination of the contract according to the Law on Electronic Communications, but the termination is regulated by the Law on Obligations.

After such findings by the Supreme Court, the Agency, in cases of user appeals against operator decisions that rejected the user's requests for early unconditional termination of the contract, instructed the supervisor of electronic communications to carry out supervision at the operator who refused such a request, in order to ascertain the factual situation, i.e. establish that whether the conditions for accepting the user's request to unconditionally terminate the contract before the end of the agreed term are met, in accordance with the provisions of Article 152 of the Law on Electronic Communications. After the Supervisor compiled the Report, the user protection service sent a letter to the users informing them about the professional supervision carried out, as well as the results of the supervision, i.e. explaining to them whether their request was founded or not. In the letter, they were instructed that they can prove their rights to unconditional termination of the contract before the competent judicial authority.

During 2021, the number of complaints about the calculation of roaming services and the calculation of Internet in national traffic has noticeably decreased, which indicates that users in Montenegro have increased the level of information about the use of these services via smartphones that have activated certain applications that require a constant connection to the Internet. Namely, users are aware of the possibility that even without their knowledge, internet consumption can be achieved in such a way that the mentioned applications automatically connect to the internet every day at certain time intervals in order to download the latest data necessary for their use from the internet, which is why they request the exclusion of this service before going abroad or turn off the internet service independently and thus protect themselves from unwanted costs.

A small number of complaints related to the quality of the provided landline telephony services, Internet speed and TV service reception within individual service packages. In all cases, when it was deemed necessary, the Agency's supervisors determined the factual situation that is the basis for decision-making on appeals, and which resulted in the correction of the bill during the inability to use the services. In all cases where access to services and the use of services of the contracted quality were prevented due to the fault of the operator, the Agency accepted appeals and sent them back to the operator for re-decision according to the instructions given by the Agency. The Agency dealt with user complaints related to the speed and quality of the Internet, in cooperation with the users, by measuring the speed of Internet access. Namely, the Agency

has installed a solution on its website at www.nettest.ekip.me that allows users to check the data transfer speed themselves, which can be used as evidence in the process initiated by a possible appeal against the operator's decision.

In 2021, communications with users continued via a direct telephone provided by the Agency for contact with users. In addition to the e-mail address on the Agency's official website www.ekip.me (link: Users ask), there is another e-mail address: zastitakorisnika@ekip.me, which is used in most cases for submitting complaints and user questions. The use of this address was especially important in the newly emerging circumstances of the pandemic, when direct, personal communication had to be minimized. In this way, it is possible for a significant number of users to receive answers to their questions in the shortest possible time. The largest number of user questions related to the complaint and appeal procedure, unilateral termination of the contract, resolving the issue of accumulated debt to the operator, portability of numbers from one network to another, quality of services, moving numbers from one address to another, etc. Also, a number of questions of users of electronic communication services were referred to the Agency through the Directorate for Inspection Affairs.

As part of the intensification of activities to meet the criteria for the temporary closure of Chapter 28: Consumer Protection and Health, with the help of the IPA project, the Government of Montenegro, at its 19th extraordinary session on April 8, 2021, adopted a Decision on determining the list of authorities responsible for inspection supervision over the implementation of laws containing provisions on consumer protection ("Official Gazette of Montenegro", 53/21) which, for the first time, introduces independent organizations and independent organizations into the Information System for Monitoring Complaints and Consumer Issues (CISZP) legal entities responsible for consumer protection, including the Agency for Electronic Communications and Postal Services. Subjects of supervision are listed in 29 points, while the Agency is recognized as competent for supervision in 9 points.

The improved Central Information System for Consumer Protection - CISZP was officially launched on November 19, 2021. The system enables consumers to file a complaint or ask a question about their rights and/or obligations in any area through the web address (www.potrosac.me), after which the complaint or question is immediately forwarded to the authority responsible for resolving it. Therefore, all supervisory entities covered by the mentioned Decision have access to the CISZP and from the system take over the questions and complaints of consumers related to the area for which they are responsible. This created another channel for users to contact the Agency.

In order to improve the information of users in daily direct communication with users, the Agency gave and referred to already prepared brochures with appropriate content, wanting to acquaint users with all the information about the service they intend to use and the contract they sign with the operators. The content of the brochures refers to the protection of children when using the Internet, protection from electromagnetic radiation, broadband Internet access, measurement of the quality of broadband Internet connection, number portability service, and the use of smartphones.

In order to protect users from receiving unwanted messages and calls for the purpose of direct marketing, the Agency for Electronic Communications and Postal Services has established a Register in electronic form at the address www.nezovime.ekip.me, which contains only telephone numbers and e-mail addresses of users who do not want to receive such messages or calls. Entry/deletion of data in/from the Register, free of charge, based on the user's request, is performed by the operator with whom the user has concluded a subscription contract. By registering in the Register, the user chooses not to receive electronic messages and phone calls for the purpose of direct marketing and thereby withdraws all previously given consents.

In 2021, with the aim of even better visibility of the content, the Agency innovated its official website (www.ekip.me), where, among other things, information is available to users about the official offers of operators, price lists of services of all operators, subscription contracts and general conditions of provision

services to which this Agency has given consent, as well as the rights of users of electronic communication services and the procedures for protecting their rights.

In order to better communicate with users, the Agency opened its official account on the Instagram social network in order to make information related to both the Agency's activities and their user rights more accessible to its users, especially the younger population. The users are able to ask questions via direct messages, to which they receive answers within 24 hours.

7.2. Tariff Calculator – Application for users

The Agency implemented web application 'Tariff Calculator' to assist the users in the selection of electronic communications services in Montenegro. "Tariff Calculator" is an interactive tool for comparing the offers of public electronic communications services in Montenegro, as regards fixed and mobile telephony, Internet access services, distribution of TV and radio program (AVM contents) and combined packages of above mentioned services. "Tariff Calculator" is available as of 22 March 2016 on the address: kalkulator.ekip.me.

'Tariff Calculator' assists the user while selecting electronic communications services which suit his/her needs and is of an informative nature. It is based on the data on tariffs and description of the services uploaded by the operators of electronic communications. In order to compare the costs needed for providing certain type of service, the user first needs to enter his/her requests, and according to the requests, through this application he/she gets the most affordable tariff packages. There are two entry methods - basic and detailed. With a simple entry, the user enters less data and certain assumptions apply based on the data on the average consumption of users in Montenegro for the selected service. To define the distribution of traffic to specific destinations, a detailed entry is used.

Based on the information about the desired electronic communications service entered by the user and the data uploaded by the operators of electronic communications, "Tariff Calculator" provides a rank list of the most favorable services offered by the operators responding to the requests of users. The results obtained with the help of 'Tariff Calculator' do not represent monthly bills for the use of public electronic communications services. For the actual calculation, obtaining the offer and conclusion of the contract the user is required to address directly the operator of electronic communications chosen by the user on the basis of recommendations/calculations of 'Tariff Calculator'.

The Agency follows the statistics for the use of this application and thus receives data on the number of users who accessed the application. The operators of electronic communications enter in the application information on the prices, conditions and service description, and the Agency, in line with the situation on the market (new offers of the operators) whether gives approval to entered data or sends it back to additional elaboration to the operator (if comparing with data and prices in the price list detects that data and conditions entered are not correct). In that way, the Agency provides for the availability of correct information and data for users who access the calculator.

7.3. Analysis of compliance with the principles of Network Neutrality in Montenegro

Measures regarding an open Internet access are defined by the Regulation (EU) 2015/2120 of the European Parliament and the Council (hereinafter referred to as: "Regulation")²⁴. EU Regulation which refers to an open internet access imposes several obligations to Internet service providers (ISP – *Internet Service Provider*) with regard to the provision of Internet access service (IAS – *Internet Access Service*). Main intention of the Regulation is to "provide equal and non-discriminatory traffic treatment in the provision of Internet access service and related rights of end users" and to "guarantee continuous functioning of Internet ecosystem as an innovation driver"²⁵. With a view to ensuring the realization of those goals, the Regulation laid down the measures concerning the way of managing data transmission traffic by the ISPs, in their networks. Furthermore, the Regulation defines the obligations to the ISPs concerning the conditions and terms, along with information contents in subscriber contracts for the provision of the IAS.

In the EU member states it is a practice that national regulatory authorities (NRAs) are competent bodies for the realization and supervision of the implementation of the obligations arising from the mentioned Regulation. BEREC Guidelines²⁶ on the implementation of the European Regulations for network neutrality are designed to give instructions for implementation of the NRA's obligations.

Regulations of the European Parliament and the Council are administrative provisions directly applicable in the EU member countries with no need for amending national legislation. Unlike the mentioned practice, in order to have Regulation (EU) 2015/2120 of the European Parliament and the Council introduced in Montenegro, it is necessary to make its implementation through national legislation. However, this has not been done till now, so the provisions of this Regulation are not laid down by actual ZEK. On the other side, aware of the importance of this matter, and in the volume allowed by its actual competences stipulated by ZEK, the Agency carried out certain activities in order to follow the implementation of relevant parts of this Regulation.

At the end of 2021, the Agency sent its enquiry to the operators providing Internet access service, asking them to give information on general, commercial and technical issues concerning network neutrality. Subject enquiry was submitted to all Internet service providers, and half of them sent back their answers. It should be noted that the operators are only partly familiarized with the Regulation provisions which made them difficult to answer all the questions of the enquiry.

Traffic management (TM) measures are very important for assessing network neutrality. Reasonable measures of TM are allowed to Internet service providers, provided that these are transparent, nondiscriminatory, proportional and not relied on any "commercial reasons". Based on the analysis of the submitted data, it is to conclude that traffic management measures are only introduced when needed to maintain network integrity and safety, as well as congestion management measure, on a nondiscriminatory base.

In other words, the answers of the operators prove that there are no actions which show non-compliance with the Regulation, and which concern traffic management measures. Besides, from the answers of the operators, it is clear that there might be blocking certain services, in case of such requests are made by competent bodies (for example by the Agency- blocking the sites for on-line gambling; by MUP (Ministry of Internal Affairs) – blocking child pornography sites). Which is also the obligation of the ISPs is to have the influence of TM measures described in clear and comprehensive manner in subscriber contracts, which is not the case at the moment.

²⁴ REGULATION (EU) 2015/2120 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 November 2015 laying down measures concerning open internet access and retail charges for regulated intra-EU communications and amending Directive 2002/22/EC and Regulation (EU) No 531/2012 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02015R2120-20181220>)

²⁵ EU Regulation 2015/2020, Recital (1)

²⁶ https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/6160-berec-guidelines-on-the-implementation-by-national-regulators-of-european-net-neutrality-rules

Furthermore, the enquiry of the Agency also includes the practice applied by the ISPs, blocking the ports in order to keep the integrity and safety of their networks. Received replies prove that the operators block certain ports, but it is not a permanent measure, but is of provisional character, for keeping network safety. Main reasons mentioned in the responses of the ISPs for blocking the ports, are: SPAM, preventing from DDoS attacks, user protection from malware, etc.

As from 2019, the Agency enabled end users to apply measuring system EKIP NetTest in order to allow the control of application of TM measures, the operators that provide Internet access service. Among others, EKIP NetTest allows check of blocking specific UDP and TCP ports, *Traceroute* test and VoIP test for detecting eventual slow down or limiting the traffic (precise description of QoS tests is available on the following address: <https://nettest.ekip.me/>). The available results of measurements have proved that the operators providing Internet access do not use permanent measure of blocking the ports, but only provisionally, as stated in their responses to the enquiry.

Relying on data received by the operators from Montenegro, there are several zero rated services, like music streaming, video streaming, access to social networks, messaging platforms, etc. BEREC guidelines state that zero rated services should be studied in details by national regulatory authorities, as to ensure that they do not compromise the goals of the Regulation. As the Regulation is not implemented in Montenegro, the Agency does not apply the procedures of assessing compliance of zero rated services with Regulation provisions.

Based on the responses of the operators to the enquiry of the Agency, it is concluded that the provision of specialized services (VoIP and IPTV in the fixed network) by the ISPs leads to the situation that specialized services are used or provided to replace Internet access services and are not available to the detriment of availability or quality of Internet access services. Namely, the operators shall provide enough capacities in their networks so that provision of specialized services to end user does not endanger the quality of Internet access service to other users in the network.

As referred to in Article 4 of the Regulation, the operators that provide Internet access services are imposed to act transparently. This transparency means the following:

- The contract contents shall include Internet access service;
- Obligation of publishing simple and efficient procedure for resolving user complaints referring to an open Internet access and to fulfilling contractual obligations.

Although the Regulation has not been implemented in the legislation of Montenegro, many elements relating to the mentioned obligations have been already implemented by the operators that provide Internet access service. At the first place this refers to the procedures on resolving user complaints precisely stipulated by the actual Law on Electronic Communications.

Also, the Agency has already controlled a large part of mandatory items for subscriber contracts, through the procedure of giving approvals to all subscriber contracts, even to those comprising Internet access service.

It is definitely necessary to make some amendments and harmonization, as to make complete harmonization with Regulation provisions. It is necessary to stress the importance of Internet access speed. The actual Law on Electronic Communications lays down two categories concerning this parameter of service quality: minimum and maximum Internet access speed in the fixed networks. On the other side, four categories have been referred to this parameter: minimum, usually available, maximum and advertised Internet access speed in the fixed networks.

Further to received responses of the operators, it is to conclude that great operators have been very well familiarized with the principles of network neutrality. There is also high level of understanding shown for

certain technical aspects concerning the issue of network neutrality. On the other side, as for the questions concerning commercial practices applied, there is an obvious lack of relevant information.

According to the available data, we've come to a conclusion that a complete image of network neutrality in Montenegro is quite positive, it even proves unhindered functioning of Internet ecosystem as an innovation driver. Harmonization of ZEK with the EU Regulation concerning network neutrality will conclude the system in which the Agency will gain certain competencies in the field of supervision over implementation of appropriate measures with a view to implementing all obligations imposed the operators that provide Internet access services. With implementation of relevant measures provided for by the Regulation, this will inevitably lead to more efficient and more comprehensive protection of end users.

Intending to educate the users, the Agency has been continuously working on raising the level of users' familiarization with electronic communications services. At the first place, by introducing a direct telephone line (020 406 725), e-mail address: zastitakorisnika@ekip.me and web page of the Agency (www.ekip.me) were made conditions for establishing contact with users on a daily basis. Using these communications channels, the users were enabled to find any information on the official offers of the operators, pricelists of the services of all operators, subscriber contracts and general terms and conditions for the provision of these services officially approved by this Agency, as well as on the rights of the users of electronic communications services and the procedures for protection of their rights.

7.4. Education of users

Intending to educate the users, the Agency has been continuously working on raising the level of users' familiarization with electronic communications services. At the first place, by introducing a direct telephone line (020 406 725), e-mail address: zastitakorisnika@ekip.me and web page of the Agency (www.ekip.me) were made conditions for establishing contact with users on a daily basis. Using these communications channels, the users were enabled to find any information on the official offers of the operators, pricelists of the services of all operators, subscriber contracts and general terms and conditions for the provision of these services officially approved by this Agency, as well as on the rights of the users of electronic communications services and the procedures for protection of their rights.

In order to better communicate with users, the Agency opened its official account on the social network Instagram ([ekipcg](https://www.instagram.com/ekipcg)) in order to make information related to both the Agency's activities and their user rights more accessible to its users, especially the younger population. Users are able to ask questions via direct messages, to which they receive answers within 24 hours.

For education of users and for protection of rights and interests of users, the applications which the Agency put into operation, are of great importance, and these are:

Application for measuring Internet access speed (nettest.ekip.me); this application helps users to check data transmission speed (detailed information are available under item 1.13.1 of this report), and

Application "Tariff calculator" (kalkulator.ekip.me) that helps users when selecting electronic communications services (detailed information are available under item 7.2 of this report),

in order to protect the users from unwanted receipt of the messages and calls with a purpose of direct marketing, at the address www.nezovime.ekip.me the Agency established a Register in electronic form that contains telephone numbers and e-mail addresses of users who do not want to receive such messages or calls. Entry/deletion of data in/from the Register, free of charge, based on the user's request, is performed by the operator with whom the user has concluded a subscription contract. By registering in the Register, the user chooses not to receive electronic messages and phone calls for the purpose of direct marketing and thereby withdraws all previously given consents.

In order to improve information in daily direct communication with users, the Agency provided and referred to already prepared brochures with appropriate content, wanting to inform users of all information about the service they intend to use and the contract they sign with the operators. The brochures cover the following topics:

- Rights of the users of electronic communications services;
- Use of smart phones;
- Numbers of emergency services;
- Tariff Calculator;
- Measuring the quality of a broadband Internet connection;
- Protection of children when using the Internet;
- Broadband Internet access;
- Electromagnetic radiation;
- Number Portability Service, and
- Postal Services.



7.5. Exercise of rights and protection of interests of the users of postal service

Protection of users of postal services is regulated by the Law on Postal Services, Chapter II of the Postal Service - Subparagraph 5 - Protection of the users of services and dispute settlement. The procedure for submitting complaint (reclamation) to the operator is stipulated, due to:

Non-delivery or delayed delivery of postal items not providing a special service agreed upon, or not providing this service as a whole (as referred to Article 44 and 45), when one can apply for a claim procedure regarding the postal item, while a complaint can be submitted within 6 months as of the date of the delivery of the postal item, and

Damaged or reduced contents of the postal item (Article 46), when the complaint shall be filed immediately upon delivery of a postal item, or the following day at the latest.

Postal operator shall give its opinion regarding justification of the complaint within 10 days from the receipt of reclamation in internal traffic, i.e. within 60 days upon the receipt of the complaint in international traffic.

The objection to the Agency against the order of a postal operator, or its failure to answer the complaint filed, may be submitted within 15 days of the date of receiving decision on the complaint and/or expiry of the deadline for replying to the complaint. The Agency shall decide on the complaint within 30 days upon receiving the objection. The Agency may dismiss the complaint as untimely, accept the request and impose an obligation on the postal operator to compensate for the damage caused, or reject the complaint as unfounded and terminate the procedure, or instruct the user to bring their claims before the competent court.

The Agency's order is final in the administrative procedure, as referred to in Article 32 of ZEK (Law on Electronic Communications) and Article 70 of the Postal Services Act, and an appeal can be filed against it to the Administrative Court of Montenegro within 30 days. If a postal operator does not act in compliance with the Agency's order, the Agency may initiate the procedure to revoke special licenses and the licenses, i.e. to remove the postal operator from the register of postal operators.

In addition to the non-implemented provisions of the Act that prescribe the submission of a complaint to the operator, i.e. the submission of a complaint to the Agency, Article 109 of the Postal Services Act stipulates that the Agency, through supervisors, performs expert supervision over the application of this Act, regulations adopted on the basis of the Act and the general conditions of postal service providers, which the performance of postal services, the quality of universal postal services, network access, prices, accounting of postal service providers, as well as the supervision of the implementation of individual acts adopted within its jurisdiction, are regulated.

Although in 2021, 16 users wrote to the Agency, directly or through the Directorate for Inspection Affairs, with complaints about the operator's work, only one user submitted a complaint to the Agency in accordance with Article 48 of the Postal Services Act, on the occasion of which a decision was made to reject the complaint as untimely.

Although there was no legal basis for the implementation of the complaint procedure in the case of the other users who applied, in all cases the Agency carried out a control procedure, i.e. extraordinary supervision of the operator in order to determine whether in specific cases the operator acted in accordance with the law, by-laws acts and general conditions of the operator, about which all users have been informed in writing.

Given that in the reporting period, the largest number of user complaints related to the provision of universal postal services, the Agency, in addition to issuing specific orders to Pošta Crne Gore in the process of conducting regular and extraordinary professional supervision, initiated several meetings with representatives of Pošta Crne Gore at which activities were defined which Pošta Crne Gore should implement in order to improve internal procedures related to the protection of users of the services of that postal operator.

In addition to the mentioned written complaints from users about the operator's work, during the reporting period, users addressed the Agency with both written and oral requests for expert opinions regarding the application of regulations, and various questions from users of postal services were also answered, in connection with which the necessary data were collected from postal operators and the same, with detailed explanations, forwarded to users.

7.6. Administrative procedures in accordance with the requests made by the subjects in the market of electronic communications and postal services and the resolution of disputes between those subjects

7.6.1. Legal proceedings conducted in 2021 on the basis of yearly regulatory

During the year 2021, the following administrative disputes were active before the Administrative Court in accordance with the suits made by Telenor:

- U No. 2529/2016, in regards to the yearly regulatory fee for 2014;
- U No. 793/16, in regards to the yearly regulatory fee for 2015;
- U No. 1372/16 in regards to the yearly regulatory fee for the use of numeration and addresses for the year 2016;
- U No. 6828/17, in regards to the yearly regulatory fee for the regulation and oversight of the market within the sector of electronic communications for the year 2016;
- U No. 7709/2017, in regards to the yearly regulatory fee for the regulation and oversight of the market within the sector of electronic communications for the year 2017;
- U No. 4839/2018, in regards to the yearly fee for the performance of the jobs in relation to regulation and oversight of the market of electronic communications for the year 2018;
- U No. 3717/2019, in regards to the yearly fee for the performance of the jobs in relation to regulation and oversight of the market of electronic communications in the year 2019;
- U No. 3004/2020, in regards to the yearly fee for the performance of the jobs in relation to regulation and oversight of the market of electronic communications for the year 2020.

The Agency halted the procedure of reaching the solution about the determination of yearly regulatory fees for the use of radio-frequencies for the year 2016 in the repeated procedure in accordance with the Verdict In No. 12216/17 from 27.03.2019 with which the solution made by the Agency was repealed and the Agency was ordered that, only when the conditions arise, that is, after the dispute is lawfully resolved in regards to the synchronization of the licenses, which is considered the previous question, to reach a new solution in this case.

The Dispute in regards to the previous question, the lawfulness of the synchronization of licenses that were issued to Telenor in accordance with the Law of telecommunications with the Law of electronic communications from 2008, is not legally concluded. In the year 2021, the following events occurred:

- The Administrative Court reached a verdict In. No. 4051/19 with which the Decision Up II No. 060-201/2017-7 from 12.07.2019 made by the Ministry of Economy was repealed, as well as was repealed the Decision No. 0205-158/48 from 18.02.2016, made by the Agency, with which Telenor had their licenses No. 01-423 from 01.01.2002, No. 01-122 from 13.04.2007 and No. 01-143 from 29.10.2007 were harmonized with the Law on Electronic Communications from the year 2008 and the Agency has been ordered to reach a new decision within 30 days;
- The Agency has filed a Proposal to repeat the procedure to the Administrative Court and the Request for the extraordinary re-examination of the Court's Decision that was filed to the Supreme Court against the Verdict U No. 4051/19;
- The Agency filed a Proposal to repeat the procedure to the Administrative Court and the Request for the extraordinary re-examination of the Court's Decision that was filed to the Supreme Court against the Verdict U No. 4051/19;
- The Agency reached a new Decision on 17.11.2021, against which Telenor issued a complaint to the Ministry of Economic Development on 02.12.2021. The Ministry repealed the complaint with the Decision dated 04.01.2022.

The procedure against the Agency as the defendant was also lead before the Administrative Court in regards to the compensation for the damages in regards to the repeal of Telenor's request to extent radio-

frequencies that were approved by a special license No. 01-423 from 01.01.2002, without any tenders and without paying for one-time fees, after the expiration of the subject license in the year 2016.

In the year 2021, the Administrative Court reached a Verdict U No. 921/20 from 10.09.2021, with which it repealed the Agency's Decision. The Agency, in a repeated procedure, reached a new Decision on 18.11.2021, against which Telenor filed a complaint to the Administrative Court. The Agency has, in January 2022, delivered the lists of subjects and the statement in regards to the lawsuit to the Administrative Court.

7.6.2. Procedures conducted in 2021 before the Economic Court

The following disputes were conducted before the Economic Court in Podgorica:

- In accordance with the suit made by Pošta Crne Gore for the fee of the net expenditure of the Universal postal service for the year 2010, which was legally ended in favour of the Agency with the Verdict made by the appeals Court. Pošta Crne Gore has issued a revision to the Supreme Court, against the Verdict made by the Appeals Court;
- Following the suit made by the Agency against CEDIS for the yearly regulatory fee for the usage of radio-frequencies for the year 2020, which was legally ended in favour of the Agency with the Verdict made by the appeals Court. CEDIS has issued a revision to the Supreme Court, against the Verdict made by the appeals Court;
- The dispute, according to the suit filed by Telenor against the Agency as the defendant and the Ministry of Economy as the second defendant, for the damage fees, has been halted until the legal end of the dispute in regards to harmonization of the licenses and the dispute in regards to the rights to extend radio-frequencies which were allowed by a Special License No. 01-423 from 01.01.2002;
- The dispute, according to the suit filed by Crnogorski Telekom for the damage fees because of the imposition of the reduction in rates of roaming prices in accordance with the Agreement about the reduction of prices of roaming services in public mobile communication networks, which Montenegro had closed with other countries in the Western Balkan region.

7.6.3. Procedures conducted in 2021 before the Administrative Court in regards to net expenditure fees of the Universal Service of postal services in accordance with the Law on Postal Services Act

Considering that all procedures before the Administrative Court, which were commenced in accordance with the lawsuits made by Post of Montenegro against the decision made by the Agency about the repeal of the request for the verification of the calculation of the net expenditure for 2011-2017, were legally ended with the verdicts made by the Supreme Court of Montenegro in favor of the Agency, in 2021, there was only one procedure being lead before the Administrative Court due to the calculation of the net expenditure of the universal postal service for 2018, and the value of the dispute was 1,146,047.74 EUR.

The Agency has reached a Decision No. 0102-7427/4 from 28.11.2019, with which it was determined that the Pošta Crne Gore does not have separate accounting in accordance with the Postal Services Act and the Rulebook on accounting and the calculation of net expenditure of the universal postal operators, and in relation to this, the request to verify the calculation of the net expenditure was repealed with an amount of 1,146,047.74 and was deemed as unfounded.

Pošta Crne Gore, on 18.12.2019, forwarded a suit to the Administrative Court against the aforementioned Decision made by the Agency. The Administrative Court, on 15.01.2020, forwarded the suit made by the Post of Montenegro, to the Agency, with a request that the Agency assembles and delivers an answer to the suit, as well as the lists of subjects in accordance with the suit made by the Post of Montenegro against the decision made by the Agency. The answer to the suit made by the Post of Montenegro with attachments was delivered to the Administrative Court on 11.02.2020.

The Administrative Court, after a verbal discussion, held with a presence of the attorneys of both Post of Montenegro and the Agency, reached a Verdict U No. 6109/2019 from 30.11.2021, according to which the suit made by the Pošta Crne Gore was repealed.

7.6.4. Resolving disputes between operators

Regarding the IP Mont operators appeal in relation to the dispute with the Radio-broadcast center about the retroactive turning out of the documents for the use of colocation services, the Agency responded with a memo No. 0403-1520/3 from 27.04.2021.

Mtel, on 07.12.2020, sent a request to mediate in the resolving of the dispute with the Crnogorski Telekom in relation to the already established interconnection in regards to the request made by Crnogorski Telekom for the reduction in prices of the international termination for the calls which are directed by Mtel users that are in roaming in countries that signed the Agreement about the implementation of roaming tariffs for the Western Balkan countries, for the traffic from WB6 countries for the numbers which were transferred from 067 network to the 068 network. The Agency requested from Crnogorski Telekom to make a statement on their request. Crnogorski Telekom delivered an answer to the Agency on 17.12.2020 and Crnogorski Telekom issued a request for the mediation in the dispute on 21.12.2020, as well as the request made by Telenor for the mediation, on 22.12.2020, all in response to the same query. The operators, after a meeting held in the Agency on 21.01.2021, during which the Agency pointed out a way to resolve a dispute in case they do not reach an agreement within 30 days, peacefully resolved the dispute. Regarding the address of the operator IP Mont regarding the dispute with the Broadcasting Center regarding the retroactive issuance of invoices for the use of the co-location service, the Agency responded with letter number 0403-1520/3 dated April 27, 2021.

8. TASKS PERFORMED BY THE AGENCY IN ACCORDANCE WITH THE 2021 WORKPLAN

8.1. Preparing the regulations relating to the area of electronic communications

As laid down by Article 11, paragraph 1, item 1 of ZEK (Law on Electronic Communications), the Agency adopts regulations based on the competences established by this Law. In line with the competences from the Law, the Agency adopted the following bylaws in 2021:

- Decision on determining point monetary value based on which is calculated an annual fee for the use of radio frequencies for 2021, No 0901-121/1 from 14.01.2021;
- Decision on determining point monetary value based on which is calculated an annual fee for the use of number and/or addresses for 2021, No 0901-290/1 from 21.01.2021;
- Decision on determining an annual fee for carrying out the activities of market regulation and supervision of electronic communications for 2021, No 0901-3271/1 dated 27.05.2021;
- Rulebook on the Form of Technical solution for the use of radio-frequencies ("Official Gazette of Montenegro", No 5/21);
- Radio-frequency allocation plan for the frequencies in the band 1427-1518 MHz for MFCN systems ("Official Gazette of Montenegro", No 5/21);
- Radio-frequency allocation plan for the frequencies in the band 3400-3800 MHz for MFCN systems ("Official Gazette of Montenegro", No 22/21);
- Radio-frequency allocation plan for the frequencies in the bands 24.25-27.5 GHz for MFCN systems ("Official Gazette of Montenegro", No 22/21);

8.2. Control and monitoring radio-frequency spectrum

According to ZEK, the Agency was competent to perform the control and monitoring of radio-frequency spectrum (hereinafter referred to as: RF), and in line with this to plan, develop and improve the system of control and monitoring of RF spectrum.

At the first place, purpose of the control and monitoring of RF spectrum is to provide the support to RF spectrum management, which inter alia, includes the functions of planning and assignment of approvals for the use of radio frequencies. With this regards, in the procedures of control and monitoring of RF spectrum the following tasks have been performed:

- measurements of the parameters of radio frequencies in order to control harmonization with the conditions of assigning radio frequencies,
- following RF bands and measurement of occupancy of RF channels,
- examining the cases of interferences,
- detection, identification and positioning of unauthorized radio emissions,
- measurements of the parameters of coverage and quality of radio communications services,
- support in coordination of radio frequencies with neighbouring countries,
- participation in international programs (campaigns) of the control and monitoring of RF spectrum.

Control and monitoring of RF spectrum is performed in accordance with the relevant ITU recommendations for the monitoring of RF spectrum (ITU-R SM recommendations), CEPT/ECC recommendations, ETSI standards and other documentation issued by ITU, BEREC and CEPT/ECC.



Main Control-measuring Center on Dajbabska Gora in Podgorica

During 2021, the Agency carried out control and monitoring of the RF spectrum on the territory of Montenegro, continuously from fixed control and measurement stations, i.e. in the form of one-day or multi-day control and measurement campaigns, when the control and monitoring of the RF spectrum was carried out using mobile control and measurement stations and portable equipment. The activities were carried out in accordance with the Plan for regular control and monitoring of the RF spectrum in 2021, number 0102-1828/1 dated March 12, 2021 (hereinafter: Plan for regular monitoring), mainly in the range from 80 MHz to 3 GHz, as follows:

- from the Main Control-measuring Center on Dajbabska Gora (hereinafter referred to as GKMC) for the municipalities of Podgorica and Tuzi in the 20 MHz – 3.6 GHz band, and partly for the municipalities of Danilovgrad and Bar;
- from the Regional Control-measuring Center on Crni rt near to Sutomora (hereinafter referred to as: RKMC) for the municipality of Bar in the 20 MHz – 3.6 GHz band, and partly for the municipality of Budva;
- from the remote-controlled Control-measuring station on Bijela Crkva (hereinafter referred to as: DUKMS Rožaje) for the municipality of Rožaje in the 20 MHz - 3 GHz band;
- from the remote-controlled Control-measuring station on Trojica (hereinafter referred to as: DUKMS Kotor) for the municipalities of Kotor and Tivat in the 20 MHz - 3 GHz band, and partly for the municipality of Herceg Novi;
- from the remote-controlled Control-measuring station on Bijela Gora (hereinafter referred to as: DUKMS Ulcinj) for the municipality of Ulcinj in the 20 MHz - 3 GHz band;
- from the remote-controlled Control-measuring station on Mrkošnica (hereinafter referred to as: DUKMS Nikšić) for the municipality of Nikšić in the 20 MHz - 3 GHz band;
- using Mobile control-measuring station in Mercedes* Sprinter car (hereinafter referred to as: MKMS) in the municipalities of Danilovgrad, Budva, Herceg Novi, Cetinje, Kolašin, Mojkovac, Žabljak, Berane, Bijelo Polje, Plav and Gusinje in the 20 MHz – 3.6 GHz band.

Control and monitoring of the RF spectrum was performed with the use of control and measurement equipment and software installed in RKMC, DUKMS Pljevlja, DUKMS Rožaje, DUKMS Kotor, DUKMS Ulcinj and DUKMS Nikšić exclusively remotely in the so-called "remote desktop" mode of operation, through a telecommunication connection based on leased digital radio-relay links. Monitoring, control and monitoring of the RF spectrum from the GKMC was performed both directly from the GKMC facility and remotely in situations when the Agency's employees were working from home due to the current COVID-19 pandemic. At the same time, the internal plans, taking into account first of all the priority extraordinary tasks of RF spectrum control and monitoring, as well as other delegated tasks, specify the time limits and task executors for individual facilities. These tasks entailed performing the following activities:

- monitoring broadcasting from broadcasting objects (hereinafter referred to as: EO) in the receiving zone of fixed control-measuring stations i.e. monitoring from the local EO when MKMS is used, in order to determine compliance with granted approvals and relevant regulations;
- monitoring RF band and determining the occupancy of certain RF channel (frequency);
- detection, identification and locating illegal radio broadcasting.

Upon collecting control-measuring results in ordinary and extraordinary procedures of control and monitoring of RF spectrum, further activities have been carried out, mostly referring to processing and professional analysis of collected control-measuring results and preparation of proper information and reports on the control and monitoring of RF spectrum and their further proceeding. Once the irregularity in RF spectrum is identified, it is recorded in the measurement reports, and with this regards relevant subjects of the Agency and/or other bodies are appropriately informed.



Regional Control-measuring center on Crni rt near Sutomore, municipality of Bar

In accordance with the above, during 2021, procedures for regular control and monitoring of the RF spectrum were carried out in individual municipalities, and relevant reports were prepared.

According to reports of disturbances sent to the Agency by holders of authorizations for the use of radio frequencies, as well as on the basis of internal requests of the Agency's organizational units, extraordinary measurements were made. For most of the extraordinary controls and measurements, reports were formally prepared, while for a few of them they were not, but notes and internal comments were made, all through e-mail correspondence.



DUKMS Pljevlja



DUKMS Kotor



DUKMS Rožaje



DUKMS Ulcinj



DUKMS Nikšić

By Decision No. 0504-2385/23 of 07/09/2020, the Agency ordered the operator Mtel to eliminate deficiencies in its public mobile electronic communication network within 10 months from the date of the decision, in order to fulfill the conditions prescribed by the authorization for the use of radio - frequency number 0505-5109/2 from September 1, 2016. In order to check whether this operator acted in accordance with the aforementioned decision, in the period from 05/26 to 06/29/2021, an extensive campaign of measuring the signal of the operator Mtel's network was carried out, during which measurement samples were collected in all municipalities in Montenegro. The measuring process itself lasted more than 200 working hours. After the completed measurements, the demanding task of analyzing the obtained measurement results was carried out, and at the end of July 2021, a Report on measurements was drawn up in order to verify the fulfillment of requirements regarding the quality of service in mobile electronic communication networks after the expiration of the third year of validity of the approval for the use of radio frequencies, which stated that this operator fulfilled the conditions prescribed by the authorization for the use of radio frequencies.



Mobile control-measuring station (MKMS) in the vehicle Mercedes-Benz® Sprinter



Mobile control-measuring station (MKMS) in the vehicle Renault® Trafic Passenger

8.3. Activities on further implementation of the System for control and monitoring of the RF Spectrum

The actions for implementation of the System for Control and Monitoring of RF spectrum (hereinafter referred to as: the System) in 2021 was performed in accordance with the Elaborate on further development of the System, 2021 Financial Plan of the Agency, with 2021 Plan for public procurement, 2021 Plan for low value procurement (hereinafter referred to as: NMV), and 2021 Plan for simple procurement. These were prepared in chapters containing crucial details, as follows.

8.3.1. Activities on the implementation of DUKMS Nikšić

According to the Elaborate on the further development of the System, the Agency planned the construction of a Remotely Controlled Control and Measuring Station (hereinafter: DUKMS) in the area of the urban complex of the municipality of Nikšić at the Mrkošnica micro location, within the building of the Institute for Hydrometeorology and Seismology of Montenegro (hereinafter: ZHMiSCG), with which the Agency signed a cooperation agreement in mid-2016, and an agreement on joint use of the weather station in early 2017. ZHMiSCG gave the Agency one room with an area of about 7 m², and the Agency helped ZHMiSCG to modernize the supporting infrastructure of their building on Mrkošnica. At the end of 2020, all works on the construction of the DUKMS Nikšić facility were completed (preparatory, earthwork, concrete, reinforcement, insulation, work on the steel structure of the 25 m antenna pole, power, grounding, lightning protection, work on low current installations, testing, measurements). The installation of control and measurement equipment, software and supporting devices was started immediately afterwards and continued at the beginning of 2021.

Upon completion of testing, demonstration and functionality, in mid-February 2021, DUKMS Nikšić was put into operation. As a telecommunications connection was previously provided at the end of 2020, DUKMS Nikšić is also connected to other stations in the System and thus provided the possibility of remote control of equipment, software and devices in the same ("remote desktop" mode of operation), and also for the needs of the system video surveillance of this object.

By putting DUKMS Nikšić into operation, as the seventh fixed monitoring station in the system, it is possible to control and monitor the RF spectrum in the range from 10 kHz to 3 GHz in the area of the municipality of Nikšić, i.e. local radio broadcasts from almost all significant radio broadcasting facilities in wider surroundings of Nikšić (Nikšić - city area, Tović, Ostrog, Lovćen...), and partly also a radio broadcast from Bosnia and Herzegovina.



8.3.2. Provision and upgrade of the control measuring equipment in the System

In 2021, the Agency completed the development, testing and commissioning of a web portal for displaying the results of measuring the quality of services provided by mobile networks. During February 2021, the corresponding measurement results were entered. The portal is of great importance for the public, who through it will have an insight into the results of measuring the quality of services provided by mobile networks.

In the course of 2021, the Agency conducted the public procurement procedure of a portable measuring system for measuring the quality of service provided by GSM/UMTS/LTE/5G mobile networks, including the upgrade of the existing portable measuring system for measuring the quality of service for GSM/UMTS/LTE mobile networks. The measuring system was delivered within the agreed period, and at the end of the year, the procedure of quantitative-qualitative acceptance and elimination of certain observed deficiencies in functioning was started. This equipment is of great importance for the Agency, i.e. implementation of upcoming campaigns for measuring the quality of mobile network services, that is, measuring the fulfillment of conditions from the approvals issued to mobile operators.

8.3.3. Maintenance of the System for control and monitoring of the RF spectrum

The System is made of seven fixed control-measuring stations located throughout Montenegro (Podgorica, Bar, Pljevlja, Rožaje, Kotor, Ulcinj and Nikšić), two mobile stations, one multi-purpose vehicle, and portable

(manual) control-measuring equipment. The functionality of the System is maintained independently, within the domain of the capabilities of the Agency's employees that perform the operations of control and monitoring of RF spectrum, as well as of different supporting services (authorized by the manufacturers of the equipment and/or according to contracted obligations), engaged for performing calibration, rectifying malfunctions, repairs and various shortcomings in the System. Continuity of the services of calibration, repairs, and regular maintenance of the control-measuring equipment that break down during exploitation or start to deviate from the declared factory values of their individual parameters due to age is of great importance for the normal functioning of the System. Accordingly, in the public procurement procedure, the Agency concluded a framework agreement on the provision of calibration services, repairs and regular maintenance of control-measuring equipment and System software.

8.4. Implementation status of digital terrestrial broadcasting

As laid down by the Law on Digital Broadcasting ("Official Gazette of Montenegro" 34/11 and 31/12), as of 17.06.2015 ended analogue broadcasting of television signal in Montenegro. As of that date continued development of only of digital terrestrial broadcasting, that is of broadcasting service that uses terrestrial stations for digital broadcasting of television programs.

The radio frequency band 174-230 MHz in Montenegro is currently not used for commercial digital broadcasting of broadcast signals, however, this band is used from March 2021 for testing radio communication equipment, i.e. test broadcasting of digital terrestrial radio signals.

For this purpose, the Agency, in accordance with Article 116 paragraph 1 of the Law, issued a temporary authorization to the Broadcasting Center for the use of radio frequencies for the purpose of testing radio communication equipment for the needs of the pilot project. On the basis of the Temporary Approval, the Radio Broadcasting Center conducted test broadcasts of DAB+ signals from the Sjenica location during 2021. The activities for the realization of this project were financed from the company's own funds with the aim of overall development of digital radio, however, further activities in this regard depend on the strategic guidelines for the development of this technology at the level of Montenegro and the financial support provided for this purpose.

During 2020, the Agency informed the agents of car receiptment equipment and car distributors on future activities relating to radio digitalisation, including also introduction of the implementation of the pilot project according to recommendations given within the Proposal for strategic standingpoints and guidelines for introduction of digital radio in Montenegro. During 2021, it continued to monitor further situation regarding development of digital radio in Europe and beyond in order to timely implement the best solutions in Montenegro.

Broadcasting band of 470-694 MHz for digital broadcasting of television signal via terrestrial network of broadcasters, is used by two operators - Radio-difuzni centar and business company Radio Televizija "Mir&Teuta" d.o.o. Ulcinj.

Part of total capacities of the network with national coverage MUX1 is still used as a terrestrial platform with free access (free to air - FTA) for two television programs of national public services (TVCG1 and TVCG2) and three programs of commercial electronic media (TV Vijesti, TV Prva and TV Pink M). The remaining part of the capacities of MUX1 and total capacities of MUX2 is used for the realization of Pay-TV service as well during the previous years.

MUX1 and MUX2, as the platform for the needs of Pay-TV service with the name "TV za SVE", realised by Radio-difuzni centar and Crnogorski Telekom, is available to all users in the area covered with DVB-T2 signal, and in this phase it is 97% of the population of Montenegro. In the postpaid contract for a period of 12

months or 24 months, a total of 22 TV programs are included in the basic package, and in the extended package 35 TV programs.

For the realisation of MUX1 Radio difuzni centar uses radio-frequencies i.e. channels in the allotment zones: Radio-difuzni centar Lovćen channel 35, Bjelasica channel 43 and Tvrdaš channel 46, defining certain geographic areas covered with DTT signal, and realized transmitters on totally 111 emission locations. For the realization of MUX2 Radio difuzni centar uses radio-frequencies i.e. channels in the allotment zones: Lovćen channel 27, Bjelasica channel 25 and Tvrdaš channel 22, defining certain geographic areas covered with DTT signal, and realised with transmitters on 38 broadcasting locations.

Radio-difuzni centar also has the status of operator for 15 local multiplexes, which are also only partially used as a platform with free access. The radio frequency range 470-694 MHz is also used for the realization of these multiplexes, and so far local multiplexes have been realized in the Capital City of Podgorica and the municipalities of Nikšić, Plužine, Pljevlja and Budva using the channel: channel 21 at the Velja Gora location (MUX PG -DG L1), channel 23 at the locations Suđina Glava-Tović, Nikšićka Župa, Ostrog and Zavorovi (MUX NK-PZ L1), channel 26 at the location Tvrdaš (MUX PV L1) and channel 46 at the location Spas (MUX BD L1).

In addition to the above, the operator of the local multiplex MUX UL L1 for the municipality of Ulcinj is the company Radio Televizija "Mir&Teuta" doo Ulcinj. The capacities of this multiplex are used as a platform partly with free and partly with conditional access, and channel 39 is used for the realization of the network at the locations of Možura and Pinješ.

In 2021, there were no requests by the entities competent for issuing and/or change of the approvals for the use of radio frequencies for certain locations from which DVB-T2 signal is broadcasted, and neither were there any needs for the approval amendments upon official obligation which means that radio frequency spectrum has been efficiently used by network operator for digital terrestrial broadcasting. According to current resource usability laid down by Radio frequency allocation Plan in the 174-230 MHz and 470-694 MHz for DTT i T-DAB systems, it is clear that there are available radio frequency resources in the subject bands, for the realization of new DTT networks with national, regional and local coverage, depending on the demands on the market of audio-visual media services, including the realization of future T-DAB+ networks.

8.5. Preparation of the document Study on strategy of introducing 5G mobile networks in Montenegro

Mobile communications networks of the fifth-generation (5G) represent one of the most important segments in the buildup of digital economy and digital society in the upcoming decade. The significance of 5G networks in the total development of the economy and society had been recognized by all developed countries of the world. Having in mind the potential influence on practically all spheres of human practices, coordinated implementation of 5G mobile networks has, in many countries, become a part of the strategy of the total social and economic development.

It is expected from 5G mobile networks to enable a ubiquitous ultra-fast connectivity with minor delays (low latency), not only to individual users, but to a large number of interconnected facilities, as well as to create an environment for the expansion of technological and business innovations in so-called vertical sectors (industries which with a purpose of committing to their own business have a need for connectivity) such as: automobile industry, energy sector, agriculture, tourism, factories, traffic, transportation and logistics, health, public administration, management of communal infrastructure within the cities, protection of the environment, and others.

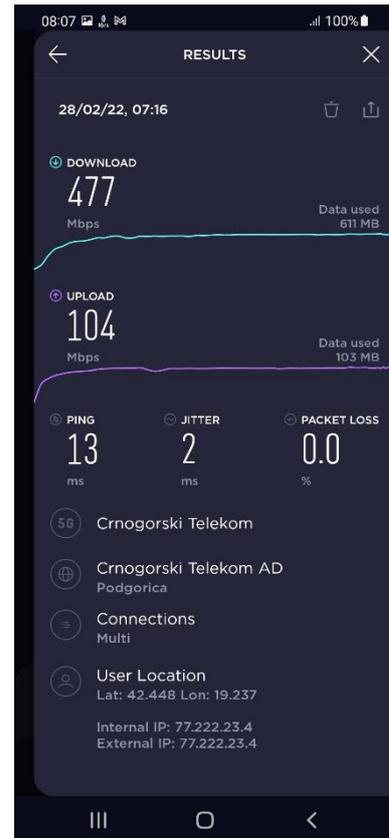
Scenarios for the use of 5G mobile networks can be categorized into three groups: enhanced Mobile Broadband transmission of data (eMBB), massive Machine Type Communications (mMTC), and Ultra Reliable Low Latency Communications (URLLC). Some of the applications are transmission of data with speeds measured in Gb/s, 3D video, Ultra HD screens, and working and gaming within the cloud, virtual reality, smart homes/buildings, smart cities, automobiles with autopilots, applications in critical situations (urgent and remote medical procedures), industrial automatization and others. Also, it is to be expected that the 5G network becomes the foundation of artificial intelligence systems.

Given that it is a comprehensive communication system, the development of which, in addition to the needs and requirements of individual users, is influenced by future digital business models in various sectors, for the full valorization of the 5G system, and at the same time for their development, the synergy of the mobile and ICT industry with on the one hand, and various participants from the sphere of the public and industrial sectors, on the other hand.

Having in mind the significance of the introduction of 5G mobile communications networks in a timely manner, for the development of the economy and the society as a whole, it is necessary to create an all-encompassing plan of activities that would evaluate all possibilities and the value of this technology's uses, identify key challenges, limits and barriers, and to provide pointers to overcome those challenges. Considering that the development of future 5G networks is somewhat reliant on innovative digital business models in the public and real sectors, it is important that during the manufacturing of this document to gather all relevant subjects from the mobile industry, public administration on both the state and local levels, as well as the representatives of vertical sectors and the academic community. Given that in Montenegro a map of the roads for the implementation of 5G mobile networks still has not been defined, the Agency, with the Work Plan for the year 2020, predicted the buildup of the strategy on implementing the 5G mobile communication networks in Montenegro, as well as the umbrella document for the coordinated implementation and development of 5G systems in Montenegro. From this document, among other things, is to be expected to identify technological, regulatory, safety, spectral and structural challenges, limits and barriers for the implementation of 5G mobile communication networks and the development of the 5G infrastructure and to offer relevant points, so the implementation of 5G networks in Montenegro can be enabled until the end of the year 2022.

In order to collect relevant information for a comprehensive overview of the current situation and define the optimal strategy for the introduction of 5G mobile communication networks in Montenegro, the Agency conducted consultations with mobile operators, other operators, ICT companies, the most significant companies in other vertical sectors and bodies and institutions in the public sector at the state and local level (over 100 entities in total). By means of questionnaires specially developed for certain categories of entities, answers were requested about their awareness of the possibilities of 5G technology, interest in the introduction and use of 5G mobile networks, potential scenarios of using 5G networks in business processes, potential benefits, challenges, limitations and barriers to the introduction of 5G mobile networks in Montenegro. The responses of 27 subjects were analyzed in the Study, and appropriate recommendations were defined based on them.

Based on the proposal from the Study, the Ministry of Economic Development, in cooperation with the Agency, prepared a Roadmap for the introduction of 5G mobile communication networks, which the Government of Montenegro, in accordance with the obligation assumed by signing the Memorandum of Understanding on the 5G plan for the digital transformation of the Western Balkans region, signed in Tirana in November 2020, adopted at the end of 2021.



Given that the largest number of identified activities which should enable an efficient implementation and further 5G mobile communications networks in Montenegro are not under its competences, the Agency considers that for a successful implementation of 5G mobile communications networks in Montenegro it is necessary to prepare a national 5G strategy, the implementation of which would enable coordination at the level of the Government of Montenegro. This is the reason why the document is made available to the Ministry of Economic Development, to be used as a ground in a professional sense, for preparing the Strategy, which is an umbrella document for coordinated implementation and development of 5G systems in Montenegro. The Government of Montenegro plans to adopt the implementation strategy and development of 5G systems in Montenegro in 2022.

8.6. Preparation of the document of Guidelines for the authorization of 5G base stations regarding EM radiation

The issue of the harmful impact on the environment and human health of electromagnetic (EM) radiation generated by base stations and terminals of mobile communication networks has occupied the professional and lay public on a global level since the beginning of mass implementation and use of these systems. Reference international bodies, above all ICNIRP (International Commission on Non-Ionizing Radiation Protection) and the Council of the European Union, have adopted appropriate recommendations in order to eliminate the harmful effects of EM radiation on the environment and human health. Thirty years of experience in the use of mobile communication networks, from analog cellular systems, through GSM and UMTS, to LTE technology, confirms the effectiveness of the prescribed measures. In Montenegro, the limits of permissible exposure to high-frequency electromagnetic fields, which includes radiation from radio base stations of mobile networks, for general public exposure are prescribed in accordance with international recommendations, while for areas of increased sensitivity (public, residential and commercial buildings where people stay: schools, pre-school institutions, maternity wards, hospitals, tourist facilities and children's playgrounds) twice as strict as those recommended at the global level.

Pursuant to the Law on Electronic Communications, the Agency has the obligation to check whether the conditions regarding the prescribed limits of exposure to EM fields are met when issuing authorizations for the use of radio frequencies, including the determination of technical and operational conditions for the installation of radio base stations of mobile communication networks.

The concept of planning and implementation of future 5G mobile networks, unlike the concept applied in mobile networks of previous generations, implies a much denser spatial distribution of radio base stations, including the installation of base stations inside buildings where people live, as well as in some scenarios a completely different way of using them networks (a large number of connected devices in the immediate living and working environment, network interfaces that are carried next to or implanted in the human body, etc.). Also, for the implementation of 5G mobile networks, it is planned to use frequency bands that are identical or close to the bands used by existing networks (from 700 MHz to 3.6 GHz), but also millimeter wave bands (initially only 26 GHz, and in the future also 40 GHz and 66 GHz), which are being used for these applications for the first time. When you add to that the need for parallel operation of 2G, 3G, 4G and 5G networks, at least in the initial phase of 5G network implementation, as well as certain characteristics of 5G technology that were not present until now (massive MIMO systems, beamforming, etc.), modeling of the expected strength distribution of the electric field in the environment of multiband multitechnology base stations and the assessment of compliance with the conditions concerning the limits of exposure to EM fields becomes a very complex and challenging task. At the same time, the only reliable way of checking compliance with these conditions remains the measurement of the equivalent electric field strength, which corresponds to the cumulative effect of radiation originating from several sources, which is not available to the Agency in the authorization procedure of radio base stations. Since it is necessary to ensure that 5G NR radio base stations are implemented exclusively in a way that implies that in places where people stay for a long period of time, the parameters of the EM field will not exceed the maximum allowed limits, there was a need to

create a professional scientific document that will Provide the agency with guidelines for assessing in which scenarios the installation of 5G radio base stations is possible without detailed analysis, in which scenarios detailed analyzes need to be carried out and in what way, and in which situations the installation of a 5G radio base station at the planned location is not possible. The document is expected to, based on measurements in the field, analysis of the configurations of existing radio base stations and the associated environment, as well as the expected contribution to the cumulative radiation of a 5G radio base station of the appropriate type and configuration, offer typification of locations and for each type provide guidelines for assessing compliance with the conditions concerning the prescribed limits of exposure to EM fields.

During 2021, a project assignment with a technical specification was defined, on the basis of which the public procurement procedure for the creation of a professional scientific document was launched at the beginning of 2022. The completion of the document is expected in the second half of 2022, which coincides with the dynamics of the introduction of 5G mobile communication networks in Montenegro.

8.7. Professional supervision in the field of electronic communications

The expert supervision in the area of electronic communications, based on ZEK, is done by the Agency through supervisors for electronic communications. The supervisors for electronic communications do jobs in regards to supervision in accordance with ZEK and the Law on Inspectional Supervision.

Planned expert regulators with operators registered with the Agency and subject to which the Agency had issued a permit for the use of radio-frequencies, are committed in accordance with the Plan on the supervision in electronic communications for the year 2020.

Extraordinary examinations have been conducted according to the need, in cases when:

Radio stations disrupted the operations of other radio stations,

The reports of monitoring the radio spectrum have pointed to some irregularities in the operations of radio stations,

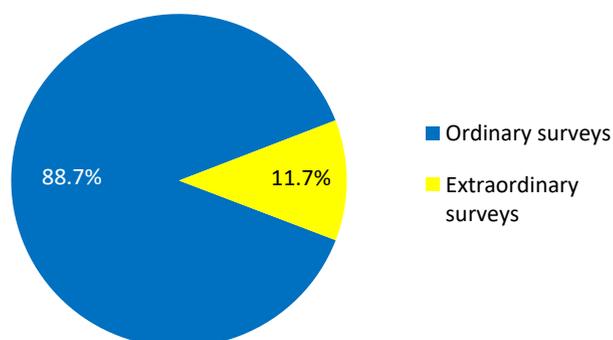
The operator, user or some other subject issued an initiative to conduct expert supervision,

There were indications that the operator or some other subject does not act in accordance with the law.

The surveys were carried out when needed, when needed to perform the control of compliance of the actions with decision of the supervisor for electronic communications, by the Agency's acts and decisions.

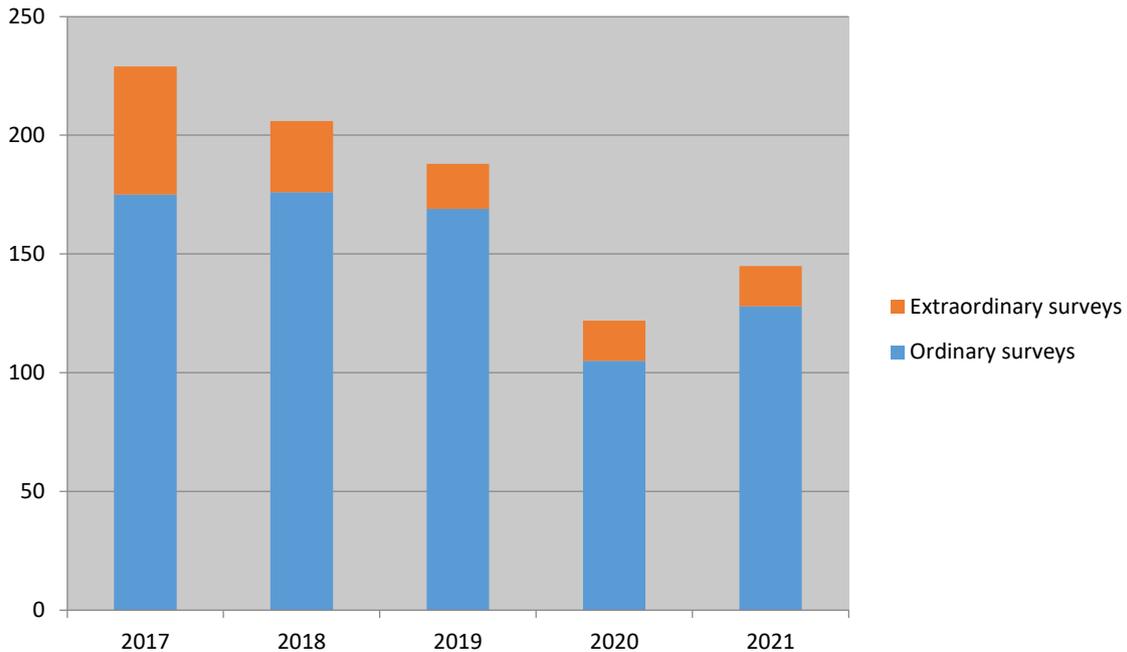
When conducting a professional supervision, the supervisors mostly acted preventively. The identified irregularities were indicated and the date for removing them was determined.

In 2021, a total of 145 surveys were conducted, of which 128 ordinary surveys and 17 extraordinary surveys.



Comparative overview of the number of conducted professional surveys in the period from 2017 – 2021 is given in the Table below, and presented in the chart down below.

Year	Ordinary surveys	Extraordinary surveys	Total surveys
2017	175	54	229
2018	176	30	206
2019	169	19	188
2020	105	17	122
2021	128	17	145



Records were written on the completed surveys. The authorized representatives of the entities subject to supervision did not have any objections. Records copies were delivered to official representatives of the entities subject to supervision and the evidence was neatly kept in accordance with the Law on Inspection Supervision.

In 25 cases the removal of the established irregularities was ordered, of which in 18 cases it was ordered by the records, and in 5 cases the decision was made to the records. There was 15.8% of the irregularities established in the total number of the surveys conducted in 2021. The irregularities regarded the following:

- Non-compliance of the working parameters with the issued approvals for the use of radio frequencies (frequency deviation, antenna mast, lack of the filters etc.);
- Not allowing the termination of the subscriber agreement;
- Failure to hold the agreement on the access and interconnection;
- Not providing the data upon request of the competent authorities;
- The absence of the approval by the Agency Council on the general requirements for the provision of services and subscriber agreements;
- Inconsistency of the calculation of services with the prices from the published price list;
- Use of the frequencies without the Agency's approval;
- Non-compliance with the provision on publicly available prices, tariffs and general conditions for the use of public electronic communications services;
- Failure to take the measures to ensure a continuous provision of the services to the users;
- A lack of retaining the data on traffic and location, and
- Failure to hold the attests for electro and lightning rod installations of the buildings.

Table below gives a comparative overview of the established irregularities as a result of the supervisions conducted in the period 2017 – 2021.

Year	Number of conducted surveys	Number of the established irregularities	Percentage of the established irregularities
2017	229	89	38.8%
2018	206	46	22.3%
2019	188	24	12.7%
2020	122	25	20.5%
2021	145	23	15.8%

Based on the initiatives for taking the supervision procedure, the surveys upon operators' requests and the unit of the Agency for the protection of rights and interests of the users. The requests referred to the control of the compliance of the operators' work with the provisions of the Law, inappropriate service quality and a lack of the provision of the services.

8.8. Analysis of the need to introduce numbering ranges for communications between machines –M2M

In 2020, in the course of the fulfillment of its obligations, the Agency conducted the analysis procedure in order to estimate a need to introduce numbering ranges for communications services between machines – M2M and made a Draft Analysis on the need to implement numerical bands for the services of communications between machines – M2M, which will be used as the basis in the future changes of the numbering plan.

The analysis of the need to implement numerical bands for the services of communications between the machines – M2M, shows an overview of the validity of the application of M2M communications in modern society and an overview of the defined numbering for the needs of M2M communications. Also, the analysis gives a proposal for the numerical bands for M2M in Montenegro, as well as the dates of the implementation.

Machine-to-machine, M2M is a business area that entered a stage of more significant growth and it has become a new business area for the operators of electronic communications networks. The operators should enable the connection needed for maintaining the connection between different devices and sensors and for that they need to be provided with relevant regulatory requirements and appropriate resources. It is assumed that in the near future there will be around 50 billion devices in the world for the needs of M2M and the IoT services (Internet of Things), so that will extend numbering resources.

Given the need for large numbering resources, a new short-term and a long-term strategy on the use of the numbering resources will satisfy the need for the digits. One of the suggestions to national regulatory authorities is a new band of digits intended only for the M2M or similar applications, including the increased total length of the number, but up to 15 digits in accordance with the ITU E.164 Recommendation. In practice, a lot of countries follow these recommendations, so Denmark, Norway, the Netherlands, Spain, France, Finland, Croatia, Luxembourg, Slovenia, Sweden, and Belgium opened a new expanded numbering plan only for the M2M services. The national number for the M2M services can be used for the services within fixed and mobile electronic communications networks.

In the countries that have branched out a network of the M2M devices or they anticipate it in the near future, special numerical bands have been assigned, with the size order of the national number from 9 (Serbia and Bosnia and Herzegovina), 10 (Croatia), and 12 digits (Slovenia and Norway).

The M2M services in Montenegro are used for the POS terminals, ATMs, pay machines, routers which are primary or back up of the primary links (MPLS, ADSL, LLICG) alarm systems, devices for remote reading

(expenditure of electric energy, water, temperature, and others), devices for vehicle tracking, the connection of video supervision within companies that offer insurance for individuals and objects. For these services, operators use numbering resources which are intended for mobile telephony users.

By the Analysis, the following options for the M2M numbering are recommended:

Option 1: The length of the national number should be: NDC²⁵ + SN²⁶ 9 (2+7) digits, which is the maximum amount of digits by the valid Plan of numeration. For NDC the band would be 7x. This allows 10 million numbers for each NDC,

Option 2: The length of the national number should be NDC + SN 10 (2+8) digits, so that in the existing Numbering Plan, the length had to be changed for both the national and international number. The length of the national number would be increased from 9 to 10 digits, and for the international from 12 to 13 digits. The increase in length of the national number is related only to numbers that are used for M2M services. This allows each NDC 100 million numbers, which would be probably enough for the longer time period.

It was also proposed that the existing numbers used for the M2M services (numbers with an access code 6x) be replaced with the numbering appropriate only for the M2M services, December 31, 2023.

The Agency, on the session of the Council held on December 17, 2020, adopted Draft Analysis of the need to introduce numerical ranges for the communications services between machines – M2M, when the decision was brought for initiating public consultations procedure on the Draft Analysis with stakeholders. Along with the comments and suggestions regarding the Draft Analysis, the participants were also expected to give their opinions on the public consultations, regarding the following:

Length of the national number for M2M;

Deadline for the introduction of a new range of numbers for M2M, and

Deadline for the replacement of the existing numbers used for M2M, with a new range of the numbers for M2M.

As referred to in Article 33 (1) of the Law, the Agency conducted public consultations procedure in the course of which the comments were given by Crnogorski Telekom, Telenor and Mtel. After evaluation of the received comments given by the above operators, the Working Group prepared the Report on the consultation process conducted on the Draft Analysis of the need for the introduction of numerical bands for the communications services between the machines – M2M. The Working Group proposed establishment of a special band for the numbers intended for the use of the M2M services, and that for the M2M needs are used non-geographic numbers with the SDN code 71, and that the length of a national number should be SDN + SN: 9 (2+7) digits, which is a maximum number of digits according to the actual Numbering Plan. This ensures th

This allows 10 million numbers to be used per SDN. It is also proposed that the implementation of the new range of numbers for M2M can be started after the adoption of the Amendment to the Numbering Plan, and no later than January 1, 2023, while the deadline for replacing the existing numbers used for M2M, from the scope of numbers for public mobile networks, with a new range of numbers for M2M determined on September 1, 2025. At the session held on December 16, 2021, the Council of the Agency adopted the Report on the conducted consultative process regarding the Draft Analysis of the need to introduce numbering ranges for communication services between machines - M2M.

8.9. Submission of data and giving opinions on spacial planning documents

As referred to in Article 40 of the Law on Electronic Communications, the obligations of the Agency and the operator are prescribed to submit data on existing and planned electronic communication networks, electronic communication infrastructure and related equipment in the area covered by the planning document at the request of the holder of preparatory work for the preparation and adoption of the planning document. Also, the same article of the Law prescribes the obligation of the Agency to give an opinion on the

compliance of the planning of electronic communication networks, electronic communication infrastructure and related equipment in the process of preparing the planning document.

As referred to in Article 38 of the Law on Spatial Planning and Building Construction ("Official Gazette of Montenegro", 51/08, 40/10, 34/11, 47/11, 35/13, 39/13 and 33/14), and in regarding Article 217 of the Law on Spatial Planning and Building Construction ("Official Gazette of Montenegro", 64/17, 44/18, 63/18, 11/19 and 82/20), the Agency, in its capacity as a legal entity responsible for telecommunications affairs, is obliged to, at the request of the holder of the preparatory work, within 10 days, submit the available data, as well as its proposals and opinions, which are necessary for the preparation of planning documents. As referred to in Article 39 of the same Law, and in regarding Article 217 of the Law on Spatial Planning and Building Construction ("Official Gazette of Montenegro", 64/17, 44/18, 63/18, 11/19 and 82/20), holder of preparatory works shall, along with the draft of planning document, submit the opinions of the comments of competent bodies, institutions and public local self-government bodies.

In accordance with the stipulated provisions, the holders of preparatory works on the preparation and delivery of the planning documents: Ministry of Sustainable Development and Tourism and the organs of the local municipality – secretariats responsible for the activities on planning the space and construction of buildings shall address the Agency with the request to deliver data and suggestions. Based on 5 submitted requests, in 2021 the Agency delivered relevant data and recommendations on preparing the spatial planned documents. Data and recommendations were delivered to the Ministry of Ecology, Spatial Planning and Urbanism, and were required for the preparation of 5 planning documents, in the municipalities of: Budva (2), Mojkovac (1) and Podgorica (2).

Moreover, the holders of preparatory works (local self-government bodies and the Ministry of Ecology, Spatial Planning and Urbanism) submitted for the opinion of the Agency the draft spatial planning documents. Based on 11 submitted requests for providing the opinion, in 2021, the Agency submitted its opinion on 11 draft spatial planning documents. All the opinions to the draft planning documents were delivered to the Ministry of Ecology, Spatial Planning and Urbanism and are regarding the prepared planning documents in the following municipalities: Bar (2), Cetinje (1), Podgorica (3), Rožaje (1), Tivat (1) and Ulcinj (3). Also, the Ministry of Ecology, Spatial Planning and Urbanism delivered for the approval the proposals of spatial planning documents. At the requests, the Agency replied with 5 approvals to the proposals of spatial planning documents, in the following municipalities: Berane (1), Gusinje (1), Herceg Novi (1), Plav (1), and Podgorica (1).

For making its opinions to the draft planning documents, the Agency referred to ZEK and the legislation which are in accordance with the same or with the latest trends in the field of modern electronic communications. By giving its opinions to the draft planning documents, by applying modern technology solutions, the Agency intends to establish preconditions for:

Further and faster development of the ICT Sector, primarily of the broadband access;

Stimulating the interest and promoting the investments in the ICT Sector,

Enticing the competition in the electronic communications market,

The use of available ICT tools and services in everyday life and business by physical persons (citizens) and business entities.

In that way, the Agency gives out the guidelines that are the basis for the development of a strong and generally accessible infrastructure that allows, under equal conditions, a common use by multiple operators in the provision of a high-speed broadband connection and the use of modern and demanding services for all the households and business entities.

When delivering data and proposals, as well as the opinions to planning documents, the Agency has used the data on electronic communications infrastructure, provided by the operators, in accordance with Article 55 of ZEK and the Rulebook on the type and manner of the provision and publishing of data on electronic communications infrastructure and related equipment which can be of interest for the mutual use („Official Gazette of Montenegro”, 48/18), as well as the data on the number of users of individual services (fixed

telephony, fixed broadband access to the Internet, fixed wireless broadband access to the Internet, mobile electronic communications and distribution of the AMV content). Also, the Agency points out the importance of an adequate estimation of the degree of development of electronic communications within the scope of the planning document, in relation to the average degree of the development of electronic communications in Montenegro.

Based on a continuous review of the spatial planning documents that are delivered to the Agency in order to give out its opinions, it is evident that the same, in the part related to electronic communications, are of better quality and content than in the previous period. The above indicates that the processors of spatial planning documents complied with the recommendations received from this Agency, which confirms that the Agency's participation in the process of creating spatial planning documentation had positive effects on its quality and content, and that it justified its legally prescribed role in this area.

8.10. Research on the degree of satisfaction of the users of electronic communications services

Public Opinion Research Agency "Damar Plus" conducted the research on user satisfaction with electronic communications services in Montenegro. The research was conducted at the beginning of May 2021 on 1.008 respondents, aged 15 years and over.

The research refers to the level of user satisfaction with fixed and mobile telephony services, the Internet and the distribution of television and radio programs, information about individual telephone numbers, as well as the level of information on the rights of users of electronic communication services.

Research results regarding the level of satisfaction of the users of electronic communications services in Montenegro are available on the Agency's website: <https://equip.me/page/reports/istrazivanja/content>. The research results show high level of the use of electronic communication services in Montenegro and high level of satisfaction with the quality and prices of electronic communications services, but also that the citizens are not appropriately informed on important telephone numbers, rights and procedures for the protection of their rights and interests in the area of electronic communications.

53% of respondents have a fixed telephone line. 83.1% of respondents are satisfied with fixed telephony services, while the level of satisfaction with the prices of fixed telephony services is 71.4%. The percentage of users who had problems using fixed telephony is 32.6%, while 71.2% of users are satisfied with the speed of their elimination. In the previous year, 33.7% of users contacted their operator's customer support (call center), and 83.4% of users were satisfied with the service they received.

The following results were obtained per individual segments.

8.10.1. Fixed telephony

53% of respondents have a fixed telephone line. 83.1% of respondents are satisfied with fixed telephony services, while the level of satisfaction with the prices of fixed telephony services is 71.4%. The percentage of users who had problems using fixed telephony is 32.6%, while 71.2% of users are satisfied with the speed of their elimination. In the previous year, 33.7% of users contacted their operator's customer support (call center), and 83.4% of users were satisfied with the service they received.

8.10.2. Mobile telephony

Mobile telephony services in Montenegro use 98.2 of respondents. The percentage of users with mobile telephones which they can use to access the Internet is 88%, while 87.5% of respondents have a so-called smartphone. 96.9% of total number of mobile services users use the service of telephone calls, 75.2% use SMS messages, while 75% use the Internet access service. Some of the Internet applications for communication (Viber, Facebook Messenger, Instagram, WhatsApp) are used by 97.8% of mobile telephony users who have so-called smart phones. 84.6% of respondents have mobile Internet service in their apartment/house, and 77.3% are satisfied with the speed of mobile Internet. The general level of user satisfaction with mobile network services is 85%, while the level of user satisfaction with their prices is 74.2%. In the previous year, 30.1% of mobile users used customer support services, while 88.2% of users were satisfied with the service provided. The roaming service was used by 18.7% of mobile phone users, mostly for incoming calls. 53.5% of users believe that the prices of mobile telephony services in roaming are too high, while satisfaction with mobile telephony services in roaming amounts to 82.2% of respondents. As in last year's survey, the roaming service was used by fewer mobile phone users than in 2019, which is most likely a consequence of the inability to travel due to COVID19.

8.10.3. Television

The number of citizens of Montenegro using TV programs through one of TV signal distribution systems is 92.6%, while 3.9% users follow TV programs broadcasted via radio broadcasting systems. Level of satisfaction with the picture quality is 92.5%, 82.2% were satisfied with the quality of the program offer, and 73.5% with the prices of the users who use the services of the TV program provider. The number of citizens who in the previous year noted interference or interruptions in signal reception is 40.5%, while 74.7% of respondents are satisfied with the speed of elimination of these interferences. The customer support center (call center) was contacted by 33.4% of users in the previous year, while 80.5% of users were satisfied with the quality of the support service. As a key reason when choosing a TV program provider, citizens single out the price of services, followed by the choice of programs and quality.

8.10.4. Internet use

The number of Montenegrin citizens who have the possibility to use the Internet at home is 88.5% of the population, while 86.2% of respondents stated that they use the Internet. 87.8% of respondents were satisfied with the quality of Internet services in Montenegro, and 78.5% with the price. The number of Internet users who have noticed certain disturbances and interruptions in the use of the Internet in the previous year is 44.9%. 74.7% of them were satisfied with the speed of elimination of disturbances and service interruptions. The percentage of Internet users who have used the customer service support service in the last year is 39.4%, while 79.5% of these users are satisfied with the service they received.

8.10.5. The number 1180 – Universal information service

The number of the citizens informed on the number 1180 (universal information service on telephone numbers of fixed and mobile telephony) is 37.6%. In the last year 28.2% of those respondents used that service, and 95.3% users were satisfied with its quality.

8.10.6. Single European Emergency Number 112

With Single European Emergency Number "112" is familiarized 28.3% of population, while with the purpose of this number is familiarized 20.09% of the population.

8.10.7. Emergency service numbers

The police call number 122 is recognized by 78.7% citizens of Montenegro, 66,1% of the citizens are familiarized with the number 124 for emergency medical help, the service for the protection and rescue (firefighters) number "123" is recognized by 63,4% respondents, while 10.4% of citizens know that the number 129 is provided for the maritime assistance.

8.10.8. Number for reporting interferences

Most of the citizens of Montenegro (56.1%) are not familiar with special numbers for reporting interferences, but compared to the research results from the previous year, there is a slight decrease in this familiarity.

8.10.9. Agency for Electronic Communications and Postal Services

47.6% of the citizens of Montenegro have heard of the Agency, while 18.3% are familiar with the Agency's activities. When it comes to the source of information about the Agency, television is still the dominant source for the majority of Montenegrin citizens (54.5%).

Out of those respondents that have heard of the Agency, 61.8% are not familiar with the Agency's official website. Those who have visited the Agency's website i.e. 86.8%, consider the information availability on its site as very high.

8.10.10. Protection of user rights and interests

The percentage of the citizens of Montenegro who are familiar with the rights of the users of electronic communications services is 37.9%, while the percentage of those who are familiar with the procedure for protecting their rights is 42.1%. Percentage of citizens who submitted to the operator or the Agency the appeal or complaint is 9.8%, while the percentage of those who are satisfied with timely responses to them is relatively high and amounts to 63.6%. As it was the case in the previous year, most of the citizens of Montenegro (76.5%) are still not familiar that they can ask questions in regard to many aspects of the protection of their rights within the area of electronic communications and postal services. Most of the respondents (69.4%) received a telephone call with the purpose of direct marketing or an advertising message over SMS, Viber or some other service, while there is 51% of those who are bothered by these activities.

8.11. System for collecting data from the operators

With a view to fulfilling their legal obligations, more efficient collecting, storing, and processing collected data, as well as preparing the reports on electronic communications market and postal services market, in 2015, the Agency implemented a system for collecting and processing of data about electronic communications market and postal services market. The system is located in the Agency's domain, and it is connected with the systems of the electronic communications operators and postal services operators. The data is entered into the system by the operators in accordance with their obligations set out by ZEK. The data is entered weekly, monthly, quarterly, semi-annually, and annually, which depends on the need to collect and process them. In 2020, the system was used by 14 operators for electronic communication services, who entered the data within a specified time frame. The system for collecting and processing of data was construed to enable a continuous upgrade and development, so it is neither limited to the number of the operators that are entering the data nor with the number of forms and parameters, i.e. data of different type, and it can support an unlimited number of market segments for electronic communications and postal services.

During 2021, the system was used by 14 operators of electronic communication services who entered the data within the time limit. The system for collecting and processing data is designed in such a way that it enables continuous upgrading and development, and is therefore not limited by the number of operators whose data is entered, nor by the number of questionnaires and parameters, i.e. data of different types, and it can support an unlimited number of segments of the electronic communications market and postal services.

During the same year, the system was upgraded and expanded with a certain number of questionnaires, all in accordance with the requirements and needs of collecting a new set of data. At the same time, work was done on the modernization of the design of the mentioned system. It is planned that the innovated version of the data collection system will be put into production in the first half of 2022.

8.12. Activities on switching to IPv6 Protocol in Montenegro

Based on the Development Strategy of the Information Society of Montenegro until 2020, a Migration Plan to the IPv6 protocol was prepared, in accordance with the standards, decisions and recommendations of competent European and international bodies.

The main goal of transition to the Internet protocol of the new generation IPv6 is to overcome the problem of the lack of Internet addresses, which occurred with the IPv4 protocol. The advantages of this protocol are, in addition to the expansion of the address space, increased efficiency, security and the possibility of implementing modern IoT solutions.

The analysis of the state of the ICT infrastructure showed that Montenegro is one of the few countries in Europe where it is not possible to connect to the Internet via IPv6, although there is a certain level of initiative, readiness and thinking about migrating to the new IP protocol. On the other hand, a breakthrough has been identified in the introduction of new innovative ICT solutions (IoT, M2M, sensor networks, smart solutions, etc.) which, in their full implementation, will require the functionality of the new protocol.

Having in mind that state institutions, public entities and local self-government bodies are among the largest users of ICT solutions and resources in Montenegro, and that Migration to IPv6 has been defined as a strategic goal at the state level, it was necessary to submit separately a Migration plan for this group of the subjects. As laid down by the Plan, the following activities are recommended:

Establishing a national body („IPv6 *task force*“) or a team which will prepare an action Migration Plan to IPv6 of the state institutions, coordinate the activities, promote and follow migration process. Team members should be the representatives of the subjects that will be the holders of migration process (state institutions, regulators, operators, academic communities, ICT business etc);

Encouraging and organizing promotion of the advantages of the IPv6 protocol and education on subject migration techniques at all levels of public administration and residential users;

Organization and realization of the survey of operators on their transmission plans to IPv6;

Preparing formalization of the recommendations and the guidelines to state institutions with regard to IPv6 implementation at an administrative level;

Establishing a laboratory, within CIS UCG, for testing a transition to IPv6;

Encouraging planned migration to the network of the University of Montenegro to IPv6 through *dual-stack* technology according to the scenery "from the outside in", as a pilot project based on which the acquired experience and knowledge that can be applied to other state institutions will be documented;

Preparation of the migration for state institutions based on the Project and documented UCG activities;

Realization of the migration of state institutions by applying a *dual-stack* technology to IPv6 Protocol.

Based on the recommendations stated in the Migration Plan to IPv6 Protocol in Montenegro, continuing the activities initiated or planned for 2020, in which the Agency was involved, certain activities were carried out in 2021.

At the beginning of 2021, IPv6 implementation on a measuring server of the system for measuring and analyzing the quality of the Internet access service "EKIP NetTest", was enabled. That way, the measuring and analyzing the Internet access service quality was also enabled through IPv6 Protocol.

The Agency conducted the survey of the operators regarding their plans of migration to IPv6. Based on the received replies, the following is concluded:

For now, the operators have not received any requests from the users for the provision of the services over IPv6. The stated fact determines in a great part their plans for the IPv6 implementation, i.e. takes it seriously into consideration, due to necessary investments. As the first step the IPv6 implementation at the wholesale level was mentioned;

Most of the operators in Montenegro have available IPv6 addresses, granted them by the authorized international organizations (RIPE NCC) and most of these addresses is globally visible;

One of the mobile operators in the core of its mobile network activated the functions necessary for providing the users with the resources from IPv4 and IPv6 address spaces within the same session. Also, *end-to-end testing* was conducted for a limited number of mobile users.

In the organization of the Agency and International Telecommunication Union (ITU) – Office for Europe in Podgorica, on 20 and 22 April 2021 was held a national workshop for Montenegro on the topic: „IPv6 Strategy, Policy and Implementation“. The intention of the workshop was to increase the awareness at a national level for the Internet Protocol version 4 (IPv4) to Internet Protocol version 6 (IPv6). More details on the workshop are presented in the item 8.17.6 of that Report.

Furthermore, in cooperation with the ITU and Malaysia University of Science and Technology (MUST), an advanced training for IPv6 was held in the period 10-14 May 2021. The training, inter alia, dealt with the IPv6 architecture, structure of the IPv6 packages, mechanisms of migration to IPv6, IPv6 safety problems, as well as the IoT. The training attended 19 representatives from the ministries, universities, electronic communications operators and a private sector.

The above activities were planned to be realized during 2020. However, due to COVID-19 Pandemic, the realization of mentioned activities was postponed until 2021.

Financing the provision of the equipment for IPv6 laboratory was agreed with the ITU, and it will be installed in the Information System Centre of the University of Montenegro. It is expected that the laboratory will be implemented in the middle of 2022.

8.13. Development of human resources

As laid down by the Rulebook on the organization of work and job classification in the Agency for Electronic Communications and Postal Services, made by the Agency Council, the Agency is organized through the work of its departments, units and divisions.

The Agency includes the following stand-alone organizational units:

Legal Department;

Department for Economic Affairs;

Department for Electronic Networks and Services;

Radio Communications Department;

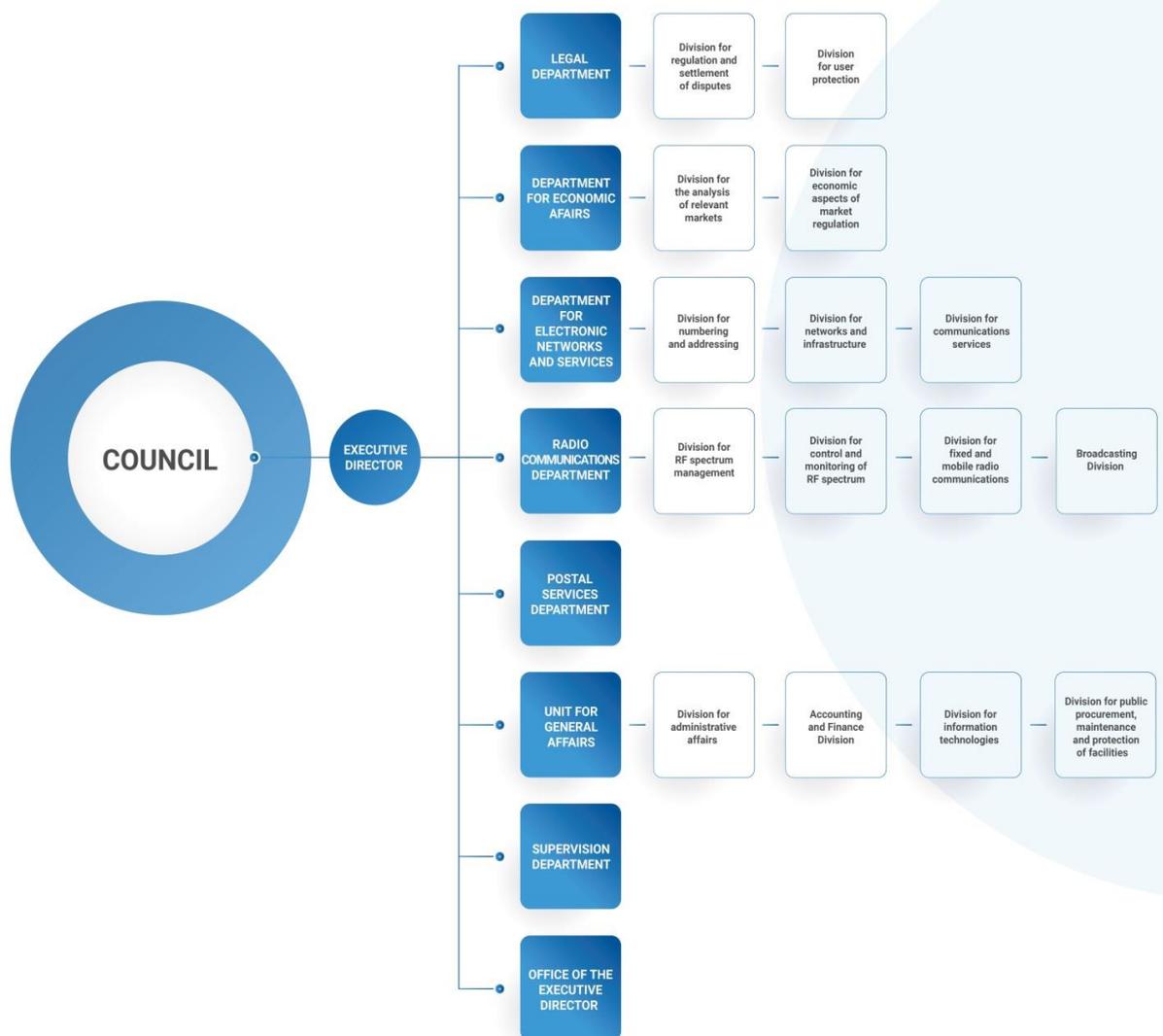
Postal Services Department;

Unit for General Affairs;

Supervision Department, and
Office of the Executive Director.



Organizational Structure



Administrative capacities of the Agency for Electronic Communications and Postal Services are at high level, and it should be emphasized that, according to the Rulebook on the work organization and job classification, all employees are obliged to undergo professional development for achieving high quality of performance of the tasks and duties which are within their scope of work.

On 31.12.2021, the Agency had 70 employees, including the President of the Council, members of the Council and the Executive Director of the Agency. Qualification structure of the employees is as down stated:

- 1 employee with PhD degree,
- 3 employees with MA degree,
- 56 employees with high school degree, and
- 10 employees with secondary school degree.

8.13.1. Professional training of the employees

In accordance with the work organization and job classification in the Agency, all the employees are in obligation to undergo professional training for achieving high quality of performance of the tasks and duties which are within their scope of work. Concerning a new technological solutions in the field of electronic communications, radio communications and postal services, permanent professional training of the employees is reflected in their participation in professional gatherings, seminars, conferences and in the activities of the working groups in the organization of: ITU, CEPT, BEREC, etc. but also through exchange of experience on a bilateral basis with the regulatory agencies of the countries in the region and the signatory countries to international cooperation agreements with the Agency.

In 2021, the employees of the Agency underwent professional trainings, among which the course with ITU Academy on the topic: Security and QoS in Internet Network; training in the organization of Cullen International: "Regulatory Framework for Electronic Communications"; trainings of CompTIA Network+, WCNA (*Wireshark Certified Network Analyst*), CCNA (*Cisco Certified Network Associate*), CEH (*Certified Ethical Hacker*), CompTIA CySA+ (*Cybersecurity Analyst*); trainings on the implementation of the Law on Consumer Protection – Conformity of the products and warranty; consumer protection in online transactions, implementation of the "Decision on determining the List of the authorities competent for the supervision of the implementation of the laws containing the provisions on consumer protection", and many other on-line professional educations and trainings, including foreign language courses.

8.14. Information system of the Agency

Maintaining and improving the information system of the Agency (hereinafter referred to as the System) in 2021 were carried out through regular maintenance procedures, increase of the safety and reliability of the System operations, including supplements to the system following the latest trends in technology, change of the amortized hardware and supply with the missing hardware, as well as obtaining new software licenses and renewal of software licenses, when needed. In the segment of purchasing devices and equipment, defined guidelines were respected. Each provision is, in line with the legal obligations, carried out after assessing the offers of goods demanded on the market and assessing the ratio price/performance, whereas the quality of goods is considered at the first place, which has long-term results in decreasing the maintenance costs. The warranty period of provided devices is also considered as very important matter, for decreasing the costs of potential defects rectification of the devices.

8.14.1. Network infrastructure

In 2021 were conducted ordinary controls, updates and maintenance of the network infrastructure of the Agency. Relevant annual licenses for supporting protection systems were renewed.

Network infrastructure is implemented in the central office of the Agency, ensuring the performance of traffic control, system access, collecting logs, analysis and reporting. Several protection levels are implemented against malware, misuse, known vulnerabilities of the operation systems and software, leakage of information, identification, and control of applications; also, there was implemented prevention of infected systems to get in contact with the known C&C servers and enabled the analysis of actual network status and of traffic flow. The devices are redundant, thus avoiding a single point of failure when defect of one device is a threat to the whole information system.

The Agency's headquarters is connected to the Internet via FTTH technology and is redundant, i.e. second operator is a provider of secondary internet connection. As a response to work demands, download speed of Internet connections have been increased in this year, and are 200 Mbps and 1Gbps.

A technologically advanced Wi-Fi network has been implemented in the entire office space of the Agency with the possibility of adjusting parameters for each device of the system. For the needs of certain projects implemented by the Agency, which are physically located in the Agency's hall system, a special symmetrical 10 Mbps Internet connection is provided.

The network infrastructure at the remote location of GKMC on Dajbabska gora was also connected to the network infrastructure of the Agency's headquarters, which was implemented in the same way as at the Agency's headquarters.

GKMC's connection to the Internet was also achieved through FTTH technology, and it is also used to establish a VPN connection with the Agency's headquarters in such a way that the remote location is actually part of the local computer and telephone network, which were separated in 2021. Employees and their computers at GKMC are part of the local computer network and have all the rights and secured access as if they were physically located at the Agency's headquarters.

The agency leased public fixed IP addresses for both internet connections at the headquarters and the internet connection at GKMC, which enables a better connection between these two locations as well as other services.

In the period ahead, it is planned to increase the speed of the local network infrastructure by implementing newer devices that will enable more optimal use of the capacity of Internet connections and faster access to all System resources.

8.14.2. VPN connection

During 2021 was continued an intensive use of VPN connection, as well as the improvement and development of new system policies. VPN connections were provided for all the employees with the policies that are fulfilling their needs. The necessity for the realization of on-line work from home for all the employees was born due to COVID-19 Pandemic and was enabled thanks to a good infrastructure of the Agency. The employees who are out of the Agency's premises can access only the approved Agency's systems, by applying relevant safety policies for performing their tasks.

8.14.3. Server infrastructure

In 2020 were conducted ordinary monitoring and update of software versions, occupancy control and expending the space and other server resources, and maintenance of server infrastructure of the Agency.

Server infrastructure includes virtual machines, storage and servers with the projects conducted by the Agency. In the Agency are implemented hardware and software for the virtualization and backup, and was performed virtualization of servers which are separate appliances; this means that was done implementation of "Private Cloud" Project. "Private Cloud" was introduced in accordance with the Agency's needs and it is physically consisted of three appropriately dimensioned servers with redundancy and storage. In 2021, new virtual servers were created respecting new projects and services provided by/to the Agency.

The Agency has also run the projects and data bases which are not under the virtual platform and two such projects are physically placed in the Agency's premises. Two servers for each of them are used: a production and redundant. They are also connected to Internet through an independent connection which is not in the

local network infrastructure of the Agency. Internet traffic of the public server segment is scanned and protected as it is the remaining network infrastructure of the Agency.

In the period ahead is planned replacement of the „*Private Cloud*“ system with higher capacities in order to create a basic prerequisite for further development of all systems of the Agency. This “old” system is planned to be used as a DRS on the remote location – GKMC.

8.14.4. Backup system

In 2021 was performed monitoring on daily basis of the following: work of backup system, analysis of the occupancy capacities and update of the related software and rectifying of the malfunctions.

For the purpose of virtual infrastructure backup solution with protection is implemented and is performed on the storage in the space planned for backup procedure. Once a week is conducted a “full backup” of all servers, and on daily base is conducted “incremental backup” of data. “Online” replication of the domain controller and file servers was performed to the remote location.

8.14.5. Telephone infrastructure

In 2021 were conducted ordinary maintenance of telephone infrastructure, transfer of local numbers per request, as well as the provision and replacement of necessary devices and their integration in the system. At the end of the year was made the analysis of the Agency’s needs for electronic communications services, upon which consumption optimisation for these services was implemented by introducing additional devices and establishing their connections with the headquarters.

The basis of the telephone infrastructure is telecommunications switchboard, which enables connection to the local telephone network of telephones at a remote GKMC location. Connection was established through IP telephony at the remote location thus the main function and met the request for connecting local telephone numbers of all the employees in the Agency.

In 2021, the system of connecting the headquarters and GKMC was improved through VPN and the separation of the local computer and telephone network, which achieved a much better quality of communication on the one hand, and on the other hand improved the security aspect of the local network. In the next period, it is planned to replace the old switchboard and switch to an IP switchboard and IP telephony in its entirety.

8.14.6. Video surveillance and access control system

In 2021 was continued the performance of regular controls of the work of video surveillance and the system for recording entry and exit checks in the Agency’s premises, as well as of the system maintenance which includes the following installed equipment: server, camera, video balun for the transmission of signals through UTP cable, and cameras supply. The cameras are placed at the appropriate places in the premises of the Agency, in GKMC, and in other premises of the Agency, which are part of the System for the control and monitoring of radio-frequency spectrum, with information on video surveillance put labeled on visible places. The Agency is provided with the approval for implementation of video surveillance system and the access control system, issued by the Agency for protection of personal information and free access to information.

8.14.7. Hall system

The devices of network infrastructure, server infrastructure, telephone exchange and appropriate devices of video surveillance system are stored in a special room, prepared for that purpose. The access to the hall system is allowed only to the authorized staff, through a double authorization procedure.

The equipment in the room is supplied with electricity through the UPS devices protecting from overvoltage and the loss in the supply. Equipment power supply redundancy is implemented in a high percentage, via redundant UPS devices. These activities proved to be very important and necessary considering the vulnerability in the power supply, and the lack of diesel electric generators. Its realization will ensure higher safety and shall prevent all the systems and appliances from malfunctions, as well as from potential data loss.

Hall system was appropriately equipped for the firefighting. Self-activating fire extinguishers are properly stored, so that they do not jeopardize the equipment once they are activated.

Cooling system of the hall system was introduced separately from the whole cooling/heating system in the Agency's premises and is consisted of two appliances. For that purpose were provided two professional devices working in a "load balancing" mode, ensuring maintaining comfortable temperature in all weather conditions with no excessive effort for either of the devices, and at the same time it ensures that the failure of one machine does not affect the risk of overheating of active devices in the hall system.

8.14.8. Video conference room

In accordance with the increased needs of online communication, and in order to overcome the problem of the non-ability of holding personal contacts and meetings, the Agency has equipped a video conference room for online meetings. In 2021, the hardware resources were increased and the necessary licenses of the videoconferencing system were renewed. Through the activities carried out, the Agency realized the possibility of online communication inside the hall in two ways: using licensed computer-related software and using licensed software related to the videoconference system, where care was taken to separate traffic from the local computer network, for its security.

8.14.9. Computer infrastructure

In 2021 continued the maintenance and improvement of the computer infrastructure of documents on the file server and the supply with new computers and equipment and replacement of amortized computers and equipment. On each of the computers of the Agency is installed licensed operations system, which in the time of its provision was a modern one. On each computer was installed an "office" software package. Operations system and "office" software is regularly updated. All the computers and all network peripherals are connected in the network infrastructure and are associated in one domain. Within controller domain, according to its policies and functions, are controlled the employees' access and assignment of IP addresses to the computers in the computer network of the Agency. Each computer and server are protected with adequate antivirus software, which is regularly updated, and which scans the workstations and servers. In 2021, license validations of antivirus software were extended. Antivirus software is centralized and is subject to everyday analysis of the system safety from the scope of its operations in the whole domain of the Agency. Each employee can use domain resources according to required policies – sharing documents on a file server, keeping data which are not public, backup of data recorded on the server, access to peripherals, internet access.

8.14.10. Peripherals

In 2021, maintenance of available peripherals resources and the improvement and supply with the new ones, continued. Along with network and local printers, scanners and multifunctional machines used by the employees in their offices, in 2021 was provided and implemented the system of network printing and scanning. On each floor of the Agency's headquarters and GKMC there is one network multifunctional machine connected to active directory and fitted in the network infrastructure, for optimizing total resources for maintaining peripherals and consumption of materials.

In 2021, the system of network printing also included an additional multifunctional machine for color printing. Further improvement of this system is planned in order to reach higher cost-effectiveness in relation to individual (office) devices.

8.14.11. Independent information systems

In 2021, in accordance with the concluded agreements on maintenance were conducted ordinary maintenance and update of the projects and data basis kept by the Agency, and were also conducted ordinary procedures on the system maintenance in the Agency. The upgrades of certain systems and their renewal following the latest technological trends were completed and a new system was implemented.

Along with previously mentioned information systems deployed in special physical servers in the Agency, the Agency also has both physical and virtual servers, that is the projects hosted on other locations, while all other systems are placed on virtual machines within 'Private Cloud' Platforms. It is worth mentioning also has one information system deployed in the Montenegrin Internet Exchange Point (MIXP), due to the accuracy of measuring data collected in its data base (Ekip Nettetst).

In addition to the information systems, previously mentioned in the "Server infrastructure" section, which are installed on virtual machines within the "Private Cloud" platform or special physical servers in the Agency, the Agency also has physical and virtual servers, i.e. Projects hosted in other locations. It is important to note that the Agency has also set up an information system in the Montenegrin Internet Point of Internet Exchange (MIXP), due to the accuracy of the measurement data collected in its database.

The projects and data bases kept by the Agency are as follows: Registers of the operators of electronic communications, registers of the operators of postal services, Register of radio frequencies, Register of numbering/addresses, Register of electronic communications infrastructure, System of central base of ported numbers, System for collecting data of the operators, Tariff calculator and measuring of the speed of Internet connection, Ekip Nettetst, Register NeZoviMe and web page of the Agency.

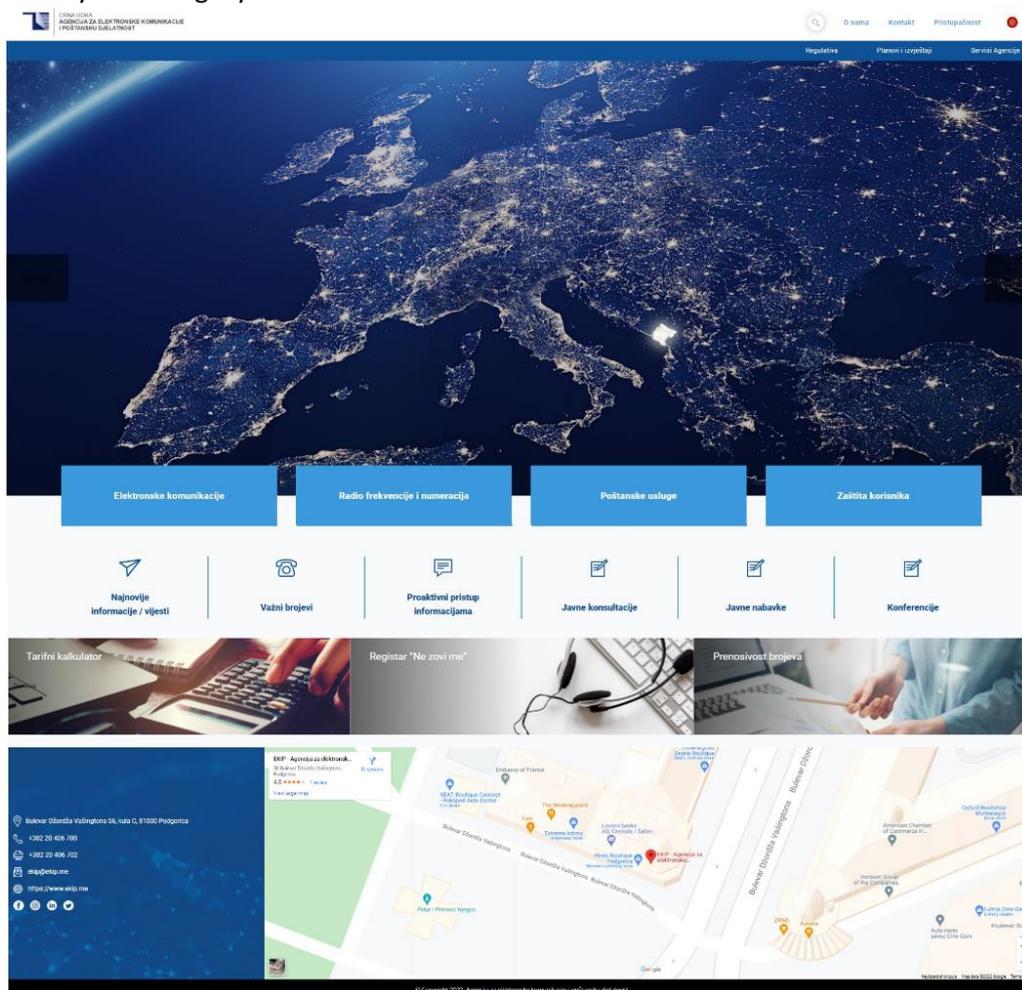
The projects and data bases maintained by the Agency are independent information systems, and in 2020 was prepared new documentation which will be used for designing new systems and integration of all systems, to the extent possible.

8.14.12. Website of the Agency

In 2021, a redesign and reorganisatio of the Agency's website www.ekip.me was made, by applying new technological solutions, as well as modern and available design.

An everyday "on-demand" update of technologically advanced website of the Agency continued, supported by a new specialized CMS software.

The web page is hosted on a special virtual platform with the operators, with an increased level of network and service safety and integrity. SSL certificates are renewed.



In the period ahead, the Agency's website will be covered by system integration and will enable connection with other systems, after which users will be able to get all information from the Agency's scope of work in one place.

8.15. Activities of the Agency on the implementation of measures from other action plans and strategies in the implementation of which it is involved

8.15.1. The Agency's activities on the implementation of the Strategy on prevention and repression of radicalization and violent extremism for the period 2020-2024

On June 17, 2021, the Government of Montenegro adopted a new Decision on the appointment of the national coordinator and members of the National Interdepartmental Operational Team for the Suppression of Violent Extremism, Terrorism, Money Laundering and Terrorist Financing (hereinafter: NOT), which ensured coordination between two closely related strategies (Strategy for prevention and suppression of radicalization and violent extremism and Strategy for prevention and suppression of terrorism, money laundering and terrorist financing).

Bearing in mind that the NOT was formed only in June 2021, it was not expedient to prepare an Action Plan for the implementation of the Strategy for 2021, however, this did not affect the implementation of the measures provided for in the Strategy as well as the measures provided for in the Joint Action Plan for the

fight against terrorism in the Western Balkans, signed in October 2018 in Tirana, as well as the Agreement on its implementation, signed in November 2019, which defined common goals that the six partner countries of the Western Balkans will implement with the support of the European Union.

The main goals refer to the harmonization of the legal and institutional framework with relevant EU instruments, efficient prevention and fight against violent extremism, intensive exchange of information and operational cooperation, as well as establishing capacities for the fight against money laundering and terrorism financing and encouraging the protection of the citizens and infrastructure.

The Agency participated in the activities on achieving the operations goal 1: Increasing the resilience of the Montenegrin society against the radicalism and violent extremism, which resulted in the agreed text of the Memorandum on cooperation in the prevention and suppression of radical and violent-extremist contents on the Internet, between the NOT and electronic communications operators, it was not signed because a legal framework should be adopted that regulates the removal/blocking of inappropriate violent-extremist internet content.

8.5.12. The Agency's activities on the implementation of the Strategy on the development of postal services in Montenegro for the period 2019-2023

In February 2021, at the request of the Ministry of Economic Development, the Agency submitted to this Ministry a Report on the implementation of activities under its jurisdiction in 2020, which were determined by the 2019-2020 Action Plan of the Strategy for the Development of Postal Activities in Montenegro for the period 2019-2023. The report on the realization of the mentioned activities was also an integral part of the Annual Report on the work of the Agency for the year 2020. The Ministry of Economic Development submitted to the Government of Montenegro the Report on the implementation of the Action Plan for 2020, which was adopted at the Government session in April 2021.

At the request of the Ministry of Economic Development from February 2021, the Agency appointed its representatives in the Working Group for the development of the Action Plan for 2021-2022. The working group, which was coordinated by the Ministry of Economic Development and included representatives of the Post Office of Montenegro in addition to representatives of the Agency, began its work at the beginning of May 2021, and by the end of May, the representatives of the Agency finalized their activities on the drafting of the Action Plan proposal.

At the proposal of the Ministry of Economic Development, the Government of Montenegro adopted the Action Plan 2021-2022 at the session held on July 1, 2021, which, in addition to operational goals with performance indicators, established measures, competent authorities and a time frame for their implementation as well as indicators of the results of the measures taken. The Action Plan for 2021-2022 defines four operational goals: ensuring the quality and sustainability of the universal service, modernization of existing and development of new services based on the synergy of postal and electronic services, strengthening the postal market in Montenegro by encouraging competition and access to the network of the universal postal operator and strengthening protection end users. The competent authorities for the implementation of the activities determined by the aforementioned Action Plan are the Agency, the Post of Montenegro and the Revenue and Customs Administration. For the year 2021, no specific measures or activities of the Agency have been defined, which, according to this planning document, should be implemented this year.

8.15.3. The Agency's activities on implementation of the Strategy on prevention and suppression of terrorism, money laundering and terrorist financing

Following the results of the Strategy on the prevention and suppression of terrorism, money laundering and terrorist financing 2015-2018 and the Action Plan 2017–2018, the Agency prepared and regularly submitted to the Operations Team of the Council for national security of Montenegro the reports on a three-month and six-month basis, regarding the Agency's activities on implementation of measures on the prevention and suppression of terrorism, money laundering and terrorist financing, based on the indicators stipulated by the Action Plan.

After completion of the period covered by the Strategy and Action Plan, the Agency was informed that the plans are under way for preparation of a new Strategy on prevention and suppression of money laundering, terrorist financing for the period 2022-2025, and consequently was made a draft of a new Strategy for the period up to 2022 with Action Plan for its implementation; these documents will be subject of public discussion, and the final version will be delivered for adoption to the Government of Montenegro.

However, a new Strategy on prevention and suppression of terrorism, money laundering, terrorist financing for the period 2022 – 2025, with the Action Plan for implementation of the Strategy on prevention and suppression of terrorism, money laundering, terrorist financing for the period 2022-2023, was only adopted on December 29, 2021, and its implementation starts as from the beginning of 2022.

In 2021, as referred to in Article 94, paragraph 1(2) of the Law on Prevention of Money Laundering and Terrorist Financing („Official Gazette of Montenegro“, 33/14, 44/18, 73/19 and 70/21), the Agency performed the supervision of the implementation of the Law and regulations thereto, and in relation to the obliged party, pursuant to Article 4, paragraph 2 (4) – Pošta Crne Gore that, on the market of postal services, conducts the operations of universal postal operator.

With a goal to fulfill the competences as provided for by the Law, the Agency performed ordinary and extraordinary professional supervisions and submitted requests for semi-annual reports, and when needed additional data for conducting the checks and controls of the implementation of measures to detect and prevent money laundering and terrorist financing by the universal postal operator, Pošta Crne Gore.

As in the previous period, while conducting tasks from the scope of its competences, the Agency cooperated with the Police Directorate, i.e. the Financial Intelligence Unit the activities of which are intended for prevention of money laundering and terrorist financing. In 2021, the Agency regularly submitted to the Police Directorate, i.e. the Financial Intelligence Unit, the updated statistical data which referred to the measures taken by the Agency, as the supervisory body, and by Pošta Crne Gore, as the obligee in the field of AML/CFT.

In line with the requests of the Police Directorate, i.e. Financial Intelligence Unit, the Agency was regularly informing Pošta Crne Gpra on the latest reports of the Financial Action Task Force - FATF.

In accordance with a call for tenders published by the Ministry of Interiors, the Agency participated in the procedure of public discussions on the Sraft Law on Prevention of Money Laundering and Terrorist Financing. The Agency sent to the Directorate for Normative Affairs and Development of the Minisstry of Interiors its Proposal for the Amendments to Draft Law, which should ensure the appropriate implementation of the Law on AML/CFT, which is in line with the EU practise and regulations in that field.

8.15.4. The Agency's activities on implementation of the Action Plan – National Consumer Protection Program

Through its representative in the Consumer Protection Council of the Government of Montenegro, the Agency continued its activities defined by the National Consumer Protection Program 2019-2021 (NCPP), according to the annual Action Plan for the realization of NCPP for 2019-2021. In November 2021, the Report on implementation of the NCPP Action Plan for 2019 – 2021 was delivered to the Ministry of Economic Development – Montenegro Consumer Protection Directorate. It contains relevant data for 2021 regarding the activities on implementation of the Law, regarding the field of electronic communications and postal services, in line with the obligations as referred to in the NCPP Action Plan.

In December 2021, a proposal for activities was submitted, the implementation of which the Agency intended for the improvement of the protection of users of electronic communications and postal services in Montenegro, and which will make part of the Action Plan for the implementation of the activities for 2022.

8.16. Cooperation with competent state bodies and institutions

Cooperation with competent state bodies and institutions was performed in compliance with ZEK and at the level necessary for implementation of: the Law on Electronic Communications, Law on Electronic Media, Law on digital radio broadcasting, Law on Postal Services, Law on Inspection Work, Law on Personal Data Protection, Law on Consumer Protection and Law on Protection of Market Competition.

Regarding the administration of radio frequency spectrum, along with the competent Ministry of Economy, intensive cooperation was also achieved with the state bodies and authorities competent for safety of civil aviation traffic as well as for the sea traffic, also with the state bodies competent for internal affairs, issues of national security and defense, and with regulatory authority competent in the field of audiovisual media services.

Successful cooperation was achieved by signing the agreements on business cooperation with other state bodies and institutions, as follows:

Agency for Protection of Competence, April 28, 2009;
 Real Estate Administration of Montenegro, July 4, 2012;
 Electro technical Faculty, December 7, 2012;
 Civil Aviation Authorities of Montenegro, January 24, 2014;
 Agency for Electronic Media, May 28, 2014;
 Standards Institution of Montenegro, December 8, 2014;
 Bureau of Statistics, September 24, 2015;
 Hydro meteorological and Seismological Institute, June 21, 2016;
 Agency for personal data protection and free access to information, November 14, 2017;
 Maritime Safety Department of Montenegro, July 25, 2018, and
 Environment Protection Agency, January 12, 2022.

8.16.1. Cooperation with the Environment Protection Agency

In November 2021, in order to develop and encourage the cooperation within the competences stipulated by the law, in November 2021, the Agency held the meeting with the Environment Protection Agency (EPA), when further cooperation models between these two agencies was



discussed. On that meeting the agencies agreed to conclude relevant agreement on cooperation in the period ahead. After the text was defined and agreed upon, on January 12, 2022, the Executive Director of the Agency, Mr. Darko Grgurović and Acting Director of EPA, Dr. Milan Gazdić.

By signing the agreement, procedures and cooperation will be improved in terms of: exchange of experience and knowledge from areas that are of interest and under the jurisdiction of the agencies, exchange of data from registers and databases maintained by these agencies in accordance with the laws, which are of mutual interest, information about changes regulations and standards related to the impact of electromagnetic radiation on the environment and human health, issuing approvals for the use of radio frequencies for radio stations whose work may affect the environment and human health, as well as the exchange of other information related to the work and jurisdiction of these agency.

During the meetings, it was established that the issue of the harmful impact on the environment and human health of electromagnetic (EM) radiation generated by base stations and terminals of mobile communication networks has occupied the professional and lay public at the global level since the beginning of the mass implementation and use of these systems, and that reference international bodies, above all ICNIRP (International Commission on Non-Ionizing Radiation Protection) and the Council of the European Union, adopted appropriate recommendations aimed at reducing the impact of EM radiation on the environment and human health. In Montenegro, the limits of permissible exposure to high-frequency EM fields, which includes the radiation of mobile network base stations, for general public exposure are prescribed in accordance with international recommendations, while for areas of increased sensitivity (public, residential and commercial buildings where people stay, schools, preschool institutions, maternity hospitals, hospitals, tourist facilities and children's playgrounds) twice as strict as those recommended at the global level. It was agreed that during 2022, additional education of the general population regarding the impact of EM radiation and the proper use of mobile terminals will be done, which is very important, especially from the aspect of implementing future 5G mobile networks, which will require a much denser spatial distribution of base stations, including the installation of base stations inside buildings where people stay, as well as in some scenarios a completely different way of using the network (a large number of connected devices in the immediate living and working environment), which makes these networks different from previous generations. The fear was also expressed that the Law on Protection against Non-Ionizing Radiation itself could be a problem because some administrative procedures are "over-standardized" and could represent a certain business barrier, but the importance of observing sensitive areas and objects with special attention was also highlighted, and therefore these two agencies to cooperate in order to implement all the foreseen legal procedures operationally and in the most adequate way for the environment and citizens.

8.17. International activities

In the scope of international activities during 2021, the Agency continued its cooperation with the most eminent authorities in the field of electronic communications and postal affairs, as follows: International Telecommunication Union (ITU), Body of European Regulators for Electronic Communications (BEREC), Conference of Postal and Telecommunications Administrations (CEPT), European Telecommunications Standards Institute (ETSI), Regional Internet Registry (RIR) for Europe, West Asia, and the former USSR (RIPE NCC), European Committee for Postal Regulation (CERP), which reflects, inter alia, in active participation of representatives of the Agency in professional meetings and the work of expert groups and project teams dealing with issues under the competence of regulatory sector of electronic communications and postal affairs.

The Agency made a very good cooperation with many regulatory bodies in the region and in Europe, which was formally confirmed in concluding Memorandum of Understanding and Exchange of information in the field of electronic communications and postal services, with the following bodies:
Regulatory Authority of Electronic and Postal Communications of the Republic of Kosovo, March 12, 2010;
Authorities for Technology and Information of the Republic of Turkey, July 6, 2011;

Agency for Electronic Communications of the Republic of Macedonia, September 20, 2011;
Croatian Agency for Post and Electronic Communications, November 17, 2011;
Body for Electronic Communications and Postal Services of the Republic of Albania, March 13, 2012;
Republic Agency for Electronic Communications of the Republic of Serbia, June 22, 2012;
Office of Electronic Communications of the Republic of Poland, July 8, 2013;
Communications Regulation Commission of the Republic of Bulgaria, October 14, 2013;
Agency for Communication Networks and Services of the Republic of Slovenia, January 16, 2014;
National Authority for Communications of the Republic of Romania, April 07, 2016;
Office for Telecommunication of the Czech Republic, September 8, 2016;
Regulatory Agency for Communications of Bosnia and Herzegovina, September 25, 2017;
Autorità per le Garanzie nelle Comunicazioni of Italy, March 28, 2018, and
Public Utility Commission of Latvia, May 11, 2018.

8.17.1. Participation in the work of Body of European Regulators for Electronic Communications (BEREC)

Body of European Regulators for Electronic Communications



BEREC was established by the European Commission and the European Council No. 1211/2009. BEREC assumed the role of the European Regulators Group (ERG) in the field of exchange of expertise and best practices and in terms of exchanging expertises and the best current practice, as well as in terms of submitting opinions and recommendations in the manner in which telecommunications market should function in the European Union. BEREC prepares the opinions and views on various issues of regulation for the needs of the European Commission and the Council, on their request or at its own initiative.

Pursuant to EU Regulation in the field of electronic communications, adopted at the end of 2018 (*European Electronic Communications Code - EECC*), during the 39th Plenary Session held on 13 and 14 June 2019 in Gent-Belgium, the Agency signed with BEREC the Working Agreement on participation in the work BEREC. Jeremy Godfrey, President of BEREC and László Ignéczi, Administration Manager of BEREC Office signed the Agreement on behalf of BEREC, while Branko Kovijanić, President of the Council of the Agency signed the Agreement on behalf of the Agency. As stipulated by the Agreement, the Agency participates in the operations of the Board of BEREC, Contact Network and Working Groups of BEREC, as well as in the work Managing Board of BEREC Office. The Agency also participated in selecting the member of Mini Board, representing non-EU countries. Continuance in the Agency's participation in the work of BEREC allows the Agency implementation of best regulatory practices in the sector of electronic communications, faster transfer of expertise and even greater strengthening of personnel capacities.

Along with plenary sessions, the Agency, through its representatives, participates in the meetings of Contact Network. Contact Network is an expert working group of BEREC, consisted of the representatives of national regulatory agencies. It provides coordination of all proposals and standings to be considered on plenary meetings, so that all necessary preparations are done, as well as harmonization of opinions of the representatives of Member States, assess if the documents proposed by BEREC members are competent and consistent, facilitate coordination with BEREC Office and delegate other actual issues to be considered. The Contact Network meetings are held three or four weeks before the dates planned for ordinary plenary meetings of BEREC and of IRG and may be held before the dates planned for extraordinary plenary sessions, upon request of the presiding officer of the Contact Network.

During 2021, during COVID-19 Pandemic, the meetings were organized remotely, using audio-video systems of BEREC.

8.17.2. Participation in the work of the European Regulators Group for Postal Services (ERGP)

The European Regulatory Group for Postal Services (ERGP), in whose work the Agency participates as the regulatory body of a candidate country for membership in the European Union, held two regular assemblies in 2021. The convocation of the assemblies was preceded by the meetings of the working groups, where the document proposals that were discussed at the plenary sessions were finalized.

The first plenary session was held on June 25, 2021 in online format, organized by the Greek Telecommunications and Post Commission (EETT).

The plenary session approved the draft ERGP work program for 2022, which was determined based on the three strategic goals of the ERGP mid-term strategy 2020-2022.

It was concluded that in 2022 ERGP should focus its work on the following activities: analysis and eventual revision of the Postal Services Directive, analysis of the impact of online platforms and new business models on competition in the postal sector, access to postal networks and consumer protection in the context the rapid growth of e-commerce and the application of the Regulation on cross-border parcel delivery.

In addition to the draft of the Work Program for 2022, drafts of other documents were adopted and put up for public discussion, and numerous internal documents, reports and analyzes of ERGP working groups were approved.

The second regular assembly of ERGP, in a hybrid format, was held in Athens on November 26, 2021, also organized by the Hellenic Telecommunications and Posts Commission (EETT).

The ERGP Work Program for 2022 was adopted at the plenary session, which defined the tasks of the ERGP for 2022 in accordance with the strategic goals of the ERGP Mid-Term Strategy 2020-2022:

- Revision of regulatory framework for Postal Sector;
- Promotion of competition and a unique EU postal market, and
- Improvement of user protection and ensuring user oriented universal service.

Some of the documents adopted by the Parliament are the following: ERGP Report on the service quality and user protection for 2020, report on the impact of COVID-19 Pandemic on the future of postal sector, report on the agreed status of the postal service users and the ERGP Report on the implementation of (EU) 2018/644 Regulation.

Considering that ERGP is the European Commission consultation body in the field of postal services, the adoption of two reports from November 2021 was supported on the plenary meeting, and these are:

- European Commission Report on the evaluation of the implementation of Postal Services Directive 97/67/EC, and
- European Commission Report on the evaluation of implementation of the Regulation (EU) 2018/644 on cross-border parcel delivery services.

The report of the European Commission on the evaluation of the application of the Directive on postal services 97/67/EC states that the regulatory framework for postal services has existed for more than 20 years. Directive 97/67/EC ("Postal Services Directive") entered into force in 1997 with the aim of harmonizing national obligations regarding the universal postal service while at the same time gradually introducing competition into the postal services sector. It was amended in 2002 to allow further market opening, and again in 2008 to complete full market opening. With these two amendments to the Directive and Regulation on cross-border parcel delivery adopted in 2018, the aim of which is to ensure greater transparency and regulatory oversight of cross-border parcel delivery, the EU regulatory framework for postal services has not changed since 1997.

However, in the period from 1997, postal service markets have suffered significant changes stimulated by technology innovations, digitalisation and e-trade. Letter-post items have been increasingly replaced by electronic communications, especially in the field of e-administration. In the same time, e-trade has produced a significant increase of parcel delivery service. This transformation, which especially came to the fore during the COVID-19 Pandemic, impacted both the demand and the offer in all member states.

Prompted by the aforementioned changes in the markets, the Commission has carried out an ex post evaluation to assess whether the Postal Services Directive has achieved its objectives, is still fit for purpose and meets the current and future needs of users and operators. The main conclusion of the evaluation is that maintaining some form of universal postal service for all EU citizens is justified, albeit with an appropriate level of flexibility for member states to define different policies on national postal markets. At the same time, the evaluation identified problems that were not sufficiently addressed in the existing Postal Services Directive or where the Directive did not produce the expected results:

- Universal postal services offer fewer and fewer benefits for society, while the provision of universal services becomes more and more expensive;
- Establishment of the internal market and encouragement of competition in the letter segment and insufficient use of standards, which reduces legal certainty and may lead to interoperability problems;
- In addition, the large differences in prices between shipments in domestic and international traffic require special attention.

At the second plenary meeting, the ERGP members shared their opinions and standingx on the EU mentioned reports and after that agreed that it is necessary to react in time on the report conclusions, with the focus on the update i.e. improvement of regulatory postal framework.

8.17.3. Membership in the European Telecommunications Standard Institute (ETSI)

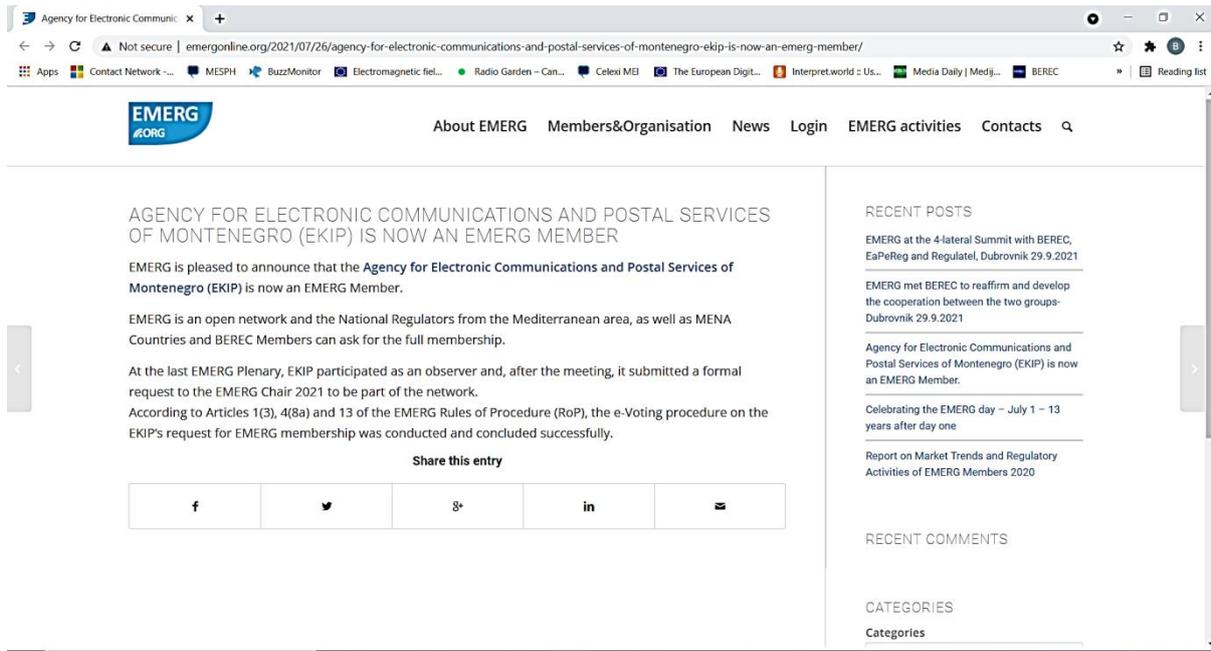
The European Telecommunications Standards Institute - ETSI is an organization that produces globally applicable standards for Information and Communications Technology (ICT), including fixed, mobile, radio, converged, broadcasting and internet technologies. The Institute was established as an independent and non-profit organization based in Sophia Antipolis - France. ETSI is officially recognized by the European Union as the European standards organization.



The representatives of the Agency participated in online meetings of the 77th and 76th General Meetings of ETSI, held on April 13-14 2021 and in the period 30.11 – 01.12.2021.

8.17.4. Membership in the European Mediterranean Regulatory Group (EMERG)

Upon the invitation of the Council of the Regulatory Agency for Electronic Communications of Portugal (ANACOM) and the President of the European Mediterranean Regulatory Group (EMERG), the Agency's representatives took part for the first time in the EMERG Plenary Meeting held on EMERG, held on April 7, 2021. The goals that EMERG has set as the focus of its activities in the coming years correspond to the medium-term plans of the Agency, bearing in mind that the exchange of knowledge and experience among the representatives of the regulator within the framework of the work and activities of EMERG will contribute to the further strengthening of the Agency's administrative capacities, and thus further improvement of the regulatory framework and the development of the electronic communications market in Montenegro, the Agency launched a formal initiative to acquire the status of a full member of EMERG, and after consideration of the initiative by the EMERG member, and as of June 15, 2021, the Agency became the 23rd member of EMERG.



EMERG was founded on July 1, 2008 on Malta, as an independent platform of national regulatory bodies for electronic communications networks and services. The activities of EMERG are focused on the realisation of the downmentioned activities:

- regular discussions and exchange of information among the member states on the issues in regard to electronic communications;
- approaching the European Regulatory Framework and promotion of the best practises among the member states;
- monitoring of the electronic communications development in the Mediterranean area;
- encouraging the cooperation and exchange of ideas and expertise with international organisations, other regulatory networks and experts in the field of electronic communications;
- preparation of the documents, reports, presentations, analysis and common opinions of the member states.

At the end of 2021, a status of a full-member of EMERG had regulatory agencies for electronic communications of the following countries: Austria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Germany, Greece, Israel, Italy, Jordan, Lebanon, Libya, Malta, Montenegro, Morocco, Palestine, Portugal, Spain, Slovenia, Switzerland, Tunisia and Turkey.

8.17.5. Organisation of Regional Regulatory Forum for Europe in the cooperation with ITU: “Universal Connectivity for a Post-Pandemic Digital Europe“

In 2021, the Agency for Electronic Communications and Postal Services (EKIP) and International Telecommunication International Union (ITU) continued with the organisation of International Conference - Regional Regulatory Forum for Europe. The organisation of this event has been traditionally held within the program framework of the International Festival of the ICT achievements - INFOFEST, but due to Covid19 Pandemic, in 2021 the event was organised via OnLine Platform.

The Conference on the subject: *Universal Connectivity for a Post-Pandemic Europe* was held on September 27-28, 2021 in the scope of the regional initiatives for Europe in the broadband infrastructure, radio broadcasting and spectru managements, adopted at the World Confernece on Telecommunication

Development. The Conference ensured a continuity in the exchange of best practise among the policy makers, regulators and electronic communications.

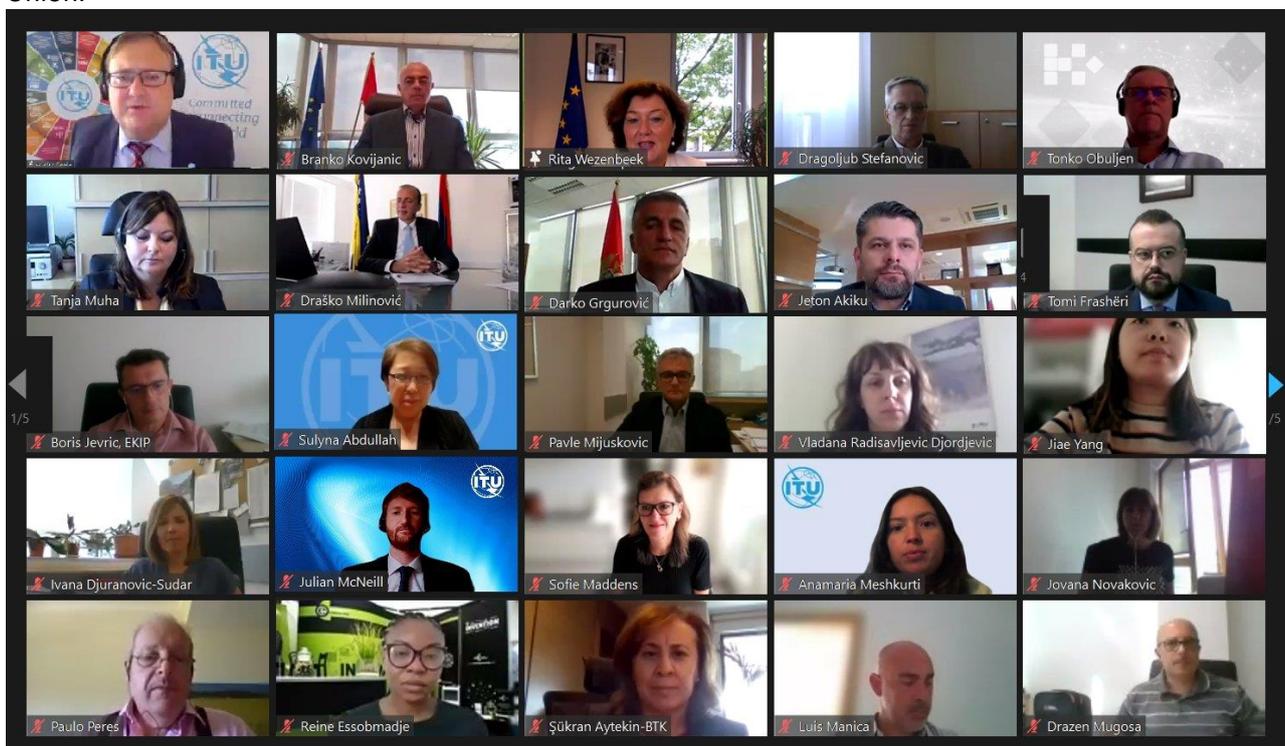
On the Conference subject was initiated discussions related to the best guidelines on regulations and challenges of the ICT Sector in the context of the economic recovery from the consequences of Covid19 Pandemic, based on digital transformation driven by connectivity and a clear regulatory activity. During the Conference it was also discussed on the status of regulatory framework in Europe that supports the investments in broadband infrastructure, thus encouraging digital transformation of the economies.



Main topics discussed on the Conference referred to:

- Policy and regulatory incentives for an accessible and robust connectivity;
- 5G implementation: strategy, policies and regulations that foster deployment of 5G mobilnih mreža;
- Market analysis and visualisation: environment that ensures the regulation based on evidence;
- New challenges in Europe we will be facing after Pandemic.

Regardless of the fact that the Conference was held via Online platforms, as in previous years, the interest in participating in the Conference was great. Over 28 eminent speakers presented and discussed during the program sessions. More than 230 registered participants from more than 30 countries took part in the Conference, and on average around 100 participants were online during each session. The participants of the Conference were representatives of administrations and national regulatory bodies from the region and Europe, including representatives from the European Commission and the International Telecommunications Union.



Regionalni Forum was opened by Branko Kovijanić, President of the Agency Council, Jaroslav Ponder, Head of the ITU Office, and Rita Wezenbeek, Director Connectivity at European Commission, DG CONNECT. In the introductory program session, the participants of the Forum were addressed by the representatives of regulatory agencies from the region:

- Jeton Akiku, Director of the Agency for Electronic Communications of the North Macedonia;
- Tomi Frasherri, President of the Council of AKEP of the Republic of Albania;

- Draško Milinović, Director General of the Communications Regulatory Agency of BiH;
- Tanja Muha, Director of the Agency for Communications Networks and Services of the Republic of Slovenia;
- Tonko Obuljen, President of the Council of the Croatian Regulatory Authority for Network Industries (HAKOM);
- Dragoljub Stefanovic, Technical Director of Regulatory Agency for Electronic Communications and Postal Services of the Republic of Serbia, and
- Darko Grgurović, Executive Director of the Agency for Electronic Communications of Montenegro.

The moderators of the program sessions were: Sofie Maddens, Head of the Department for Regulation and Market Environment in ITU, Boris Jevrić, Assistant Executive Director of the Agency and Jaroslav Ponder, Head of the ITU Office for the European Region, and during the Conference 15 presentations were held, two of which were given by representatives of the Agency, Pavle Mijušković, Assistant Executive Director for electronic networks and services and Elvis Babačić, General Manager for fixed and mobile radio communications.

8.17.6. Organisation of a national workshop with ITU „IPv6 Strategy, Policy, Implementation“

A national workshop for Montenegro on "IPv6 strategy, policy and implementation" was held in Podgorica on April 20 and 21, organized by the Agency for Electronic Communications and Postal Services and the International Telecommunications Union (ITU), Office for Europe.

The workshop aimed to raise awareness at the national level regarding the transition from Internet Protocol Version 4 (IPv4) to Internet Protocol Version 6 (IPv6). The workshop was attended by 67 representatives of ministries, state bodies, universities, electronic communications operators, banks, IT companies, the Chamber of Commerce, ITU and BEREC (Body of European Regulators for Electronic Communications).

On the first day, ITU's activities related to IPv6 were presented, such as plans for the implementation of IPv6 in the networks of state administration bodies, Crnogorski Telekom and Telenor, and an overview of the use of IPv6 in 5G networks was also given.

On the second day, experiences regarding the implementation of IPv6 in the network of the University of Montenegro and in the internet exchange point MIXP were presented. Experiences from Slovenia regarding the implementation of IPv6 and raising awareness at the national level were also presented. A report on the state of IPv6 implementation in EU countries was presented and an overview of successful implementations in the EU was presented, with a focus on the role of national regulators in this process, as well as BEREC's plans in this field. IoT (Internet of Things) and business models were also discussed. During the discussions, experiences were exchanged regarding the previous work on the implementation of IPv6.

The workshop completely fulfilled its goal, while the cooperation with ITU in this field continues.

8.17.7. Participation in the Digital Summit of the Western Balkans countries

The Fourth Digital Summit of the Western Balkans (WB6) is the largest gathering in the region, which gathers high-level officials from the governments of the economies of the Western Balkans, representatives of the European Commission, the Regional Cooperation Council, the academic community, international institutions, and the civil sector. The host and organizer of this year's edition was the Ministry of Public Administration of Digital Society and Media on behalf of the Government of Montenegro. The digital summit was organized on a hybrid platform, from 11-13 October 2021 in Podgorica, Montenegro.

Continuing with the experience of the high-level regional dialogue on digital transformation, the Digital Summit of the Western Balkans 2021 was held as part of the Berlin Process and as an initiative of the Regional Cooperation Council (RCC), and the importance of the summit was also confirmed through the new four-year action plan 2021-2024, for the Common Regional Market (Common Regional Market – CRM).

The WB6 2021 Digital Summit aimed to showcase good practices in the Western Balkans, highlight the achievements and outcomes of the Digital Agenda, and explore the possibilities of building partnerships with the private sector, in the context of the digital transformation process.

The Summit promoted digital perspectives of the Western Balkans in the context of the European integrations. It comprised 4 main themes: network and service connectivity, confidentiality and safety, digital skills and digital economy.



For the Summit, the Agency prepared a video materijal, presenting the representatives of the Ministry of Economic Development, mobile operators and the Agency in giving their reports on the plans in regard to 5G deployment in Montenegro. Furthermore, the representatives of the Agency participated in the Panel where

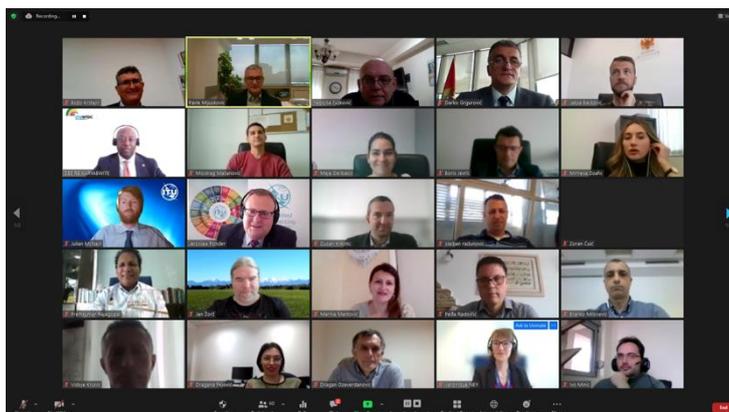
discussed a digital infrastructure and connectivity, where they give the data on the availability and the use of broadband services, degree of development of electronic communications infrastructure, and plans on further development of electronic communications networks and services.

8.18. Participation in the activities of the working groups in regard to the European integrations

The engagement of the Agency and its employees in connection with European integration during 2021 mainly related to the preparation and delivery of the necessary information related to the development of the electronic communications sector and postal services, the degree of compliance of the regulations with the acquis of the European Union and other essential information and data useful for the preparation Report on the progress of Montenegro.

8.18.1. Chapter 10: Information society and media

Following the Decision on establishing the structure for negotiations on the accession of Montenegro to the European Union (“Official Gazette of Montenegro”, 9/12, 15/14, 19/17, 33/18, 48/18, 55/21 and 68/21), at the session held on September 16, 2021, the Government of Montenegro made Decision on establishing a working group for the preparation and negotiations on the accession of Montenegro to the European Union in the EU aquis regarding the



Negotiation Chapter 10 – Information Society and Media. A new working group has 25 members, and three sessions of Working Group were held in 2021. Montenegro opened the Chapter 10 – Information society and media at the Intergovernmental Conference held on March 31, 2014 in Brussels, when two final benchmarks were defined. According to the assessment in the latest Report of the European Commission on Montenegro for 2021, covering the reporting period from June 2020 until June 2021, in Chapter 10, Montenegro has a

moderate level of readiness as in the last three years, and limited progress was achieved during the reporting period, which represents the continuation of the trend from the previous reporting period June 2019 - June 2020.

In that Chapter two final benchmarks for a temporary closure of the Chapter were defined, as follows:

- Montenegro should harmonize the legislation with the EU acquis in order to ensure the independence of the regulatory body for electronic communications (EKIP) and with the legal acquis on audiovisual media services, Montenegro needs to demonstrate that it has sufficient administrative capacity to implement the acquis in the fields of electronic communications and audiovisual policies, including the independence of regulators.

At the proposal of the Working Group, the Government of Montenegro adopted the Roadmap for the fulfillment of the final criteria for the temporary closure of negotiations in Chapter 10 - Information Society and Media at the session of December 29, 2021. The roadmap includes the creation of a strategic document for the coordinated introduction of 5G mobile networks, which will represent the basis for the further development of society and the economy. The roadmap also recognizes that the wide application of information and communication technologies, in all areas of the economy, sets additional requirements for broadband access, both in terms of bandwidth and in terms of the quality and specific technical properties of broadband access, so it is foreseen that through the National Plan development of high-speed broadband networks, define goals that include the introduction of very high-capacity networks and 5G networks in Montenegro. Defining special goals will contribute to further accelerated development of electronic communication networks and services in accordance with the legislative and regulatory framework in the field of electronic communications. Harmonization of national legislation with the EU regulatory framework for electronic communications is also planned. Namely, with the adoption of the new Electronic Communications harmonization with Directive (EU) 2018/1972 will be carried out. This directive establishes a harmonized framework for the legal regulation of electronic communication networks, electronic communication services, connected equipment and connected services, as well as certain characteristics of terminal equipment. It also prescribes the obligations of national regulatory authorities and, if applicable, other competent authorities and establishes a series of procedures to ensure the harmonized application of the regulatory framework in the EU. Completion of these activities is planned for the fourth quarter of 2022.

Chapter 10 – Information society and media is within the Competitiveness and Inclusive Growth cluster (10 Information Society and Media, 16 Taxes, 17 Economic and Monetary Policy, 19 Social Policy and Employment, 20 Entrepreneurship and Industrial Policy, 25 Science and Research, 26 Education and Culture, 29 Customs Union).

8.18.2. Chapter 3: Right to establish a company and freedom to provide services

When it comes to Chapter 3 - Right to establish a company and freedom to provide services - sub-area of postal services, the European Commission Report on Montenegro for 2021 states that the legislation is aligned with the EU Directive on postal services. It was also noted that the quality standards for the provision of universal postal services were introduced in November 2020 through the adoption of by-laws. The by-law mentioned in the Report of the European Commission is the Rulebook on amendments and additions to the Rulebook on closer conditions for the performance of the universal postal service, which was adopted by the Agency ("Official Gazette of Montenegro" 114/20). According to the assessments given in the Report, full compliance will be achieved by harmonizing the relevant regulations with the EU Regulation on cross-border package delivery services. Chapter 3 was officially opened on December 11, 2017 at the Intergovernmental Conference in Brussels.

The working group for the preparation and management of negotiations on the accession of Montenegro to the European Union for the area of the acquis of the European Union, which refers to Negotiating Chapter 3 - Right to establish a company and freedom to provide services, was formed by the Decision of the

Government of Montenegro at the session held on September 16, 2021. During 2021, 3 working group meetings were held.

At the proposal of the Working Group, the Government of Montenegro, at the session held on December 16, 2021, adopted the Roadmap for the fulfillment of the final criteria for the temporary closure of negotiations in Chapter 3 - Right to establish a company and freedom to provide services. When it comes to the sub-field of postal services, the Roadmap stipulates that the development of postal activity and postal services must follow the development of information and communication technologies and new development trends, so that postal operators respond to all the challenges that accelerated development brings with them and are ready to adapt expectations and demands of the modern user. In this regard, the key priorities for ensuring the sustainability and quality of the universal service, the conditions for the development of new postal services and services, the development of an efficient and developed market that is adapted to the needs and requirements of users of postal services, are defined in the Action Plan for the Implementation of the Postal Activity Strategy for the period 2021-2022, which was adopted by the Government of Montenegro at the session held on July 1, 2021. Considering that harmonization with the Regulation on cross-border delivery of packages is planned for the fourth quarter of 2022, the regulatory framework in this area will soon be harmonized with the EU acquis.

9. PERFORMED TASKS THAT HAVE NOT BEEN SUBJECT TO THE 2021 WORK PLAN

9.1. Participation in preparing a Road Map for deployment of 5G mobile communications networks

Aware of the challenges of digital transformation in the countries of the Western Balkans and the importance of regional cooperation, the countries of the Western Balkans, within the framework of the Initiative for the Western Balkans, have agreed on a Memorandum of Understanding on the 5G plan for the digital transformation of the Western Balkans region, which was signed in Tirana on November 2, 2020. Bearing in mind the importance of the entire digitalization process, the signatories of this memorandum have identified four areas to which special attention should be paid on the following:

- Connection of networks and services;
- Trust and security;
- Digital skills, and
- Digital economy.

Following the basic tasks prescribed in this memorandum, Montenegro, as one of the signatory states, has committed itself to make efforts within its capabilities, adopting new policies, regulatory and technical measures that ease the administrative burden, facilitate and support private initiatives, stimulate investments, ensure sustainable competitive environment, strengthen cooperation in the region, remove unnecessary obstacles and promote best practices. In accordance with the obligations assumed by signing the memorandum in question, which entailed the adoption of an appropriate strategy or road map by the Government of Montenegro, at the initiative of the competent Ministry of Economic Development, the representatives of the Agency, in cooperation with the representatives of the Ministry of Economic Development, contributed to the drafting of the Road Map Proposal for the introduction of 5G mobile communication networks, which was adopted by the Government of Montenegro at the 52nd session held on December 23, 2021.

The purpose of this document is to encourage the implementation of the necessary activities for the introduction of 5G mobile networks for the period until the end of 2022, by which time it is expected that the national 5G strategy will be adopted, which will define further activities regarding the development of 5G mobile networks in Montenegro. The document identifies measures and policy reforms that the relevant ministry and the Agency should implement in the coming period, and they are divided into 7 most important activities:

- **Activity 1** - Harmonization of the regulatory framework in the field of electronic communications with EU regulations; the proposed activity implies the amendment of the existing Electronic Communications Act or the adoption of a new one in order to harmonize it with Directive (EU) 2018/1972 on the European Electronic Communications Code (EECC). These activities have been started, but they need to be intensified at the beginning of 2022.
- **Activity 2** - Ensuring unhindered use of radio frequencies from pioneering 5G bands for the implementation of 5G mobile networks throughout the territory of Montenegro; this activity entails the release of the 3400-3600 MHz band from the existing WiMAX systems and the resolution of interference in the 700 MHz band from the DTV system from neighboring Albania. These activities should be implemented by June 30, 2022.
- **Activity 3** - Realization of pilot projects in order to enable testing of 5G technology; these are activities that require coordination with mobile operators on test scenarios, location of test activities and technical requirements. For the implementation of 5G pilot projects, radio frequencies from the

3600-3800 MHz band can be used in areas where the operation of the existing WiMAX system in the 3400-3600 MHz band is not endangered. The implementation of these activities should begin as soon as possible, and in the first quarter of 2022 at the latest. The duration of test activities should be limited to the allocation of radio frequencies from the 3400-3800 MHz range for 5G mobile networks.

- **Activity 4** - Allocation of radio frequencies for the early implementation of 5G mobile communication networks; the allocation of radio frequencies from the pioneering 5G bands (700 MHz, 3.6 GHz and at least 1000 MHz from the 26 GHz band), provided that the realization of activity 2 is certain within the planned period, should be carried out during 2022.
- **Activity 5** - Removing barriers to the construction of telecommunications infrastructure and installation of broadband network elements; the implementation of Directive 2014/61/EU on measures to reduce the costs of setting up high-speed electronic communication networks into the national legislation implies simplification and increasing the efficiency of the implementation of procedures for approving the construction of telecommunications infrastructure. The directive in question was implemented through the Law on the use of infrastructure for the installation of high-speed electronic communication networks, which was adopted by the Parliament of Montenegro ("Official Gazette of Montenegro" 1/22).
- **Activity 6** - Raising the awareness of the benefits of deployment of 5G mobile communications networks; this includes activities on promoting 5G technology and the benefits it provides. Measures within this activity imply strong engagement of media, both on promoting 5G technology and the confidence of the general public in the safety of its implementation.
- **Activity 7** - Strategy on deployment of 5G mobile communications networks in Montenegro with the accompanying action plan; this activity includes a measure related to the preparation of a Strategy for the deployment of 5G mobile communication networks in Montenegro with an accompanying action plan.

9.2. Participations in the preparation of Digital Transformation Strategy of Montenegro 2022-2026, with Action Plan for 2022 -2023

At the end of December 2021, at the proposal of the Ministry of Public Administration, Digital Society and Media, the Government of Montenegro adopted the Digital Transformation Strategy of Montenegro 2022-2026 with an Action Plan for 2022-2023.

The Digital Transformation Strategy of Montenegro 2022-2026 represents a development framework that will define the prerequisites and initiatives necessary for rapid adaptation to an increasingly complex digital environment and the agile and proactive development of digital Montenegro. With an efficient digital environment, which will create positive impacts on economic development, it will also contribute to the development of society as a whole. For this reason, the Digital Transformation Strategy should not be understood as a technical-development strategy, but rather one of the key political and development documents, which also forms the basis for political decisions, changes in the normative environment, investments and incentives.

The bearer of the preparation of the Strategy was the Ministry of Public Administration, Digital Society and Media, and the Strategy was prepared in cooperation with relevant stakeholders and the operational working group (ORG) for the preparation of the strategy, which consisted of representatives of competent ministries, the academic community, business associations, non-governmental organizations and the Agency for Electronic Communications and Postal Activities. The digital transformation strategy of Montenegro 2022-2026 with the Action Plan 2022-2023 includes several basic chapters:

- Analysis of the situation;
- Vision and identified strategic directions;
- Strategic and operational goals with accompanying indicators;

- Key activities for the implementation of operational goals;
- Monitoring, reporting and evaluation;
- Action Plan 2022 – 2023.

The analysis of the situation is prepared based on data and information relying on the documents and actual relevant analysis, data received through the interviews made with government, economic, non-government (NVO) and academic organisations, as well as with the representatives of the Operations Working Group for the preparation of the Digital Transformation Strategy of Montenegro 2022-2026, taking active participation by giving their ideas, proposals and analysis in the preparation of this document.



The document gives a comprehensive oversight of the actual situation from technical, organisational, legal, social and other aspects of digital transformation and has focused on the main challenges the Digital Transformation Strategy will deal with (the Strategy). All the presented arguments and findings are proved with specific data and information in individual segments (organisation and coordination; e-services and design of e-services; eID, confidence and cyber security; data availability and interoperability, accessibility and (critical) infrastructure; skills and education; ICT industry, digital preparedness of Montenegrin society). Moreover, the SWOT analysis comprised the main challenges set out by the Strategy.

“Rapid digital development accessible to all - a chance for long-term success and prosperity of the entire society” represents the vision stated in the Strategy.

The challenges in the digital transformation of Montenegro, identified in the Analysis of the situation, are addressed, as downstated, in two strategic goals reflecting the picture of digital reality in Montenegro and are they are further channeled through seven operational objectives with areas or groups of activities and the activities in order to achieve an improved target state.

The first strategic goal has focused on the improvement of the capacities and capability for digital transformation of Montenegro, and the second goal is to raise the digital awariness of Montenegrin society as well as digital competitiveness of the ICT Sector.

In the Strategic Goal, the following operational goals have been set forth:

- Efficient and effective coordination and supervision of digital transformation;
- Bettering of the availability, interoperability and data management;
- Increasing the coverage and modernisation of electronic communications infrastructure;
- Development of and expanding digital knowledge and skills of Montenegrin society.

In the Strategic Goal II, the following operational goals have been set forth:

- Raising the awariness of the citizens and the economy on the imprtance of digital development;
- Increasing the quality, quantity and use of e-services;
- Improvement and development of the ICT Sector.

For the monitoring of the realization of operational goals, appropriate performance indicators have been defined. Each performance indicator is precisely defined through the indicator passport (description, data necessary for its calculation, calculation methodology, institution responsible for calculating values, etc.). In

addition, the initial values for the performance indicators, as well as the target values of the indicators for 2024 and 2026, are given. On the basis of strategic and operational goals defined in this way, key activities for the realization of operational goals were defined with the Activity Holders and partners in the realization of the aforementioned activities. The key institutions that are recognized in the implementation of activities through the recognized operational goals of the Strategy are: Government of Montenegro/General Secretariat of the Government of Montenegro, Ministry of Public Administration, Digital Society and Media, Ministry of Education, Science, Culture and Sports, Ministry of Internal Affairs, Ministry of Economic Development, Ministry of Finance and Social Welfare, Agency for Electronic Communications and Postal Activity, Chamber of Commerce of Montenegro, Administration for Personnel, Administration for Statistics of Montenegro - MONSTAT, Agency for Protection of Personal Data, Agency for Control and Quality Assurance of Higher Education, Agency for Investments, investment and development fund, academic and IT community.

In accordance with the Methodology for developing policies, drafting and monitoring the progress of strategic documents, the Digital Transformation Strategy of Montenegro 2022-2026 defines a monitoring, reporting and evaluation plan. Monitoring will ensure the regular collection and analysis of data on the achievement of goals and results during the implementation of activities. Specifically, monitoring will be focused on the Action Plan and on the implementation of the annual activities foreseen in the plan. The report on the monitoring of the implementation of the activities will mainly deal with the result indicators with reference to the performance indicators, if these data are available.

The implementation of the Digital Transformation Strategy of Montenegro will be realized through two action plans, the first of which is for the period from 2022 to 2023 and the second from 2024 to 2025. The Action Plan 2022-2023, which is an integral part of the Strategy, contains an overview of the activities necessary to achieve the operational goals, as well as the activity holders and partners for each of them, deadlines for implementation, performance indicators, as well as the amount of funds and the method of financing.

The Agency was actively involved in the preparation of the Strategy through membership in the operational working group (ORG). Also, in the process of public consultations, the Agency made a certain number of proposals and suggestions for improving the final text of the Strategy, most of which were accepted. With regard to its competences defined by law, the Agency's key contribution relates to Operational Goal 1.3 (increased coverage and modernization of electronic communication infrastructure), which deals with the availability of adequate ICT infrastructure, which represents the basis for all digital services, both for their development and for their wide use. In addition to digital skills, infrastructure is a key prerequisite for the widespread use of developed digital solutions. In addition, within the framework of the Strategy, the Agency is recognized as one of the key institutions for the implementation of activities through the defined operational goals of the Strategy.

9.3. Participation in the preparation of the Cyber Security Strategy of Montenegro 2022-2026, with the Action Plan 2022 -2023

At the end of December 2021, the Government of Montenegro adopted Cyber Security Strategy of Montenegro 2022-2026 with the Action Plan for the period 2022-2023, upon the proposal of the Ministry of Public Administration, Digital Society and Media.

Cyber Security Strategy of Montenegro 2022-2026 (hereinafter referred to as: the Strategy) is an interdepartmental document which refers to a five-year strategic period and is an improvement of all the capacities (legislative, operational, human-resource, financial and technical) for an adequate response to the challenges and threats coming from the cyber space in/and outside of Montenegro.

The Strategy defines strategic goals, and operations goals for their realization. Respecting the principle of alignment, the Strategy was prepared in line with the priorities and goals of the umbrella strategic documents

of Montenegro that deal with issues of national security, defense and digitalization. When creating the Strategy, the strategic framework of the European Union was taken into account, which deals with the issue of cyber security and relies to a significant extent on the policy and vision defined by previous strategies.

In the process of public consultations, the Agency made a certain number of proposals and suggestions for improving the final text of the Strategy, some of which were accepted. Although the Agency is not recognized within the Strategy as one of the key institutions for the implementation of activities through the defined operational goals of the Strategy, the Agency, as one of the interested parties, will contribute to the fulfillment of the activities defined by the Strategy based on its competences defined by the Law. Activities related to internet service providers and owners of critical infrastructure will be particularly interesting for the Agency.

9.4. Acting according to the recommendations of the State Audit Institution from the Report on the financial audit and audit of the regularity of operations of the Agency for Electronic Communications and Postal Activities for 2020

In accordance with the Report of the State Audit Institution on the financial audit and audit of the regularity of operations of the Agency for Electronic Communications and Postal Activities for the year 2020, the Agency prepared and submitted an Action Plan for the implementation of the recommendations within the deadline. On January 31, 2022, the Agency submitted a Report on the implementation of recommendations from the Audit Report to the State Audit Institution. In the submitted Report, the Agency stated that out of 26 given recommendations, by the date of submission of the report, it had implemented 15 recommendations, partially implemented 3 recommendations, 5 recommendations are in the implementation phase, and that 3 recommendations are not applicable. In 2022, the Agency will continue with further activities on the implementation of recommendations that have been partially implemented or are in the implementation phase.

9.5. Participation in the feasibility study and cost analysis project for the development of broadband infrastructure in Montenegro

It is expected that the implementation of next generation networks in Montenegro will strengthen the economic and social development of the country. Access to ICT is predicted to increase business opportunities in all economic sectors and enable social inclusion for all participants and all communities. Moreover, it will encourage the digital connection of Montenegro with other countries in the region and the EU, reduce the digital gap and contribute to the development of the region.

One of the most important prerequisites for the digital transformation of the entire society is ensuring the connection of all citizens and the economy with high-capacity broadband networks. In this context, the technical assistance of the Management Board of the Investment Framework for the Western Balkans (WBIF) was implemented through the project "Feasibility Study and Cost-Benefit Analysis for Regional Broadband Infrastructure" Development in Montenegro", which WBIF approved in June 2019. The chosen consultant started work in July 2020. The beneficiary of this technical assistance is the Ministry of Economic Development.

Based on the large volume of collected data, information, documentation and previous studies, an overview of the initial situation was prepared with an overview of missing data and information related to the development of broadband electronic communication networks in Montenegro. After that, on the basis of prepared questionnaires, data was collected from operators of electronic communication networks and individual municipalities, about their networks and three-year plans. In addition, a survey of the willingness of users to pay for certain broadband services was conducted. On the basis of the submitted data from the

questionnaires, but also on the basis of other available data (demographic, cadastral, technical, etc.), settlements were classified into white, gray and black zones²⁹ according to the availability of broadband networks that allow access to speeds higher than 30 Mbps and 100 Mbps (so-called NGA networks). The following table shows the collective classification of settlements in relation to networks that provide access to speeds of at least 100 Mbps (so-called VHCN):

Actual situation + a three-year plan	Settlement	NGA 100 Mbps + zone					
	Total	White		Gray		Black	
Andrijevića	24	14	58%	8	33%	2	8%
Bar	83	48	58%	5	6%	30	36%
Berane	42	27	64%	7	17%	8	19%
Bijelo Polje	98	38	39%	38	39%	22	22%
Budva	33	9	27%	7	21%	17	52%
Cetinje	94	84	89%	8	9%	2	2%
Danilovgrad	81	45	56%	17	21%	19	23%
Gusinje	9	6	67%	3	33%	0	0%
Herceg Novi	27	5	19%	5	19%	17	63%
Kolašin	70	68	97%	2	3%	0	0%
Kotor	56	27	48%	19	34%	10	18%
Mojkovac	15	9	60%	2	13%	4	27%
Nikšić	109	72	66%	26	24%	11	10%
Petnjica	24	13	54%	5	21%	6	25%
Plav	14	12	86%	2	14%	0	0%
Pljevlja	159	129	81%	26	16%	4	3%
Plužine	43	42	98%	0	0%	1	2%
Podgorica	143	86	60%	14	10%	43	30%
Rožaje	26	17	65%	5	19%	4	15%
Šavnik	27	26	96%	1	4%	0	0%
Tivat	12	0	0%	5	42%	7	58%
Ulcinj	39	2	5%	21	54%	16	41%
Žabljak	28	26	93%	2	7%	0	0%
Total	1256	805	64.1%	228	18.2%	223	17.8%

As shown in the table above, most settlements in rural areas are classified as white zones in relation to coverage by very high capacity networks (VHCN). Black or gray zones in relation to coverage with very high-capacity broadband speeds are mainly settlements near large cities and coastal settlements.

Based on all available data, the project presented certain findings related to the development of fixed broadband networks and services, mobile networks and services, quality of broadband services, use of Internet access, electronic services of the government, municipalities, use of e-health services, etc. In addition, an analysis was prepared that refers to the willingness of users to pay for certain broadband services, as well as an analysis of certain procedures that refer to the remarks of operators regarding the issuance of permits for the construction of networks, which are primarily the responsibility of municipalities.

Based on the aforementioned data, a techno-economic model was developed to calculate the costs of setting up and operating NGN networks in Montenegro. An analysis was prepared for 4 potential scenarios:

- Scenario 1: GPON with a mixed underground and aerial FTTH network for the entire territory, where all white zones and selected gray zones with the main socioeconomic drivers would be covered;
- Scenario 2: GPON with a mixed underground and aerial FTTH network for the entire territory, covering selected white zones and selected gray zones with the main socioeconomic drivers;
- Scenario 3: GPON with a mixed underground and aerial FTTH network for the entire territory, covering all white zones;
- Scenario 4: GPON with a mixed underground and aerial FTTH network for the entire territory, where selected white zones with the main socio-economic drivers.

Capital and operating costs for all zones, which need to be covered, are calculated as follows:

- Scenario 1: 142.68 million € – CAPEX: 80.16 million € / OPEX: 62.52 million €;
- Scenario 2: 100.52 million € - CAPEX: 56,05 million € / OPEX: 44.47 million €;
- Scenario 3: 123.37 million € - CAPEX: 69,82 million € / OPEX: 53.54 million €;
- Scenario 4: 80.38 million € - CAPEX: 45.27 million € / OPEX: 35.11 million €.

The analysis of the obtained results leads to the conclusion that the best solution in terms of coverage (Scenario 1 – All white zones and selected gray zones) is the most expensive, and that scenario 4 (Only selected white zones) is the cheapest. In all scenarios, the ratio between CAPEX/OPEX is almost the same (~56% - 44%). In addition, there is also a significant difference for the costs of covering the household ("home passed") between scenarios 1 and 2 (~1,600 EUR) and scenarios 3 and 4 (~2,400 EUR), which is expected because in scenarios 3 and 4 gray zones, which are mostly suburban areas, are excluded.

An analysis of the costs and benefits of the construction of the network provided for in scenario 2 "White and gray zones with socioeconomic drivers" has been prepared. In this project, four different cases were considered in connection with the proposed financing scheme for project implementation. The CBA (Cost-Benefit Analysis) study is based on the model for CBA Broadband analysis developed by JASPERS and which is parameterized based on the relevant characteristics of Montenegro (demand, supply, cost estimation) necessary for this study obtained from previous reports.

A number of the activities and measures/incentives have been proposed to facilitate investments, strengthen the demand for broadband Internet for businesses and citizens, and design new public ICT services. Some of the proposals are as follows:

- Encourage municipalities to reduce the cost of rights of way by 50% for suburban areas and eliminate them in rural areas for the installation of very large capacity electronic communication networks;
- Allow operators access to any public building during the construction period;
- Design a central communication plan in detail in order to promote the importance of setting up electronic communication networks of very high capacity and the importance of the advantages of broadband access for citizens and businesses;
- Design and provide a monthly grant amount through a voucher scheme that will reduce the monthly retail prices of superfast and ultrafast internet services for citizens;
- Design a similar voucher scheme, but for small and medium enterprises;
- Design and implement e-government services;
- Development of digital skills in education, for the unemployed, in the elderly, in the female population.

Various business and investment models were also proposed. The basic proposed model for this project is a private-public partnership, whereby the joint scheme should last for 20 years. The public sector should be the owner of the network, and the private sector the operator that will provide services.

Since the financial CBA analysis showed that no profit is expected for the project in question, the private sector is unlikely to express interest in participating in CAPEX financing and will probably prefer to just manage the network. Therefore, the investment should be financed from the public sector, which has the obligation to minimize the digital gap between urban and rural areas and lead Montenegro into the new digital decade. The investment will be supported by WBIF through a grant, and by the EBRD through a loan to the state for the remaining amount needed to meet financial needs.

The Agency actively participated in this project through its representatives. The main role of the Agency was to provide georeferenced data on electronic communication networks and electronic communication infrastructure of operators in Montenegro, data on the state of the electronic communications market, as well as information related to the application of the regulatory framework defined by the Law on Electronic Communications and by-laws. In addition, the representatives of the Agency made proposals with the aim of specifying, and thereby increasing the quality, of individual parts of the project itse

10. CONCLUSION

The stable and predictable regulatory framework created by the Government of Montenegro, the relevant Ministry and the Agency for Electronic Communications and Postal Services had a significant impact on the development of the electronic communications and postal services sector during 2021, which proved to be particularly good during the duration of COVID-19 Pandemic. Legal and by-law regulations were adopted in a timely manner with a high degree of compliance with the regulatory framework of the European Union. The strategy for the development of postal activity in Montenegro is still valid because it was adopted for the period 2019-2023, and at the end of 2021, the Government of Montenegro adopted the Digital Transformation Strategy of Montenegro 2022-2026 with an action plan 2022-2023 and the Cyber Security Strategy of Montenegro 2022-2026 with an action plan for 2022-2023. Also, at the end of 2021, the Government of Montenegro adopted the Roadmap for the introduction of 5G mobile communication networks. The purpose of this document is to encourage the implementation of the necessary activities for the introduction of 5G mobile networks for the period until the end of 2022, by which time it is expected that the national 5G strategy will be adopted, which will define further activities regarding the development of 5G mobile networks in Montenegro. Adopting these strategic documents, and harmonizing the existing national regulation (Electronic Communications Act) with Directive (EU) 2018/1972 on the European Electronic Communications Code (EECC), will create the necessary conditions for monitoring European trends and long-term established strategic goals for further continuous development, competitive behavior and operations of operators in the markets of electronic communications and postal services, while providing the most modern services with high quality standards and favorable prices for end users in our country.

Electronic communication networks and electronic communication infrastructure in Montenegro make it possible to apply the most modern technologies for the provision of electronic communication services. Through the existing networks and infrastructure, users in Montenegro are now offered electronic communication services that are provided in the world and that currently meet the needs of the users of these services. The degree of technological development of modern electronic communication networks is reflected in the ability of these networks to support, above all, broadband data transmission services. The users' constant need for higher data transmission speeds and service quality has forced operators in Montenegro to constantly improve their networks and thus keep pace with technological development with operators in developed European countries.

When talking about the level of development of fixed electronic communication networks, it is important to point out that at the end of 2021, the penetration of fixed broadband access in relation to the number of households amounted to 96.7%, as well as that the most numerous users of broadband connections are via fiber optic networks, with a representation of 42.84%. Also, the percentage of households in the area of NGA availability (Internet access speed greater than 30 Mbps) was 81.04%.

Montenegro can be compared with the most developed countries in Europe in terms of the degree of coverage of the population by the signal of mobile networks. The total coverage of the population by the GSM signal is around 99%, while the total coverage by the UMTS and LTE network signals is around 98%, which ranks Montenegro among the countries with extremely good coverage.

The development of mobile electronic communication networks in Montenegro continued mainly through the increase of the capacity of the access part of LTE/LTE-Advanced mobile networks in order to compensate for the increase in the volume of traffic and maintain the quality of the data

Montenegro can be compared with the most developed countries in Europe in terms of the degree of coverage of the population by the signal of mobile networks. The total coverage of the population by the GSM signal is around 99%, while the total coverage by the UMTS and LTE network signals is around 98%,

which ranks Montenegro among the countries with extremely good coverage. The development of mobile electronic communication networks in Montenegro continued mainly through the increase of the capacity of the access part of LTE/LTE-Advanced mobile networks in order to compensate for the increase in the volume of traffic and maintain the quality of the data transmission service at a high level.

Mobile communication networks of the fifth generation (5G) represent one of the most important segments in the construction of the digital economy and digital society in the next decade. The significance of 5G networks on the overall development of the economy and society has been recognized by all developed countries of the world. After several years of extensive preparations to adjust the regulatory framework and create technical conditions, in 2021, the first 5G installation in real conditions in Montenegro and testing of 5G NR technology was carried out. In this way, the conditions were created for the start of the commercial operation of the 5G network, which is set out in the work plan of the Agency for 2022.

All this contributed to better connectivity and greater availability of e-services, e-education, e-health, as well as improving digital literacy and digital skills among citizens of Montenegro, regardless of their age, gender, level of education or geographic location where they live or they work.

Confirmation of the high level of technological development of networks and services, their integrity, safety and security, is the success, stability and functionality of public electronic communication networks (fixed and mobile) even in the period of COVID-19 Pandemic. Certainly, this result was contributed by the operators themselves, who in the period from 2017-2021 invested in network development more 368 milion EUR.

The Postal Sector in Montenegro has a significant infrastructure that provides access to networks and services that are also important for the efficient functioning of the economy and society as a whole. The provision of universal postal services is of public interest for Montenegro. It is evident that the market of postal services in Montenegro is exposed to a process of constant changes due to the need to adapt to the information and communication environment and the services that such an environment enables. In such conditions, the postal services market is recording a continuous growth in the number of postal services provided. A favorable regulatory framework and an increased scope of postal services contributed to the start of 20 new commercial postal operators in 2021. Despite the difficult business conditions caused by the COVID-19 Pandemic, the volume and quality of postal services remained stable.

Intensive cooperation with competent state institutions, regulatory agencies from the Region and the European Union, and the exchange of experience and knowledge with international organizations and institutions, especially with the Body of European Regulators for Electronic Communications (BEREC), the International Telecommunications Union (ITU) and the European Regulatory Group for Postal Services (ERGP), the Agency continued the process of strengthening administrative capacities, which is a guarantee that in the coming period, with a high-quality regulatory framework and regulatory decisions, with the application of the basic principles of regulation: objectivity, transparency, non-discrimination and proportionality, it will provide the conditions for an even development of the market of electronic communications and postal services.

During 2021, the Agency carried out all the activities as provided by the Work Plan and Financial Plan for 2021, adopted by the Parliament of Montenegro, Decision No: 00-72/20-42/4 EPA 10 XXVII dated 29.12.2020 ("Official Gazette of Montenegro", 129/20), i.e. by the Operations Plan for the implementation of the Work Plan for 2021 and the Work Program of the Agency Council for 2021.

11. APPENDICES

11.1. Contents of the Work Plan of the Agency for 2021

The contents of the Agency's Work Plan for 2021 is given below, showing where in this report there is information on the execution of planned program activities for 2021.

Contents of the Agency's Work Plan for 2021	Report on the Agency's work for 2021
I INTRODUCTION	
II PLAN OF THE ACTIVITIES	
II-1. NORMATIVE PART	Item 8.1.
II-1.1. Normative part – Electronic communications	Item 8.1.
A. Regulations and acts adopted by the Agency	Item 8.1.
B. Professional grounds for developing regulations and acts adopted by the ministries	Item 8.1.
C. Professional grounds for the development of regulations to be adopted by the Government of Montenegro	Item 8.1.
II-1.2. Normative part – Postal services	Item 5.2.
A. Regulations and acts adopted by the Agency	Item 5.2.
B. Professional grounds for the development of regulations and acts to be adopted by the Ministry	Item 5.2.
C. Professional grounds for the development of regulations and acts to be adopted by the Government of Montenegro	Item 5.2.
II-2. CURRENT ACTIVITIES	
A. Maintaining and keeping the registers and data base of the Agency	Items: 1.3, 4.2, 4.6, 11.2, 11.3.
1. Register of operators	Items: 1.3. and 11.2.
2. Register of radio frequencies	Item 4.2.
3. Register of numbers and addresses	Item 4.6.
4. Data base of electronic communications infrastructure	Item 1.12.
5. System for the collection and processing of data on the market of electronic communications services and postal services market	Item 8.11.
B. Protection of competition in the field of electronic communications	Items: 2.1, 2.2.
1. Analysis of relevant markets	Item 2.1.
2. Monitoring of implementation of regulatory obligations imposed to operators with significant market power	Item 2.1.
3. Regulation of retail prices of fixed telephony services	Item 2.1.
4. Monitoring of implementation of the model of accounting separation and cost accounting of operators in public fixed and mobile electronic communications network	Item 2.2.
5. Activities on implementation of the Agreement on reducing the prices of roaming services in public mobile communications networks in the Western Balkans region, concluded on April 4, 2019	Item 2.4.
6. Preparation of cost models of the Agency according to "bottom up" LRIC Methodology	Item 2.2.
7. Preparation of a "Margin squeeze" Methodology with bundled services in fixed electronic communications network	Item 2.3.
8. Initiative on reducing the prices of international termination	Item 2.5.

C. Keeping separate accounting of universal postal operator	Item 5.4.
1. Monitoring of implementation of the Rulebook on Pravinika on the manner of keeping accounting and calculation of net costs for the provision of universal postal services	Item 5.4.
2. Regulation of the prices of universal postal services	Item 5.4.
D. Universal Service	Chapters: 3. and 6.
1. Universal Service in electronic communications	Chapter 3.
2. Universal Service in postal services	Chapter 6.
E. Radio frequency Spectrum Management	Chapters: 4. i 8.
1. Planning of radio frequency use	Items: 4.1, 4.2, 4.3, 4.4, 4.5, 8.4, 8.5, 8.6.
2. Issuing approvals for radio frequency	Item 4.1.
3. Control and monitoring of radio frequency spectrum	Items: 8.2. and 8.3.
4. International coordination of radio frequencies	Item 4.4.
F. Numbering and addresses management	Chapters: 1, 4. and 8.
1. Issuing approvals for the use of numbers and addresses	Item 4.6.
2. Number portability	Item 1.11.
3. Informing the citizens on the availability and use of the Unique European number "112", for emergency calls	Item 4.7.
4. Provision of numbering resources for communications between mashines M2M	Item 8.8.
G. Rights and protection of interests of users	Chapter 7.
1. Conducting the protection of rights and interests of users of electronic communications services and postal services	Item 7.1.
2. Monitoring the offers of operators and changes of agreed provision of services	
3. General conditions of service provision	
4. Subscriber agreements	
5. Service quality	Items: 1.13 and 4.3.
6. System for measurement of Internet access speed	Item 1.13.
7. Monitoring compliance with network neutrality principles (Net neutrality) in Montenegro	Item 7.3.
8. Assistance tools for users when selecting electronic communications services (Tarif Calculator)	Item 7.2.
9. User education	Item 7.4.
10. Public opinion polling	Item 8.10.
11. Monitoring of the work of a national exchange point of Internet traffic in Montenegro (MIXP)	
H. Planning of electronic communications networks and electronic communications infrastructure	Item 8.9.
I. Protection of electronic communications	Item 1.14.
1. Implementation of measures for the provision of safety and integrity of electronic communications networks and services	Item 1.14.
2. Implementation of measures on the prevention and suppression of malware and fraud in the provision of electronic post services	Item 1.14.
J. Carrying out monitoring in the field of electronic communications and postal services	Chapters: 5. and 8.
1. Expert supervision in the field of electronic communications	Item 8.7.
2. Expert supervision in the field of postal services	Item 5.5.
K. Implementation of measures set out by the Action Plan for implementation of the Information Society Development Strategy until 2020	Item 1.2.
L. Implementation of measures set out by the Action Plan on implementation of the Postal Services Development Strategy	Item 8.15.
M. Implementation of measures set out by other action plans in the implementation of which the Agency has been involved	Item 8.15.
II-3. PREPARATION OF PLANS, REPORTS AND INFORMATION RELATED TO THE ELECTRONIC COMMUNICATIONS MARKET AND POSTAL SERVICES MARKET	Items: 1, 4, 5. and 8.
A. Plans, reports and information prepared on an annual level	
B. Plans, reports and information prepared semi-annually	

C. Plans, reports and information prepared quarterly	
D. Plans, reports and information prepared monthly	
E. Plans, reports and information prepared when needed	
II-4. COOPERATION WITH COMPETENT STATE BODIES AND OTHER INSTITUTIONS, REGULATORY BODIES FROM OTHER COUNTRIES AND INTERNATIONAL ORGANISATIONS IN THE FIELD OF ELECTRONIC COMMUNICATIONS AND POSTAL TRAFFIC	Items: 8.16, 8.17, 8.18, 9.1, 9.2, 9.3, 9.4. and 9.5.
A. Cooperation with competent state bodies and institutions	Item 8.16.
B. Cooperation with international institutions	Item 8.17.
C. Organisation of international gatherings and celebration of 20 years of the Agency's work	Item 8.17.
II-5. MATERIAL-TECHNICAL AND PERSONNEL TRAINING	Items: 8.3, 8.13 and 8.14.

11.2. List of the operators entered in the Register of operators in the field of electronic communications on December 31, 2021

Ser. No	Name of the operator	The activity for which it is registered	Year of entry	Name of the operator used in this report
1.	Crnogorski Telekom A.D.	Operator of public fixed electronic communications network and operator of public fixed electronic communications services: transmission of voice, sound and picture (AVM), transmission of data, facsimile, intelligent network services, services of public telephone boxes, services of line leasing, service of voice transmission based on Internet protocol, feedback service, value added services and any other fixed telecommunications services, operator of public mobile electronic communications network, operator of public mobile electronic communications services.	2009	Crnogorski Telekom
2.	Telenor d.o.o	Operator of public mobile electronic communications network and operator of public mobile electronic communications services, public fixed electronic communications network and public fixed electronic communications services and service of leasing of electronic communications infrastructure.	2009	Telenor
3.	Mtel d.o.o.	Operator of publicly available telephone services in fixed electronic communications network, publicly available services in mobile electronic communications network, services of transmission and distribution of audio-visual media contents and public electronic communications services of multiplexing and transmission of multiplexing signals to transmission multiplex network for broadcasting radio and other signals, internet access services, service of data transmission and service of leased lines.	2009	Mtel
4.	Telemach d.o.o	Operator of public fixed electronic communications network and operator of public fixed electronic communications services: internet access, fixed telephony and distribution of audiovisual media contents and service of voice transmission via networks based on Internet (VoIP).	2009	Telemach
5.	Wimax Montenegro d.o.o	Operator of public electronic communications network based on broadband wireless access (BWA), and operator of public electronic communications services	2009	Wimax Montenegro
6.	Radio-difuzni centar d.o.o.	Operator of public electronic communications network for transmission and broadcasting radio and other signals, public electronic communications service of transmission and broadcasting of radio signals, public electronic communications service of leased lines and public electronic communications service of multiplexing, transmission of multiplexed signals to transmission multiplex network for the transmission of broadcasting signals and other signals and services of leasing of electronic communications infrastructure.	2009	Radio-difuzni centar

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7.	Pošta Crne Gore A.D.	Operator of public fixed electronic communications network and operator of public fixed electronic communications services for the following services: - provision of public services of public telephone boxes, and - provision of public services of voice transmission via networks based on Internet Protocol.	2009	Pošta Crne Gore
8.	Radio Euro Taxi d.o.o.	Operator of public electronic communications services through its own functional network/system.	2009	Radio Euro taxi
9.	Dasto Montel d.o.o.	Operator of public fixed electronic communications network and operator of public fixed electronic communications services for the following services: - provision of public service of Internet access, and - provision of public service of leased lines.	2009	Dasto Montel
10.	Orion Telekom d.o.o.	Operator publicly available telephone service in fixed electronic communications network, services of transmission and distribution of audiovisual media contents (excluding terrestrial radio broadcasting), services of voice transmission via internet, internet access services, voice transmission services, services with additional value and SMS services.	2010	Orion Telekom
11.	Ipmont d.o.o.	Operator of public electronic communications services of voice transmission via networks based on internet Protocol (selection and pre-selection of an operator, prepaid calling cards, Call Shop and SIP users), internet access services, leased line services and services of access and use of the elements of electronic communications network (leasing of optical fibers - dark fiber).	2010	IPMont
12.	Crnogorski Elektroprenosni Sistem A.D.	Operator of public fixed electronic communications network and operator of public fixed electronic communications services for: - provision of leasing services of optical fibers (dark fiber).	2010	CGES
13.	Sattelite Broadband Service Network Montenegro d.o.o.	Operator of public fixed electronic communications network and operator of public fixed electronic communications services for: - provision of public service of Internet access, and - public service of leased lines.	2011	SBS Net Montenegro
14.	IT-desk d.o.o.	Operator of public electronic communications services of the access to and use of the elements of electronic communications network.	2012	IT-desk
15.	Wireless Montenegro d.o.o.	Operator of public electronic communications network based on TETRA (Terrestrial Trunked Radio) standard and electronic communications services of voice transmission and short text messages via TETRA system and Internet access services.	2012	Wireless Montenegro
16.	Siol d.o.o.	Operator of public fixed electronic communications network and operator of public fixed electronic communications services, for internet access services, services of leased lines and services of the access to and use of the elements of electronic communications network (leasing of optical fibers).	2012	Siol

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17.	Komunalne usluge d.o.o.	Operator for the provision of services of leased optical fibers (dark fiber) and services of leasing of electronic communications infrastructure	2012	Komunalne usluge
18.	Cogent Communications Montenegro d.o.o.	Operator of public electronic communications services for Internet access, Ethernet links (point point) and IP transit	2013	Cogent Communications Montenegro
19.	Lona Trade d.o.o.	Operator of public electronic communications services for Internet access	2013	Lona Trade
20.	CPA d.o.o.	Operator of public electronic communications services of Internet access, leased lines and leasing of optical fibers (dark fiber)	2014	CPA
21.	Fibercom d.o.o.	Operator of public fixed electronic communications network for the services of publicly available telephone services in the fixed electronic communications network, Internet access service and service of transmission and distribution of audiovisual media contents (except for terrestrial broadcasting)	2015	FiberCom
22.	Teleeye-Montenegro d.o.o.	Operator of public fixed electronic communications networks (fixed wireless access on 5 GHz) for Internet access services	2015	Teleeye Montenegro
23.	Željeznicka infrastruktura Crne Gore A.D.	Operator of public electronic communications services of access and use of electronic communications network elements and service of leasing of electronic communications infrastructure	2016	Željeznička infrastruktura Crne Gore
24.	Univerzitet Crne Gore-CIS	Operator of public electronic communications services of connecting to national point of exchange of Internet traffic (IXP)	2016	Univerzitet Crne Gore - CIS
25.	Aquaterra solutions d.o.o.	Operator of public electronic communications services of internet access	2016	Aquaterra Solutions
26.	Crnogorski elektodistributivni sistem d.o.o.	Operator of public electronic communications services of leasing of optical fibers and leasing services of electronic communications infrastructure	2017	CEDIS
27.	MDS Network d.o.o.	Operator of public electronic communications services of Internet access	2017	MDS Network
28.	ASP CO d.o.o.	Operator of public electronic communications services of Internet access	2017	ASP CO
29.	INFO SISTEMI d.o.o.	Operator of public electronic communications services for Internet access, data transmission, and lease of optical fibers	2018	Info sistemi
30.	NETMONT d.o.o.	Operator of public electronic communications services of Internet access	2018	NetMont
31.	SIMES NET d.o.o.	Operator of public electronic communications services in fixed electronic communications networks, transfer and distribution of audiovisual media contents, Internet access, leased lines, optical fiber leasing (<i>dark fiber</i>) and leasing of electronic communications infrastructure	2019	Simes Net
32.	RTV Mir&Teuta d.o.o.	Operator of public electronic communications services of multiplex access service for digital terrestrial broadcasting and transmission and/or distribution of audiovisual media contents and other data intended for direct receipt in the terrestrial broadcasting	2020	RTV Mir&Teuta
33.	RED d.o.o. Podgorica	Operator of public electronic communication services through its own functional network/system	2021	RED

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34.	REGIONALNI VODOVOD CRNOGORSKO PRIMORJE d.o.o. Budva	Operator of public electronic communication services for the provision of optical fiber leasing services (<i>dark fiber</i>)	2021	Regionalni vodovod Crnogorsko primorje
35.	PORTONOVI RESORT MANAGEMENT COMPANY d.o.o. Kumbor	Operator of public electronic communications services for the provision of optical fiber leasing services (<i>dark fiber</i>) and electronic communications infrastructure leasing services	2021	Portonovi Resort Management Company

11.3. List of the operators entered in the Postal Operators Register on December 31, 2021

Ser. No	Name of the operator	The activity for which it is registered	Year of entry	Name of the operator used in this report
1.	Pošta Crne Gore a.d. Podgorica	Universal and Commercial Postal Services	2007	Pošta Crne Gore
2.	Kingscliffe Distribution Montenegro d.o.o. Podgorica	Commercial Postal Services	2017	DHL
3.	City Express Montenegro d.o.o. Podgorica	Commercial Postal Services	2017	City Express Montenegro
4.	Montenomaks Control&Logistics d.o.o. Danilovgrad	Commercial Postal Services	2019	Montenomaks
5.	Tim Kop d.o.o. Podgorica	Commercial Postal Services	2019	TNT
6.	Express Courier d.o.o.Bar	Commercial Postal Services	2020	UPS
7.	Alo Kurir Express d.o.o. Plav	Commercial Postal Services	2018	Alo Kurir Express
8.	NTC Logistics d.o.o. Nikšić	Commercial Postal Services	2014	NTC Logistics
9	Fast Express d.o.o. Danilovgrad	Commercial Postal Services	2020	Fast Express
10	Purić Trade d.o.o. Podgorica	Commercial Postal Services	2020	Send
11.	See All Group d.o.o. Podgorica	Commercial Postal Services	2020	See All
12.	Adre Com Pljevlja	Commercial Postal Services	2021	Adre Com
13.	Exclusive Mobile d.o.o. Podgorica	Commercial Postal Services	2021	Exclusive Mobile
14.	Go Express - Braća Kasratović d.o.o. Podgorica	Commercial Postal Services	2021	GO Express -Braća Kasratović
15.	Italicom d.o.o. Podgorica	Commercial Postal Services	2021	Daily-Express
16.	Lancer d.o.o. Podgorica	Commercial Postal Services	2021	Lancer
17.	Mg Express d.o.o. Podgorica	Commercial Postal Services	2021	MG Express
18.	Post Express d.o.o. Podgorica	Commercial Postal Services	2021	Padrino
19.	Pro Express d.o.o. Podgorica	Commercial Postal Services	2021	Pro Express
20.	Rabbit Courier d.o.o. Podgorica	Commercial Postal Services	2021	Rabbit Courier Express

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21.	Royal Express d.o.o. Podgorica	Commercial Postal Services	2021	Royal Express
22.	Transporter Courier Montenegro d.o.o. Podgorica	Commercial Postal Services	2021	Transporter Courier Montenegro
23.	Žvaka d.o.o. Podgorica	Commercial Postal Services	2021	Žvaka
24.	Congress Support Team d.o.o. Podgorica	Commercial Postal Services	2021	Terra Delivery Service
25.	Naš Express d.o.o. Podgorica	Commercial Postal Services	2021	Naš Express
26.	Premium Express d.o.o. Podgorica	Commercial Postal Services	2021	Premium Express
27.	TT Phoenix d.o.o. Podgorica	Commercial Postal Services	2021	TT Phoenix
28.	Wolf Express d.o.o. Podgorica	Commercial Postal Services	2021	Wolf Express
29.	DMC Logistics d.o.o. Podgorica	Commercial Postal Services	2021	DMC Logistics
30.	Halo Dostava d.o.o. Podgorica	Commercial Postal Services	2021	Halo Dostava
31.	Post Express d.o.o. Bar	Commercial Postal Services	2021	Post Express
