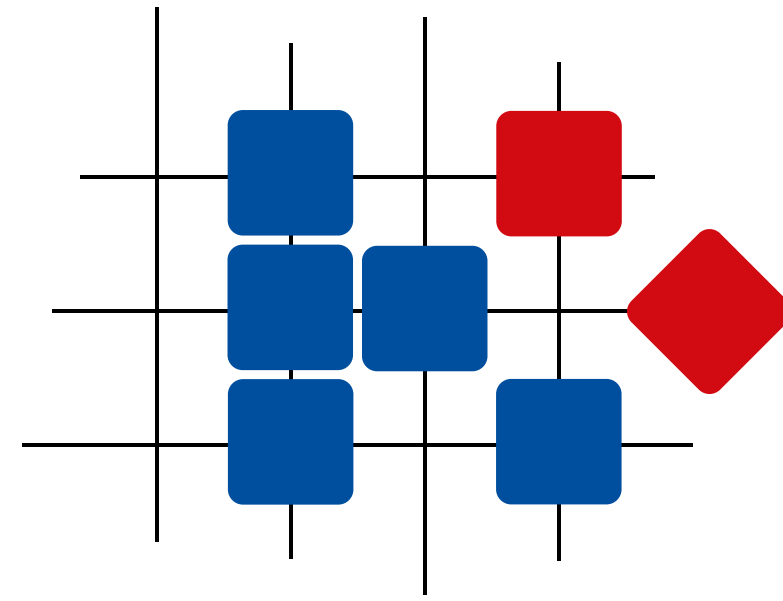


**HAKOM**

# 2021 ANNUAL ACTIVITY REPORT

ZAGREB, JUNE 2022



Pursuant to the Electronic Communications Act, the Croatian Regulatory Authority for Network Industries (HAKOM), hereby submits to the Croatian Parliament and the Government of the Republic of Croatia its Annual Activity Report for the year 2021. The financial statement and final statement are integral parts of this Report.

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*Council of HAKOM:  
Nikola Popović, Darko Josipović,  
Tonko Obuljen, Mislav Hebel and  
Ante Milas*



The previous year was marked by the continued development of the electronic communications market after the pandemic year 2020. The market growth was accompanied by the growth of investments in networks, driven primarily by a public auction for spectrum allocation in 700 MHz, 3600 MHz and 26 GHz frequency bands. Performed electronically for the first time, the auction produced very good results at the regional level and attracted new service providers, which are expected to start providing services in 2022. The existing national operators are investing in construction, with the result that Croatia's 5G network coverage is among the better ones in the European Union. Further investments and development will be fostered by adequate regulations that are to facilitate the construction of the electronic communications infrastructure, including optical fibres and base stations.

In addition to by spectrum allocation, the electronic communications market was also marked by the termination of Hrvatski Telekom's management rights of Optima Telekom and Optima's takeover by Telemach. This made Telemach the third national converged operator providing services both in the fixed network and in the mobile network, which is to additionally boost market competitiveness. Competitiveness will also be enhanced by the completion of projects of developing new cost models and changing the margin squeeze test methodology, which ensure the supervision of prices charged by operators with significant market power. One reason for satisfaction is a continued decrease in the number of user complaints from the previous

years. Nevertheless, HAKOM will continue to supervise the service provision process and the method of concluding contracts.

As more and more devices are incorporated in electronic communications networks, networks' security and their smooth operation are becoming increasingly important. HAKOM set up an in-house cybersecurity team, which cooperates with other institutions performing tasks in this area as well with other EU regulators, the European Commission and the European Network and Information Security Agency.

The postal services market recorded an increase in revenues despite a fall in the total number of services provided. The increase was primarily generated by parcel delivery services, with about 31 million parcels delivered in 2021, almost 13 percent more than in the year before. The share of the universal service in the total number of postal items has been steadily decreasing. The universal service provider's postal network still comprises 1,016 postal offices, which considerably exceeds the prescribed minimum of 700 offices. The measuring of the quality of universal service provision shows that the universal service provider, Hrvatska pošta (HP), provides this service in accordance with the prescribed standards. However, some irregularities were established in handling registered mail and HP was ordered to rectify them.

The rail services market recorded growth in 2021 over the previous year, both in terms of the quantity of transported goods and the number of transported passengers. However, despite an increase of 3 percent, the number of transported passengers

was significantly lower than in the pre-pandemic year 2019. There were 13 freight carriers and 1 passenger carrier operating in Croatia in 2021, so that competition in freight traffic was strong. The infrastructure was managed by HŽ Infrastruktura, which is also the largest service facility operator. Notable regulatory activities included bringing into compliance the Tariff for the transport of passengers in domestic traffic and an opinion poll of rail transport users. The users participating in the poll stated that they were satisfied with the price and accessibility of transport, dissatisfied with timetable accuracy and delay information and extremely dissatisfied with the length of train journeys, the main reason for them to choose other means of transport. Finally, in 2021 HAKOM co-chaired the Independent Regulators Group – Rail (IRG-Rail), assuming the full chairmanship from the Austrian colleagues at the beginning of 2022.

Also in 2021, following a public consultation, HAKOM's Strategy for the period from 2022 to 2025 was adopted. HAKOM also joined the EU project Strengthening the implementation of regulatory impact assessment, which is now underway and is expected to positively impact the adoption of regulatory decisions. In 2021, the Council of HAKOM held 30 meetings, adopting regulatory decisions envisaged under the Annual Work Programme and decisions that had to be adopted in operator disputes.

*Council of Hakom*

HAKOM's business and operational excellence relies on the improvement of specific aspects of organisational functioning. HAKOM's organisational development continued in 2021: the recording of business processes was completed and their improvement and streamlining, aimed at increasing work efficiency, was continued in line with the procedural policy. HAKOM improved processes related to digital document management and was among the first public authorities in the HR to implement e-signature, developed by the Central State Office for the Development of Digital Society. Also implemented was an in-house approval of documents by means of e-initials, which increased the level of control of responsibility in the digital environment.

A new project management methodology was completed and implemented, aimed at ensuring a higher implementation quality of an increasing number of project tasks falling within HAKOM's competence. This requires building employees' capacities and competencies for project work in the forthcoming period.

The annual cycle of managing the performance of employees and teams was in 2021 based on 175 ambitiously set operational goals. These goals were exceeded by 36 percent of the outcomes, 46 percent of the outcomes met the expectations and 18 percent required improvement.

HAKOM strives to build an organisational culture characterised by the high engagement, motivation and productivity of employees as well as by their readiness to change. HAKOM's managers are actively engaged with employees and they received additional training to strengthen the competencies required for such a leadership style.

HAKOM, as a legal entity with public authority, conducts administrative proceedings for issuing spectrum licences, participates in building permit issuance proceedings and in the formulation of urban development plans, issues right of way certificates and resolves disputes between users and electronic communications operators, postal services providers and rail passenger carriers. The number of requests for establishing special conditions for construction and issuing main project certificates increased in 2021, the number of user disputes decreased, while the number of other cases processed by HAKOM remained approximately the same as in the previous period. Providing a fast and high-quality service in public law proceeding and an efficient assistance to our users are the highest priorities for HAKOM's expert departments. In performing operations falling within the scope of its competence, HAKOM aims to achieve the highest professional standards and the best practices, which is especially reflected on the quality of operations performed on the basis of its public authority.

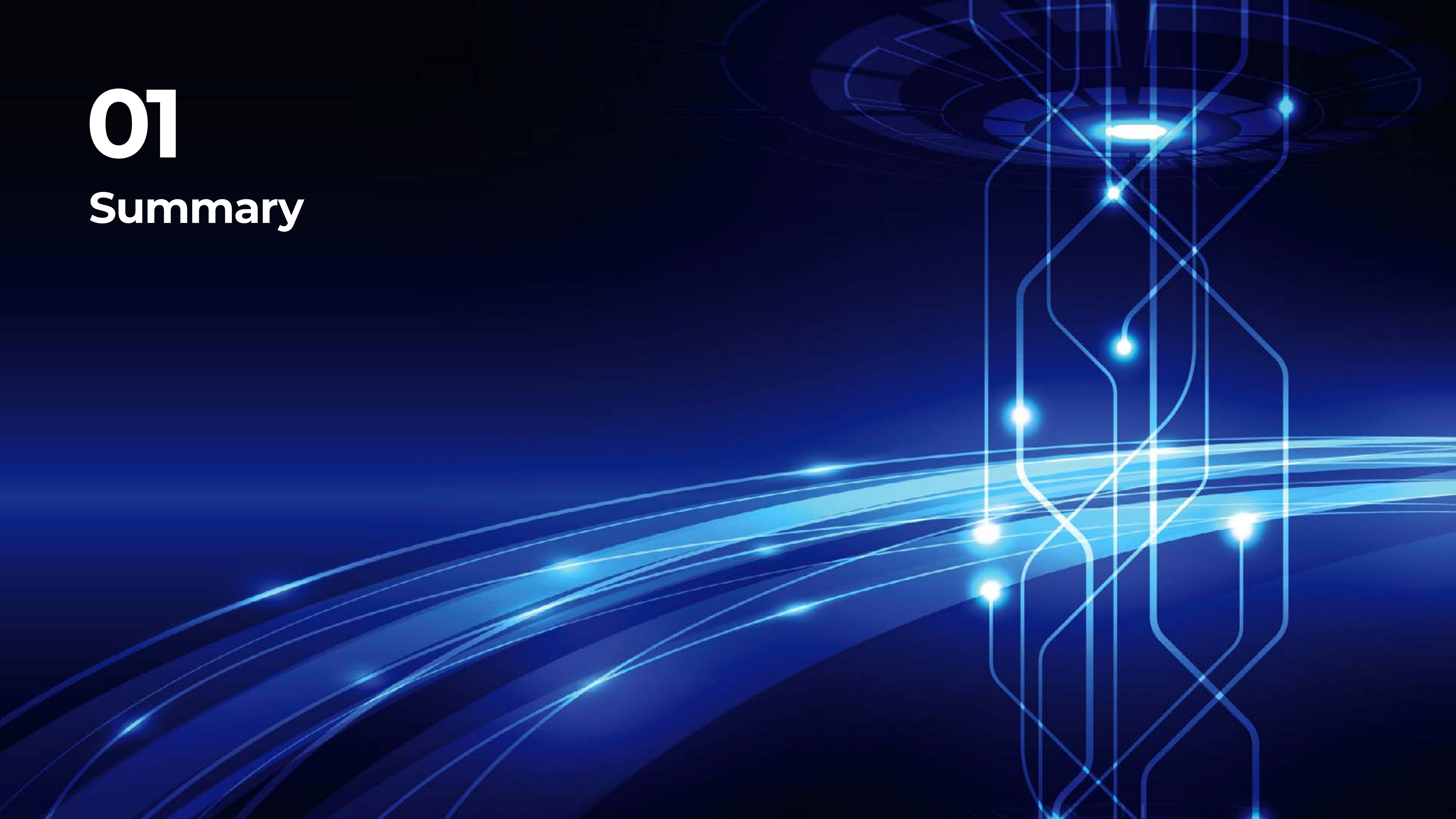
The SARS COV-2 pandemic and compliance with pandemic containment measures had a major impact on the organisation of HAKOM's operations in 2021. HAKOM adjusted its operations to comply with containment measures imposed: a part of employees worked from home, while those who were tested, vaccinated or recovered from COVID-19 worked on the premises. Nevertheless, the activities under the Annual Work Programme were carried out as planned.

*Miran Gosta, Executive Director*



# 01

## Summary





## ELECTRONIC COMMUNICATIONS

After the challenging year 2020, in 2021 the electronic communications market continued to develop, and revenues and investments continued to grow. The 5G RF spectrum was awarded at a public auction, which, in addition to the stepped up investments in the optical fibre infrastructure, spurred additional investments in mobile networks. Total market revenues stood at HRK 11.56bn, which is an increase of 3.7 percent from 2020. Total investments grew at a rate of 60 percent, reaching approximately HRK 4.2bn, with investments in both mobile and fixed networks rising from the year before. HRK 2bn of this amount was accounted for by investments in the network and network equipment, which is HRK 600m more than in 2020. Future investments will be conditioned upon the implementation of the best practices in the Croatian Roadmap, compiled by HAKOM on the basis of the Connectivity Toolbox, the Commission Recommendation for reducing the costs of deploying very high capacity networks and ensuring timely and investment friendly access to 5G radio spectrum. Measures from the Toolbox related to the RF spectrum have mostly been implemented. The year was also marked by market consolidation following the decision of the Croatian Competition Agency (CCA) approving the acquisition of Optima telekom (Optima) by Telemach. The most important service in the market is broadband internet access, generating total revenues of about HRK 5.37bn, of which HRK 3.5bn was accounted for by mobile networks and HRK 1.87bn by fixed networks. The availability of broadband internet access speeds higher than 30 Mbit/s (NGA) in fixed networks was 87 percent at the end of 2021. Such NGA connections are used by about 800,000 households. The highest increase, almost 34 percent, was in the number of FTTH/B connections, which are now used by over 150,000 households. The total number of potential users of optical fibre networks, including connections for residential, business and other entities, exceeded 650,000 at the end of 2021, having increased by about 240,000 (58 percent) in 2021 alone. The coverage of all three mobile Croatian networks by the 4G signal is 99 percent at a minimum and the number of SIM cards in various devices exceeds the total number of inhabitants by 10 percent. As expected, revenues from traditional telephone services in mobile and fixed networks is declining, whereas the televisions service is still generating growth.

The overall state of network neutrality in Croatia is generally positive, indicating that the internet ecosystem can continue to flourish as an engine of innovation. Cyber security has become increasingly more important both at the national level and at the EU level. In view of this, in 2021 HAKOM adopted the Ordinance on the manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services, which sets forth minimum security measures, the manner of and criteria for the reporting of incidents in electronic communications operators' networks. There were 7 major security incidents reported in 2021 whose root causes were system errors, and 3 computer incidents, 2 of which were DDoS attacks and 1 originated from the internal environment, causing a violation of personal data.

Regulatory activities related to the development of new cost models based on real costs were completed in February. With the management of Hrvatski Telekom (HT) by Optima terminated at mid-year, temporary decisions were adopted revoking all Optima's regulatory obligations as part of the HT Group. December saw the final revocation of all Optima's regulatory obligations and the completion of analysis of the access and call origination market.

The electronic communications market saw a total of 73 inspection supervisions, with part of these activities concerning the verification of the execution of previously adopted decisions. The inspection supervisions focused on compliance with regulatory obligations, the enabling of the universal service, the protection of users' rights, the quality and safety of communication networks, the conformity of radio equipment, the effective use of the radiofrequency spectrum, network neutrality, the prevention of unwanted electronic communications and the timely payment of the fee for the right of way to real estate owners.

## POSTAL SERVICES

The postal service market is undergoing changes due to the digitalisation of society, which contributes to its development despite the expected decrease in the service of delivery of printed matter and letters. In 2021, total revenues grew 9.1 percent, coming close to HRK 2bn, although the number of provided services declined: the number of pieces of printed matter was down by 14.2 percent and of letter items by 5 percent, with parcels being the only segment recording growth. Over 31 million parcels were delivered, accounting for 13 percent growth, so that the double digit increase in the number of delivered parcels continued. In 2021, international traffic was affected by disturbances, due both to the implementation of pandemic containment measures and the coming into force of the EU legislative framework on removing the exemption from VAT for imported goods below EUR 22.

The market shares of providers changed slightly, primarily because Hrvatska pošta (HP) assumed the distribution of printed matter (daily papers) from the Tisak plus provider. In late 2021, HP, as the universal service provider, provided 87 percent of all services in the HR market and, according to its share in total market revenues, generated slightly less than 60 percent of all market revenues. In 2021, HP's revenues increased by 2.6 percent and those of other 23 providers by 20.3 percent. The increase in the growth of revenues of other providers resulted from the growth of high-value services, which account for a major share in the operational structure relative to other types of items.

Due to a continuous decline in the number of traditional postal services from the universal service framework, the share of these services declined to only 52 percent. The second largest share of 30 percent of the market was accounted for by other postal services (letters and parcels with some

added value), while interchangeable postal services accounted for the remaining share of slightly less than 18 percent of the market. The results of measuring the quality of universal service provision in the domestic traffic showed that it was of a satisfactory level and within the prescribed limits. The postal office network comprised 1,016 postal offices at the end of 2021, exceeding the prescribed national minimum of 700 offices. This number held steady from 2020, but some offices were translocated.

The unfair financial burden on HP as the designated universal service provider in the HR territory was HRK 95m, following HAKOM's correction. In 2021, 18 inspection supervisions were carried out, most of which concerned HP as the universal service provider. The inspection supervisions of universal service provision were focused on the quality of universal provision and the rights of postal services users. Three decisions were issued ordering the elimination of irregularities, deficiencies or omissions related to the print out of notification for the arrival of a postal item, the secrecy of regular postal items and failure to deliver registered mail against the signature of authorised persons.

## RAIL SERVICES

There were 13 freight carriers and one passenger carrier – HŽ Putnički prijevoz (HŽPP) operating in the rail market. HŽ Infrastruktura (HŽI) managed a 2,617 km long network of railway lines, 980 km of which are electrified. The HŽI is also the largest service facility operator. In 2021, 227,742 passenger trains and 42,138 freight trains were in transport on the railway network.

The year 2021 saw 13.5 million transported passengers, which is a rise of about 3 percent compared with 2020, but a still a considerable decrease of 32 percent from 2019. The amount of transported goods increased by 1.5 percent, totalling 15.4 million tonnes. New freight carriers' share in transported goods grew slightly by 0.3 percent relative to that of the incumbent carrier, HŽ Cargo (HŽC). This growth was more pronounced in the previous years. The revenues of the infrastructure manager remained unchanged in 2021 from 2020, standing at HRK 137 million.

HAKOM analysed and verified Network Reports submitted by the infrastructure manager for 2020/2021 and for 2021/2022, putting forward proposals for increasing the transparency of both reports. During the year, the established non-compliance of the Tariff for the transport of passengers in domestic traffic (Tariff 101) with EU Regulation 1371/2007 was being eliminated, and the passenger carrier committed to full compliance with this regulation in the first half of 2022. In 2021, HAKOM co-chaired the IRG-Rail, an organisation of independent European regulatory bodies for the rail services market, aiming to create a single, competitive, efficient and sustainable internal rail market in Europe, and prepared for chairmanship in 2022.

A consultation with the representatives of freight and passenger rail transport service users was carried out, which is meant to provide guidance on the improvement of market conditions and the accessibility of information and service facilities.

The surveyed passengers said that the main reasons for choosing rail transport were its favourable price and availability. Over 60 percent of the surveyed passengers were very dissatisfied with the length of train journeys, singling this out as the main reason for giving up travelling by train. The same percentage of the surveyed passengers were dissatisfied with timetable accuracy as well as with information on train delays and cancelled transport services. The survey findings serve as guidelines for service improvement to be implemented by the infrastructure manager and passenger carrier. In 2021, 12 inspection supervisions were conducted to ensure compliance with specific legal provisions, the provisions of specific implementing regulations or the articles of Regulation 1371/2007. There were 6 inspection supervisions of the infrastructure manager and 6 supervisions of the passenger carrier. The focus was on passenger rights, although some supervisions dealt with the issues of infrastructure access.

## RF SPECTRUM MANAGEMENT

In August 2021, the radio frequency spectrum was awarded at a public auction in the 700 MHz, 3600 MHz and 26 GHz frequency bands for 5G mobile communication networks. National licences were issued for all bands for 15 years, with possible extension for 5 more years, to the three existing operators, while the new operator, EOLO, was granted a licence for the 26 GHz band. Licences for 5G networks were also issued at the regional (county) level in the 3600 MHz band to EOLO, Eco Net, Terakom, BeenIN, Digicom and Markoja. The amount of fees for the use of the RF spectrum achieved at the public auction totalled HRK 358,995,433.

A public tender for issuing an individual licence for the use of the radiofrequency spectrum to provide the service of managing the digital radio electronic communications network for the MUX 1 multiplex in the territory of the Republic of Croatia (174-240 Mhz frequency band) was launched in July. Odašiljači i veze d.o.o. was granted a 15-year licence and the digital radio started commercial broadcast in November, after four years of test broadcasting. Commercial broadcast, started with the coverage of 90 percent of the HR population for mobile reception, was provided by ten transmitters deployed at the most important coverage locations: Belje, Psunj, Ivanščica, Sljeme, Učka, Čelevac, Ugljan, Biokovo, Vidova gora and Srđ.

There are 153 operational analogue radio networks: 11 public networks, Croatian Radio-Television: 3 state and 8 regional levels) and 142 commercial networks (3 state, 3 regional, 16 county and 120 city/local levels) as well as a digital radio multiplex. Television broadcast by terrestrial transmitters



is enabled by 4 terrestrial digital television networks with national coverage and 2 networks with local coverage. All national and local networks free for reception in the public transmit the DVB-T2 signal with H.265/HEVC encoding in HD quality.

The control and monitoring of the spectrum included, apart from protection against interferences, protection against unauthorised electromagnetic field levels. The daily and periodic measurements of the radiofrequency spectrum and measuring campaigns planned were successfully carried out. Measurements included the measuring of electromagnetic field levels in the areas of increased sensitivity for health protection, and all measurement reports were published and are publicly available.

## USER PROTECTION

In 2021, 1,285 disputes related to the electronic communication area were resolved, which is a decrease of 10 percent relative to 2020. In addition, the number of disputes between users and operators fell for the third consecutive year. The activities concerning user protection mostly involved creating preconditions for improved user protection, including consumer information and education, monitoring complaint resolution by operators, cooperation with the representatives of consumer complaint commissions and consumer protection associations as well as the analysis of general terms and conditions, special conditions and price lists. Throughout this period users had access to free applications, such as HAKOMetar and HAKOMetar Plus, Cost Estimate and “Do Not Call” Register.

The year 2021 saw 318 requests for the resolution of disputes concerning postal services, which is a decrease of about 28 percent from the previous year. The largest number of received requests, 91 percent of them, were related to disputes with the universal service provider, HP, and the remaining requests to other postal service providers. As regards the types of complaints, most complaints were about non-compliance with the delivery deadline due to failure to provide the contracted service and due to the loss or damage of postal items. As regards the types of postal items, most complaints (63 percent) concerned parcels.

Ten decisions pursuant to the requests of passengers in rail passenger transport were adopted in 2021. Of these 10 requests, 8 were approved and 2 were partially approved. Most passenger complaints were lodged about information on train delays.

Attention was also devoted to vulnerable consumer groups, such as the elderly, persons with disabilities and children. Cooperation continued with the Faculty of Electrical Engineering and Computing within the accessibility project, with interested associations for persons with disabilities taking part in the project too. In 2021, the main aim of the project was raising awareness in

the society, which resulted in the creation of the methodology for workshops on persons with disabilities to be held with primary school children. In addition to paying attention to children as the users of electronic communications services, HAKOM also marked the Safer Internet Day by participating in the programmes organised by the Safer Internet Centre and the NGO Partners in Learning.

## HAKOM'S OTHER ACTIVITIES

Activities continued to be implemented regarding the Framework National Programme for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments, with HAKOM as the competent authority. A lot of HAKOM's activities were related to cooperation with other bodies concerning the National Plan for the Development of Broadband Access in the HR for the period from 2021 to 2027 or international and domestic cooperation aimed at fostering and facilitating the construction of the electronic communication infrastructure. Cooperation and participation in the work of numerous international expert bodies or working groups were intensive, although most of the meetings were held online, and mostly concerned the EU, the International Telecommunication Union (ITU) or international organisations of regulators of all three markets within HAKOM's competence.

## FINANCIAL STATEMENT

HAKOM continued to operate stably in 2021, so that revenues exceeded expenditures for the performance of its own activities and development. In 2021, total revenues amounted to HRK 100,347,189, with the largest share accounted for by radiofrequency spectrum management fees, followed by fees for other HAKOM's business operations and fees for address and number space management. The increase in revenues from the previous period stemmed primarily from the collection of fees for licences issued for the use of the radiofrequency spectrum for 5G mobile communication networks following the public auction. Expenditures amounted to HRK 85,078,901.





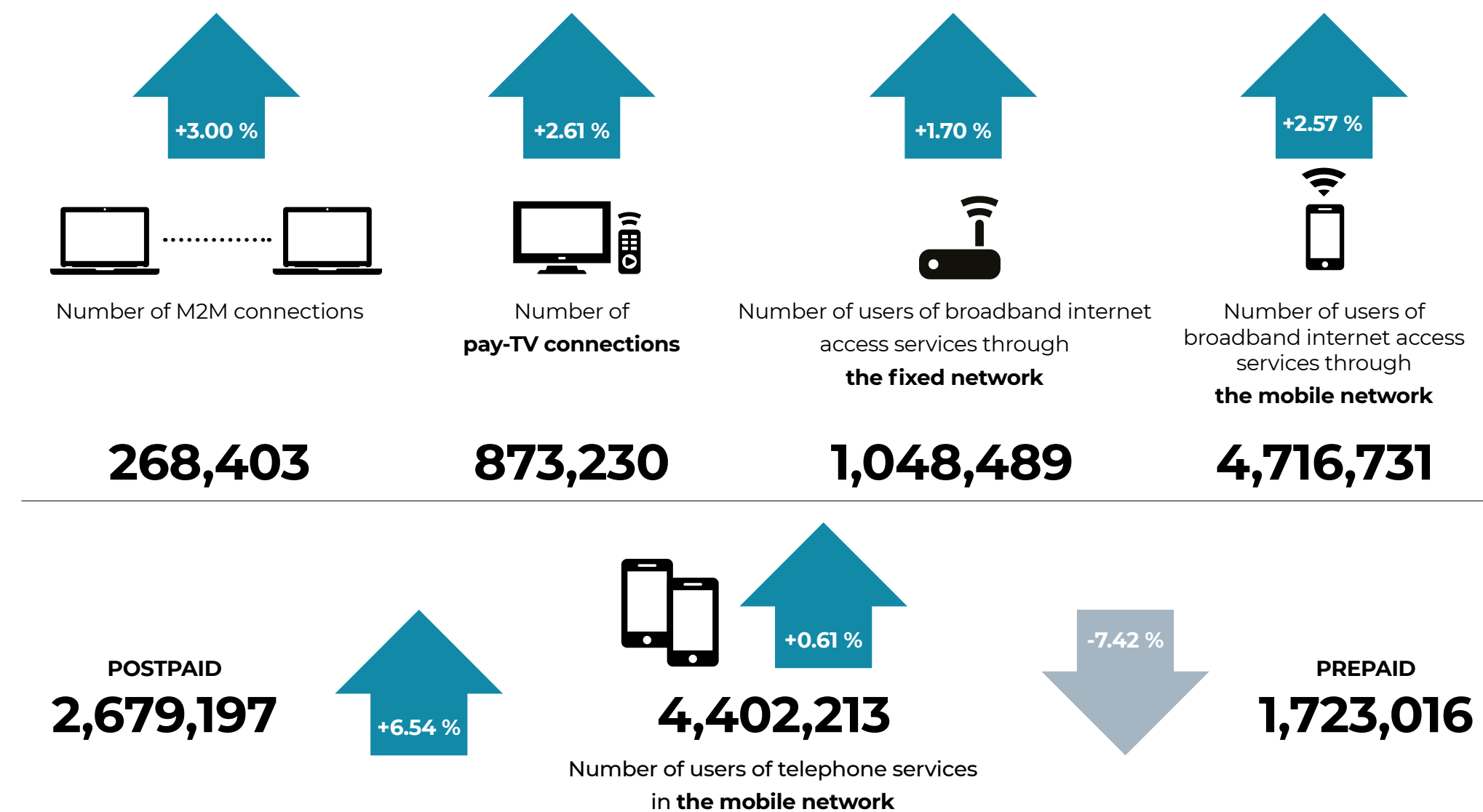
# 02

## ELECTRONIC COMMUNICATIONS

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The year 2021 was marked by the recovery of the market after the challenging 2020 and by creating preconditions to step up the introduction of modern technologies and the availability of internet access by means of very high capacity networks. Despite the pandemic, the market exhibited a momentum in 2021, primarily regarding the development of optical broadband access. In addition, the successfully completed allocation of radiofrequency resources for the implementation of 5G technology via a public auction fostered the development and construction of Croatian 5G mobile networks in line with the defined objectives. The year 2021 was marked by the greatest advance of the HR in the Connectivity category of the [DESI](#) for 2021. Croatia advanced more than other countries, improving its position by five places.

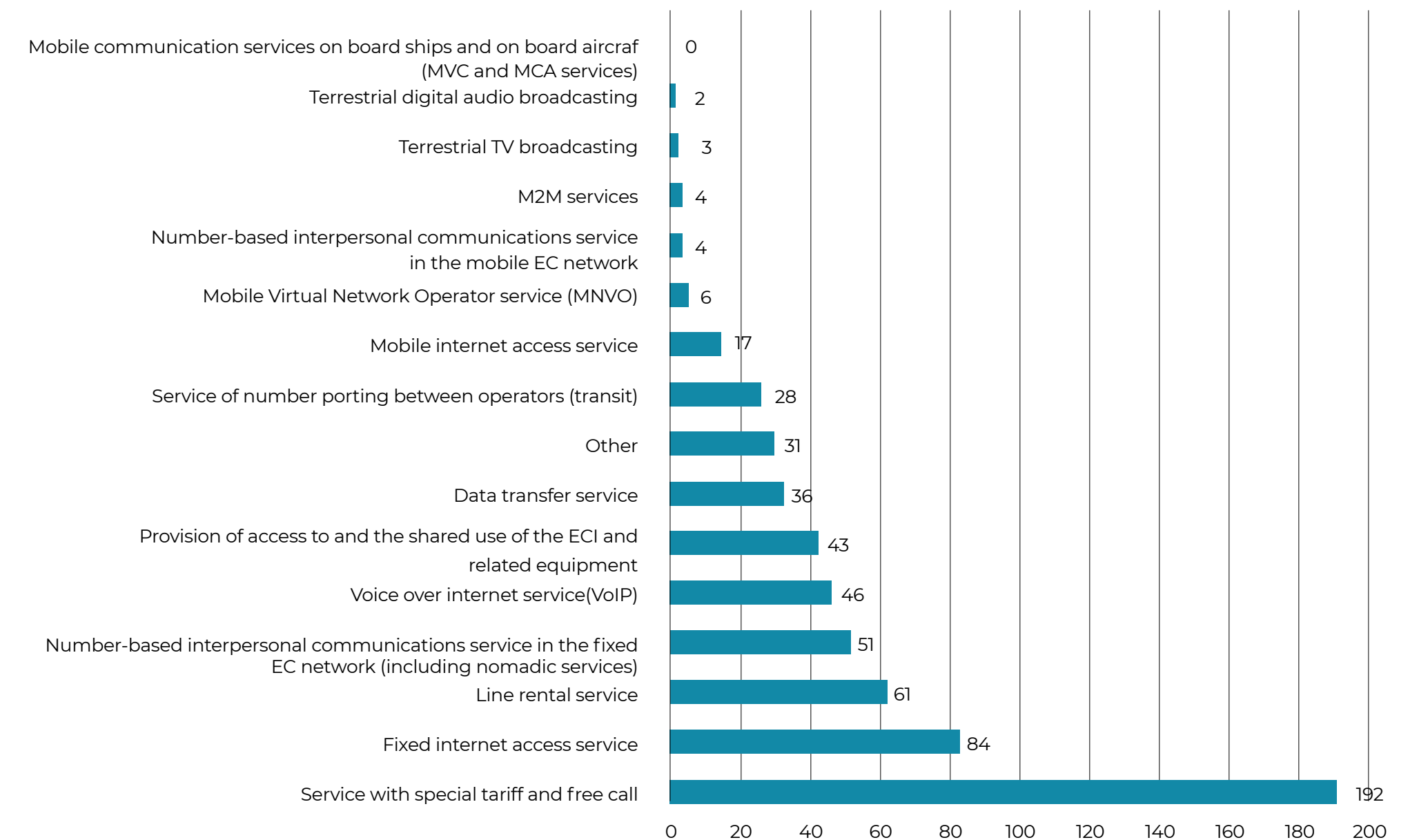
**Figure 2.1** Basic market data



## MARKET OVERVIEW

### Operators

**Figure 2.2** Number of registered operators per type of service/activity



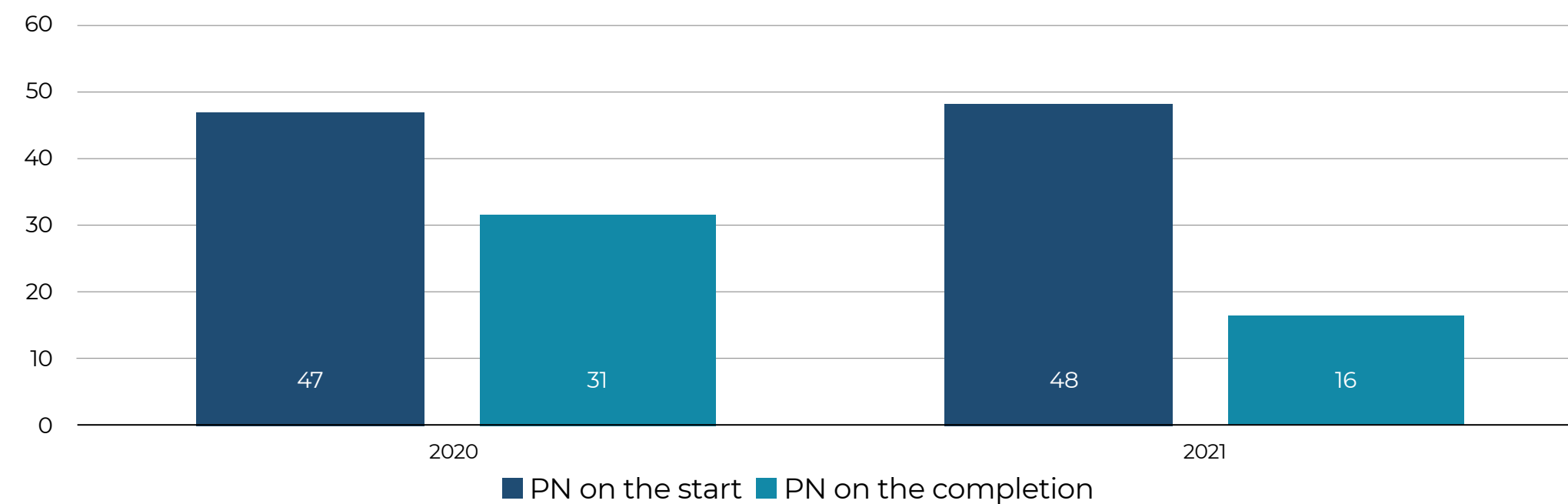
The operators of public electronic communications networks and public electronic communications services must notify HAKOM of the start, changes to and completion of the provision of electronic communications networks and services. Requests are digitalised in the e-Operator system; the database was updated in 2021 and 16 prior notifications of the completion of activities were submitted.

The e-Operator system currently comprises 319 registered operators, providing a total of 608 electronic communications services and activities in the HR territory. The most often registered



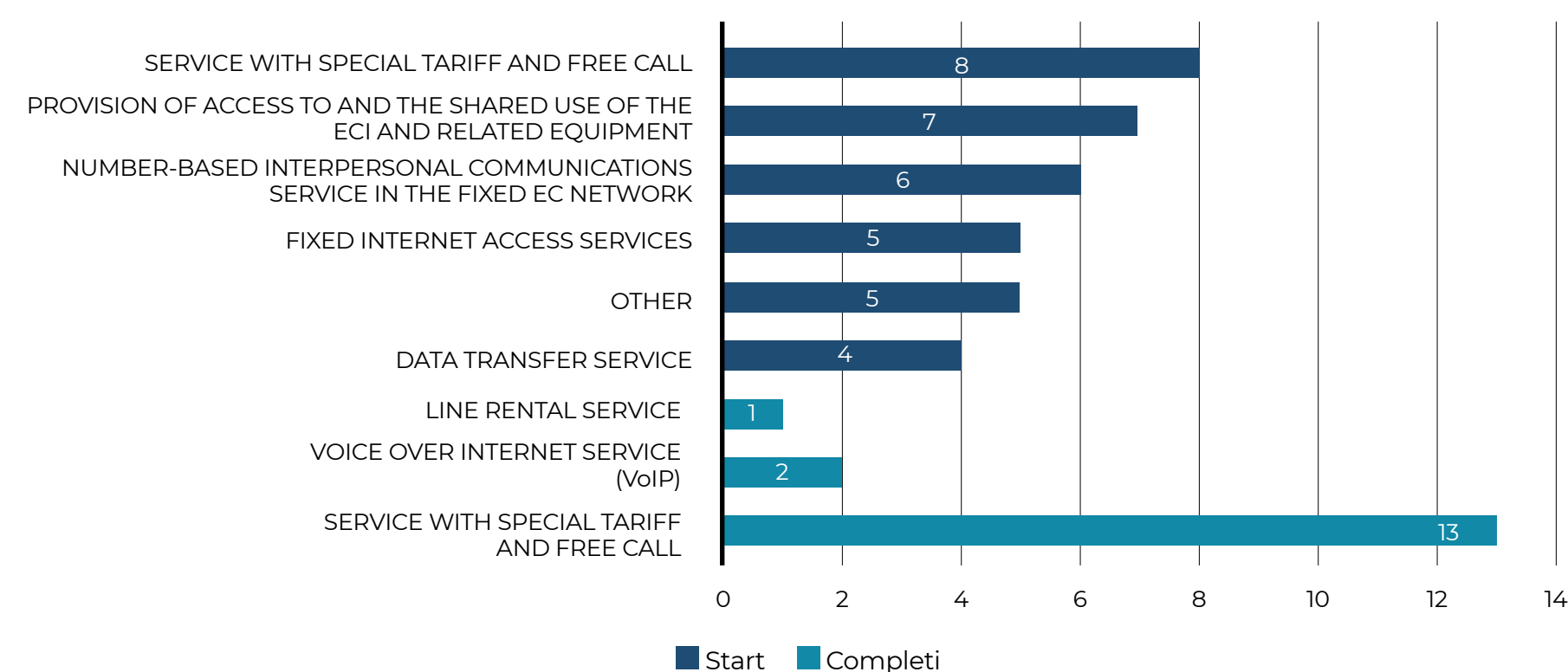
activity was the Service with a special tariff and free call, followed by the Fixed internet access service and the Line rental service.

**Figure 2.3** Number of prior notifications



The Service with a special tariff and free call and the Voice over internet service accounted for the largest share of activities for which prior notifications of the completion of an activity were

**Figure 2.4** Types of submitted prior notifications of the start and completion of activities



submitted in 2021, while the Service with a special tariff and free call, the Provision of access to and the shared use of the electronic communications network and related equipment and the Number-based interpersonal communications service in the fixed EC network accounted for the largest share of activities for which prior notifications of the start of an activity were submitted.

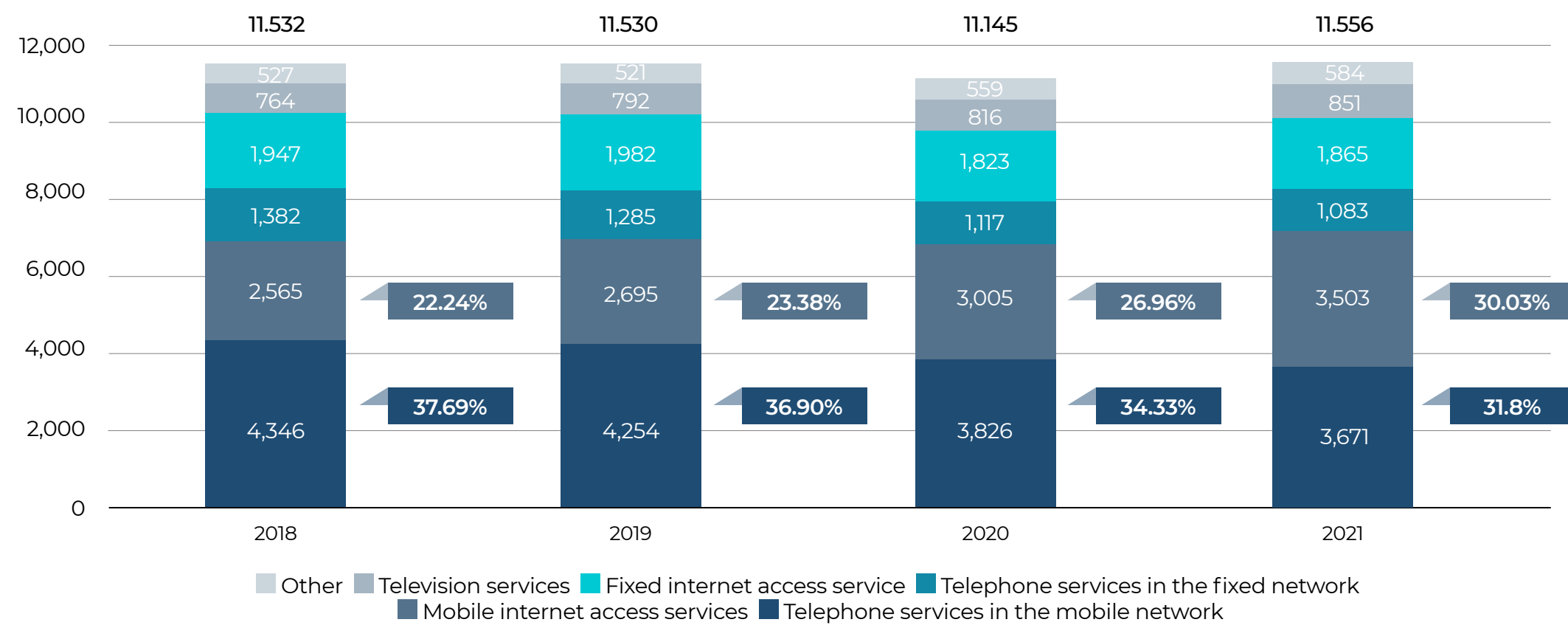
## Market revenues

Following the economic slowdown in Croatia caused by the COVID-19 pandemic in 2020 and the resulting decrease in total revenues in the electronic communications market, the year 2021 saw a recovery and revenue growth. Total revenues stood at the five-year high of almost HRK 11.6bn.

In contrast with 2020, when business operations and education were conducted online, in 2021 physical and virtual communication were combined. The broadband internet access service is becoming increasingly important year after year. In 2021, the revenues from this service accounted for almost 47 percent of total revenues, irrespective of whether it is provided through mobile or fixed networks. The mobile broadband internet access service recorded the highest individual growth, almost 20 percent. The mobile broadband internet access service can be expected to become, for the first time, the leading service in the total revenues of the electronic communications market next year and to replace the currently leading telephone service in the mobile network, the revenues of which have been decreasing. The decrease in revenues generated by this service is due among other things to the fact that users make increasingly more calls through OTT services.

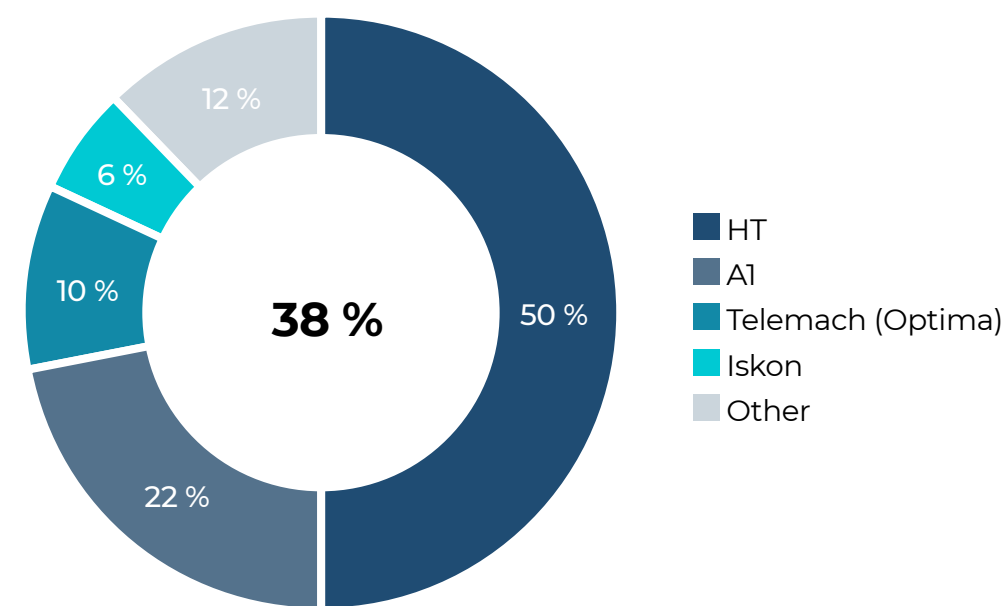
Compared with the pre-COVID-19 period, in 2021 citizens continued to spend a considerable amount of time at home, so that television service revenues, as expected, grew further. While developments in television service revenues in the following short-term period are difficult to predict, it is an evident trend that users are increasingly changing their habits, a challenge that needs to be addressed by all content providers in order to have steady revenues or increase them.

**Slika 2.5.** Ukupni prihod tržišta elektroničkih komunikacija (u mil. kuna)

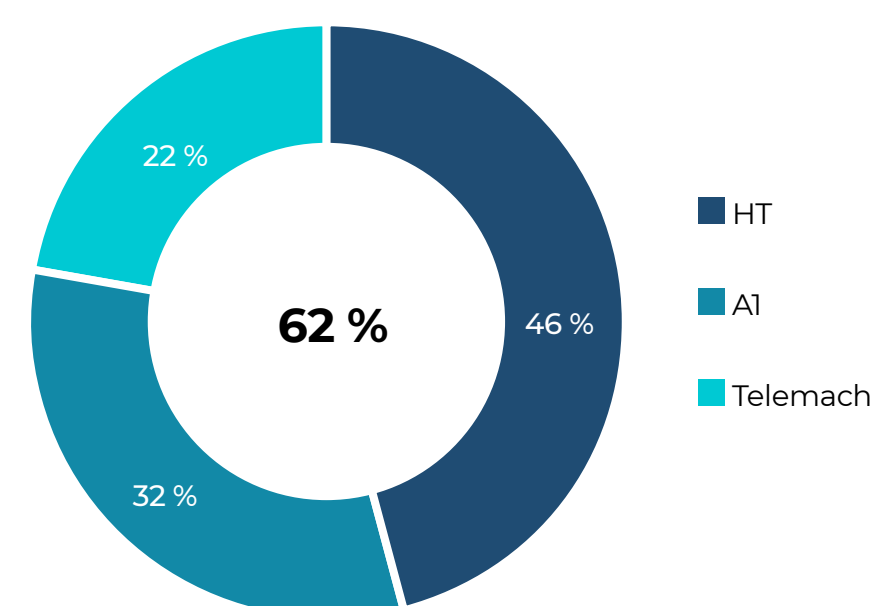


The increasingly large share in total revenues is generated by the mobile network market, a trend continuing from the previous years. In 2021, mobile networks accounted for a share of 62 percent in total revenues, relative to 38 percent accounted for by fixed networks. As the mobile internet access service recorded the largest growth on the service level, the share of mobile network revenues in total revenues predictably increased. This trend is expected to continue on the back of major investments that are to follow the partial allocation of the 5G spectrum in 2021.

**Figure 2.06** Operator revenue shares in the fixed network market and fixed network revenue shares in total revenues



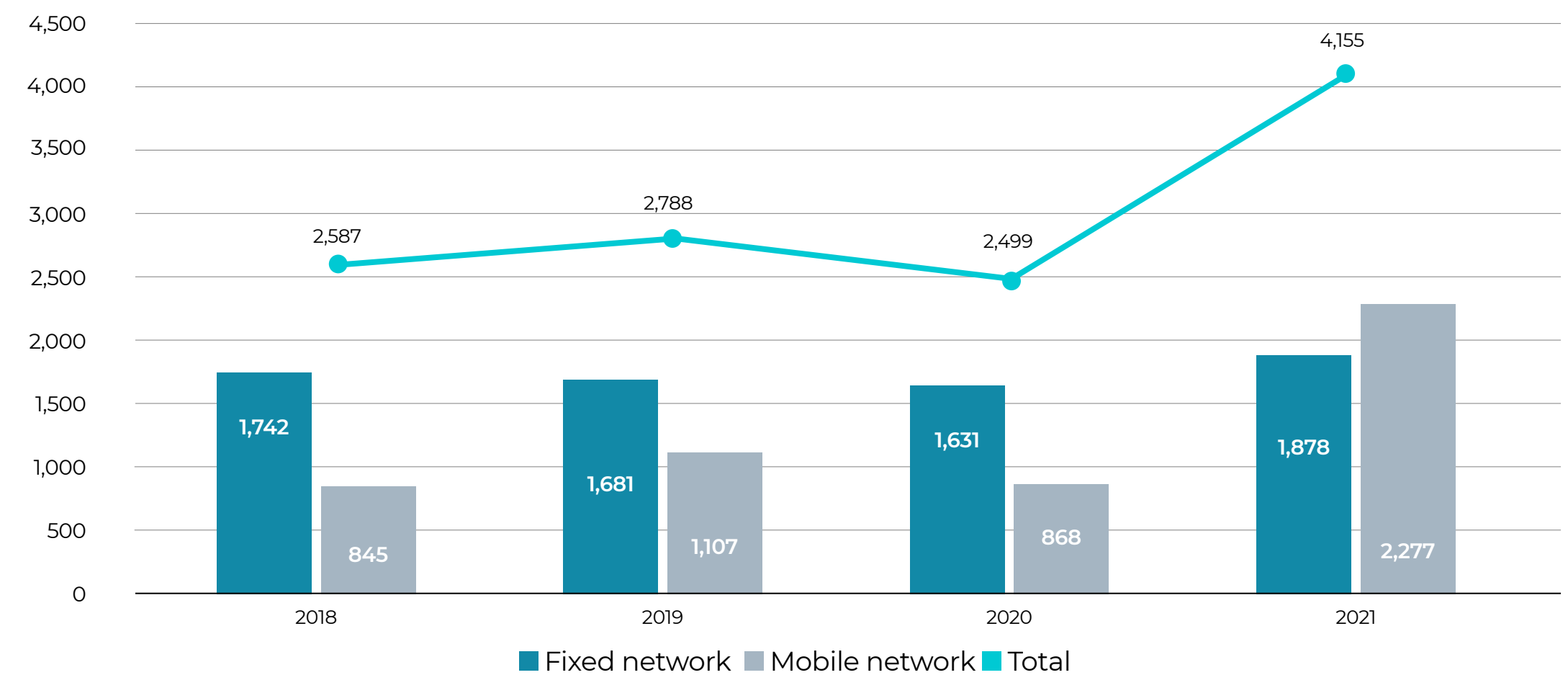
**Figure 2.7** Operator revenue shares in the mobile network market and mobile network revenue shares



## Investments

The stronger revenue growth in 2021 is directly linked to the stronger growth of investments, which stood at about HRK 4.2bn in the same year, increasing by 60 percent from 2020. It is a positive thing that revenue growth was recorded both in the fixed and mobile networks. The surge in investments in mobile networks was related to the allocation of the spectrum to operators and the construction of the 5G network. The largest investments in fixed networks in the last four years resulted in an increase in the number of users of high speed internet access services provided through very high capacity networks.

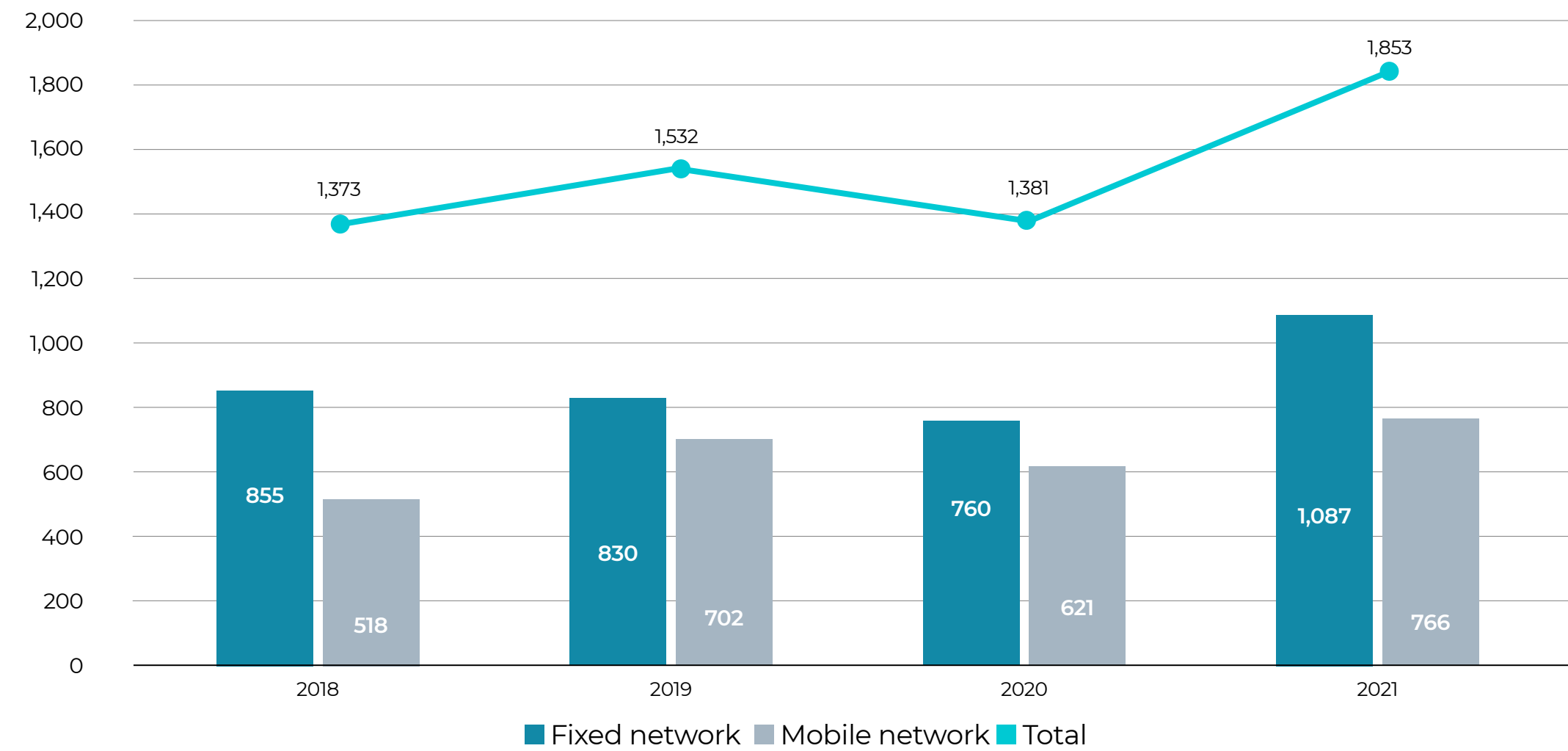
**Figure 2.8** Total investments by electronic communications operators (in HRK million)



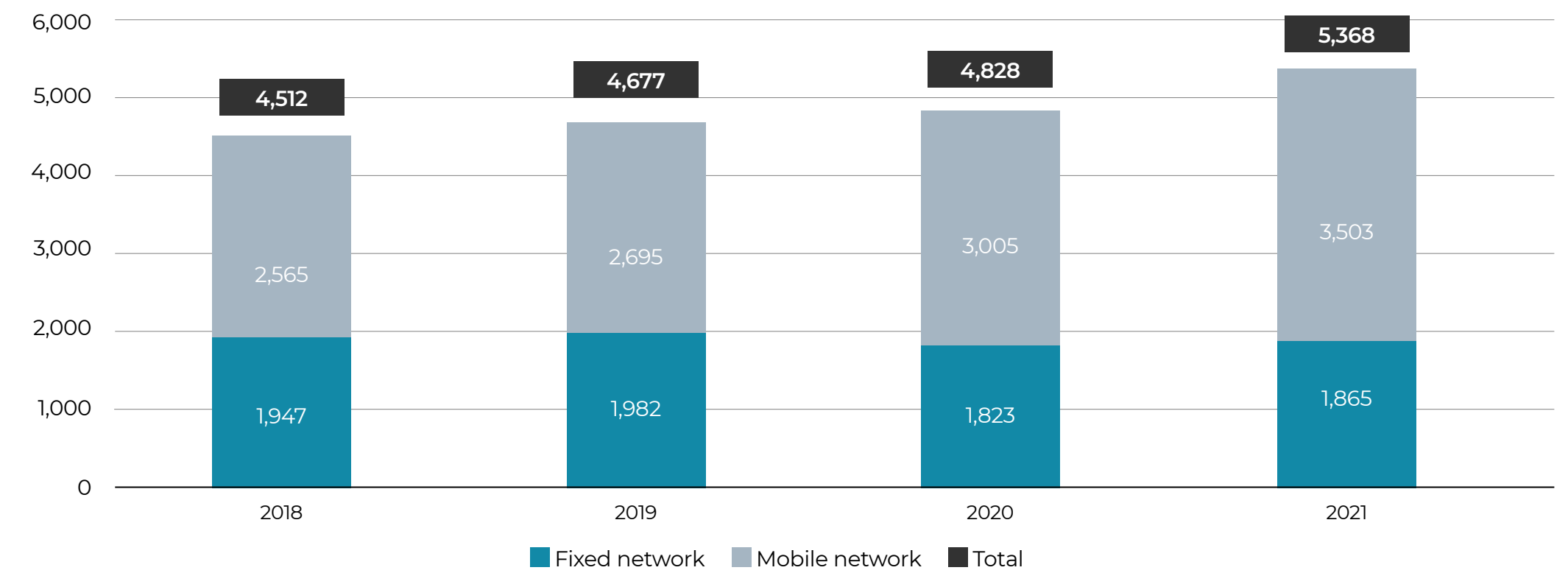
Close to HRK 2bn was invested in the network and network equipment, which is HRK 600m more than in 2020. This amount includes operators' direct investments into very high capacity networks.



**Figure 2.9** Operator investments in the network and network equipment (in HRK million)



**Figure 2.10** Total revenues in the broadband internet access market (in HRK million)



The number of 4D bundled services, which enable users to connect all services to the same operator, has been on the increase for several years. This trend continued in 2021, with the number of users of 4D services for the first time exceeding 300,000. This demonstrates that it is equally important for operators to invest in the network and in the content, because users can opt for using all services with the same operator based on just one service.

## BROADBAND INTERNET ACCESS SERVICE

Strong investments in the broadband internet access service in 2021 confirmed its status of the most important service in the whole market. Total revenues from the internet access service for the first time exceeded HRK 5bn, growing by HRK 500m from the previous year.

**Figure 2.11** Number of service packages

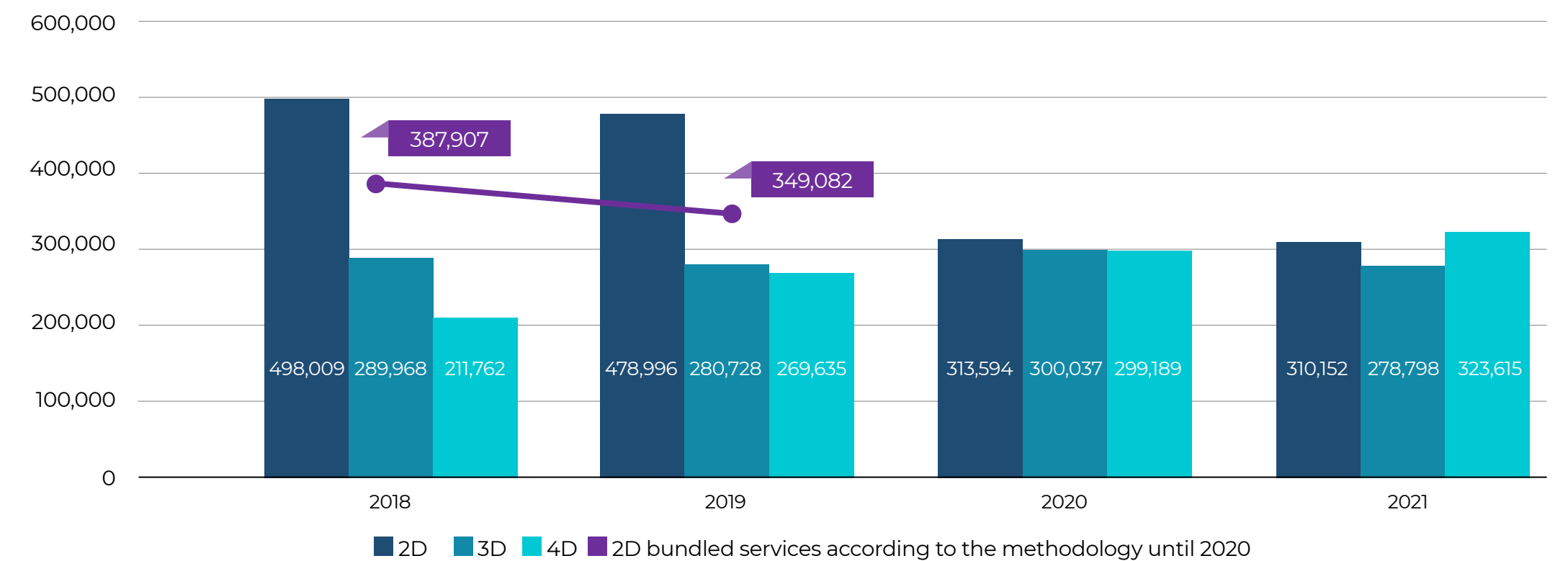
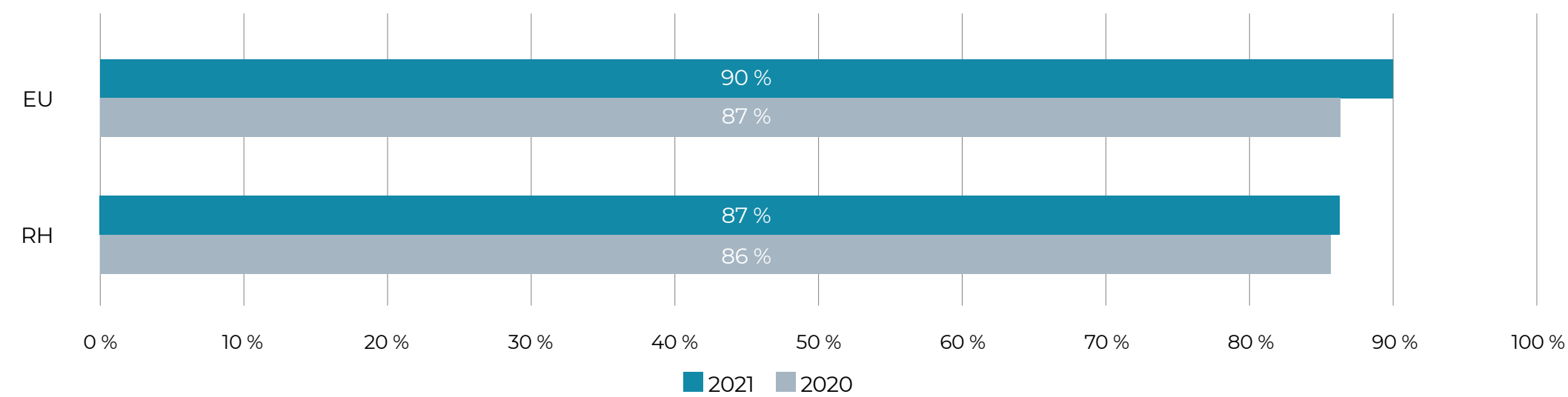


Figure 2.12 NGA availability



The strong investment growth in 2021 resulted in an increase in the number of connections through technologies enabling the minimum speeds of 100 Mbit/s, including FTTH/FTTB (optical fibres), cable networks and VDSL. Expectations are that most high access speed connections will be enabled by FTTx technologies. Due to investments in the network infrastructure, the number of users using services provided by means of copper pairs will continue to decline, with the result that the number of FTTx connections will exceed the number of ADSL connections in two years at the latest.

The share of households using fixed broadband internet access is almost 70 percent.

Figure 2.13 Density of households with the broadband internet access in the fixed network

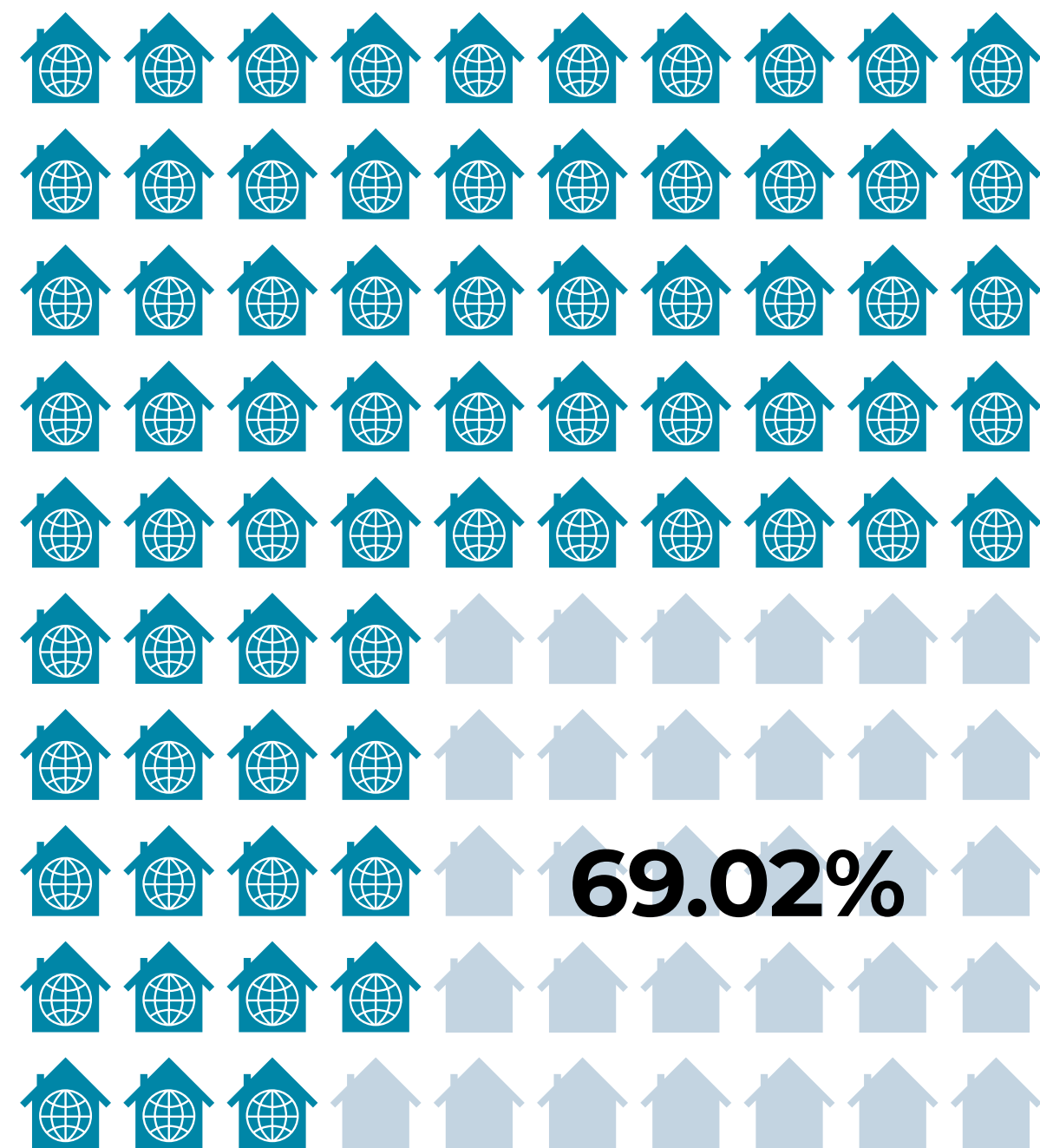
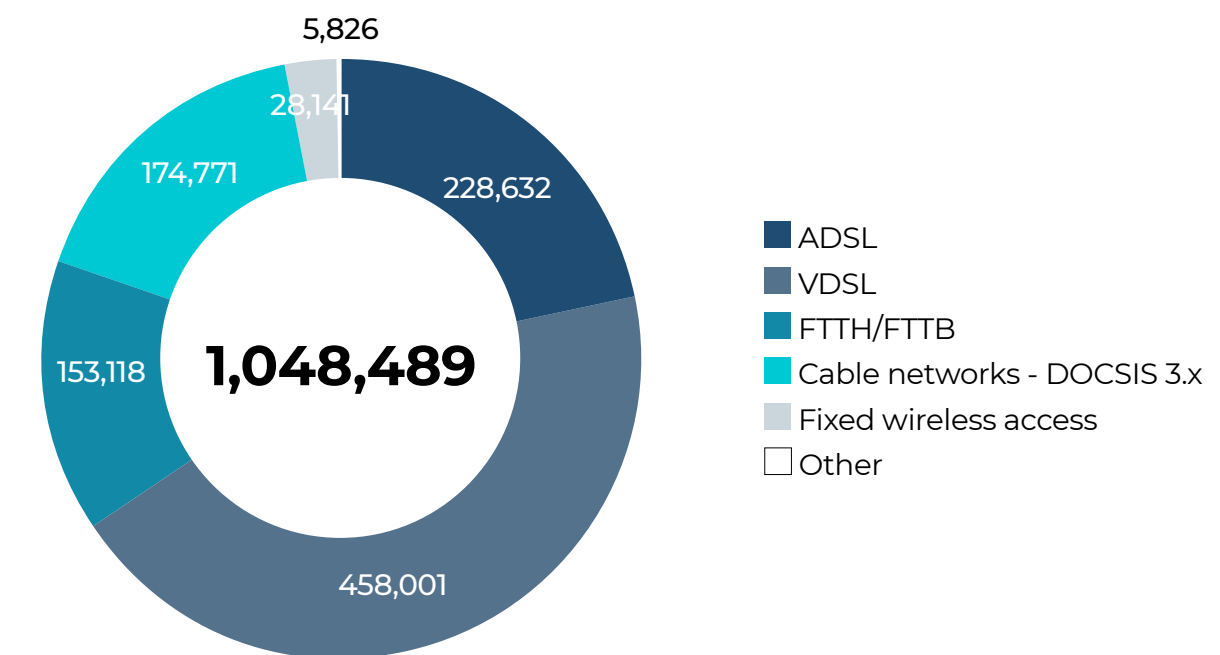


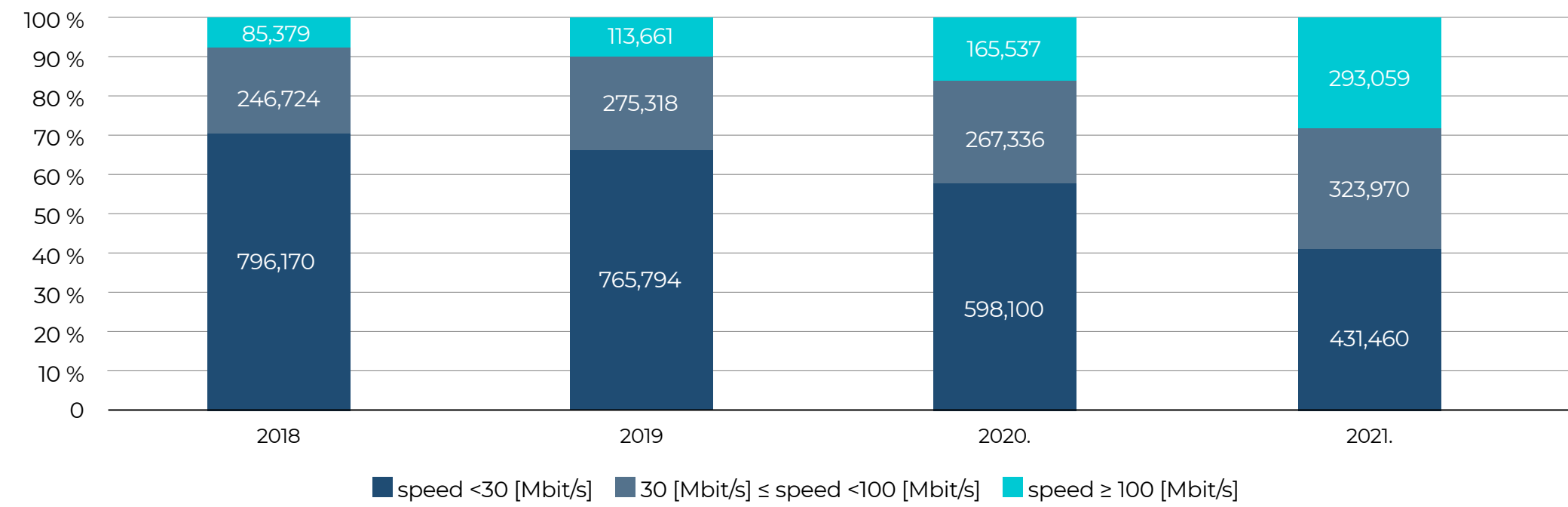
Figure 2.14 Number of fixed broadband internet access connections



Trends in the number of fixed connections by speed are closely related to technologies and investments in these technologies. The speeds of up to 30 Mbit/s are connected with the ADSL technology and services provided by copper pairs. The conspicuous downward trend in the number and share of users with these speeds is expected. On the other hand, the number of users with the speeds of 30 to 100 Mbit/s and those using the speeds higher than 100 Mbit/s can be expected to rise in the period to come. In the forthcoming short-term period, the number of users in both of these categories can be expected to increase, with the number of those using speeds higher than 100 Mbit/s increasing the most.

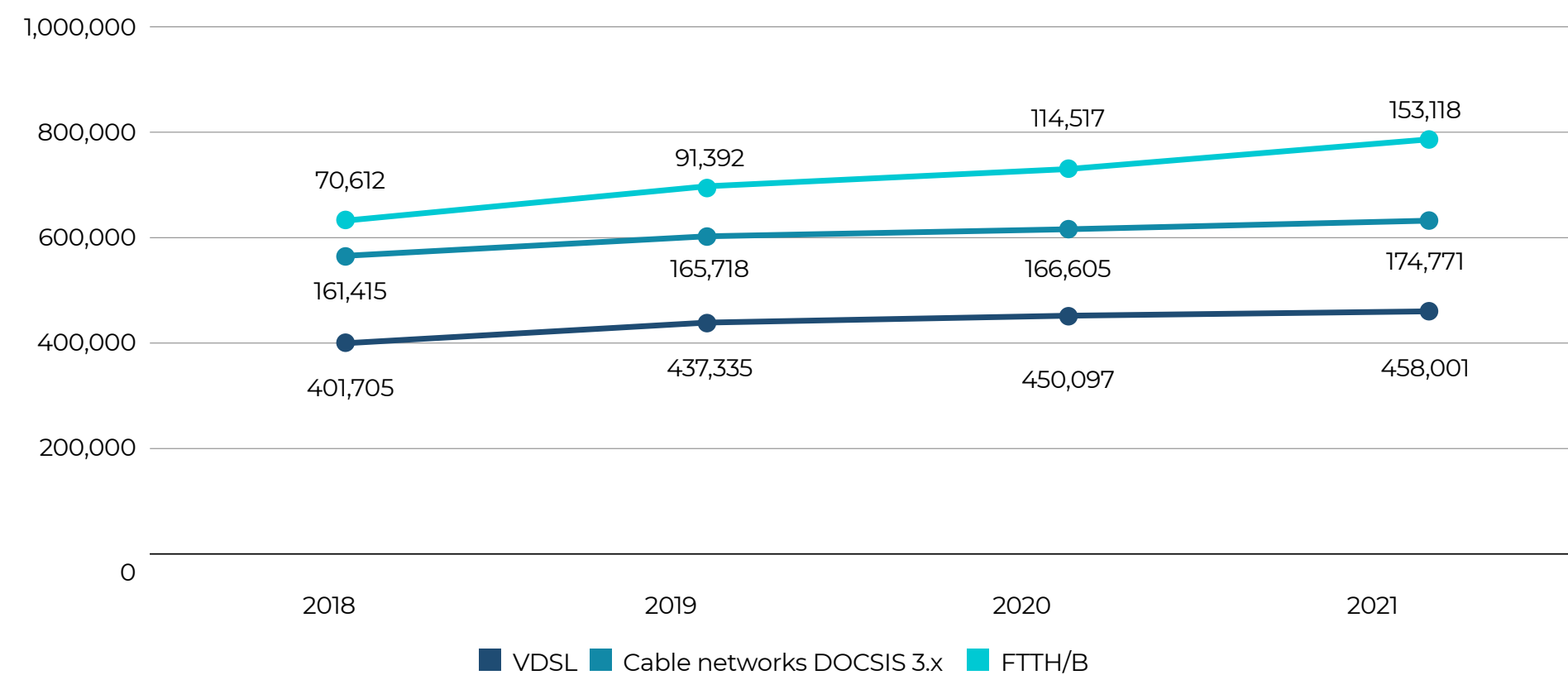


**Figure 2.15** Number of fixed connections by speed



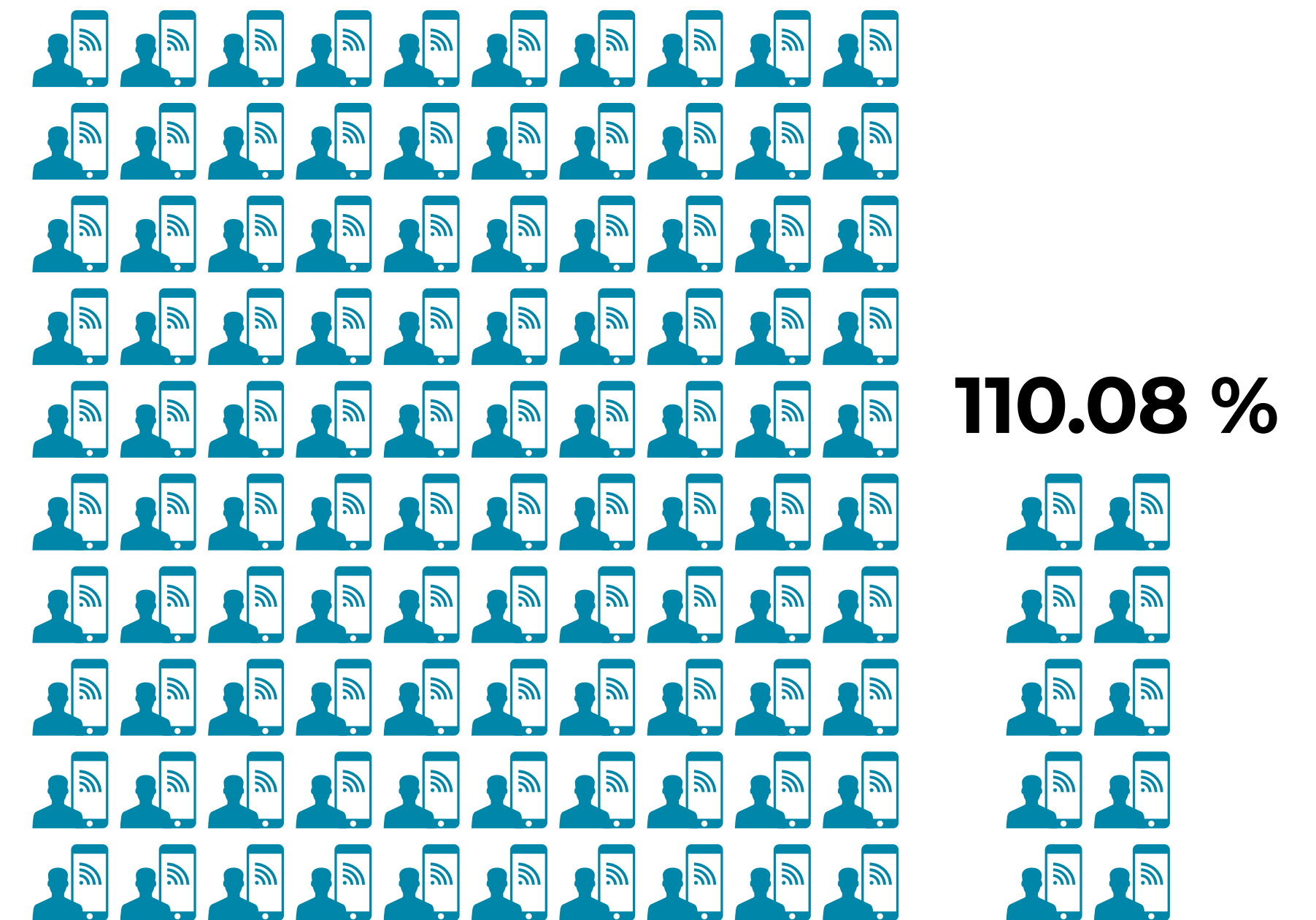
If only NGA connections are taken into account, all technologies enabling the minimum speeds of 30 Mbit/s recorded an increase. The number of optical fibre connections is expected to increase the most in the following year, as operators' plans focus on the construction of optical fibre access networks. The number of users with VDSL connections is also expected to grow, because this technology is applied to the range of speeds between 30 to 100 Mbit/s, which can in a short term cater for the needs of a large share of users without them having to carry out any adaptation works in their flats, which is a requirement for optical fibre connections and a reason for some users not to opt for this service.

**Figure 2.16** Number of NGA connections

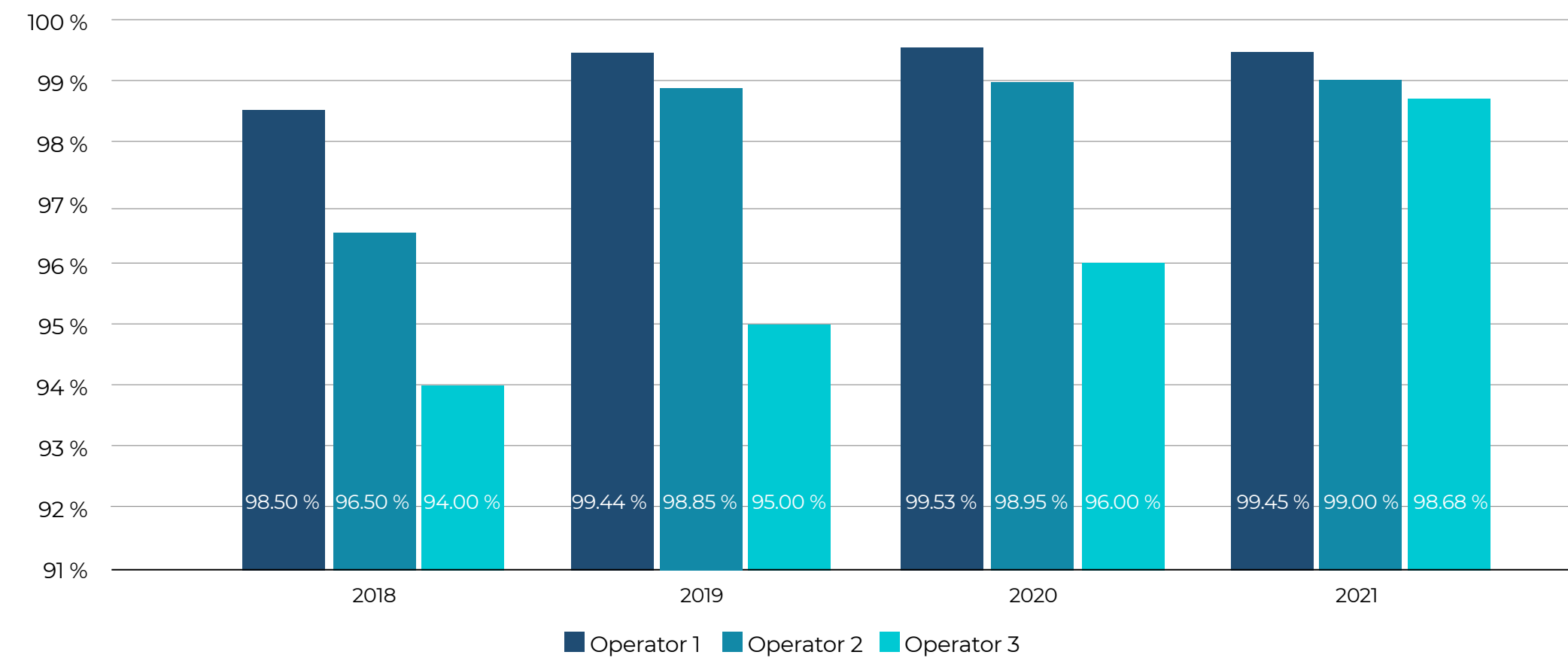
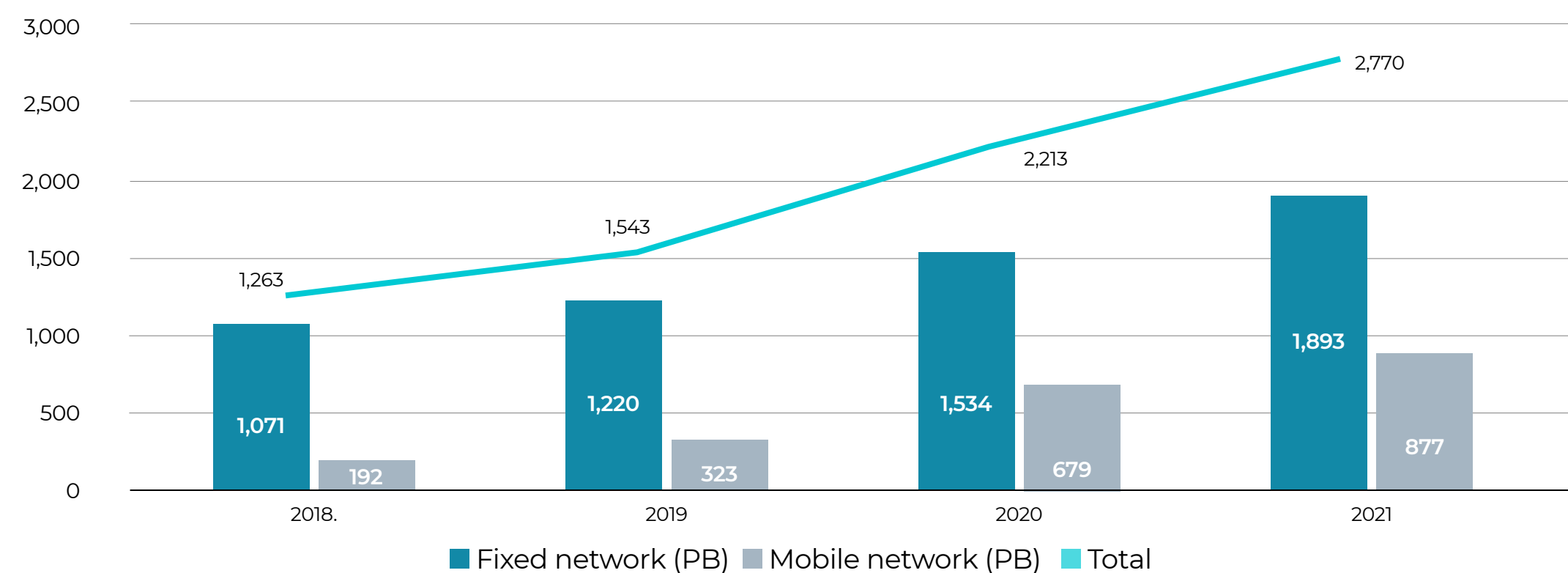


If the percentage of the population with mobile broadband internet access is observed, the density was 110 percent at the end of 2021. The number of active SIM cards in various user devices, such as smartphones, tablets and similar devices, thus exceeds the total population of the HR by 10 percent.

**Figure 2.17** Population density with broadband internet access in the mobile network



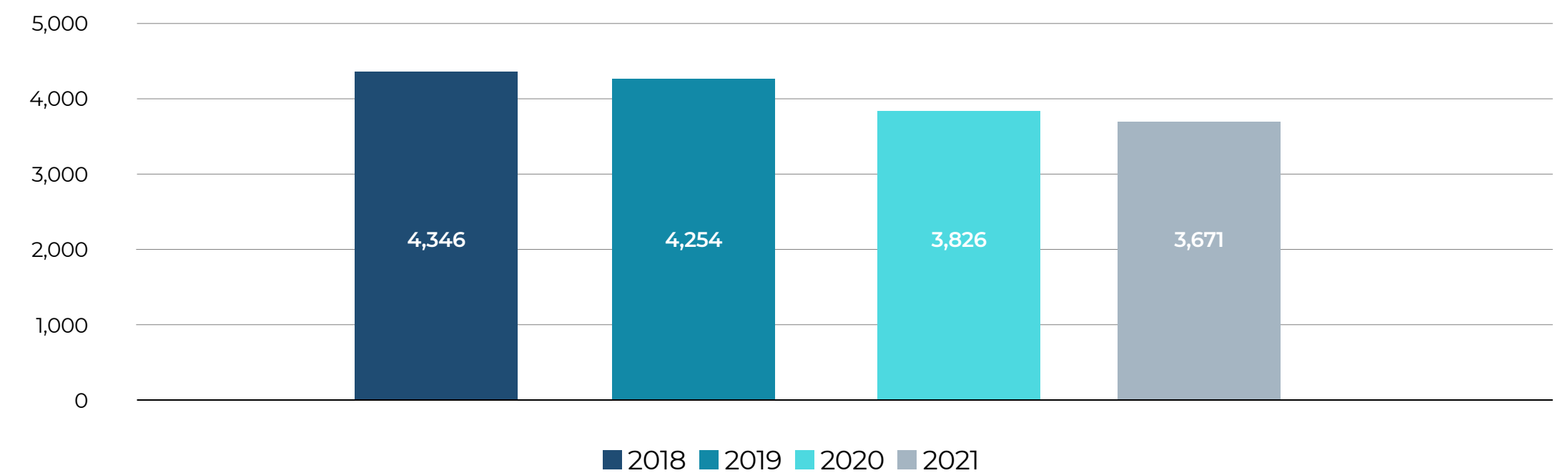
Operator investments in the network are evident when the population coverage by the 4G signal is analysed. In 2021, the population coverage by the 4G network of all three mobile network operators was at least 99 percent.

**Figure 2.18** Population coverage by the 4G network**Figure 2.19** Data traffic in PB

Data traffic started to grow faster after 2019 due to the effect of the pandemic on the society and social developments. Although it decelerated in 2021, data traffic is expected to increase at a faster rate than in the pre-pandemic period as a result of the strengthening of the digitalisation trend.

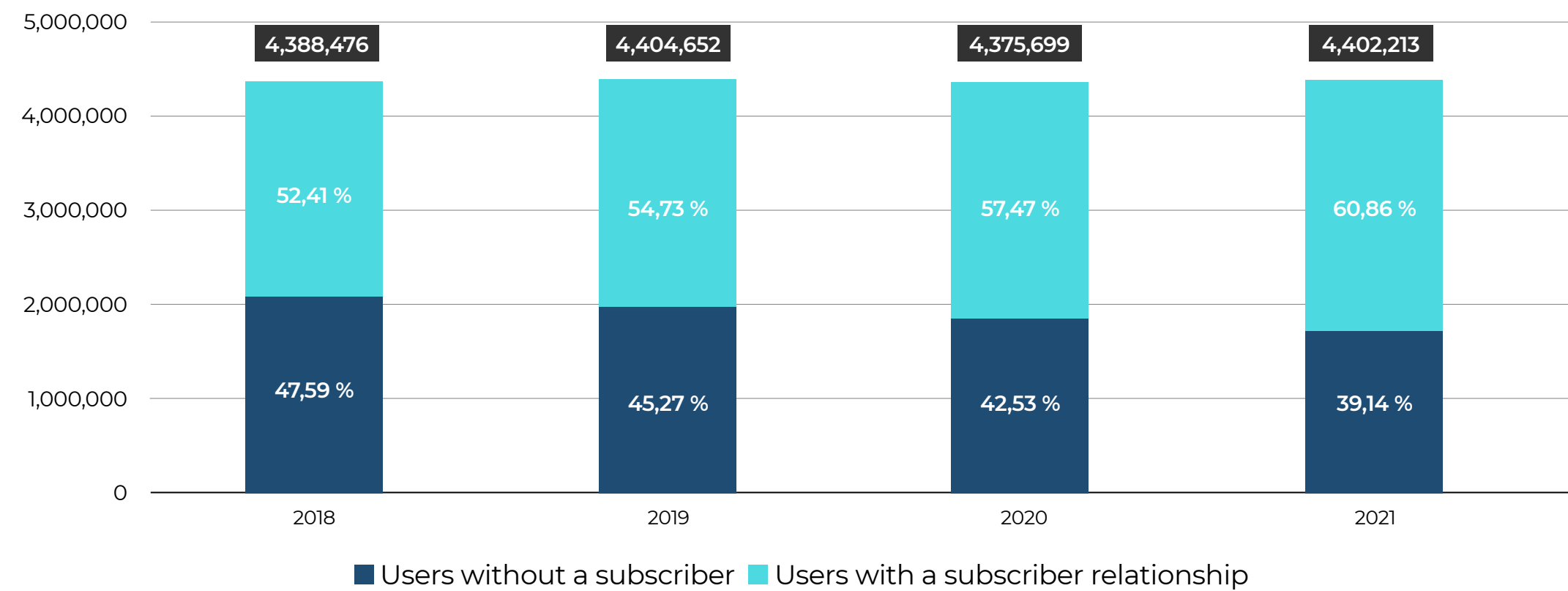
## TELEPHONE SERVICES IN THE MOBILE NETWORK

Telephone services in the mobile network remained the main method of voice communication between users despite a negative trend. The continued decrease in total revenues generated by this service was not due to a decrease in communication between users, but to the fact that they make an increasingly large number of calls using OTT services, such as Viber or WhatsApp and that part of the communication was transferred to video conference applications.

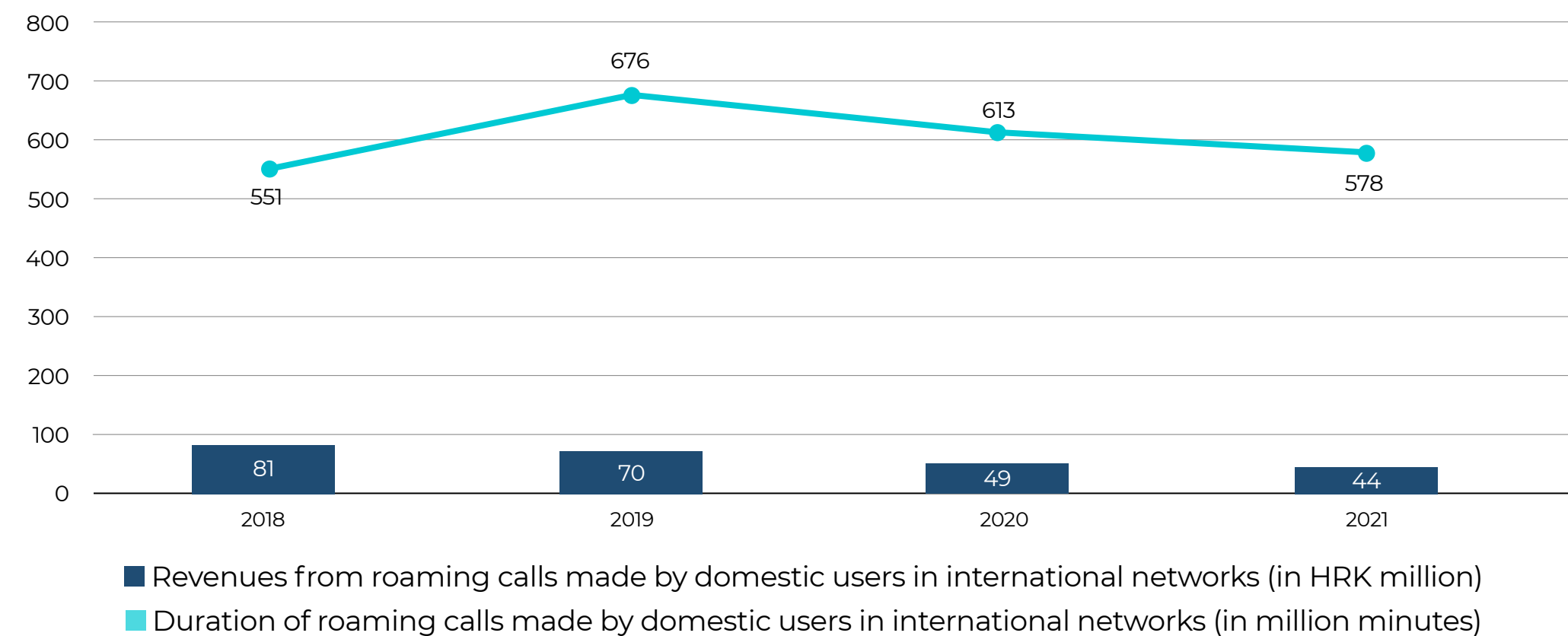
**Figure 2.20** Total revenues from telephone services in the mobile network (in HRK million)

The number of users in a subscriber relationship with operators is growing, among other things due to the business decision of operators to make packages for end-users more attractive, while conditioning them on the contractual obligation for 12 or 24 months.

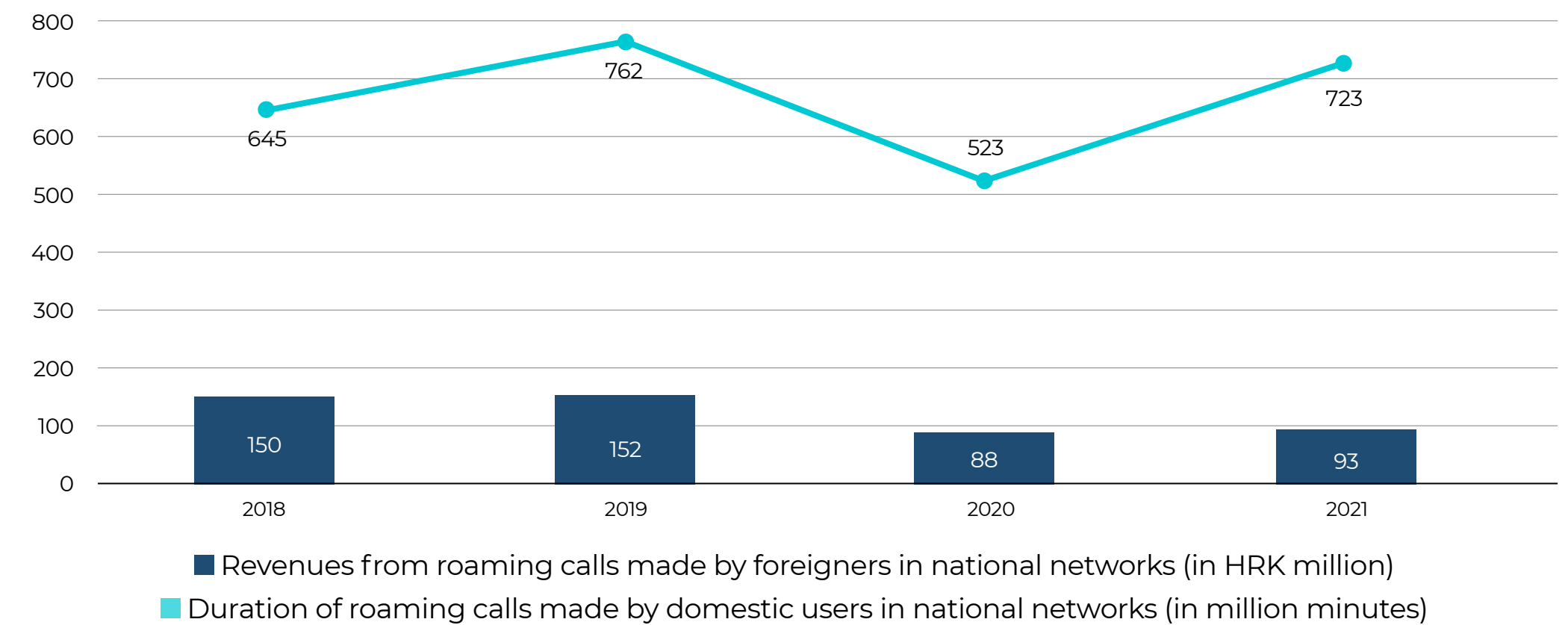


**Figure 2.21** Distribution of users by subscriber relationship

Croatian users travelled less abroad due to the pandemic in 2021 too, with the result that the downward trend in roaming traffic and related revenues continued. The traffic and revenues declined by 5 percent from 2020.

**Figure 2.22** Revenues from and duration of roaming calls made by domestic users in international networks

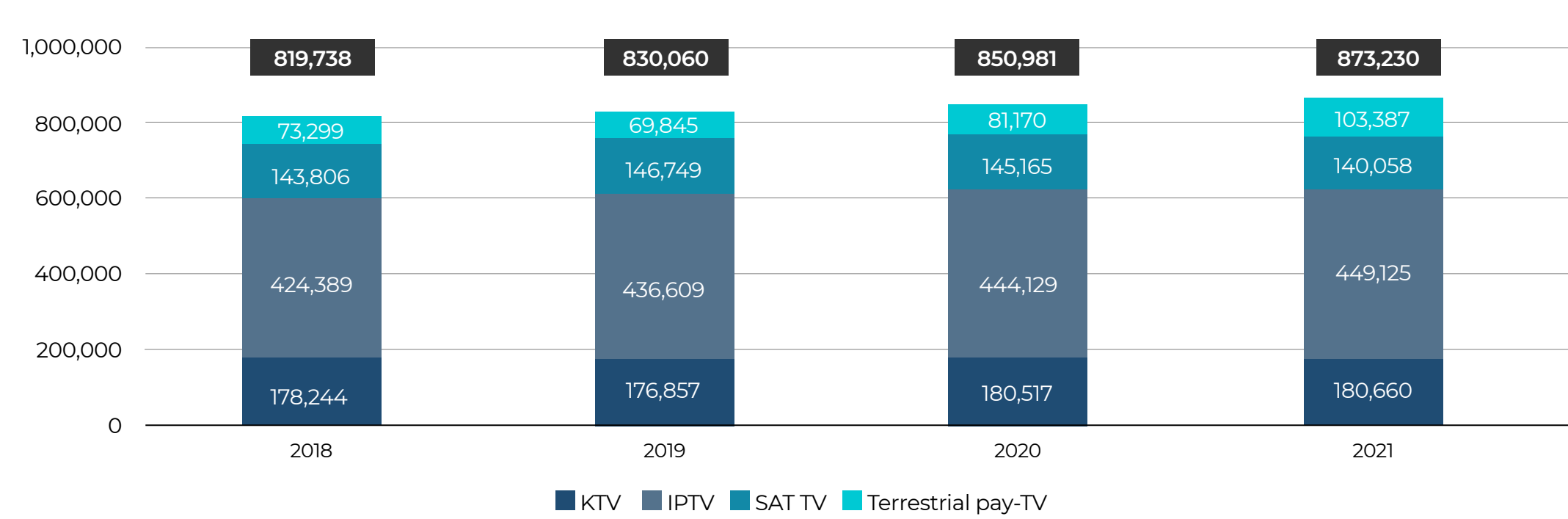
Given the traffic and related revenues from roaming calls made by foreigners in Croatian mobile networks, 2021 was the year of recovery. The call duration increased by almost 40 percent from 2020, coming close to that in the prepandemic year 2019. Nevertheless, revenues are considerably lower than in 2019 because prices decreased in the meantime.

**Figure 2.23** Revenues from and duration of roaming calls made by foreign users in national networks

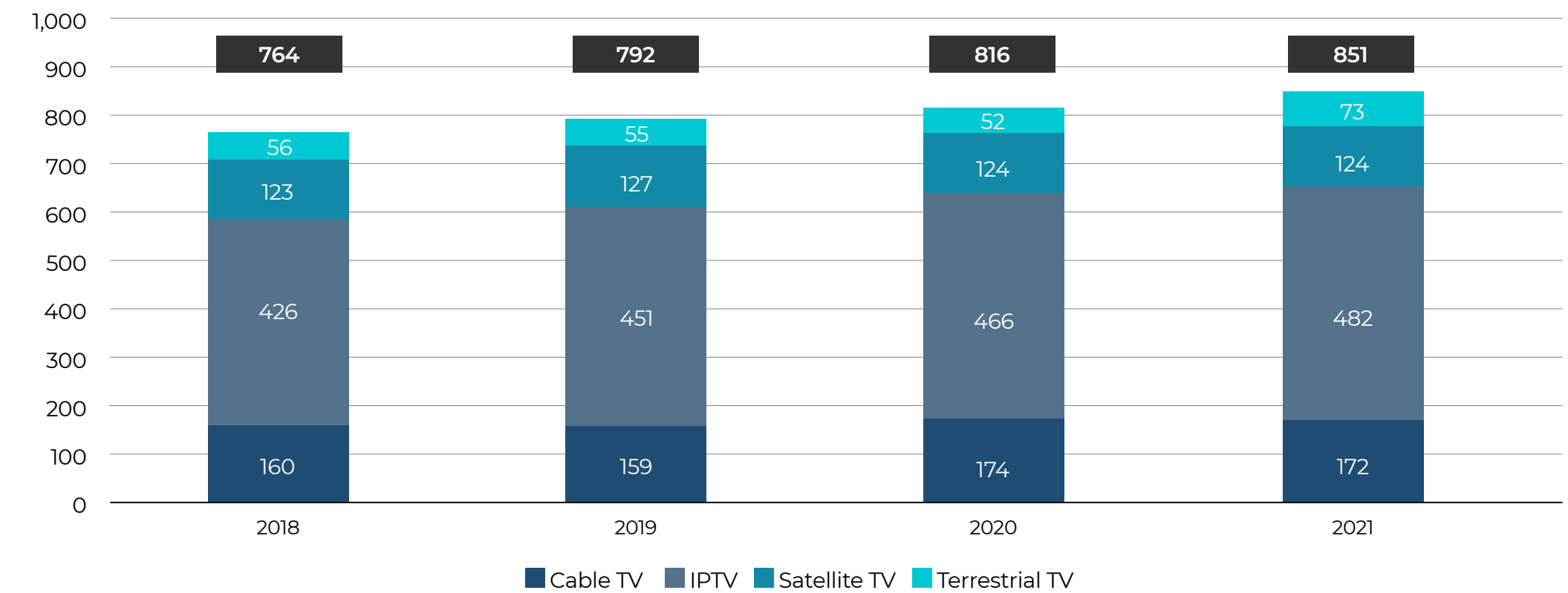
## TELEVISION AND PAID TELEVISION

Croatian users gain access to the TV distribution service through the free-to-air TV broadcast from terrestrial transmitters and various forms of pay-TV platforms. Services provided through various streaming services (e.g. Netflix, HBO MAX) have recently been increasingly used as alternative services to various forms of pay-TV. Although users cannot view the TV programme via software applications, they can view the main Croatian channels through free-to-air TV broadcast from terrestrial transmitters. The content provided by various streaming services is alternative to a great majority of pay-TV programmes, and cannot be viewed via free-to-air TV. This is the reason why the number of users using the television service through various forms of pay-TV slightly increased.

**Figure 2.24** Users of pay-TV service by technology



**Figure 2.25** Revenues from the pay-TV service by technology (in HRK million)



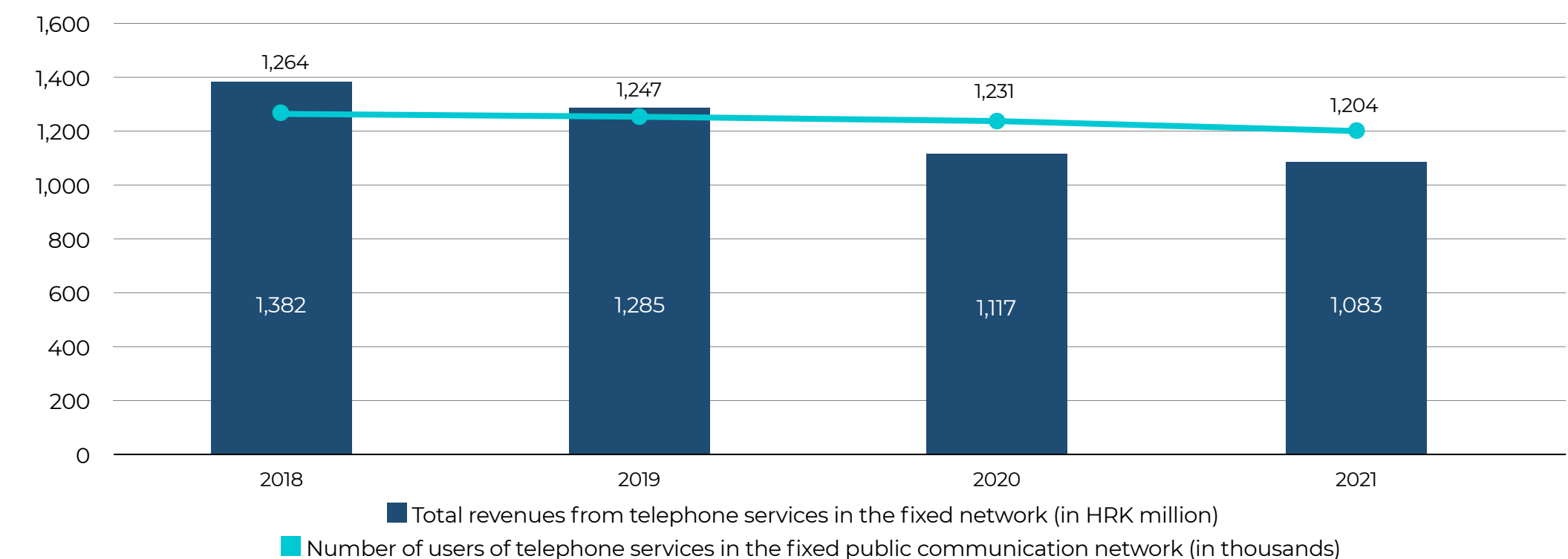
Due to the slight increase in the number of users, pay-TV revenues grew to HRK 851m. The need for personalised content is likely to grow, so that the content offered through various streaming services will be more and more competing with linear television. Future revenue trends will probably depend only on the way in which electronic communications operators will adjust to users' demands. It is very likely that the current pay-TV model will no longer be sufficiently competitive to streaming services.

The bulk of revenues, almost 60 percent, is realised through the IPTV technology. Taking into account that the IPTV service has by far the largest potential of all forms of pay-TV, given that the largest investments are made in the optical fibre infrastructure, this service should be expected to remain the leading pay-TV service.

## TELEPHONE SERVICES IN THE FIXED NETWORK

Telephone services in the fixed network cannot keep up with modern trends in the digital society and are getting out of step with all other services that are necessary to users. In 2021, as expected, the number of users and total revenues generated by this service declined. This service can be expected to gradually become less important in the forthcoming period. However, it is unlikely to record a more considerable decrease in the short-term period as many of the remaining users are elderly citizens who find it difficult to adapt to the new circumstances in the increasingly digitalised society.

**Figure 2.26** Total revenues from and the number of users of the telephone service in the fixed network (in HRK million)



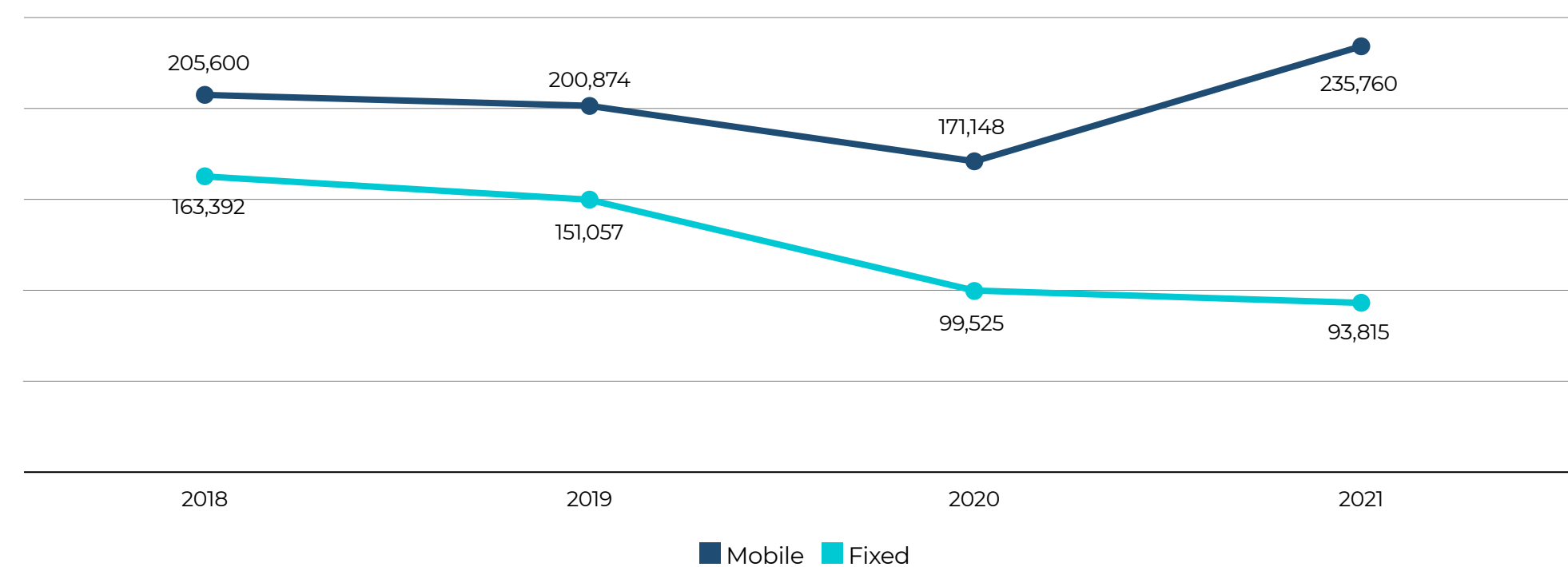


## Switching operators/Number porting

In 2005, HAKOM introduced the number porting service in such a way that users could select the optimal operator in accordance with their needs and habits and switch to another operator's network while keeping the previous number.

In order for this process to function efficiently, HAKOM provides for the timely upgrading and regular maintenance of the Central Administrative Data Base of Ported Numbers (CABP). A good quality administrative and technical process of the number porting service is an important factor for end-user satisfaction and indispensable for a sustainable market competition of operators. HAKOM's application [e-Portability](#) enables users to timely check the number porting status and receive information about the number's current network.

**Figure 2.27** Number of ported numbers in the fixed and mobile networks



The downward trend in the number of ported numbers in the mobile network reversed in 2021, while the decline in the fixed network was lower. The dynamics of change of numbers is expected to once again approach the figure of about 150,000 households in the forthcoming.

## UNIVERSAL SERVICES

Universal services in electronic communications are the electronic communications services of a specified quality that must be available to all end-users at an affordable price throughout the HR territory, regardless of their geographical location, with as little distortion of competition as possible. In 2019, HAKOM adopted a decision designating HT as the universal operator of the end-user access service, which includes the users of public payphones and notification (information) services on subscriber numbers, and Imenik d.o.o. as the operator for the provision of universal services of access to the comprehensive directory of all subscribers to publicly available telephone services and of access of end-users to the provision of notification (information) on subscriber numbers in the HR territory, for a period of three years.

Accordingly, HT, as the universal operator, is obliged to enable a minimum internet access speed of 4 Mbit/s to each end-user in the HR territory at a fixed location which, at the time of submission of the request, it cannot provide with any of the standard packages from its offer. HT also has an obligation to make this package available to the socially vulnerable group of end-users, with a discount of 50 percent, irrespectively of whether it can provide such users with any of the standard packages. HAKOM has also set additional discounts and benefits for persons with disabilities and other special categories of end-users (e.g., access for the socially vulnerable groups of end-users, with an emphasis on the fact that obtaining discounts is not conditioned on entering into an obligatory subscriber relationship that would potentially aggravate a user's financial situation, etc.). Special conditions for the socially vulnerable groups of end-users enable access to the internet access service and the public phone service to the most sensitive social group and the digital inclusion of the socially vulnerable group, i.e., access to the use of a minimum range of digital services (e.g., access to public services and educational digital content for children and young people).

In 2021, the status of the following universal services was reviewed:

- (i) the access of end-users to the at least one comprehensive directory of all subscribers to publicly available telephone services;
- (ii) the access of end-users, including the users of public payphones, to notification (information) services on subscriber numbers,
- (iii) the installation of public payphones or other publicly accessible access point for public voice service in public areas at all times, in accordance with the reasonable needs of end-users as regards the geographical coverage, service quality, number of public payphones or other publicly accessible access points and their accessibility to persons with disabilities,
- (iv) special measures for persons with disabilities as regards services referred to in points (i) to (iii)

(v) special price systems adjusted to the needs of socially deprived groups of end-users for services referred to in items (i) to (ii).

The procedure involved submitting inquiries to associations of persons with disabilities and the Office of the Ombudsman for Persons with Disabilities regarding their satisfaction with the currently available measures for persons with disabilities provided by universal service operators, the potential inclusion of other services in the scope of universal services, satisfaction with the possibilities of physical access to operators' business premises and the frequency of use of the public payphones and subscriber directory. An analysis and review of needs showed that of all services defined by the scope of universal service in the previous period, only the service of public payphones should be retained. Retaining public payphones is at the moment considered as a justified and proportionate regulatory measure, aimed at the protection of end-users' interests, especially considering that the indicators of use of this service are still significant. Public payphones continue to be used frequently enough to be considered important, so that their accessibility and affordability still have to be ensured. The analysis established some elements for the improvement of the service provision. These elements, to be discussed and defined in the forthcoming period, will enable a considerable reduction of the number of payphones, with the result that the obligation will be related only to payphones located at public interest sites, providing an opportunity to remove all payphones located at such sites that have not been in use for one whole year. These changes are not meant to determine a fixed number of operating payphones, but to enable HT to reduce the number of payphones that have not been in use for a year. However, having in mind the social importance of payphones, and the fact that there are payphones that have not generated any revenues, but have been in use, HAKOM is of the opinion that the public payphone service must continue to be defined as part of universal services.

The services of public directory and providing information on subscriber numbers should be retained only until the obligation to provide these services expires, that is, until December 2022, because interest for these services has been waning and they are commercially available.

HAKOM regularly monitors the realisation of obligations of operators in the provision of universal services and the quality of universal services provided, and publishes a report on the findings.

## INTERNET NEUTRALITY, OPENNESS AND QUALITY

HAKOM did not receive any complaints from end-users regarding any difficulties in the use of internet access service related to blocking or slowing down the use of certain applications and services or price discrimination. There were no major changes as regards the introduction of new products or services. Generally speaking, public knowledge of open internet access and the readiness of the internet service provider (ISP) for cooperation can be described as very positive. The public [Report](#) for 2021 once again confirmed the continued positive perception of the open internet access in the HR. HAKOM will continue to monitor the market in order to ensure compliance with Regulation (EU) 2015/2120 of the European Parliament and of the Council laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and it will take measures as appropriate. Only two inspection decisions were adopted during the reporting period, with all the addressed issues resolved, as a rule, through the dialogue with ISPs.

An inspection supervision procedure was launched because of Telemach's 2Stay subscription tariff, which provides end-users with monthly internet traffic at the maximum possible internet access speed only at the address to be determined when concluding the subscription contract and with a speed of up to 2 Mbit/s for data download and transmission at all other locations. Accordingly, end-users will be able to use the maximum speed of data traffic without limitations, with the exception of those typical of services in the mobile electronic communications network (service quality and speed depend on the overload of the network, the strength of the signal and the characteristics of the device), only at one location. In addition, the Terms and Conditions of Use of the 2Stay and 2Go Subscription Tariffs of the same operator, in the part related to the use of equipment, prohibit the use of the tariff (SIM cards) in devices supporting voice service (mobile phones). The inspector established that those cases represented the violations of the provisions of the Regulation, specifically of Article 3(3) in the part concerning traffic management. To put it more precisely, the Regulation prescribes that operators providing internet access services must treat all traffic equally, without any discrimination, restriction or interference, and irrespective of the sender and receiver, the content accessed or distributed, the applications or services used or provided, or the terminal equipment used. In addition, operators may implement reasonable traffic management measures which, in order to be deemed to be reasonable, must be transparent, non-discriminatory and proportionate, and may not be based on commercial considerations, but on objectively different technical quality of service requirements of specific categories of traffic. Such measures do not monitor the specific content and are not to be maintained for longer than necessary. The same paragraph states that operators may implement these measures, including slowing down internet access, only as necessary and for as long as necessary, among other things to preserve the integrity and security of the network, services provided via that network



and the terminal equipment of end-users. It is concluded that permanent slowing down of speed for end-users in certain areas (in this case all areas outside the users' area of residence) is not allowed, and neither is temporary slowing down, if no justifiable circumstances have occurred. Furthermore, the provisions of this Regulation aim to encourage the construction and capacity enhancement of the operator network in the cases of network overload in order to meet the quality of service provided. In other words, the operator may limit the users' speed only in specific cases and must timely and responsibly design network capacities in accordance with the requirements contained in its offers to end-users. Pursuant to the inspector's decision, Telemach rectified these actions, so as to provide end-users at all times with the maximum speed, that is, the contracted speed based on the best effort principle. As regards the limitations of use of the 2Stay and 2Go tariffs in connection with the terminal equipment, in this case mobile phones, Article 3(1) states that end-users have the right to use terminal equipment of their choice, further specifying that they are free to use terminal equipment of their choice and that ISPs should not impose restrictions on the use of the terminal equipment connecting to the network in addition to those imposed by manufacturers or distributors of the terminal equipment in accordance with Union law. It was established that Telemach was partially in compliance with the obligation in question and that the possibility of use should be extended to smartphones as they fully perform the task of routers too.

HAKOM also performed inspection supervision over ISPs due to the non-transparent offer of services. Specifically, tariffs were designated as unlimited when advertising services on the internet or other sales channels as well as when concluding subscriber contracts, i.e., it was suggested that they may be used without any limitations concerning the amount of traffic or the reduction of internet speed, although they actually contained certain limitations. Irregularities established for some ISPs implied the violation of transparency of tariff conditions communicated to service users, with the offer of some tariffs not being clear, comprehensive and unambiguous. In this case, end-users were offered mobile tariffs as unlimited, while they were actually limited by traffic. For example, once 200, 300 or 400 GBs of traffic has been spent, the user's internet access speed is reduced. It was concluded that such actions were not in compliance with the legal framework and the EU Regulation. ISPs were therefore ordered not to use the term unlimited or a similar term in their offers and advertisements, as such terms may lead users to conclude that spending and speed are unlimited, while in reality they were not or contained limitations of other kind related to spending or the speed of service use.

The overall condition of network neutrality in Croatia is generally positive, indicating that the smooth functioning of the internet ecosystem as the innovation generator is ensured. Accordingly, the Regulation and the Guidelines justified their purpose and contributed to a gradual quality improvement of internet access services provided in Croatia by increasing the transpar-

ency of information on provided services and non-discriminatory open access to internet content, services and applications. HAKOM's supervisory and measurement tools are available and currently appropriate for the analysis and monitoring of derogations from the provisions of the Regulation. In the cases of violations of network neutrality rules, after consultations with HAKOM, operators addressed the issues and eliminated the irregularities.

This is confirmed by an annual **survey**, carried out on a representative sample at the end of the year. The survey showed that the most frequently used communication services were mobile voice service (98 percent), internet access service (82 percent) and fixed voice service (65 percent). The majority of users (76 percent) uses internet access service as part of the service bundle, while 89 percent of users believes that the service bundle contains all the services they need. Most of the users, as many as 92 percent of them, use the home WiFi network to connect to the internet in the household, while 54 percent of them connect via the mobile network. The most used internet connection devices are smartphones (97 percent) and laptops (87 percent), while desktop computers are used by 45 percent of the respondents.

An increase in the price of ADSL/VDSL services would motivate about half of the current users to switch to optical connections. Almost one third of the users surveyed do not know what their contracted speed is. Most users with speeds below 100 Mbit/s do not consider internet speed as usage restriction, in the context that they do not use some demanding services because of low internet speed, 37 percent of users would like to have higher speeds, but are not willing to pay, while 22 percent of users think they do not need higher speeds. Approximately one half of users obtained information on maximum, normal and minimum internet speed from their operators. Users do not have a habit of regularly checking speed – most of them do that when they notice that internet speed has changed.

Most users are not familiar with HAKOM's applications: a survey showed that 20 percent of the respondents used HAKOMetar and 8 percent used HAKOMetar plus.

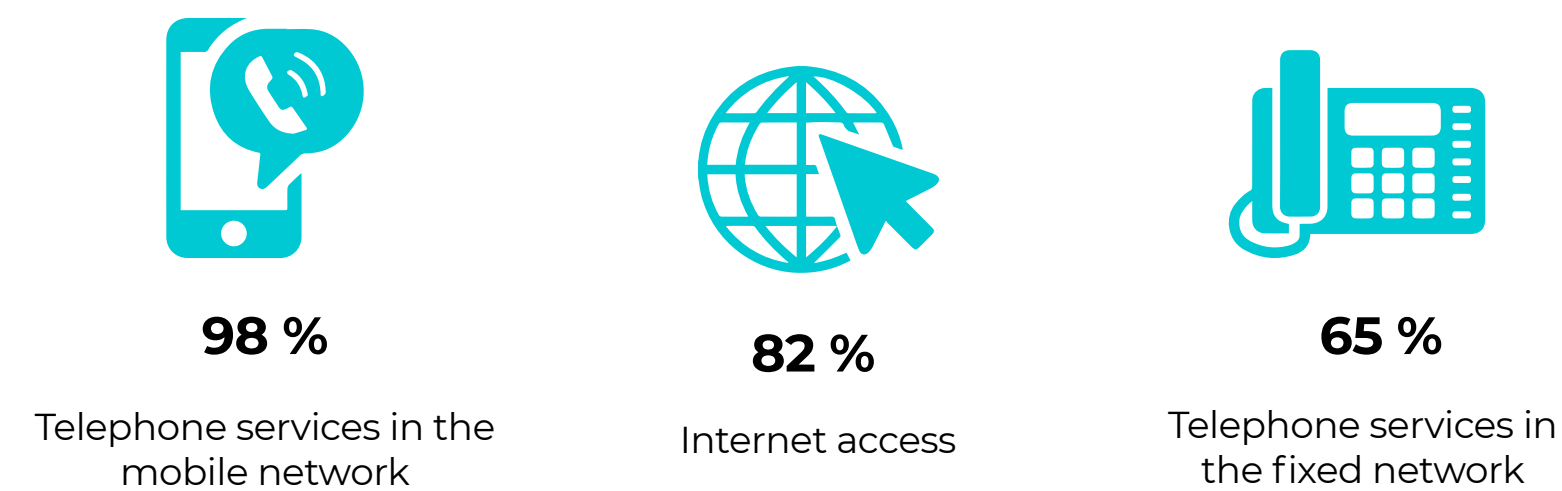
The frequency of technical difficulties remained almost unchanged from 2020. The most frequent difficulties encountered include service interruption, poor internet speed and problems with the WiFi network. Nevertheless, the level of satisfaction with services was generally high. Most internet users have contacted the customer service and 68 percent several times. In general, users were pleased, more with the reply quality than with the reply speed. A lower price is the most frequent reason why users switch operators, but the current price, that is, a minimum change in the price of the current operator is more likely to influence their decision to switch operators than the offer of competitors. Almost all surveyed internet users take precautions to maintain internet safety – they most often avoid downloading applications from unknown sources.

es, protect personal data and avoid contact with unknown people. However, 15 percent of them stated that they had experienced a cyberattack or cyberbullying.

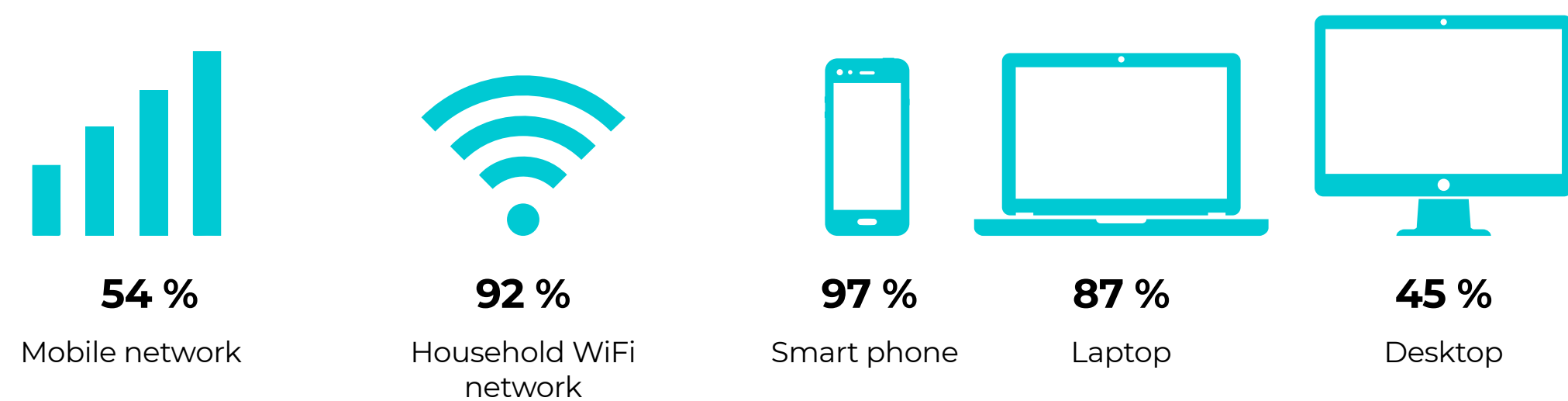
The test results are [publicly available](#).

Figure 2.28 Survey results

### Services



### Methods and devices used to connect to the internet in households

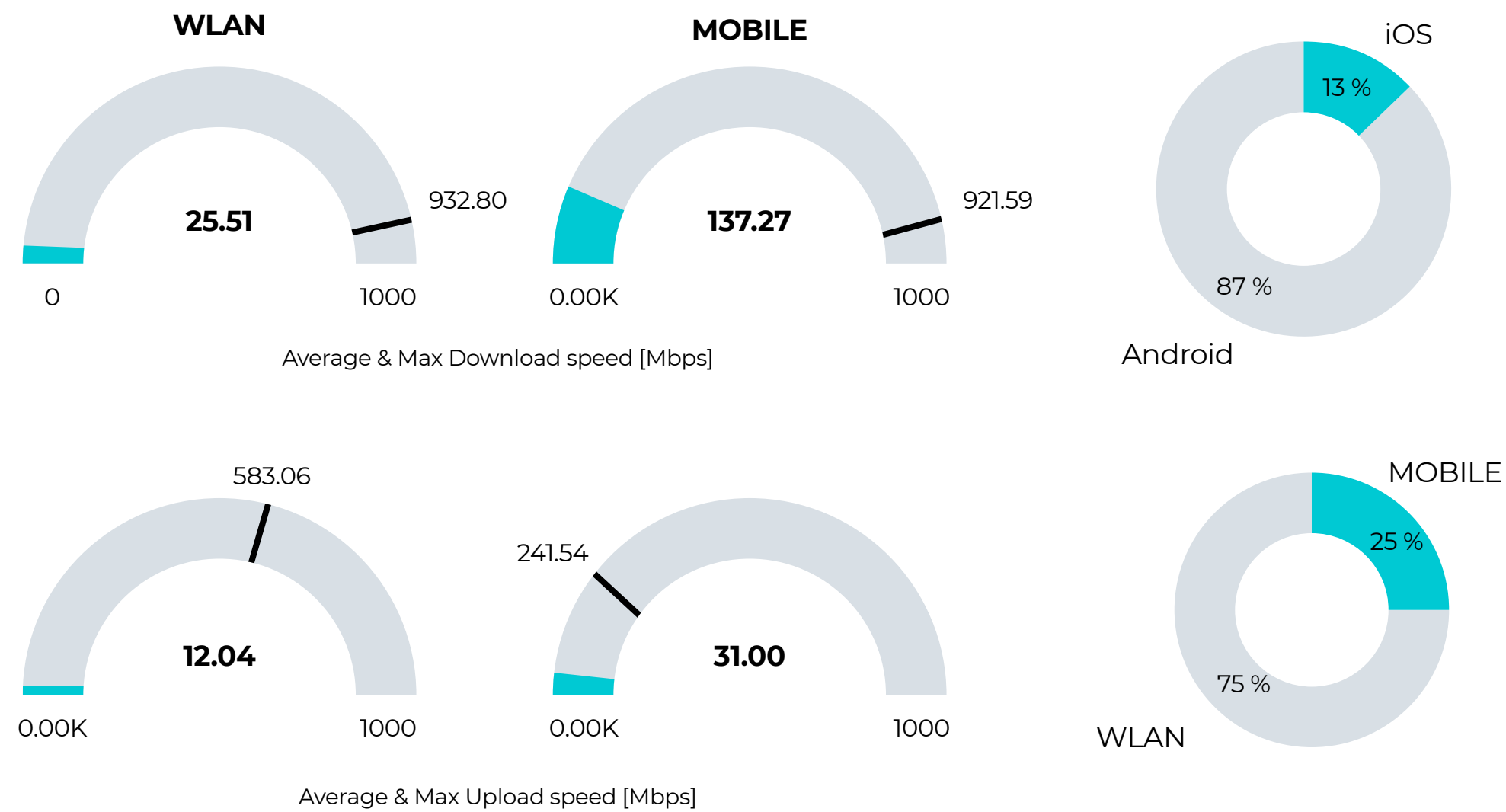


Electronic communications service providers are obliged to ensure a sufficient network capacity for the provision of high-quality internet access services whose general quality should not be undermined by the provision of other services that are not internet access services (e.g. IPTV) and also require a specific level of quality. In order to improve the monitoring of contractual conditions for the quality (speed) of the broadband internet access service, prescribed at the EU level by the Regulation, HAKOM has since 2012 been enabling end-users and operators the free use of the certified tool for measuring access speed in the fixed network - **HAKOMetar**. The test results are acceptable as evidence in end-user complaint resolution processes as, pursuant to the [Ordinance on the manner and conditions for the provision of electronic communications networks and services](#), operators are required to indicate in contracts and advertisements the minimum, regular and maximum speeds, and the minimum speed must not be less than 70 percent of the maximum speed. In 2021, more than 4,100 individual measurements were performed, that is, more than 2,693 measurement cycles were started, with only 58 completed measurement cycles, conducted by users themselves, eligible for the submission of complaints due to too low speed. These figures show that contracted speeds are provided in a large percentage and that only a small share of users was not provided with the guaranteed internet access quality.

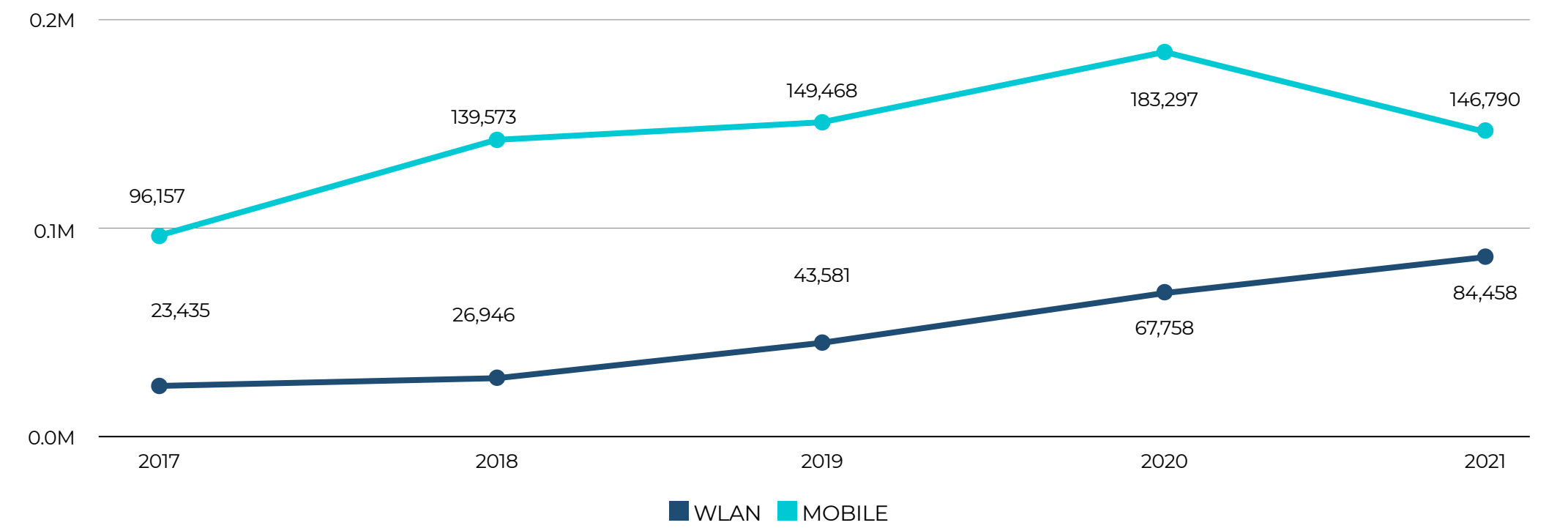
In 2017, in order to measure the quality of internet in wireless networks (mobile communication networks and WLAN networks), HAKOM launched the free [HAKOMetar Plus](#) application. The application provides information on the current internet connection quality and helps raise awareness and increase knowledge of real data portability speeds and the wireless network service quality. All measurements are shown on a geographical map of the HR, thus forming a map of coverage quality with user measurements.



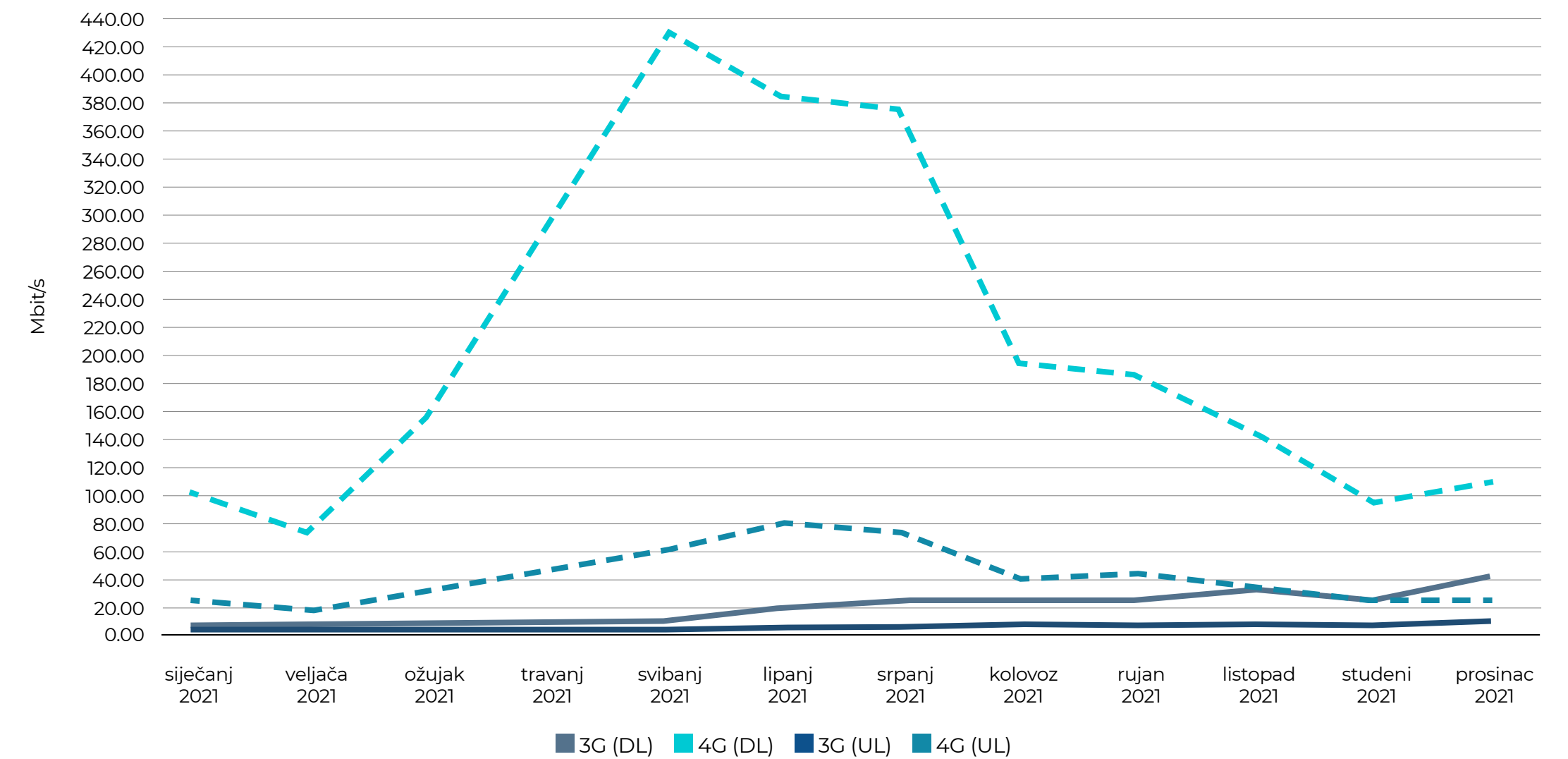
**Figure 2.29** HAKOMetar Plus measurement statistics and upload/download speeds



**Figure 2.30** Number of measurements in WLAN and mobile networks via HAKOMetar Plus



**Figure 2.31** Average download speeds in mobile networks measured via HAKOMetar Plus



The measurement results (more than 965,000 individual measurements since putting the application into operation, of which over 232,000 were carried out in 2021) are informative and do not constitute evidence in end-user complaint resolution processes.

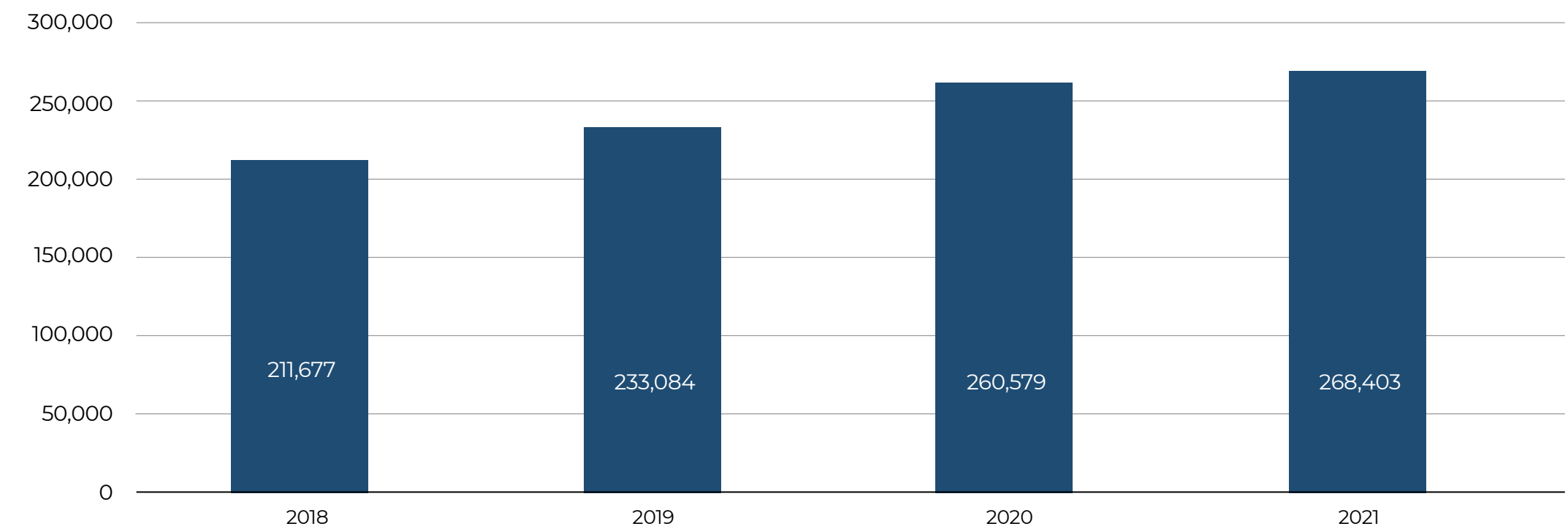
These results, summarised in aggregate values for different categories and geographically represented on the maps, can be used to compare internet access market offerings as well as to analyse different internet access offers or offer ranges provided by operators and their market penetration. HAKOM uses these results to verify whether operators' published information on coverage maps and available speeds in mobile networks is consistent with the results of user measurements.

## NETWORK AND SERVICE SECURITY

In 2021 HAKOM adopted the Ordinance on manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services, which sets forth minimum security measures, the manner of reporting to HAKOM on incidents and reporting criteria. The reported security incidents are analysed and those that result in the breaches of security or the loss of integrity of communications networks or services are reported to the European Network and Information Security Agency (ENISA) and competent national regulatory authorities of other EU Member States. In 2021, there were seven major security incidents whose root causes were system errors, and three computer incidents, two of which were DDoS attacks and one originated from the internal environment, causing a violation of personal data. Cyber security has become increasingly more important both at the national level and at the EU level. HAKOM participated in the work of the National Cybersecurity Council (Office of the National Security Council, Security and Intelligence Agency, Operational and Technical Centre, Information Systems Security Bureau, National CERT, Central State Office for the Development of Digital Society, Ministry of the Interior) playing the role of a coordinator for the regulatory implementation of a set of tools with a common package of measures aimed at the alleviation of main risks to the cybersecurity of 5G networks (Toolbox). The set of tools contains various measures that ensure the appropriate level of cybersecurity of 5G networks throughout the EU and enable a coordinated approach of Member States. The technical measures comprised by the Toolbox were in 2021 implemented in the Ordinance on manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services by means of the defined criteria to be met by operators and manufacturers. In addition to national cooperation, HAKOM was in 2021 very active in the field of cybersecurity, cooperating with the competent EU authorities, including the NIS Group.

## M2M and IoT

Figure 2.32 Number of M2M connections



Machine-to-machine communication (M2M), as part of the Internet of Things (IoT), is an area of electronic communications with a considerable growth potential. The introduction of 5G is expected to increase the number of M2M services, with the new network serving as a basis for Industry 4.0. HAKOM amended the Numbering Plan in order to determine the appropriate numbering for services based on M2M/IoT applications, such as networked cars. Current growth estimates for IoT services suggest a demand for an increased amount of uniquely identifiable devices, that is, requests for numbering, because it is assigned to each individual device. Some of IoT services provided by operators include: NB IOT (Narrow Band Internet of Things) – a network technology that interlinks devices connecting to the internet and communicating with each other (IoT devices) and M2M services – provided by operators as solutions for fleet management, fiscalisation and smart city (computer communication network in traffic, video surveillance, public city bike system, electric car chargers, municipal waste collection records, smart city lighting, smart parking or LAN/WiFi networks with advanced functionalities).



## MANAGEMENT OF ADDRESS AND NUMBER SPACE

HAKOM has a statutory duty to efficiently manage the addressing and numbering space in the RH. The transparent, objective, uniform and unbiased assignment of addresses and numbers to operators allows for a fair competition at all times. As the number of operators increases, so does demand for addresses and numbers. Furthermore, the use of new technologies generates new services, which makes for more complex technical and regulatory conditions.

The RH resources are currently completely in tune with market needs. HAKOM will strive to timely revise plans and ensure sufficient resources at all times.

**Table 2.1** Address and/or number allocation – number of decisions

	2020	2021
PRIMARY ASSIGNMENT	81	130
REVOCAION	55	29
TRANSFER OF RIGHT	30	3

**Table 2.2** Types of number allocation requests

Services in the fixed EC network	74
Short six-digit SMS/MMS codes	26
Freephone services	15
Common access code services	4

The most required types of numbering in 2021 were for fixed electronic communications network services, SMS/MMS codes for mobile network services, freephone services, NetIDs and common access code services.

The free numbering space, that is, the quantity of numbers available for primary assignment to operators, currently completely meets market needs.

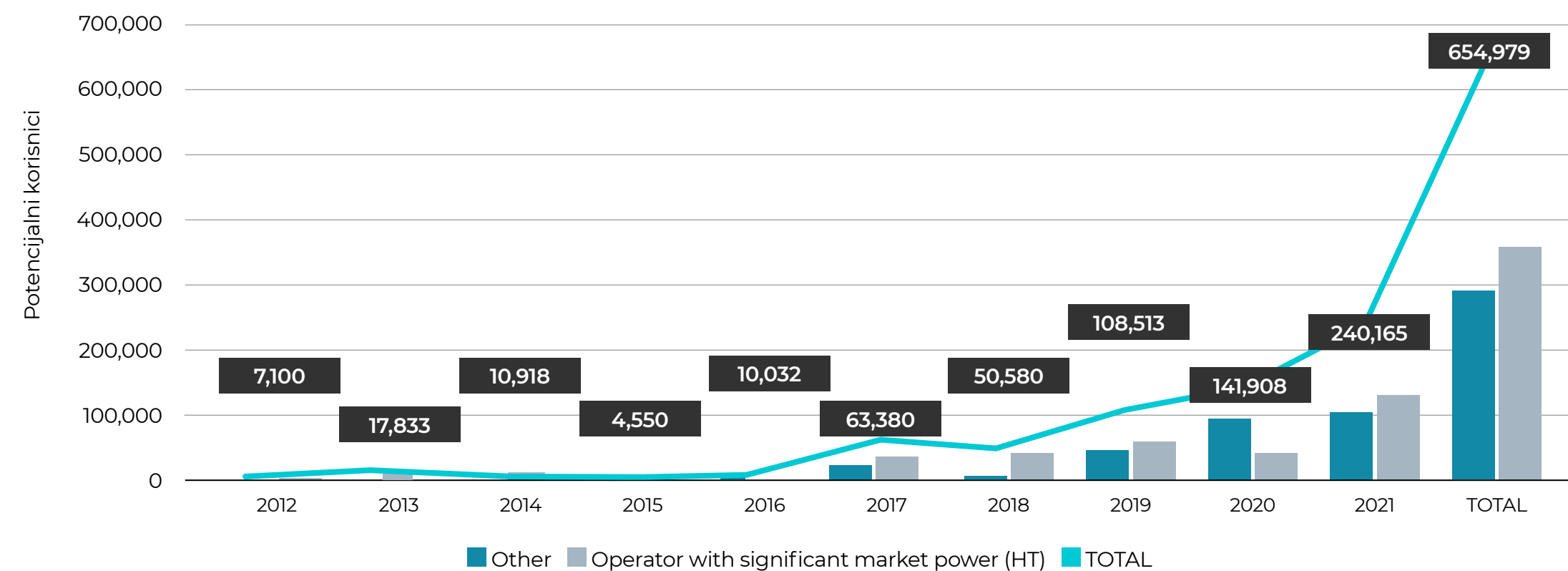
**Table 2.3** Numbers available for primary assignment

Numbering type	Free numbers	Percentage %
060 (general content)	989,893	98.99
064 (services with child-inappropriate content)	997,612	99.76
072 (common access code services)	988,054	98.81
074 (personal number services)	995,484	99.55
075 (personal number services)	987,312	98.73
800 (seven-digit numbers for freephone service)	8,123	81.23
800 (nine-digit numbers for freephone service)	809,403	80.94
Services in the fixed EC network (all counties)	21,912,500	81.44
Services in the mobile EC network	45,900,000	45.90
M2M services	49,500,000	99.50

## CONSTRUCTION OF THE ELECTRONIC COMMUNICATIONS INFRASTRUCTURE

Market indicators, regularly published by HAKOM, suggest a steady growth of demand for the broadband internet access service and the IPTV service. In order for electronic communications network operators and service providers to meet the growing demand and maintain service quality levels, network capacities and end-user access speeds should be increased, which requires major investments.

An analysis of the current availability of broadband access speeds shows that in large cities, where operators' commercial interest is higher, the availability of high speed networks is much larger than in rural areas. Data on broadband access availability are collected on a quarterly basis and aggregate results are published and presented on the HAKOM's GIS portal <http://mapiranje.hakom.hr/hr-HR/SirokopojasniPristup>. The portal also publishes the notices of intent to build optical fibre distribution networks <http://mapiranje.hakom.hr/hr-HR/SvjetlovodnaMreza>, which operators are obliged to report in accordance with the Ordinance on optical fibre distribution networks.

**Figure 2.33** Number of users of optical fibre distribution networks – notices of intent to build

The number of users of optical fibre networks, including residential, business and other entities was 654,797 at the end of 2021, with the number of users increasing by 240,165 (58 percent) in 2021 alone. The development of the construction of optical fibre distribution networks can also be observed by analysing, in addition to the total coverage of constructed optical fibre distribution networks, the shares of investments by other operators relative to that of HT as an operator with significant market power. Until the end of 2021, other operators made several times larger investments in the construction of the optical fibre infrastructure than in the previous year, while the operator with significant market power invested less than other operators, despite recording an investment growth from the previous year. Investments in rural and suburban areas are expected to increase in the period to come, with the bulk of these investments to be co-financed from EU funds.

## ACCESS TO AND USE OF THE ELECTRONIC COMMUNICATIONS INFRASTRUCTURE

The access to and the use of the electronic communications infrastructure (ECI) are important for market development. The processes related to the common use of the ECI include preparing the proposals of legislative acts, subordinate legislation, regulations, instructions and forms required for the access to and the shared use of the ECI as well as the shared use of optical fibre

installations in buildings, analysing and monitoring the realisation of requests for the shared use and collocation of the ECI, resolving disputes between infrastructure operators and beneficiary operators, determining technical conditions for unbundled access to the local loop and collocation and regulating the current condition regarding the shared use of the ECI.

### Legalisation – the regulation of the current condition regarding the shared use of the ECI

The requests of infrastructure operators provide grounds for the legalisation procedure, that is, the procedure regulating the current condition of cables installed without the prior conclusion of contracts on the access to and the shared use of cable ducts. The legalisation procedure has so far been initiated for the areas of Bjelovar, Zaprešić, Zagreb (Sesvete and Dubrava, Trešnjevka North), Rijeka (Zamet and Sušak), Split (Pujanke and Meje), Zagreb I (part of Dalmatinska Street, part of Baštijanova Street, part of Klaićeva Street, part of Dubrava Avenue, part of Ribnjak, part of Medveščak, part of Kuniščak, part of Gundulićeva Street, part of Preradovićeva Street and part of Mihanovićeva Street), Zagreb II (Savska Street, part of Vukovarska Street and part of Držićeva Street) and the cities of Vodnjan, Stupnik, Payin, Jastrebarsko, Rovinj, Pitomača, Novska, Postira, Pag, Novi Marof, Buje, Bol, Sinj, Virovitica and Orahovica.

Legalisation procedures in the area of the cities of Bjelovar, Zaprešić Phase II, Split (Pujanke and Meje), Rijeka (Zamet and Sušak), Zagreb (Sesvete and Dubrava, Trešnjevka North) and of the cities of Labin, Vodnjan, Stupnik, Pazin, Jastrebarsko, Rovinj, Pitomača, Novska, Postira, Pag, Novi Marof, Buje, Bol, Sinj, Virovitica and Orahovica have been completed.

### Electronic communications infrastructure and the right of way

HAKOM issues the right of way certificates based on requests submitted by infrastructure operators, which includes the right of access to, installation, use, repair and maintenance of the electronic communications network and the ECI. In addition, at the request of the common good owner or manager, the infrastructure operator of the ECI, constructed on a public property or real estate owned by the HR and units of local and regional self-government and on real estate owned by other legal or natural persons, the quantity and type of infrastructure and the amount of fee for the right of way are also established. The right of way certificate is issued pursuant to the Electronic Communications Act (ECA) and the [Ordinance on the right of way certificate and fee](#), based on requests submitted by infrastructure operators, (infrastructure operators previously established at the request of common good managers or real estate owners).



In the course of 2021, natural persons filed 390 requests for issuing the right of way certificates and a total of 231 certificates were issued. The total length of the route for which the right of way certificates were issued is 26,923.63 metres. As regards the regulation of property-law relations between infrastructure operators and common good managers or real estate owners, a total of 51 new requests were received in 2021 for the regulation of these relations between local self-government units (LSUs) and the infrastructure operator in the following cities: Ilok, Rab, Rijeka, Pakrac, Makarska, Korčula, Županja, Ivanec, Našice and Varaždin, communities: Stari Jankovci, Dicmo, Preseka, Sveti Lovreč, Sokolovac, Jakšić, Velika, Kršan, Oriovac, Šandrovac, Baška, Marčana, Severin, Bukovlje, Brod Moravice, Končanica, Nova Rača, Brestovac, Ivanska, Belica, Kula Norinska, Zmijavci, Seget, Ribnik, Tovarnik, Karlobag, Hrašćina, Klakar, Konjščina, Zrinski Topolovac, Krapinske Toplice, Kraljevec na Sutli, Trnovec Bartolovečki, Koška, Sveti Martin na Muri, Donji Andrijevcu and Karojba, the County Road Administration (CRA) of Bjelovar and Bilogora County, two reviews of the Right of way Survey for the County Road Administration of Zadar County, Primorje and Gorski Kotar County and the County Port Administration of Mali Lošinj. A total of 116 requests filed by LSUs and CRAs were addressed, i.e., an infrastructure operator was identified in the LSU administrative area and CRAs area. These included 24 requests received in 2021 and 96 requests from the previous period. It should be noted that HAKOM's resolution of requests is conditioned on the accuracy of the documentation, so that it is possible to have several decisions (partial, final and supplementary) related to the same case. In this manner LSUs and CRAs regulate property-law relations with infrastructure operators that have illegally set up their ECI on the real estate in their ownership. The goal of regulating these relations is to achieve monetary compensation the use of the real estate.

**Table 2.4** Number of LSU and CRA requests for the regulation of property-law relations by year

Year	2014	2015	2016	2017	2018	2019	2020	2021
Number of requests	14	175	140	49	93	87	47	51

## PUBLIC AUTHORITY OPERATIONS

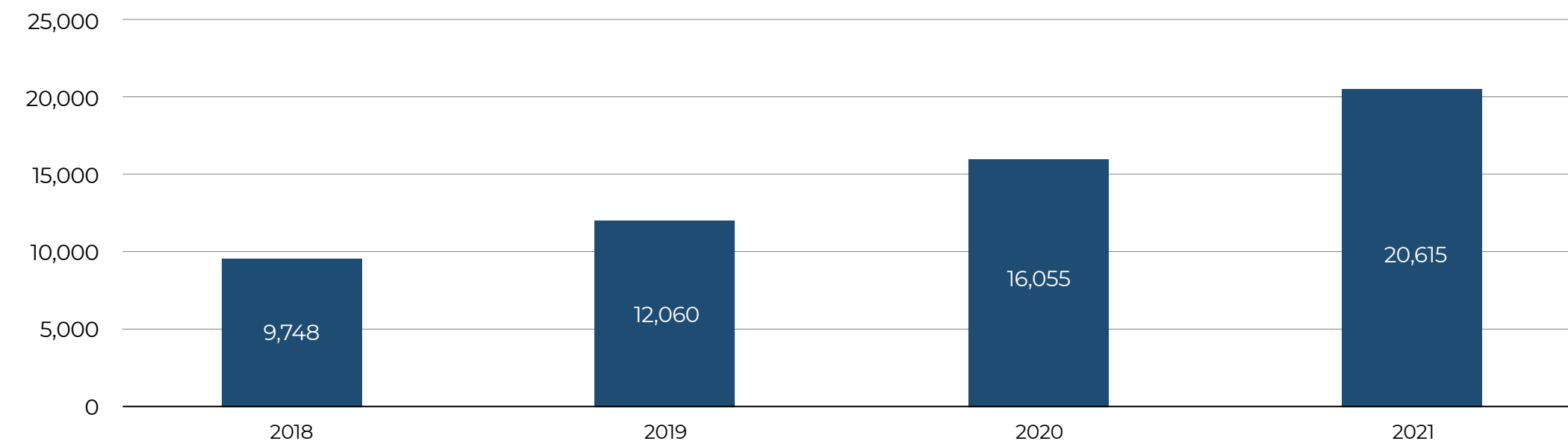
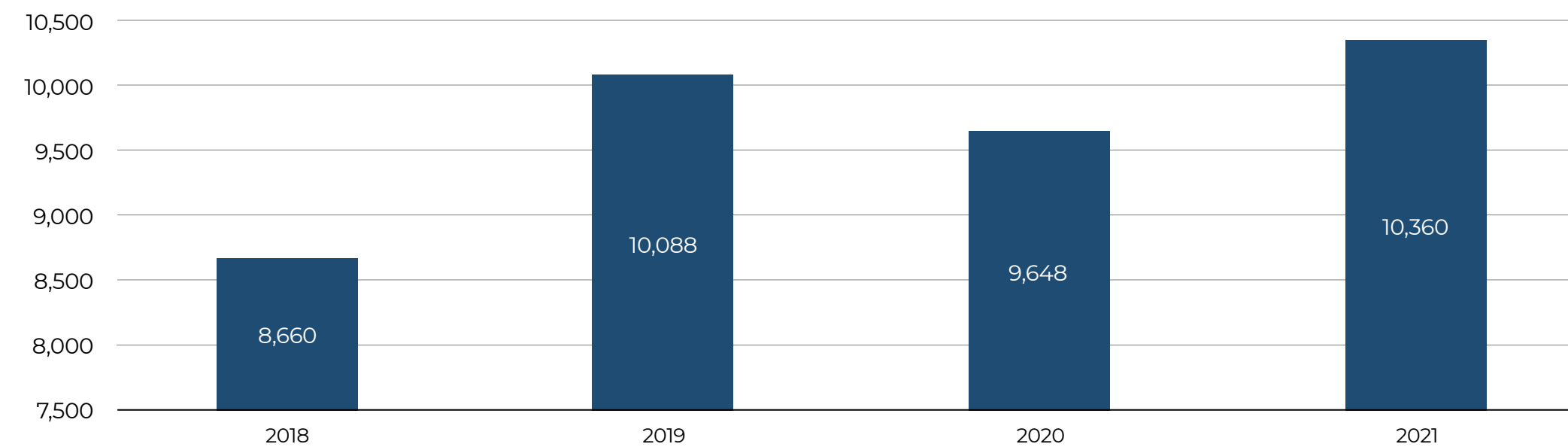
HAKOM, as a public authority for physical planning and construction participates in the procedures of issuing requests and providing opinions on physical planning documents, establishing special conditions for construction and granting main project certificates.

### Issuing requests and guidelines and providing opinions on physical planning documents

A special attention is paid to the adoption of physical planning documents that serve as a basis for the seamless construction of the ECI and other associated facilities. Pursuant to the [Physical Planning Act](#), HAKOM, as a legal entity with public authority, regularly participates in the adoption of physical plans by issuing guidelines and opinions, defining the manner of network planning without restricting their development, taking a particular care that requirements for the protection of public health, space and environment are met. In 2021, HAKOM issued 761 documents defining guidelines and requirements to be complied with during the development of physical plans of all levels. HAKOM also issued 344 opinions during public consultations concerning proposals for physical plans.

### Defining special building conditions and issuing main project certificates

For interventions into space, within the ECI zone and other associated facilities, as well as in the safety zones and the radio corridors of certain radio stations, HAKOM establishes special building conditions and issues approvals for the main projects in compliance with the Physical Planning Act and the Building Act. In 2021, the number of requests for defining special building conditions and approvals for the main projects increased.

**Figure 2.34** Number of defined special building conditions**Figure 2.35** Number of main project certificates

Fully digitalising the process, HAKOM improved access to the e-Licences system and the e-Conference module of the Ministry of Physical Planning, Construction and State Assets (MPPCSA), which has significantly shortened time limits and enabled transparency and financial savings in the process of submission of requests for defining special building conditions and issuing main project certificates.

## OVERVIEW OF REGULATORY MEASURES

Key regulatory activities marked the beginning, middle and end of the year. The development of new cost models was completed in February, which created conditions for the further development of efficient market competition, with key wholesale prices set at the real cost level. HT's management of Optima ceased in mid-year, so that HAKOM adopted a temporary decision in July, specifying that Optima was no longer part of the HT Group and that its regulatory obligations were revoked as a result. Once the analyses of the access and call origination market had been completed in December, HAKOM adopted a final decision confirming that all Optima's regulatory obligations were revoked. The year 2021 saw important documents adopted at the EU level, such as the "new" Roaming Regulation, and care was taken that operators appropriately implement the provisions of the Delegated Regulation setting a single maximum Union-wide voice termination rate, adopted at the end of 2020.

### Optima is no longer part of HR Group

Pursuant to the decision of the Croatian Competition Agency (CCA), HT's management rights of Optima expired in July 2021. On the day of expiration of HT's management rights (12 July 2021) HAKOM adopted a [temporary decision](#) temporarily revoking Optima's regulatory obligations to conduct the margin squeeze test (MST) until the completion of the review procedure related to the status of an operator with significant market power. The revocation of this obligation enables Optima to design service packages like all other alternative operators in the market, independently/without HAKOM's approval. A [final decision](#), which confirmed the temporary decision, was adopted in December 2021, permanently revoking all Optima's regulatory obligations. In addition to the mentioned temporary decision, on 12 July 2021, HAKOM adopted another [temporary decision](#), which, as opposed to the first decision, temporarily, i.e. until the finalisation of the procedure, revoked Optima's regulatory obligation to conduct the MST related exclusively to the standalone voice service offered to end-users. The revocation of this obligation enables Optima to offer only the fixed voice service like all other alternative operators in the market, independently/without HAKOM's approval.

### Analyses of relevant markets

The analysis of the markets of access to the public communications network at a fixed location for private and business users and the analysis of call origination from public communications networks provided at a fixed location were completed in 2021. Considering that this is a network



access market providing exclusively for the standalone voice service via a fixed connection, which had been on the decline year by year, in December 2021 HAKOM [adopted a final decision](#) prescribing that this market was no longer subject to preliminary regulation. However, given that there are still end-users in the HR who use the standalone voice service through a fixed connection, HAKOM obliged HT, although all its regulatory obligations had been revoked, to continue providing the WLR service in the transition period until 31 December 2023 at the prices and conditions valid until then. The WLR service is a wholesale service that enables other operators in the market to provide end-users with the standalone voice service through a fixed connection by means of the HT network. The decision confirmed the temporary decision, which exclusively concerned the possibility for Optima to offer the fixed voice service independently/without HAKOM's approval.

In December 2021, a [final decision](#) was adopted in the call origination market, which was also deregulated. Due to close links between the access service and the call origination service, with both markets related to the provision of the standalone voice service through a fixed connection, HAKOM defined a transition period for this market too until 31 December 2023, specifying that the call origination service was to continue to be provided at the prices and conditions valid until then.

### Setting wholesale prices

On the basis of the results of the new cost model of HAKOM<sup>1</sup>, prepared in accordance with the methodological principles complying with the Commission Recommendation 2013/466/EU, HAKOM set the new prices of regulated wholesale services.

[The new prices of wholesale services used to provide broadband access services for the mass market](#) (private, small and medium-sized users) came into force at the beginning of April 2021. In comparison with old prices, it should be emphasised that the new prices of wholesale broadband services supplied over the copper network (the NBSA service) are independent of the access speed and that fees for the used capacities were considerably reduced, which contributes to the increase in the number of users with higher access speeds.

[The new prices of wholesale high-quality access services used to provide retail services for business users](#) came into effect at the beginning of August 2021. The new prices of wholesale high-quality access services based on the Ethernet technology were thus reduced by more than 50 percent.

<sup>1</sup> For more details on HAKOM's decisions refer to [2020 Annual Activity Report](#).

### Operators retail tariff packages analysis – highlights

The MST was updated in March 2021 in such a way that it incorporated updated user habits, new wholesale prices determined on the basis of the new BU-LRIC+ Model for fixed networks and the own network costs of the SEO operator, also determined on the basis of the new BU-LRIC+ Model for fixed networks. After the MST had been updated, some offers of HT Group operators (HT and Iskon) no longer met the MST.

In order to prevent any distortion of competition due to a negative MST, the HT Group was obliged to immediately suspend offers and stop concluding contracts for these offers with new users or to adjust these offers as appropriate in order for them to meet the MST. HT decided to lower the prices of wholesale broadband access services, implementing this decision by changing these prices in the [Standard offer for the wholesale broadband access](#). Following the reduction of wholesale prices, the offers of HT and Iskon with a negative margin met the MST.

### Other regulatory activities

At the end of December 2020, the European Commission adopted a delegated act, which set single maximum EU-wide mobile termination rates (MTR) and fixed termination rates (FTR). Prior to the adoption of the act, each regulator had set the rates for these services on the basis of its own cost models. In 2021, HAKOM came to an agreement with operators as regards all adjustments they were obliged to make in their standards and minimum offers pursuant to the act.

The new FTR came into force on 1 July 2021. This was the first time that a single price was introduced; prices for weak and heavy traffic periods had been in effect until then. The new price in the transition period, in effect in the second half of 2021, was 0.0057 HRK/min. As of 1 January 2022 a single FTR has been in effect, equal for all EU operators, amounting to 0.0053 HRK/min.

The MTR did not change in 2021. However, pursuant to the provisions of the delegated act, a new price of 0.0413 HRK/min came into effect on 1 January 2022. In contrast with the FTR, a three-year transition period was introduced for the MTR, so that the single MTR price, equal for all EU operators, will come into effect on 1 January 2024 and will amount to 0.2 euro cent/min or about 0.015 HRK/min.

HAKOM actively participated in the preparation of the “new” [Roaming Regulation](#), adopted at the end of 2021. The new Regulation comes into force on 1 July 2022 and will remain in force until 2032. The Regulation increases transparency on the retail level in terms of quality of services, information on services with a special tariff and access to emergency services. In addition, it increases transparency on the wholesale level in terms of numbering ranges for services with a special tariff by setting up a centralised database of the EU and continues to ensure a free access to emergency services to users in roaming by taking additional measures.

The procedure of amending the [Standard offer for the service of access to the passive optical access network at the location of distribution node for optical distribution networks \(FA-PON\)](#) was completed in June. The offer defines the conditions of access to the passive optical access network at the location of distribution node, which HT enables for other operators in the market.

In order to strengthen equal level competition, HAKOM introduced two important amendments. The operators concluding a contract for the service of access to the passive optical access network at the location of distribution node for optical distribution networks are allowed to resell the service and apply any other wholesale model in which the beneficiary operator will use the service of access to optical distribution networks as an input for its wholesale service for other operators and to use the optical fibre installation in the area of the end-user, which is owned by HT.

June also saw the completion of [the amendment procedure for HT’s Standard offer for the wholesale broadband access service](#), launched at the request of HT in order to implement open broadband profiles in the HT’s wholesale broadband access service provided via the copper network.

In the request for launching the procedure of amending the Standard offer HT stated that the amendment concerned a technical change in its own network and that it would terminate bandwidth reservation by services (Unlimited service), that the full bandwidth potential of the line would be utilised (users would be provided with the maximum possible internet speed), that the prioritisation would be managed by the Quality of Service (which would optimise the operation of services) and that the line speed would be adjusted without any service breaks (e.g. due to adverse weather conditions). Taking into account the advantages of introducing open profiles and the fact that there are no disadvantages, HAKOM accepted the HT’s proposal and adopted a decision on the proposed changes of the standard offer.

## INSPECTION ACTIVITIES

HAKOM is competent for inspection activities in the field of electronic communications in the HR. Inspection activities (inspection supervisions, inspections, on-site evaluations and other related activities) were conducted in accordance with the principles of proportionality and appropriateness, while the areas of focus were primarily defined in the [2021 Annual Work Programme](#). The year 2021 saw 73 inspection supervisions, 2 misdemeanour proceedings and 2 charges. Inspection supervisions were initiated based on complaints lodged by users/operators or ex officio. Inspection activities were partly related to the verification of execution of previous decisions.

Inspection supervisions focused on compliance with regulatory obligations, universal services, user protection, the quality and safety of communication networks, the conformity of radio equipment, the effective use of the radiofrequency spectrum, network neutrality, the prevention of unsolicited electronic communication and the timely payment of right of way fees to real estate owners. All inspection decisions are published and available on HAKOM’s website.

A considerable attention was in 2021 devoted to inspection supervisions ex officio for the purpose of ensuring and implementing measures to protect security and integrity of networks and services. This provided a basis for the enactment of two decisions and instituting one charge and one misdemeanour order.

Operators’ compliance with regulatory obligations was subject of two inspection supervisions. As part of the inspection supervisions, a decision was adopted establishing HT’s breach of conditions defined under the Standard offer for the wholesale broadband access service in the part related to non-compliance with the set deadline for operator’s switching from the standard profile to the fault repair profile and vice versa. Another decision connected with the establishing of breaches of regulatory obligations was related to the obligation of supervising prices and conducting cost accounting for operators with significant market power. This inspection supervision established that obligations related to carrying out the MST were not fulfilled.

Inspection activities related to the rights of users and the obligations of operators of electronic communications were carried out for all operators with significant market shares: AI, HT, Telemach, Iskon and Optima. Enhanced controls were carried out of the execution of rights of end-users, with a focus on compliance with rules applied when concluding contracts remotely and outside business premises as well as when porting numbers and switching operators. Inspection supervisions ex officio were carried out in connection with the observed difficulties of Telemach users regarding submitted complaints (at the first and second instances), the termination of subscriber contracts, the provision of timely information on the amount owed in the case of early termination of the contract, and appropriate decisions were adopted.



Specific complaints of natural or legal persons provided a basis for the resolution of issues related to the untimely elimination of breakdowns in subscriber lines, the destruction of and damage to the electronic communications network and infrastructure by third parties, the provision of low-quality service, the construction works done and damage incurred, the provision of universal service, the shortening of the subscriber loop, the elimination of the causes of interference from electromagnetic emissions, the use of the master antenna system and household installations in residential buildings, etc.

Four inspection supervisions of operators were performed to verify operator actions in the cases of not providing end-users with the contractually agreed minimum broadband access speed. In 2021, regular inspection supervisions were performed due to delays in service provision caused by operator switching in the fixed electronic communications network and due to user complaints about the untimely number porting in the mobile electronic communications network. An inspection supervision over the unauthorised provision of IPTV services by an operator was also carried out.

The procedure against Akton d.o.o. operator was carried out regarding malpractice with fake A numbers. Some users stated in their complaints that they often received a call that was quickly interrupted. However, when they tried to return the call they got a message that the number was disconnected. Other users stated that they managed to make a reply call to that number, but the call recipient said that no call had been made. Inspection supervision established that such calls were not made from A numbers that were shown to the users of B numbers, i.e., they were not originated in the network of Croatian operators, but forwarded from the networks of other European operators. HAKOM requested international assistance from the regulatory authorities of Germany, Spain and France in order for the issue to be resolved on a general level. It is noteworthy that this is a complex issue that needs to be resolved keeping in mind that all operators in the chain must be timely informed of the observed irregularities in order to reduce the harmful impact on end-users. HAKOM, as a regulatory authority, will continue to make efforts towards addressing this issue.

The inspection supervisions of HT's aggregation and access networks also continued, with a focus on the verification of compliance with decisions related to the implementation of activities in Sisak-Moslavina County, Brod-Posavina County and Karlovac County, where equipment had been inspected in 11 important hubs and a large number of access networks. The inspections covered the areas of galleries, aggregates, interdistributors, main distributors, transmission and data equipment, access nodes and network segments as well as other areas of inspected facilities. The inspections were especially focused on the method of deploying optical fibre cables to the facilities of nodes. The reliability and availability of all key transmission links is at a satisfactory level. It should be emphasised that in the areas of access networks Novska, Kutina, Jasenovac, Hrvatska Dubica and Gvozd considerable reconstructions were made, which contributed towards a better quality of service provided to end-users.

The decisions adopted in the previous period instructed that a series of activities be implemented to en-

sure a better reliability and availability of networks. The controls and verifications of the follow up of the previously adopted decisions established progress achieved in the implementation of activities required to increase the safety of networks and equipment as well as in the regulation of facilities and access networks subject to inspection supervision, especially regarding the replacement of worn out equipment, the regulation of air network routes, the installation of surge protection, the construction of grounding, etc.

Verifications were carried out of actions taken to comply with the decisions of HAKOM's inspectors regarding the restoration of the coastal nodes of cables of aggregation and transmission rings. Verifications were made at the restored nodes (Morinje Bridge – two nodes) in Šibenik-Knin County and at three restored nodes (Slatine, Grljevac and Split – Institute) in Split-Dalmatia County. A large number of controls dealt with establishing facts in relation to the enforcement of HAKOM's decision to record, within the set deadlines, the occupancy of the existing manholes for HT's own cables and the cables of beneficiary operators for which it concluded contracts on the shared use of cable ducts, and to enter the data in the on-line base. Controls were performed in the City of Zagreb, County of Međimurje and Split-Dalmatia County. Over 200 manholes were inspected in these three areas. The inspections established that the process was of high quality and in accordance with the dynamics and time limits specified in the decision.

The procedures of regulating property-law relations between HT as an infrastructure operator and local self-government units and other legal and natural persons included three inspection supervision procedures initiated for failure to comply with the HAKOM's decision. All three procedures were completed (City of Poreč, City of Pula and the CRA of Virovitica-Podravina County).

The bulk of HAKOM's regular inspection supervisions was related to the field of construction and redeployment of the electronic communications infrastructure, mainly ensuring compliance with regulations and construction works deadlines. In order for requests to be resolved swiftly and economically, on-site evaluations, inspections and inspection supervisions were carried out and meetings and discussions were held where appropriate. Decisions were adopted in cases when it was necessary.

For the inappropriate advertising of number 385955511880 for the service of SMS information on subscribers contrary to the Decision of HAKOM CLASS: UP/I-344-01/19-07/01, Ref. No: 376-10-15-22 of 27 November 2019, inspection supervision was carried out over the operator Imenik d.o.o. Inspection activities were partly related to regulatory disputes between operators or between operators and local self-government units. A large number of on-site evaluations, meetings and discussion was performed and the enforcement of decisions was verified.

The control and supervision of the spectrum are performed regularly without any difficulties. In the course of regular controls and supervision of the radiofrequency spectrum, once measurements had been taken and irregularities detected, three inspection supervisions were carried out.





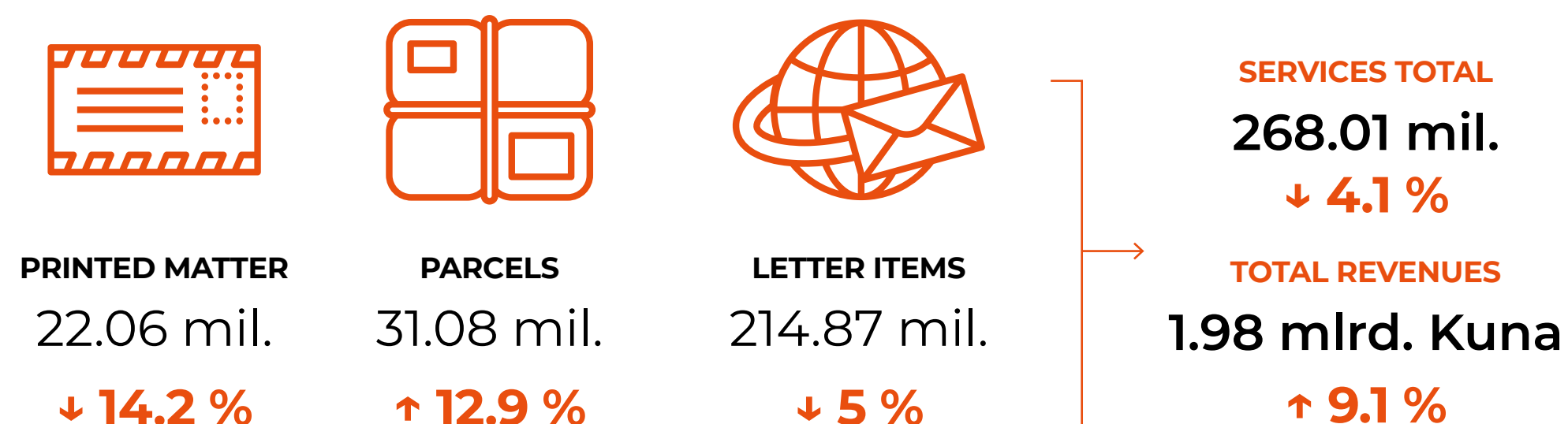
# 03

## POSTAL SERVICES

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Figure 3.1 Indicators in the postal services market



Postal services proved to have a significant role in the normal functioning of the society amid the conditions of a global pandemic. Not only did they maintain their key connecting role but at some point become one of the most important distribution channels to the end consumer. Postal services providers adapted their usual services to the challenges in the market and responded to the demand for certain types of services. Postal services, especially the universal service, faced certain difficulties during some periods, primarily due to limitations to the work and office hours of some postal offices, extended deadlines of transfer and delivery in international postal traffic or total interruption of traffic with individual countries. However, despite difficulties, the provision of postal services in the HR was never put into question and postal traffic continued to flow throughout the year.

## MARKET OVERVIEW

The postal services market in the HR was greatly impacted by the global pandemic and additionally by earthquakes. This led to changes in the structure of provided services. The number of letter items declined, while parcel services significantly increased. The market was additionally affected by digitalisation. In these circumstances traditional and other postal services have been under constant pressure of change and of the need to introduce new business models and offer new postal services.

As expected, the number of total postal services in the market continued decreasing but at a lower rate than in 2020. The greatest impact on the decline in the number of services came from

letter items and printed matter. In contrast, the number of parcels grew, continuing the positive trend from the last few years.

This has primarily been the result of the growth in e-commerce where postal services are an unavoidable link between the seller and the buyer. Although the number of parcel services reached record highs, they did not compensate for the decrease in the number of other types of postal services but their share in the total market increased. The HR market follows trends present in the EU postal markets, with the pandemic affecting the speed and intensity of the observed processes.

International traffic flew with certain disruptions and delays and was at times completely interrupted with certain countries. Additional negative impact on cross-border traffic came from the entry into force of the EU legislative framework regarding the removal of VAT exemptions when importing goods in the value of up to EUR 22 from third countries. This reduced the volume of e-commerce and the number of postal services in international traffic. Cross-border traffic is expected to normalise in the upcoming period and services are expected to grow to return to pre-pandemic levels. Forecasts related to revenues in the postal services market were realised with revenues increasing in 2021, regardless of fewer total services. This was primarily a result of revenues from parcel services and to a small degree of the growth in the prices of individual services. It is expected that postal services providers will direct their business towards innovation in existing services and offering new services fully suited to the needs and demands of users, especially in the segment of higher value services connected to e-commerce.

## Providers in the postal services market

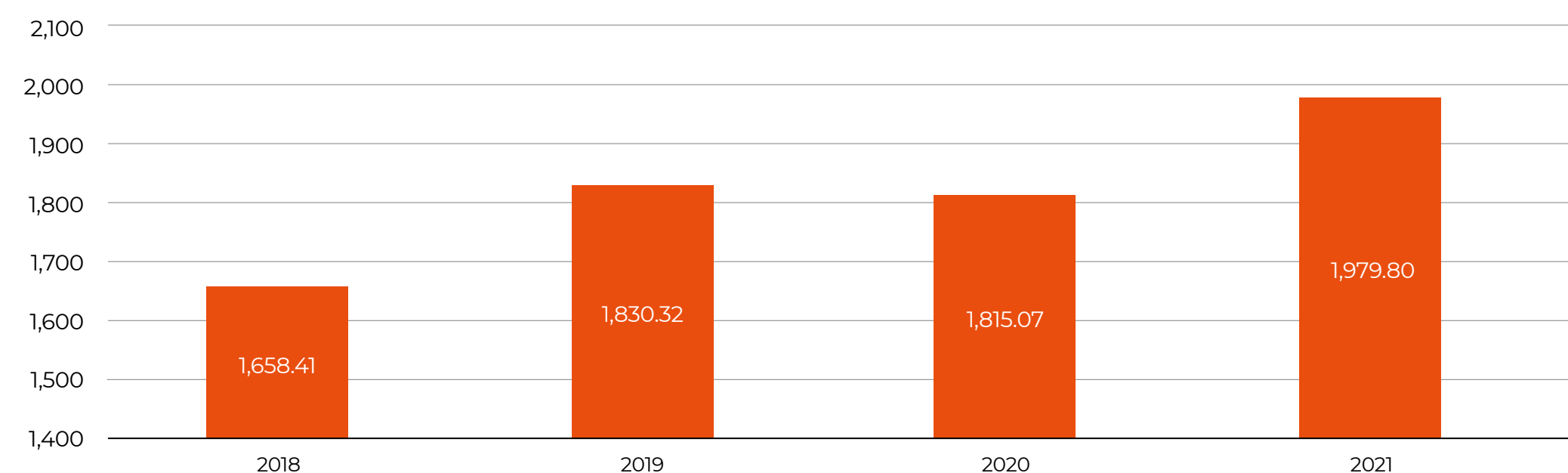
There was a total of 24 providers of postal services at the end of 2021, one more than in the previous year. An application for the provision of postal services was submitted by two new providers during the year, for the provision of interchangeable postal services, while one provider of postal services ceased its operation. Pursuant to the [Postal Services Act \(PSA\)](#) the only provider having the right and the obligation to provide the universal postal service in the HR is HP -Hrvatska pošta d.d. (HP), for a period of 15 years. HP is the largest provider on the market, providing interchangeable and other postal services in addition to the universal service. Through its post office network HP also provides other non-postal services (financial services, sale of goods, etc.) which are services that are not part of the universal service since they are available in the free market and can be provided by other providers as well. However, the provision of these services in certain areas (islands, less populated areas, etc.) benefits these areas. The majority of registered postal service providers, some 18 of them, provides other postal services as well, of which three also provide

interchangeable postal services and five are registered exclusively to provide interchangeable postal services. Among the providers of other postal services there are also companies that operate in the global and/or regional postal services markets, providing services through their own networks as notified providers or in partnership with other providers (DHL, DPD, FedEx, UPS, GLS, Intereuropa and others). Thirteen of them were registered to provide services in domestic traffic, among which there were three providers that registered their services in the limited area of one of more Croatian counties and/or cities, while 11 providers provided services in both domestic and international traffic. At the end of 2021, all postal service providers employed a total of 11,787 workers in jobs related to the provision of postal services, almost the same as the year before. In order to rationalise and improve the quality of delivery, service providers introduced new access points where users can claim their parcels, whereby they have primarily used the facilities of other business entities (shops, gas stations, etc.) and as of late the automated parcel delivery lockers, whose number grew to a total of 155 at the end of 2021.

### Revenues from the provision of postal services

The postal market registered a rise in revenues in 2021, continuing the positive developments started several years back, although the total number of services has been decreasing. Namely, the growth in the number of parcels, i.e. services of higher value (services with added value) generated an increase in realised revenues thus compensating for the reduction in revenues from other services due to their decline. To a smaller degree the growth in revenues was also affected by the increase in prices of some services. Total revenues were HRK 1,979,803,919, some HRK 164.7m more than in 2020, which was a rise of 9.1 percent.

**Figure 3.2** Total revenues from postal services (in HRK million)

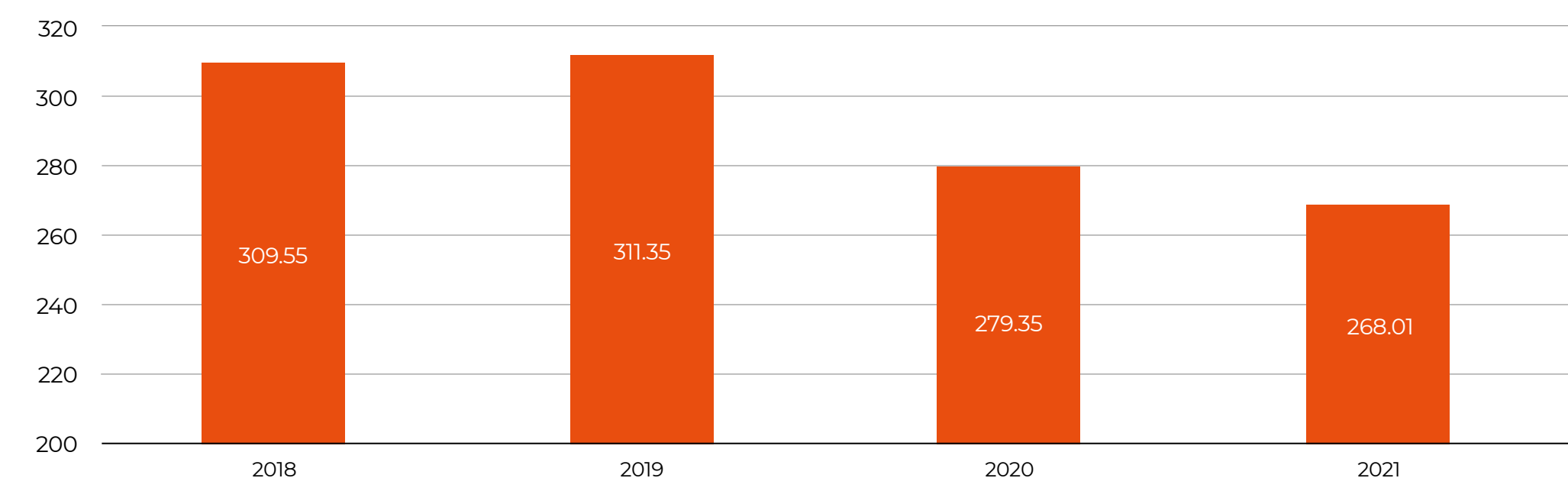


Both HP and other providers increased their revenues. HP increased its revenues by 2.6 percent, while other providers increased theirs by 20.3 percent. This increase in revenues of some HRK 134.6m increased the share of other providers in the overall market by 3.8 percent, so their share in realised revenues in 2021 totalled more than 40 percent and slowly neared HP's share. Other providers derived the bulk of their revenues from the provision of added-value services within other postal services that grew uninterruptedly, while HP derives the largest share of its revenues from providing "traditional" postal services within the universal service, which have observed a negative trend. Previous forecasts that revenues from the provision of higher-value services and traditional services will equalise did not only come true. Moreover, revenues from higher-value services in 2021 exceeded those from the provision of traditional services. This trend is expected to continue in the future because of the expected growth in e-commerce and associated services.

### POSTAL SERVICES

The number of postal services has been on the decline for several years. A total of 268,014,952 postal services were realised in 2021, some 4.1 percent less than in the previous year. However, the reduction was lower than in 2020 when it amounted to 10.3 percent. Such developments were expected because the market in the HR follows the trends present in the postal services markets of EU Member States. The effects of digitalisation have started to be increasingly prominent and the continuation of this process will contribute to further reduction in the number of postal services.

**Figure 3.3** Total number of postal services (in million)





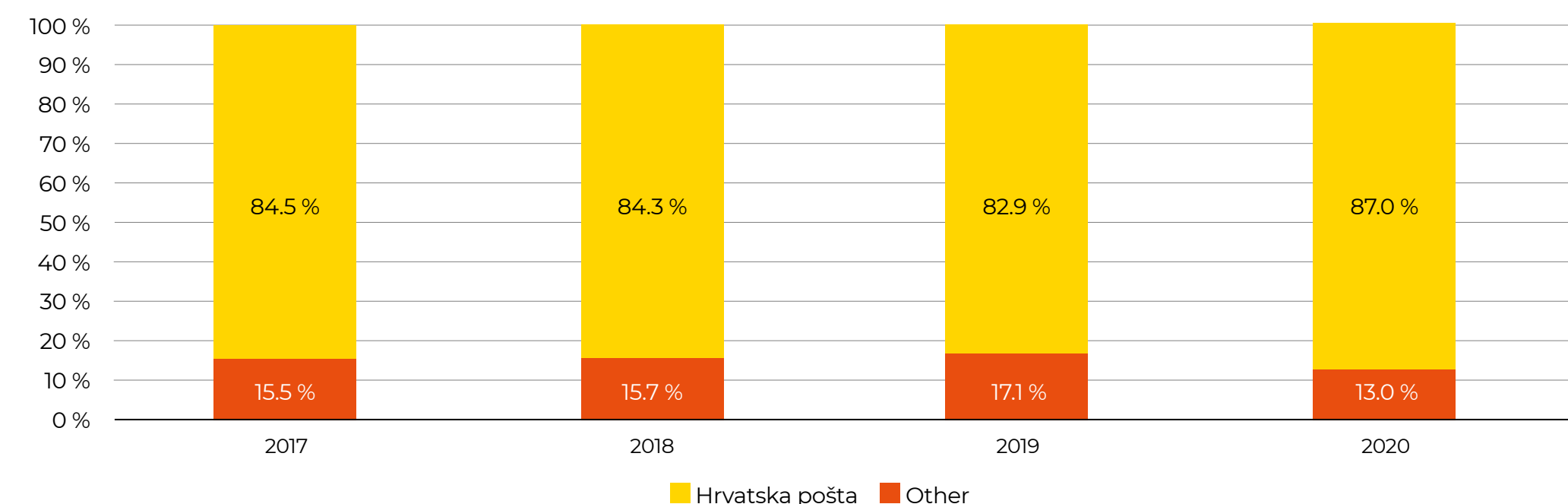
Again in 2021 cross-border postal traffic was strongly impacted by the pandemic and flew with certain restrictions and temporary delays (and was completely interrupted with some non-EU Member States). An additional negative influence came from the entry into force of the EU legislative framework regarding the removal of VAT exemptions when importing goods in the value of up to EUR 22 from third countries. It contributed to the reduction in the volume of e-commerce and consequently reflected itself in the number of realised services in international traffic. As a result, the decline in the number of services in international traffic continued, with a total of 19.2 million services being realised in 2021, some 3.2 million or 14.3 percent less than in the previous year. This reduction also affected the share of international traffic in total traffic, which decreased to its lowest level in the last few years. However, cross-border traffic is expected to normalise in the upcoming period.

**Figure 3.4** Shares of postal services by types of traffic



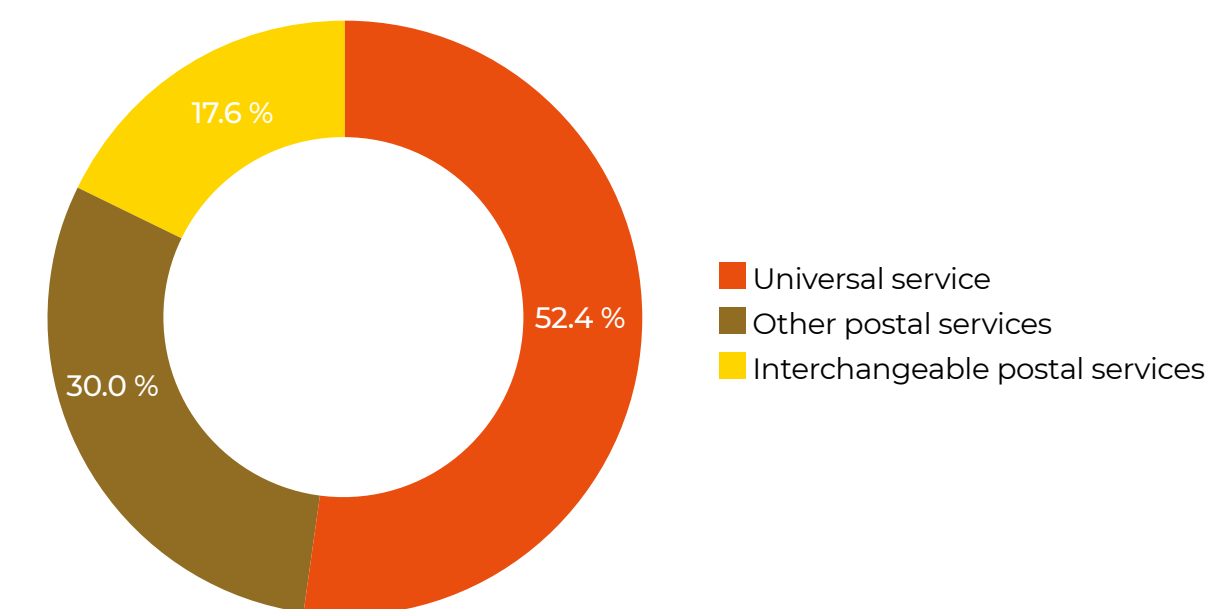
The largest postal services provider in the postal services market was HP, accounting for a share of 87.0 percent with a total of 233.3 million services realised in 2021, some 4.1 percent more than in the previous year. However, this was primarily a result of the distribution of printed matter (daily newspapers) taken over by HP from Tisak plus d.o.o. as of 1 April 2021.

**Figure 3.5** Provider market shares by the number of services



Broken down by type of postal service, the universal service, continues to account for the highest share (52.4 percent). However, this share decreased by some nine percent in the last two years and is a consequence of the smaller number of traditional services from within the framework of the universal service. Other postal services followed by the size of their share with 30 percent, while interchangeable postal services accounted for the smallest share of 17.6 percent.

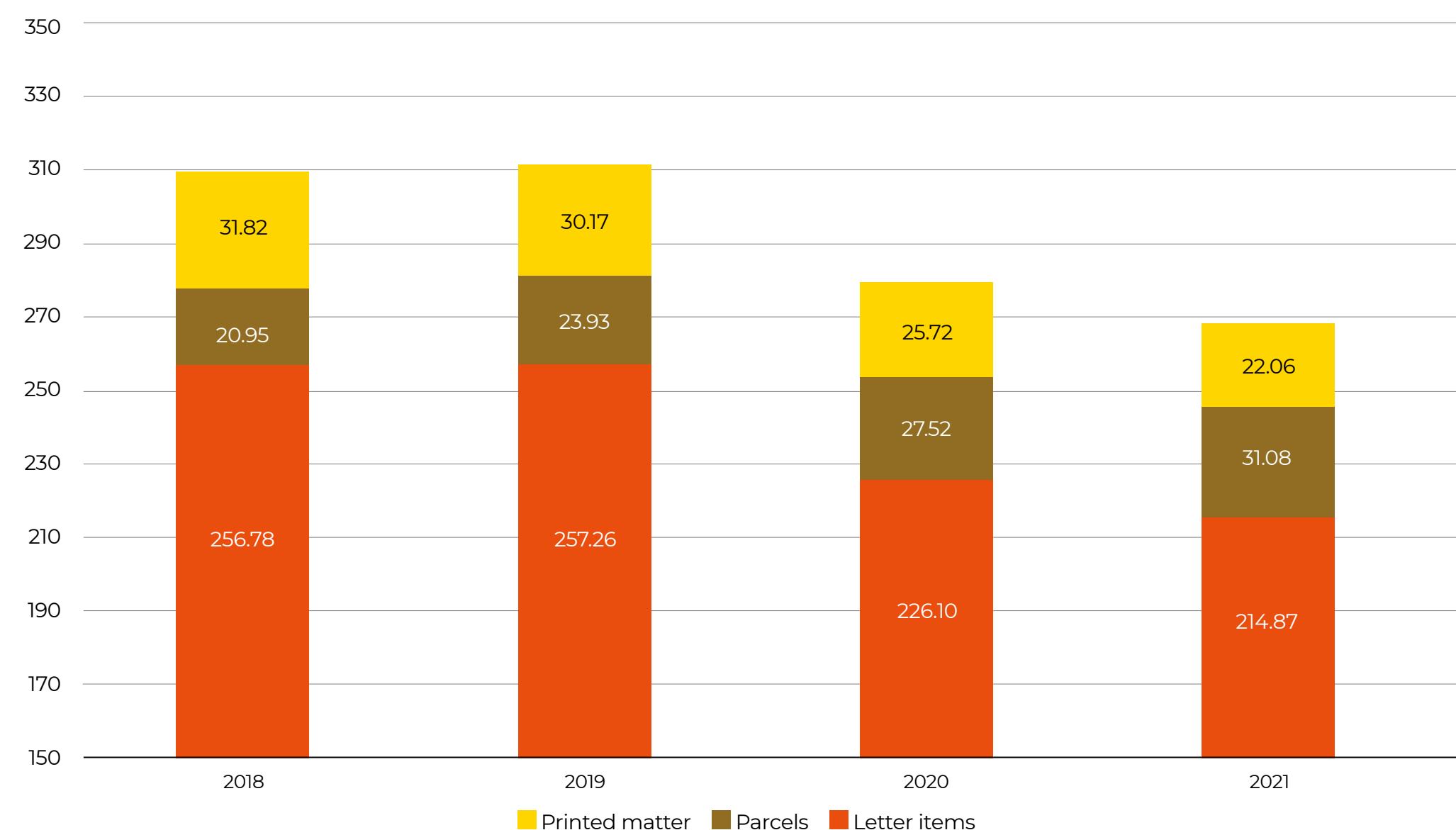
**Figure 3.6** Shares of types of postal services



Structural changes in the postal market caused by the pandemic were also visible in 2021, demand for letter items and printed matter continued to decrease, while parcel services grew. The growth in the number of parcels and developments in the postal market in the HR are very similar to those in the markets of EU Member States. In 2021, 11.2m less letter items were delivered or

five percent less than in the previous year, while printed matter decreased by 14.2. The number of parcels was 3.6 m higher, increasing by 12.9 percent from 2020. This raised the share of parcels in the total market to 11.6 percent or 1.7 percent more than in the previous year and the highest level thus far. Parcel traffic is expected to continue growing in the upcoming years, due to the great potential of e-commerce in the HR.

**Figure 3.7** Number of postal services by type (in million)



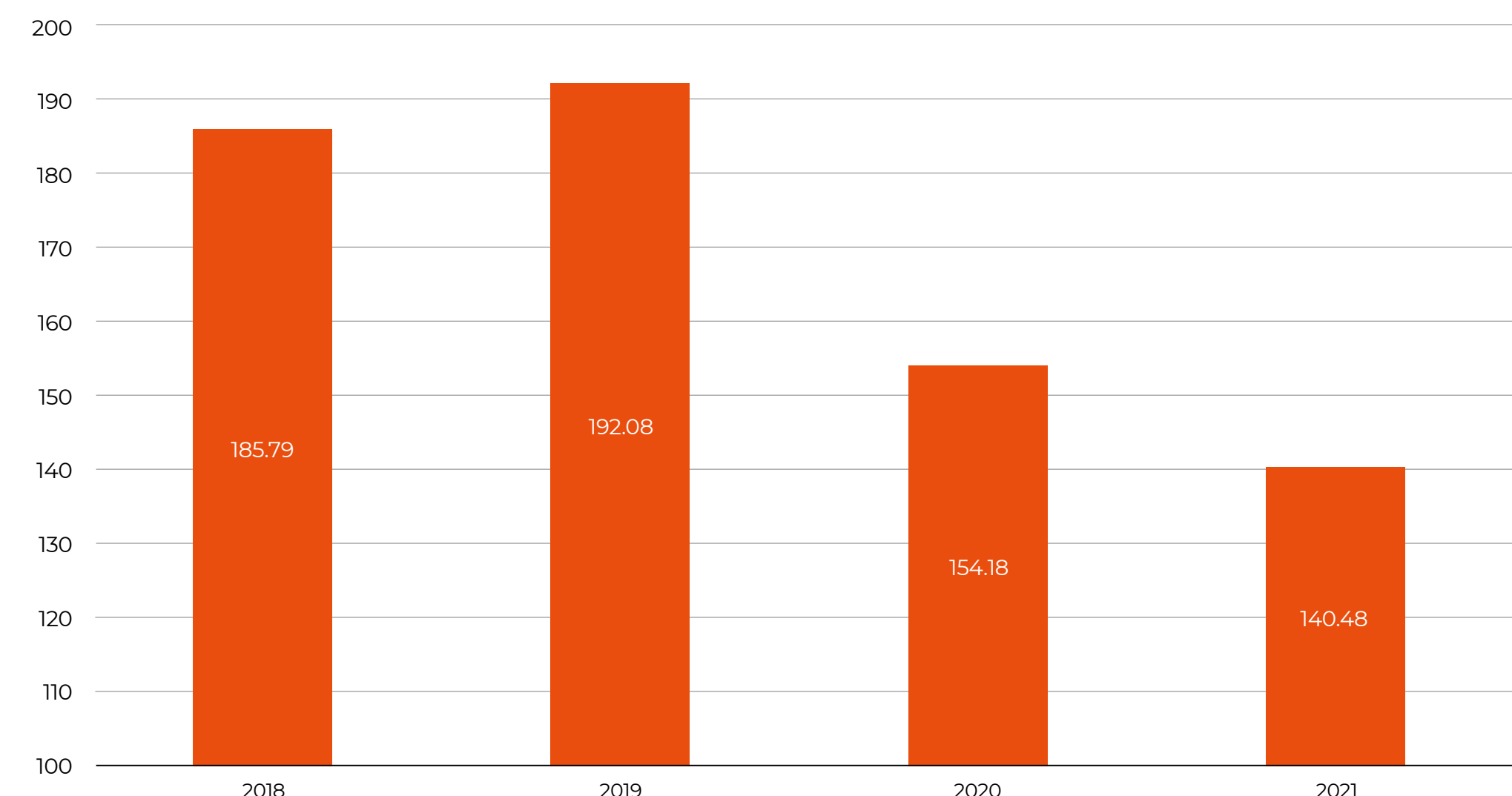
## Universal service

The universal service<sup>1</sup> is a set of different postal services in domestic and international traffic the provision of which is in the interest of the HR and which, in addition to adhering to certain standard of quality, needs to be available at an affordable price to all users of postal services through-

<sup>1</sup> The universal service includes postal services in domestic and international traffic: clearance, sorting, transport and distribution of letter items of up to two kilograms, parcels of up to ten kilograms, of registered mail and value-added items and cecograms of up to seven kilograms and sorting, transport, and distribution of parcels up to 20 kilograms in international inbound traffic.

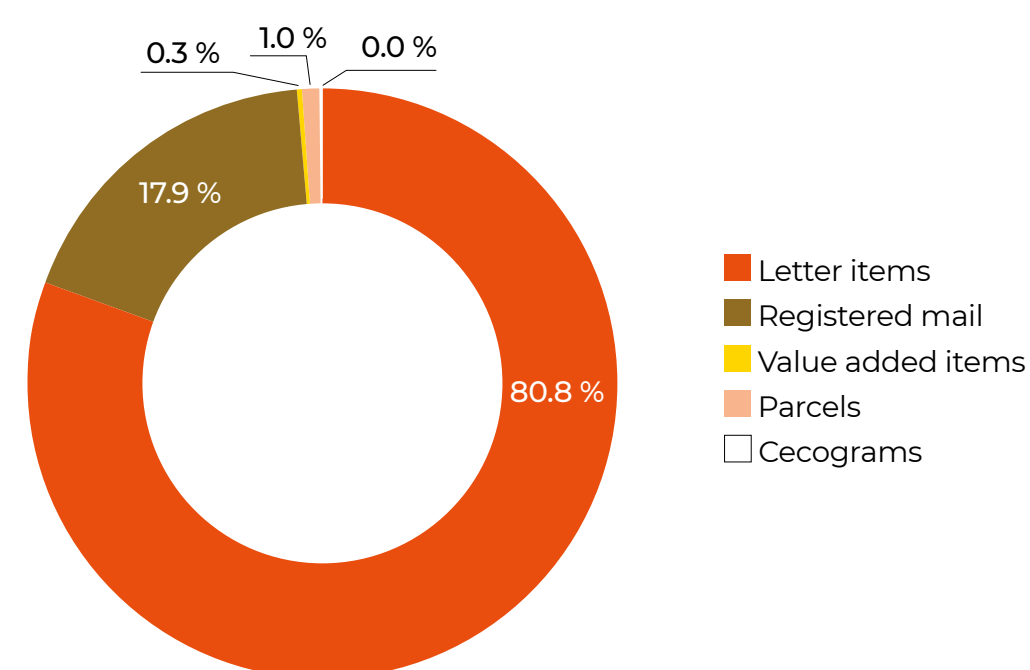
out the territory of the HR under the same conditions. The only provider of the universal service in the HR is HP and it acquired the right and the obligation to provide this service pursuant to the PSA. In 2021, HP realised a total of 140,484,522 services from within the scope of universal service or 8.9 percent less than in the previous year. This continued the expected negative trend since the impact of digitalisation and the pandemic was most prominent precisely in this segment. Such developments are expected to continue in the future, considering further expected substitution of written communications by digital communication, but at lower rates of decline.

**Figure 3.8** Total number of services within the scope the universal service



The universal service accounted for some 52 percent of total services, 2.8 percent less than in the previous year, which is the smallest share of these services thus far. This resulted in total revenues of HRK 786.9m, down 1.3 percent from the previous year. Despite the registered decline in revenues, it is noteworthy that it is much smaller than the decline in the number of services (8.9 percent), primarily due to higher revenues generated from the increase in prices of certain services. Letter items, with a share of 80.8 percent, accounted for the highest share in the universal service, down by 1.6 percent from 2020, which was a further decline of their share. Next to follow were registered mail items, whose share increased by 1.6 percent, while the shares of other types of postal items remained unchanged.

**Figure 3.9** Shares of services provided within the scope of universal service by type



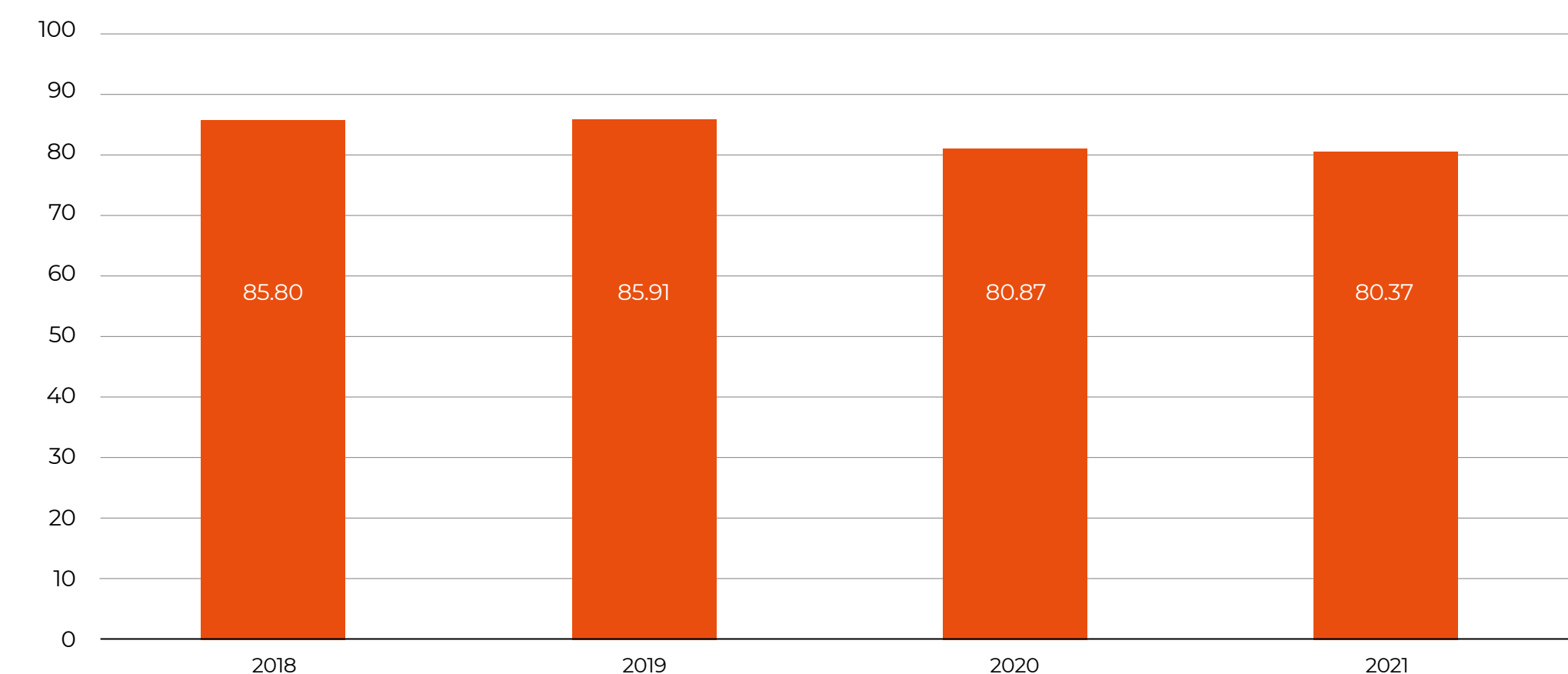
The universal service with its main determining features, which are affordability and availability in the entire territory of the HR will continue to play its role in communication. However, it is clear that with time the importance of will diminish due to more modern ways of communication. A share of services from the scope of the universal service was realised within the scope of interchangeable postal services<sup>2</sup>. In addition to the universal service provider these services may also be provided by other providers, of which there were eight in 2021. The number of interchangeable services continued to grow from the previous year, reaching a total of 47,077,347 services and growing by 6.3 percent. This was primarily a result of the “spillover” of certain services from the scope of the universal service since those are same or similar services. The growth in the number of services also partly contributed to the increase in the share in the total market so interchangeable services accounted for a share of 17.6 percent in 2021, up 1.7 percent from the previous year. Greater number of services also resulted in greater revenues, totalling HRK 111m or 9.9 percent more than in the previous year. It is expected that changes in the access to the network of universal service providers that were implemented in 2021 provide for access by a greater number of users and continue to a further increase in the number of interchangeable postal services.

<sup>2</sup> Postal services from the scope of universal service, which may deviate from the conditions of universal service, such as the obligation of daily delivery or the obligation to provide services in the entire territory of the country but may from the user standpoint be viewed as being within the scope of universal service because they are sufficiently interchangeable with the universal service.

## Other postal services

The share of postal services outside the scope of the universal service or interchangeable postal services includes other postal services that are connected with basic postal services (letters and parcels) with some added value<sup>3</sup>. These are so-called express parcels, printed matter and direct mail<sup>4</sup>. Competition among providers within this market segment is the strongest because the majority of them provides these services, while users of postal services are given a choice among services best suited to their needs and requirements. Regardless of the competition, providers in this segment have the greatest opportunity for further growth and for increasing their total revenues, primarily by developing new ways of providing services connected with e-commerce, by adding new value and/or supplementing the existing services. A total of 80,453,083 services were realised within the framework of other postal services, almost the same as in the previous year, accounting for 30 percent of the total market.

**Figure 3.10** Total number of other postal services (in million)



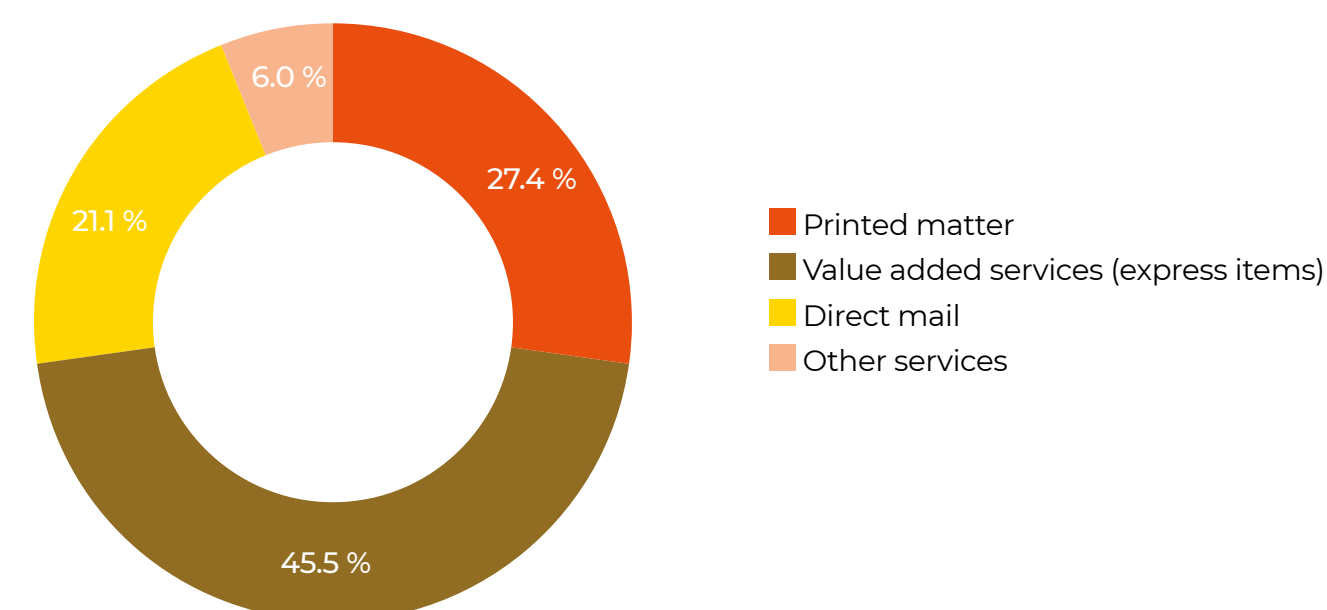
Although the total number of services remained unchanged, it came to visible changes in the structure of provided services, continuing the trend from the previous years. The number of express parcels grew by 4.4 million from the previous year, resulting in a 5.7 percent higher share of these items. At the same time, both the share and the number of printed matter and direct mail decreased.

<sup>3</sup> Added value means clearing items when called by users, enabling tracking, observing contracted delivery times, etc.

<sup>4</sup> Direct mail – a postal item consisting solely of advertising, marketing or publicity material and comprising an identical message Except the addressee’s name, address, and identification number, as well as other modifications that do not change the nature of the message, which is sent in at least 500 copies.



**Figure 3.11** Shares of services realised within the scope of other postal services by type



The changes in the service structure, i.e. the increase in the number of express and other services, resulted in the increase of revenues from other postal services. The rise in revenues by some 165m or 18 percent from 2020 is the continuation of the trend observed in the past several years, with total revenues in 2021 exceeding a billion kuna, totalling HRK 1,081,881,392. Revenues from other postal services in 2021 accounted for some 54.6 percent of total revenues in the postal market or four percent more than in the previous year, although quantity-wise they account for 30 percent of all postal services. This corroborates the potential of services connected with e-commerce or higher value services, which gives providers with smaller number of services or share in the market the opportunity to increase their revenues. This can be confirmed by the fact that 13.7 percent of added value services or express services in the total market accounts for some 50 percent of total postal revenues, some 6 percent more than in 2020. Considering that the potential of e-commerce has not yet been fully utilised, positive trends are likely to continue with revenues increasing to above two billion kuna in 2022.

## REGULATORY ACTIVITIES

HAKOM'S regulatory activities in 2021 were in line with its Annual Work Programme, but were partly also dictated by the extraordinary circumstances caused by the pandemic and earthquakes, as well as changes to global and European regulations (Brexit and removal of the zero VAT rate on the import of goods from third countries). The focus of all regulatory activities was primarily on the protection of users and on ensuring the provision of postal services in domestic and international traffic.

One of more important tasks was the amendment of the Ordinance on the performance of the universal service with the aim of efficient and effective access to the postal network by users, i.e. further liberalisation of the postal market, as well as simplification of the reorganisation of the postal offices network in accordance with the results of the latest population census. After completing two rounds of public consultations HAKOM's Council adopted an Ordinance on Amendments to the Ordinance on the performance of the universal service in September 2021, and by the end of the year HP submitted the Terms and conditions for access to the postal network and its Price list. Immediately upon the receipt of these documents, HAKOM started checking their compliance.

Special activity was directed at providing postal services in international transport because Great Britain exited the EU at the beginning of the year making it necessary to adjust customs regulations and postal processes in accordance with the mutually accepted Agreement. In addition, EU-level legislative framework entered into force on 1 July 2021, abolishing the VAT exemption for the import of goods below EUR 22 from third countries, which resulted in new procedures being adopted by service providers. Since the EU's new customs regulations made it equally possible for the designated provider and other providers to submit items for customs inspection for the purpose of VAT calculation, this warranted regulatory intervention and harmonisation of the procedure among several component authorities (Customs and Tax Administrations), service providers and users.

In addition to planned and extraordinary regulatory activities, HAKOM regularly collected and analysed statistical and other data from providers for the purpose of monitoring the situation and the development of the postal market in the HR. Additional data were also collected with the aim of obtaining the most precise overview possible of the effects of the pandemic, which was all publicly available and presented to the public. Special attention was directed at controlling the obligation to provide the universal service, its quality and analysis of accessibility and the cost-orientation of the prices of the universal service. In 2021, HAKOM thus continuously monitored the changes in the price of the universal service, determining whether they complied with the PSA, with special focus on discounts on the universal service. Compliance of prices from the basket of services with the Decision setting the highest permissible average weighted price increase was additionally monitored, while a part of the activities was directed at harmonising registrations, general terms and conditions of existing providers and their price lists with the provisions of the PSA following changes to their operations.

As a result of the last years amendments to the Instructions on accounting separation and cost accounting, additional efforts were invested in the verification of the regulatory report and analysis of HP's request for the reimbursement of the cost of the unfair financial burden arising from

the provision of the universal service and the Decision on the amount of net cost. Special attention was directed at resolving disputes between users and providers, responding to user queries and issuing expert opinions. In addition, planned inspections were carried out regularly, as well as extraordinary inspections at the request of users and providers. Inspection supervisions were predominantly related to the fulfilment of the prescribed obligations of the providers of the universal service related to the quality of performance of the universal service and the rights of users of postal services.

Regular cooperation with all stakeholders of the Croatian, the European and the global postal system continued via video meetings and conferences. HAKOM's representatives participated in virtual sessions and the work of all working groups, as well as ERPG Plenary sessions. They monitored the work of the European Committee for Postal Regulation (CERP) and cooperated with the competent ministry in the work of this committee. Last summer, the 27th World Postal Union Congress was held in a hybrid format, in autumn the EC published the long-expected evaluation report on the evaluation on the Postal Services Directive and at the end of the year the traditional round Table of all stakeholders in the postal services market took place. Consequently, all planned and extraordinary regulatory activities were completed in accordance with the circumstances at hand.

### Accounting separation (Regulatory report)

The PSA prescribes the obligation of accounting separation with special emphasis on the provider of the universal service and HAKOM's competence. In June 2021, in compliance with the [Instructions on accounting separation and cost accounting \(Instructions\)](#), HP submitted to HAKOM its Regulatory Financial Statement (RFS) for 2020 (RF) with associated documents.

Pursuant to the obligation prescribed under the PSA, HAKOM initiated an ex officio procedure to verify the accounting separation of revenues and expenses of the provider of the universal service HP, which included an audit by an independent body. The audit company Crowe Horwath Revizija d.o.o. (Crowe) was selected in a public procurement procedure, which, following the conducted RFS audit confirmed that the cost model and regulatory report for 2020 in all significant elements complied with the Instruction and cost accounting documents.

Based on the audit, HAKOM issued a [Statement of Compliance of the Methodology of Accounting Separation by the Universal Service provider HP](#), confirming that HP's RFS for 2020 complies with all prescribed requirements by its form, content and methodology.

### Universal service provider's net cost

The PSA provides that if the obligation to provide the universal services generates unfair financial burden on the universal service provider, the provider of the universal service is entitled to the reimbursement of the cost of the unfair financial burden.

At the end of June 2021, HP submitted a Request for the reimbursement of the cost of unfair financial burden (net cost) in 2020 arising from its obligation to provide the universal service, enclosing to the Request the audit report and the net cost calculation. In its Request HP described its operations and what its operations would be like were it not for the obligation to provide the universal service, in compliance with the PSA. It stated in its Request and the accompanying documents that its net cost for 2020 totalled HRK 108,762,823.00.

For the purpose of establishing the accuracy of the calculation submitted together with the HP's Request, HAKOM consulted the opinion of the independent audit company BDO Croatia d.o.o. (BDO). As part of the verification process, HAKOM held a series of workshops with the representatives of the BDP and HP, where individual elements of the calculation were discussed and where it was established that HP's calculation needed amendments in certain elements. Following the subsequent verification after the implementation of the said corrections HAKOM established by its [Decision](#) of October 2021 that the net cost for 2020 amounted to HRK 95,056,342, HRK 13,706,481 less than the amount stated in the request.

### Universal service prices

One of HAKOM's important competences under the PSA is to monitor and regulate the universal service prices and verify their compliance with the provisions of the PSA and guidelines of the EU Postal Directive.

HAKOM monitored all changes to the universal service prices in 2021, determining their compliance with the PSA, as well as compliance of the prices for the services from the basket of services from the scope of the universal service with the [Decision setting the highest permissible price increase \(Decision\) and Methodology for the regulation of prices of the universal service adopted in 2020](#).

As of 16 August 2021, pursuant to the said Decision HP started applying the new price for the service from the basket of services "Registered postal item up to 50 g – domestic traffic", which now totals HRK 12.30 (previously HRK 11.50) in accordance with the said Decision.



In accordance with the said Decision, HAKOM verifies whether key parameters are present that affect the calculation of the price cap for the regulatory period 2020 – 2022. The new price cap calculation will be conducted in 2022 leading to the adoption of the new decision for the period 2020 – 2022, as part of which key parameter projections will be made on the basis of values realised in the previous 2020 – 2022 period.

As of 1 December 2021, HP started applying the [Price list of postal services in domestic traffic](#) which experienced considerably altered conditions for granting discounts for the universal service for users sending a larger number of postal items, which is a result of the analysis previously conducted by HAKOM. An important change in comparison to the previously applicable Price list is that operational discounts on the universal service are applied equally for all users of postal services sending postal items under similar conditions irrespective of their geographic location and expected geo-distribution. Pursuant to the PSA, HAKOM has the task of verifying whether the new prices and terms and conditions comply with the provisions of the PSA.

### **Ordinance on amendments to the Ordinance on the performance of the universal service**

After public consultations were completed on the draft Ordinance on amendments to the Ordinance on the performance of the universal service in the fourth quarter of 2020, in September 2021 HAKOM adopted the Ordinance on amendments to the Ordinance on the performance of the universal service (Ordinance on amendments). This was preceded by additional analyses of indicators, criteria and conditions for the use of the service of access to the postal network as a result of which new public consultations were held in the third quarter of 2021 on the final draft of the Ordinance on amendments as well as consultations with HP as the provider of the service of access to the postal network, as well as users of these services.

Following the adoption of the Ordinance on amendments in the last quarter of 2021, HAKOM additionally verified compliance with and implementation of the provisions of the Ordinance on amendments with HP's general terms and conditions regulating the service of access to postal network.

### **Network access**

In accordance with amendments to the Ordinance on the performance of the universal service, HP amended the terms and conditions, and the prices for access of the postal network so new Terms

and conditions of access to HP – Hrvatska pošta d.d postal network (Access terms and conditions) are in force since 1 December 2021 as well as the Access price list (Price list).

Prices of services and the discounts that can be enjoyed by the user of the approach were laid down in the Price list, and discounts were determined as quantitative and operational. Quantitative discounts depend on the number of postal items to be processed by the postal network, while operative discounts are granted to the user when the user carries out certain activities instead of HP thus saving HP the costs of providing postal services.

When receiving the terms and conditions and the price list, HAKOM verifies whether the Terms and conditions of access and the Price list comply with the PSA, the amendments to the Ordinance, that is, whether the prices of access to the postal network are set in compliance with the principles laid down by the Ordinance.

### **Quality of universal service performance**

HAKOM's regulatory activities were partly directed at meeting the prescribed quality of universal service provision, i.e. on supervising and monitoring quality due to its general significance, especially during times in which "normal" performance of the universal service was put into question. Quality is one of the key elements in user satisfaction. The objective to which all EU Member States within the single postal services market strive is to attain the prescribed quality levels. HR is no exception.

The measurement and quality criteria to be met by universal service providers in domestic and international traffic are prescribed by the PSA and the [Ordinance on the performance of the universal service](#). One quality parameter is related to ensuring the delivery of postal items within the prescribed deadlines<sup>5</sup> and it is determined by measuring the time of transfer of certain items from clearance to delivery, while the other is determined by measure the number of complaints and compensation claims. Quality measurement is carried out in accordance with prescribed norms<sup>6</sup>, and the universal service provider is obligated to submit to HAKOM the Report on the quality of universal service performance (Report). According to the Report for 2021, HP measured the quality of the provision of the universal service in international traffic on several occasions, of which one concentrated on the measurement of the quality in the traffic between Croatia and other EU Member States. The result obtained showed that the prescribed quality criteria have not been met since 46.4 percent of shipments were delivered within the D+3 time limit, and 72.5

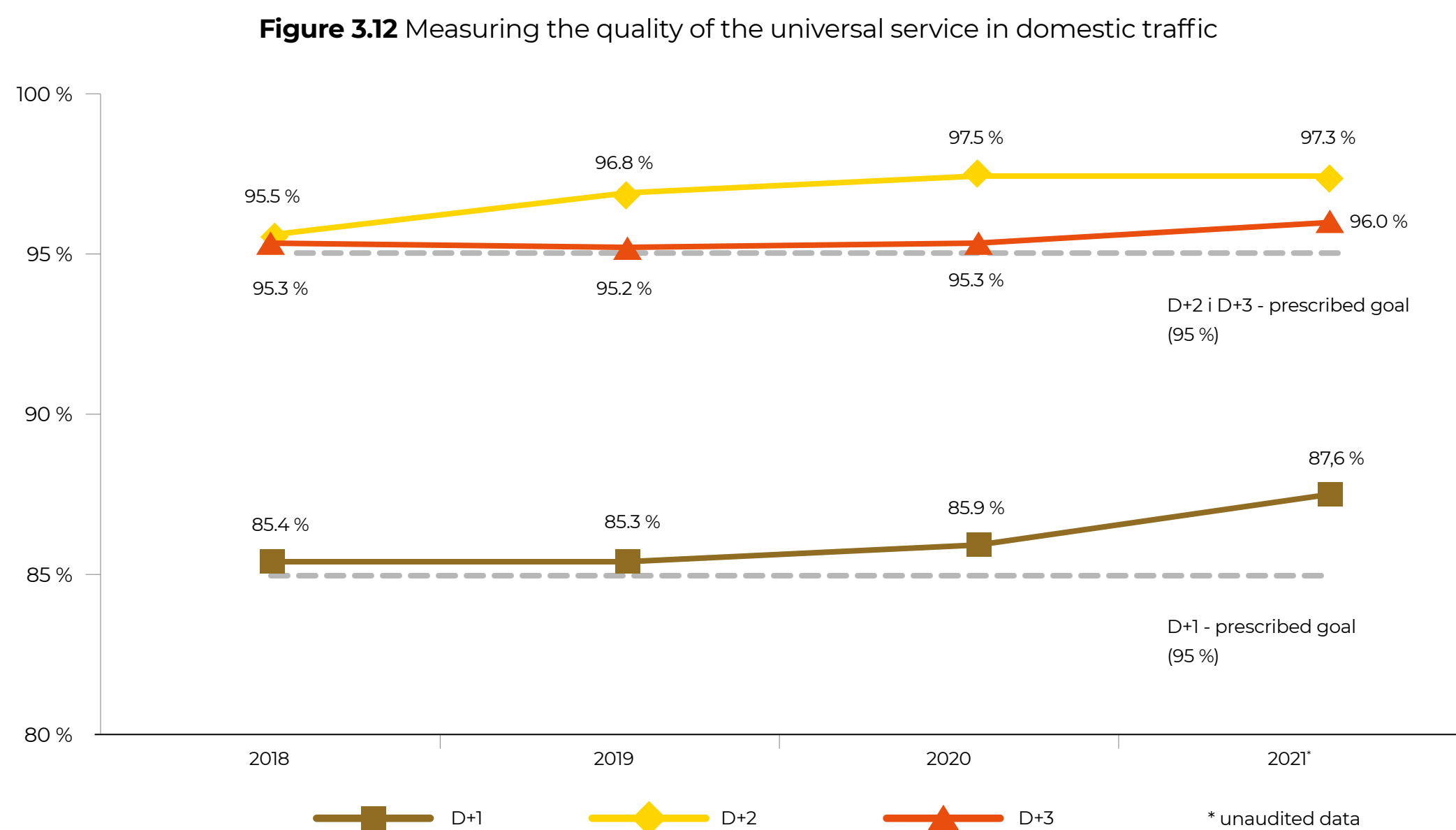
<sup>5</sup> Universal service providers in domestic traffic must ensure the delivery of 85 percent of postal items of the fastest category (priority items) in one working day, i.e. 95 percent within two working days, and for all other shipments 95 percent within three working days. In international postal traffic with EU Member States universal service providers must ensure the delivery of 85 percent of the fastest category items within three working days, i.e. 97 percent within five working days.

<sup>6</sup> HRN EN 13850 – Measuring the time of conveyance of individual priority postal items, HRN 14508 – Measuring the time of conveyance of individual non-priority postal items and HRN EN 14012 – Measuring the number of complaints and compensation claims.



percent of shipments within the D+5 time limit. Such results were to a degree expected considering the difficulties in international postal traffic caused by the pandemic, as was confirmed by HP in its Report. EU measurement results showed that the HR was no exception as the other Member States failed to meet the prescribed criteria.

The quality of the universal service in domestic traffic was measured by monitoring the conveyance of priority and non-priority postal items. In contrast to 2020, when due to force majeure measurement was suspended at one point, measurement in 2021 was continued throughout the year regardless of the difficulties faced. The obtained results showed that in the past year 87.6 percent of priority postal items was delivered within the D+1 time limit, 97.3 percent within the D+2 time limit, and 96.0 percent of non-priority postal items within the D+3 time limit so all prescribed criteria were met (Figure 3.11).



The count of the number of complaints and compensation claims in 2021 established that users submitted altogether 36,959 complaints to the provision of the universal service to HP. Of the total number of complaints 41 percent was related to services in domestic traffic, while the remaining portion to services in international traffic. The majority of user complaints were related shipment loss, damaged shipments, failure to perform services or exceeded delivery deadlines. HP resolved some 97 percent of all complaints within the legal deadline. Based on the presented results it may be concluded that the quality of the universal service performance in 2021 was satisfactory.

### Universal service provider’s postal network

The universal service provider is obligated to establish, maintain and develop a postal network throughout the territory of the HR in the manner prescribed by the PSA and the Ordinance that additionally prescribes the density of the access point network<sup>7</sup>.

As over the previous years, HAKOM focused its attention on HP’s postal network and prescribed criteria related to density and office hours of postal offices, especially considering the challenges faced when providing the universal service. In 2021, the approval that was first granted by the Ministry of the Sea, Transport and Infrastructure (MSTI) in 2020 regarding the measures to be implemented with the aim of protecting the health and life of HP’s employees and users of postal services in the territory of the HR remained in force. The approval was issued at HP’s request and is connected with the application of extraordinary operating measures during the pandemic, with the condition that these measures may remain in force until the pandemic is declared over.

The measures undertaken by HP were, among other things, to temporarily close individual postal offices, as well as to shorten working hours of those that remained operational, in accordance with the current epidemiological situation, as well as with the situation regarding the offices damaged in the earthquake. HP undertook appropriate measures and as the situation normalised with time relaxed its operation, reopening the temporarily closed offices and restoring their working hours to usual timetables. In 2021, HP continued to apply the model of relocating individual non-profitable postal offices to more frequented locations for the purpose of business optimisation and rationalisation. Several postal offices were thus relocated to new shopping centres so their number remained unchanged at 1016 postal offices in the HR. Additional activity related to the postal network was to amend the Ordinance in the part relating to the reorganisa-

<sup>5</sup> The postal offices network must be organised so that one postal office covers the area of a maximum of 80km<sup>2</sup>, that is a maximum of 6,000 inhabitants and needs to count a minimum of 700 regular postal offices.

tion of postal offices and was aimed to simplify the reorganisation procedure in accordance with the results of the new population census.

The provider of the universal service is obligated to enable other providers of postal services, consolidators and users to access its postal network, the services belonging to the scope of interchangeable services. In 2021, this opportunity continued to be used by two providers of interchangeable postal services and one user of postal services.

Regardless of the circumstances and the environment in which postal offices operated in 2021, the prescribed density of postal offices network and the performance of the universal service were never put into question and postal traffic continued throughout this period, although with occasional difficulties.

### Monitoring the situation in and the development of the postal services market

Monitoring of the situation in and the development of the postal services market falls within the HAKOM's competence, which continued to collect different statistical, financial and other data from postal service providers. The scope of the data collected was in line with the PSA and the data was collected for each quarter and on an annual level.

After the processing the data collected were used to create various different reports and make analyses that enabled HAKOM an insight into the situation in and developments in the postal services market in the HR, as well as set the foundations for adopting regulatory decisions. The data were also used to comply with the requirements of different European authorities competent for monitoring and analysing the situation in the EU postal market (EC, ERGP, Universal Postal Union (UPU), to respond to different external queries (media, providers, etc.), as well as to cater for the obligations towards different government bodies and institutions (MSTI, CBS, CCA, etc.).

The most important indicators of the state and developments in the postal services market in the HR were regularly published on HAKOM's website within the scope of [e-market](#).

HAKOM kept and regularly updated databases, the register of postal services providers and its website provides for an [updated list of postal service providers](#) with the list of services they provide.

### Other regulatory activities and tasks

Of other activities in the market, it is necessary to mention HAKOM's active role in cooperation with the MSTI in the introduction of the new service in the market "Hybrid mail". Since this is a completely new service in the market it was necessary to create the conditions for this service to come to life. In mid-2021, HP introduced a new service in the segment of providing interchangeable and other postal services defined by the UPS' letter post regulation as an electronic service where the sender sends a message in physical or electronic format, which is then electronically processed and transferred to a letter-item for physical delivery to the user.

Active support was provided to postal service users throughout 2021 through provision of timely notifications of all temporary changes to the provision of postal services and disturbances in postal traffic. As part of its activities in 2021, HAKOM gave provided its expert opinions and explanations relating to the application of the PSA and other regulations adopted pursuant to the PSA.

A share of activity was directed at challenges emerging in connection with the implementation of new customs procedures regarding postal items. On 1 July 2021, new EU legislative framework entered into force abolishing the VAT exemption for the import of goods below EUR 22 from third countries paired with the introduction of the IOSS system (Import One Stop Shop), enabling on-line sellers to pay the collected VAT directly to the state budget of an EU Member State by the place of consumption of the purchased good. As a result, HP introduced new services available when submitting goods to be inspected by the customs authority and caused numerous users to lodge complaints, especially those who had already paid the online seller VAT through the IOSS system.

Although HAKOM is not competent for the provisions of the law governing the customs process and foreign currency payments, until the end of the year it launched several initiatives for this issue to be resolved to the satisfaction of all interested stakeholders, especially users of postal services. A special challenge was posed by the collection of the payment for the service of submitting goods for customs inspection when VAT had been paid through IOSS because in this case there is no customs or tax debt. In November, at users' request the Croatian Competition Agency initiated a previous procedure of determining the disturbance of market competition through misuse of a governing position and requested HAKOM's expert assistance, which was provided in written form in 2021 and the proceedings are under way.

The eight round table of stakeholders in the postal market of the HR was held in November, organised by HAKOM. It included representatives of providers of postal services, as well as repre-



representatives of the competent ministry, the Faculty of Transport and Traffic Sciences (FTTS) and of the Croatian Standards Institute (CSI). The round table provided for the opportunity to exchange information on current developments in the market and the event covered four topics on which HAKOM's and FTTS' experts prepared presentations. Following the presentations all participants in the round table exchanged their experiences and opinions on the topics.

The good practice of providing information to users regarding different queries related to the provision of postal services on a daily basis, as well as other questions associated with postal activity continued.

Users were also provided with the opportunity to make their queries via [e-mail](#) or online app [Ask us](#), available on HAKOM's website.

## INSPECTION ACTIVITIES

Postal inspectors performed 18 postal supervisions in 2021, which included inspection supervisions, on-site inspections, oral discussions, and examinations. Two motions for indictment were submitted and all decisions were public.

Inspection supervisions were for the most part conducted over HP as the provider of the universal service. In the conduct of inspection supervision related to the performance of the universal service attention was usually directed at the quality of the service performance and the rights of users of postal services.

When determining the merits for initiating inspection supervision ex officio, stipulations and other notifications were taken into consideration that indicated breaches of the provisions of the PSA. Three decisions were adopted ordering irregularities or omissions determined by inspection supervision to be removed:

[The Decision](#) by which HP was ordered to remove irregularities, deficiencies or omissions associated with printouts of the notifications on receipt of deliveries before it was established that the delivery of registered postal item could not be effected to the recipient or another person authorised for the receipt at their home address or the premises of the recipient. HP initiated administrative proceedings against this order before the High Administrative Court of the HR, which [ruled against it](#) and refused the claim.

[The Decision](#) by which HP was ordered to remove irregularities, deficiencies and omissions associated with the confidentiality of regular postal items (Article 35, paragraphs (1) and (2) of the PSA).

[The Decision](#) by which HP – Hrvatska pošta d.d. was ordered to remove irregularities, deficiencies and omissions associated with the failure to deliver registered postal items to authorised persons against a signature upon delivery. At the suggestion of the inspector, HAKOM submitted two motions for indictments against HP for failure to deliver data at the written request of the postal inspector within the set deadline which is qualified as a misdemeanour under the PSA. Following the submission of the motion, the Municipal Misdemeanour Court in Zagreb ruled on 11 March 2021, finding HP guilty and imposing a fine in accordance with the law.

An additional motion for indictment was submitted against HP for failure to deliver a postal item to an authorised person against signature, which also qualifies as a misdemeanour.

After the submission of the motion, the Municipal Misdemeanour Court in Zagreb ruled on 14 October 2021, finding HP guilty and imposing a fine.

Following petitions for two legal persons, inspectors verified compliance with the provisions of Article 17 of the PSA, which prescribes that the right to provide interchangeable postal services and other postal services is acquired by a legal or natural person as of the date of submission of a complete application to HAKOM. One inspection supervision established that the legal person does not provide postal services as it was stipulated in the documents and in other case, upon the receipt of the petition by one provider of postal services, in which the entity submitting the petition claims that there is a legal person in the market providing postal services without HAKOM's authorisation in accordance with Article 17 of the PSA, the entity that submitted the petition was notified that the conditions for initiating an inspection supervision referred in Article 59, paragraph (1) of the PSA ex officio had not been met because in the case at hand there were no breaches of the provisions of the PSA that the entity submitting the petition stipulated in the petition.





# 04

## RAIL SERVICES

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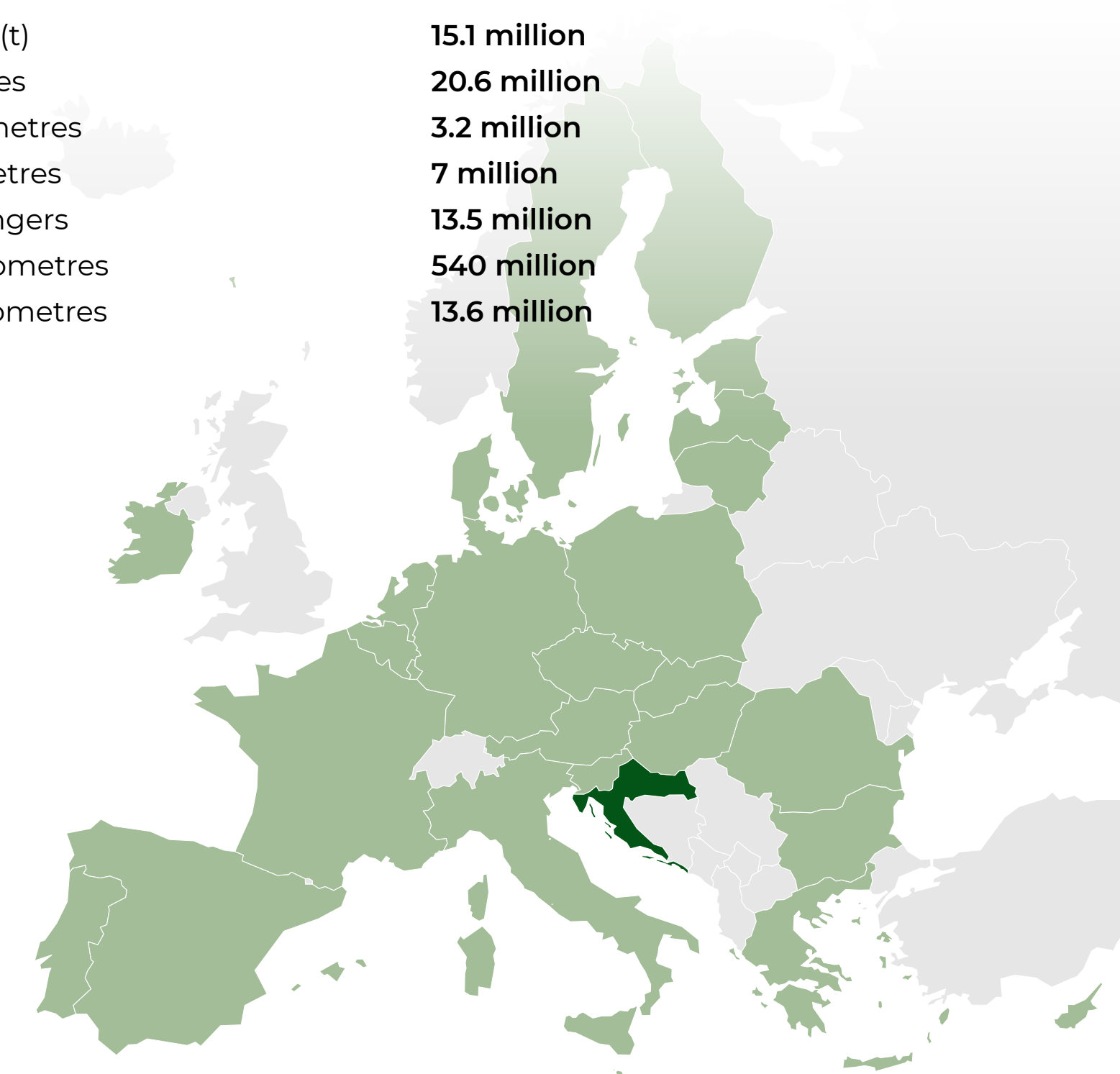
Croatia's geographic position of a Central European, Mediterranean and a Danube country has certain comparative advantages for the development of its overall transport in which railway transport holds a prominent position. Although it did not develop according to expectations, in the organisational sense railway transport adjusted to the EU railway system, where growing importance is awarded to lower impact transport modes which at the same time contribute to the efficiency of the transport system and cost reduction. HAKOM as the regulatory authority has the task to ensure non-discriminatory access of railway undertakings to the rail services market and the protection of the rights of passenger in railway passenger transport.

## MARKET OVERVIEW

**Figure 4.1** Basic information on railway infrastructure and operation of railway operators at the end of 2021

### REPUBLIC OF CROATIA

❖ Infrastructure manager	<b>HŽ Infrastruktura d.o.o.</b>
❖ Length of railway network in the HR	<b>2,617 km</b>
❖ Number of freight carriers	<b>13</b>
❖ Number of passenger railway undertakings	<b>1</b>
❖ Maritime ports	<b>5</b>
❖ Inland waterway ports	<b>4</b>
❖ Goods transported (t)	<b>15.1 million</b>
❖ Total train kilometres	<b>20.6 million</b>
❖ Total net train kilometres	<b>3.2 million</b>
❖ Freight train kilometres	<b>7 million</b>
❖ Transported passengers	<b>13.5 million</b>
❖ Total passenger kilometres	<b>540 million</b>
❖ Passenger train kilometres	<b>13.6 million</b>



## Stakeholders in the rail services market

In accordance with the [Act on the Regulation of the Rail Services Market and the Protection of Passenger Rights in Rail Transport](#) (ARRSM), HAKOM monitors market competition in the rail services market. In doing so HAKOM collects the data required for regulating the rail services market and data required for statistical monitoring of stakeholders and their operations in the market.

In 2021, railway infrastructure continued to be managed by a single railway infrastructure manager, HŽ Infrastruktura d.o.o. (HŽI), which is at the same time the largest service facilities operator in the rail services market in the HR.

By regularly consulting the European Railway Agency Database of Interoperability and Safety [ERADIS](#) and cooperating with the infrastructure manager, HAKOM established that two new freight carriers were registered in 2021 in the HR market. Pursuant to the ARSM, rail operators are obligated to submit to HAKOM key information within the time limit of up to eight days from obtaining a certificate on security and/or permit to provide railway transport services, required for statistical monitoring of the market and the protection of market competition. New carriers failed to submit their data in a timely manner and were invited to submit the data. There were 13 freight railway undertakings operating in the market in 2021 and one passenger railway carrier.

Figure 4.2 HR rail services market



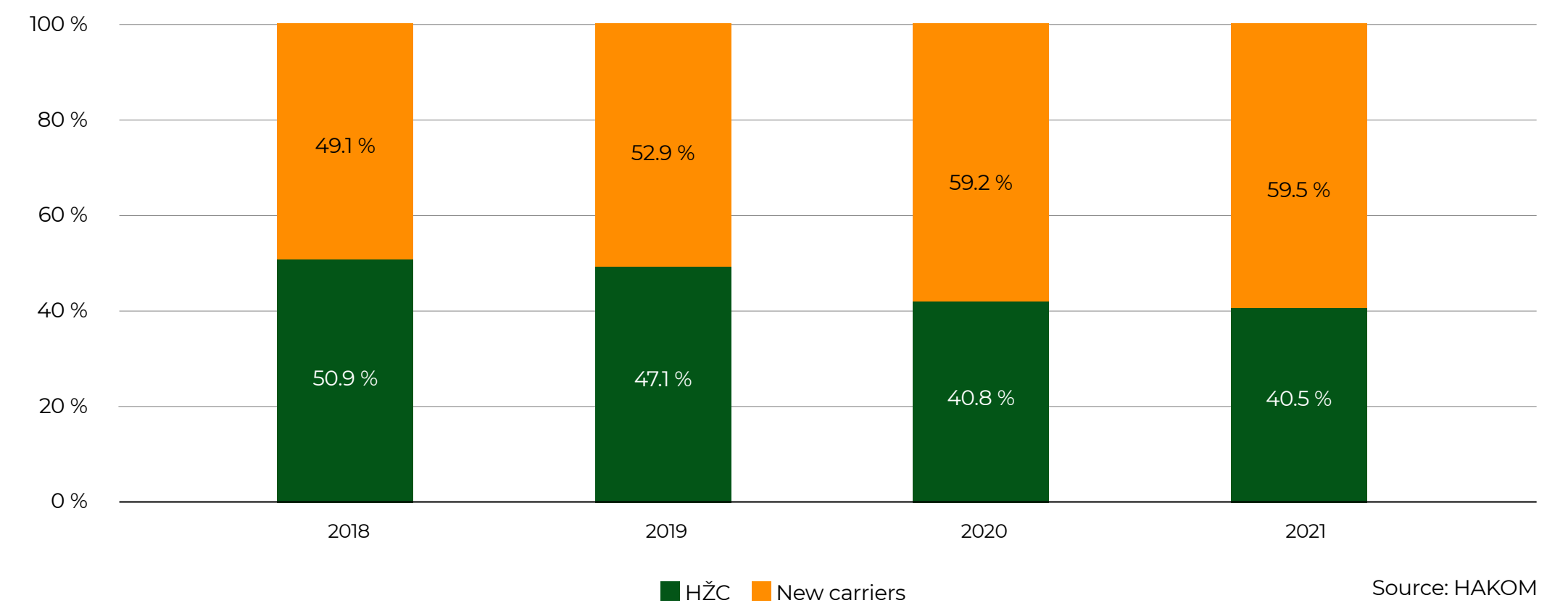
Of the 13 registered freight railway carriers in 2021, 11 carried freight, two carriers were inactive, while the company Pružne građevine d.o.o. continued to conduct transport for own purposes.

In May 2021, HAKOM was notified of planned new services in rail passenger transport relating to seasonal passenger lines in 2022 and passenger transport services on the following lines: Krakow – Split - Krakow, Krakow – Ogulin – Krakow, München Hbf – Zagreb Central Station - München Hbf. Pursuant to ARSM, HAKOM published on its website, within the set time limit, the Notification of the applicant, after which no authorised entity submitted a request for an economic equilibrium test (EET) of the contract on public passenger transport.

## Performance indicators by railway undertakings in the rail services market

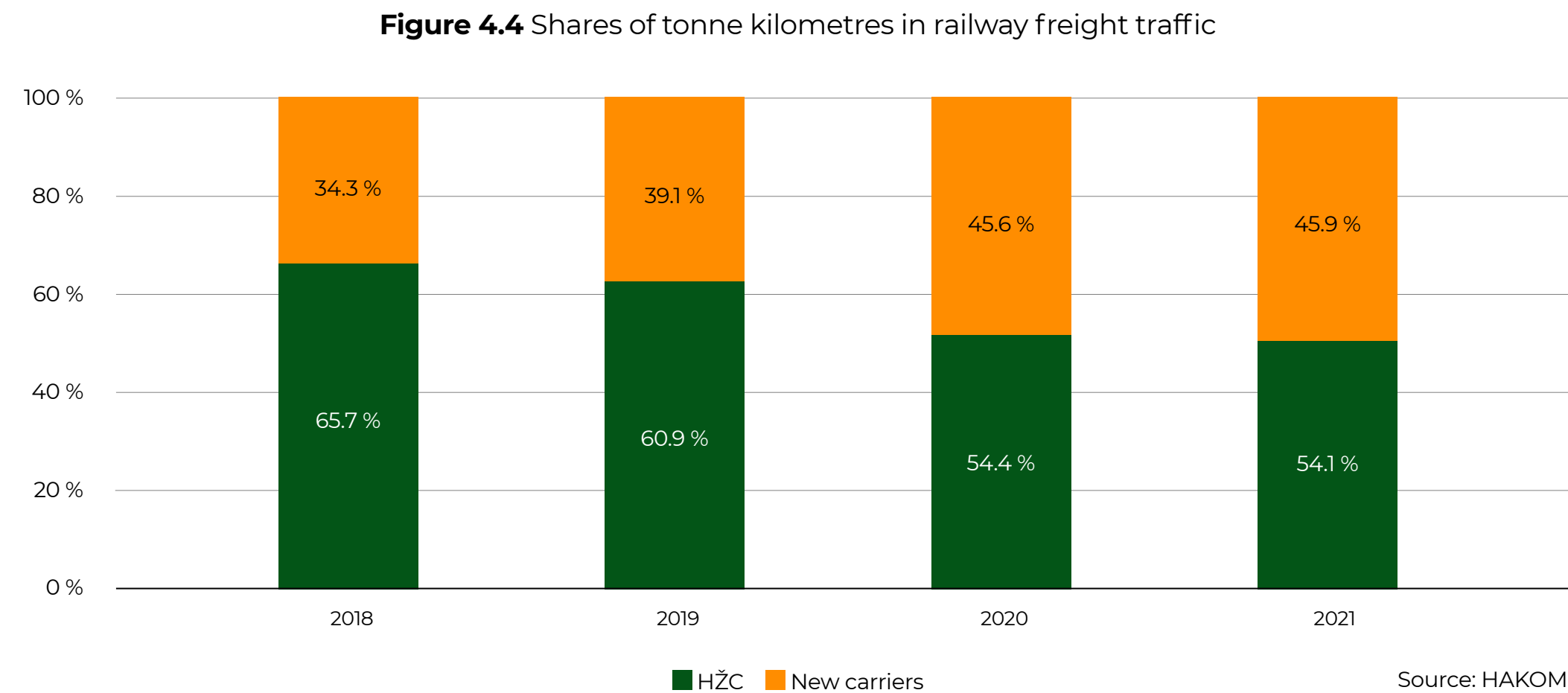
In 2021, 227,742 passenger and 42,138 freight trains were in transport on the railway network. A total of 15.4 million tonnes of goods were transported, i.e. 1.5 percent more than in the previous year. The increase in the number of new freight carriers increased their share in transported goods, although much less than over the previous year. New carriers increased the share in transported goods by 0.3 percent from 2020, and the incumbent carrier, although decreasing its share in the quantity of goods transported in the market, transported 0.74 percent more goods than in 2020.

Figure 4.3 Market shares by goods transported in railway freight traffic

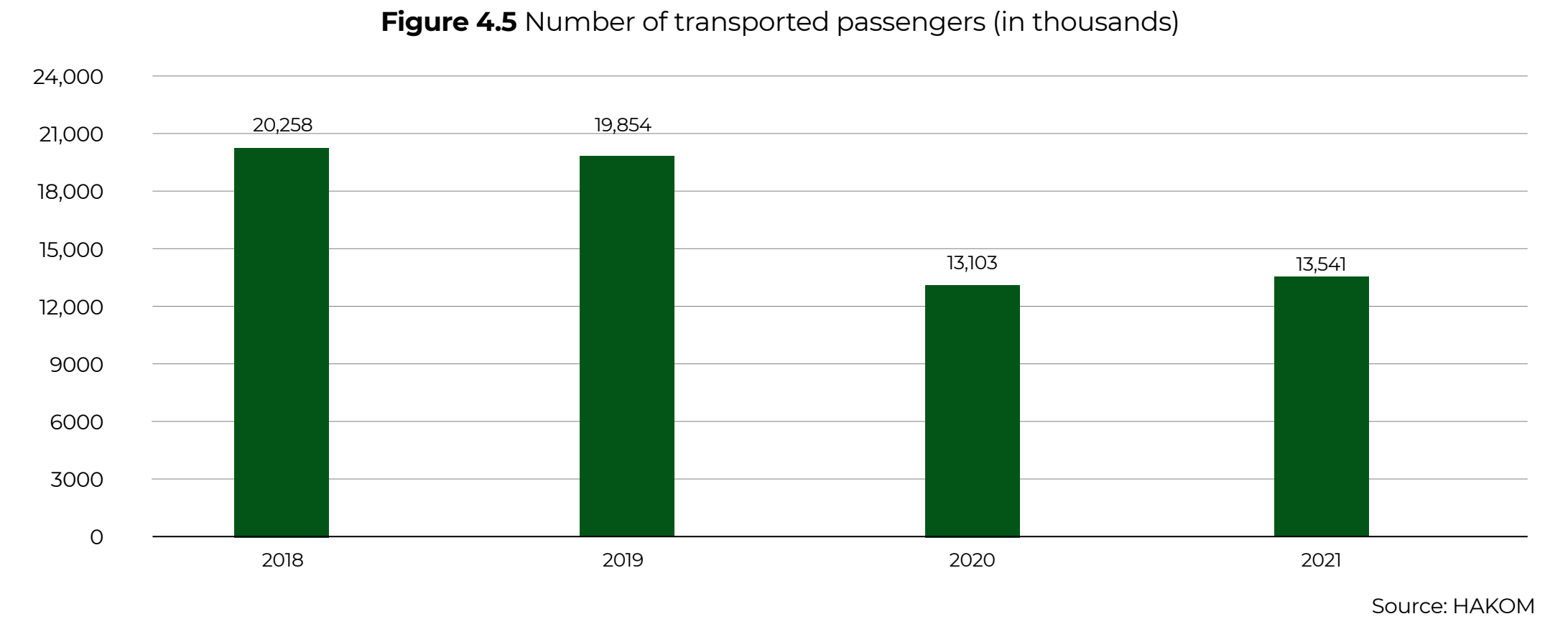




Freight traffic was less impacted by the COVID-19 pandemic than passenger traffic. However, the pandemic took its toll on the operations of all stakeholders in the rail services market. The domestic incumbent reduced its share of total tonne kilometres by 0.3 percent from 2020, while new rail carriers realised the least increase in their share thus far.



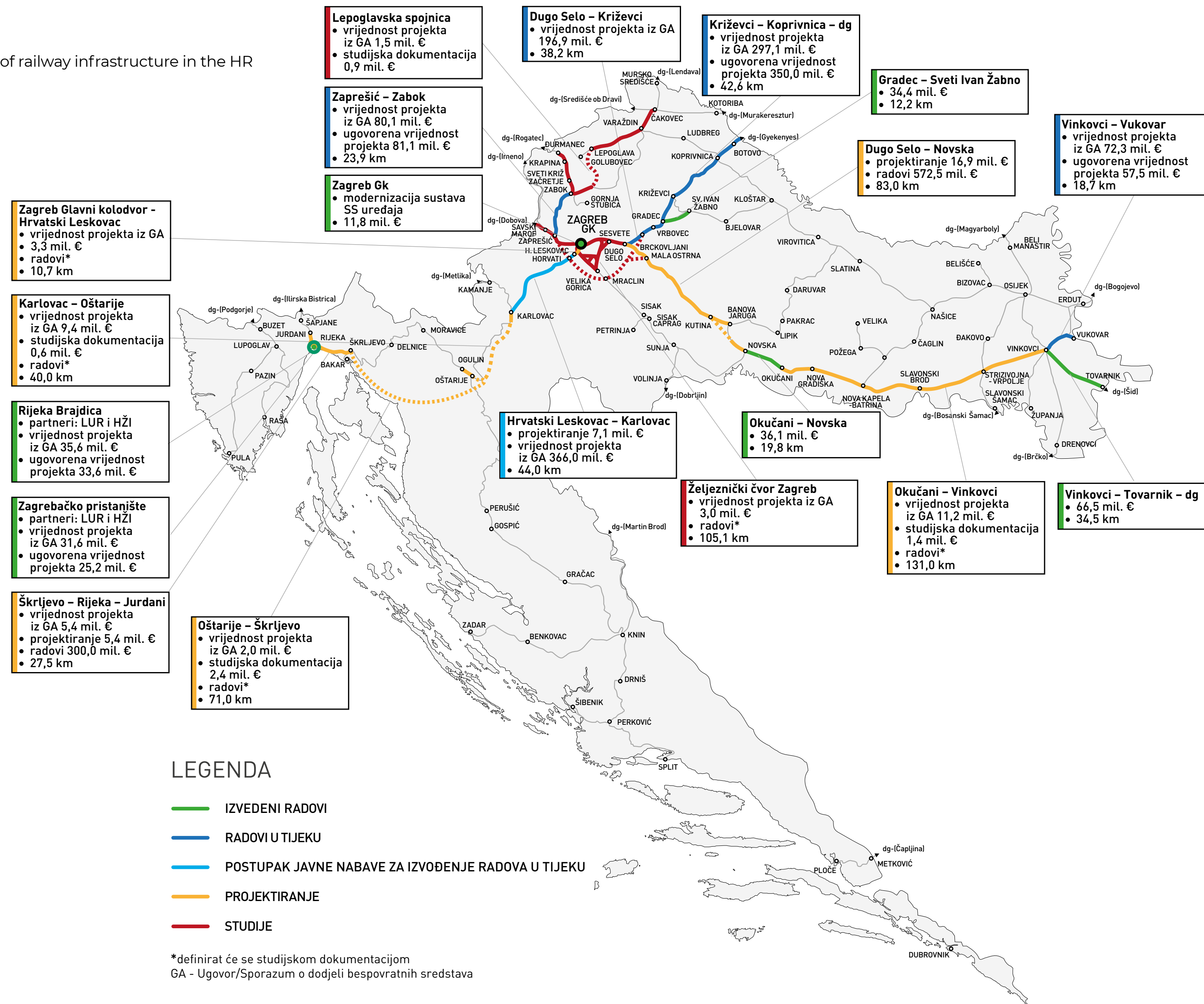
After the drastic decrease in the number of transported passengers in 2020, caused by the lockdown, in 2021 the number of transported passengers increased. However, the recovery was not good enough to even remotely attain the figures seen in 2019. A total of 13.5 million passengers used the service of rail passenger traffic, 31.8 percent less than in 2020. Passenger kilometres in 2021 rose by 20.1 percent from the previous year, implying that passengers travelled longer lines because the number of passengers grew less than the number of passenger kilometres.



## RAILWAY INFRASTRUCTURE AND SERVICE FACILITIES

HŽI is responsible for organising and regulating railway traffic, as well as for restoring, maintaining and developing the railway infrastructure, which is a public good in general use. Railway infrastructure in the HR is connected with the railway infrastructure of four neighbouring countries: Slovenia, Hungary, Serbia and Bosnia and Herzegovina. Pursuant to the [Railway Act \(RA\)](#), HŽI, as well as service facilities operators, are obligated to ensure all interested railway undertakings the right of access to railway infrastructure and use of tracks that connect maritime ports, inland waterway ports and other service facilities specified in the RA under equal, transparent and non-discriminatory terms. For each timetable HŽI creates a Network Statement (NS) the purpose of which is to provide a unique source of key information required by applicants for the provision of transport services in railway infrastructure. In 2021, HŽI managed 2,617 km of railway infrastructure, of 2,343 km are single-track and 274 km are double-track railway lines. According to the NS data, 980 km of the track are electrified, of which 977 km with the alternating current system of electrification with 25 kV and 50 Hz, while the remaining three kilometres are electrified with 3 kV DC power supply system. The lag in the electrification of HR railway lines is also illustrated by the fact that of the total length of the railway infrastructure only 38 percent is electrified, while the EU average is 55 percent. In addition to the quality of transport and reduction of operating costs, electrification has a strong impact on gas emissions. All this makes it necessary

Figure 4.6 Restoration and development of railway infrastructure in the HR



Source: HAKOM



to continue with the electrification and modernisation of the electric traction power system to achieve reliable and quality services of railway transport oriented towards protecting the environment as the ultimate objective of all Member States. As part of NS HŽI also publishes a list of service facilities it operates, the services it provides and the associated fees. In accordance with [Commission Implementing Regulation \(EU\) 2017/2177 of 22 November 2017 on access to service facilities and rail-related services](#) (Implementing Regulation 2017/2177), operators of service facilities are obligated to publish a service facility description. Every year HŽI publishes an invitation for submission of documents or links to service facility descriptions of other service facility operators that manage service facilities and provide services from them. The received documents or links to the service facility descriptions are then published as an Attachment to the said NS.

## INFRASTRUCTURE USAGE

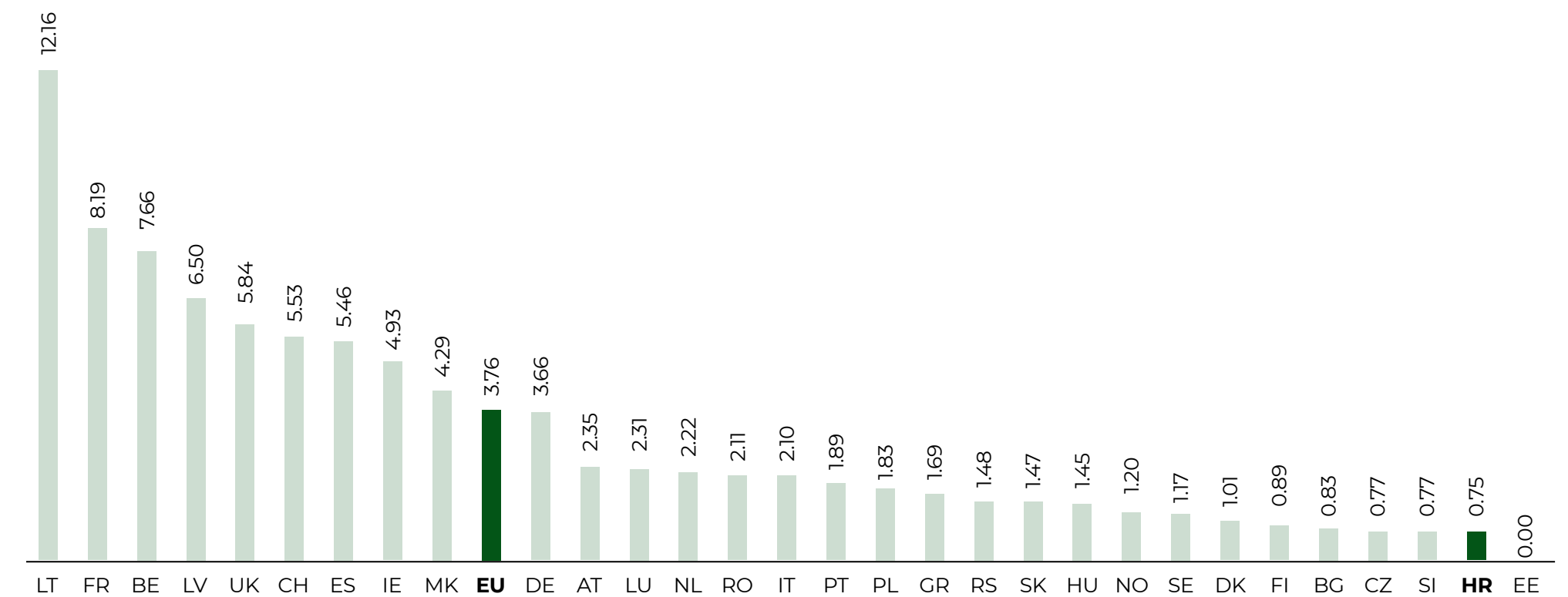
The basic functions of infrastructure management are deciding on allocation of train paths, which includes the preparation and the assessment of availability and allocation of individual train pates and deciding on charges. HŽI is obligated to enable all rail undertakings the service of the minimum access package, access to service facilities and services provided at those facilities in a non-discriminatory manner, which HAKOM monitors regularly within the scope of its regulatory activities, inspection supervisions, data collection and cooperation with stakeholders in the rail services market.

### The minimum access package

HŽI provides the basic minimum access package (MAP) of services, which encompasses the processing of applications for allocation of infrastructure capacity, including turnouts and notes. The MAP also includes the processing of application for management of train traffic, including signalisation, regulation, train reception and dispatch and communication and providing information on train movement, usage of available equipment for supply of electricity required for towing trains and provision of other information required to realise or perform the service for which the capacity has been allocated.

The average price per train-kilometre for the MAP service in the HR, for the 2020/2021 timetable, was HRK 5.7. According to the latest IRG-Rail report on 2020 market supervision the MAP charge in the HR was the lowest in the EU market, totalling a mere EUR 0.75 and remaining unchanged in 2021.

**Figure 4.7** Charges for MAP in EU Member States



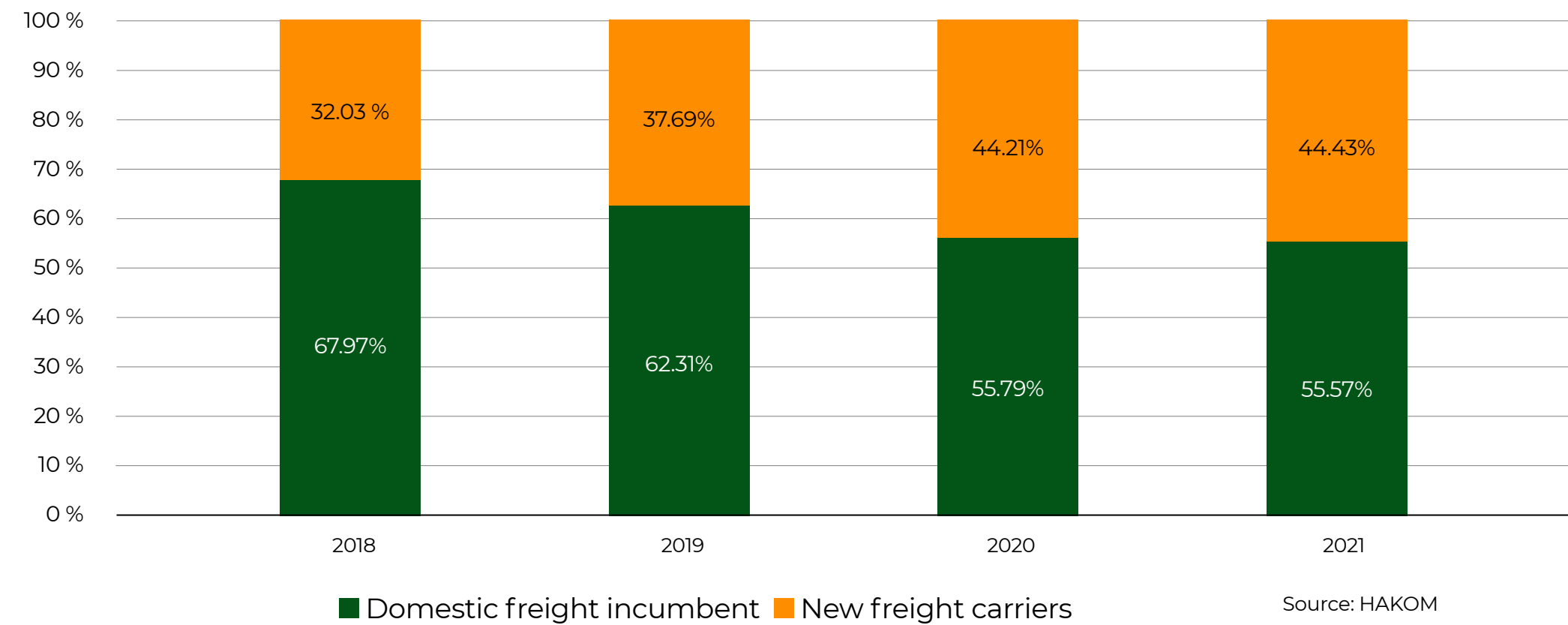
Source: Group - Rai<sup>8</sup>

## Indicators of infrastructure usage

The indicators of infrastructure usage are train-kilometres (tkm) realised by carriers. The passenger undertaking realised 13,655,776 tkm in 2021, while freight carriers realised a total of 6,954,686 tkm. The incumbent freight carrier decreased its tkm by 3.5 percent and new carriers by 2.6 percent from the previous year. As a result, new carriers minimally increased their share in total tkm compared to the incumbent undertaking.

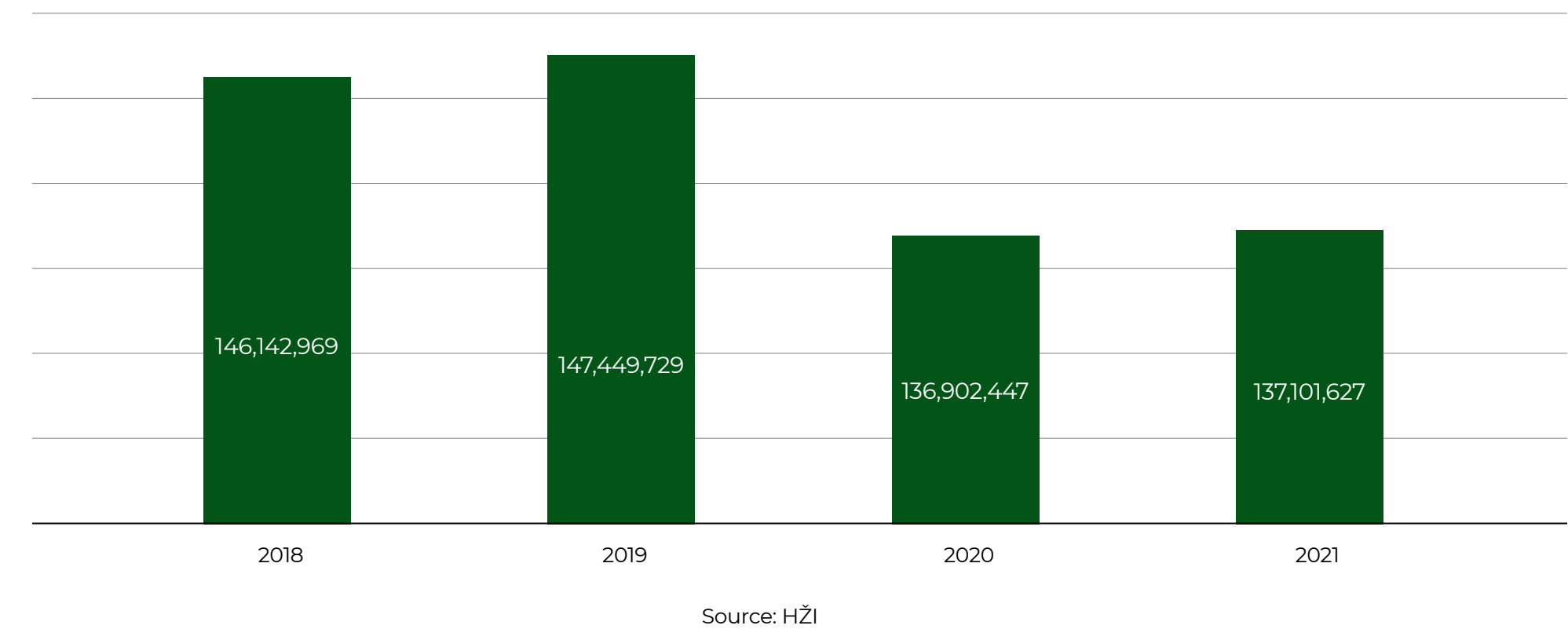
<sup>8</sup> IRG-Rail, Independent Regulators' Group - Rai

**Figure 4.8** Overview of infrastructure use by freight carriers in train-kilometres



The COVID-19 pandemic has impacted the entire railway sector and consequently the revenues of the infrastructure manager. The revenues generated were almost the same as in 2020, i.e. were 0.1 percent higher, and seven percent lower than in the pre-pandemic 2019.

**Figure 4.9** HŽI revenues from railway services (in million HRK)

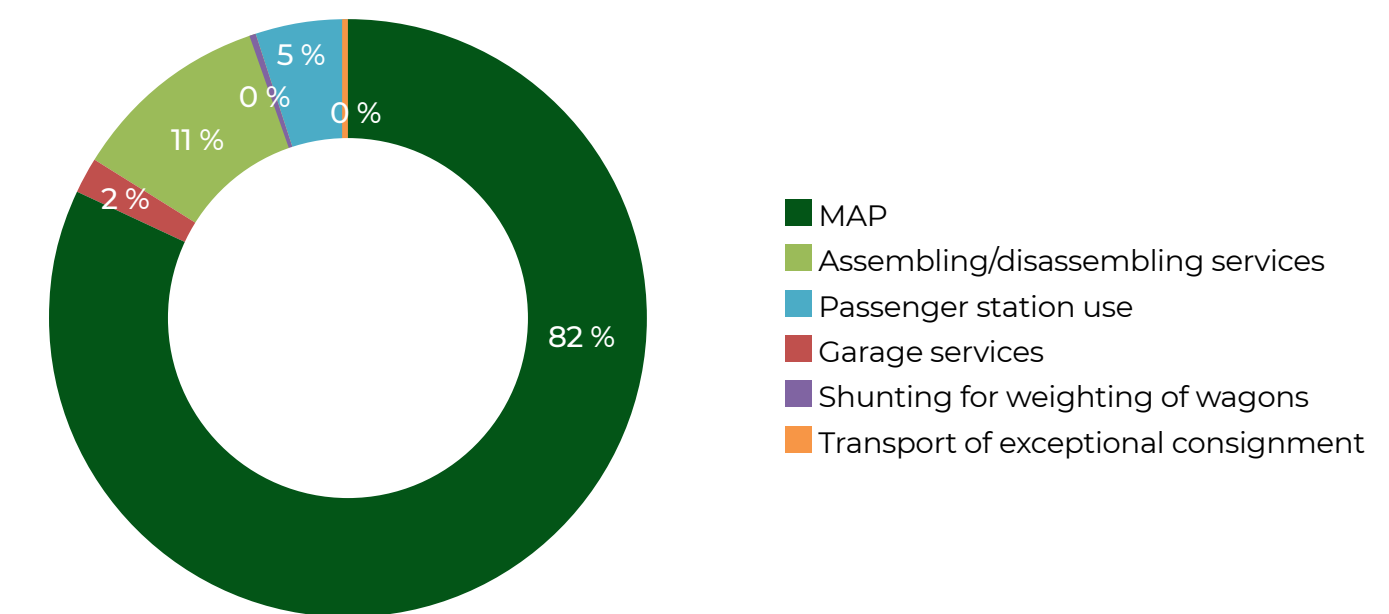


## Revenues and charges

The only infrastructure manager in the HR, HŽI, collects charges for rail services: the minimum access package, access to service facilities and services provided at those facilities, including track access to those service facilities and additional and auxiliary services. In accordance with [Commission Implementing Regulation \(EU\) 2015/909 on the modalities for the calculation of the cost that is directly incurred as a result of operating the train service](#), the level of charges for the minimum access package and track access to service facilities is set based on direct cost. When additional and ancillary services are provided by only one service provider, the charge may not exceed the costs incurred by the service increased by reasonable gain and if there are several service providers charges are set by the market. HŽI is autonomous and independent in defining the methodology, conditions and prices for infrastructure access and it publishes the conditions and prices for other railway services in accordance with the provisions of the RA. HŽI and service facilities operators are completely independent in the calculation of the price for access and usage of railway services, while HAKOM's role is to supervise the infrastructure manager and service facilities operators when setting these charges. For instance, whether the correct methodology has been applied. HAKOM is authorised to supervise negotiations between the applicants and infrastructure manager on the amount of charges for railway services in order to ensure equal and non-discriminatory right to service utilisation.

HŽI continues to generate its greatest revenues from MAP. The services least used by carriers in 2021 were transport of exceptional consignment, weighting services and services of shunting for weighting.

**Figure 4.10** Shares of rail services in HŽI revenues





## REGULATORY ACTIVITIES

### Co-chairing the IRG – Rail

In 2021, HAKOM co-chaired the IRG Rail, the organisation of independent European Regulators for railway services. The aim of the IRG Rail is to create a single, competitive, efficient and sustainable railway market in Europe. HAKOM undertook a series of activities and made preparations to take over the chairing role in 2022, participating in over a dozen meetings of a special group working on amendments of the general acts of the IRG Rail and strategic meetings and meetings of IRG-Rail co-chairs and chairs in relation to the coordination and co-operation in running the organisation. The topic for discussion in these meetings were data sharing and their confidentiality, IT solutions, quorum and voting, dissenting opinions and their interpretation and other issues relevant for the organisation's operations. More than ten meetings were held with other organisations in the rail market, such as RNE – Rail Net Europe, ERFA – European Rail Freight Association, DG MOVE – DG for Mobility and Transport, and UIRR – International Union for Road-Rail Combined Transport.

In addition to its other activities, HAKOM actively participated in the drawing up of IRG – Rail's new statutory acts, adopted to improve its operations and decision making. They also regulate the IRG – Rail's chairing role in relationships with the stakeholders in the European rail market. Drawing on the internal experience of using a system that provides for simultaneous use of common documents, HAKOM suggested that a similar system be used in the work of IRG – Rail's working groups. This makes it easier to prepare documents that are being simultaneously drawn up by members of all regulatory bodies. The organisation opted for the technological platform, and HAKOM, together with regulators from Spain, Austria and Germany, participated in resolving technical issues and making tests required for joint simultaneous operation. For more information on IRG – Rail expert activities please refer to its website [www.irg-rail.eu](http://www.irg-rail.eu).

### Infrastructure manager's Network Statement (NS)

Pursuant to the ARRSM and based on its competence in the segment of regulating the rail services market, HAKOM continuously checks the content of the NS and in the draft phase of documents analyses the content and compliance with regulations, as well as notifies the infrastructure manager on possible necessary amendments to disputed provisions. In order to increase the transparency of the data available in the NS for the 2020/2021 train schedule, HAKOM submitted to HŽI proposals to update information on working hours of its offices in accordance

with the applicable train schedule, to define in more detail the terms of notifications on works planned on railway infrastructure with longer deadlines, to publish links to descriptions of service facilities of other service facility operators. HAKOM issued the same instructions also for the NS for the 2021/2022 train schedule.

### The tariff for the transportation of passengers in domestic traffic (Tariff 101)

By conducting inspection supervisions, working on different cases, providing advice to end-users (passengers) and acting ex officio, HAKOM, since assuming its competence for the segment of protection of passenger rights, and especially intensively in 2020, has systematically monitored and kept records of deficiencies and established non-compliance of Tariff 101 with [Regulation \(EC\) No. 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passenger's rights and obligations](#) (Regulation (EC) No 1371/2007). After establishing the deficiencies and in accordance with user instructions and information available at the official website of HŽPP, acting ex officio, HAKOM ordered HŽPP mandatory amendments to Tariff 101 and compliance with the obligations specified in the Regulation, as well as other regulations governing passenger rights. In 2021, activity was focused on cooperating with HŽPP in removing the established deficiencies, drafts of new provisions contrary to law and non-compliance with the Regulation. At HAKOM's request and following numerous amendments of contested content, HŽPP committed to implement the said amendments in the first half of 2022.

### Bilateral meeting between AKOS and HAKOM

In November 2021 a bilateral meeting was held with AKOS, the Slovene regulator, relating to accounting separation in practice and the structure of the regulatory financial statement of the infrastructure manager. Experiences were also exchanged regarding the supervision of charges, focusing on the minimum access package, service facilities and services provided in these facilities.

### Analysis of consultations with representatives of users of railway freight and passenger transport services

In 2021, HAKOM performed and published an analysis of consultations with representatives of users of railway freight and passenger transport services. The consultations were performed via a predefined online survey questionnaire that was public and available to users of rail transport. The questionnaire for users of freight transport contained 27 questions divided into six groups,

while the questionnaire for rail passenger transport included 45 questions, structured into 13 thematic segments.

The survey was conducted in November and December 2020 based on responses of 1,635 passengers, aged 16 to 60, and 26 users of rail freight transport. The users graded the quality of the transport service and courtesy of the carrier, service facility operators and infrastructure managers. When the SARS – CoV-2 emerged in the HR the survey questionnaire was amended to take into account the latest situation with some of the questions being targeted at assessing its impact on the provision of rail freight and passenger transport services.

Based on the analysis of the market of **users of rail freight transport services** it is concluded that the most surveyed companies have more than a hundred employees and have been present in the market for more than ten years, they use rail transport services predominantly to transport bulk cargo, containers and liquids daily or several times a month.

More than 50 percent of users were satisfied or very satisfied with the price and frequency of the transport and less with the duration and punctuality of the transport. More than 50 percent of users were satisfied or very satisfied with the availability of information on transport prices and changes in transport routes and less satisfied with the availability of information on traffic situation, cancellation of transport services and on service facilities.

It is interesting that 50 percent of users thought that rail freight transport was developing in a good direction but too slowly and that in the last year as much as one half changed their rail transport carrier, which is a good indicator of a liberalised market.

It may be concluded that carriers need to continue improving their services, primarily in the segment of duration, frequency and accuracy of transport, availability of information on traffic situation and cancellation of transport services and to digitalise their operations, as well as ensure an adequate vehicle fleet for users. Service facilities operators need to improve their flexibility and availability of information on service facilities and services they provide, while the infrastructure manager must up its investments in railway infrastructure in order to increase transport speeds, transport reliability and cut cargo transport times.

The analysis of the **market of users of rail passenger transport services** indicates that most of those surveyed use railway transport daily or several times a week to travel to work, school or for leisure activities. The main reasons for opting for railway transport are favourable prices and accessibility. More than 60 percent of those surveyed is very unsatisfied with the duration of travel, which is at the same time the main cause for abandoning train travel. As many of those surveyed are dissatisfied with the punctuality of timetables, provision of information on train delays and

cancellation of transport services.

The results of the survey should provide guidelines to the provider of passenger railway services and infrastructure manager to invest further efforts in improving their service, primarily as regards better availability of information on transport service, accessibility and passenger comfort in vehicles and facilities, as well as accuracy and shortening the duration of travel.

### Organising a round table and debate

The 11th Round table on the topic of Service facility description focused on the obligations on service facilities operators arising from the Implementing Regulation 2017/2177 and the RA. One of the main obligations of the service facility operator is to publish a service facility description. Therefore HAKOM processed in detail questions linked to the content of the service facility description, manner of publication, time limits in which the operator is obligated to respond to the request for service and allocation of railway services and shared experiences from inspection supervisions that were performed in 2020 of all service facilities operators. Examples from practice were provided and participants informed on the registry of rail services provided by service facilities operators that is kept by HAKOM, as well as the European Rail Facilities Portal (RFP). Due to pandemic containment measures the Round table was organised in the format of an online workshop including all interested representatives of service facilities.

In 2021, a debate was held, jointly organised by the MSTI, HAKOM and Pro Rail Alliance, on the occasion of the European Year of Rail, under the title Contemporary railway amid the liberalised market, and was dominated by topics regarding the modernisation and restructuring of the railway sector, market competition as the driver of the sector and contribution of the sustainable development of railway transport to the overall national economy. The activities within the framework of the European Year of Rail were aimed at providing momentum towards increasing the share of railway transport in the transport market. Various events, projects, and activities across Europe underline different dimensions of the railway; from the European innovative rail industry to the role of the railway in the European culture and legacy, important role in connecting different regions, people and businesses, its role in sustainable tourism and its involvement in European relations with neighbouring countries.



## INSPECTION ACTIVITIES

In 2021, HAKOM conducted 12 inspection supervisions of which six over the infrastructure manager, HŽI and six over the passenger carrier HŽPP.

### Execution of a Decision on an administrative measure

In accordance with the RA, the infrastructure manager is obligated to create a tool for informative calculation of charges based on the Network Statement and publish it on its website. Since the infrastructure manager failed to implement the inspector's decision within the specified time limit, a decision on execution was issued, which prompted the infrastructure manager to meet its obligation. The informative tool for the calculation of charges based on the Network Statement is published on the website of the infrastructure manager: <https://www.hzinfra.hr/naslovna/pristup-infrastrukturi/korisnicki-centar/>.

According to Regulation 1371/2007, railway passenger undertaking is obligated to provide information during the journey on on-board services, delays, next station, main connecting services and security and safety issues. More than 40 inspections were performed of transport vehicles in which HŽPP failed to execute the inspector's decision and to meet its obligation to inform passengers during the journey to the full extent. HŽPP focused exclusively on providing one type of information, that on the next station, neglecting the provision of other four groups of information. Due to failure to meet its obligation under the said decision and non-compliance with the Regulation pursuant to Article 8, paragraph 2, in connection with Annex II, Part II of the Regulation, Information during the journey, HAKOM issued a decision on execution imposing a fine of HRK 25,000.

### Other inspection supervisions

Inspection supervisions of HŽI were conducted for the purpose of verifying the implementation of individual legal provisions: the implementation of Article 20, paragraph 4 of the RA under which infrastructure manager is obliged prior to adopting a business plan to ensure existing applicants, and upon request potential applicants, access to relevant data and give them the opportunity to express their opinion on the draft business plan, in connection to the access and utilisation, as well as efficiency, availability and development of railway infrastructure. Considering that HŽI failed to meet its statutory obligation in 2021, it was issued a decision on the obligation to meet its statutory obligation, which was met in 2022.

The implementation of Article 20, paragraph 5 of the RA under which the infrastructure manager is obliged, prior to adopting a business plan, to submit the draft business plan with possible opinions of existing or potential applicants to the regulatory authority which gives its unbinding opinion. Considering that HŽI failed to meet its statutory obligation in 2021, it was issued a decision on the obligation to meet its statutory obligation, which was met in 2022.

The implementation of Article 15 of the RA under which the main infrastructure manager is obligated to organise regular coordination meetings with interested railway carriers and applicants with the participation of the regulatory authority as observer, to which, as necessary, the representatives of users of rail passenger and freight transport services will be invited, as well as representatives of state, regional and local authorities. Considering that HŽI failed to meet its statutory obligation, it was issued a decision on the obligation to meet its statutory obligation, which it met by publishing the guidelines for coordination on its website: <https://www.hzinfra.hr/naslovna/pristup-infrastrukturi/koordinacijski-sastanci/> and by holding a coordination meeting on 29 September 2021.

The implementation of Article 47 of RA under which the infrastructure manager is obligated to set up and maintain a register of own assets and assets under its management for the purpose of assessing the funds required for maintenance or replacement of these assets. It was established during the inspection supervision that HŽI meets this statutory requirement which prompted the inspector to discontinue inspection supervision proceedings.

The implementation of individual provisions of the [Ordinance on timetables in railway transport \(Official Gazette 23/2020\)](#) (Ordinance) pursuant to which the infrastructure manager is obligated to prepare and publish train timetable excerpts at all facilities where trains are planned to halt for the purpose of passenger boarding or disembarking. Inspections of train stations and stops established that HŽI does not fully meet its obligation, meaning that it failed to post excerpts from the timetable for passengers in all facilities or posted them in places not visible to passengers on train stations and stops. In addition, excerpts failed to contain the logo and name of the infrastructure manager and of the facility to which it pertains, the period of implementation, as well as all passenger trains that depart from this facility, time allowed for passengers to board and disembark or trains for which this facility is the last station. Train timetable excerpts for train arrivals and departures are not displayed separately and for different stops as prescribed by in the Ordinance. The excerpts should also contain the time and number of the train direction of arrival and direction of departure and the number of the train platform and track. All materials amending the train timetable should be adopted and published by HŽI.

The infrastructure manager was ordered by an inspector's decision to comply with the said provisions as of the entry into force of the 2021/2022 timetable, i.e. as of 12 December 2021.

Inspection supervisions of HŽPP were conducted for the purpose of checking the implementation of individual statutory provisions:

Verifying compliance with Articles 13 and 26 of Regulation (EC) No 1371/2007 for the purpose of compliance with the obligation to make advance payments proportional to the damage suffered in case of a passenger being killed or injured. Following the issuance of the decision on execution HŽPP met its statutory obligation.

Verifying compliance with Article 28 of Regulation (EC) No 1371/2007. In relation to the obligation to define the quality of service, to implement the system of quality management and monitor own performance in the standards of service quality and publish reports on the quality of service provided by HŽPP. Following the issuance of the decision HŽPP met its statutory obligation.

Verifying compliance with the obligation pursuant to Article 57, paragraph 8 of the RA in connection with the obligation to provide an explained and written answer to submitted complaints regarding the draft timetable. Following the issuance of the decision HŽPP met its statutory obligation.

Verifying compliance with the obligation pursuant to Article 29 of the RA based on which HŽPP is obligated to make plans for extraordinary situations and ensure they comply with Article 18 of Regulation (EC) No 1371/2007. Following the issuance of the decision HŽPP met its statutory obligation.



# 05

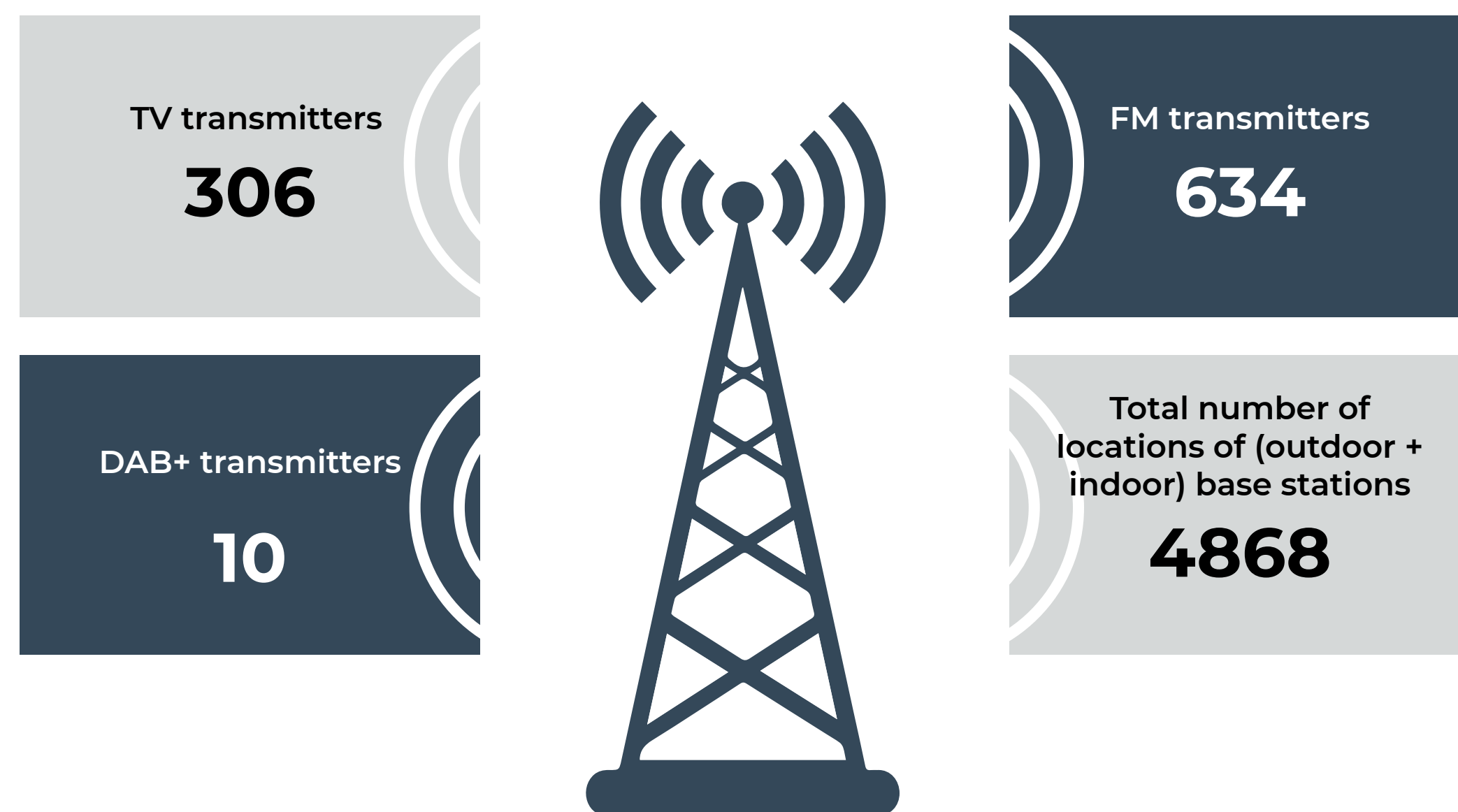
## RF SPECTRUM MANAGEMENT

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## RF SPECTRUM MANAGEMENT

Effective spectrum management is one of HAKOM's main tasks. It includes determining spectrum use, allocation planning, frequency planning, the preparation of network technical parameters, the licensing and approval of the RF spectrum use and spectrum control and monitoring on the national and international levels. The RF spectrum is a limited natural resource of interest to the Republic of Croatia and of great importance for the development of electronic communications and digital society. In the upcoming EU's digital decade, wireless broadband networks are expected to contribute greatly to the development of Industry 4.0 and the economy, as well as to greater accessibility and increase in digital skills and operation. The RF spectrum use in the HR is internationally coordinated in accordance with the regulations of the International Telecommunication Union (ITU), European Conference of Postal and Telecommunications Administrations (CEPT), and international implementation treaties, and is additionally harmonised among EU Member states and neighbouring countries. The RF spectrum management and control ensure smooth operation of radiocommunication services and indirectly the safety of human life and the protection of health and property.

**Figure 5.1** Basic data on radio stations



## EFFECTIVE USE OF RF SPECTRUM

RF spectrum management continued to be marked by the coronavirus pandemic and different radio-communication services continued to contribute to communication and timely provision of information to the public, as well as to ensuring the preconditions for growing number of electronic services that entered the everyday life of citizens and the economy. This caused an even greater demand for spectrum to satisfy required capacities needed to provide quality electronic communication services.

HAKOM continued to adjust its operations by speeding up and improving own business processes and services to provide and even better-quality service to its users. In addition to a previously developed service e-Licence, which provides for a simple and quick way of submitting applications and issuing licences for the use of the RF spectrum, e-Vessels, e-Broadcasting and e-Microwave, HAKOM additionally provided for the receipt of licence applications and sending of granted licences and invoices for RF spectrum use in electronic format. Preparations have been made for the implementation of new services within the scope of e-Licence (mobile, fixed, satellite, aeronautical and amateur radio stations), the implementation of which is expected in 2022. In addition to the listed application for licence issuance there is also an application available for Licence overview, enabling overview of general and individual licenses for RF spectrum use, which is being updated as appropriate.

In 2021, in cooperation with MSTI, HAKOM finished the project of integrating the vessel register with e-Vessels, additionally improving the quality of service for users registering their vessels and being issued the necessary licences for RF spectrum use, at the same time ensuring faster and better-quality interinstitutional exchange of data and information.

Considering that interest was expressed over previous years for launching of the Croatian nano-satellite in the low earth orbit (LEO orbit), HAKOM started adjusting national regulations in 2020 that would define the rights and obligations of the operators of space activities. The Ordinance on amendments to the Ordinance on the allocation of the radiofrequency spectrum was adopted in 2021, laying down the conduct of space activities in the sense of clearly defining the rights and obligations of licence holders that manage space objects.

For the purpose of alleviating the burden on the economy, and pursuant to HAKOM's annual financial plan and the completed public consultations, HAKOM adopted the Ordinance on payment of fees for HAKOM's business operations. Fees for RF spectrum management for public communications networks were reduced by 50 percent and fees for point-to-point links by 20 percent.

HAKOM's website was redesigned in 2021, making a separate section dedicated to 5G technology more user friendly. Information on 5G were regularly updated and in 2021 HAKOM published a short educational video on the introduction of 5G in Croatia.



In 2021, central activities of RF spectrum management for mobile communication networks were preparations and conduct of a public auction for 5G frequency bands (700 MHz, 3.6 GHz and 26 GHz). An important part of the preparations was drawing up allocation plans, regulating the terms and conditions for allocation and use of radio frequency. In connection with the allocation plans, in April 2021 HAKOM carried out the appropriate public discussions and following their adoption the key technical conditions were set up for 5G operations in main 5G frequency bands.

The licences for the use of the RF spectrum for frequency bands currently used for 2G, 3G and 4G technology expire in 2024. Prior to their expiry HAKOM will conduct new allocation proceedings. In preparation for these proceedings, at the end of 2021, HAKOM held public consultations on future use and allocation of the 800 MHz, 900 MHz, 1500 MHz, 1800 MHz, 2100 MHz, 2600 MHz, 3.6 GHz and 26 GHz frequency bands. As a result of the large number of frequency bands, and taking into account the practices of other European countries and the expected redistribution of a certain portion of the spectrum among operators within individual bands, the new allocation will be conducted via public auction. Since the beginning of the public auction was planned for the end of 2022, public procurement proceedings were initiated at the end of 2021 for the procurement of consulting services and adequate software for the public auction.

In 2021, the 5G working group primarily dealt with queries related to the impact of 5G technology on health and issues related to electromagnetic fields. In cooperation with equipment manufacturers present in the HR market, HAKOM organised a workshop early in 2021 on the assessment of the level of electromagnetic fields for adaptive antennas. Following the example of other European regulators, a document was prepared that represents [instructions for the assessment of exposure to electromagnetic fields for base stations with adaptive antenna system in mobile communications networks in the frequency band of up to 6 GHz](#). It was completed in cooperation with the representatives of the academic and scientific community and adopted within the framework of the sub-group for electromagnetic fields (EMF). The document is available on HAKOM's website.

Activities aimed at ensuring frequency resources for the national coverage of the HR within the framework of the fixed satellite service via geostationary satellite orbit position in accordance with Appendix 30B to the IT Radio Regulations were continued. Of the three available orbital positions to the HR, HAKOM opted for the position at 63°E that enables the coverage of Europe, Africa, Asia and western parts of Australia. In the next seven years international harmonisation will be required with satellite networks in fixed satellite services of other countries that were registered beforehand. To make this process easier, HAKOM joined the initiative aiming to amend the provisions of Appendix 30 B of the ITU Radio Regulations so that countries that did not have an allocated orbital position for national coverage within the framework of the fixed-satellite service be given priority and a special status in international alignment.

Considering that interest was expressed over previous years for launching a Croatian nanosatellite into the LEO orbit, HAKOM continued to adjust national regulations defining the rights and obligations of the operators of space activities. The Ordinance on amendments to the Ordinance on the allocation of the use of the radiofrequency spectrum was adopted in 2021, laying down the terms and conditions of RF spectrum use, specifying the manner of performing space activities in terms of clearly defining the rights and obligations of operators of space activities.

Resulting from technological advancements and market development in the segment of short-range devices and for the purpose of adopting implementing decisions of the European Commission and alignment with the ERC Recommendation 70-03, new or amended licences were issued. HAKOM thus issued new general licences for RLAN radio devices operating predominantly in closed spaces within the 5945 – 6425 MHz frequency band, and radio devices for broadband data transfer within the 57 – 71 GHz frequency band, considerably increasing the available spectrum for the so-called free RF spectrum use. In addition, in 2021 HAKOM launched the application e-Prijava RP service making it easier for all users to register the use of RLAN and SNG radio stations as prescribed for users of the free RF spectrum under the respective general licences.

In 2021, HAKOM carried out a public tender procedure for the issuing of an individual license for the use of the radiofrequency spectrum to provide the service of managing the electronic communications network of the digital radio in the territory of the HR. The first commercial licence for the use of the RF spectrum for digital radio in the HR was issued in the procedure.

Within the scope of its regular activities of RF spectrum management, HAKOM issued licences for the RF spectrum use, approvals for services of particular importance and compliance certificates to radio stations, and, in accordance with the Ordinance on fiscalisation in cash transactions, certificates confirming inability to establish an internet connection to exchange data with the Ministry of Finance and the Tax Authority.

**Table 5.1** RF spectrum management – documents issued

Type of documents issued	Quantity
RF spectrum use licences	4,563
Approvals for services of particular importance	2
Compliance certificates	5,456
Fiscalisation certificates	14

## FIFTH GENERATION OF MOBILE COMMUNICATION NETWORKS (5G) IN CROATIA

In August 2021, RF spectrum was allocated in frequency bands 700 MHz (758 - 788/703 - 733), 3600 MHz (3400 - 3800 MHz) i 26 GHz (26.5 – 27.5 GHz) for fifth generation (5G) mobile communication networks. Licences on national level were issued for a period of 15 years with a possibility of extension by five years to the following operators: AI Hrvatska, Hrvatski Telekom, Telemach Hrvatska and EOLO.

The results of the bidding in the public auction procedure for the 700 MHz frequency band at the national level:

Selected bidder	Main auction amount of RF spectrum (MHz)	Blocks	Assigned RF spectrum (MHz)	Initial price (HRK)	Total realised fee (HRK)
Telemach Hrvatska	20	A03	713 - 723/768 - 778	45,000,000.00	46,094,999.00
Hrvatski Telekom	20	A01	723 - 733/778 - 788	45,000,000.00	48,894,999.00
AI Hrvatska	20	A02	703 - 713/758 - 768	45,000,000.00	45,000,000.00

For individual frequency blocks (A01, A02 and A03) coverage obligations that contribute to the realisation of the strategic goals of the [National Plan for Broadband Development in the Republic of Croatia in the period from 2021 to 2027](#).

The results of the auction for the 3600 MHz frequency band at the national level:

Selected bidder	Main auction amount of RF spectrum (MHz)	Assigned RF spectrum (MHz)	Initial price (HRK)	Total realised fee (HRK)
Telemach Hrvatska	100	3600 - 3700	52,500,000.00	54,455,750.00
Hrvatski Telekom	120	3480 - 3600	63,000,000.00	66,765,750.00
AI Hrvatska	100	3700 - 3800	52,500,000.00	52,920,000.00

The results of the auction for the 26 GHz frequency band at the national level:

Selected bidder	Main auction RF spectrum amount	Assigned RF spectrum (GHz)	Initial price (HRK)	Total realised fee (HRK)
EOLO	200	27,3 - 27,5	7,500,000.00	7,500,000.00
Telemach Hrvatska	200	26,5 - 26,7	7,500,000.00	7,688,135.00
Hrvatski Telekom	400	26,9 - 27,3	15,000,000.00	15,000,000.00
AI Hrvatska	200	26,7 - 26,9	7,500,000.00	7,500,000.00

The 3600 MHz band was also awarded at the regional (county) level to create business opportunities for smaller, regional operators, as well as to encourage a variety of services and give the end-users greater choice. Licences at the regional level were issued for a period of 15 years for all areas, except in the case of Međimurje and Varaždin counties, where there are already issued licences for technologies other than 5G valid until 2023, and for these areas new licences were exceptionally issued for a period of 13 years with the possibility of extension by a maximum of five years.

This spectrum was allocated in all counties except in the area of the City of Zagreb, Koprivnica - Križevac County, Virovitica-Podravina County, Slavonski Brod-Posavina County and Vukovar-Srijem County. The selected bidders are as follows: EOLO, Eco Net, Terrakom, BeenIN, Digicom and Markoja.

The deployment of the fifth generation (5G) networks is one of the key factors for making broadband available to all households, reliable communication with low delays (latency) and connecting a large number of devices. 5G is expected to create the preconditions, not only for new services in mobile communications, but also for new services and applications in other industries such as automotive, healthcare, agriculture, tourism, education, media, etc. These networks are conceptually a completely new ecosystem that involves not only stakeholders in the electronic communications market but also other markets.

The total amount of fees for the use of RF spectrum obtained at the public auction is **HRK 358.995.433,00**. The fees collected from the auction are paid in full to the state budget, and details on the auction may be found on HAKOM's website.



## DIGITAL RADIO (DAB+) IN COMMERCIAL OPERATION

With regard to the previously expressed interest of market stakeholders, preparatory activities for the launching of the commercial digital radio (DAB+) were continued in 2021. Early in the year HAKOM published a Recommendation on Minimum Receiver Technical Requirements for the Reception of DAB + signal and made appropriate amendments to the Radio Frequency Allocation Plan for terrestrial broadcasting services which, in addition to ensuring frequency resources at international level, ensured preconditions for launching a public tender for issuing individual licences for the use of the radio frequency spectrum.

In July, HAKOM launched a public tender for issuing the individual licence for the use of radio frequency spectrum for the provision of electronic communications network management service digital radio, for multiplex MUX 1 in the territory of the Republic of Croatia (frequency band 174-240 MHz). The company Odašiljači i veze d.o.o. was issued the licence for a period of 15 years.

The issuance of the licence, after four years of test broadcasting, launched the commercial operations of the digital radio (DAB+) in the HR. The commercial operation was started with the coverage of 90 percent of the HRK population for mobile reception and it is ensured by 10 digital radio transmitters at locations Belje, Psunj, Ivanščica, Sljeme, Učka, Čelevac, Ugljan, Biokovo, Vidova gora and Srđ. In the coming period coverage will increase to include 94 percent of the HR population.

Digital radio (DAB+) is a platform for broadcasting a digital radio signal and enables reception of the radio signal without interferences, greater selection of programmes with clear sound and additional textual and graphic services supporting the audio content. Frequency band envisaged for the analogue FM radio (87.5 - 108 MHz) is exceptionally congested so it is precisely the possibility of the introduction of new programme content that is one of the main advantages of digital radio (DAB+) in the VHF III frequency bands (174 - 240 MHz). However, considering that there is no obligation to switch off analogue FM radio, the speed and success of the DAB+ platform implementation will primarily depend on the penetration of DAB+ receivers, the interest of consumers for new radio content and the interest of existing and future broadcasters to provide new content via the DAB+ platform.

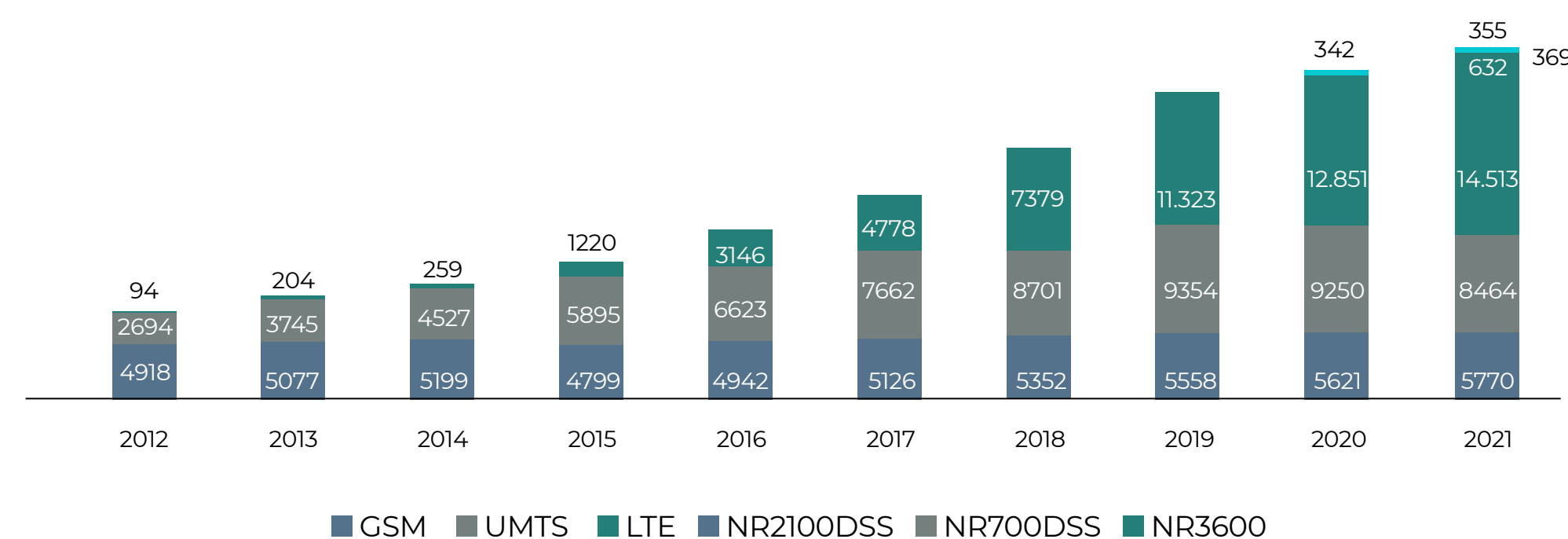
## PUBLIC MOBILE COMMUNICATION NETWORKS

The migration to 5G technology started after the completion of the public tender and the allocation of the 700 MHz, 3.6 GHz and 26 GHz frequency bands. Since 5G deployment started at the end of the third quarter of 2021 5G base stations are still not numerous, while in the 26 GHz

band there are still no base stations in commercial operation. In the 700 MHz band operators have been introducing 5G through DSS technology (Dynamic Spectrum Sharing in the same Frequency band), depending on the number of 4G and 5G users. It is evident that the greatest increase in base stations is connected to 4G technology which is currently dominant given the number of users. It is expected that the increase in the number of users with 5G devices will spur the number of base stations operating exclusively on 5G technology.

In the 3.6 GHz only 5G is introduced, as expected, given the characteristics of this frequency band. In this band it is possible to use adaptive antenna systems that can focus their signal in the direction of the user or mobile device and reduce it in other directions, thus adapting to the needs and the number of users in the area they cover. A significant share of base stations registered in this frequency band have adaptive antennas. However, their advantages will become fully utilised only with the increase in the number of 5G user devices.

Figure 5.2 Number of base stations



## PRIVATE MOBILE COMMUNICATION NETWORKS

The number of issued new licences is close to the figures over the previous years. Most new networks operate in digital mode. The majority of new licences were issued to Hrvatska elektroprivreda which has been expanding its data network. Therefore, HAKOM initiated the signing of an agreement on preferential frequencies in the 410-430 MHz band among Croatia, Hungary, Slovenia and Austria. The agreement encompasses narrowband and broadband mode and has thus far been harmonised among Croatia, Hungary and Slovenia. The signing of the agreement is expected in 2022.

Meetings were held with the Croatian Firefighters Association (HVZ) in connection with the firefighters' radio network. The HVZ has still not decided on its future network so meetings will continue throughout 2022. After measuring the purity of the frequency spectrum along the Adriatic coast, a new communication channel was allocated for the communication of firefighting units with aeroplanes of the Ministry of Defence (MOD). Cooperation with MOD continued with regard to the issuance of necessary authorisations for the use of special equipment, as well as for the purposes of NATO forces in the Republic of Croatia.

The dynamic of erecting new meteorological radars in the 5GHz frequency band has been agreed with the Croatian Meteorological and Hydrological Service.

The international frequency coordination for the operation of private mobile communication networks with the neighbouring countries (Slovenia, Austria and Hungary) continued.

### MICROWAVE AND SATELLITE NETWORKS

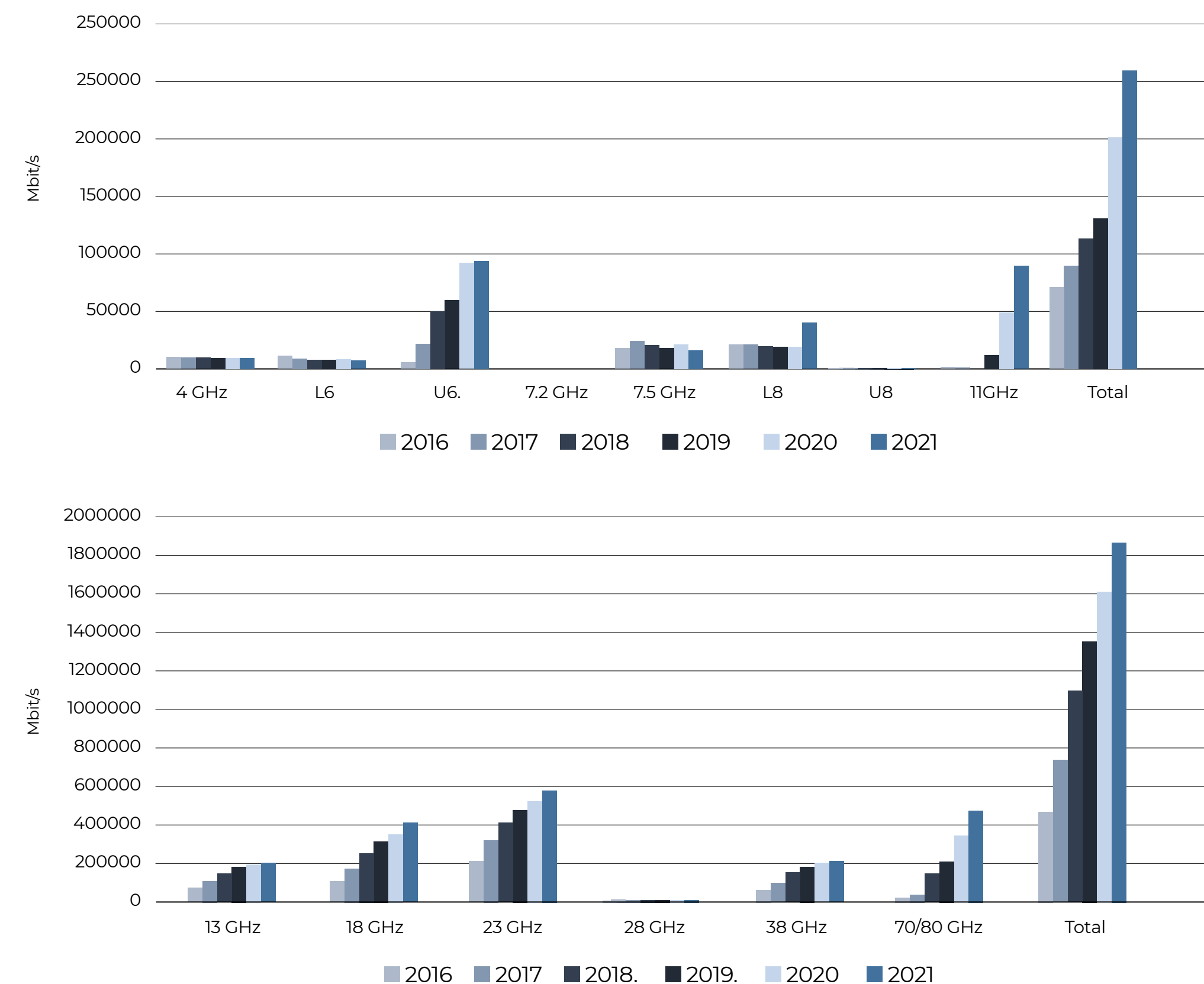
Adhering to the principles of effective use of the RF spectrum, HAKOM also carried out frequency planning and international coordination of microwave links. Frequency planning is necessary to ensure continuous operation of microwave links in the territory of the HR. Continuous operation of microwave links in international context is ensured through international alignment in accordance with the provisions of the HCM agreement.

In 2021, 1163 licences and one authorisation for microwave links were issued, of which 473 were new links, 457 were changes in technical parameters of existing links (predominantly relating to the increase in transfer capacity of the operator of mobile communications network) and 234 were extensions in the validity of existing links. The total number of active microwave links at the end of 2021 was 5057, up 3.3 percent on the end of 2020.

The upward trend in the growth of transfer capacity continued, rising by more than 17 percent from 2020. This was a result of further upgrading of mobile communication networks and points to user tendency to increasingly depend on data transfer over wireless networks. This trend is expected to continue in the coming years and additional requests for the increase in transfer capacity of microwave links are expected because of the implementation of 5G networks. One was able to notice a significant growth of transfer capacity in the lower 8 GHz (L8), 11 GHz and 70/80 GHz frequency bands, stagnation in the frequency bands below 10 GHz, very small growth in the 13 GHz frequency band and considerable growth in 18 GHz, 23 GHz and 38 GHz frequency bands.

The trend of significant increase in the transfer capacity in the 11 GHz continued (increase of more

Figure 5.3 Transfer capacity of microwave links



than 80 percent from 2020) because in some locations in the 13 GHz frequency band it came to saturation and a lack of available radio channels for the realisation of the required transfer capacities, so the 11 GHz frequency band served as an alternative. This was also reflected in the very mild, almost negligible growth of transfer capacity in the 13 GHz frequency band. In light of the expected further increase in transfer capacity of microwave links in the coming years, the problem will become more frequent and operators will have to use new, mostly higher frequency bands, such as 70/80 GHz, which already in 2021 showed an increase in transfer capacity of over 40 percent from the previous year.



The average transfer capacity of digital microwave links in 2021 was 435 Mbit/s, which was an increase of slightly more than 13.5 percent from the previous year.

As part of its regular activities, HAKOM processed requests for satellite link licences and applications for the installation of radio stations in the satellite service (operating on the basis of issued general licences). In 2021, one licence was issued for earth station for the use of the RF spectrum in the satellite service. Received coordination requests for satellite networks were analysed and processed in accordance with ITU procedures.

Given that interest was expressed over past years to launch a Croatian nanosatellite in the LEO orbit, in 2020 HAKOM started adjusting national regulations that will define the rights and obligations of operators of space activities. Accordingly, HAKOM will provide the operators of space activities with regulatory support, primarily in relation to the ITU internationally mandated procedures. During the year, HAKOM cooperated intensively with the company Viasat that plans to build a larger number of earth stations in satellite service in the territory of the HR in the upcoming period. Potential locations for earth stations were planned and harmonised with ground systems that share the frequency resource.

The validity of the temporary licence for the earth station for the use of RF spectrum in satellite service was extended in 2021 for one more year to test the non-geostationary satellite network of the company OneWeb that in 2022 via a partner company plans to start providing services in the HR. In 2021, HAKOM continued to provide all necessary information on regulatory conditions for the operation of the non-geostationary satellite network Starlink by the company SpaceX for the purpose of enabling the planned start of commercial provision of broadband access in the HRK in 2022.

Activities aiming at ensuring the frequency resources for national coverage of the HR within the framework of the fixed-satellite service via a geostationary orbital position in accordance with Appendix 30B of ITU's Radio Regulations were continued. After completing its analysis ITU offered three possible orbital positions for the HRK, and HAKOM opted for the position at 63°E that enables the coverage of Europe, Africa, Asia and western part of Australia. In the necessary seven years international alignment with earlier registered satellite networks in the fixed-satellite service of other countries. To make this process easier, HAKOM joined the initiative trying to amend the provisions of Appendix 30B to ITU Radio Regulations so that countries that up to the present had no allocated geostationary position for national coverage within the framework of the fixed-satellite service get priority and a special status during international alignment. When awarded geostationary orbital position the HR will have ensured frequency resources enabling it to achieve national coverage for links within the framework of fixed-satellite service in the 4500

– 4800 MHz, 10.70 – 10.95 GHz and 11,20 – 11,45 GHz frequency band for downlink and 6725 – 7025 MHz and 12.75 – 13.25 GHz za for uplink.

## RADIO NETWORKS

The planning and optimisation of radio networks in the 87.5-108 MHz (FM) frequency band continued in 2021, as well as international harmonisation of technical parameters of radio stations. This is necessary to ensure technical conditions for improving the coverage of existing broadcasters or new concessions for the provision of radio media services.

At the end of 2021, there were altogether 153 analogue radio networks operating in the HR: 11 public (HRT: 3 on state and 8 on regional level) and 142 commercial (3 on state, 16 on county and 120 on city/local level). There is still interest in launching new radio stations and in improving the coverage quality of existing radio stations. In 2021, HAKOM conducted a number of detailed technical analyses in order to, given the congestion of the radiofrequency spectrum, determine the possibility of approving new requests. During the year, HAKOM prepared and submitted to the Agency for Electronic Media (AEM) technical parameters for launching a public tender for awarding seven concessions for the provision of radio media service. AEM was regularly submitted notifications on amendments of technical parameters for existing radio stations, as well as responses to queries on conditions for awarding concessions in individual areas.

Data on assigned and free frequencies and radio concessions were published in the database for the RF spectrum in the radio segment on HAKOM's website. The data were regularly updated based on results of international coordination, planning and optimisation or cooperation with the AEM.

In addition to technical conditions for concessions, HAKOM processed applications for licences for the use of the RF spectrum in radio broadcasting and issued new licences for putting into operation new transmitters, it amended data from existing licences and renewed the licences for transmitters with expired licences. Based on the regulatory framework and ability to issue temporary licences, HAKOM approved and issued a number of licences for temporary use of the RF spectrum in radio broadcasting for the purpose. The continuation of the pandemic and social distancing measures in 2021, caused a significant number of applications for the use of FM frequencies for temporary events, such as drive-in cinemas, etc. to be received in 2021. Temporary licences for the use of FM frequencies were issued for 16 such events (19 in 2020 and only 3 in 2019).

In addition to activities for the preparation, launching and completion of a public tender and issuing the licence for the use of RF spectrum for the digital radio (DAB+), HAKOM in 2021 participated in five bilateral meetings and eight multilateral coordination meetings with representatives of competent authorities of neighbouring countries. The meetings were held to examine the option of replanning the VHF III frequency band and to internationally harmonise the technical parameters for digital radio transmitters. The objective was to allocate available frequency resources in the VHF III band more effectively and internationally harmonise technical parameters for transmitters to ensure future uninterrupted digital radio operation.

In accordance with international agreements GE84 and GE06, the procedure of coordination of radio stations with neighbouring countries continued (Albania, Austria, Bosnia and Herzegovina, Montenegro, Italy, Hungary, Germany, Slovakia, Slovenia and Serbia). HAKOM received and replied to many requests for coordination of technical parameters of radio stations and initiated a series of procedures for coordination of technical parameters of Croatian radio stations. FM and T-DAB radio stations with possible impact on internationally harmonised network of transmitters in the HR were regularly analysed and listed in the ITU BR IFIC notifications (Radiocommunication Bureau International Frequency Information Circular).

## TELEVISION NETWORKS

The migration of digital terrestrial television free-to-air services from the DVB-T to DVB-T2 (H.265/HEVC encoding system) was completed at the end of November 2020. As a result of the migration there are four terrestrial digital television networks with national coverage and two networks with local coverage. All national and local free-to-air networks (multiplexes M1, M2 and L1) transmit DVB-T2, H.265/HEVC encoded signal in HD quality. Two national networks transmit DVB-T2 multiplex MUX C and MUX E, H.264/AVC encoded signal. Within multiplexes MUX C and MUX E EVO TV transmits pay TV programmes.

In accordance with the issued licences for the use of the RF spectrum for digital television, an operator of digital television networks may optimise the network by putting into operation new transmitters or by changing the parameters of the existing network. HAKOM issued the necessary technical parameters and certificates of compliance of the radio station for all transmitters put into operation in 2021. Changes in technical parameters and data on new transmitters were regularly updated and published in the RF database for television, published on HAKOM's website.

In accordance with international agreement GE06, the procedure of coordination of radio stations

with neighbouring countries continued and DTT radio stations regularly analysed, as published via the ITU BR IFIC notification (Radiocommunication Bureau International Frequency Information Circular). The migration of digital terrestrial television to DVB-T2 system completed activities on the freeing of the spectrum in the 694-790 MHz band in the HR, which is already used for the introduction of the wireless broadband access service. With regard to this, the procedure for the international coordination of Croatian DVB-T2 stations with neighbouring countries continued, i.e. activities within the SEDDIF forum and the group of countries that encompass the area of the Adriatic and the Ionian Sea. By the end of 2017, agreements were signed within the frameworks of both these groups under which the HR agreed the distribution of television channels with all the neighbouring countries. In addition, activities related to the harmonisation of the timetable and deadlines for freeing up the DD2 spectrum (700 MHz band) were carried out with neighbouring countries. In doing so the HR would satisfy the preconditions for the introduction of the wireless broadband access service and ensure operation without interferences caused by TV transmitters from neighbouring countries.

## SPECTRUM CONTROL

The radiofrequency spectrum is a natural limited good whose efficient use is of national interest to the Republic of Croatia. HAKOM is competent for facilitating efficient use and ensuring effective management of the RF spectrum. For this purpose, it has set up a system of control and measuring centres and stations in the territory of the Republic of Croatia.

It uses the system of control and measuring stations to determine and remove the causes of interferences in the RF spectrum. Four control and measuring centres have been established in the four largest cities that are operationally supplemented with remotely controlled unmanned stations. For daily tasks of RF spectrum control and other technical tasks within its competence, HAKOM also uses special purpose control and measuring vehicles equipped with adequate measuring equipment.

In 2021, all necessary permits were obtained, and public tender was completed for the construction of a new control and measuring station Osorščica on the island Lošinj. The construction of the new control and measuring station at Osorščica will ensure better quality control and monitoring of the RF spectrum in the County of Istria and on Kvarner islands, as well as examination and determination of interferences in the greater area of Northern Adriatic.

A portion of HAKOM's activities related to RF spectrum control was related to the protection of health and safety of Croatian citizens and measurement of interferences originating from



the Italian Republic, interfering with the reception of Croatian radio and television programmes along Croatia’s coastline. The planned campaign of measuring Italian interferences was carried out during the summer.

All planned measuring activities were successfully implemented in accordance with the 2021 measurement plan, focusing on interference protection and measurement of the EMF level. The operation of radio stations with microwave links and the broadcasting of radio stations was checked for compliance with the conditions in the issued licences.

In addition, measurements required for frequency planning and international frequency coordination were also carried out.

At the end of 2021, the first meteorological radars within the 5600 – 5650 MHz band started operating, so HAKOM introduced targeted checks of the use of the 5 GHz frequency band as a regular activity. In addition to the check of compliance of WAS/RLAN devices with valid general licences for the said frequency band, in cooperation with Croatian Meteorological and Hydrological Service it set up an additional protocol aiming at efficient and effective elimination of unwanted interferences for meteorological radars.

More than 4,350 daily and periodical measurements were carried out from immovable control and measuring stations in 2021, while there were some 1300 field measurements. This exceeded their number in 2020.

## Electromagnetic field measurement

In 2021, electromagnetic field measurements were carried out in the areas of increased sensitivity with an aim to protect human health from electromagnetic fields. Legal persons authorised for EMF measuring regularly submitted measurement results, confirming compliance with the set standards. All measurement reports, indicating the location of the measurements are available to the public on HAKOM’s GIS portal. This portal also enables browsing through data on locations and basic technical characteristics of base stations in public mobile communication networks and radio stations in broadcasting service. This way citizens can always access measurement data, including measurements relating to the previous years.

## Interferences

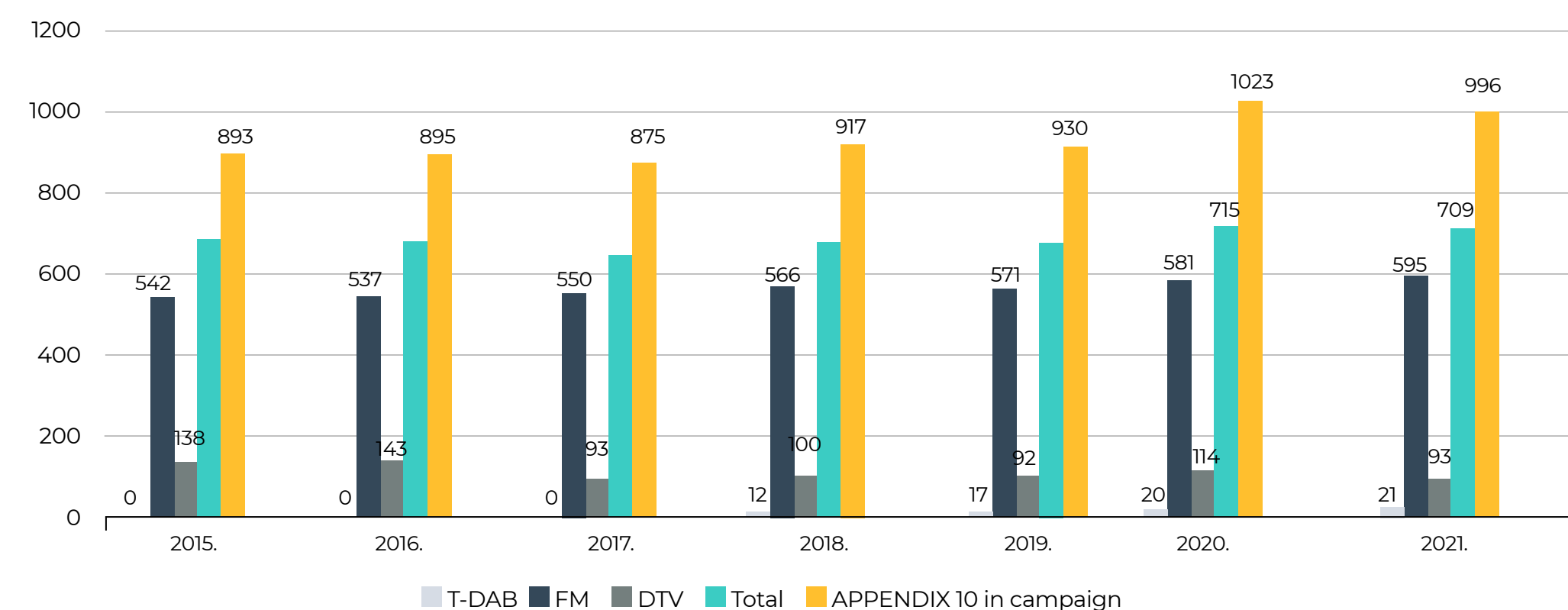
Uninterrupted operation of the electronic communication system and related services is ensured by identifying and eliminating the sources of interferences in radio communications. Special at-

tention is awarded to state administration bodies competent for search and rescue, emergency services, maritime and air traffic control radio communications that are important for protecting human life and property, as well as to operators of mobile electronic communications. The number of reported and removed interferences by domestic RF spectrum users was 101 compared to 2020, when there were 95. The number of reported interferences in frequency area of maritime and aviation was evenly distributed.

A signal measuring campaign for radio and TV signal was carried out during summer months along the coast with the aim of monitoring the situation and presence of interference at frequencies allocated to the HR in accordance with the international agreements and plans for radio and television frequencies (GE84 and GE06). Measurements conducted in 2021 confirmed that there is a certain number of interferences from FM radios from the Italian Republic, preventing quality reception of Croatian radio programmes along the entire coast. Interferences with Croatian television channels were mostly eliminated. The impact of interferences in the FM frequency area was measured in more than 100 Croatian FM radio frequencies along the coast and on Croatian islands.

For several years now, at multilateral meetings organised by ITU and EC’s RSPG Good Office meetings, HAKOM has been drawing attention to the occurrence of uncoordinated Italian T-DAB transmitters and to likely problems that are now present in the FM segment. Measurements conducted in 2021 showed that the number of measured and proven interferences remained at a similar level as in 2020.

Figure 5.4 Interferences reported to the Italian Republic





# 06

## CONSUMER PROTECTION

PROTECTION OF USERS OF ELECTRONIC  
COMMUNICATIONS **65**  
PROTECTION OF POSTAL SERVICE USERS **69**  
PROTECTION OF PASSENGERS IN RAIL  
PASSENGER TRANSPORT **70**  
ACCESSIBILITY (PERSONS WITH DISABILITIES) **71**  
CHILD PROTECTION **72**



## PROTECTION OF USERS OF ELECTRONIC COMMUNICATIONS

Constant growth in the electronic communications market is characterised by the development of new technologies and services and the spreading of its significance in the everyday life of individuals and the society. According to the preliminary census results, 3,888,529 inhabitants lived in the Republic of Croatia in 2021, and according to the data provided by HAKOM, there were 1.67 million subscribers of fixed network communications and more than 4.57 million users of mobile network communications in 2021. These figures clearly show that the majority of the citizens of the HR use a large number of electronic communications services on a daily basis. In 2021, as in the previous year, the importance of electronic communications services became additionally pronounced during the periods when, due to the coronavirus epidemic, some activities could only be carried out using electronic communications services (e.g. distance learning, working from home, etc.). It all points to the complexity of the protection of users of the electronic communications market and the need for constant changes in compliance with the simultaneous changes in the market. HAKOM's activities in user protection can be divided into two main groups. The first group relates to resolving disputes between service users and operators in accordance with the ECA, and the second group relates to preventive activities. Disputes resolved before HAKOM are the most important corrective tool in the consumer protection procedure, enabling users to resolve their issues with the operator cost-free or without involving the courts. HAKOM's preventive activities are directed at the compliance of regulations with actual market requirements, monitoring the implementation of applicable regulations implemented by operators, education and information of users about their rights, obligations and the characteristics of services, etc.

In order to ensure that operators award greater attention to the analysis of HAKOM's decisions and adopt practices that minimise the reasons for users to submit complaints and initiate proceedings, in 2021, HAKOM continued its activities aimed at improving the performance of operators' services. In 2020, these activities led to better quality in the work of operators with their own users, as particularly seen in operators' commissions in adopting second-instance decisions relative to HAKOM's decisions in disputes. Therefore, in 2021, HAKOM focused on the work of operators' services in the adoption of first-instance decisions, as well as on the implementation of the contract termination procedure with special emphasis on terminating distance contracts and the procedure for the repair of a malfunction upon received user reports.

### DISPUTES

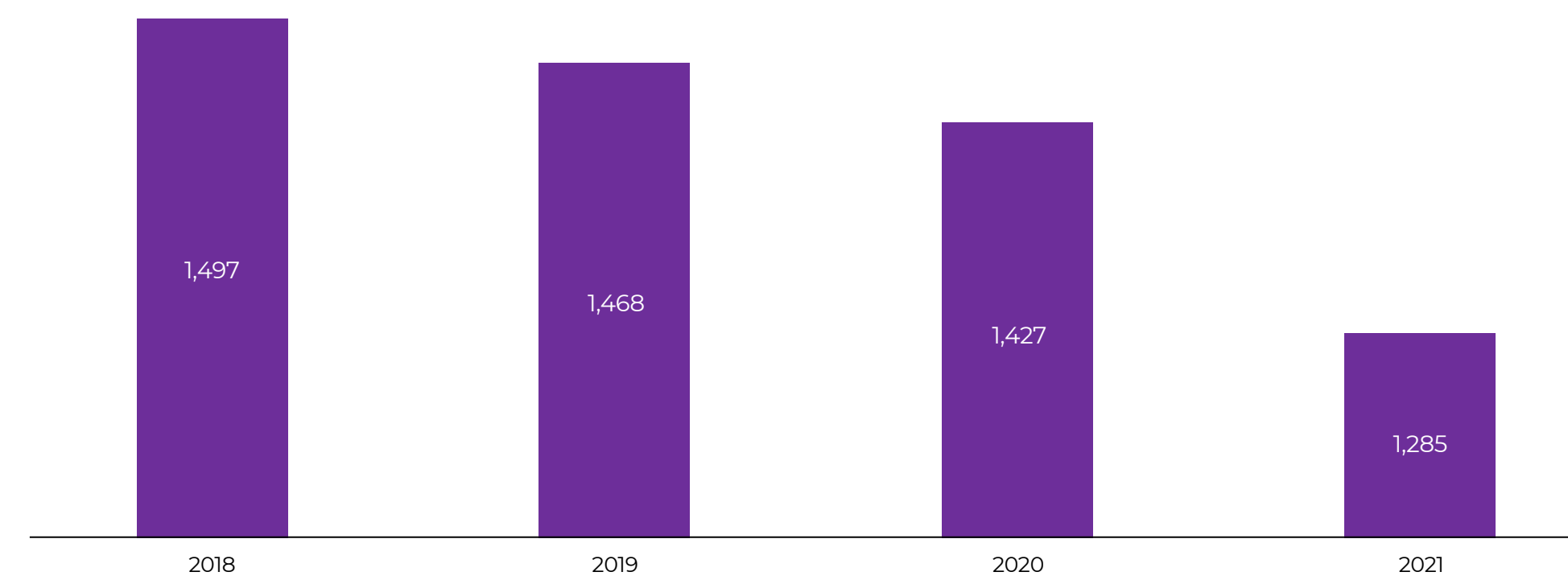
The ECA determines the right of the user to submit a motion for the resolution of a dispute to HAKOM concerning the amount of the bill, the quality of provided services, the violations of sub-

scriber contracts or the violations of the right concerning the protection of open internet access. HAKOM resolves disputes between users and operators based on the opinion of the Complaints Commission, which, in addition to HAKOM's experts, also includes the representatives of consumer protection associations in its work. The statutory precondition for bringing a dispute before HAKOM is to complete a two-instance procedure with the operator. The first step is to file a complaint with the operator. In case users are dissatisfied with the responses of operators to the complaint, they are entitled to initiate a free-of-charge dispute resolution procedure before HAKOM. If users are dissatisfied with HAKOM's resolution of the dispute, they can initiate legal proceedings before an Administrative Court.

The results of disputes are used in the analysis of the situation in the market and to provide insight into the key issues, which serve as a basis for proposing and implementing the appropriate measures for improvements. For example, the results of the analysis are a good indicator of the need to change the applicable regulations, the success in the implementation of new provisions, the performance of individual operators' services, the clarity and transparency of the contractual conditions, the familiarity of users with their rights, etc.

In 2021, 1,285 disputes were resolved, which was a decrease of ten percent from 2020. The decrease reported for three consecutive years indicates a positive trend.

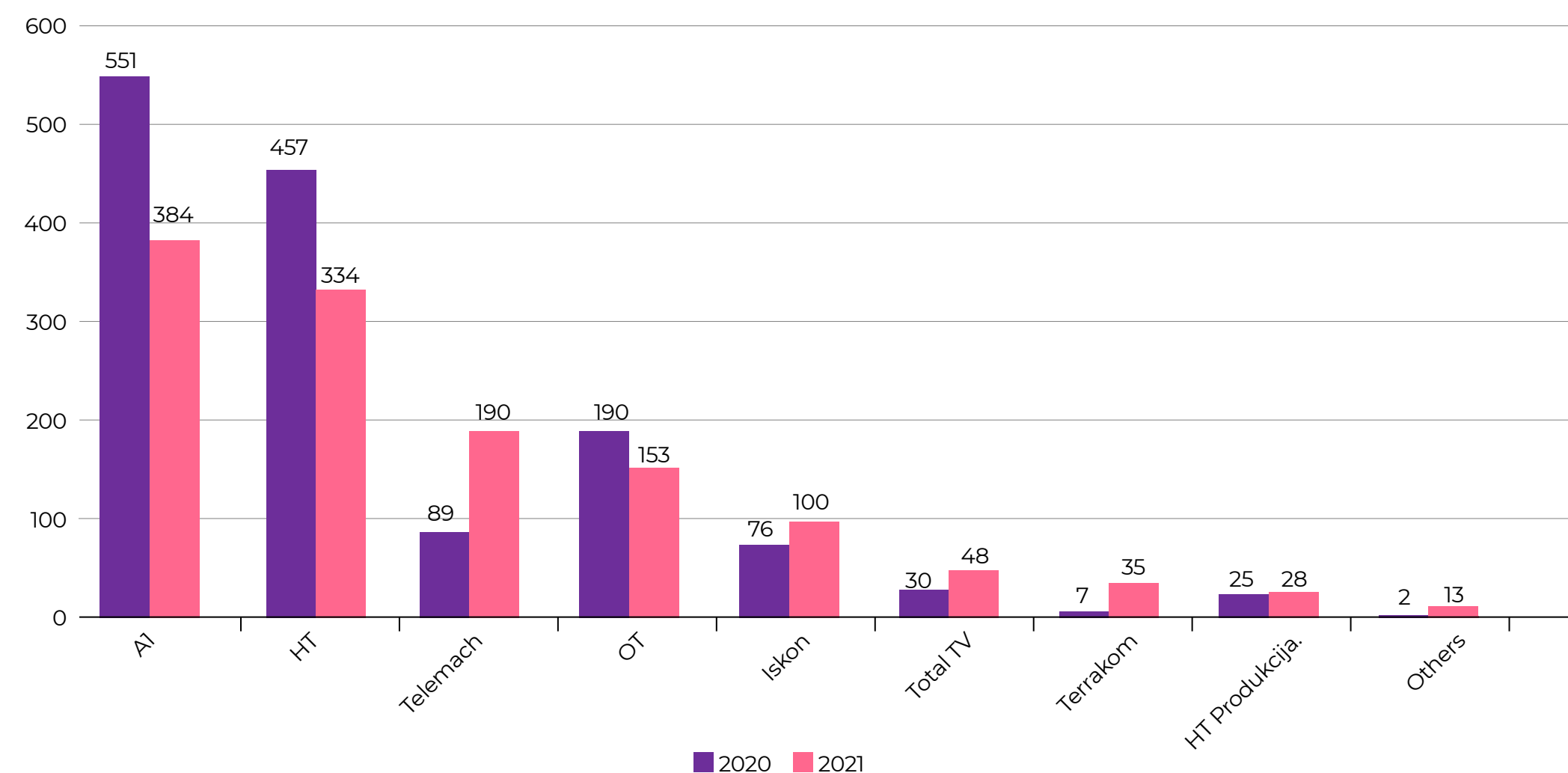
**Figure 6.1** Number of disputes in electronic communications



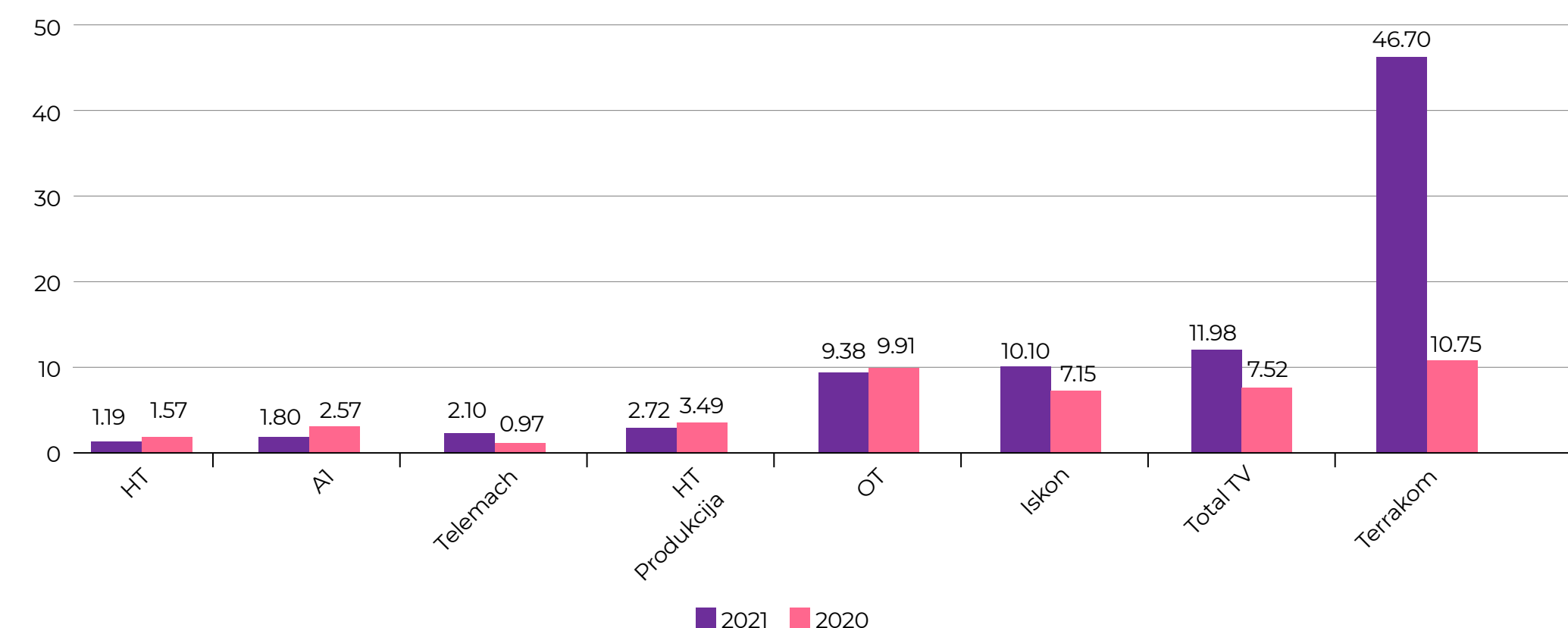
However, the number of disputes depends on a significant number of different factors (the number of users, (lack of) information of users regarding their rights, the offer of services, changes in technology for the provision of services, etc.), and when evaluating their importance for the situation in the market, it is necessary to take into account the specific circumstances. For instance, HAKOM directs a significant share of its activities at encouraging operators to improve the performance of their customer support services.

One of the key performance indicators of the analysis is the total number of disputes of each operator and the ratio of the number of disputes to the total number of users of operators. The result of dispute resolution conducted by HAKOM (the ratio of positive to negative decisions adopted by HAKOM) is particularly important because a comparison of these indicators with the previous years' results, among other things, provides the information about the quality of work of the customer support service of the individual operator. A rise in the number of disputes of a specific operator that cannot be correlated with the increase in the operator's user base points to weaknesses in the work of operators' services.

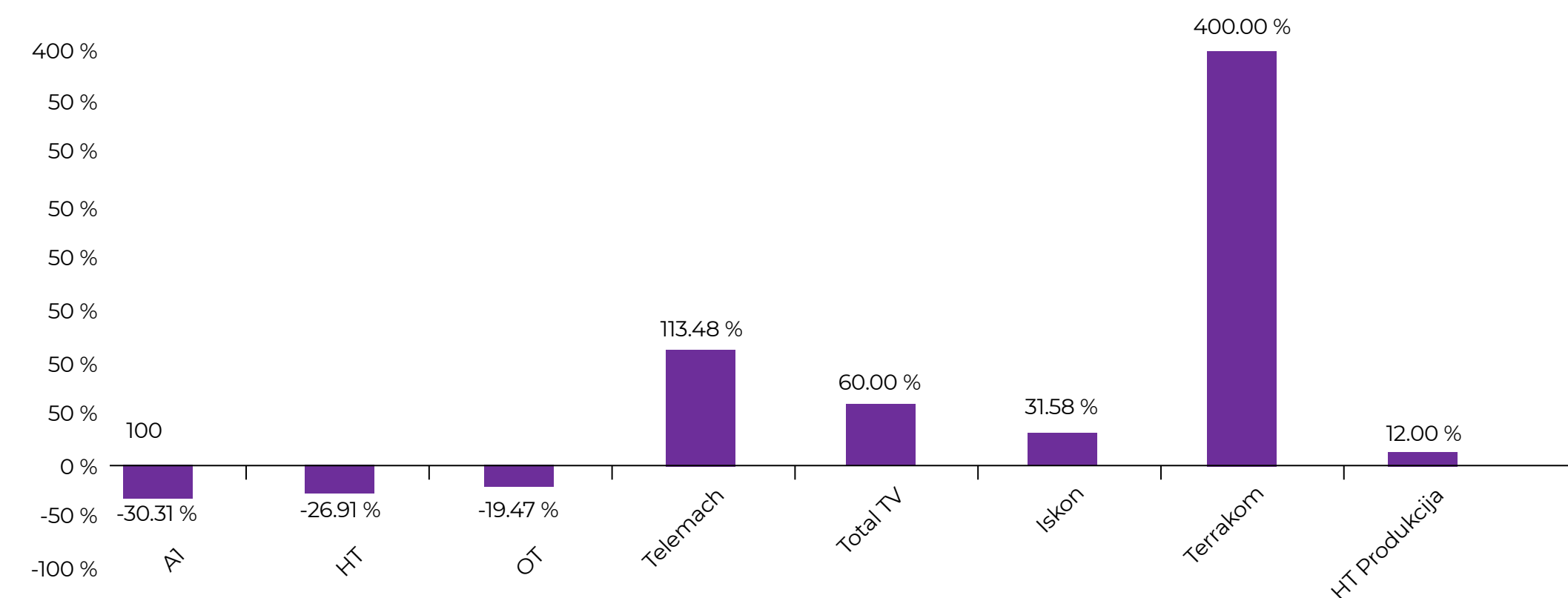
**Figure 6.2** Number of disputes by operator



**Figure 6.3** Average number of disputes per every 10,000 users of each operator

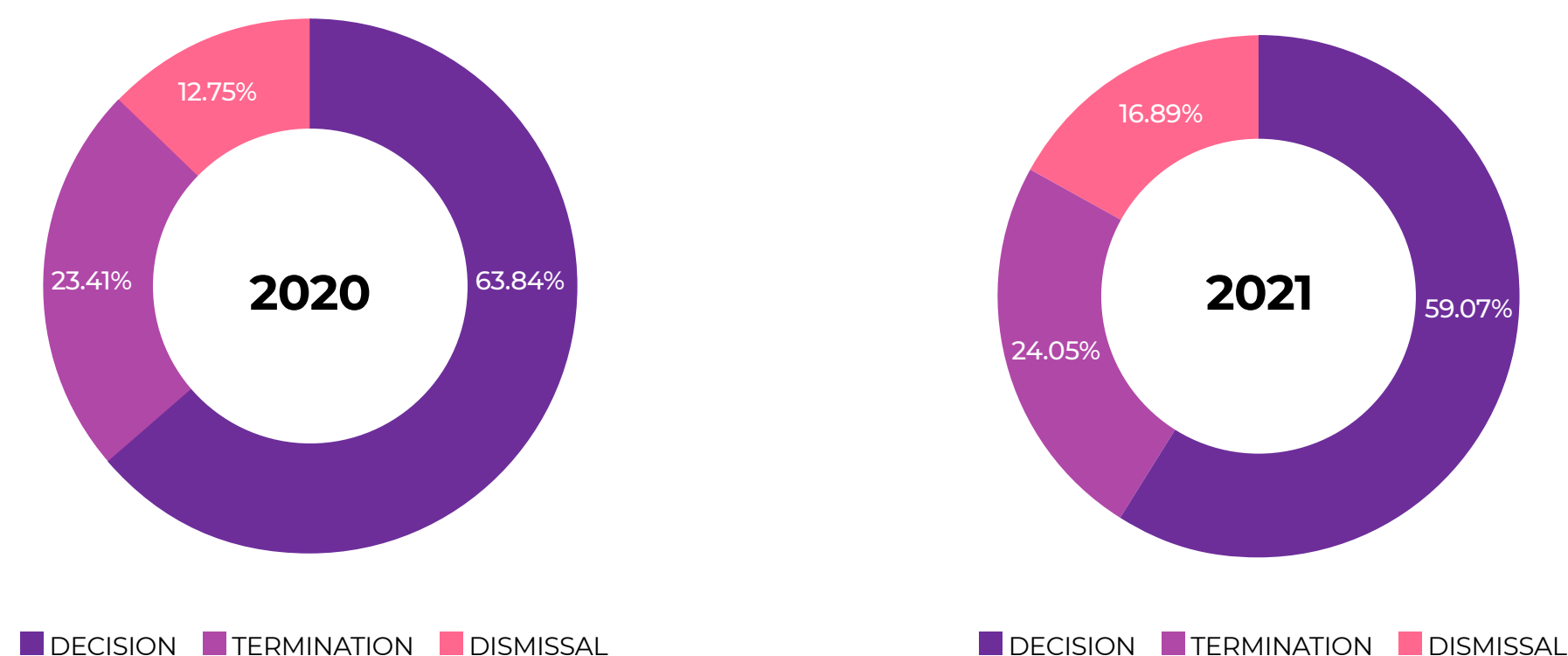


**Figure 6.4** Number of disputes by operator in 2021 from 2020

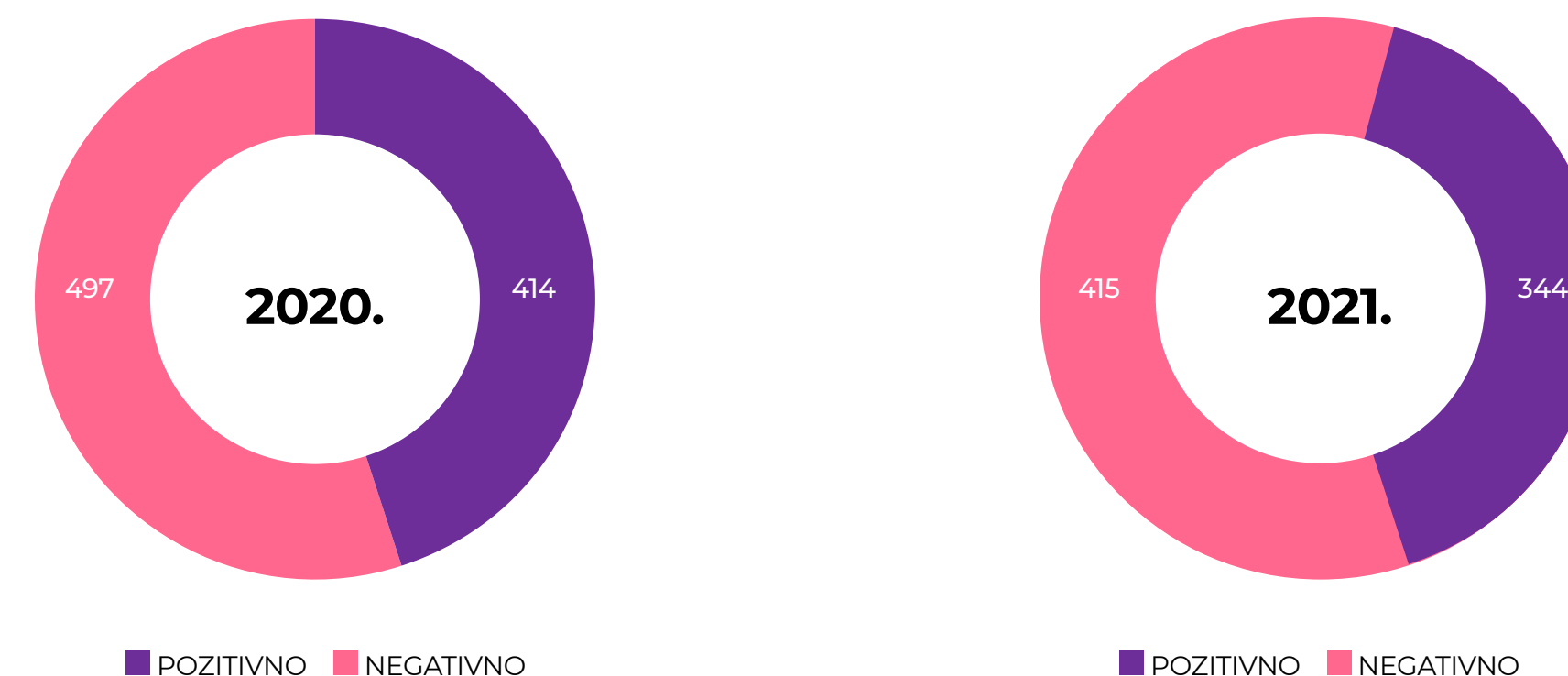




**Figure 6.5** Ratio of disputes by type in 2020 and 2021



**Slika 6.6.** Odnos pozitivnih i negativnih odluka za korisnika u 2020. i 2021.



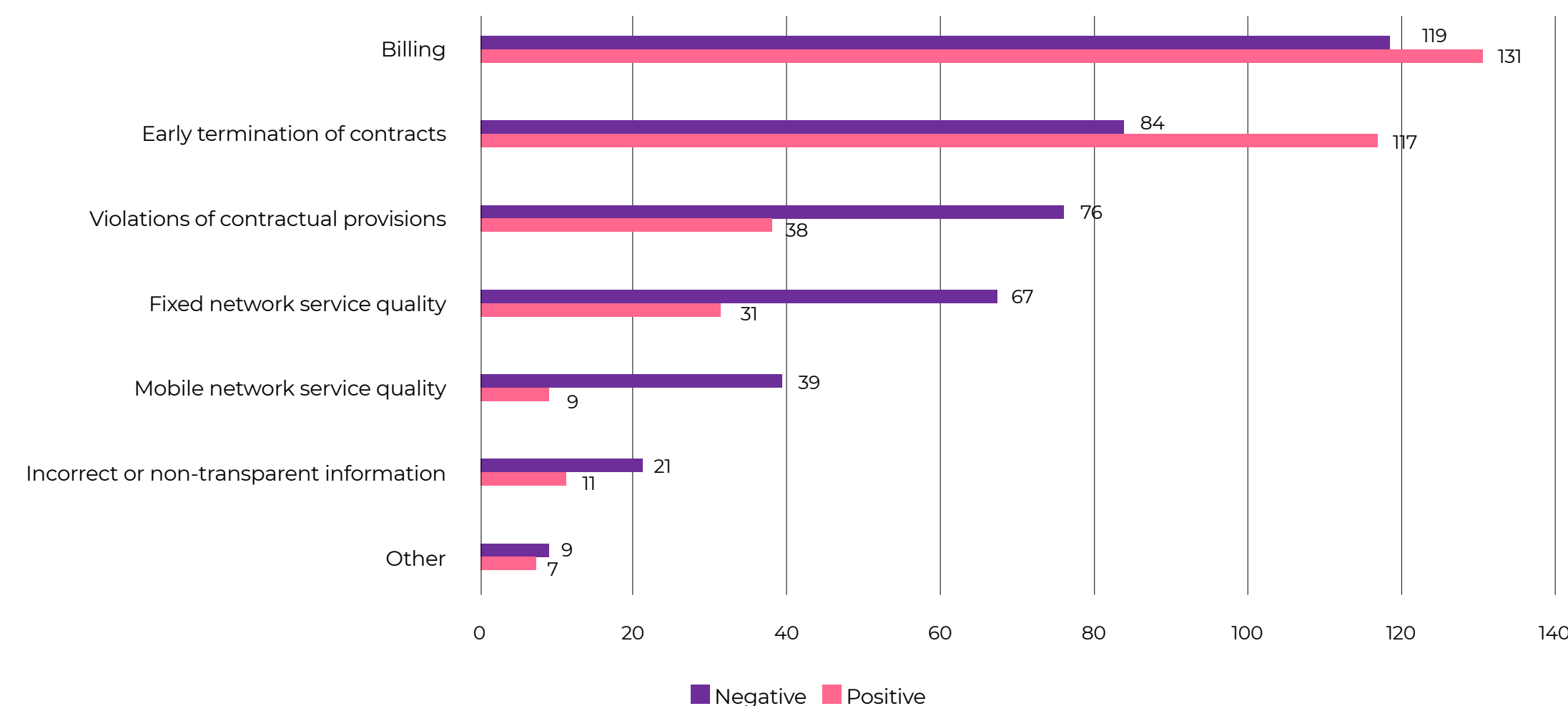
Of the total number of user requests for dispute resolution in 2021, 526 were resolved by adopting a decision on dismissal or termination that were resolved without the need to deliberate the merits of the case. The number of such decisions grew by two percent in 2021 from the previous year. However, since in 2021 the total number of disputes decreased by ten percent, a more relevant indicator of the development of such resolutions is their share in the number of resolved disputes. A 4.8 percent growth was recorded in 2021, where the decisions on termination accounted for 0.6 percent and the decisions on dismissal accounted for 4.1 percent of the number of resolved disputes.

The decisions on termination were predominantly reached because the operator subsequently, after the user turned to HAKOM, changed its initial decision when resolving consumer complaints and the user raised no objections. As such dispute resolutions point to weaknesses in the work of operators' customer support service, HAKOM has warned operators that they should improve the work of their services in resolving user complaints and that the adoption of such decisions should be an exception. The larger number of decisions on dismissal shows an increase in the number of users whose requests for dispute resolution were dismissed in 2021, predominantly because the issue was not under HAKOM's jurisdiction or due to the expiry of statutory procedural deadlines.

Most disputes between operators and users in 2021, 759 of them, were resolved by a HAKOM's decision. The ratio of decisions in which HAKOM confirmed the second instance decisions taken by operators to decisions in which they were not confirmed is a measure of correct treatment

by operators. In the cases when operators' services, in particular their consumer complaint commissions, proceed as HAKOM would proceed in a particular case, then the HAKOM's decision in the dispute is negative for the user and confirms decisions taken by operators. The fact that 45.3

**Figure 6.7** Ratio of decisions by reasons for disputes in 2021



percent of decisions in 2021 were in favour of the user, while in 2020 that share totalled 45.4 percent, indicates that the work of operators' services in resolving user complaints has not shown any improvement.

The analysis of the reasons why users initiated disputes showed that they were mostly related to bills (billing, consumption and realised traffic), followed by the early termination of the contract due to the violations of subscriber contracts or in accordance with the provisions of the Consumer Protection Act (CPA).

## OTHER ACTIVITIES

User dispute resolution is just one of the segments of HAKOM's activities for the protection of users of electronic communications. Other activities are directed at ensuring preconditions for achieving high-levels of consumer protection. The precondition for successful protection is a well-informed user who, in addition to all relevant information available on the official website, obtains all necessary information and answers to specific questions through several different communication channels (direct telephone contact with HAKOM's experts, e-mail contact, the "Ask Us" application and social media or mail). One of the popular communication channels among users is the telephone contact with HAKOM's experts, who are available to users every working day from 9 a.m. to 11.30 a.m. Users were also informed through direct contacts with users and representatives of consumer protection associations, appearances of HAKOM's experts on TV and radio shows concerning consumer protection and through cooperation with other authorities competent for consumer protection policies.

For the purpose of active cooperation with consumer protection associations, in April 2021, HAKOM organised a round table with the representatives of consumer protection associations on the topic of "Consumer Rights – End User Rights". The possibilities of certain improvements that would contribute to an easier and more efficient resolution of the difficulties that users of services face were discussed at the meeting. The eighth traditional "Market Day" was held in October with the participation of the representatives of operators, businesses, consumer protection associations and regulators to try and find the answers to some of the current issues, including the ways in which operators may facilitate the use of services for their users. HAKOM has noticed that users encounter difficulties when realising some of their rights with operators, i.e. that operators often refer users to take some additional actions, which lead to the withdrawal from proceedings due to administrative obstacles, excessive identification, time-consuming exchange of correspondence with the customer support service, etc. The representatives of operators shared their experiences and, in principle, concluded that all procedures had to be simplified in order to reduce the administrative burden for users as much as possible.

With the aim of informing and educating users, a [user leaflet](#) was prepared and published (electronically) with information every user should know about his/her rights and operators' obligations, in particular when concluding or terminating subscriber contracts, consumption control and the protection from undesirable amounts of bills, the complaints procedure and the possibility of entry in the "Do Not Call" Register. Printed leaflet copies were made available to consumer counselling centres, consumer associations and operators. In 2021, two informative and educational videos on the quality of services in mobile and fixed networks were prepared.

For the purpose of enhancing user experience and achieving higher-levels of protection, service users were provided with the following free applications:

- HAKOMetar, which serves for measuring internet speeds in fixed networks. Results may be used for all cases of complaints to operators and for dispute resolution.
- HAKOMetar plus, which serves for measuring internet speeds in mobile/wireless networks. Data traffic usage from the contracted tariff package is not calculated for the first ten measurements in a single month. The application enables a presentation of the statistics of measurement results, a presentation of measurement on a chart and a presentation of the quality of signals of all networks based on user measurements.
- Cost Estimate, which makes it easier for the users of telephone or Internet access services to find the most favourable tariff in accordance with their telephone or Internet usage habits.
- "Do Not Call" Register, which serves to check whether the number is entered in the Register. By entering their telephone number in the Register, users confirm they do not want to be contacted for advertising and sales purposes by merchants. At the end of 2021, there were 61,076 telephone numbers entered in the Register.

**Monitoring of operators' complaint resolution** – Aiming to achieve the most efficient user complaint resolution, i.e. compliance of the work of operators' services and commissions with applicable regulations, the practice of publishing [semi-annual](#) and [annual reports](#) on the work of operators' commissions based on HAKOM's decisions in the same cases was continued. The reports, in addition to presenting the results of dispute analysis, also include recommendations to operators on how to improve their performance. In 2021, HAKOM informed and warned operators that it would significantly direct its future activities towards enhanced control of operators' work in the first-instance complaint resolution procedures in accordance with Article 50 of the ECA (obligatory administrative and technical checks carried out by the operator, clarity of responses to all items of a complaint, further referral of the user), simplified procedure and the manners of contract termination (with special emphasis on the termination of contracts concluded at a distance) and the timely and appropriate procedure for the repair of a malfunction upon users' reports.

**Cooperation with the representatives of operators' Consumer Complaints Commissions** – In order to detect and eliminate problems in the work of consumer complaints commissions of all operators with major market shares as efficiently as possible, semi-annual meetings were held



with their representatives, making them acquainted with the results of the analysis of operators' work when resolving user complaints. Based on this analysis and taking into consideration the results of the analysis of HAKOM's decisions in disputes as well as information provided by users, operators were proposed specific measures for improving the performance of their services, in particular the work of the commissions when resolving user complaints.

**The analysis of general terms and conditions, special conditions and price lists** – All of these documents form part of each subscriber contract. Taking into account the fact that they should comply with the applicable law and subordinate legislation, as well as the fact that the lack of knowledge or understanding of specific provisions in these documents is one of the most frequent causes for disputes, HAKOM monitored all amendments and, upon need, requested from operators to make certain corrections. In 2021, special emphasis was placed on provisions governing the issue of contract termination, in particular when submitting a request for termination at a distance, as well as the implementation by operators in practice.

## PROTECTION OF POSTAL SERVICE USERS

In 2021, regular postal traffic normalised because postal services providers adapted their operation to the situation and measures taken to contain the epidemic. Nevertheless, the received user requests showed that certain problems with the provision of postal services still existed. It primarily referred to complaints due to non-compliance with the deadline for transfer and delivery of postal items, which were significant in the first part of 2021. This challenge was considerably eliminated after the HAKOM's decision in relation to the circumstances of the pandemic.

In 2021, the development of events in the market was constantly monitored and user disputes were regularly resolved in accordance with the PSA. A user of postal services may submit a written complaint to a postal services provider in a complaint resolution process in the cases of loss of a postal item, non-compliance with the deadline for transfer and delivery, if the postal service was not provided in part or in full, and in the cases of damage or loss of contents of a postal item. A user has the right to submit a complaint (consumer complaint) to the Consumer Complaints Commission of the postal services provider to a written reply of the service provider. In case of a continued dispute regarding the complaint, the user may submit a request for dispute resolution to HAKOM within the statutory time limit.

Disputes are resolved by decisions adopted based on the opinion of the Consumer Complaints Commission, an advisory body established at HAKOM, which also includes the representatives of consumer protection associations as members.

Figure 6.8 Number of user disputes in the postal services market

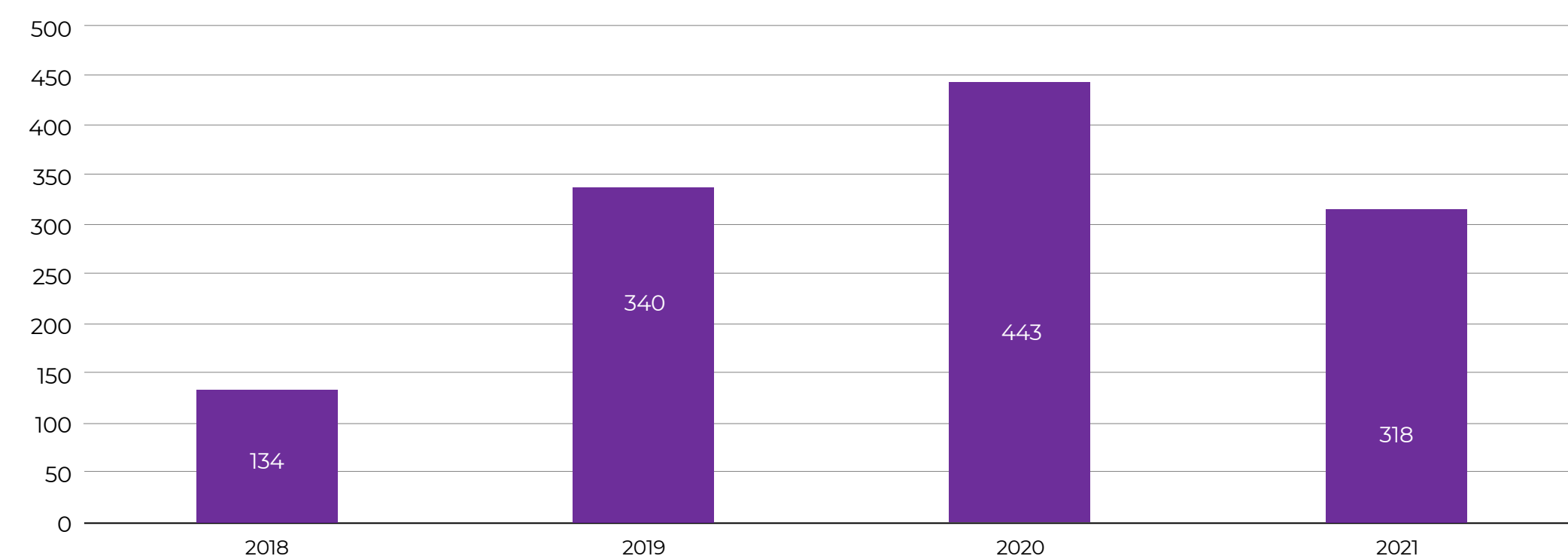
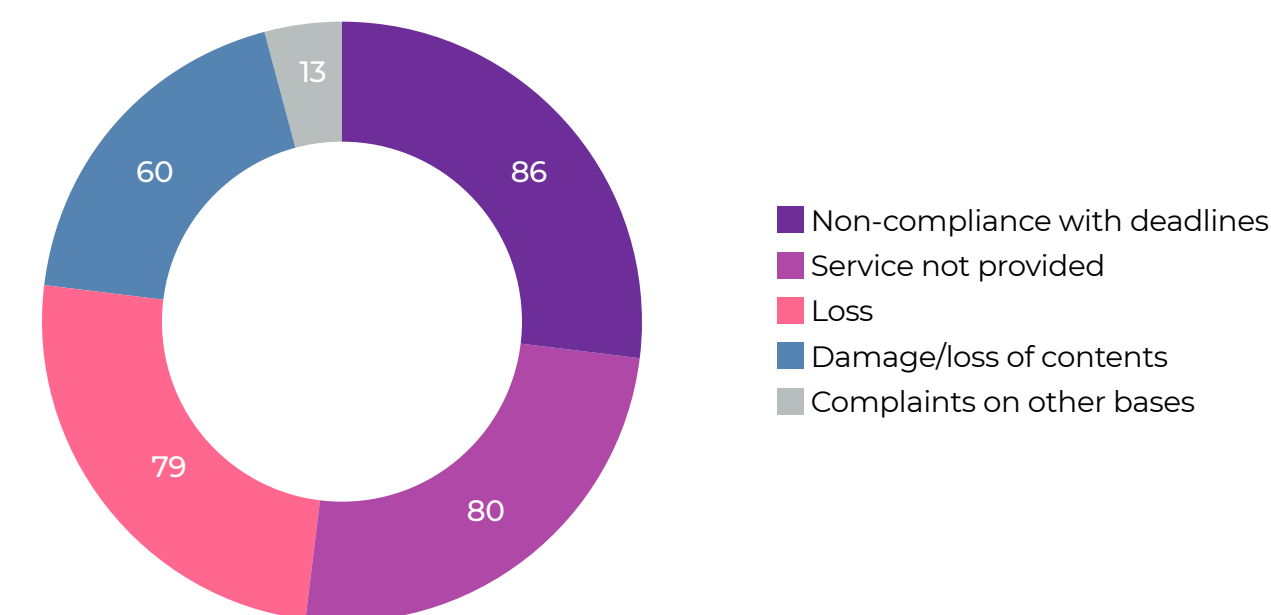


Figure 6.9 Shares of types of complaints in received requests in the postal services market



In all, there were 318 dispute resolution requests in 2021, or down by about 28 percent than in the previous year. However, it is worth noting that if the figure is broken down by applicants individually, the number of disputes grew by about 20 percent (as many as two hundred requests were filed by a single user in 2020, while in 2021 the number of requests of this specific user was much smaller). The largest number of the total received requests, 290 or 91 percent of them, were related to disputes with the universal service provider, HP, and 28 to other postal service providers.

According to the type of complaint, the majority of complaints referred to the non-compliance with the deadline for transfer and delivery of postal items, 86 of them, failure to provide con-

tracted postal services (80); there were 79 complaints due to the loss of items and 60 due to the damage to items, and thirteen complaints on other bases.

If the types of services complaints related to were analysed, most disputes, around 63 percent, related to parcels, followed by complaints related to registered mail items with seventeen percent (which also include judicial documents and documents sent under administrative, tax and other proceedings, which are sent by courts and other public administration bodies in special envelopes pursuant to special laws). The remaining complaints were related to services with some added value.

In all, 319 disputes were resolved in 2021, of which 296 were received in 2021, while 23 were transferred from 2020. Pursuant to the decision, 110 requests were rejected, and 140 requests were adopted or partially adopted. In 61 cases a decision on termination was reached (at users' request because they resolved the disputes amicably with postal services providers), while eight cases ended with the adoption of a decision on dismissal because such requests did not refer to objections referred to in Article 54 of the PSA, or were not submitted in a timely manner or were submitted by unauthorised persons.

## PROTECTION OF PASSENGERS IN RAILWAY PASSENGER TRANSPORT

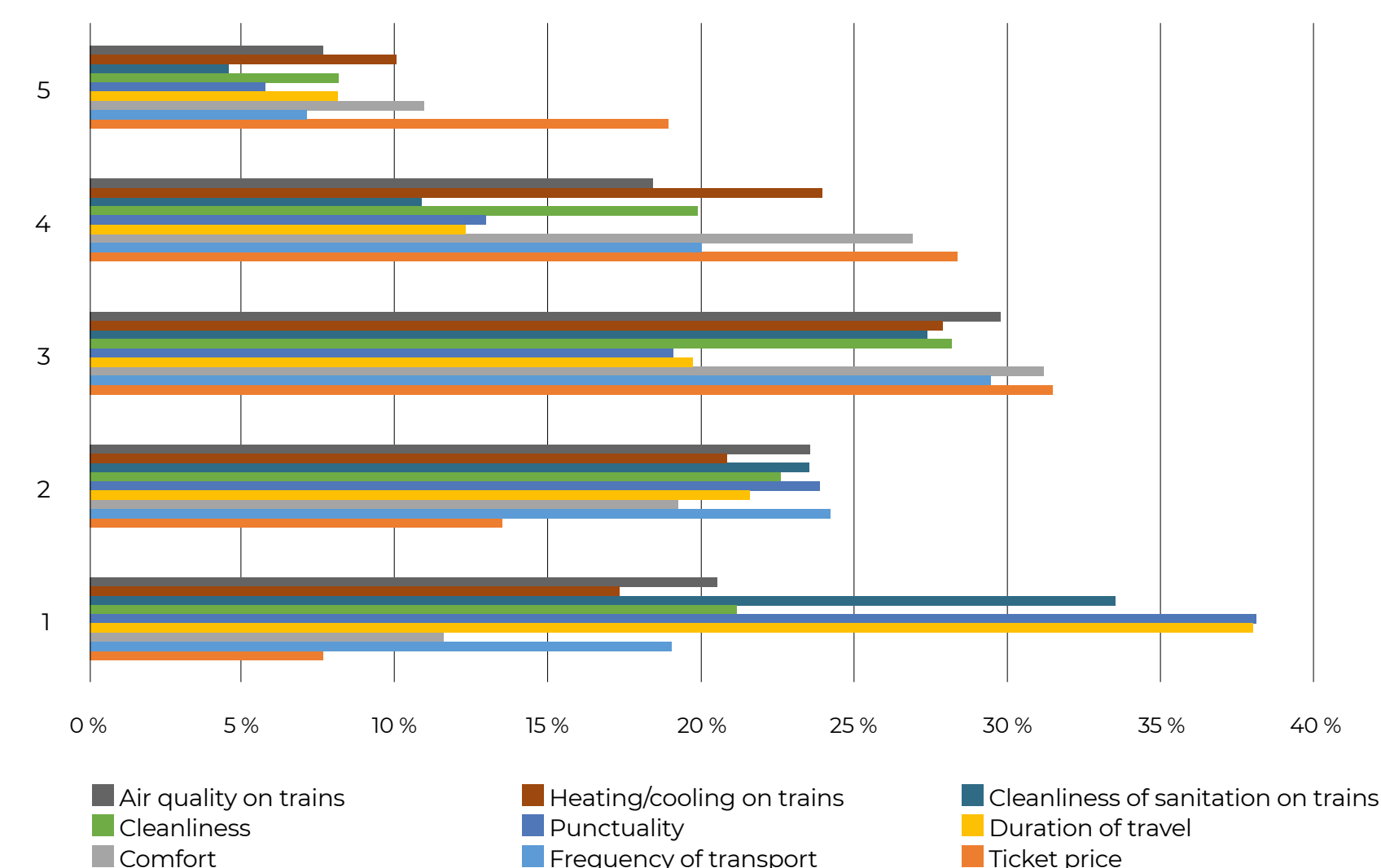
Pursuant to the ARSM, HAKOM is competent for the protection of passenger rights and for resolving passenger complaints against the decisions of the Consumer Complaints Commission of railway undertakings. In accordance with the provisions of this Act, a passenger may submit a written complaint to the railway undertaking for the protection of his or her rights as laid down in Regulation 1371/2007, the ARSM and other regulations governing passenger rights. Legal protection is provided in three instances. The first instance is the railway undertaking, the second is the Consumer Complaints Commission of the railway undertaking and the third instance is HAKOM. The time limits for submitting complaints and requests to HAKOM are regulated by the Disputes are resolved by decisions adopted pursuant to the opinion of the Consumer Complaints Commission, an advisory body established at HAKOM, in accordance with the Consumer Protection Act. HAKOM's decisions in the disputes between passengers and undertakings are final and may not be appealed, but administrative proceedings may be initiated before a local competent administrative court.

Ten decisions pursuant to passenger requests were adopted in 2021. Eight cases were resolved positively, while two were partially accepted. There were no terminations or dismissals of user re-

quests. Information on train delays is the most frequent reason for passenger complaints, where the railway undertaking does not comply with Regulation 1371/2007, which prescribes the obligation of railway undertakings to provide the passenger during the journey with information and provide minimum information.

The level of passenger satisfaction with HŽPP service is shown in the survey on the consultation with the representatives of users of passenger transport services in rail transport, prepared and published by HAKOM on the websites of the MSTI, Varaždin County, the Croatian Consumer Protection Association – "Potrošač", HŽPP, HŽI, CCE, Pro Rail Alliance, Community Sustainable Development NGO and Cyclists' union as well as on HAKOM website.

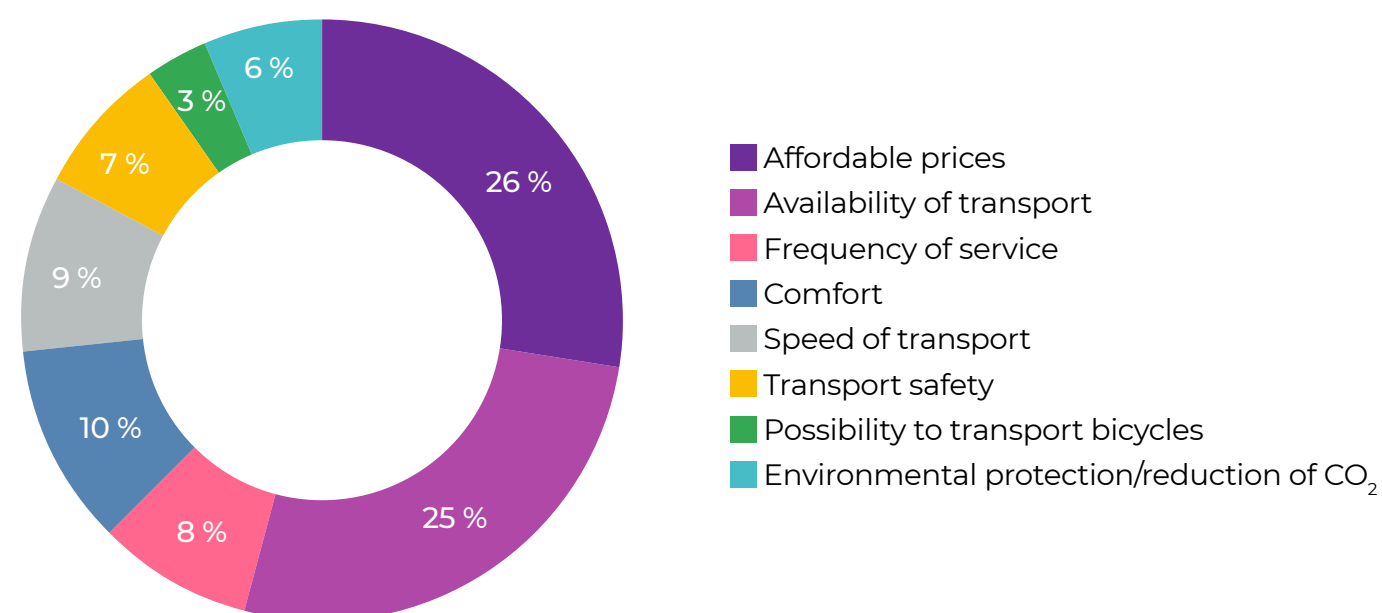
Figure 6.10 Satisfaction with rail transport service



The survey has shown that the lower cost of travel and the availability of travel are the most frequent reasons for respondents to choose the train as a means of transport.



Figure 6.11 Reasons for choosing rail transport



Passengers are still insufficiently informed about and/or aware of their rights and obligations when travelling by train.

Every two years HAKOM creates an updated brochure on rail passengers' rights and obligations for the purpose of a better provision of information to passengers. In 2021, an informative and educational video was prepared on the most frequent user complaints, such as complaints related to train delays, insufficient information and support to persons with disabilities and reduced mobility.

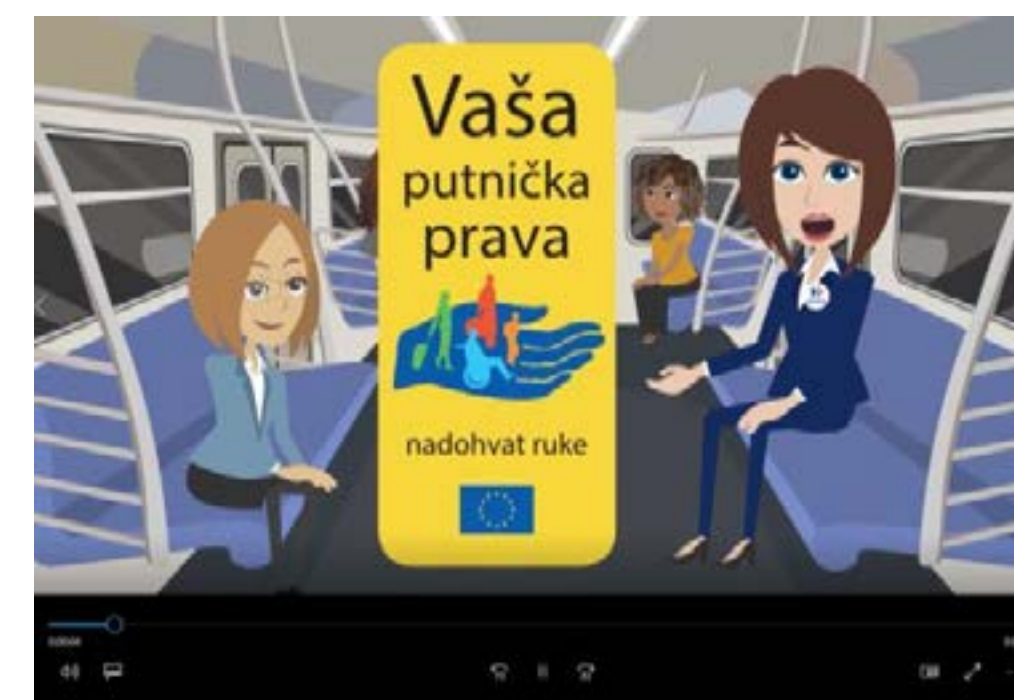
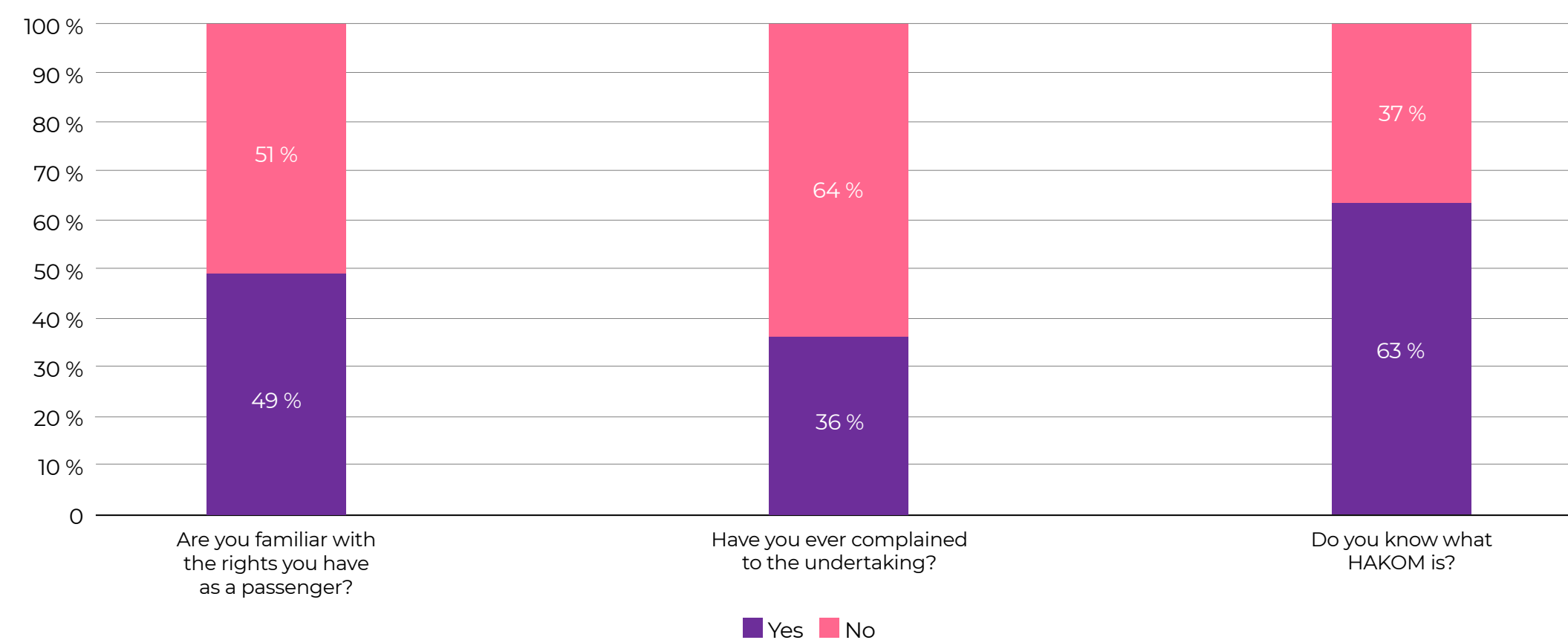


Figure 6.12 Information of passengers



## PROTECTION OF PERSONS WITH DISABILITIES

HAKOM continued with the activities related to persons with disabilities and, in cooperation with the Faculty of Electrical Engineering and Computing (FER), held the fourth conference on the topic of "Persons with Disabilities in a Digital Society". At the conference, the activities undertaken and the projects implemented during the long-term cooperation were presented, and it was announced that attempts would be made to apply positive experiences in the field of electronic communications to rail transport and postal services. Emphasis was placed on eliminating the barriers making the life of persons with disabilities more difficult and thus preventing the exercise of their rights, based on the fact that public authorities are tasked with ensuring and promoting the provision of architectural, communication and social accessibility. Conference participants included the representatives of associations representing the interests of persons with disabilities, the Ombudswoman for persons With Disabilities, the representatives of operators, educational institutions and everyone implementing projects aimed at eliminating barriers and also working on raising the awareness of the society as a whole. During the conference, operators presented their activities undertaken to facilitate access to their services for all users. A virtual shop with the salesman was presented, as well as the introduction of tactile signs at the points of sale or voice control services.



Within the project implemented in cooperation with FER, “Accessibility 2021”, the methodology of holding workshops for primary school children on the topic of persons with disabilities was designed and, in coordination with headmasters of several schools (Dubrovnik, Osijek, Glina, Zagreb), the methodology was successfully tested. For this purpose, manuals were created as support to teachers in independent organisations of transversal subject topics related to the development of a digital inclusive society, raising awareness about the needs of persons with disabilities and digital accessibility, building on other prepared materials, such as workshop scenarios and presentations with notes for the workshop adapted to the children’s age and the “serious game” of “Susretnica”, created to raise awareness of the importance of the proper approach to persons with various disabilities. The manuals are adapted for two age groups of pupils (from the third to the sixth grade and the seventh and the eighth grade) and for teachers. All materials, as well as the “serious game” are available on the Internet with the link <http://www.ict-aac.hr/index.php/hr/ict-aac-razvijene-aplikacije/web-aplikacije/ict-aac-susretnica-web> and as a mobile application that can be downloaded from e-shops for mobile applications on the App Store or Google Play (the apps are free of charge).



## CHILD PROTECTION

In 2021, HAKOM joined in the celebration of the Safer Internet Day on 10 February 2021 and participated in the programmes of the Safer Internet Centre and Partners in Learning. The Safer In-

ternet Day, held every year on the second Tuesday in February, was marked by two organisational programmes, which included more than 900 Croatian schools and institutions. Virtual events focused on the safety of the most vulnerable groups of the society, children and youth, and special educational programmes were also organised for those who care for them, parents, primary and secondary school teachers and educators. On the eve of the marking of the Safer Internet Day, as part of civic training and education for primary and secondary school teachers, HAKOM's experts held a presentation on the topic of the “World of electronic communications and how to protect yourselves in it”. As part of the programme of the Safer Internet Centre, a ZOOM webinar was held for children and youth titled “Where are you in the digital jungle?”. Webinar panellists included famous YouTubers who shared their experiences on the Internet and answered questions raised by children and youth. A webinar for experts was also held on the topic of “Strengthening the capacity of experts in the digital environment”. This year, the online quiz also attracted the attention of children, and the most successful ones won valuable awards. With the Partners in Learning association, HAKOM joined the “Pledge for a better Internet” conference, where the lecture was held on the topic of “How to protect yourself in the world of electronic communications”. While participating in the programme and activities of the whole day video conference, students could learn about or discover many challenges in the digital environment. The Safer Internet Day was also marked by the genuine pledge for a better Internet – an interactive game involving student and teacher participants, who were looking for and critically reviewed information on the Internet, solved puzzles and brain teasers, broke secret codes and detected fake news, and the best among them also received special gifts. One of the tasks was browsing for HAKOM's brochure entitled “How to protect yourself in the world of the Internet and mobile phones”. The brochure, which is part of the HAKOM's programme of informing children and parents, implemented in cooperation with the Ministry of Science and Education since 2016, was traditionally distributed to children and their parents through schools. The brochure contains practical and useful advice on the dangers and safety on the Internet, the protection of privacy and personal information, the way to behave and the responsible use of social networks. Workshops for children and parents were also held in the course of the year, aimed at raising awareness about the protection on the Internet. The brochure for the 2021/2022 school year was updated in accordance with the changes occurring every year.







# 07

## OTHER HAKOM ACTIVITIES

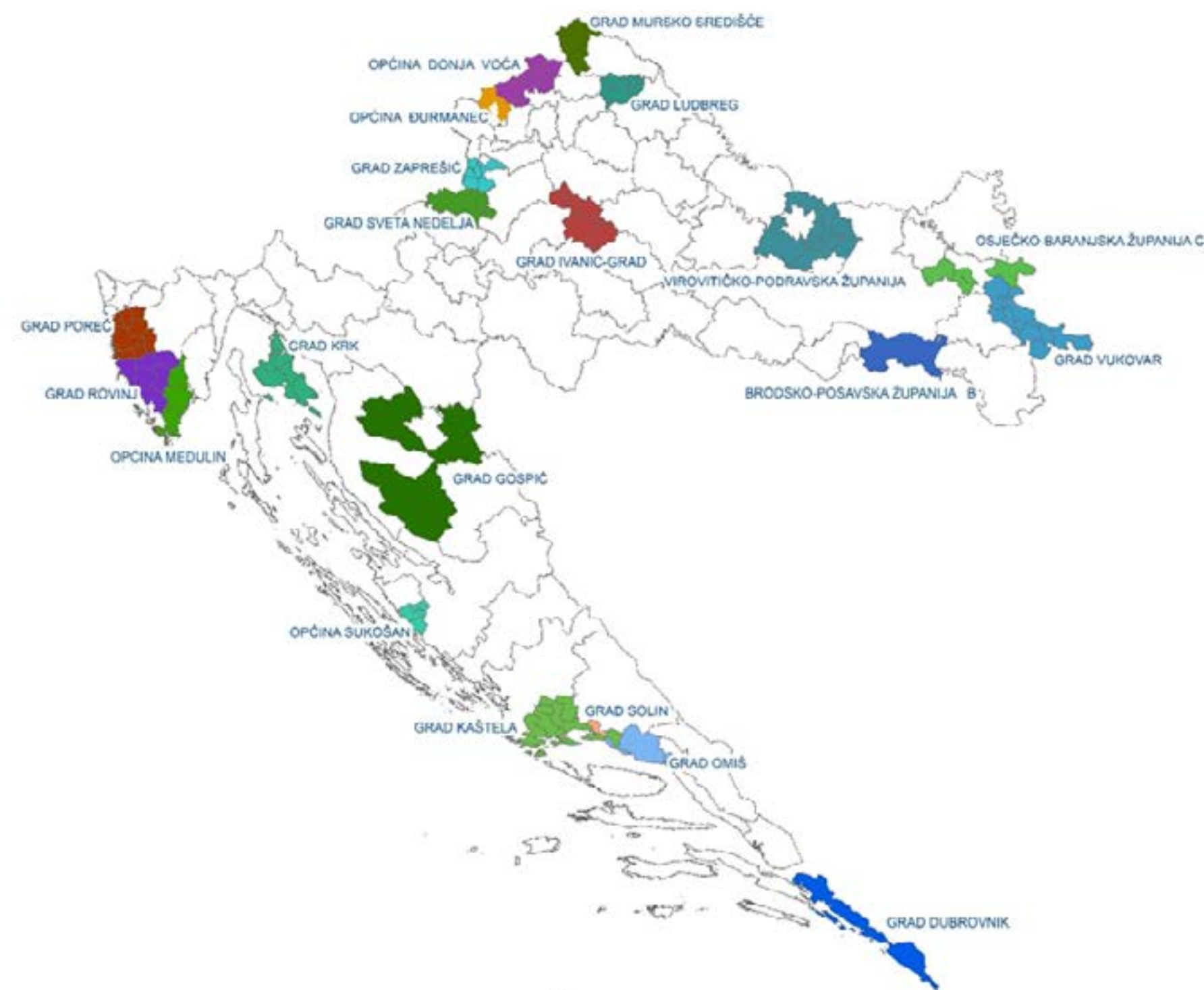
FRAMEWORK NATIONAL PROGRAMME **74**  
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STAFF **86**



## FRAMEWORK NATIONAL PROGRAMME

The implementation of the Framework National Programme for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments (FNP) continued, in which HAKOM performed its role of the Competent Authority for the Framework Programme (CAFP). Twenty-one projects are being implemented as part of the FNP, of which sixteen under model A – private DBO (Design, Build, Operate) model and five under model B – public DBO model. These projects cover a total of 126 LSUs, so that it is expected that 156,000 households, i.e. 236,000 housing units will be covered (mostly with FTTH) by the end of 2023. Total investment costs amount to about HRK 1.2bn, of which HRK 705m are allocated through grants from the financial perspective 2014 – 2021.

**Figure 7.1** Local/regional self-government units involved in projects co-financed by EU funds



Additional grants in the amount of HRK 799,999,997 were ensured for the continuation of the FNP implementation under the National Recovery and Resilience Plan 2021 – 2026 (NRRP). These funds will enable the co-financing of a certain number of projects for the development of the broadband infrastructure access to the units of local and regional government, which were not co-financed in the financial perspective 2014 – 2020. In order to enable the continuation of the FNP implementation, in 2021, the existing FNP state aid scheme was extended, which concerns an extension of the allocation of the necessary funds and the sources of financing, approved by the European Commission (State Aid SA.100662 (2021/N)).

The units of local and regional self-government, as competent authorities for individual projects, began updating the existing Broadband Infrastructure Development Plans (BIDPs) because, due to the elapsed time, it is necessary to review the existence of the commercial interest of electronic communications network operators in investments, by renewed procedures of mapping and public consultations. The mentioned activities, together with the renewed BIDPs granted by HAKOM as the Competent Authority for the FNP, are a necessary precondition for the submission of applications to the call for grants scheduled in 2022.

## BROADBAND COMPETENCE OFFICE

HAKOM has been a member of an EU-wide Broadband Competence Offices Network (BCO Network) since mid-2016. In 2021, HAKOM's representatives participated in several meetings and workshops organised by the BCO with the aim of sharing knowledge and experience among Member States and addressing practical issues related to the development of broadband networks access.

The process of programming the new 2021– 2027 financial period of the European Union, which began in 2020, continued in 2021. HAKOM's representatives are members of the Smarter Croatia Working Group participating in the preparation of the Competitiveness and Cohesion Operational Programme 2021 – 2027. The process of programming and adopting the Operational Programme and negotiations with the EC is expected to ensure grants for investments in the broadband infrastructure.

HAKOM also participated in the work of the expert group of the Connecting Europe Facility (CEF) for the digital sector, together with a CARNET representative. Following the adoption of the CEF Regulation, in 2021, the CEF Coordination Committee was formed, which, unlike the CEF Telecom Expert Group, plays a formal role. Each Member State designated a representative for the transport, energy and digital infrastructure. A HAKOM's representative was appointed as an HR representative for the area of digital infrastructure, and, upon need, experts for individual areas will also join the work of this Committee.



## NATIONAL PLAN FOR BROADBAND DEVELOPMENT

The [National Plan for Broadband Development in the Republic of Croatia in the period from 2021 to 2027](#) was adopted in March 2021. HAKOM participated in preparing the National Plan and was tasked with the implementation of a large number of measures, independently or in cooperation with other state bodies. The measures include the reduction of costs of deployment of very high capacity networks (VHCN), the legislative framework regarding the construction and physical planning of VHCNs, informing and educating the public on electromagnetic fields and supporting the introduction of 5G networks. HAKOM has partially implemented the measures regarding 5G networks and electromagnetic fields by assigning 5G frequency bands, while the remaining part is implemented through the activities of the 5G Working Group.

## CONNECTIVITY TOOLBOX

Following the adoption of EC Recommendation (EU) 2020/1307<sup>12</sup>, the adoption of the Toolbox for fostering connectivity, which includes a set of examples of best practices with the aim of reducing the costs of deploying very high capacity networks and providing timely and investment-friendly access to the radiofrequency spectrum for 5G networks (Connectivity Toolbox) and establishing a special working group for the development of the Connectivity Toolbox in 2020, HAKOM, as the HR representative, intensively participated in the Toolbox development in the first quarter of 2021. The Connectivity Toolbox is based on the best practices of Member States, and was agreed in March 2021. According to the obligations from the Toolbox, in April 2021, HAKOM prepared the Croatian Roadmap for the deployment of infrastructure of selected best practices. The largest part of the measures from the Roadmap related to the issues regarding the construction of infrastructure and the cost reduction. The spectrum-related measures were fulfilled to the largest extent by the assignment of 5G frequency bands and activities implemented by HAKOM regarding the electromagnetic fields.

## DIGITAL DECADE

In September 2021, the EC proposed the adoption of an implementing decision defining the Policy Programme “Path to the Digital Decade”. The programme is aimed at setting out a governance based on an annual cooperation mechanism with Member States to fulfil digital decade

<sup>12</sup> <https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32020H1307&from=EN>

targets by 2030 at EU level in the area of digital skills, digital infrastructure and the digitalisation of operations and public services. The objective of the programme is to address deficiencies in European digital capacities and target joint action and large investments in order to take advantage of the benefits of digitalisation. The Central State Office for the Development of the Digital Society is the coordinator for the preparation of the framework position regarding the decision proposal, and HAKOM, together with other state bodies, participates in the preparation of the position from the area of its competence. The monitoring of the fulfilment of the programme targets is foreseen through the upgrading and improvement of the DESI indicator, for which HAKOM submits data on an annual basis.

## COOPERATION

HAKOM, as the regulator of three markets and a public authority focusing on a multidisciplinary approach, is often involved in different developments that imply cooperation with others on the national or international levels. Domestic cooperation included state administration bodies, public authorities, the academia and civil society, and has been partially addressed in the previous sections. International cooperation included many international bodies and organisations in the area of electronic communications, postal and rail services. Due to the epidemiological situation during the year, most meetings were held virtually.

### International cooperation

#### European Union

HAKOM's experts continued their engagement in the discussions of the Working Party on Telecommunications and Information Society on the proposals of EU acts, primarily by providing their comments on the proposals of acts.

The central topic in 2021 was the review of the Roaming Regulation (the Regulation of the European Parliament and of the Council on roaming on public mobile communications networks within the EU), where HAKOM's experts took an active part in defining the national position and providing comments on compromise proposals. In December 2021, EU institutions reached a political agreement on the text of the Regulation. The Regulation is expected to be formally adopted in 2022.

In addition, HAKOM's representatives actively contributed to discussions on the Proposal for a Directive of the European Parliament and of the Council concerning measures for a high common level of cybersecurity across the Union, repealing Directive (EU) 2016/1148 (the NIS2 Directive), about which the general approach of the Council was adopted and trilogue negotiations of the EC, the Council and the Parliament continue.

A large part of EC activities in 2021 was dedicated to actions to achieve the targets of the 2030 Digital Compass and the EU plan for digital future, where HAKOM's experts also took part in defining the national position.

For the purpose of achieving the connectivity target, the EC began the review of the BCRD (the Broadband Cost Reduction Directive) and preparing the Connectivity Toolbox Recommendation. HAKOM's experts actively participated in these processes.

HAKOM also participated in discussions on the Proposal for a Regulation of the European Parliament and of the Council on privacy and the protection of personal data in electronic communications (e-Privacy Regulation), and in discussions on the Proposal for a Regulation on a Single Market For Digital Services (**Digital Services Act (DSA)**) and the Proposal for a Regulation on contestable and fair markets in the digital sector (**Digital Markets Act (DMA)**).

The DSA and the DMA should ensure a safe, open and fair online environment in the EU. Namely, the objective of the DSA is to ensure a better protection for online users and their fundamental rights and define a uniform set of rules in the internal market, by supporting smaller platforms to enlarge. The DSA sets a new standard for the liability of online platforms regarding illegal and harmful content. The platforms impose certain obligations proportionate to their role, size and impact on the online ecosystem. They should be transparent regarding the decisions on content moderation, prevent harmful disinformation from becoming viral and circumvent uncertain products offered on the markets. The objective of the DMA is to create a fairer and more competitive digital sector for new players and European businesses by putting in place certain rules crucial for fostering and opening digital markets, reinforcing the freedom of choice for consumers, enabling better distribution of values in the digital economy and promoting innovation. These established rules refer to large online platforms, which should ensure that none of the large online platforms acting as gatekeeper for a high number of users, misuses this position to the detriment of businesses wishing to access such users. The Regulation not only establishes the obligations for platforms but also prohibitions of certain courses of conduct, as well as the results of breaches of the rules of gatekeepers. The European Commission is competent for the implementation of the Regulation.

With regard to the proposals for the **DSA** and the **DMA**, it is worth noting that a special team was set up within HAKOM that reviewed the potential impact of the two proposals on the different definition of the regulatory powers of HAKOM. In addition, in 2021, until the political agreement between the Council and the Parliament was reached, HAKOM cooperated actively with the national authorities in charge of monitoring the legislative procedure and participated in the preparation of comments and proposals.

HAKOM's representatives participated in the work of two committees chaired by the European Commission: the Radio Spectrum Committee (RSC) and the Communications Committee (COCOM).

In 2021, HAKOM participated in the work of the RSC, which assists the EC in developing technical implementation decisions that ensure harmonised conditions for the availability and efficient use of the RF spectrum in the EU. The RSC also addresses measures that ensure accurate and timely delivery of spectrum usage information. Participation in the work of this authority facilitates the communication of national regulators with the EC on their proposals before implementation to ensure that the measures are adapted to the different situations of individual Member States. Among the EU decisions adopted in 2021, the following should be highlighted: (EU) 2021/1067 on the harmonised use of radio spectrum in the 5 945-6 425 MHz frequency band for the implementation of wireless access systems including radio local area networks (WAS/RLAN), (EU) 2021/1730 on the harmonised use of the paired frequency bands 874,4-880,0 MHz and 919,4-925,0 MHz and of the unpaired frequency band 1 900-1 910 MHz for Railway Mobile Radio. HAKOM also participates in the **work of the Radio Spectrum Policy Group (RSPG)**, a high-level advisory group assisting the EC in the development of radio spectrum policy – in particular regarding the coordination of approaches, coordinated conditions of availability and efficiency of the RF spectrum use and establishing and functioning of the internal market. The RSPG adopts opinions, positions and reports, and advises the EC at the strategic level. In accordance with the work programme for the period from 2020 to 2021, the RSPG considered the topics of shared RF spectrum use, additional spectrum needs and the future use of wireless broadband networks, the role and potential contribution of the RF spectrum in combating climate change, peer review and sharing experiences of Member States in spectrum allocation, the development of the programme of RF spectrum management policies and activities relating to cross-border coordination, an analysis of the results of the WRC 2019 and preparing EU positions for the WRC-23. With regard to the several-year long **problem of Italian interferences**, and taking into consideration that Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code also emphasises the RSPG as the forum for resolving disputes in relation to cross-border harmful interference between Member States, pursuant to Article 28, paragraph (3) of the Code, HAKOM submitted a request



to the RSPG to use its good offices and issue opinions proposing a coordinated solution regarding cross-border harmful interference originating from the Italian Republic, in order to ensure uninterrupted use of the harmonised radiofrequency spectrum in the territory of the Republic of Croatia in accordance with EU law. Taking into account the planned allocation of the RF spectrum for 5G mobile communication networks in August 2021, and ensuring an uninterrupted operation of the terrestrial digital television within the 470-694 MHz band, HAKOM requested an urgent addressing of interference on the existing TV channels in operation (21, 22, 23, 27, 28, 29, 33, 34, 35, 39, 41, 43 and 45) and priority addressing the interference in the 700 MHz band. With this regard, on 16 June 2022, the RSPG adopted the opinion defining coordinated solutions and activities that the Italian Republic should undertake in order to remove the interference within the given time limits.

Since the EC decisions are directly applicable to the HR, which is obligated to implement them, participation in the RSC and the RSPG is crucial in order to influence the final decision in a timely manner, depending on the national situation of the individual parts of the RF spectrum.

## **BEREC**

BEREC is the Body of European Regulators for Electronic Communications and acts as a forum for cooperation among national regulatory authorities and between national regulatory authorities and the Commission in the exercise of the full range of their responsibilities under the Union electronic communications regulatory framework.

It is a technical body with expertise on electronic Communications and composed of representatives from national regulatory authorities and the Commission, with the objective to provide expertise, act independently and transparently and through its activity ensure the consistent implementation of the regulatory framework for electronic communications, within the powers governed by the BEREC Regulation ((EU) 2018/1971).

BEREC is assigned tasks such as delivering opinions on proposals of national measures as regards market regulation, providing the necessary guidelines to national regulatory authorities and other competent authorities in order to ensure common criteria and a consistent regulatory approach, and keeping certain registries, databases and lists at Union level.

The mentioned role of BEREC as a technical body in ensuring the consistent implementation of the regulatory framework for electronic communications, requires HAKOM's active involvement in the work of BEREC through the participation of HAKOM's experts in the work of the working groups, the Contact Network, the Board of Regulators and the Management Board.

In 2021, BEREC adopted about forty documents in accordance with its [annual work programme](#).

## **ITU and CEPT**

### **Electronic Communications Committee (ECC)**

The umbrella organisation in charge of electronic communications within CEPT is the Electronic Communications Committee (ECC), whose work HAKOM also actively followed in 2021. The ECC makes decisions and recommendations important for the management of the RF spectrum. The ECC is the umbrella organisation that oversees the work of the WGFM, WGSE, ECC PT1, CPG and NaN working groups.

#### **Working Group Frequency Management (WGFM)**

The WGFM monitors the development of the RF spectrum use and its harmonisation and deals with the allocation and harmonisation of the radio spectrum in mobile, fixed, maritime, satellite and short-range communications. In 2021, HAKOM's representatives participated in the work of this working group at meetings, by completing questionnaires and exchanging correspondence with other members.

#### **FM44 Project Team**

The FM44 Project Team is part of the WGFM and participation in the work of the project team dealing with satellite connections continued. Considering the development of new satellite systems, it is necessary to monitor their impact on existing microwave and satellite connections in the HR.

#### **SRD/MG (Short Range Devices/ Maintenance Group) Project Team**

In 2021, HAKOM participated in the work of the SRD/MG Project Team, which is part of the WGFM in charge of dealing with issues on short-range devices. Taking into account the economic potential of short-range devices and their widespread use, it is important for HAKOM to participate in the work of this project team in order to recognise market needs on time and adjust national regulations in order to enable new applications of technologies for these devices.

#### **Working Group Spectrum Engineering (WGSE)**

In 2021, HAKOM also participated in the work of the WGSE working group. As part of the ECC, the WGSE is in charge of addressing technical issues in the RF spectrum management, which primarily refers to the analyses of the possibility of sharing this naturally limited public good be-

tween different radiocommunication services, such as mobile, fixed and satellite services and short-range devices (SRD).

### **SE19 Project Team**

SE19 Project Team's tasks are related to the fixed service within the WGSE. HAKOM participated in the project team's work. In 2021, the main tasks included the preparation of a revision of the ECC report 173 on the use of microwave links in Europe, the development of the new methodology for the short-term criterion of the protection of the fixed service, the development and regulation of a new point – multipoints (PtMP) technology with active antennas for 5G backhaul above 27.5 GHz, etc.

### **HCM Agreement**

The HR is one of the signatories to the HCM (Harmonized Calculation Method) international agreement. The main objective of the Agreement is to establish unique criteria and methods on which interstate coordination of radiocommunication services will be based. The Agreement defines the procedures of the coordination process, including the record format for the data exchange between signatory countries. The HR coordinates private mobile networks and microwave links with neighbouring countries based on this Agreement exclusively. The HCM constantly adjusts to the development of radio technologies, which is the task of the HCM TWG working group in whose work HAKOM also took part in 2021.

### **ECC PT1**

HAKOM's representatives participated in three meetings of the CEPT CPG PTD working group and two meetings of the ITU TG 6/1 working group. The main task of these working groups is to prepare A.I 1.5 for the WRC 2023, relating to the future use of the UHF spectrum, i.e. to analyse the spectrum use and the needs for spectrum of the existing services within the 470-960 MHz frequency band in Region 1 and consider possible regulatory measures in the 470-694 MHz frequency band in Region 1 based on the analysis in accordance with Resolution 235 (WRC-15).

### **CPG**

The Conference Preparatory Group (CPG), in whose work HAKOM also participated in 2021, is a working group responsible for developing common European positions for the forthcoming World Radiocommunication Conference WRC 2023. Taking into account as many as 35 different topics on the agenda for the WRC 2023, the group's work is divided among five project teams A, B, C, D and ECC PT1.

### **CPG PTD (CEPT) and ITU TG 6/1**

In 2021, HAKOM's representatives participated in the work of the project team D within the CPG (CPG PTD) and the ITU TG 6/1 working group. The main task of these working groups is to prepare for the World Radiocommunication Conference WRC 2023 for item 1.5 of the Agenda, relating to the future use of the UHF spectrum, which is currently used for broadcasting in Region 1. The task is to analyse the RF spectrum use and the spectrum needs of the existing services within the frequency band 470-960 MHz and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 based on such analyses in accordance with Resolution 235 (WRC-15).

### **ITU WP4A**

In 2021, HAKOM joined the work of the ITU's working group WP4A which deals with the equitable use of satellite orbits and RF spectrum for the fixed-satellite service (FSS) and the broadcast satellite service (BSS). At these meetings, the representatives of eight countries (including the HR) proposed amendments to the provisions of Appendix 30B of the ITU Radio regulations to be made at the next World Radiocommunication Conference (WRC-23), so that countries that so far have not had a geostationary-orbital position assigned for national coverage in the fixed-satellite service should have priority and a special status in the international harmonisation. The group of countries that launched the initiative, along with the HR, comprises: Bosnia and Herzegovina, North Macedonia, Serbia, Moldova, Georgia, South Sudan and Rwanda.

### **WG FM PT22.**

The WG FM PT22 Working Group deals with the control and monitoring of the RF spectrum, drafting international recommendations and developing harmonised measurement techniques and procedures for the monitoring of the RF spectrum. In this group in 2021, reports from other working groups were also monitored at the level of analysis of output documents.

### **ADCO RED**

HAKOM regularly participates in the plenary sessions of the Administrative Cooperation Radio Equipment Directive Group (ADCO RED) set up for the purpose of cooperation between market surveillance authorities concerning equipment falling within the scope of the Radio Equipment Directive 2014/53/EU (RED). The plenary sessions are organised by the EC. In the course of the previous year, discussions were held about harmonising approaches to the monitoring of radio equipment products, the use of ICSMS tools and products that should be the subject of a future joint market surveillance campaign. Various aspects related to the interpretation of the Radio



Equipment Directive were discussed concerning various non-compliant products and PMR446 radio devices, as well as standardisation, measurement uncertainty of standards and better co-ordination in the adoption of standards.

## WG NaN

In 2021, HAKOM followed and actively participated in the work of the CEPT/ECC **Numbering and Networks (WG NaN) Working Group** and its project teams. The most important topics of this working group included:

- numbering for the needs of the e-Call service;
- guidelines for major changes to National Numbering and Dialling Plans concerning E.164 Numbers;
- studying the issues linked to SIM-less calls to emergency services or non accessible for other reasons;
- the role of E.164 numbers in the cases of international fraud (verification of irregular EU/EEA numbers)
- numbers for the provision of OTT services.

## EMERG

The European Mediterranean Regulators Group (EMERG) is a body that through its activities attempts to apply BEREC's manner of work to the broader Mediterranean region. It mostly comprises the Mediterranean countries, as well as other countries (23 in total). HAKOM has been a full member of EMERG since 2015, and it has participated in the plenary sessions, workshops and meetings organised by EMERG. In 2021, three virtual workshops were held under the auspices of EMERG: broadband strategy, international roaming and network neutrality.

### European Network and Information Security Agency

In 2021, HAKOM continued to participate in the working meetings of the European Network and Information Security Agency (ENISA) in the ECASEC, Article 13a working group, which deals with a harmonised implementation of EU provisions from the existing 2002 regulatory framework on security and integrity of networks and services, necessary security measures and incident reporting. HAKOM participated in developing the ENISA guidelines, which support Member States in the implementation of strategic and technical measures from the Toolbox in the national legal frameworks.

## NIS

In the Network and Information Systems Cooperation Group (NIS), Member States, with the assistance of the Commission and ENISA, monitored the implementation of a Toolbox with a common set of measures which are able to mitigate the main cybersecurity risks of 5G networks. Furthermore, cooperation with BEREC involved monitoring the progress of a particular Member State in the implementation of the Toolbox and creating a review of potential ways to implement specific measures.

## HLIG

Participation in the work of the High Level Group on Internet Governance (HLIG) at the European Commission continued. The main task of the HLIG is the coordination of positions of the EU Member States in matters of Internet governance with special emphasis on public interest. Participation in the HLIG has enabled a fast exchange of information and coordination with other Member States. The main topics that were discussed included cybersecurity, the strengthening of the IGF, the strengthening of the multistakeholder Internet governance model, the issues of human rights in the digital world, the allocation of new .eu domains and other issues with the aim of achieving a common European position for a coordinated approach of the representatives of the EU Member States in the GAC Committee at the ICANN, at the Internet Governance Forum (IGF), in discussions that are opened within the ITU and within other relevant institutions. Where necessary, for certain topics with the HLIG, information was distributed within the HR to relevant ministries and other authorities.

## ICANN (GAC)

HAKOM continued to participate in the work of the Governmental Advisory Committee (GAC) within the Internet Corporation for Assigned Names and Numbers (ICANN) organisation. The GAC is an advisory committee with the main task to ensure the protection of public interest in matters of Internet governance. The main topics in 2021 related to the issues of privacy in the WHOIS service, improvements in the governance processes used at the ICANN and the issues of the protection of human rights in such processes as well as the issues of the protection of geographical and other protected names in the TLD domains assignment processes. In 2021, HAKOM coordinated the proposals of HR positions with CARNet as the .HR top-level domain manager.

## ERGP

In 2021, HAKOM was an active participant in the work of the European Regulators Group for Postal Services (ERGP). Due to the situation with the pandemic, working group meetings were held

online (via virtual platforms) and the topics on the agenda were related to the universal service provision, regulatory accounting, prices of postal services, situation and indicators of developments in the postal services market, quality of services, consumer satisfaction and protection, the cross-border traffic of postal items and other issues. Special attention of one of the ERGP working groups was directed at changes and the developments in the postal sector, with emphasis on the consumer situation associated with e-commerce. The ERGP continued to provide support to the EC by providing technical assistance and advice in the field of postal services. The issues to which the ERGP paid special attention in 2021 included the provision of postal services in the Member States during the pandemic and the related challenges of the European postal system, the challenges and strategic directions of the ERGP in the forthcoming period and the application of new knowledge and technologies in postal activity. HAKOM's representatives attended the ERGP plenary sessions in June (online) and in person in Athens in November 2021.

## PDC

The Postal Directive Committee (PDC) is an EC working body in the field of postal services that serves as a scrutiny body for monitoring the application of postal legislation (the Postal Directive and the accompanying acts) and for the improvement of quality of the universal service in the Member States. The PDC, as a rule, consists of the representatives of EU countries' national/line ministries.

In 2021, as in the previous years, HAKOM's representatives participated in PDC meetings via online (virtual) platforms, at which the initiative relating to the amendments to the Postal Directive and the related challenges in the Member States and potential scenarios in the postal services market in the future period were the main topics of discussion. Every year the PDC prepares a report for the EC on the state of the implementation of postal legislation, which is submitted to the European Parliament. Thus, in 2021, the Report on the application of the Postal Directive was published. Since more than 20 years have passed since the first Directive, all stakeholders were anticipating impatiently this report in order to take their stand with regard to the new guidelines in postal activity, in particular because the ERGP had announced the need to change the regulatory framework. However, after the analysis of the situation in the sector and reviewing the provisions of the Postal Directive, the EC in its report concluded that innovative technological changes and e-commerce contributed to growth on the postal market to the benefit of all users of postal services and that further activities regarding the changes to the European regulatory framework were still not necessary, so that the Postal Directive still provides all national postal systems with sufficient flexibility in regulating and/or changing their legislation.

<sup>9</sup> Directive (EU) 2016/2370 of the European Parliament and of the Council of 14 December 2016 amending Directive 2012/34/EU as regards the opening of the market for domestic passenger transport services by rail and the governance of the railway infrastructure

## CERP

In 2021, in agreement and in cooperation with the line ministry, HAKOM participated in the work of CERP, the **European Committee for Postal Regulation**, plenary sessions and the UPU and Policy working groups. The focus of the working groups was on the UPU congress.

## UPU

The 27th Congress of the Universal Postal Union (UPU) was held in August 2021 in Abidjan, Côte d'Ivoire, where a representative of HAKOM participated on behalf of the HR. During the Congress, a large number of amendments to UPU acts was discussed and adopted, relating to the UPU organisation and financing in the forthcoming four-year period, proposals related to an effective and efficient improvement of international postal traffic were discussed and the Postal Strategy for the period from 2022 to 2025 was adopted. Discussions were also held on the opening up of the UPU to other interested stakeholders from the universal postal system, as well as about the new plan for mandatory postal services. However, the adoption of the documents was postponed until the fourth extraordinary congress 2023. In the second part of the Congress the new UPU leadership was elected, where a representative from Japan was elected as Director General and a representative from Slovenia as Deputy Director General, as well as new members to the Council of Administration and the Postal Operations Councils.

## IRG Rail

The IRG-Rail acts as a platform for cooperation, information exchange and sharing of best practices between national railway regulators in order to efficiently face current and future regulatory challenges in railways and promote a consistent application of the European regulatory framework. HAKOM's rail experts participate actively in the work of six working groups – Access, Access to Service Facilities, Charges, Charges for Service Facilities, Market Monitoring and Emerging Legislative Proposals, and a special group for multimodality. In 2021, they attended more than 25 meetings, plenary meetings and network meetings and responded to IRG-Rail's inquiries and questionnaires concerning the situation on the rail services market in the HR.

## European Network of Rail Regulatory Bodies

The European Network of Rail Regulatory Bodies (ENRRB) is the EC advisory body, which discusses issues and exchanges practices under the competence of regulation of the rail services market of importance for the work of regulatory authorities. For the purposes of the work of the ENRRB, a database of regulatory bodies (DAREBO) was established. In December 2021, HAKOM participated in the 21st ENRRB meeting at which relevant events in the rail sector in Member



states were presented, as well as activities concerning the Rail Facilities Portal with the participation of members of the Access to Service Facilities IRG-Rail working group, the RNE group that gathers infrastructure managers and the UIRR group for international combined transport.

## NEB

HAKOM is a member of the national authorities for the enforcement of the regulation on rail passengers' rights and obligations, which, once a year and under the auspices of the EC, exchange experiences with the aim to establish best practices for the protection of rail passenger rights, their harmonisation and propose changes to the legislative framework. In December, HAKOM participated in the meeting on the current situation, practices and issues of national regulatory authorities during the COVID-19 global pandemic. The topics of discussion also included Implementing Regulation 1371/2007 and recently enacted Regulation (EU) 2021/782 on rail passengers' rights, improved information and passengers' access to appeals procedures.

## RMMS

The objective of the working group for monitoring the conditions in the single European market (RMMS) is to collect data on market conditions. In order to ensure consistency and comparability between the data submitted by the Member States, pursuant to Article 15, paragraph (6) of the Recast Directive<sup>9</sup>, on 7 July 2015, the EC adopted Implementing Regulation (EU) 2015/1100 on the reporting obligations of the Member States in the framework of rail market monitoring.

By 31 December each year, Member States submit to the EC the data specified in the rail market monitoring questionnaire (Rail Market Monitoring Scheme), and every two years the EC submits the report to the European Parliament and to the Council. The collected data serve as the basis for the adoption of the legislative framework. HAKOM's obligation to collect and publish data on the condition in the market is also prescribed in the national legislation of the HR.

## Domestic cooperation

### Ministry of the Sea, Transport and Infrastructure

The transposition of the provisions of the European Electronic Communications Code into the Croatian legislation and the preparation of the new Electronic Communications Act continued in 2021. HAKOM's representatives also participated in the work of the working group headed by the MSTI with regard to the transposition of spectrum-related provisions.

Rail services experts continuously cooperate with the MSTI, so that in 2021 meetings were held for the purpose of improving the situation on the rail services market and strengthening the existing communication and coordination. Meetings were held on the implementation of Regulation 1371/2007 with regard to HŽPP and on the need to introduce the minimum standards prescribed by the Regulation. A meeting was also held on the topic of providing incentives to the freight transport for the purpose of increasing the volume of the rail transport of goods and the possibilities of attracting new cargo through maritime ports and inland waterways ports. The MSTI and HAKOM participate in the work of the EC working groups, of which HAKOM's Rail Services Sector was engaged in the work of the road transport working group in charge of preparing amendments to Regulation (EC) No 1371/2007 and a new Regulation 2021/782 was adopted, which will be applied from 7 June 2023. HAKOM also cooperated actively with the MSTI in the working group responsible for drafting the Ordinance on the equipment of service facilities.

### Ministry of Health

HAKOM continued cooperation with the Ministry of Health on the issues of electromagnetic fields. Measure M3 of the National Plan for Broadband Development concerns the information and education of the public on electromagnetic fields. Both HAKOM and the Ministry of Health are responsible for its implementation. The Ministry of Health also participates in the work of the 5G network working group headed by HAKOM, which also deals with the issues of electromagnetic fields. This cooperation is expected to yield significant results by improving the information on the measurements of electromagnetic fields, which is published on HAKOM's GIS portal.

### Ministry of the Interior

Regular cooperation with the Ministry of the Interior (MoI) intensified in 2021, with the aim of determining the coverage conditions in the auction for the assignment of 5G frequencies. HAKOM participates in the work of the MoI's working group for the improvement of the quality of signals at the HR border. The obligations prescribed in the auction also relate to the work of this working group. HAKOM also cooperates with the MoI on determining a long-term solution for spectrum needs and a good quality coverage for the whole Public Protection and Disaster Relief (PPDR) community with the MoI as its competent authority.

Cooperation with the MoI (the Civil Protection Directorate, former State Administration for Protection and Rescue) focused on preparing the proposal for the technical solution for access to emergency services, which would be more resistant to serious incidents and disruptions in the functioning of electronic communications networks of the individual operator. HAKOM also cooperated with the MoI on the setting up of the short number 113 as the number of emergency service during the implementation of measures to contain the spreading of the disease caused by the corona virus and COVID-19. Number 113 was introduced to disburden the calls to number 112.

## CERT

In 2021, HAKOM realised additional cooperation with the National CERT by participating in the working group for the setting up and use of the PiXi Platform for collecting, analysing and exchanging information on cybersecurity threats and incidents. The PiXi Platform enables the harmonisation with the Cybersecurity Act of operators of essential services and digital service providers, transposing Directive 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (the NIS Directive). The harmonisation will enable the inclusion of the operators of essential services and digital service providers in collecting and exchanging information on computer security incidents and threats through the PiXi Platform. In 2021, by adopting the Ordinance on the manner and deadlines for the implementation of measures for protecting safety and integrity of networks and services, HAKOM fulfilled its obligation towards operators to report computer security incidents to operators in compliance with the National taxonomy for computer security incidents on time to the PiXi Platform.

## CCA

Cooperation between HAKOM and the **Croatian Competition Agency (CCA)** in the field of electronic communications in 2021 was related to the CCA's (positive) opinion on the analysis of relevant markets of access to the public communication network provided at a fixed location for private and business users and the analysis of the origination of calls from public communication networks at a fixed location. HAKOM and the CCA also cooperated in the procedure of the termination of the HT and Optima concentration, which was concluded by the HAKOM's provisional decision on the termination of regulatory obligations for Optima. Cooperation also included the preparation of the position of the HR with regard to the Digital Markets Act (DMA) because the CCA, together with the Ministry of the Economy and Sustainable Development (MESD) was the competent authority for this preparation. HAKOM contributed to the improvement of the text by its participation in the work of the working group established at the national level.

### Ministry of Science and Education

For a number of years, HAKOM has been cooperating with the Ministry of Science and Education on the programme of brochures for a safe and responsible use of the Internet. In 2021, a series of lectures on the protection of children on the Internet was held and cooperation with the County Expert Council of the City of Zagreb was initiated regarding the education of teachers of civic education and interdisciplinary topics.

### Consumer protection associations

Within the cooperation with interested consumer protection associations, lectures were given for the public, organised by different associations dealing with consumer protection issues. In 2021, noteworthy was the cooperation with the Union of Consumer Protection Associations Consumer (Potrošač in Croatian) and the individual associations such as Customer (Potrošačica in Croatian), Međimurski potrošač, the Association for Consumer Protection Garešnica, the Association of the Voice of Consumers of the Vukovar-Srijem County and others.

### Ministry of the Economy and Sustainable Development

HAKOM cooperates with the Ministry of the Economy and Sustainable Development in the area of consumer protection and has its representative in the National Consumer Protection Council. A part of this cooperation also refers to the "Do not Call" Register.

### Ministry of Physical Planning, Construction and State Assets

The purpose of cooperation with the Ministry of Physical Planning, Construction and State Assets was the improvement, digitalisation and automatisisation of the process of issuing legislative acts within the scope of activity of the public authority.

### State Geodetic Administration

On 10 August 2021, HAKOM signed the Annex to the Protocol for viewing and downloading SGA data with the State Geodetic Administration (SGA), which refers to accessing and downloading data on infrastructure from the Central Infrastructure Cadastre.

### Croatian Railway Safety Agency

HAKOM has good and several-year long cooperation with the Croatian Railway Safety Agency, the body responsible for the safety and interoperability of the railway system with the aim of preventing negative effects on competition or traffic safety.

### Government Legislation Office

Cooperation with the **Government Legislation Office** intensified at the end of the year through preparation for the start of the project "Strengthening the implementation of regulatory impact assessment", which will enable the Government Legislation Office and HAKOM to perform practical regulatory impact assessment, develop better regulations and make optimal decisions in the interest of citizens and the economy.

The project provides technical support provided by the Directorate-General for Structural Reform Support of the European Commission and is co-financed by the EU under the Technical Support Instrument and the German Federal Ministry of Economic Affairs and Energy.



## PUBLICITY OF HAKOM'S OPERATIONS

The publicity of HAKOM's operations is evident not only in terms of the availability of information on the basis of positive regulations of the HR, but also in general terms. Restrictions with regard to public access to HAKOM's work only exist to the extent that personal data or official and business secrets are protected.

All relevant information, in particular the information defined by regulations, was regularly published on the website, including HAKOM's decisions and rulings, and decisions and judgements made in connection with HAKOM's decisions. Complete subordinate legislation within HAKOM's competence is also published with unofficial consolidated texts for ease of reference.

The website is regularly updated with: (i) adopted decisions and other administrative acts, and received judgements of the Administrative Court and the High Administrative Court of the HR as well as the final misdemeanour rulings; (ii) proposals for regulations, measures and decisions that must be subject to public consultation and other documents for which this has not been explicitly prescribed, but it has been assessed that there is a need for public consultation regarding those documents; (iii) data for databases of all registers; (iv) publication of statistical data on the markets of electronic communications, postal and rail services.

In addition to the transparent presentation of data or information in the field of HAKOM's regulatory work, an important segment of its public activity includes public consultations that are held for all decisions that may have a significant impact on market stakeholders. In 2021, 25 public consultations were initiated. All consultations are published on the Internet as part of the special section of HAKOM's public consultation site (e-Consultation).

HAKOM occasionally published special releases about important events, alerts to users, decisions, judgements and regulations related to the electronic communications, postal services and rail services markets. News from the area of HAKOM's competence was regularly published on its website. In all, there were 80 such releases.

It has become a common task for the regulator to participate in radio and television broadcasts aimed at informing the public, primarily consumers, about important issues in the field of electronic communications, postal and rail services. The largest part of such public appearances was related to electronic communications consumer protection issues, and the majority of public appearances occurred on the public radio and television as part of informative programmes or specialised consumer-related broadcasts. In 2021, there were 92 requests for information submitted by the media, of which 27 related to statements or appearances in the electronic media.

Citizens can contact HAKOM directly and get information every working day from 9 a.m. to 11.30 a.m. through special telephone lines for individual areas. In addition, citizens can forward queries by means of the "Ask Us" application available on the website. In 2021, 621 queries were received through this application. Finally, citizens can contact individual departments at their e-mail addresses, published on the website, or use a special address for proposals, complaints and praise regarding HAKOM's work.

HAKOM's Facebook page is constantly active. It is used for releases and to provide user support. Its primary objective is to raise awareness and knowledge of the rights and obligations or provide prompt and important information when necessary, such as to alert to fraud or a malfunction on an operator's network. In addition to Facebook, Twitter and LinkedIn are also used as other social networks for communication.

HAKOM received nine requests for access to information under special regulations pursuant to the Act on the Right of Access to Information. All requests were resolved within the time limit and the Information Officer received a report on the implementation of the Act on the Right of Access to Information.

## COURT PROCEEDINGS

Court proceedings include administrative disputes initiated against HAKOM's decisions, misdemeanour proceedings initiated by HAKOM against natural and legal persons due to violations of legislative provisions within HAKOM's competence and enforcement proceedings against legal and natural persons for non-payment of fees for the right of use (State Budget) and for HAKOM's work, and pre-bankruptcy and bankruptcy Proceedings where HAKOM applied for its claims against a debtor upon whom pre-bankruptcy or bankruptcy proceedings have been initiated.

### Administrative disputes

No appeal is allowed against HAKOM's decisions adopted in administrative proceedings, but judicial protection is provided as part of an administrative dispute. An administrative dispute is initiated by filing a lawsuit with the competent court.

The High Administrative Court of the Republic of Croatia is competent for administrative disputes initiated against decisions adopted by the Council of HAKOM in the field of electronic communications, postal and rail services, and against decisions adopted by HAKOM's inspectors in the cases of very serious and serious violations of the ECA and the PSA.

Figure 7.2 Statistics on administrative complaints

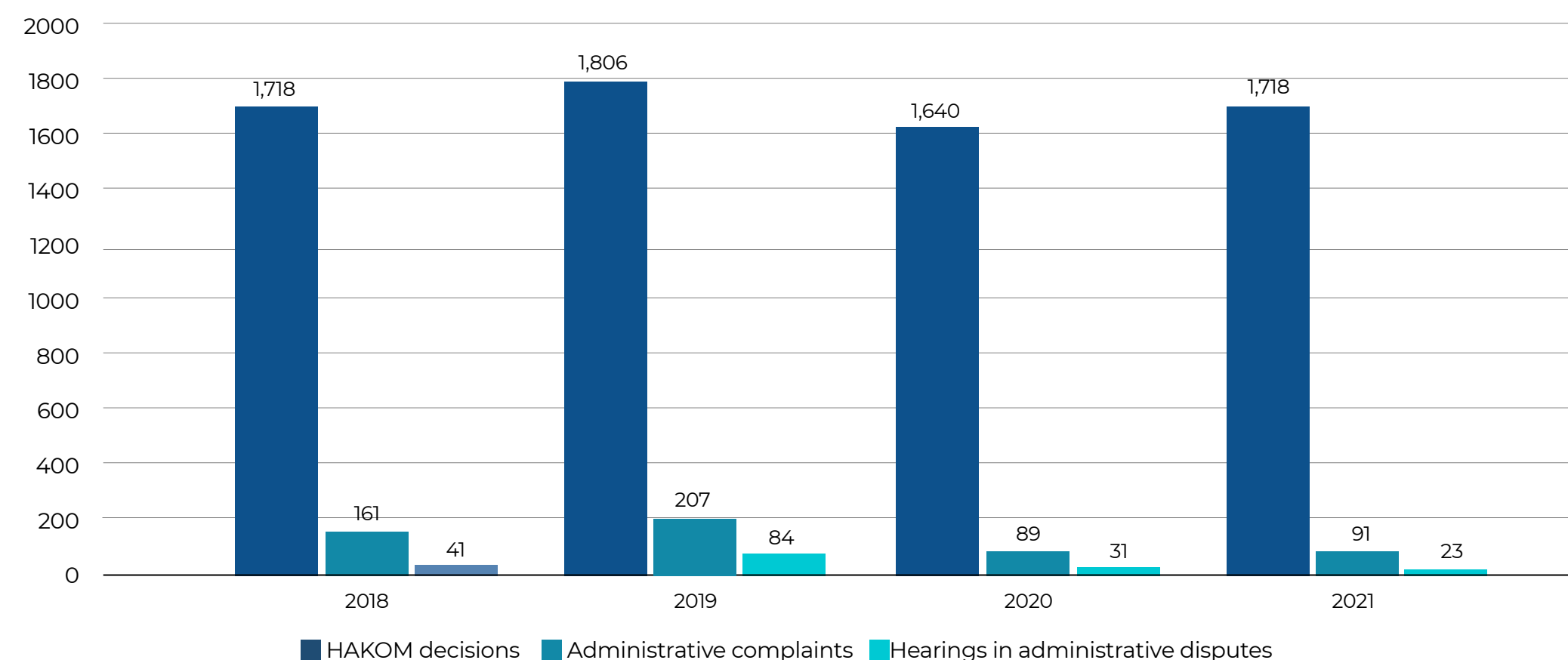


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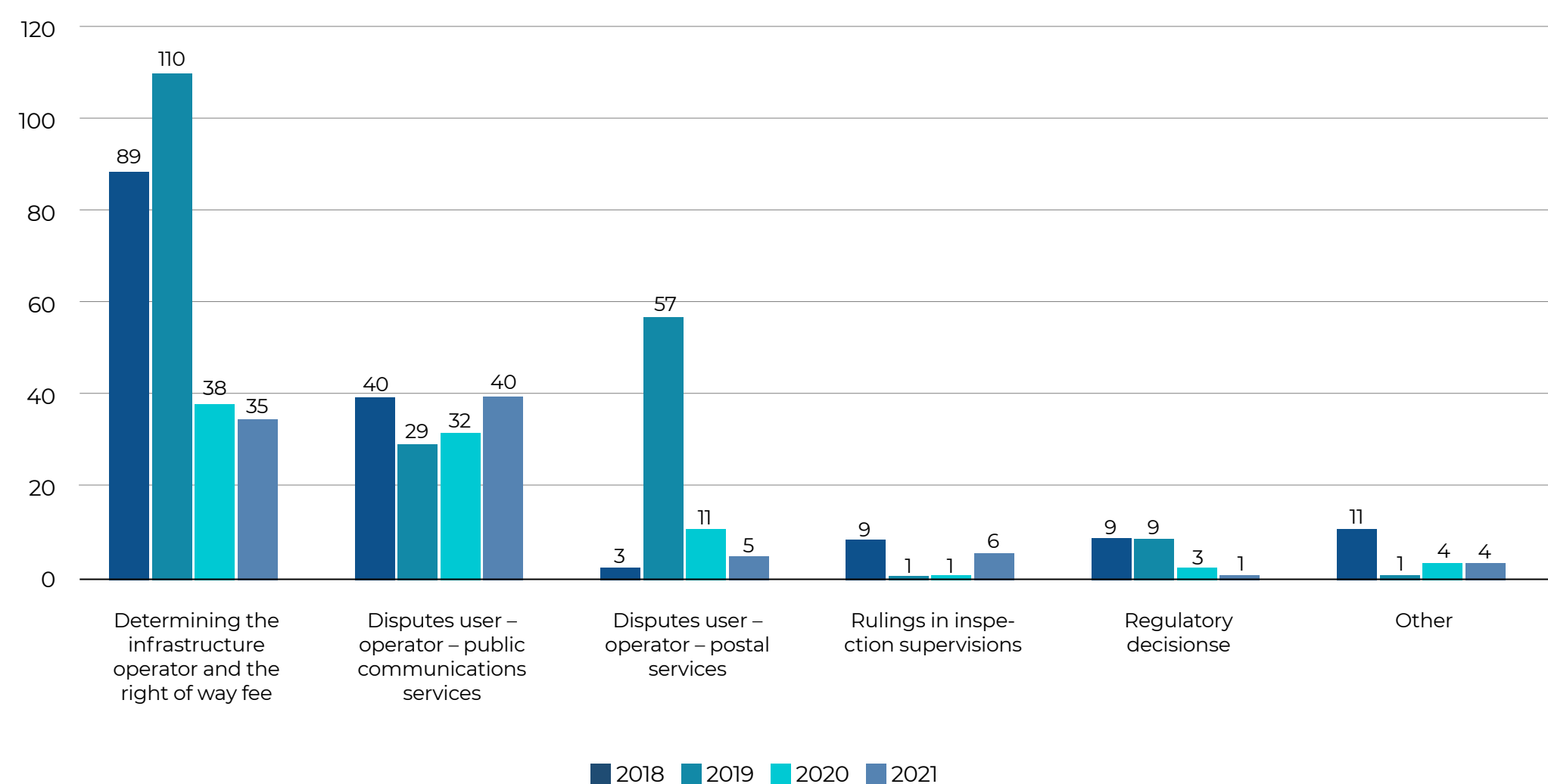
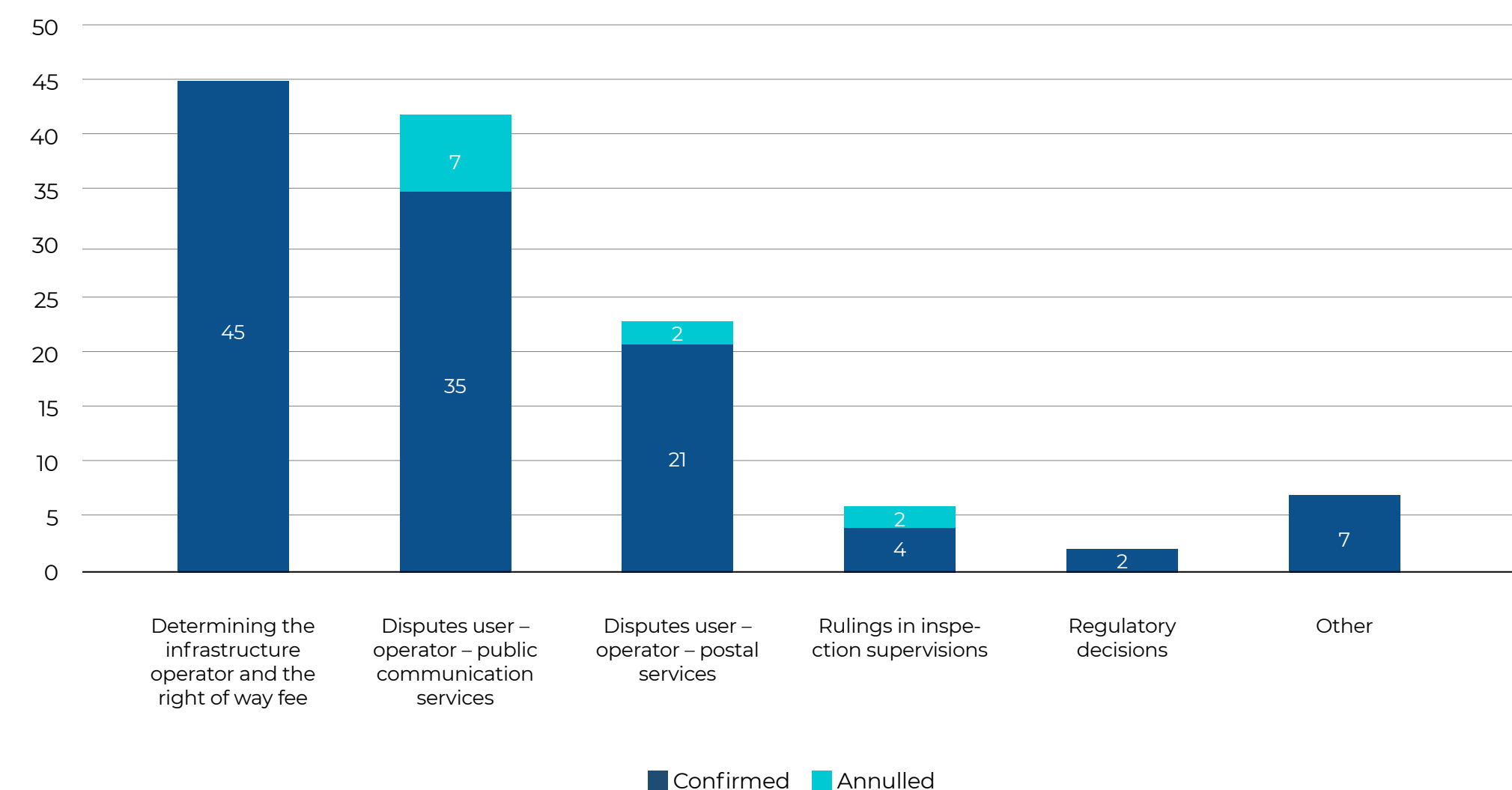


Figure 7.4 Statistics on judgements in administrative disputes



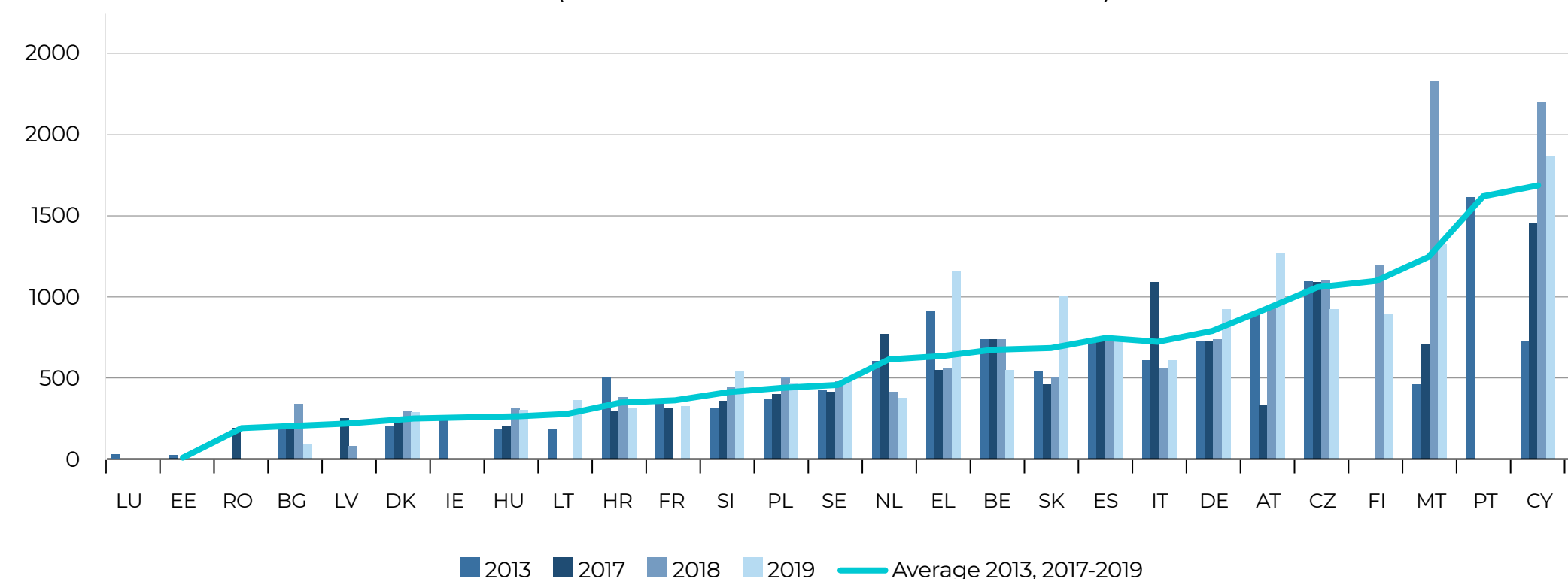
The first instance administrative courts (Zagreb, Osijek, Rijeka and Split) are competent for administrative disputes initiated against decisions adopted in disputes between users of electronic communications services and postal services and operators (providers of services) and the protection of passengers' rights, as well as against the decisions of HAKOM's inspectors for other violations of the ECA and the PSA, as well as violations of the ARRSM.

The analysis of the filed administrative complaints shows that a large number of complaints (40 complaints, or 43.9 percent) was filed in the cases of resolving disputes between users and operators of public communication services. In 2021, HAKOM resolved 1,285 disputes between users and operators of public communication services, so that the number of filed complaints relative to the number of resolved disputes was only 3.1 percent. In the cases for determining the infrastructure operator and the right of way fee, 35 complaints (38.5 percent) were filed. The remaining 16 complaints (17.6 percent) were filed in the cases of inspection supervision (six), in the disputes between users and postal service providers (five), in regulatory disputes (one) and in other cases (four).

The majority of confirmed HAKOM's decisions are cases for determining the infrastructure operator and the right of way fee (45), while the majority of annulled decisions (7) concerns the cases initiated for resolving a dispute between users and operators of public communication services.



**Figure 7.5** Duration of court proceedings in electronic communications  
(Source: The EU Justice Scoreboard 2021)



It is also worth noting that, in all, 114 (91.2 percent) HAKOM's decisions were confirmed, while a total of 11 (8.8 percent) HAKOM's decisions were annulled.

It is important to mention that the HR, with the average duration of court proceedings of around 300 days by applying the ECA, is ranked the 10th in the [EU Justice Scoreboard](#) statistics according to the efficiency of proceedings.

A comparative detailed overview of the duration of court proceedings conducted by the national courts of the EU Member States is shown in the figure below.

### Misdemeanour proceedings

In 2021, five non-final judgements were adopted, of which two refer to the violation of regulatory obligations, while the remaining three refer to: failure to inform the user on the right to termination, failure to submit data to the postal inspector and failure to publish postal services according to regulations. Also, a settlement was reached in the case of the failure to take the prescribed security measures, where the operator admitted guilt and was imposed a fine in the amount of HRK 75,000.00.

In 2021, HAKOM filed eight motions for indictment in the field of electronic communications and post.

### Enforcement proceedings

In 2021, based on enforcement proceedings initiated in the total amount of HRK 111,422.71, the amount of HRK 47,360.85 was collected, while for the remaining amount, the enforcement collection is still pending.

### Pre-bankruptcy and bankruptcy proceedings

In 2021, HAKOM submitted two requests for the settlement of its claims in the pre-bankruptcy proceedings for the total amount of HRK 1,248.66.

No amount was collected based on the previously concluded pre-bankruptcy settlements. However, four entities ceased to exist and were deleted from the court register, so that their claims in the total amount of HRK 38,474.00 were written off and erased from the accounts.

## PERSONAL DATA PROTECTION

Within its competences prescribed by Title XII of the ECA, HAKOM supervises the activities of operators and other legal entities with regard to the protection of privacy in electronic communications. HAKOM regularly responds to the queries received at the published e-mail addresses that primarily relate to the issues of unsolicited electronic communications, the potential abuse of personal data of users and malicious or harassing calls from users.

In 2021, all activities regarding the adoption of new EU legislative acts and new legislative initiatives were followed, relating to the protection of personal data, such as the e-privacy Regulation, which should replace the existing e-privacy Directive and the Data Governance Regulation (Data Governance Act).

### e-AGENCY

The e-Agency programme is based on the digitalisation of operation. Digital initialling and electronic signing of documents was introduced as part of the continuation of the digitalisation of operation. This has enabled the digital processing of documents from the time of their production until the final approval of the individual document (without the need of printing it out on paper), and business processes are adapted to the digital operation.

HAKOM's website was upgraded and modernised to improve user experience and security. At the same time, the obligation to ensure digital accessibility for public authorities was ensured.

HAKOM participated in "Cyber Coalition 2021", NATO's largest cyber defence exercise, which was organised by the Allied Command Transformation (ACT). The aim of the exercise was to strengthen coordination and collaboration between the NATO alliance and its members and to improve the ability to deter, defend and counter threats in and through cyberspace.

Education on information security was organised for users. The aim of the education was to raise awareness of information security, strengthen the knowledge and perception of the importance to ensure the security of data and information and other information assets.

## COMPETENCE DEVELOPMENT

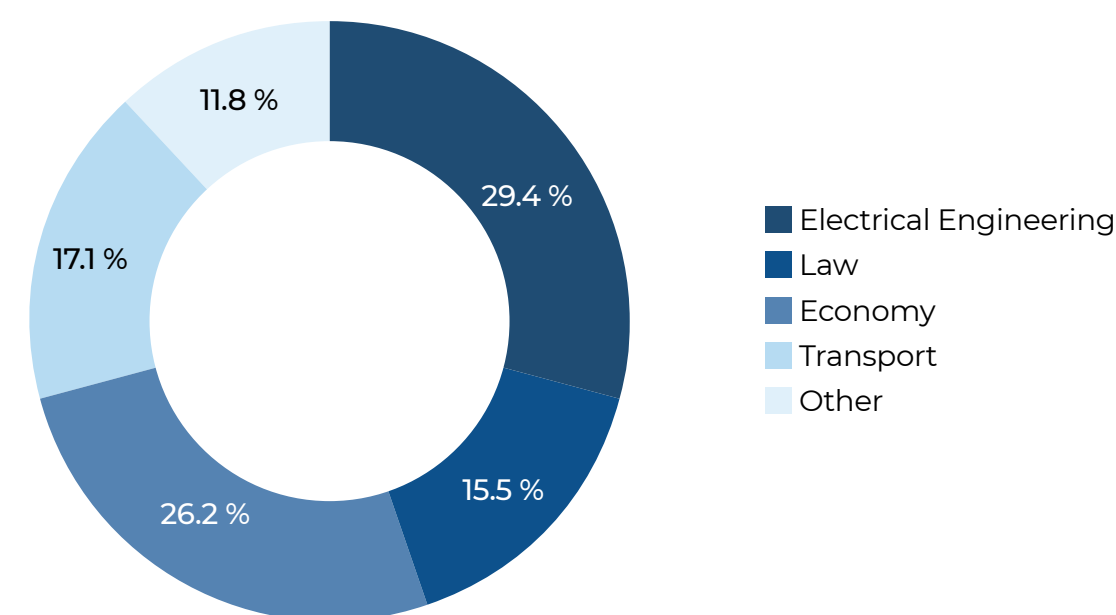
In order to cope with daily challenges and tasks in its operation and make the utmost progress in accordance with international requirements and needs of the electronic communications, postal and rail services markets, HAKOM needs highly qualified experts in different specialised fields, who are expected to provide a broad range of expertise, competencies, specific knowledge and skills. Therefore, the development and improvement of the resources management system continued in 2021 in which the system of competencies played the key role in its development. As a pilot-authority, HAKOM also continued its participation in the project implemented by the Ministry of Justice and Public Administration the "Development of a Public Administration Competency Framework".

HAKOM systematically promotes lifelong learning, so that investment in the education of employees continued in 2021 through further training, education at graduate and postgraduate studies. In order to fully implement the system of personal career development, HAKOM launched the implementation of the tools for an unbiased employee appraisal.

At the end of 2020, funds were received under the new cycle of the EU technical assistance instrument. In 2021, the project "Strengthening the implementation of regulatory impact assessment" was finally defined, which will enable a practical application of the **regulatory impact assessment** to the Government Legislation Office, the state government bodies and HAKOM for the development of better regulations and the adoption of optimal decisions in the interest of citizens and businesses. The project is conducted by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and provides technical support provided by the Directorate-General for Structural Reform Support of the European Commission and is co-financed by the EU under the Technical Support Instrument and the German Federal Ministry of Economic Affairs and Energy. The project officially began in January 2022 and is expected to close in the first half of 2023.

## STAFF

**Figure 7.6** Structure of employees according to fields



HAKOM is managed by the Council which consists of five members, while the administrative service is governed by the Executive Director who is accountable to the Council for his work. The administrative service carries out expert, administrative and technical tasks and is organised in accordance with the Statute and other HAKOM's internal rules.

At the end of 2021, HAKOM had 187 employees, of which 137 had completed university or specialist graduate studies. Of this number, four percent of employees have completed postgraduate university doctoral studies, 12 percent of employees hold postgraduate master of science degrees, and 21 percent of employees have completed postgraduate professional studies. Since HAKOM is the national regulatory authority for the performance of regulatory and other tasks in the field of the electronic communications, postal and rail services, HAKOM is primarily represented by engineering professions and experts in the legal and economic fields. Twenty-nine percent of employees have higher education in the field of electrical engineering, 26 percent in economics, 17 percent in the field of transport engineering, and 15 percent in law. The rest of the employees have other professions. Twenty employees have completed university and specialist undergraduate studies, and 29 employees have completed secondary education.



# 08

## FINANCIAL STATEMENT

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## INTRODUCTION

The Croatian Regulatory Authority for Network Industries (HAKOM), pursuant to Article 13, paragraph (1), item (6) of the Electronic Communications Act (Official Gazette 73/2008, 90/2011, 133/2012, 80/2013, 71/2014 and 72/2017; hereinafter: ECA) and Article 10 of the Statute of HAKOM (Official Gazette 11/2019), submits to the Croatian Parliament and the Government of the Republic of Croatia the Financial Report for the year 2021. This report is an integral part of the 2021 Annual Activity Report.

HAKOM is an independent and autonomous legal entity with public authority within the scope and competences prescribed by the ECA, the Postal Services Act (Official Gazette 144/2012, 153/2013, 78/2015 and 110/2019; hereinafter: PSA) and the Railways Act (Official Gazette 32/2019 and 20/2021; hereinafter: RA).

The founder of HAKOM is the Republic of Croatia, and the founding rights are exercised by the Croatian Parliament and the Government of the Republic of Croatia. HAKOM is responsible for its work to the Croatian Parliament.

In accordance with the ECA, HAKOM is governed by a five-member Council, appointed and dismissed by the Croatian Parliament on the proposal of the Government of the Republic of Croatia. Members of the Council are appointed for a period of five years with the possibility of reappointment.

HAKOM's administrative and technical affairs are performed by the Administrative Service headed by the Executive Director of HAKOM.

HAKOM is a budget user of the state budget, representing the third organisational level and belongs to only one division. HAKOM is within the scope of work of the Ministry of the Sea, Transport and Infrastructure, as the line ministry, that is, the central body of state administration.

In accordance with the Act on Execution of the State Budget of the Republic of Croatia for 2021 (Official Gazette 135/2020, 69/2021 and 122/2021), HAKOM plans the assigned revenues and receipts in the state budget, while the obligation to pay these revenues into the state budget does not apply to HAKOM. The generation and expenditure of the assigned revenues and receipts are reported on a monthly basis in the State Treasury system.

HAKOM's Financial Plan for 2021 was adopted in accordance with budget regulations as part of the budget of the Ministry of the Sea, Transport and Infrastructure.

Register of budget users: 45902

Level: 11 – State budget user and division within the line ministry

Division: 06565

Activity: 8413 Regulation of and contribution to more efficient operation of businesses

In 2021, HAKOM generated assigned revenue, EU assistance and revenues from the sale of non-financial assets, which were sufficient to cover all HAKOM's expenditures. At the end of 2021, surplus revenues were generated, which in the forthcoming period, in addition to the surplus revenues carried forward from the previous periods, is planned to be used for financing a part of material expenditures, expenditures of produced long-term assets and additional investment in other non-financial assets.

## REVENUES

**Table 1** Revenue overview (in HRK)

Account from Acc. Plan	HAKOM revenues	Realised in u 2021
63	Aid from abroad and from entities within the general budget	17,824
632	Aid from international organisations and EU institutions and bodies	17,824
64	Revenues from assets	20,644
641	Revenues from financial assets	20,644
65	Revenues from oper., and admin., fees, fees pursuant to special legislation and fees	100,139,351
652	Revenues under special regulations	100,139,351
68	Penalties, administrative measures and other revenues	93,370
683	Other revenues	93,370
<b>6</b>	<b>Operating revenues</b>	<b>100,271,189</b>
72	Revenues from the sale of produced long-term assets	76,000
722	Revenues from the sale of plant and equipment	76,000
<b>7</b>	<b>Revenues from the sale of non-financial assets</b>	<b>76,000</b>
	<b>HAKOM TOTAL REVENUES</b>	<b>100,347,189</b>



**HAKOM's revenues** are ensured on the basis of HAKOM's annual financial plan, in compliance with the ECA, the PSA and the RA, from the following sources:

1. from the fee for the addressing and numbering space management;
2. from the fee for the radiofrequency spectrum management;
3. from the fee for the performance of other activities of HAKOM in the percentage of the total annual gross revenues generated by operators in the previous calendar year in the activities of electronic communications networks and services on the market, except broadcasters broadcasting their radio or television programmes through their own electronic communications networks, which they use solely for this purpose;
4. from postal services fees, as a percentage of total annual gross revenues generated by postal service providers in the previous calendar year;
5. from the fee for performing activities in the field of rail market regulation, as a percentage of total annual gross revenues generated by infrastructure managers in the previous calendar year.

In addition to the assigned revenues, HAKOM may also generate revenues from other sources in accordance with special laws, and these revenues may be used in accordance with the act governing the planning, preparation, adoption and execution of the budget.

The calculation and amount of fees and the manner of payment of fees for the financing of HAKOM's activities are laid down in the Ordinance on the payment of fees for the performance of HAKOM's activities, adopted by the Council of HAKOM. The fees are established pursuant to the principles of objectivity, transparency, proportionality and non-discrimination. Before adopting the Ordinance, a public consultation procedure is carried out.

Revenues pursuant to special legislation constitute the most significant revenues for the performance and development of HAKOM's activities. Revenues pursuant to special legislation in 2021 amounted to HRK 100,139,351, or up by 17% from the performance in 2020. The increase in revenues was largely driven by the collection of fees based on the licences issued for the use of the radiofrequency spectrum for 5G mobile communication networks in the territory of the HR. The licences were issued after the conducted public auction procedure.

The most significant part of revenues under special legislation are revenues from radiofrequency spectrum management fees.

**Table 2** Revenues from operating and administrative fees, fees pursuant to special legislation and fees (in HRK)

Revenues from operating and admin. fees, fees pursuant to special legislation and fees		Realised in 2021
1.	Revenues from the fees for the radiofrequency spectrum management	67,342,326
2.	Revenues from the fees for the addressing and numbering space management	6,788,602
3.	Revenues from the fees for the performance of other activities of HAKOM in the percentage of the total annual gross revenues of the operators in the previous calendar year in the activities of electronic communications networks and services on the market, except broadcasters broadcasting their radio or television programmes through their own electronic communications networks, which they use solely for this purpose	18,685,537
4.	Revenues from the fees for the performance of HAKOM's activities in the field of postal services as a percentage of total annual gross revenues generated by postal service providers in the previous calendar year	4,827,840
5.	Revenues from the fees for performing HAKOM's activities in the field of rail market regulation, as a percentage of the total annual gross revenues generated by infrastructure managers in the previous year	2,329,244
6.	Other revenues from operating and administrative fees	165,802
<b>TOTAL</b>		<b>100,139,351</b>

Aid from abroad and from entities within the general budget consists of current aid from EU institutions and bodies, such as BEREC, the EU Council, the European Commission and others, in the form of refunds for official travel expenses, amounting to HRK 17,824 in 2021. The decline in revenues from current aid from EU institutions and bodies, compared with the previous periods, is the result of limited foreign official travel in 2021 due to the COVID-19 epidemic caused by the SARS-CoV-2 virus.

Revenues from financial assets relate to interest income on demand deposits, income from default interest and foreign exchange gains in the amount of HRK 20,644.

Other revenues in the amount of HRK 93,370 relate to reimbursements for unused air fair for foreign official travel, collected cancelled licences and salary in-kind until 30 June 2021.

In 2021, revenues from the sale of produced long-term assets were recorded in the amount of HRK 76,000 and were generated from the sale of computers and a communication device as well as recording the salary in-kind for the receipt of computers, computer equipment and communication devices in kind until 30 June 2021.

## EXPENDITURES

**HAKOM's expenditure** in 2021 amounted to HRK 85,078,901.

Table 3 shows HAKOM's expenditure by area. HAKOM's expenditure consists of the expenditure for the electronic communications sector, expenditure for the postal services sector and expenditure for the regulation of rail services market.

HAKOM in its accounts registers operating expenditure (class 3) and expenditure for the acquisition of non-financial assets (class 4). In 2021, the postal services sector and the regulation of rail services market sector did not generate any expenditure for the acquisition of non-financial assets. In 2021, financial resources were spent on the following:

### 1. operating expenditure (class 3)

- a) employee expenditure – the payment of salaries and other employees' expenses;
- b) material expenditure – compensation of expenses to employees (official trips for radiofrequency measurements, interference studies, technical inspections, to a lesser extent, due to the COVID-19 epidemic, participation in regular meetings and conferences of European bodies where HAKOM has its representatives, compensation for employee transport costs, professional development of employees), the costs of office supplies, other materials for the needs of regular operation and literature, in accordance with the regular needs of employees, overheads and fuel costs for HAKOM's official vehicles, phone, Internet, post and transport, the services of regular and investment maintenance of vehicles, measuring devices, control and measuring centres and control and measuring stations, publicity and information services (the brochure for a safer Internet, the brochure for students and teachers on the approach helper for people with disabilities (Susret-nica), the brochure for rail service users, the leaflet for the users of electronic communications were prepared, as well as six educational and informative videos on the topics of the protection of users of telecommunication services, rail passengers, postal services, persons with disabilities and a video on the optics), utilities, rents and lease, health services (employees' routine check-ups), intellectual services (audit services, consultation services for the preparation and implementation of the public auction for the RF spectrum allocation, the services of the analysis of the pricing principles of access to the postal network of the universal service provider, the project of calculating costs and prices of services in the fixed network, etc.), computer services, other services, premiums for the insurance of vehicles, property and employees, representation expenses, charges and fees, membership fees, etc.;
- c) financial expenditure – banking services and payment operations services, negative exchange rate differences;
- d) compensations to citizens and households based on insurance and other fees – undergraduate, graduate and postgraduate studies for four employees;

### 2. expenditure on the acquisition of non-financial assets (class 4)

- a) expenditure on the acquisition of non-produced long-term assets – licences;
- b) expenditure on the acquisition of produced long-term assets – computers and computer equipment, measuring and control devices for the purposes of radiofrequency spectrum control and management, computer programmes, communication equipment, the construction of power facilities for the purpose of connecting the Veliki Bokolj CMS to the electricity distribution grid, and office furniture;
- c) expenses for additional investments on non-financial assets – the upgrading of the disk system, servers, the measuring equipment, the technical protection system, the upgrading of the Internet portals, the Navision system, the e-signature and e-initial, Centrix system, the GIS system and portal, the market analysis system, the e-Operator system, the application for the analysis of the quality of management of traffic in the Internet service provider network, etc.



**Table 3** Expenditure overview (in HRK)

Account from Acc. Plan	HAKOM expenditure	HAKOM	Electronic communications area	Postal services area	Railway market regulation services area
	<b>Expenditure total</b>	<b>85,078,901</b>	<b>78,957,930</b>	<b>3,994,911</b>	<b>2,126,060</b>
3	Operating expenditure	78,059,247	71,938,276	3,994,911	2,126,060
<b>31</b>	<b>Employee expenses</b>	<b>48,014,937</b>	<b>44,517,760</b>	<b>2,224,000</b>	<b>1,273,177</b>
	311 Salaries (gross)	36,665,473	34,065,374	1,668,311	931,788
	312 Other employee expenses	5,310,004	4,841,946	280,436	187,622
	313 Contributions on salaries	6,039,460	5,610,440	275,253	153,767
<b>32</b>	<b>Material expenditure</b>	<b>29,918,768</b>	<b>27,298,404</b>	<b>1,768,771</b>	<b>851,593</b>
	321 Compensations of expenses to employees	2,153,988	1,963,281	139,542	51,165
	322 Expenditures for materials and energy	2,162,238	1,957,275	122,379	82,584
	323 Expenditure for services	24,456,081	22,291,450	1,476,841	687,790
	324 Compensation of expenses to unemployed persons	6,894	6,894	0	0
	329 Other unmentioned operating expenditure	1,139,567	1,079,504	30,009	30,054
<b>34</b>	<b>Financial expenditure</b>	<b>52,501</b>	<b>49,071</b>	<b>2,140</b>	<b>1,290</b>
	343 Other financial expenditure	52,501	49,071	2,140	1,290
<b>37</b>	<b>Compensations to citizens and households based on insurance and other fees</b>	<b>73,041</b>	<b>73,041</b>	<b>0</b>	<b>0</b>
	372 Other compensations to citizens and households from the budget	73,041	73,041	0	0
4	Expenditure on the acquisition of non-financial assets	7,019,654	7,019,654	0	0
<b>41</b>	<b>Expenditure on the acquisition of non-produced long-term assets</b>	<b>112,502</b>	<b>112,502</b>	<b>0</b>	<b>0</b>
	412 Intangible assets	112,502	112,502	0	0
<b>42</b>	<b>Expenditure on the acquisition of produced long-term assets</b>	<b>3,585,108</b>	<b>3,585,108</b>	<b>0</b>	<b>0</b>
	421 Buildings	518,125	518,125	0	0
	422 Plant and equipment	2,546,241	2,546,241	0	0
	426 Intangible produced assets	520,742	520,742	0	0
<b>45</b>	<b>Expenses for additional investments on non-financial assets</b>	<b>3,322,044</b>	<b>3,322,044</b>	<b>0</b>	<b>0</b>
	452 Additional in plant and equipment	1,409,724	1,409,724	0	0
	454 Additional investments in other non-financial assets	1,912,320	1,912,320	0	0

The most represented expenditure in HAKOM's total expenditure is employee expenditure, amounting to HRK 48,014,937, and material expenditure are the second most represented group of expenditure, amounting to HRK 29,918,768 in 2021. The most significant material expenditure is related to the expenditure for services, of which the most significant is the expenditure for rents and lease. This is followed by the expenditure for computer services, intellectual and personal services, other services, regular and investment maintenance services, etc.

**Table 4** Representation of individual types of expenditure in total expenditure (in %)

Account from Acc. Plan	HAKOM expenditure	HAKOM	Electronic communications area	Postal services area	Railway market regulation services area
31	Employee expenses	56.4	56.4	55.6	59.9
32	Material expenditure	35.2	34.6	44.3	40.0
34	Financial expenditure	0.1	0.1	0.1	0.1
37	Compensations to citizens and households based on insurance and other fees	0.1	0.1	0	0
41	Expenditure on the acquisition of non-produced long-term assets	0.1	0.1	0	0
42	Expenditure on the acquisition of produced long-term assets	4.2	4.5	0	0
45	Expenses for additional investments on non-financial assets	3.9	4.2	0	0
	<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

## SURPLUS REVENUE

On 1 January 2021, HAKOM had surplus operating revenue of HRK 36,675,758 and deficit in revenues from non-financial assets of HRK 7,624,840 recorded in the basic accounts of sub-group 922 in the Balance Sheet. In March 2021, the Decision on the distribution of results was adopted, by which the deficit in revenues from non-financial assets was fully covered by surplus operating revenues. The remaining surplus operating revenue stood at HRK 29,050,918.

In 2021, surplus operating revenue amounted to HRK 22,211,942 and deficit in revenues from non-financial assets amounted to HRK 6,943,654. In order for the result at the end of the budget year to reflect a more realistic balance of results by activities, results were adjusted for the situations prescribed by the Ordinance on budget accounting and the accounting plan. After the conducted adjustment in 2021, total surplus operating revenue amounted to HRK 22,287,942 and deficit in revenues from non-financial assets amounted to HRK 7,019,654.

At the end of 2021, total surplus operating revenue amounted to HRK 51,338,860 and deficit in revenues from non-financial assets amounted to HRK 7,019,654.

In March 2022, the Decision on the distribution of results was adopted, by which the deficit in revenues from non-financial assets in the amount of HRK 7,019,654 was fully covered by surplus operating revenues. Following the implementation of the Decision on the distribution of results, in the basic accounts of the Balance Sheet sub-group 922, surplus operating revenues totalled HRK 44,319,206, available in the coming period.

## BUDGET EXECUTION

Budget execution is defined in the Act on Execution of the State Budget of the Republic of Croatia. HAKOM's financial resources were spent in accordance with the planned activities. The generation and expenditure of assigned revenues and receipts are reported on a monthly basis in the State Treasury system.

**Table 5** Budget execution (in HRK and %)

	Execution 2020 (HRK)	Plan 2021 (HRK)	Execution 2021 (HRK)	Index execution 2021/plan 2021	Index execution 2021 /2020
3107 - Development of the postal services and electronic communications markets	105,677,201	103,423,159	84,562,746	82	80

**Tablica 6** Budget execution – analytics (in HRK and %)

ITEM	Plan	Realised	%
3+ 4 EXPENDITURE TOTAL	103,423,159	84,562,746	82
3 Operating expenditure	90,481,409	77,568,955	86
31 Employee expenses	51,044,364	47,798,984	94
32 Material expenditure	39,015,744	29,637,020	76
34 Financial expenditure	170,051	48,577	29
37 Compensations to citizens and households based on insurance	187,500	84,374	45
38 Other expenditure	63,750	0	0
4 Expenditure on the acquisition of non-financial assets	12,941,750	6,993,791	54
41 Expenditure on the acquisition of non-produced long-term assets	687,500	112,502	16
42 Expenditure on the acquisition of produced long-term assets	8,637,250	3,585,108	42
45 Expenses for additional investments on non-financial assets	3,617,000	3,296,181	91
6+ 7 TOTAL REVENUES	102,549,407	100,216,862	98
6 Operating revenues	102,539,407	100,214,262	98
63 Aid from abroad and from entities within the general budget	300,000	17,824	6
64 Revenues from assets	191,000	20,644	11
65 Revenues from operating and administrative fees	101,938,407	100,139,351	98
68 Penalties, administrative measures and other revenues	110,000	36,443	33
7 Revenues from the sale of non-financial assets	10,000	2,600	26
72 Revenues from the sale of produced long-term assets	10,000	2,600	26

In the preparation of financial plans and monitoring budget realisation, modified accrual basis is not applied, but revenues and expenditures are reported exclusively on a cash basis. For this reason, the data in Table 6 Budget execution – analytics differ from the data in Table 1 Revenue overview and Table 3 Expenditure overview. There is a difference in revenue of HRK 130,327, representing the calculation of salary in-kind until 30 June 2021, which is not shown in the monthly record order within the State Treasury system.

The Budget Act gives flexibility in the execution of assigned revenues and receipts as well as own revenues so that it prescribes the possibility of their execution in amounts higher than planned, and the limit is set at the level of revenue generation, that is, up to the amount paid.



## ANNUAL FINANCIAL STATEMENTS OF HAKOM FOR 2021

Entities subject to budget accounting and preparing financial statements within the budget system prepare and submit their financial statements for 2021 in accordance with the provisions of the Ordinance on financial reporting in budget accounting (Official Gazette 3/2015, 93/2015, 135/2015, 2/2017, 28/2017, 112/2018, 126/2019, 145/2020 and 32/2021).

HAKOM's Annual Financial Statements for 2021 were submitted to the State Audit Office, the Financial Agency and the competent ministry on 28 January 2022.

Copies of the signed HAKOM's Annual Financial Statements for 2021 are published on [HAKOM's website](#):

Budget statements, budget and extra-budgetary user statements for the period: 1 January 2021 – 31 December 2021 – Reference page

1. Statement of revenue and expenditure, receipts and expenses for the period: 1 January 2021 – 31 December 2021 – Form: PR-RAS
2. Balance Sheet as of 31 December 2021 – Form: BIL
3. Statement of expenditure by Functional classification for the period: 1 January 2021 – 31 December 2021 – Form: RAS-Functional
4. Statement of changes in the value and volume of assets and liabilities for the period: 1 January 2021 – 31 December 2021 – Form: P-VRIO
5. Statement of liabilities for the period: 1 January 2021 – 31 December 2021 – Form: LIABILITIES
6. Notes to the financial statements of HAKOM for the period 1 January 2021 – 31 December 2021

# 10 ANNEXES

## Abbreviations:

**AI** – AI Hrvatska

**ADSL** – Asymmetric Digital Subscriber Line

**AEM** – Agency for Electronic Media

**ARRSM** – Act on the Regulation of the Rail Services Market

**BCO** – Broadband Competence Office

**BEREC** – Body of European Regulators for Electronic Communications

**BIDP** – Broadband Infrastructure Development Plan

**CABP** – Central Administrative Base of Portability

**CAFP** – Competent Authority for the Framework Programme (for the development of broadband Internet access)

**CCA** – Croatian Competition Agency

**CEF** (Connecting Europe Facility) – EU funding instrument to promote growth

**CEPT** – European Conference of Postal and Telecommunications Administrations

**CERP** – European Committee for Postal Regulation

**CFA** – Croatian Firefighters Association

**COCOM** – Communications Committee

**DAB+** – Digital Audio Broadcasting

**DMA** (Digital Market Act) – EU Regulation on digital markets

**DSA** (Digital Services Act) – EU Regulation on digital services

**DSS** – Dynamic Spectrum Sharing

**DVB-T** – Digital Video Broadcasting –Terrestrial

**EC** – European Commission

**ECA** – Electronic Communications Act

**ECC** – Electronic Communications Committee

**ECI** – Electronic Communications Infrastructure

**EEA** – European Economic Area – the entire territory of the EU and Iceland, Liechtenstein and Norway

**EMERG** – Euro-Mediterranean Regulators Group gathers regulators from the Euro-Mediterranean countries

**EMF** – electromagnetic field

**ENISA** – European Network and Information Security Agency

**ENRRB** – European Network of Rail Regulatory Bodies

**ERADIS** – European Railway Agency Database of Interoperability and Safety

**ERGP** – European Regulators Group for Postal Services

**EU** – European Union

**FER** – Faculty of Electrical Engineering and Computing, University of Zagreb

**FM** – Frequency Modulation

**FNP** – Framework National Programme (for the development of broadband internet access)

**FTTB** – Fibre To The Building

**FTTH** – Fibre To The Home

**HAKOM** – Croatian Regulatory Authority for Network Industries

**HCM-Agreement** – Harmonized Calculation Method Agreement, an international agreement for the harmonisation of frequencies for mobile and fixed terrestrial systems

**HP** – Hrvatska pošta d.d.

**HR** – Republic of Croatia

**HT** – Hrvatski Telekom d.d.

**HŽC** – HŽ Cargo

**HŽI** – HŽ infrastruktura

**HŽPP** – HŽ putnički prijevoz

**IoM** – (Railway) Network Report

**IoT** – Internet of Things

**IPTV** – Internet Protocol Television

**IRG-R** – Independent Regulators Group – Rail

**ISP** – Internet Service Provider

**ITU** – International Telecommunication Union

**LEO** – Low Earth Orbit

**LSU** – local self-government unit

**M2M** – Machine to Machine

**MMS** – Multimedia Message Service

**MOD** – Ministry of Defence of the Republic of Croatia

**MoI** – Ministry of the Interior

**MPPCSA** – Ministry of Physical Planning, Construction and State Assets

**MST** – Margin Squeeze Test



**MSTI** – Ministry of the Sea, Transport and Infrastructure  
**MUX** (Multiplex) – in digital television: a stream of digital signals containing several radio or television programmes and/or other data simultaneously transferred via one radio frequency channel  
**NGA** – Next Generation Access)  
**NIS** (Network and Information Systems) – Network and Information Systems Cooperation Group of the Member States  
**OTT** – Over-the-top service  
**PAY TV** – Television programmes with payment  
**PSA** – Postal Services Act  
**RA** – Railway Act  
**RF** – Radiofrequency  
**RFS** – Regulatory Financial Statement  
**RSC** – Radio Spectrum Committee  
**RSPG** – Radio Spectrum Policy Group  
**SGA** – State Geodetic Administration  
**SMS** – Short Message Service  
**T-DAB** – Terrestrial Digital Audio Broadcasting  
**Telemach** – Telemach Hrvatska  
**TV** – television  
**UPU** – Universal Postal Union  
**VDSL** – Very-high-bit-rate Digital Subscriber Line)  
**VHCN** – Very High Capacity Network  
**WIFI** – Local wireless network within the 2.5/5 GHz frequency band  
**WLAN** – Wireless Local Area Network

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HAKOM