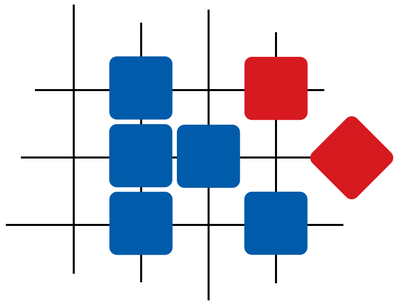
HAKOM

2020 ANNUAL ACTIVITY REPORT

ZAGREB, JUNE 2021



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 2020. The financial statement and the final statement are integral parts of this Report.

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The year behind us was marked by the pandemic and the earthquakes that hit Banovina and Zagreb. Practically overnight, online communication replaced face-to-face communication in all segments of human activity. The electronic communications market swiftly adapted to the new conditions. Operators provided additional capacities wherever technically possible and, in cooperation with HAKOM, accommodated users in earthquake-afflicted areas regarding the changes of their contracts and service charging. It should be noted that despite 2020 having been a challenging year, HAKOM did not record any increase in the number of user complaints. Total market revenues decreased by 3.3 percent from the previous year.

At the beginning of 2020, pursuant to a decision of the Croatian Competition Agency, Slovenia Broadband completed the takeover of Tele2. Tele2 changed its name to Telemach in late 2020 and in spring 2021 decided to provide services in the fixed network too, which will further advance the electronic communications market. In an effort to improve wholesale conditions, in the previous year HAKOM undertook the projects of developing new cost models and changing the margin squeeze test methodology, basic tools for setting wholesale prices and supervising operators with significant market power. Market analyses were commenced in order to establish the need for imposing regulatory measures and, following the notification of the European Commission, appropriate decisions were adopted in the first half of 2021. The management rights of Hrvatski Telekom over Optima Telekom are expected to cease, which should give an additional incentive to market development. It is important to stress that the 5G network has become operational in the HR in the previously assigned spectrum, with a public auction for new frequency bands to be held in July and August 2021.

Partial economic lockdowns directly affected demand for postal services in the postal services market. The number of parcel services increased, while the number of pieces of printed matter and letter items decreased. Market revenues declined, but not significantly, thanks precisely to parcel services. The number of international shipments dropped in 2020 owing to international traffic disturbances, but their share can be expected to increase again. In 2020, HAKOM adopted the Instructions on accounting separation and cost accounting. Other regulatory activities included the verification of the regulatory report of Hrvatska pošta and the determination of unfair financial burden for the obligation of universal service provision. The quality of postal services was affected by the COVID-19 pandemic, but measurements showed that it remained satisfactory.

The railway infrastructure manager on the rail services market is HŽ Infrastruktura, which is also the largest operator of service facilities. Rail passenger transport is performed by HŽ Putnički prijevoz, and freight and goods transport by freight carriers, a total of 11 of them registered. The volume of transported goods increased by 4.2 percent, whereas the number of transported passengers decreased by 34 percent (almost 7 million passengers) from 2019. Passenger transport was suspended from 22 March to 10 May 2020 because of the pandemic and containment measures. In the liberalised freight transport market, new rail carriers transported 16.7 percent more goods than in the previous year, whereas the incumbent carrier transported 9.7 percent less goods.

In 2020, HAKOM carried out all activities envisaged under the Annual Work Programme, except those that could not be carried out due to the pandemic. These activities were postponed for this and the following year.

Tonko Obuljen, President of the Council

The year 2020 will be remembered as the year of the COVID-19 pandemic and devastating earthquakes that struck the Banovina and Zagreb areas. These events marked the operation of the network services market, postal market and rail transport market as well as HAKOM's operation. HAKOM had to adjust its operation to adhere to pandemic containment measures, so that for almost half of the year, in the periods between 23 March and 1 June and between 11 September and 31 December, work was organised in shifts, with one shift of employees working in offices and the other from home. Although HAKOM had already been aware of the need for digitalisation and had made great advances in the development of the paperless office, part of the processes that were not completely incorporated in the digital environment at the time had to be swiftly and rationally adapted. Business processes related to customer communications, documents circulation, internal approvals, sending invoices and financial statements as well as all reports and documents issued by HAKOM as a public law body had to be adjusted for work out of office.

In the period when containment measures were in force meetings were mostly held via online platforms and there were no live events or any related travel. Operators focused all their activities on mitigating the consequences of the pandemics, with the result that some planned regulatory activities were rescheduled. However, with digitalisation and organisational efficiency becoming more relevant than ever, HAKOM introduced a large number of organisational changes, established a new procedural policy and raised the level of business process management. Human resources management also underwent significant changes and the foundations were set up for managing the work performance of HAKOM employees and teams.

HAKOM, as a public authority, conducts administrative proceedings for issuing RF spectrum licences, participates in building permit issuance proceedings and in formulating 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 cases processed by HAKOM in 2020 was approximately the same as in the previous year. Providing a fast and high-quality service in public law proceedings and efficient assistance to users is a priority for HAKOM's expert departments. Despite all the difficulties, in the year of the pandemic case resolution deadlines were met without any delay, while many processes were made more user friendly and streamlined.

Miran Gosta, Executive Director

Summary

01

ELECTRONIC COMMUNICATIONS

Last year was one of the most challenging ones for the electronic communications market. Regular operation and communication were disrupted owing to the COVID-19 pandemic. Virtual communication and work from home led to a sharp increase in internet traffic, but roaming traffic, i.e., mobile network traffic conducted by foreign citizens in Croatia or by Croatian citizens abroad, plummeted due to restrictions on movement and travel. Total market revenues decreased by 3.3 percent in 2020 from 2019, standing at HRK 11.145bn. Revenues from the broadband internet access service and the pay-TV service increased by about 3 percent, but revenues from traditional telephone services, including roaming, decreased, which led to a drop in total market revenues. Operators continued to invest in infrastructure development, new technologies and services. Total market investments were HRK 2.5bn, which was less than in 2019, but equalled the investment level in 2018. Investments in the network and network equipment amounted to approximately HRK 1.4bn, a decrease of HRK 150m from a record 2019. Demand for new radiofrequency capacities declined because the auction for the new radiofrequency spectrum for 5G networks was postponed for 2021.

The broadband internet access service accounts for the largest share of almost 45 percent of total revenues. The fixed network access and generated about HRK 1.8bn in revenues and the mobile network access HRK 2.8bn. The availability of NGA speeds of 30 Mbit/s and higher to households is 86 percent, which is about 1 percent below the EU average, while 68 percent of Croatian households have fixed internet access contracted (some households use mobile internet access as an alternative and/or substitute and do not contract fixed internet). The largest increase was recorded by optical fibre connections, standing at approximately 115,000 at the end of the year. Total data traffic grew by 50 percent in 2020, in contrast with about 20 percent in the previous year. The number of users of the traditional fixed telephone service continued to decline, while the number of SIM card devices is 7 percent higher than the total number of inhabitants.

The principles of internet neutrality and openness are consistently implemented in the market. In order for such conditions to remain unchanged and control to be improved, a project has been launched to develop a software tool for the verification of traffic management measures. The security of networks and services as well as cybersecurity play an increasingly important role. There were seven major security incidents, system errors and errors caused by the earthquake in 2020. The most significant incident was the interruption of emergency service calls from public networks used by citizens on a daily basis. Following the incident, an expert group was set up and an optimal technical solution was proposed to prevent such incidents for occurring again. According to notices of intent to build the electronic communication infrastructure, the total number of potential users of optical fibre networks at the end of 2020 was 414,814, which is an increase of about 50 percent from the previous year. The optical fibre network construction and the availability of very high capacity networks are much higher in investments in rural and suburban areas are expected to increase, with the bulk of these investments to be financed from EU funds.

The cost model development was among the most important regulatory activities. New models enable operators to provide competitive offers in the market in relation to Hrvatski Telekom, that is, stakeholders with significant market power. Other significant activities include two completed analyses of relevant wholesale high-quality access markets. The analyses primarily enable the provision of the broadband internet access service to business users.

In 2020, the electronic communications market saw a total of 90 inspection supervisions, while part of the activities concerned the verification of the execution of previously adopted 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, unsolicited communication, timely payment of fees to users and network neutrality.

POSTAL SERVICES

The postal service market was also strongly affected by the pandemic. Partial lockdowns of the Croatian economy and other economies had a direct impact on postal service demand. The number of printed matter pieces and letter items decreased by 15 and 12 percent respectively, but the number of parcels grew by 15 percent. The total volume of services went down from 311 million services in 2019 to 279 million services, but total market revenues decreased only by HRK 15m, down to HRK 1.815bn. Parcel services, as high-value services, almost completely offset the marked decrease in revenues from printed matter pieces and letter items.

92 percent of postal services was realised in the domestic traffic, a rise of 1 percent from 2019. Owing to disturbances in international traffic, the number of international shipments dropped in 2020, but their share can be expected to increase again. There were more than 80 million other postal services, i.e. postal services with some added value, such as express parcels, printed matter and direct mail. This is a decrease of about 6 percent compared with the previous year. However, due to an increase in the number of express parcels, the structure of provision of other postal services changed, so that express parcel services accounted for the largest share in other postal services (40 percent).

In 2020, HAKOM adopted the Instructions on accounting separation and cost accounting. Other regulatory activities included the verification of the regulatory report of Hrvatska pošta and the determination of unfair financial burden for the obligation of universal service provision in the whole territory of the Republic of Croatia in the amount of HRK 92.8m. The quality of postal services came under test owing to the pandemic, but according to measured indicators (measurements were not carried out from 16 March to 22 April 2020) the quality of universal service provision was satisfactory. The prescribed density of post offices was maintained at all times and postal traffic, some difficulties notwithstanding, was continuous.

Inspection supervisions carried out in 2020 were related to the provision of universal, interchangeable and other postal services. In 2020, inspection supervisions were performed in 42 cases, involving 22 inspections and on-site evaluations. Inspection supervisions of the universal service provision was focused on the fulfilment of the prescribed obligations of universal service providers regarding the quality of universal service provision, the rights of postal service users and the obligation to enable Hrvatska pošta access to their postal network.

RAIL SERVICES

The railway infrastructure manager in the Republic of Croatia's rail service market is HŽ Infrastruktura, which is also the largest operator of service facilities. HŽ Infrastruktura manages a 2,617 km long network of railway lines and maintains train stations, stops, level crossings, tunnels, bridges, ducts and turnouts. Rail passenger transport is performed by HŽ Putnički prijevoz, while freight and goods are transported by freight carriers, with a total of 11 of them registered (one conducted transport only for its own needs and one was not active). In 2020, there were 290,727 trains operating on the railway network: 214,042 passenger trains and 76,685 freight trains. 15.1 million tonnes of goods and 13.1 million passengers were transported. In comparison with 2019, the quantity goods transported increased by 4.2 percent and the number of passengers transported decreased by 34 percent. Passenger transport was suspended from 22 March to 1 May 2020 because of the pandemic and containment measures. Due to the suspension of traffic and the reduction of travel, the number of passengers transported was down by almost 7 million from 2019.

The liberalised freight transport market saw an increase in the share of new rail carriers relative to that of the incumbent freight carrier. Having transported 16.7 percent more goods than in the previous year, while the volume of goods transported by the incumbent carrier decreased by 9.7 percent, new rail carriers reached a market share of close to 60 percent. Despite an increase in total goods transport, a considerable decrease in train travel led to a drop of 7 percent in infrastructure manager's revenues, which stood at HRK 137m. Services that were less used by carriers in 2020 include assembling, disassembling and rearranging trains as well as using passenger stations, station buildings and other passenger reception and dispatch facilities. HŽ Infrastruktura continued to generate the highest revenues from the minimum access package.

Inspection supervisions were carried out according to plan or when regulatory compliance was required from stakeholders in the market, and all inspectors' decisions were published. The inspection supervisions of the passenger carrier involved the control of the quality of services provided and of compliance with obligation to provide information to passengers, while the supervisions of the infrastructure manager concerned compliance with rules on the accessibility of transport to disabled persons and persons with reduced mobility. A total of 29 inspection supervisions were conducted over service facility operators to establish their compliance with the prescribed rules.

RF SPECTRUM MANAGEMENT

In 2020 it was planned to complete transfer to the DVB-T2 system at mid-year and thus release frequencies from the 700 MHz band for mobile communications as well as to launch a public auction for 5G network frequencies. These plans were disrupted due to the pandemic circumstances, including lessons and work from home. The final transfer to the DVB-T2 system was postponed to near the end of the year and, following the consultations with the interested public and related comments, the auction was postponed to mid-2021. The preparations for the introduction of 5G networks in the Republic of Croatia included two rounds of public consultations on spectrum allocation. The public consultation on the main 5G frequency bands (700 MHz, 1500 MHz, 3.6 GHz and 26 GHz) was completed at the beginning of 2020, and the consultation carried out at mid-2020 concerned, in addition to the main 5G frequency bands, the frequency bands currently used by mobile communication network operators for 2G, 3G and 4G technologies (800 MHz, 900 MHz, 1,800 MHz, 2,100 MHz and 2,600 MHz).

In 2020, HAKOM changed allocation plans for the frequency bands currently used for 2G, 3G and 4G technologies, while the use of dynamic spectrum sharing enabled the commercial provision of 5G services at the frequencies previously used for earlier technologies. There were 342 such base stations at the end of the year. The total number of base stations grew by about 1,800 in a year, which improved the geographical and population coverage of Croatian mobile networks as operators responded to increases in traffic and user demands.

The control and monitoring of the spectrum included, apart from the protection from interferences and unauthorised use, measurements to protect against overly high electromagnetic field levels. All measuring campaigns were carried out successfully, in line with the 2020 measurement plan, with a focus on protection from interferences, measuring electromagnetic fields and protection from non-ionising radiation. The operation of radio stations in microwave links and radio stations in broadcasting was tested in accordance with conditions specified in RF spectrum licences. The measurement of signals from Italian radio and television transmitters was performed during summer months. Interferences with television were mostly eliminated, but a number of interferences with FM radio along the whole Croatian coast was confirmed.

CONSUMER PROTECTION

As a regulatory authority for electronic communications, postal services and railway services markets, HAKOM is authorised for the resolution of disputes between users (passengers) and operators, postal service providers or the freight carrier. In the area of electronic communications 1,427 disputes were resolved, decrease of about 3 percent from the previous year. The three most common causes for user-initiated disputes were billing, early termination of contracts and violations of subscriber contracts. The results of disputes were used for analysing market conditions and proposing improvements.

The number of dispute resolution requests in the postal services market was about three times lower than the number of such requests in the area of electronic communications. In 2020, users brought 443 disputes against postal services providers. The complaints primarily concerned services not provided, damage to or loss of contents of postal items, loss of postal items and non-compliance with delivery deadlines. Most disputes were initiated over services with some added value, primarily registered mail items (over 60 cases).

Although the lowest number of disputes has for a number of years been recorded in rail passenger transport, in 2020 there were four times as many decisions adopted pursuant to passenger requests as in 2019. The requests were related to reimbursements for unused tickets, especially season tickets (monthly, annual), substitute transport, the lack of assistance for persons with reduced mobility and disabled persons and train delays.

A special attention was paid to vulnerable consumer groups, such as elderly persons, children, persons with disabilities and persons with reduced mobility. Accessibility for disabled persons, primarily digital accessibility, continued to be improved and the programme on safe and responsible behaviour on the internet, aimed at parents and children, continued to be implemented.

OTHER HAKOM ACTIVITIES

The Framework National Programme for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments continued to be implemented. The Programme provided a basis for the signing of 21 grant agreements for the construction of the new broadband infrastructure. The projects, encompassing 126 local self-government units, envisage that 156,000 households, that is, 236,000 residential units, should be covered (mostly with optical fibre networks) by the end of 2023. Total investment costs stand at approximately HRK 1.2bn, of which HRK 705m is accounted for by grants.

HAKOM continued to cooperate with and participate in the work of numerous international expert bodies or working groups, but with limited physical attendance. In 2020, especially important was the participation of a number of HAKOM's experts in the Permanent Representation of the Republic of Croatia to the EU in Brussels, in the work of the Transport, Telecommunications and Energy Council and in the work of the Body of European Regulators for Electronic Communications (BEREC), where a HAKOM's representative acted as Deputy Chairman.

HAKOM's website was redesigned and tested (it was launched in 2021). HAKOM's business operations are in a large part based on its own e-Agency programme, aimed at providing citizens, business entities, government administration and public services with the highest possible quality of electronic service and as little paperwork as possible.

FINANCIAL STATEMENT

In 2020, total revenues amounted to HRK 85,523,292, with the largest share generated by spectrum management fees, followed by fees for other HAKOM's business operations and fees for addressing and numbering space management. Expenditures amounted to HRK 104,322,842 and were mostly accounted for by material expenditures. In 2020, a significant material expenditure item was an unplanned arbitration cost incurred in the arbitration dispute conducted before the International Centre for Settlement of Investment Disputes in Washington, amounting to HRK 21,476,265 and settled from the revenue surplus from the previous period.

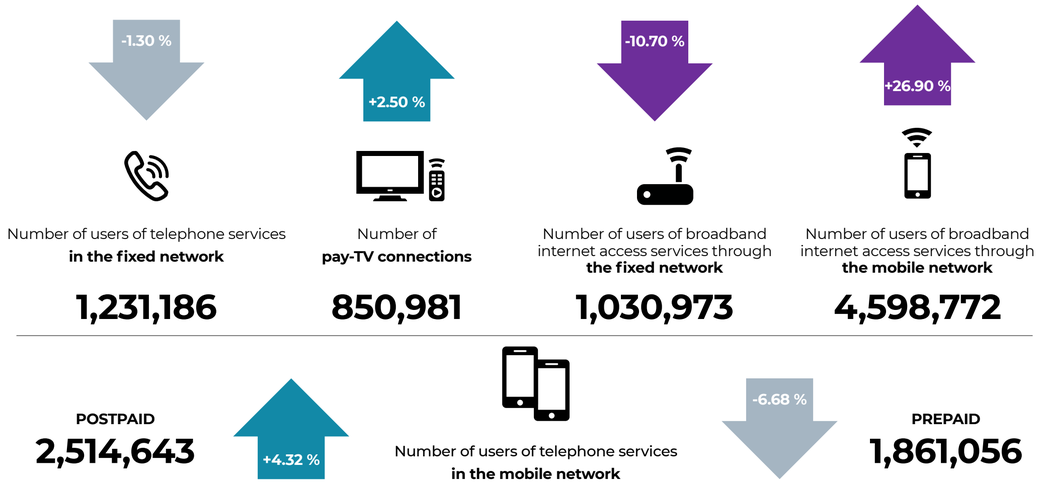
02

ELECTRONIC COMMUNICATIONS

Due to the COVID-19 pandemic, last year was one of the most challenging ones in the last two decades for the electronic communications market. The usual business operation and communication method had to be quickly adapted to the new circumstances. Face-to-face communication in business operations, education and everyday life was to a large extent replaced by virtual communication, which is yet another indication of the key importance of very high speed broadband access services for the development of the economy and the progress of the society. In addition, pandemic-induced travel restrictions led to a decrease in roaming minutes, which had grown steadily over the years.

The electronic communications market quickly adapted to the new circumstances. However, it remains crucial to invest strongly in the development of very high capacity networks and to introduce 5G technology in parallel. The availability of the new mobile technology and fixed very high speed internet access, primarily based on optical fibre technology, is an important objective at the EU level and a precondition for the further development of the digital society.

Figure 2.1 Basic data on the electronic communications market



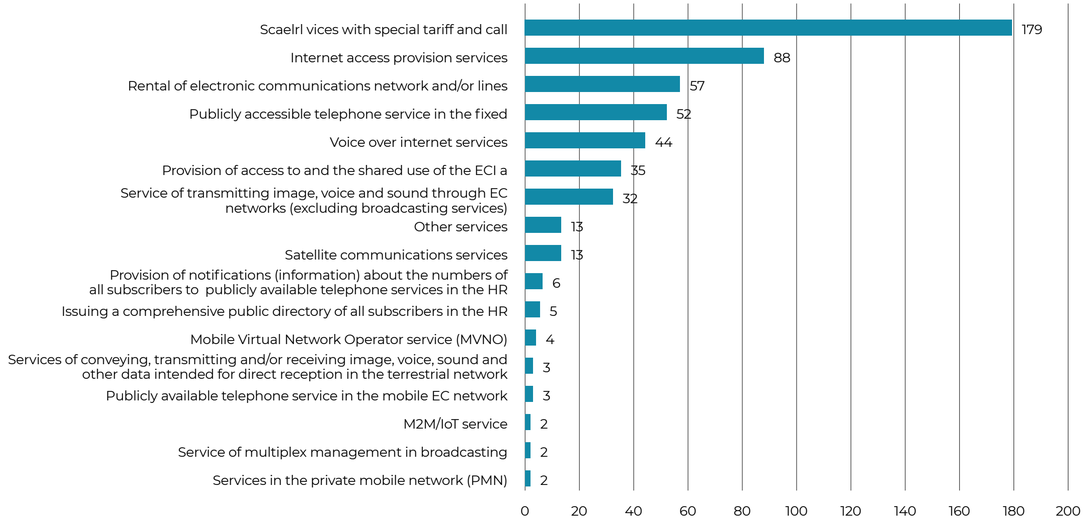
The reporting methodology changed in 2020 in such a manner that mobile broadband access connections that are exclusively used at a chosen fixed location and fail to meet the basic requirements for the guaranteed minimum speed are no longer added to fixed broadband access connections. These connections used to be reported as wireless technology connections in the fixed network and as of 2020 they will be reported as mobile broadband access connections.

MARKET OVERVIEW

Operator

The e-Operator system currently comprises 312 registered operators, providing a total of 540 electronic communications services and activities in the HR territory. *Service with special tariff and free call* was the most often registered activity, followed by *Internet access provision service and Rental of electronic communications network and lines*.

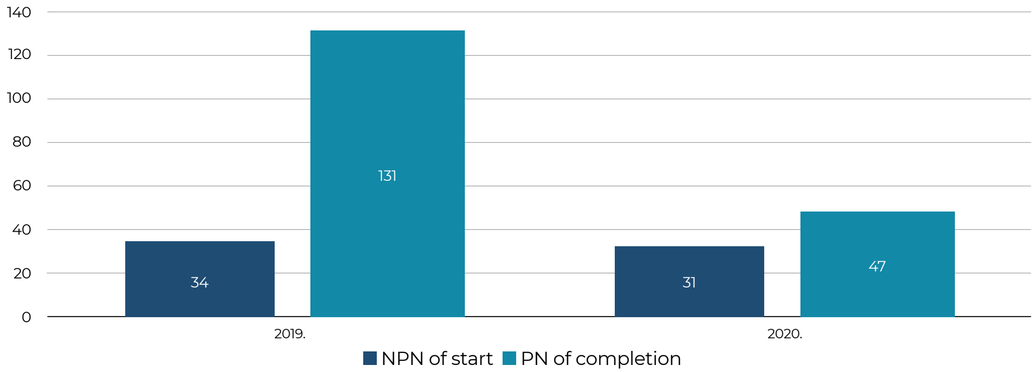
Figure 2.2 Number of registered operators per type of service/activity



In 2019 and 2020, the database was updated and 131 prior notifications of the completion of activities were submitted. Specifically, while submitting prior notification of the start of activities, operators sometimes used to register several activities without even beginning to provide commercially some of them. HAKOM therefore contacted the operators reporting revenues in the amount of HRK 0 in order for those activities that they did not intend to offer to be deregistered.

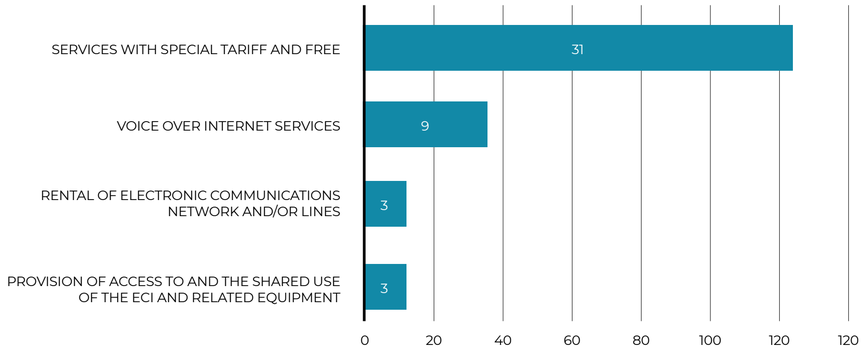
The total number of prior notifications was considerably lower in 2020 than in 2019, with the number of prior notifications of the completion of activities exceeding the number of prior notifications of the start of activities.

Figu re 2.3 Prior notifications in 2020 and 2019



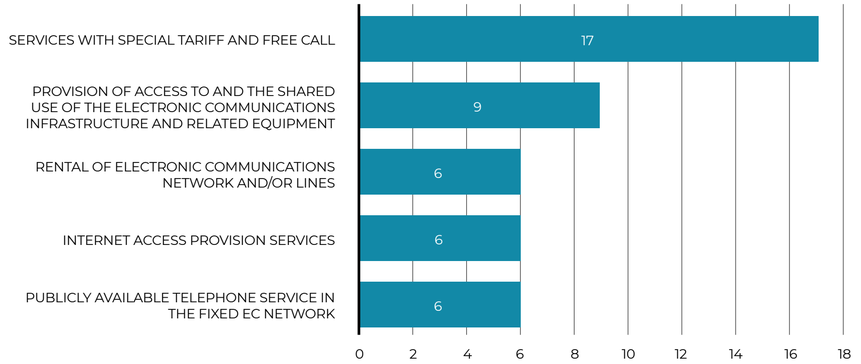
Services with special tariff and free call and Voice over internet *services accounted for the largest share of activities for which prior notifications of completion were submitted in 2020.*

Figure 2.4 Prior notifications of the completion of activities



Services with special tariff and free call and *Provision of access to and the shared use of the electronic communications network and related equipment accounted* for the largest share of activities for which prior notifications of start were submitted.

Figure 2.5 Prior notifications of the completion of activities



In early 2020, the usage instructions for (new) operators were compiled, containing a brief overview of operators' rights and obligations for ease of reference. The instructions, written in the Croatian language and in the English language (for foreign operators), which were in 2020 sent as an enclosure with the prior notification of the start of an activity to all new operators, proved to be an efficient method for informing operators on e-Agency. In the forthcoming period, special attention will be devoted to additional communication with new (and existing) operators, with an aim of eliminating any ambiguities and maintaining a very precise and functional list of operators. In addition, starting in 2021, HAKOM will immediately forward any change in the list of operators to the single EU database, which is under the competence of BEREC.

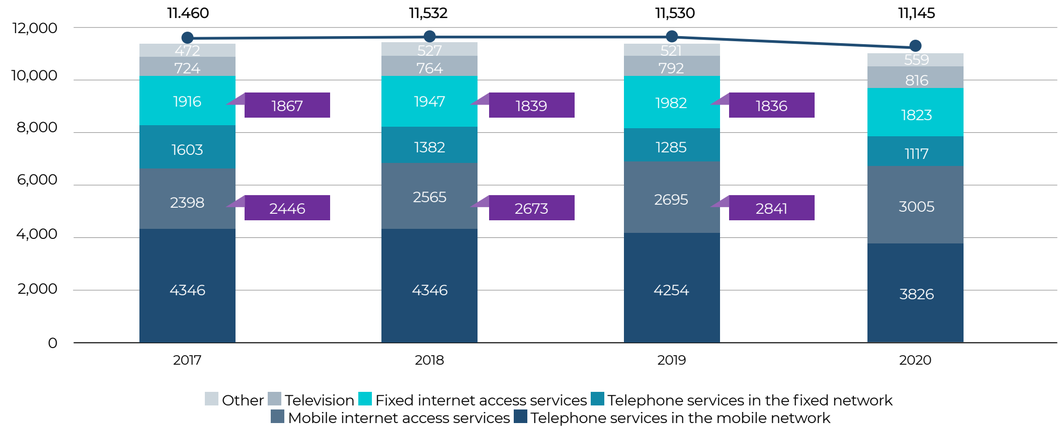
Revenues

The COVID-19 pandemic had a strong impact on the electronic communications market. Total revenues decreased by 3.3 percent, remaining, however, above HRK 11bn. As face-to-face communication was replaced by virtual communication, the broadband internet access service, irrespective of whether it was provided through the mobile network or the fixed network,

strengthened its leading position as the most important service, accounting for almost 45 percent of total revenues. In addition, citizens spent much more time at home, with the result that television service revenues increased, exceeding for the first time HRK 800m.

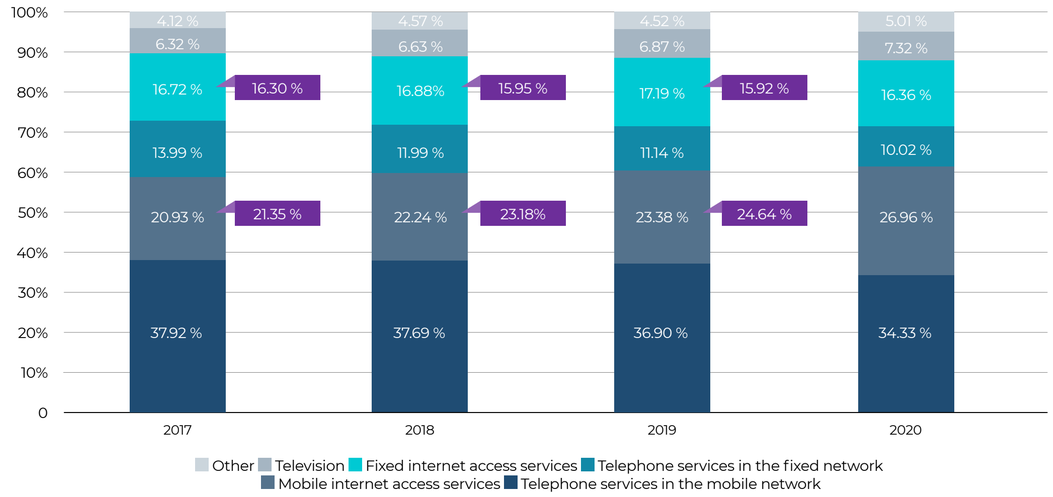
The year 2020 saw a change in the methodology classifying all services used by mobile networks exclusively as mobile network services, irrespective of whether the user changes the location of the device or not. The oval-shaped figures further in the text show how the change in the methodology influenced the presentation for the previous three years.

Figure 2.6 Total electronic communications market revenues (in HRK million)



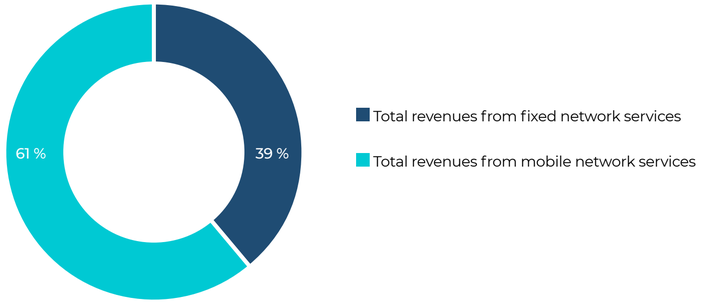
The largest share in total revenues continued to be accounted for by telephone services in the mobile network.

Figure 2.7 Shares of electronic communications services in total revenues



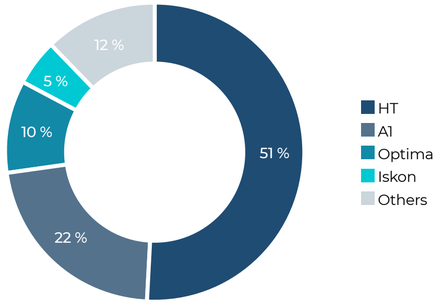
The ratio of service revenues by the type of network has been steady for years, approximately 60:40, with the higher share accounted for by mobile network services. This ratio is not expected to change significantly in the forthcoming period.

Figure 2 .8 Shares of services by the type of network in total revenues



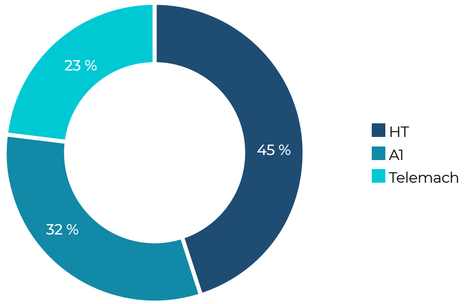
The leading operators in the fixed network market are Hrvatski telekom (HT) and A1 Hrvatska (A1), with Iskon and Optima as parts of the HT Group. Together they generate close to 90 percent of revenues in the fixed network market.

Figure 2.9 Operator revenue shares in the fixed network market



Typical of the mobile network market is a smaller number of operators, but a stronger competition than in the fixed network market. Three mobile operators have been operating in the HR since 2004. In 2020 United Group purchased Tele2 in the HR, which now operates under the name Telemach Hrvatska (Telemach). Telemach is the smallest mobile operator, with a stable market share of around 25 percent, and the only operator that does not operate in the fixed network market and does not offer converged services like its competitors.

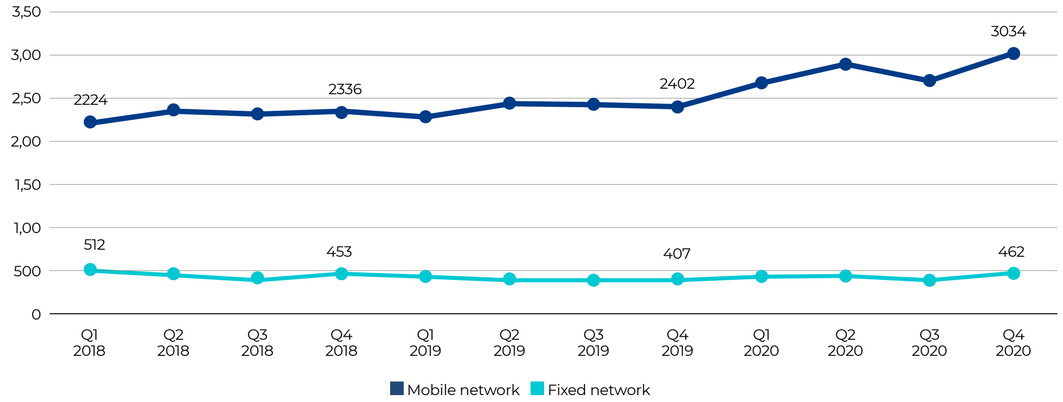
Figure 2.10 Operator revenue shares in the mobile network market



Impact of the pandemic on the electronic communications market

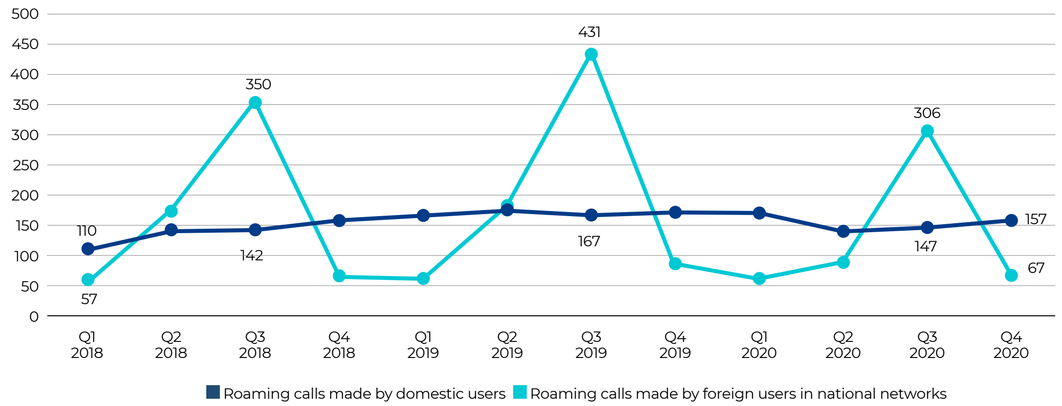
The pandemic influenced regular multiannual trends in some market indicators, such as outbound minutes in the mobile and fixed networks, roaming minutes and data traffic. The use of fixed telephone, having been on the decline for years, picked up in 2020. The number of minutes spent on mobile devices also grew considerably. This trend can be attributed to reduced movement and social contacts under the pandemic conditions.

Figure 2 .11 Outbound minutes in the mobile and fixed networks (in million minutes)



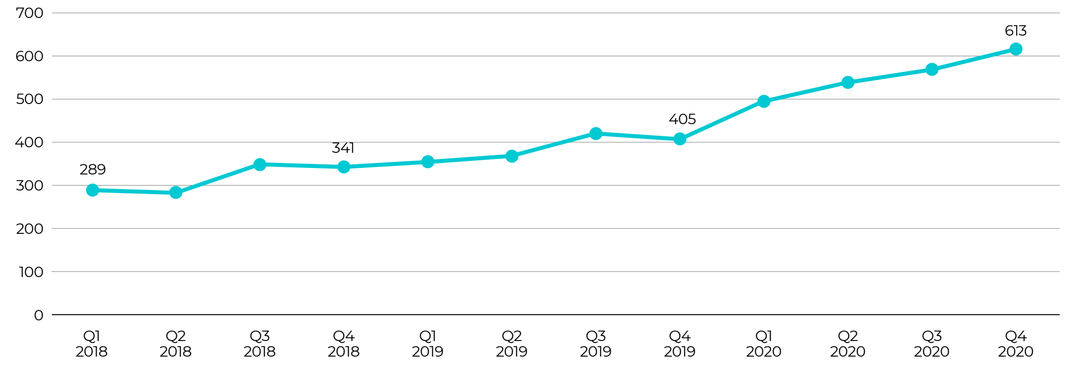
Roaming showed the opposite trends as the number of roaming calls decreased significantly. Foreigners in Croatia talked almost 30 percent more shortly (less) than in 2019.

Figure 2.12 Roaming minutes in the period 2018 to 2020 (in million minutes)



As the broadband internet access service is vital for the development of the digital society and the economy, data traffic had grown steadily and significantly every year. In 2020, due to this service's crucial role in virtual business communication and online education, data traffic increased at an even higher rate of 50 percent.

Figure 2.13 Data traffic (in petabytes[1] [PB])

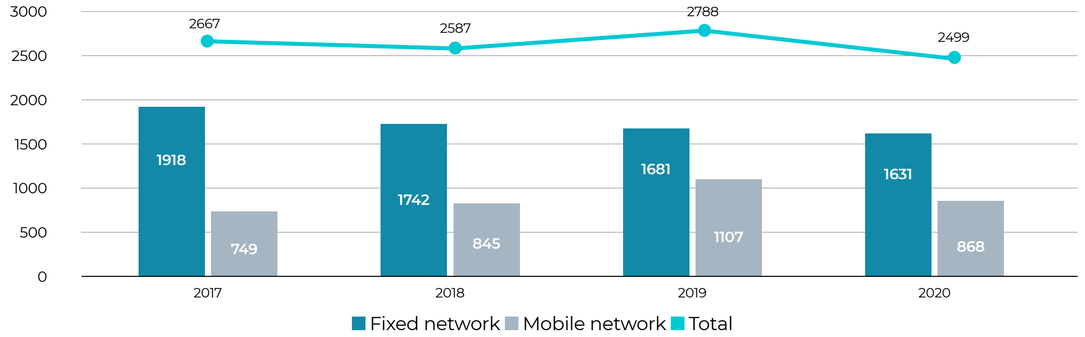


[1] 1 PB (petabyte) = 1,048,576 GB

Investment

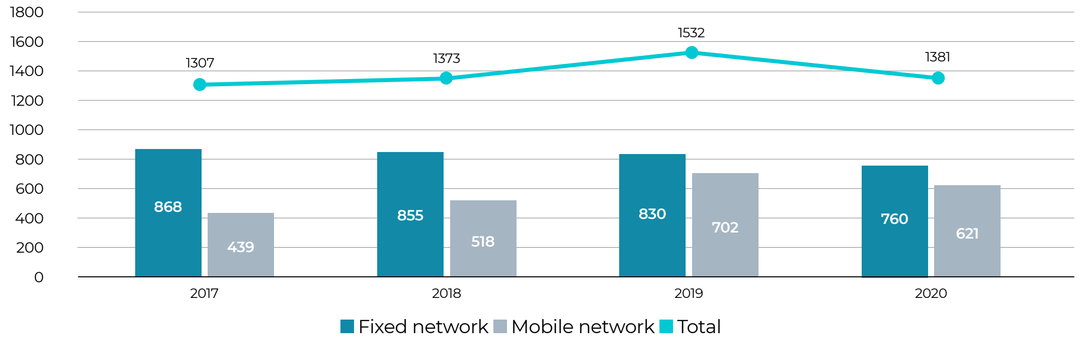
In 2020, investments in the electronic communications market amounted to HRK 2.5bn. Given the pandemic-induced challenges and uncertainties faced both by the overall economy and the electronic communications market, investments could have been expected to decline to a certain extent. The investment to market revenue ratio remained high at above 22 percent.

Figure 2.14 Total investments by electronic communications operators (in HRK million)



Investments in the network and network equipment amounted to HRK 1.4bn. Although lower than in 2019, i.e., in the pre-pandemic period, investments exceeded those made in 2018, creating a solid basis for further investments expected to be made in the following years, primarily in the construction of very high capacity networks and 5G networks.

Figure 2.15 Operator investments in the network and network equipment (in HRK million)

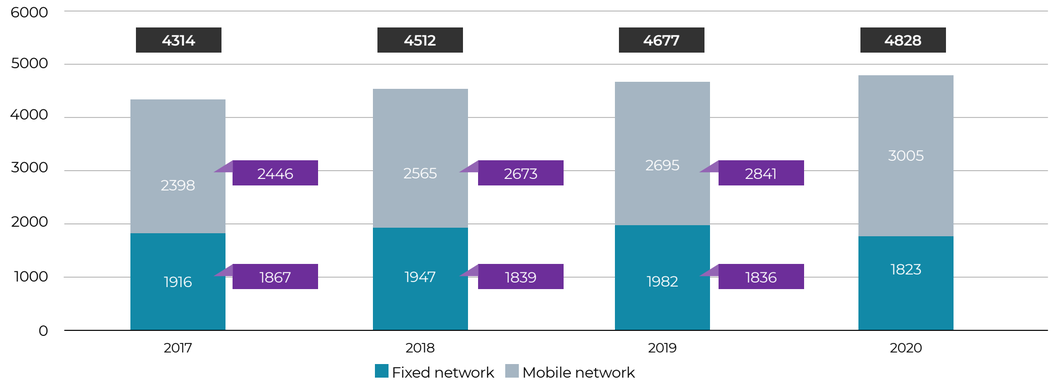


Investments in supplementary capacities include obtaining new RF spectrum licences. Due to the specific circumstances in 2020 and preparations for the allocation of a new, free radiofrequency spectrum for 5G, investments in the RF spectrum in 2021 were lower than those made in 2019, totalling HRK 41m.

BROADBAND INTERNET ACCESS SERVICE

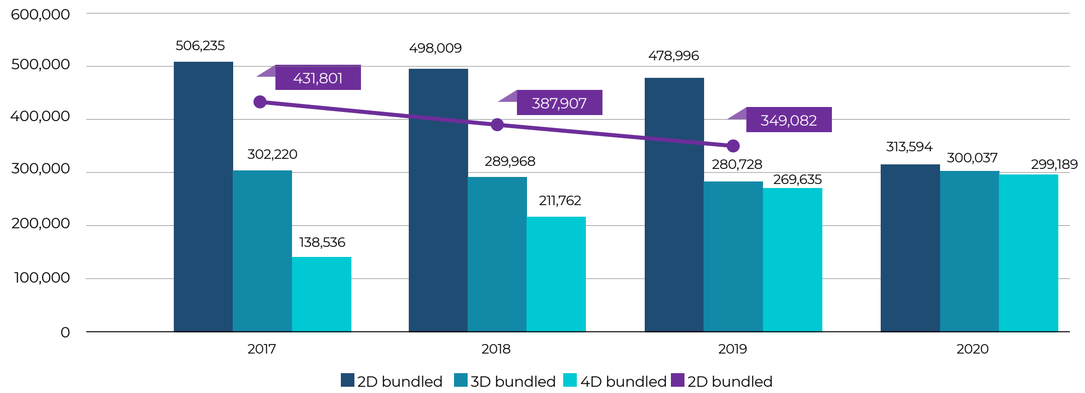
Although total revenues dropped in 2020, revenues from the broadband internet access service increased by HRK 165m from 2019. This service thus strengthened its position as the most important service in the market.

Figure 2.16 Total broadband internet access market revenues (in HRK million)



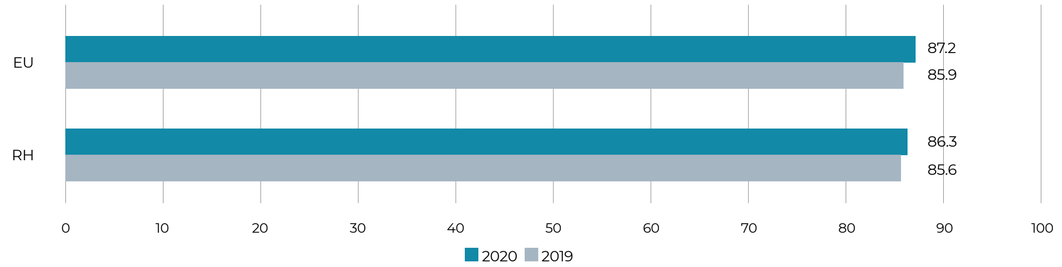
An analysis of figures on bundled services shows that t heir number increase d by about 15,000 from the previous year. The number of 4D bundled services, comprising fixed and mobile services, increased the most. This trend could become even more pronounced if Telemach, following suit of HT and A1, starts offering fixed services to its users. Furthermore, it is expected that 2D bundled services will no longer be the most used bundled services in the following year.

Figure 2 .17 Number of bundled services



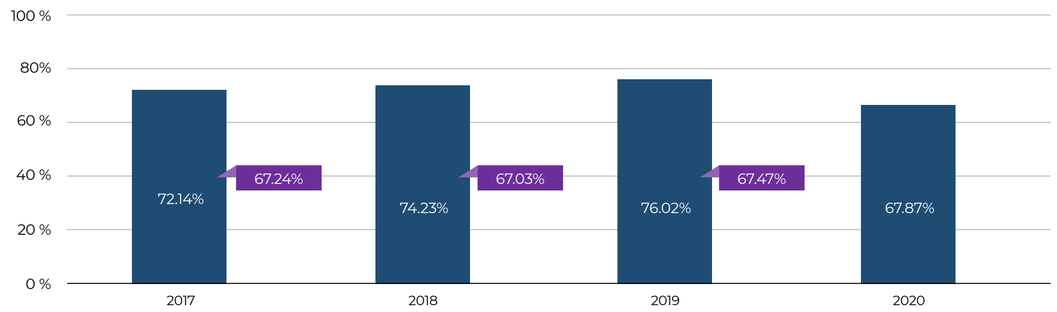
The availability of internet access speeds higher than 30 Mbit/s, that is, NGA speeds, increased by about 1 percent in 2020, coming close to the EU average. In the period to come it will be necessary to foster the availability of very high speed connections (over 100 Mbit/s) and to continue investments in very high capacity networks (VHCN), including EU structural funds investments.

Figure 2.18 NGA availability



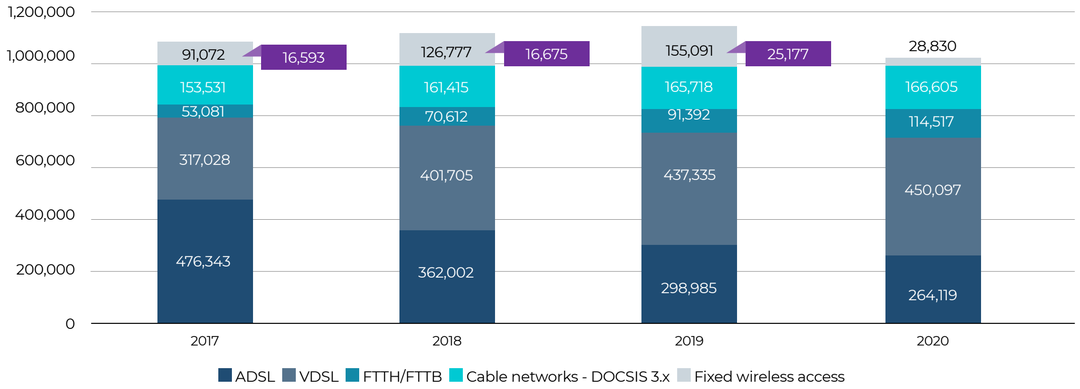
The share of households using the fixed broadband access has been between 67 and 68 percent for a large number of years. Is noteworthy that many household also use other types of internet access, such as, for example, the mobile network access.

Figure 2.19 Density of households with the broadband internet access in the fixed network



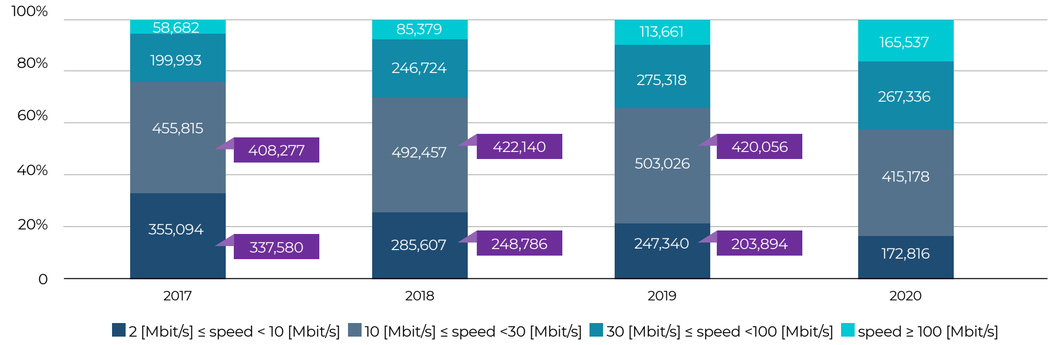
There were about 1 million broadband internet access connections, which is the same as in the previous year. However, the service of broadband internet access through VDSL and FTTH/FTTB technologies, which enable minimum speeds of 30 Mbit/s and 100 Mbit/s, recorded a significant increase. As the ADSL technology can no longer meet the needs of an average user, the number of ADSL connections is expected to drop in the following years.

Figure 2.20 Number of fixed broadband internet access connections



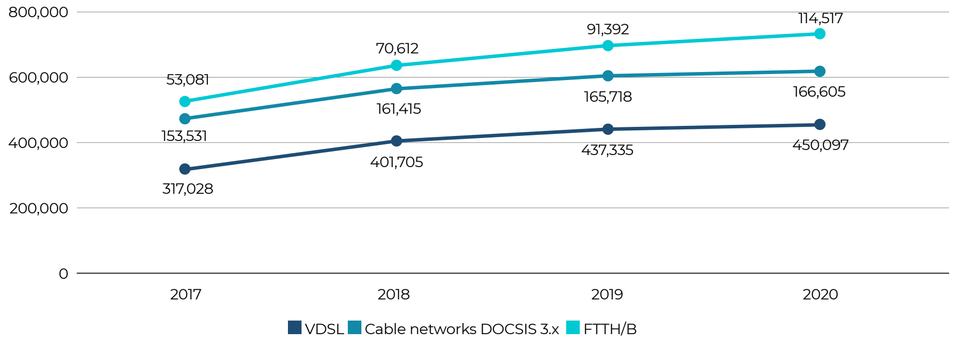
The number of users with internet access speeds ≥ 100 Mbit/s rose at the highest rate, followed by the number of users who contracted access speeds between 30 and 100 Mbit/s. Over 70 percent of all users contracted fixed internet access with minimum speeds ≥ 30 Mbit/s.

Figure 2.21 Number of fixed connections by contracted speeds



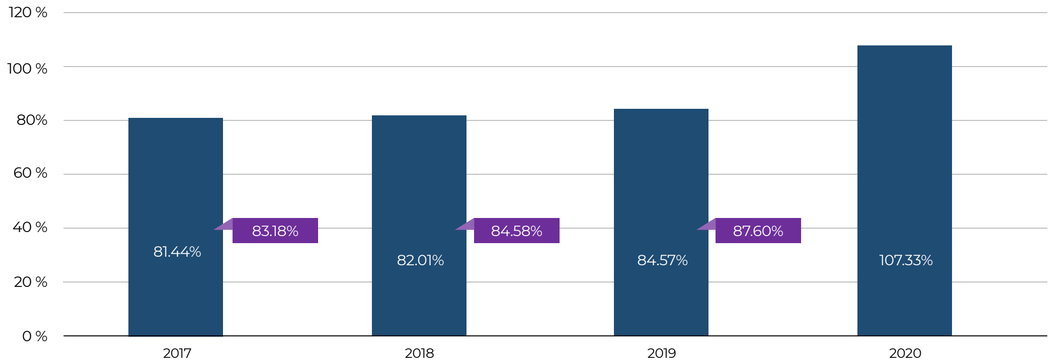
NGA connections can be deployed by means of various technologies: the VDSL, cable networks such as DOCSIS 3.1 or optical fibre technology. The number of connections deployed by all technologies increased, but the highest increase was in the number of FTTH/FTTB connections, which exceeded 100,000 at the end of 2000. Expectations are that optical fibre connections will grow at the highest rate because most operators' business plans focus on the construction of optical fibre access networks. The number of users accessing the broadband internet service through cable networks can be expected to stagnate for some time.

Figure 2.22 Number of NGA connections



While the share of households with a contracted broadband internet access is the measure observed in fixed networks, the measure for mobile networks is the population percentage. Although the number of mobile broadband access users did grow in 2020, the figure of 107.33 percent of such users primarily resulted from a change in the methodology of counting connections, showing that the number of SIM card devices (smart phones, tablets, etc.) exceeds the population number.

Figure 2 .23 Density of households with the broadband internet access in the mobile network



The mobile network access is equally important as the fixed network access. Geographical coverage with the mobile signal was at the same level as in 2019, whereas Telemach reached 96 percent of population coverage, which is an increase of 1 percentage point from 2019. The coverage density of the other two operators increased at a minimum rate, but came close to 100 percent.

Figure 2 .24 Geographical coverage by the 4G network

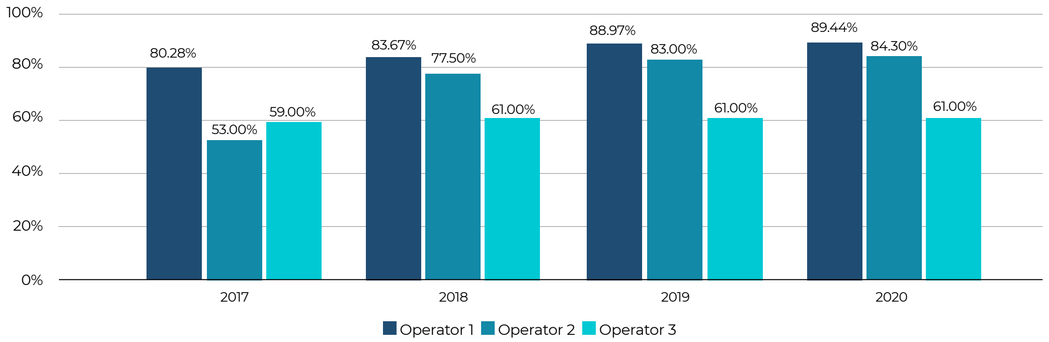
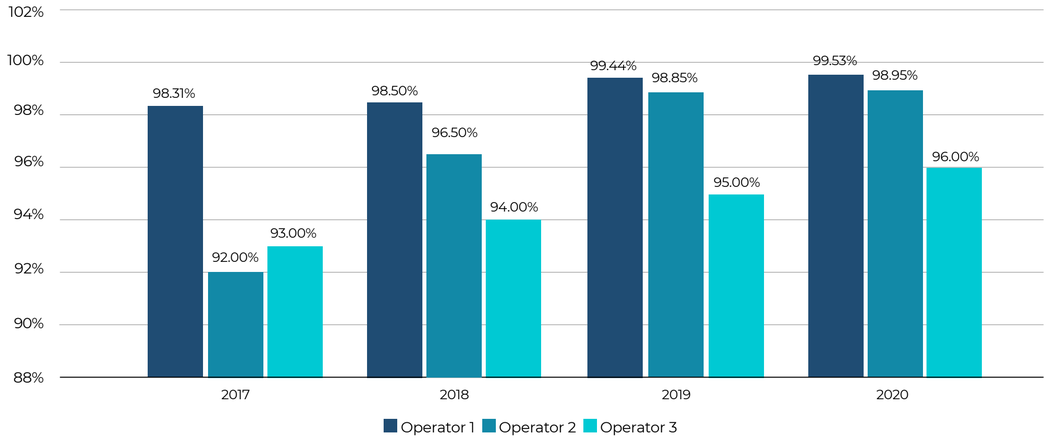
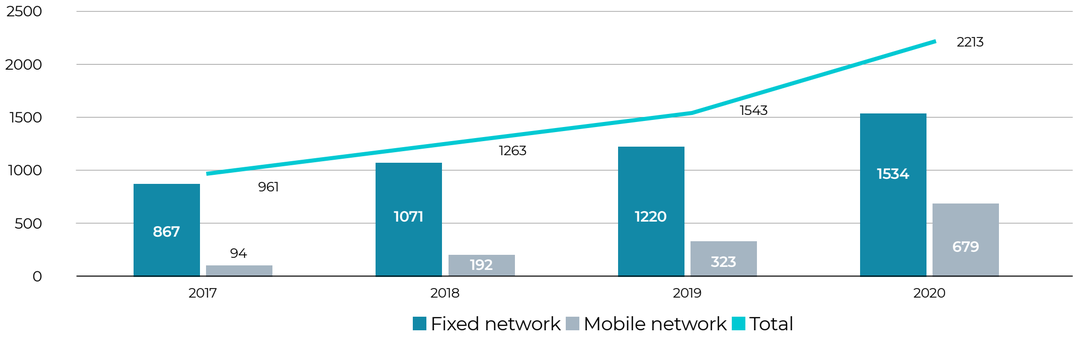


Figure 2 .25 Population coverage by the 4G network



The surge in data traffic in 2020 was not only due to the development of the digital society, but also to the pandemic, because of which business operations and education were conducted online. These trends can be expected to continue to an extent in the years to come and data traffic can be expected to grow at a strong pace. The highest growth is expected in mobile networks, especially after the commercial use of 5G networks gains momentum.

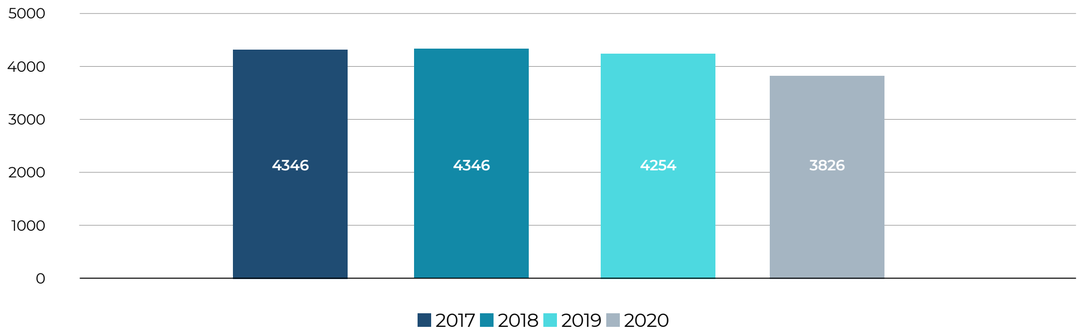
Figure 2.26 Data traffic (u petabajtima [PB])



TELEPHONE SERVICES IN THE MOBILE NETWORK

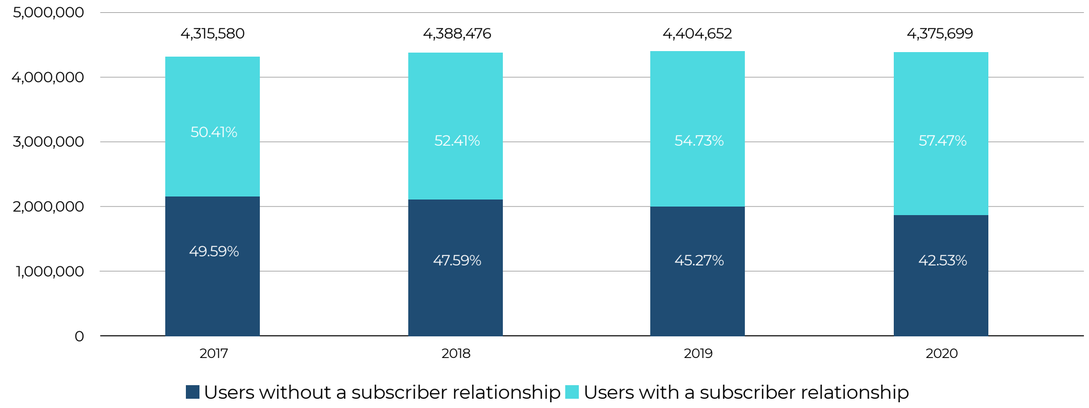
The decrease in total revenues was to a large extent due to a drop in revenues from telephone services in the mobile network. The amount of revenues, standing slightly below HRK 4bn at the end of 2020, was related to the pandemic. Given that users also make calls through OTT platforms (e.g. Viber, WhatsApp), revenues from telephone services in the mobile network do not represent all revenues from voice calls made from mobile devices.

Figure 2.27 Total revenues from telephone services in the mobile network (in HRK million)



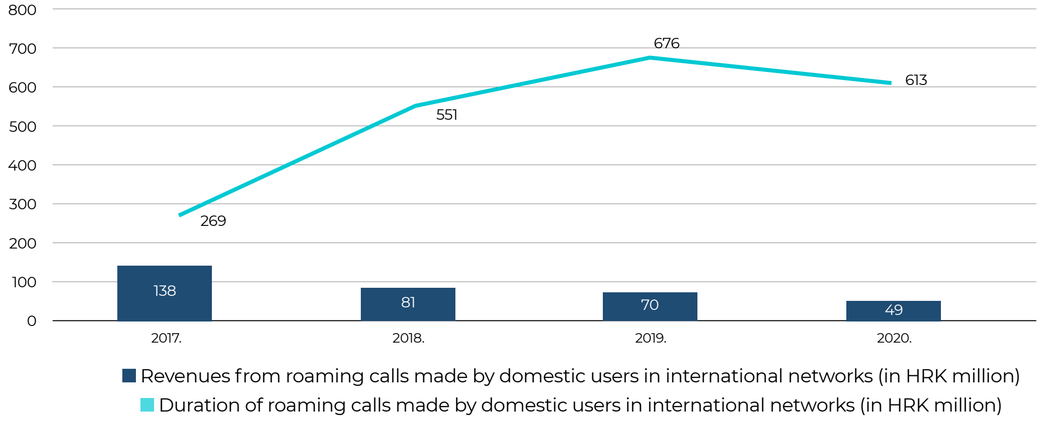
Users can contract a service at a discount with a contractual obligation (12 or 24 months) or use services without a contractual obligation. Users that are not interested in discounts on devices and similar benefits or in services with a contractual obligation of a certain duration and/or wish flexibility in monthly spending tend to opt for prepaid services. However, the number of postpaid users, that is, users contracting services with operators that are paid after the end of the calculation period (postpaid services) has grown in the last few years. If only private users are observed, that is, consumers that used to opt for prepaid tariffs, those with postpaid contracts account for a share of 48.5 percent, almost equalling the share of prepaid users. The share of postpaid users in the total user base, which also includes business users, is much higher, approximately 57.5 percent.

Figure 2 .28 Distribution of users by subscriber relationship



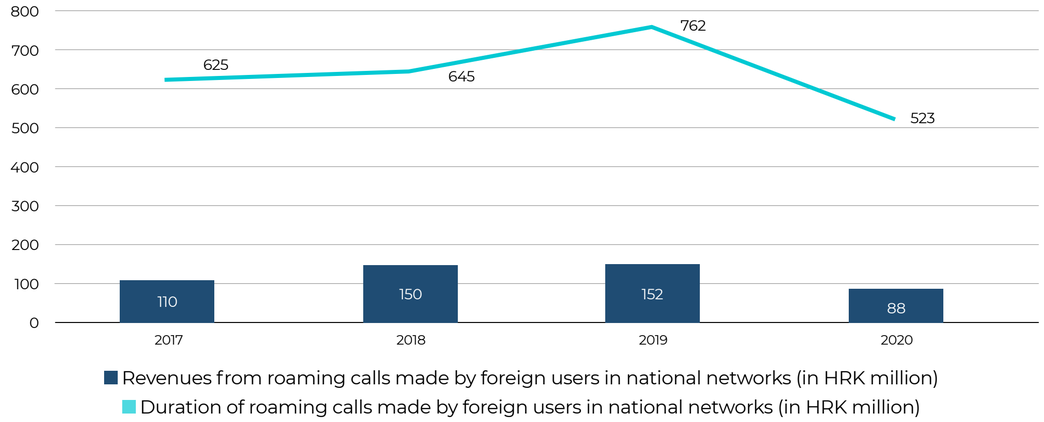
Croatian users travelled less abroad due to the pandemic, with the result that roaming traffic and related revenues declined in 2020. Revenues dropped by 30 percent and traffic by approximately 10 percent.

Figure 2.29 Revenues from and duration of roaming calls made by domestic users in international networks



The pandemic also led to a decrease in roaming traffic and related revenues generated by foreigners in national mobile networks. This decrease (30 percent in traffic and almost 40 percent in revenues) is more pronounced than the decrease in roaming traffic and related revenues generated by Croatian users abroad. This market segment is expected to recover with the resumption of tourist and business travel.

Figure 2.30 Revenue s from and duration of roaming calls made by foreign users in national networks

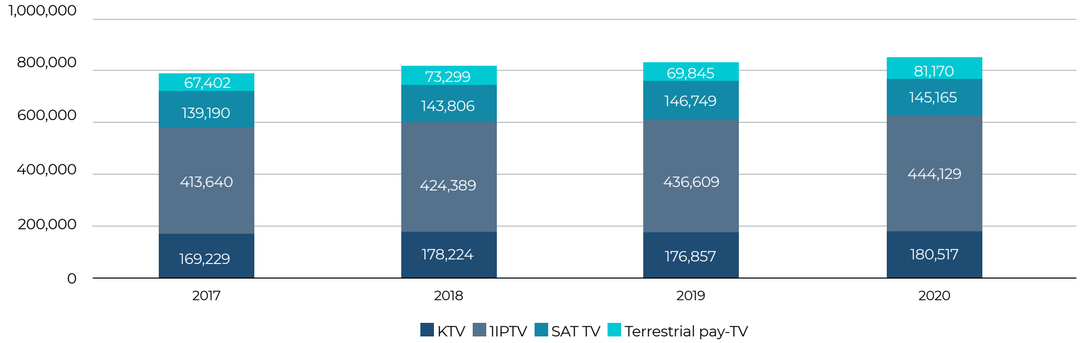


TELEVISION AND PAID TELEVISION

Croatian users are enabled access to the TV programme distribution service through the free-to-air TV and various forms of pay-TV platforms. All households have free access to programmes (TV content) that can be viewed via free-to-air TV. At the end of 2020, households viewing television programmes in such a way accounted for a share of 42.5 percent, that is, about 1.5 percent of all households in the HR contracted a television content distribution service in 2019. Given the ever rising amount of exclusive content, the number of households viewing free-to-air TV only through terrestrial transmitters (DVB-T2) is expected to decline.

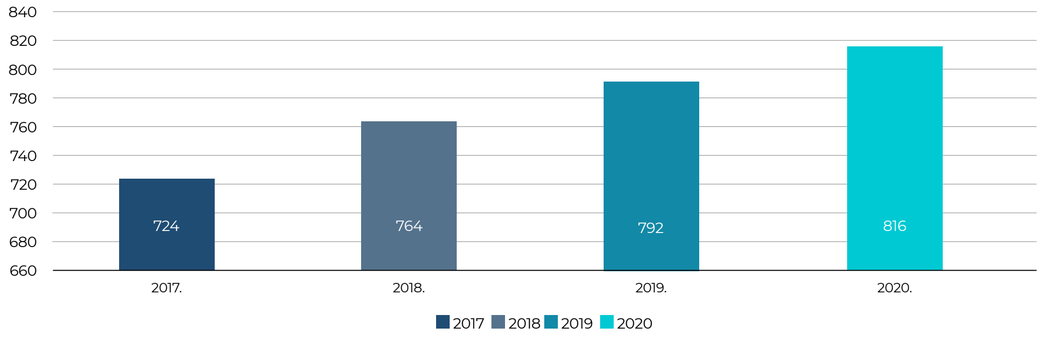
In 2020 there were about 20,000 new pay-TV users. The number of users of all types of technologies has been rising, except the number of users of satellite television, which almost number of users uses the IPTV platform and expectations are that it is precisely the number of such users that will increase the most.

Figure 2.31 Users of pay-TV service by technology



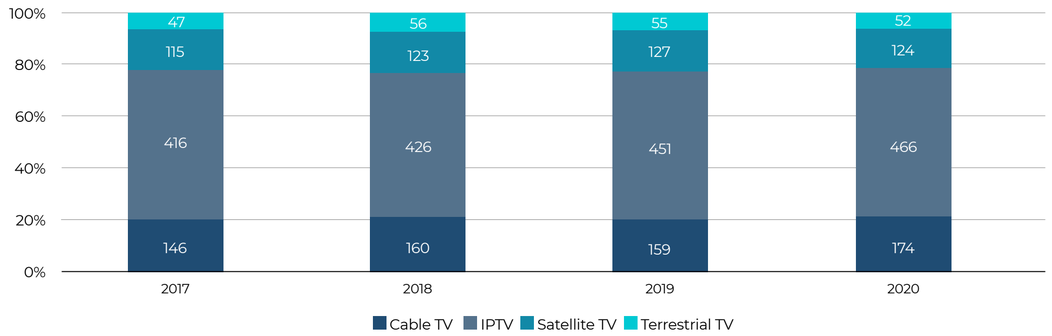
Due to a rise in the number of users, revenues for the first time exceeded HRK 800m. In addition to the broadband internet access service, content is the main service offered to end-users. Users' needs for personalised content will grow. However, to what extent this will boost operators' revenues depends primarily on operators' response to content made available by OTT service providers.

Figure 2.32 Total pay-TV revenues (in HRK million)



The bulk of revenues, almost 60 percent, is generated by the IPTV technology, which is expected due to investments in the optical fibre infrastructure and a rise in the number of users with NGA speeds.

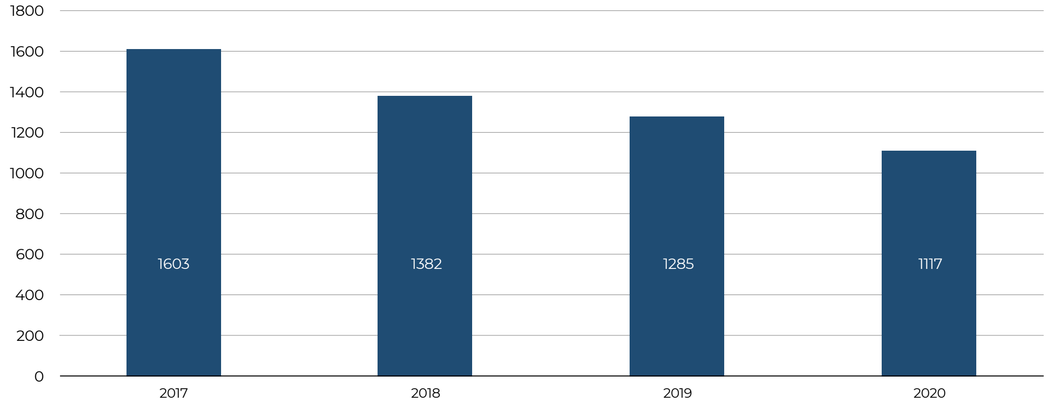
Figure 2.33 Revenues from the pay-TV service by technology (in HRK million)



TELEPHONE SERVICES IN THE FIXED NETWORK

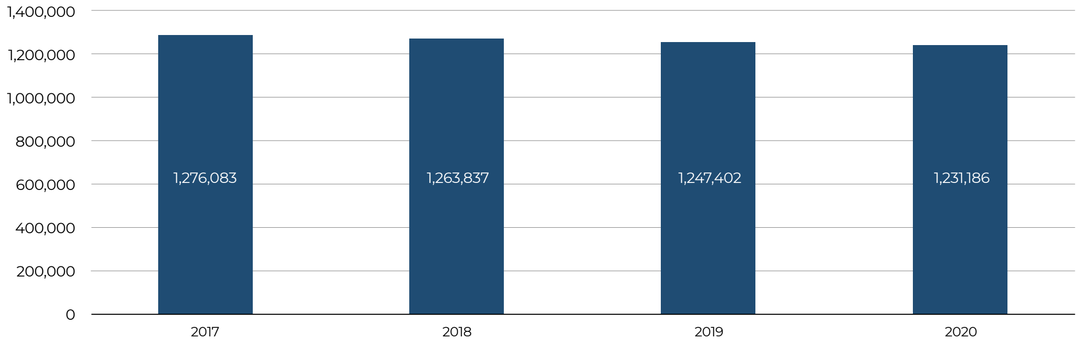
The share of revenues from telephone services in the fixed network in total revenues was about 10 percent, slightly lower than in the previous year. The increase in the number of minutes of conversation caused by the specific pandemic-induced circumstances failed to reflect on revenues, which went down by HRK 170m. This was because operators' tariff packages include a number of "free" minutes, so that the increase in the number of minutes resulted from the greater use of available minutes within tariff packages. The significance of this service and related revenues are anticipated to continue decreasing when normal market conditions are restored.

Figure 2.34 Total revenues from telephone services in the fixed network (in HRK million)



The drop in revenues is closely connected with the number of users, which decreased by about 15,000 in 2020 from 2019. Due to the fact that there will always be users opting for the traditional telephone service (primarily the elderly population) and that operators often do not charge additionally for this service, the number of users of the traditional telephone service in fixed networks is expected to continue to decrease at a slow pace.

Figure 2 .35 Number of users of telephone services in the fixed network



UNIVERSAL SERVICES

Universal services in electronic communications represent the smallest group of 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, the Council of HAKOM adopted a decision designating HT as the universal operator of the access service for end-users, including the users of public payphones and services providing notifications (information) about subscriber numbers. Imenik d.o.o. was designated 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 to services providing notifications (information) about the numbers of subscribers in the HR territory, for a period of three years.

An amendment to the Ordinance on universal services in electronic communications entered into force on 1 January 2020, obliging universal service operators to provide natural and legal persons with a data transfer speed of at least **4 Mbit/s** (the previously applicable minimum internet access speed of 1 Mbit/s was raised **to 4 Mbit/s**). Accordingly, HT is obliged to enable a minimum internet access speed to each end-user in the HR territory at a fixed location which, as the universal service operator, it cannot provide with any of the standard packages from its offer at the time of submission of the request. HT is also obliged to make this package available to the socially vulnerable group of end-users, with a 50 percent discount, irrespectively of whether it can provide these users with any of the standard packages. HAKOM has also set additional discounts and benefits for disabled persons and other special categories of end-users (e.g., access for the socially vulnerable group of end-users, with an emphasis on the fact that obtaining discounts is not conditioned on entering into an obligatory duration of the subscriber relationship that would potentially aggravate users' financial situation, etc.). Special conditions for the socially vulnerable group 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).

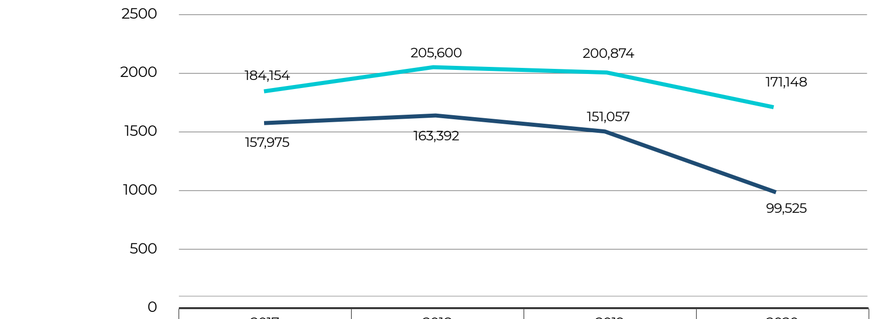
HAKOM monitors the fulfilment of universal service obligations and the quality of provided universal services for the previous year, publishing relevant information on its official website.

SWITCHING OPERATORS/NUMBER PORTABILITY

In 2005, HAKOM introduced the number portability service in such a way that users could select an optimal operator best suited to their needs and habits, that is, switch to another operator's network while keeping their current number.

In order for this process to function efficiently, HAKOM provides for the timely upgrading and the regular maintenance of the Central Administrative Data Base of Ported Numbers (CADPN). A good quality administrative and technical process of the number portability service is an important factor for end-user satisfaction and indispensable for a sustainable market competition of operators.

Figure 2.36 Number of ported numbers in the fixed and mobile networks



	2017	2018	2019	2020
Fixed	157,975	163,392	151,057	99,525
Mobile	184,154	205,600	200,874	171,148

The quantity of ported numbers decreased markedly in 2020. During the COVID-19 pandemic, users obviously made less use of the number portability service, that is, changed operators more rarely, which is understandable as physical contact, including visits to operators' branch offices, was restricted. The e-Portability application enables users to check the number portability process and monitor the status.

INTERNET NEUTRALITY, OPENNESS AND QUALITY

Maintaining internet openness, promoting the freedom of end-users to access the internet, distribute their own content and run applications of their choice, as well as fostering innovation,

are the key challenges for internet development. These goals are the most easily achieved if the internet is governed by the principle of “network neutrality”.

To that end, national regulatory authorities may impose requirements relating to technical characteristics, minimum service quality requirements and other appropriate and necessary measures for one or more public electronic communications service providers, including internet access providers. In 2020, HAKOM started a project to develop a software tool for the verification of traffic management measures applied in operator networks. The year 2020 saw the development of the functional specification, design and software of the application as well as a study establishing to which extent internet access service providers in the HR apply measures for the management of service users’ network traffic. As shown by the three-week initial measurements carried out for service providers in the mobile and fixed networks, internet access service providers in the HR do not apply discriminatory techniques of network traffic management. The measurements will be carried out over a long measurement period from various geographical locations. In 2020, HAKOM did not receive any user complaints related to the blocking or slowing down of the use of certain applications and services or to price discrimination. It can be concluded that there is currently no concern about access to open internet in Croatia. However, HAKOM will continue to monitor the market to ensure that obligations under the Regulation regarding the protection of access to open internet are met and it will, in case of non-compliance, use appropriate measures to ensure compliance. HAKOM received one user inquiry/complaint regarding network connection problems caused by the lack of publicly accessible IPv4 addresses and the use of the Network Address Translation (NAT) method by the internet service provider (ISP). Specifically, ISPs in the fixed network allocate private (dynamic) IP addresses (through the NAT) to individual end-users due to the lack of public IPv4 addresses (several users share one public IP address), which resulted in the lack of direct IPv4 end-to-end connectivity required for specific applications. Pursuant to Article 3, paragraph (1) of the Regulation, end-users have the right to use or provide applications or services (e.g. smart home servers, video surveillance, etc.) for which the key technical precondition is their direct accessibility (by means of a public IP address). HAKOM, having required the ISP to submit a statement on the mentioned inquiry, issued an opinion stating that ISPs (that use the NAT) should clearly and transparently inform end-users about that, providing information in the contract, and about the possibility of requesting and obtaining a dynamic public IP address.

In December 2020 HAKOM launched the project of surveying a representative sample of end-users regarding their experience with using the internet access service (Quality of Experience, QoE). The survey is planned to be carried out once a year. The main findings of the 2020 survey are as follows:

Approximately one half of the current ADSL/VDSL users surveyed would switch to the optical fibre technology if the price exceeded the price they currently pay by only 5 to 10 percent.

Most of the users surveyed access the internet by **smartphones and laptops**.

Terminal user devices are the most often connected to the internet by **WiFi**.

Approximately one half of the current ADSL/VDSL users surveyed would switch to the optical fibre technology if the price exceeded the price they currently pay by 5 to 10 percent.

Slightly over one fourth of the users surveyed do not know what their contracted internet speed is.

One third of the users surveyed would like to have higher speeds, but are not willing to pay for that, while 21 percent of them states that they do not need higher speeds.

Approximately one half of the users surveyed obtained information on the maximum, regular and minimum internet speed from their operators.

The users surveyed **do not have a habit of regularly checking speed** – most of them do that when they notice that speed has changed.

Most of the users surveyed are **unacquainted with HAKOM’s applications** for measuring internet speed; HAKOMetar was used by 18 percent and HAKOMetar Plus by 8 percent of users.

A small share of the users surveyed did not have any difficulties with using communication services.

The most frequent difficulties encountered include service interruption, poor internet speed and problems with the WiFi network; nevertheless, the level of satisfaction with services provided is relatively high (60 percent).

Problems with the network are equally accounted for by all operators, while the elimination of breakdowns, internet speed and low package prices are the main elements to which users pay attention when selecting an operator.

A lower price charged by an operator 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.

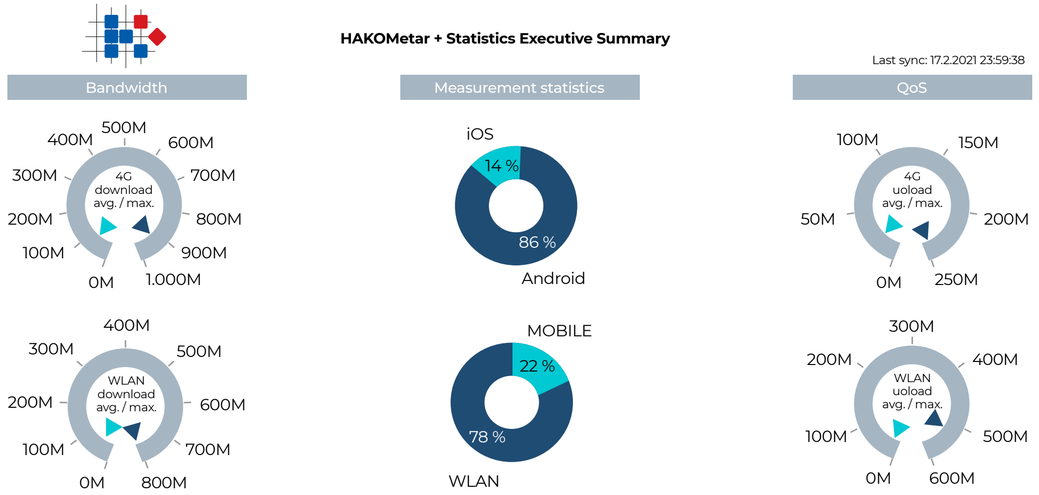
Almost all surveyed internet users take precautions to maintain internet safety – they most often avoid downloading applications from unknown sources, protect personal data and avoid contact with unknown people; however, 14 percent of them stated that they had experienced a cyberattack or cyberbullying.

The survey findings provide valuable indicators for HAKOM as to which areas require attention, including, for example, operators' transparency obligations regarding the terms and conditions of service use, coupled with the education of end-users about the procedure of concluding subscriber contracts, the education about and the promotion of HAKOM's internet s peed measuring tools, etc. The survey Internet access service users is published on HAKOM's website.

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 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 Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union, 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 e nd-user com plaint re solution 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 lower than 70 percent of the maximum speed. In 2020, over 7,700 individual measurements were performed, that is, over 4,611 measurement cycles were started and only 153 (3.3 percent) completed measurement cycles, conducted by users themselves, were eligible for the submission of complaints regarding a too low speed. These data show that a large majority of operators provide contracted internet access speeds.

In 2017, with an aim 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, while measurements are displayed on a geographical map constituting a coverage map. All measurements are shown on a geographical map of the HR, thus forming a map of coverage quality with user measurements.

Figure 2.37 HAKOMetar Plus measurement statistics and upload/ download speeds



The measurement results (more than 730,000 individual measurements performed since the application was put into operation, of which over 250,000 were carried out in 2020) 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 offers 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 the information on coverage maps and available speeds in mobile networks published by operators is consistent with the results of user measurements.

Figure 2.38 Num ber of measurements in WLAN and mobile networks via HAKOMetar Plus

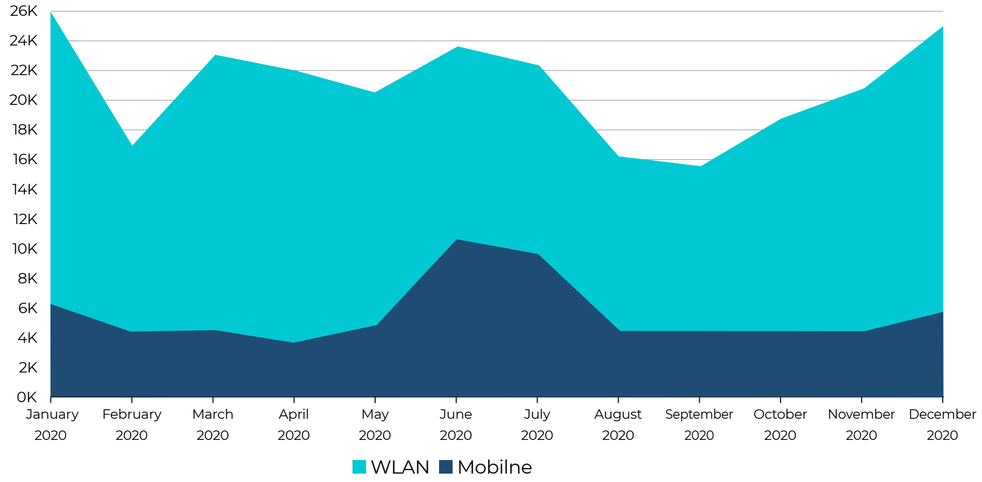


Figure 2.39 Average download speeds in mobile networks measured via HAKOMetar Plus

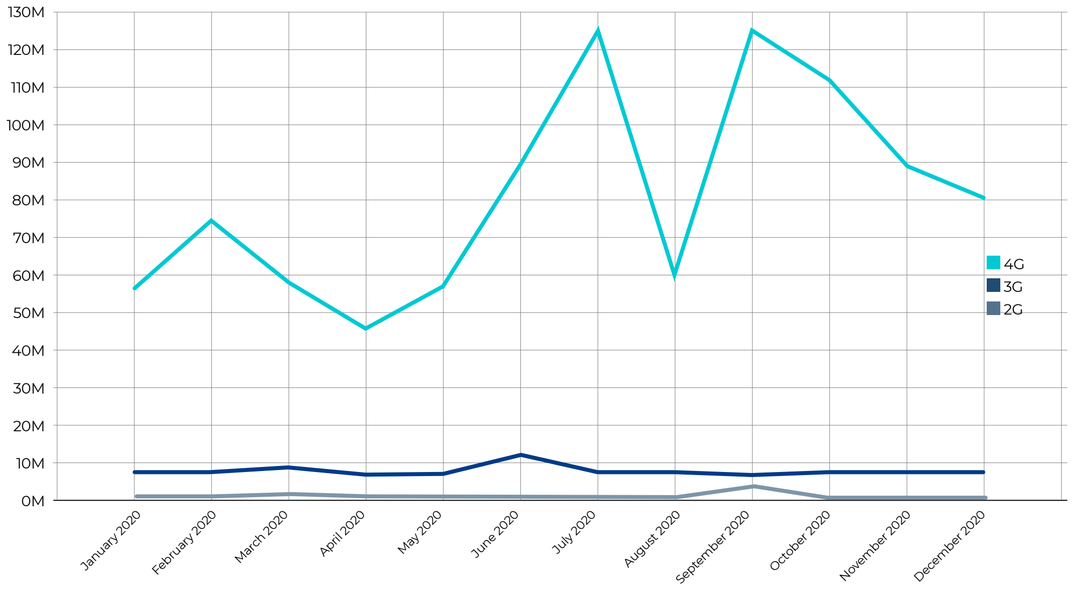
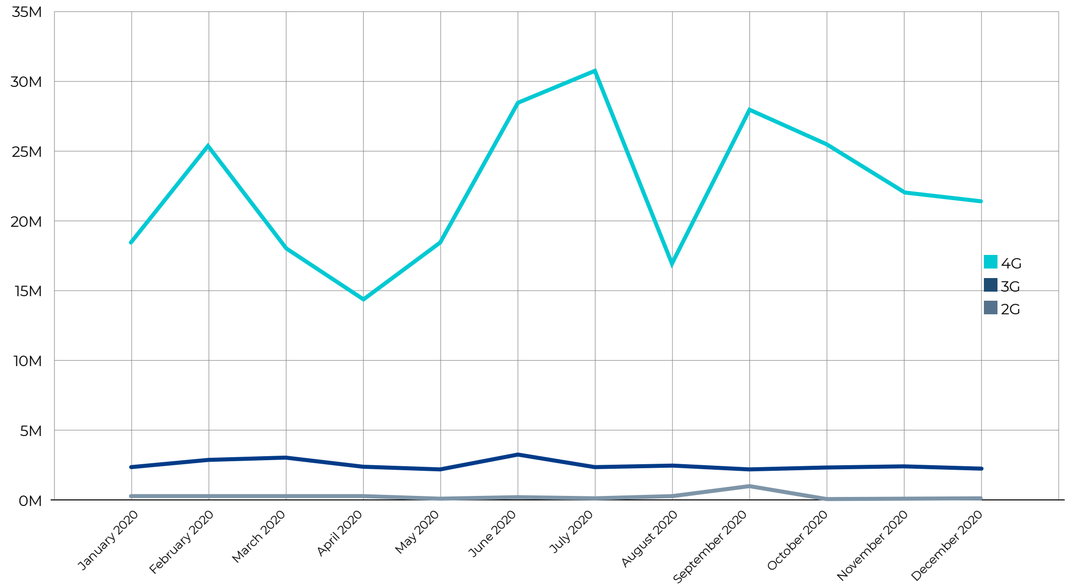


Figure 2.40 Average upload speeds in mobile networks measured via HAKOMetar Plus



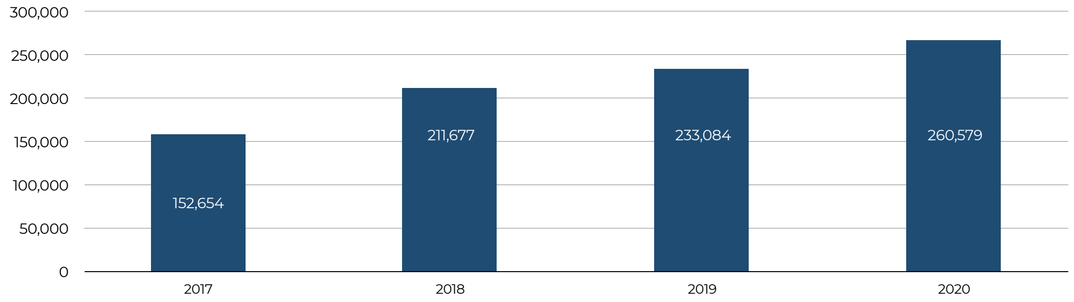
Furthermore, a project was launched to improve the transparency of information on broadband internet access speeds in mobile networks that operators are obliged to offer to end-users in accordance with the Regulation in the form of interactive maps, available on HAKOM's website. Several meetings were organised with operators for the purpose of defining the methodology for processing and presenting information on estimated maximum download and upload speeds, provided by mobile network operators to their end-users in accordance with the BEREC Common Position on information to consumers on mobile coverage.[2]. Data on signal coverage for all three mobile network operators were collected, separately for each technology (2G, 3G and 4G), and the internet application (beta version) was set up for the visualisation of collected data (mobile network operators' coverage maps, including the results of user measurements via HAKOMetar Plus and the results of field measurements carried out by HAKOM) to the general public.

[2] https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/common_approaches_positions/8315-berec-common-position-on-information-to-consumers-on-mobile-coverage

M2M AND IOT

Machine-to-machine communication, as part of the Internet of Things (IoT), is an area in the initial phase of strong growth. HAKOM'S Numbering Plan has determined the appropriate numbering for these services for the time being. Given the current growth estimates for IoT services, the amount of numbers will have to be increased, because they are assigned to each terminal device. Machine–to–machine (M2M) communication comprises automated communication (data transfer) between two or more communication devices. Due to the growth of M2M services, HAKOM will keep a strong focus on privacy and data security issues. The aim is to establish stable and sustainable foundations for the regulation of the IoT/M2M services market. It is necessary to project the potential course of market developments and propose adequate regulatory guidelines that do not prevent the expansion and development of such services, while providing security to users.

Figure 2.41 Number of M2M connections



NETWORK AND SERVICE SECURITY

HAKOM analyses reported security incidents on an annual basis, in accordance with the prescribed criteria, and reports to the European Network and Information Security Agency (ENISA) and competent national regulatory authorities of other EU Member States on the incidents resulting in the breaches of security or the loss of integrity of communication networks. Seven major security incidents, system errors and errors due to the earthquake were reported in 2020. The latter were due to strong shaking that caused damage to the equipment in the data centre and fire, which, in turn, disconnected the power supply and disabled access to 194 emergency service.

Cybersecurity has been given increasingly more attention, both at the national and EU levels. In 2020, HAKOM acted as a coordinator in the National Cyber Security Council, entrusted with finding the best option to incorporate the Toolbox, comprising a common set of measures for the mitigation of the main cybersecurity risks of 5G networks, into its regulations. The Toolbox contains various measures aimed at ensuring an appropriate level of cybersecurity of 5G networks throughout the EU and a coordinated approach of Member States. The Toolbox will be applied in the Croatian market in accordance with the defined criteria to be met by operators and manufacturers. In addition to national cooperation, a considerable share of activities related to cybersecurity was conducted in cooperation with competent EU authorities, in particular through participation in the work of the Network and Information Systems (NIS) Cooperation Group within which Member States, with the assistance of the Commission and ENISA, prepared the Toolbox to offset the above-mentioned identified risks. Furthermore, cooperation with BEREC involved monitoring the progress of a particular participating state in the implementation of the Toolbox and creating a review of potential ways to implement specific measures. In 2020, HAKOM, in cooperation with ENISA, worked on the development of the Technical Guidelines for Security Measures in accordance with the European Electronic Communications Code (EECC) and of the Technical Guideline on Incident Reporting, also in accordance with the EECC.

The most important security incident in 2020 occurred in the HT network, when emergency service calls were interrupted. The incident occurred on 29 September 2020. The trigger for the incident was a defective network element, at the location in Split, one of the three HTs geo-redundant locations. The network element caused the delay and non-delivery of Lightweight Directory Access Protocol (LDAP) messages. The increase in traffic caused network congestion. Having been discovered by an analysis, the problem was isolated from the network to enable the other two geo-redundant systems to take over the traffic, so that the incident was eliminated, voice services were established, and users were connected to the network gradually to prevent a recurring network overload. Due to this incident, a working group with HT and HAKOM was set up, and the network architecture was redefined for the provision of all emergency services.

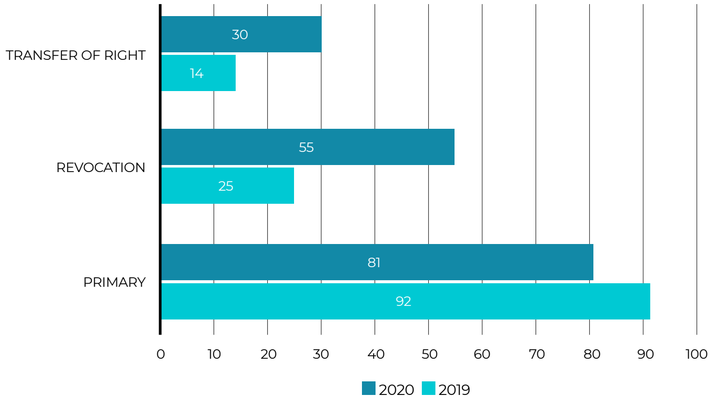
MANAGEMENT OF ADDRESS AND NUMBER SPACE

The efficient management of the addressing and numbering space in the HR, as a naturally limited public good, for the purpose of ensuring a reasonable, equal and efficient use of addresses and numbers, is based on international regulations and international agreements binding for the Republic of Croatia. HAKOM manages the addressing and numbering space and plans the assignment or revocation of addresses and numbers, in accordance with the Addressing Plan

and the Numbering Plan. The increase in the number of operators in the EU has resulted in the growing demand for resources from the addressing and numbering space. Another evident trend is the use of new technologies and the resulting appearance of new services, which makes technical and regulatory conditions for service provision more complex based on HAKOM's decisions on the primary assignment of addresses and/or numbers. Requests for the primary assignment of addresses and/or numbers are submitted to HAKOM through the e-Operator system.

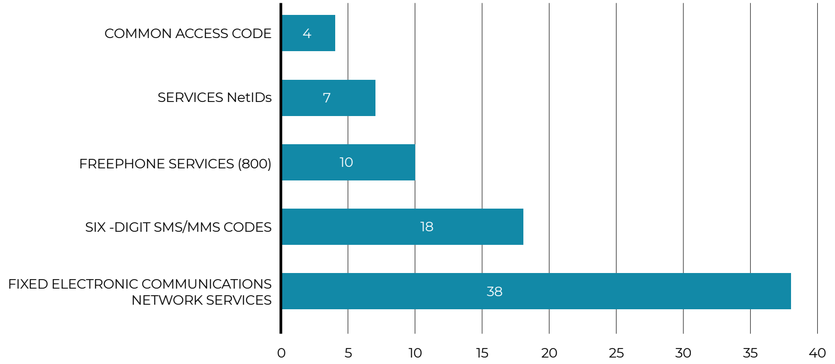
Data show that there were considerably more requests for the revocation and transfer of rights in 2020 than in the previous year. There were no marked differences in primary assignment.

Figure 2.42 Types of address and/or number allocation requests/decisions



In 2020, most numbering requests were for fixed electronic communications network services, six digit SMS/SSM codes, freephone services, NetIDs and common access code services.

Figure 2.43 Requests/decisions by type of numbering



The table shows the free numbering space, that is, the quantity of numbers available for primary assignment to operators.

Table 2.1 Numbering resources by type of numbering

Numbering type	Free numbers	Percentage of used numbers
060 (General content	989,893	1.01 %
064 (Services with child-inappropriate content)	997,612	0.24 %
072 (Common access code services)	988,054	1.19 %
074 (Personal number services)	995,484	0.45 %
075 (Personal number services)	987,312	1.27 %
800 (Seven-digit numbers for freephone service)	8,123	18.77 %
800 (nine-digit numbers for freephone service)	809,403	19.06 %
Services in the fixed EC network (all counties)	21,990,100	18.56 %
Services in the mobile EC network	45,900,000	54.10 %
M2M services	49,500,000	50.50 %

As shown by these data, the use of numbers by all numbering types is still relatively low, which means that neither the economy nor the citizens are at a risk of lack of free numbering resources. Therefore, no changes will have to be made to the Numbering Plan in the forthcoming period.

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 analysing the realisation of requests for the shared use and collocation of the electronic communication infrastructure, resolving disputes between infrastructure operators and beneficiary operators, determining technical conditions for unbundled access to the local loop and collocation, preparing the proposals of acts, 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, and regulating the existing situation 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). The legalisation procedure in Bjelovar City, Zaprešić City (phase II), Split City (Pujanke and Meje) and Rijeka City (Zamet and Sušak) were completed.

HAKOM also monitors the maintenance of the built electronic communications network and infrastructure, paying a special attention to the regular measurements of the main parameters of physical characteristics of the twisted metallic pair.

Electronic communications infrastructure and the right of way

HAKOM issues the right of way certificates based on applications 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 ce rtificate is is sued 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 2020, natural persons filed 352 applications for issuing the right of way certificates and a total of 315 certificates were issued. The total length of the route for which the right of way certificates were issued is 42,554,57 meters. As regards the regulation of property-law relations between infrastructure operators and common good managers or real estate owners, a total of 47 new requests was received in 2020 for the regulation of these relations between local self- government units (LSUs) and the infrastructure operator in the following cities: Pag, Vis, Glina, Vrgo- rac, Hrvatska Kostajnica, Hvar, Komiža, Zadar, Pleternica, Omiš, Sisak, Čakovec and Vinkovci as well as in the following municipalities: Brela, Martinska Ves, Jagodnjak, Posedarje, Lovreć, Runovići, Galovac, Ravna Gora, Bilice, Pisarovina, Đelekovec, Markušica, Ervenik, Veliki Bukovec, Vrsar, Tar, Lišane Ostovičke, Povljana, Mihovljan, Čavle, Staro Petrovo Selo, Stara Gradiška, Fužine, Stankovci, Jelsa, Sikirevci, Slavonski Šamac, Veliki Grđevac, Bebrina, Lovas, Podstrana, Cerna, Tompojevci and Čepin. A total of 145 requests filed by LSUs was addressed, i.e., an infrastructure operator was established in the LSU administrative area. These included 19 requests received in 2020 and 126 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 regulate property-law relations with infrastructure operators that have illegally set up their ECI on the LSU-owned real estate.

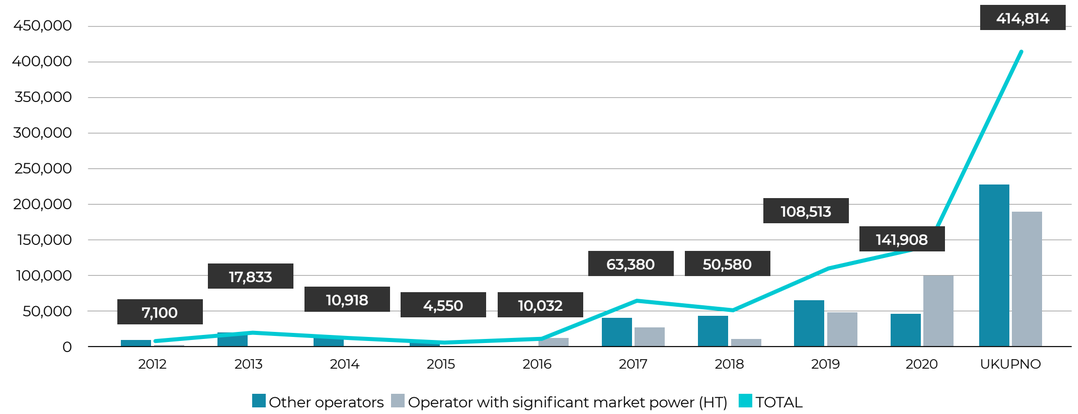
Table 2.2 Number of LSU requests for the regulation of property-law relations by year

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

BUILDING THE ELECTRONIC COMMUNICATIONS INFRASTRUCTURE

Market indicators, regularly published by HAKOM, show a constant growth of demand for the broadband internet access service and the IPTV service. In order for electronic communications network operators to meet the growing demand and at the same time maintain service quality levels, it is necessary to increase capacities and access speeds, that is, to invest in high speed and large capacity access networks.
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 availability are collected on a quarterly basis and aggregate results are published and presented on the GIS portal. The portal also publishe s the notices of intent to build optical fibre distribution networks, which operators are obliged to report in accordance with the Ordinance on optical fibre distribution net works.

Figure 2.44 Number of potential users of optical fibre distribution networks – notices of intent to build



The total number of potential users of optical fibre networks was 414,814 at the end of 2020, with the number of users increasing by 141,908 in 2020 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 2020, other operators made somewhat smaller investments in the construction of the optical fibre infrastructure than in the previous year, while the operator with significant market power was more focused on investments in the construction of new optical fibre distribution networks. Investments in rural and suburban areas are expected to increase in the forthcoming period, with the bulk of these investments to be financed from EU.

The role of HAKOM, as a public law body for physical planning and construction:

a) 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. P ursuant to the Physical Planning Act, HAKOM, as a public law body, regularly participates in the adoption of physical plans by issuing guidelines and opinions, which define the manner of networks' planning without restricting their development, taking particular care that requirements for the protection of public health, space and environment are met. In 2020, HAKOM issued 412 documents defining guidelines and requirements to be complied with during the development of physical plans of all levels. It also participated in public consultations about proposals for physical plans of all levels and issued 240 opinions concerning proposals for physical plans.

b) Defining special building conditions and issuing main project certificates

For interventions into space within the ECI zone and other associated facilities, as well as within the safety zones and the radio corridors of certain radio stations, HAKOM, in compliance with the Physical Planning Act and the Building Act establishes special conditions for construction and issues main project certificates. In 2020, special conditions for construction were established in 16,055 cases and 7,579 main project certificates were granted. HAKOM improved access to the e-Licences system, the e-Conference module of the Ministry of Physical Planning, Construction and State Assets (MPPCSA) in 2020, which has significantly shortened time limits and enabled transparency and financial savings in the process of submission of requests for the establishment of special conditions for construction and the issuing of main project certificates.

Table 2.3 Number of interventions into space

	2017	2018	2019	2020
Special conditions	8737	9748	12,060	16,055
main projects	8660	10,088	9648	7579

OVERVIEW OF REGULATORY MEASURES

The developments of new cost models marked 2020 and the first half of 2021. The models provide for determining all key wholesale prices at the real cost level and updating the costs of efficient operators. All operators in the market were thus to the largest possible extent enabled to compete with HT's offers to end-users. In addition to the mentioned projects, the analyses of relevant wholesale high-quality access markets were completed, i.e., the analyses primarily intended for business users. As concerns other regulatory activities, focusing on the resolution of regulatory disputes, HAKOM adopted decisions aimed at protecting operators with small market shares, striving to promote efficient market competition. There were numerous international activities (e.g. the drafting of a delegated act, roaming), which were conducted with a view to their most efficient implementation in the Croatian market.

Developing new cost models

HAKOM determines service prices based on its own cost models. Due to a high complexity of the model, the consulting agency Axon Partners Group Consulting was hired for the project Calculation of the costs and prices of services in the fixed network. The aim of the project is to develop a cost model for the fixed network and calculate the new prices of regulated wholesale services

in the markets of broadband internet access services intended for private[3] and business[4] users. The HAKOM's cost model is developed in accordance with the methodological principles set out in the Commission Recommendation 2013/466/EU, in particular the following ones: the relevant cost standard; the asset valuation method, the appropriate depreciation method, the treatment of operating costs, the network design method (network topology) and the total period modelled.

In February 2021, HAKOM adopted decisions for private users, that is the Decision on the market for wholesale local access provided at a fixed location (Market 3a), and the accompanying document for this market, as well as the Decision on the market for wholesale central access provided at a fixed location for mass-market products (Market 3b) and the accompanying document for this market. The adoption of the final decisions was preceded by public consultations held in the last quarter of 2020 (October/November) and the notification of the European Commission (January/February 2021), which confirmed the HAKOM's calculation of the new prices of regulated wholesale services. The new wholesale service prices had been planned to be defined by the end of 2020. However, as data delivery deadlines were prolonged in order to get as good quality data for model development as possible, the final decisions were adopted in the first quarter of 2021. The new prices based on the new cost models have been in effect since 1 April 2021.

Due to their complexity, decisions for business users could not be adopted in the same period as decisions for private users. Decision on the market for wholesale high-quality access provided at a fixed location (Market 4) and the market for wholesale trunk segments of leased lines (ex Market 14) and the accompanying document for these markets were adopted in June 2021 following the confirmation of the European Commission (EC).

Postponing the application of the new margin squeeze test methodology and updating efficient operator's costs

The purpose of the margin squeeze test methodology is to inform operators subject to the test and operators competing with them in the market of the HAKOM's method of verification of compliance with the obligation to conduct the margin squeeze test. The margin squeeze test under the new methodology (adopted in 2019) should have started to be applied to the existing packages on 1 April 2020. However, due to the circumstances caused by the COVID-19 pandemic, the application of the new Methodology to tariff packages offered to end-users was in March postponed to 1 January 2021. The new methodology applicable to new packages has been in effect since 1 January 2020.

The purpose of the margin squeeze test (MST) is to ensure a sufficient economic space between the wholesale and the retail price of the dominant (SMP) operator in order to enable other operators to compete efficiently in the retail market. Should the test requirements not be met, competitors would not be able to operate profitably based on wholesale services, which could result in the deterioration of market competition and "market closure". In order to ensure a sufficient economic space, the costs of the efficient operator should be updated in an appropriate manner.

Since HAKOM defined new wholesale prices on the basis of the new cost model, a full (positive) effect on the further development of market competition can be achieved only if the own network costs of the efficient operator[5] for the provision of the broadband internet access and IPTV services as well as the retail and common costs of the efficient operator, updated in November 2020[6] , are updated in parallel with the new cost model. The consulting agency Axon Partners Group Consulting was hired for this project too.

The adjustment of the new cost model to the characteristics of the efficient operator was completed in March 2021 and all the new calculations of own network costs as well as of retail and common costs updated in November 2020 were incorporated in the MST model. Operators with significant market power (HT, Optima and Iskon) were thus prevented from offering bundled services that other operators in the market could not compete with. Dominant (SMP) operators had to change or withdraw from the market all bundled services without a sufficient margin.

Analyses of relevant markets

Two analyses of the relevant market for wholesale high-quality access were completed in 2020. These are retail markets primarily providing the broadband internet access service to business users. Additionally, retail high-quality access services can be used for the deployment of virtual private networks (VPN), which enable private users to connect various branch offices, including data centres, for the purpose of exchanging data and accessing business applications. High-quality access services are also very important at the wholesale level as they enable operators to: (a) connect their own network segments; (b) construct (upgrade) their own fixed networks and (c)

[3] Commission Recommendation on relevant markets – the market for wholesale local access provided at a fixed location (Market 3a) and the market for wholesale central access provided at a fixed location for mass-market products (Market 3b).

[4] Commission Recommendation on relevant markets – the market for wholesale high-quality access at a fixed location (Market 4) and the market for wholesale trunk segments of leased lines (ex Market 14).

[5] Own network costs include the cost of the modem, the cost of the set up box, the cost of the IPTV platform and the cost of the IPTV content.

[6] Retail and common costs include collection costs, marketing costs, user care costs, sales costs and common costs.

connect base stations, which is carried out by the mobile communications network operator. An analysis of the market for wholesale high-quality access at a fixed location detected a number of services offered in the market on a commercial basis, which leads to the conclusion that the protection of market competition was not completely achieved as not all operators were able to use services under equal conditions. HAKOM therefore instructed HT, as the dominant operator, to declare the conditions for the provision of all services previously provided on a commercial basis in the standard offer. This resulted in raising the level of protection of market competition.

In relation to the previous analysis of the market for the wholesale trunk segments of high-quality access services, in the new analysis HAKOM included the dark fibre service, which is in increasingly high demand in the market. This market was also for the first time divided into competitive relations and non-competitive relations, which means that HAKOM designated the settlements towards which the lines of the trunk segments of high-quality access services were established, that is, the settlements for which there are conditions for efficient market competition even without regulation, while all other settlements need to be regulated.

HAKOM ensures that all regulatory obligations are reasonable and justified. As HT is discarding the obsolete SDH/PDH technologies, the obligation to provide these specific services to other operators in the market is not prescribed in either of the two high-quality access markets.

An analysis of operator retail tariff packages – highlights

As regards regulatory obligations, every year HAKOM pays special attention to the implementation of the margin squeeze test. Although the application of the new methodology to existing packages was postponed due to the COVID-19 pandemic from 1 April 2020 to 1 January 2021, HAKOM continued to monitor all tariff packages of the HT Group offered in the market. Due to the fact that the assumptions of the new methodology differ from those applied in the old methodology, all three operators of the HT Group (HT, Optima and Iskon) had to withdraw from the market all packages that did not comply with the new assumptions. In such a way, only those packages that other operators can compete with remained on the

Other regulatory activities

In late 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 set the prices of these services on the basis of its own cost model. The main aims of the delegated act are as follows: (a) achieving full harmonisation at the EU level for these services, which is to accelerate the development of the EU single market and reduce trade barriers between Member States; and (b) reducing administrative barriers for regulatory authorities by exempting them of the obligation to develop their own cost models.

The act comes into force on 1 July 2021. The EC had previously set up an informal working group of Member States for the purpose of cooperation on the drafting of the mentioned document. The HR was in this group represented by HAKOM, which took care that all open issues of Croatian operators should be appropriately resolved. The price for mobile networks in Croatia is HRK 0.045/min in 2020, while the single rate, which comes into effect on 1 January 2024, will amount to EUR 0.2 cent/min or about HRK 0.015/min. The price for fixed networks is HRK 0.0071/min, while the single rate, which comes into effect on 1 January 2022, will amount to EUR 0.07 cent/min or about HRK 0.0053/min.The implementation of obligations arising from the Roaming Regulation and the Regulation on limiting the prices of international calls continued to be monitored. Pursuant to the Roaming Regulation, as of 15 July 2017 all users have been allowed to make roaming calls within the EU/EEA at home prices, while the Regulation on limiting the prices of international calls on 15 May 2019 provided for lower prices of international calls to the EU/EEA, setting the maximum price caps.After roaming regulation ceased to apply in June 2020, the EC sent questionnaires to all regulatory authorities on the review and prolongation of roaming regulation, with a focus on questions regarding potential areas of improvement. The EC conducted public consultations in the period from 19 June to 11 September 2020 in order to collect information for the impact assessment of the EC legislative proposal to revise the Roaming Regulation and learn the views of national regulatory authorities on retail and wholesale roaming services and the impact of prolongation of these rules. The EC published a summary report presenting preliminary trends derived from the collected data, focusing on the quantitative aspects of consultation replies.

In June 2017, the Croatian Competition Agency (CCA) issued a decision on the partial annulment of the HT-Optima decision and a decision according to which the Optima and H1 concentration was assessed as conditionally approved. Based on this decision, at the end of January 2020, HT initiated the procedure of selling Optima' shares; under the same decision, the management rights of HT over Optima cease no later than by 10 July 2021.As Optima was not sold in 2020, HAKOM continued to provide its expert opinion on the opinion of the Trustee (Deloitte d.o.o.). Accordingly, an opinion on the fifth and sixth semi-annual report of the Trustee was provided in July and November 2020 respectively. In principle, there were no comments on any of the two reports, but attention was drawn to certain important activities, such as the fact that Optima continued to invest extensively in the (outdated) copper access network, rather than in the optical fibre access network, which would enable it to meet the needs of end-users for higher

speeds and better service quality. In addition, in both reports HAKOM emphasises the importance of monitoring Optima's user base as its quality is very important in the sales process. The sale of Optima should be completed until 10 July 2021. In February 2020, HAKOM received a request from Optima that, in order for the sale to be facilitated, it be exempted from the MST obligation, i.e., from the obligation that its packages offered to end-users should meet the criteria defined by the margin squeeze test. In April 2020, HAKOM replied to Optima, informing it that its request was not granted due to uncertainties surrounding the realisation of the sale and the fact that, in case Optima was sold, an entity not controlled by HT would anyway be exempted from the obligation to carry out the test.

In June 2021, HAKOM adopted a final decision, that is, completed 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), started in October 2020. The final decision was preceded by the notification of the EC, which conformed the planned direction for the HAKOM's final decision (May 2021), and public consultations were held. Prior to the amendments, the Standard offer defined the service of access to the passive optical access network at the location of distribution node for optical distribution networks as being intended only for the provision of retail services to end-users and not being allowed to be resold or used for the installation of active equipment, i.e., for the implementation of the operator-user's network node. The procedure was launched as it became necessary to additionally regulate equal competition in the market.

Regulatory disputes of operators

July 2020 saw the resolution of a regulatory dispute between HT and the Net-Connect operator, initiated over the collection of invoices for the services of termination of voice calls in HT's mobile and fixed networks. The key issue that HAKOM had to resolve was the limitation period, as HT's debt depended on its length. In this procedure HAKOM accepted the interpretation that a one-year limitation period applied to telephone claims services between traders even in the cases when these traders are also the operators of electronic communications services offering each other the voice call termination service, because a longer limitation period enables the operator with a stronger market position to accumulate disputable invoices up to the amount that can jeopardise the existence of the weaker operator. Furthermore, in April 2021 a regulatory dispute between HT and Terrakom related to IP connection, launched in 2020, was resolved.

Furthermore, in April 2021 a regulatory dispute between HT and Terrakom related to IP connection, launched in 2020, was resolved.

Annual Report – an overview of the violations of the regulatory

In 2020, some verifications were made of HT's offers in the market, in terms of whether certain packages were offered in line with data submitted to HAKOM for the purposes of the margin squeeze test. Irregularities were observed only in one case. In October 2020, a procedure was initiated against HT to establish its actions related to the difference in the price of the MAXtv To Go service when contracted by the users of HT's fixed public electronic communications network and when contracted by the users of other networks, which was not submitted to HAKOM for testing. HT corrected its operations. It should be noted that no damage would have been incurred as these packages would have had to be withdrawn by 1 January 2021 in case they had failed the margin squeeze test. The inspection supervision procedure was therefore terminated. In December 2020, an inspection supervision procedure was initiated against HT to verify the compliance of the Standard offer of Hrvatski Telekom d.d. for the wholesale internet access service in the part related to an operator- user's switching via the B 2B service from the standard profile to the appropriate fault repair profile and vice versa. The procedure was completed by an enforcement decision in 2021.

Historical analysis of the efficiency of regulatory obligations

As concerns the historical analysis of the efficiency of regulatory obligations, an analysis was made, for internal purposes, of the possibility to introduce additional regulatory obligations. It was concluded that HAKOM would in 2021 carry out an analysis of reports on the main efficiency indicators in regulated wholesale markets and inspection supervisions of reporting on the main efficiency indicators. These will be accompanied by targeted inspection supervisions, aimed at establishing whether HT complies with regulatory obligations imposed to it in regulated wholesale markets. The reports on inspection supervision findings and the analysis of reports on the main efficiency indicators will feed into decision-making on regulatory obligations, which will be imposed to HT in the following analyses of relevant markets. It was concluded that the following analyses of relevant markets should examine the proportionality of providing relevant wholesale products in accordance with the equivalence of input (EOI) model.

INSPECTION ACTIVITIES

HAKOM is competent for inspection activities in the field of electronic communications in the HR, as well as in the fields of postal services and rail passengers' rights. Inspection supervisions are always conducted in accordance with the principles of proportionality and appropriateness,

while the areas of focus we re primarily defined in the Annual Work Programme. The year 2020 saw 90 inspection supervisions, one misdemeanour proceedings and one charge. Inspection supervisions were initiated based on complaints lodged by users/operators or ex officio. Part of the activities were 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, unsolicited communication, the timely payment of fees to users and network neutrality. All inspection decisions are published and available on HAKO M's website.

Inspection activities related to user rights and the obligations of electronic communications operators were performed for all operators with significant market shares: A1, HT, Telemach, Iskon and Optima. In addition, strengthened controls were carried out of the execution of new rights of end-users, prescribed by am endments to the Ordinance on the manne r and conditions for t he provision of electronic communications networks and services, and especially of compliance with rules applied when concluding contracts remotely and outside business premises as well as when porting numbers and switching operators. The specific complaints of natural or legal persons provided a basis for the resolution of issues related to the untimely elimination of breakdowns, the destruction of and damage to cables by third parties, the provision of low-quality service, the construction works done and damage incurred, the provision of universal service, the shortening of subscriber loop, the elimination of the causes of interference from electromagnetic emissions, the use of the master antenna system The inspection supervisions of HT's aggregation and access networks also continued, with a focus on Krapina-Zagorje County, Varaždin County, Međimurje County and Karlovac County, where equipment was inspected in 19 important hubs and 10 access networks were examined. The inspection supervisions of part of aggregation rings in the territories of these counties was carried out. 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. A decision was adopted for Sisak-Moslavina County for a number of activities to be carried out in order to improve the reliability and availability of networks and compliance with previous decisions was verified. Controls were performed in 18 facilities and 19 access networks, establishing 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.

A large number of controls dealt with establishing facts in relation to the enforcement of the HAKOM's decision in Lika-Senj County, Split-Dalmatia County and Istria County. Pursuant to the decision, HT was instructed to record, within the set deadlines, the occupancy of the existing manholes for its own cables and the cables of operators-users for which it concluded contracts on the shared use of cable ducts, and to enter the data in the online base. In the areas of the three mentioned counties, more than 150 manholes were inspected and it was established that the process was developing well and in line with the dynamics and terms defined in the decision.
The procedures of regulating property-law relations of infrastructure operators of local self-government units included four inspection supervision procedures initiated for failure to comply with the HAKOM's decision. Three procedures were completed (Vis City, Bistra Municipality, Pašman Municipality), while one is ongoing (Dugopolje Municipality).

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.

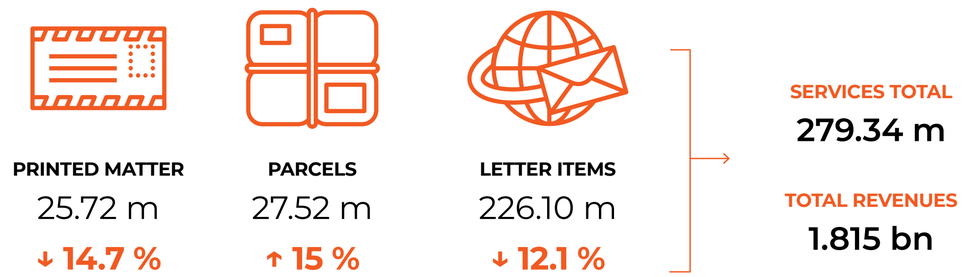
Inspection activities were partly related to regulatory disputes between operators or between operators and local self-government units. A large number of on-site evaluations, meetings and discussion was performed and the enforcement of decisions was verified.
In the course of regular controls and supervision of the radiofrequency spectrum, once measurements had been taken and irregularities detected, three inspection supervisions were carried out.

03

POSTAL SERVICES

The situation and developments in the Croatian postal services market in 2020 were strongly affected by the pandemic caused by the SARS-CoV-2 virus, as well as by the natural disasters that struck some parts of the HR creating the need for a fast adjustment of the usual operations to new circumstances. The consequence of these events was a partial lockdown of the economy with direct impact on demand for postal services, as well as on the change in the very structure of postal services. During this period, it came to occasional difficulties in postal traffic; from limited office hours of postal offices, changes to the usual way postal services are carried out, decline in the quality of postal services, reflected primarily in extended deadlines of transfer and delivery in domestic, and even more pronounced, in international postal traffic, to short interruptions of international postal traffic with individual countries. However, all postal services providers reacted promptly, adjusting to new circumstances and challenges in the market and the region. As a result, the provision of postal services in the HR was never put into question. To the contrary, postal traffic continued to flow throughout the year.

Figure 3.1 Basic information on postal services market



MARKET OVERVIEW

As a result of the pandemic and natural disasters, the postal services market in the HR faced a very challenging situation in 2020. The decline in economic activity decreased demand for some postal services, while epidemiological restrictions associated with shopping in person spurred demand and growth in other postal services - parcels. In addition, the growth and development of the postal services market across the EU and in Croatia as well, has been greatly impacted by services connected to e-communications, which have been increasingly substituting traditional written communication. This became particularly pronounced during the pandemic. As a result, traditional, but other postal services as well, remain under the constant pressure of change.

The result is the emergence of new business models in the provision of postal services that new and innovative postal services are offered to users of postal services.
The total number of postal services declined in 2020, primarily due to a lower number of letter items and printed matter. At the same time, the number of parcels grew, as it has been for several years in succession thanks to the growth of services associated with e-trade. According to the results of surveys conducted by e-traders in the HR, 40 percent more of Croatian citizens engaged in online shopping than in the year before. The growth in the number of parcels could not compensate for the decrease in the number of other types of postal services but it resulted in the increase of the share of parcels in the total market. This is in line with trends in the EU markets, with the pandemic only accelerating the observed processes.

The impact of the pandemic is visible in international traffic as well, where in contrast to the previous year the total number of services decreased, leading to the reduction of the share of international traffic in total postal traffic. Namely, throughout the year cross-border traffic faced certain disruptions and delays, and occasionally it even came to a complete interruption of traffic with individual countries. However, individual end-of-year indicators show that it came to a partial normalisation of cross-border traffic, which will increase the number of services in international traffic in the future and its share in total traffic.

The postal services market is expected to recover in the upcoming period, which will surely contribute to a higher number of realised services. However, according to forecasts they will not reach previous figures.

The decrease in total services did not seriously affect realised revenues, which remained almost the same as in the previous year. This is the result of a higher number of parcel services, that is, services with higher added value, which are more expensive, so their revenues neutralised the fall in revenues generated by decreased number of other services. It is expected that in order to achieve further growth postal services providers will direct their operation and development towards services with higher added value that will completely suit different user requirements. Such assumptions are realistic given that opportunities provided within the framework of e-trade have not yet reached their full potential in the HR. This is also confirmed by the fact that new providers appear in the postal services market that see an opportunity to achieve their business objectives through the products they offer.

Providers in the postal services market

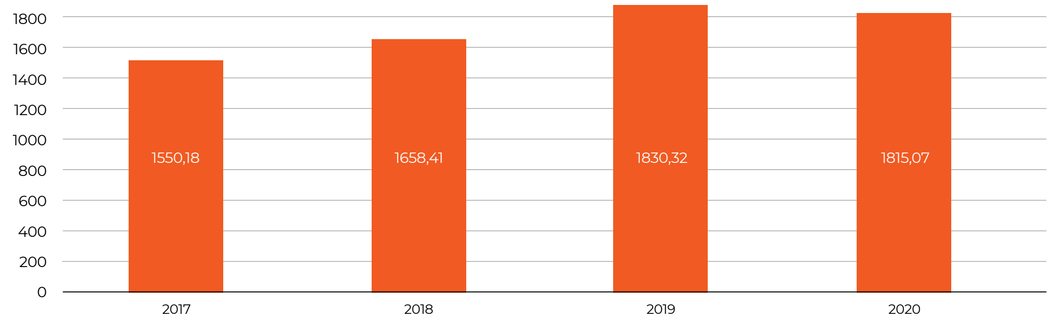
There was total of 23 providers in the postal services market at the end of 2020, two more than

in the previous year. In the course of the year an application for the provision of postal services was submitted by three new providers, while one provider was, in accordance with the Postal Services Act (PSA) deleted from the Register of providers because it did not provide the registered services for a period longer than one year. Of the new service providers in the market, two registered for the provision of interchangeable postal services and one for the provision of other postal services. The emergence of new providers in the market indicates that there is still room for new providers who with their innovative services may spur demand and an increase in their number. Pursuant to the PSA, the provider of postal services, HP-Hrvatska pošta d. d. (HP), is the only provider that has the right and the obligation to provide the universal postal service, for a period of 15 years. In addition to the universal service, HP also provides interchangeable and other postal services and is the largest provider on the market. It is noteworthy that through its post office network HP also provides other non-postal services (financial services, sale of goods, etc.), including services it is not obligated to provide within the framework of the universal service because these are services available in the free market that can be provided by others as well. As for other registered postal services providers, 19 were registered to provide other postal services, including three that also exclusively provided interchangeable postal services. Several groups that provide their services in the market also operate in the global and regional postal services markets (DHL, DPD, Fedex, UPS, GLS, Intereuropa and others) either through their own networks as notified providers or in partnership with other providers in the HR. Slightly more than a half of providers, 12 of them, provided their services both in domestic and in international traffic, while 11 provided their services only in domestic traffic. At the end of 2020, all postal services providers employed 11,727 workers providing exclusively postal services, some one percent less than at the end of 2019.

Revenues from the provision of postal services

Revenues from the provision of postal services in 2020 remained almost unchanged from the previous year, although the total number of services drastically decreased. This was primarily a result of the increased number of parcel services, that is, services of higher value (services with added value), the revenues from which managed to neutralise the reduction in revenues from letter items that resulted from fewer of these services. In total, generated revenues stood at HRK 1,815,073,049, some HRK 15.2m less than in the previous year, which was a fall of 0.8 percent.

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

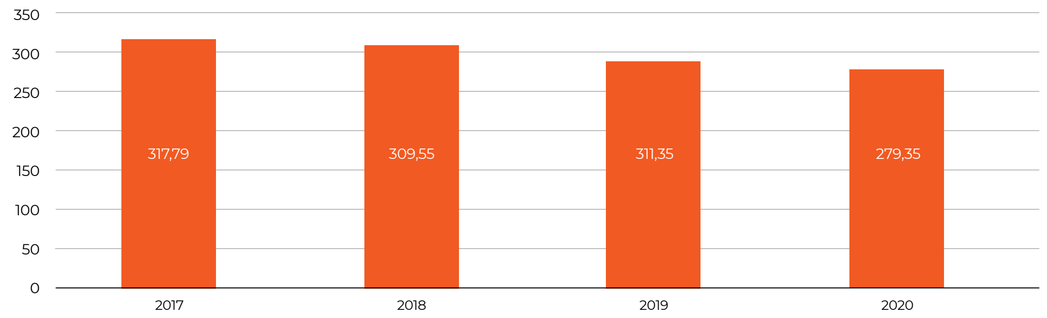


In comparison with the previous year, HP's revenues decreased by eight percent, while the revenues of other providers increase by approximately 15 percent. By increasing their revenues by some HRK 86m other providers increased their share in the total market by five percent so their share in revenues realised in 2020 totalled 36.5 percent. Other providers derive the bulk of their revenues from the provision of "added-value" services within other postal services, in contrast with HP, which derives the largest share of its revenues from the provision of "traditional" postal services within the universal service. This trend is expected to continue in the upcoming period, with the increase in revenues from services with added value and fall in revenues from "traditional" postal services. It is evident that soon these revenues are expected not only to be equalised, but the share of added-value services is expected to surpass the traditional.

POSTAL SERVICES

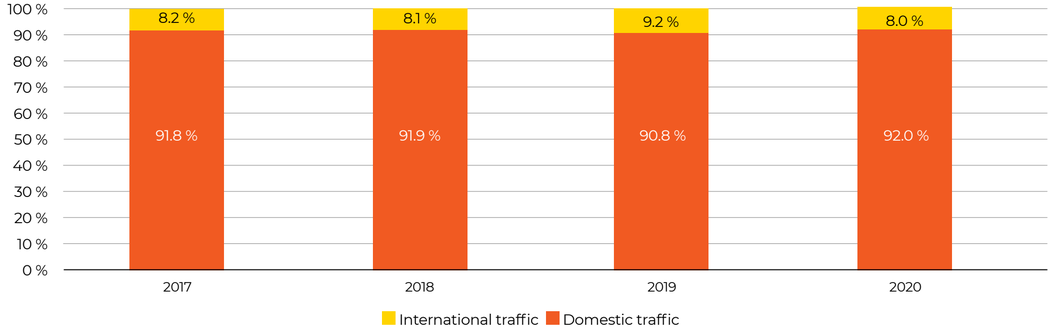
In the past several years, except in 2019, the total number of postal services was in constant decline. The year 2020 was no exception, with the same trends being observed in markets of other EU Member States because certain postal services have been increasingly replaced by more modern ways of communication. An additional contribution to this fall came from the reduction in demand for (primarily) letter items, caused by the pandemic. A total of 279,345,060 postal services were realised, some 10.3 percent less than in the previous year, which was the largest decrease in the number of these services in the past several years. It is expected that in the upcoming period the market will recover to an extent and that the number of services will increase. However, it will never again reach pre-pandemic levels.

Figure 3.3 Total number of postal services (in million)



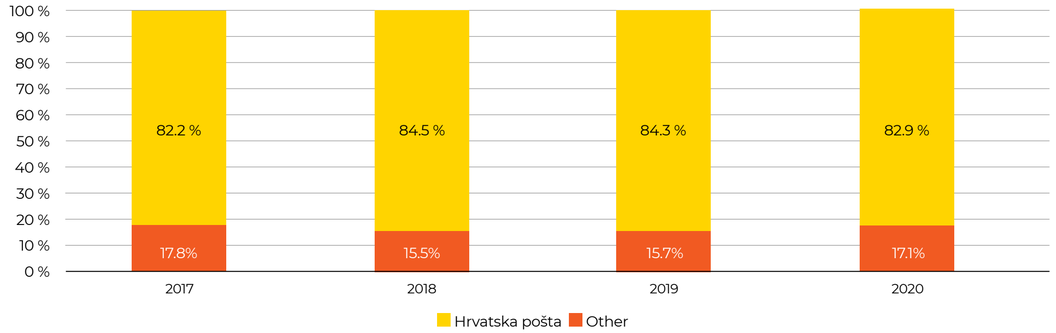
The negative impact of the pandemic was even more reflected in cross-border postal traffic. Primarily in the form of certain disruptions and delays and at one point even complete interruption, especially with certain countries. This resulted in fewer services in international traffic, so a total of 22.4 million services was realised in 2020, some 21 percent less than in the previous year. The share of international traffic at the end of 2020 was eight percent, while a year earlier it was one percent higher. Quarterly market indicators show that it came to a partial normalisation of cross-border traffic at the end of 2020, which resulted in the increase in the number of services from the previous periods. It is realistic to expect that this upward trend will continue in the upcoming period.

Figure 3.4 Shares of postal services by types of traffic



HP is the largest postal services provider that accounted for a share of 82.9 percent in the total postal services market in 2020 with a total of 231.7 million provided services, slightly less than in the previous two years.

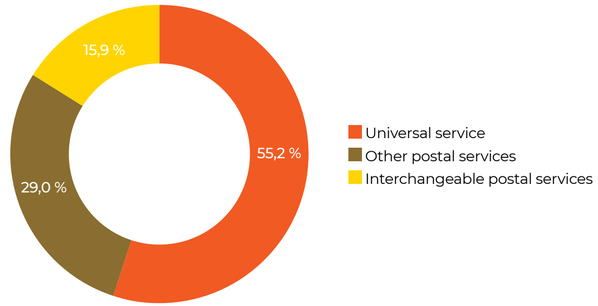
Figure 3.5 Provider market shares by the number of services



It is worth noting that the total number of services provided by HP and other providers decreased from 2019, with the decrease recorded by HP being somewhat more pronounced (some 12 percent), primarily in the number of letter items.

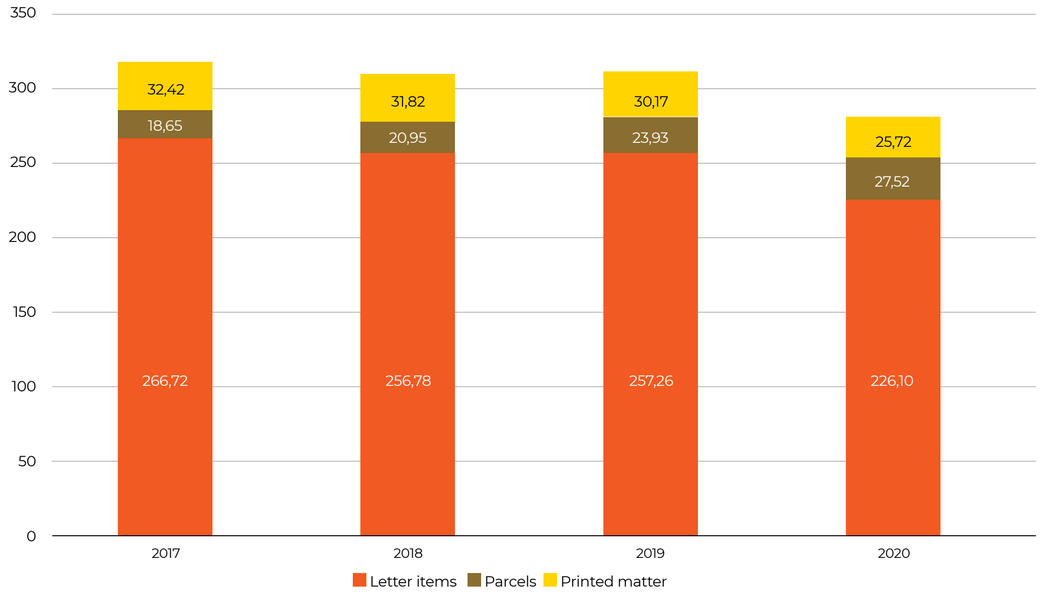
The universal service, with a share of 55.2 percent, continues to account for the highest share in total postal services. This share decreased by 6.5 percent from the previous year. Other postal services followed by the size of their share with 29 percent, while interchangeable postal services accounted for the smallest share of some 16 percent.

Figure 3.6 Shares of types of postal services



Disruptions in the postal market in 2020 were also visible with regard to demand for different types of services. As a result of the decrease in economic activity, demand for letter items and printed matter decreased but epidemiological restrictions on physical shopping contributed to greater e-trade. This resulted in delivery of purchased items through providers of postal services, i.e. in an increase in the number of parcels. Similar trends were observed across the EU, with the pandemic only accelerating certain processes. The number of letter items decreased by 12.1 percent from 2019 and the number of pieces of printed matter by some 15 percent, while the number of parcels increased by 15 percent. The increase in the number of parcels also raised their share in the total market to some 10 percent, up 2.2 percent from the previous year and the highest share of parcels to date. Parcel traffic will undoubtedly grow in the upcoming year due to the expected increase in the volume of e-trade, which currently registers two-digit growth rates without even reaching its full potential in the HR.

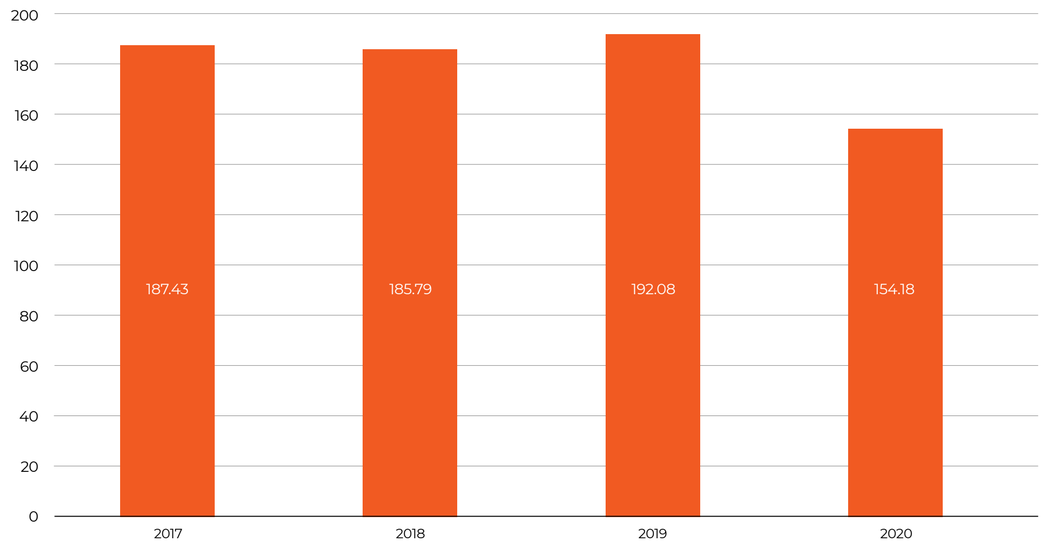
Figure 3.7 Number of postal items by type (in million)



Universal service

The universal service is a set of different postal services and it 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 of up to 20 kilograms in international inbound traffic. The provision of universal service is in the interest of the HR. In addition to the certain standard of quality it must be available to users of postal services throughout the territory of the HR under same conditions. Pursuant to the PSA, only HP has the right and the obligation to provide the universal service in the HR. In 2020, HP realised a total of 154.176.575 these services, down 20 percent on the previous year. The fall was predominantly a result of the pandemic in 2020 and the "spillover" of these services to the scope of interchangeable postal services, and lastly of the trend of written communications being substituted by more modern means of communication.

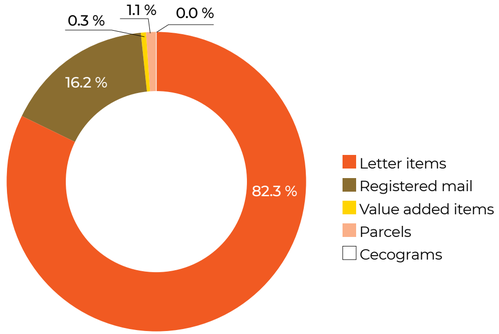
Figure 3.8 Total number of services within the scope of universal service



In the postal services market, the universal service accounted for some 55.2 percent of total services, which was a decrease of 6.5 percent from 2019 and the smallest share of these services thus far. The lower number of provided universal services also had an impact on revenues, which totalled HRK 797.2m, down 13.8 percent from the previous year.

Letter items accounted for the highest share in the universal service, of 82.3 percent, down by approximately one percent from the previous year, followed by registered mail items and an almost neglectable number of cecograms.

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



The universal service will undoubtedly continue to play its role in communication, especially due to its affordability and availability in the entire territory of the HR. However, it is clear that with time the importance of this service will diminish, making way to more modern ways of communication.

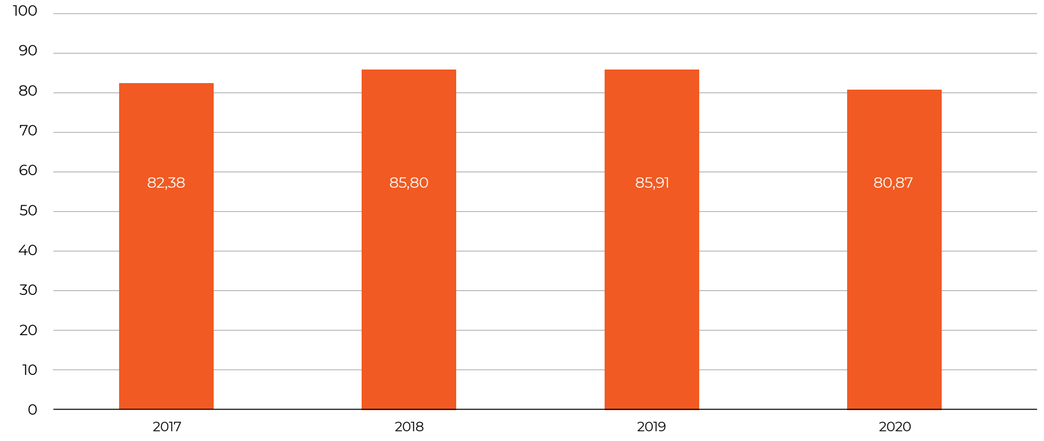
A share of services from the scope of the universal service was realised within the scope of interchangeable postal services[7] . In addition to HP, as the universal service provider, six more postal services providers provided such services in 2020. In contrast to previous years, when interchangeable postal services were in decline, 2020 registered an increase due to the earlier mentioned “spilover” of certain services from the scope of the universal service. A total of 44,297,691 of interchangeable services were realised, which is by a third less than in the previous year. Interchangeable postal services ended 2020, with a share of 16 percent in the total postal services market, some five percent more than in the previous year. Greater number of services also affected revenues which totalled HRK 101m and were 46 higher than in the previous year. In the upcoming period, the number of interchangeable postal services is expected to continue to grow since HAKOM initiated changes in the access to the postal network of the universal service provider which will spur demand for such services.

Other postal services

Other postal services are those services not included in the universal service or interchangeable postal services but are connected with basic postal services (letters and parcels) which also have some added value. These are so-called express parcels, printed matter and direct mail[8]. This market segment enables providers of postal services to offer users services best tailored to their needs and requirements. This primarily includes new modalities in providing services related to e-trade and having some new added value. As a result, providers have an opportunity for further growth and for increasing their revenues, especially given the fact that demand for services within the scope of e-trade and services with added value has been growing year after year. As a result, competition in this segment is the most intense considering that almost all registered providers in the market provide these services, with most of them providing exclusively other postal services.

A total of 80,870,794 of other postal services were realised, some six percent less than in the previous year.

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

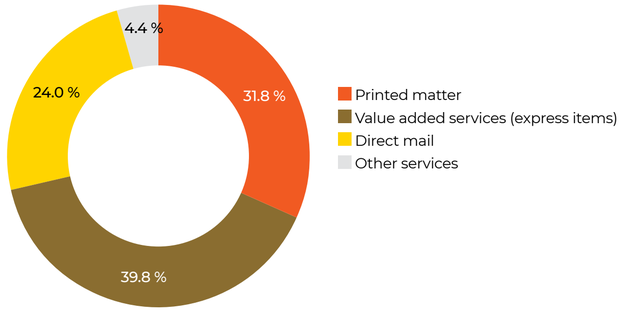


[7] Postal services from the scope of universal service, which may deviate from the conditions of universal service, such as the obligatoiobnli tgoat iporonv toid e daily delivery or the obligation to provide services in the entire territory of the country but may from the user standpoint be viewed as being within the scope of universal service because they are sufficiently interchangeable with the universal service.

[8] Direct mail – a postal item consisting solely of advertising, marketing or publicity material and comprising an identical except mesfor sthagee , 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.

The decrease in the total number of other postal services also led to some changes in the structure of provided services, continuing the trend of previous years in 2020. The share of express parcels increased 6.6 from the previous year, and the share of printed matter, direct mail and other services decreased.

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 to HRK 916.9m, up almost 10 percent than in the previous year and continuing the trend observed in the past several years. The share of revenues generated from postal services in total postal revenues increased from 2019 as well, by some five percent. All this contributed to revenues from the provision of other postal services exceeding revenues from the universal service for the first time ever, accounting for more than a half of total postal revenues (50.5 percent), although quantity-wise their share was only 29 percent of total market services. This corroborates earlier statements regarding services with value added, primarily services connected with e-trade, which give providers the opportunity of increasing their revenues regardless of having smaller shares of the total market. This can be confirmed by the fact that value-added services generate some 44 percent of total revenues. Their share in revenues increasing by some 6 percent in 2020. The positive trends of the growth of value-added services, and consequently increased total revenues, are expected going forward considering that the full potential for deliveries within the scope of e-trade has not been used yet.

REGULATORY ACTIVITIES

HAKOM's regulatory activities in 2020 were impacted by extraordinary circumstances caused by the pandemic and natural disasters and were carried out on two parallel tracks. On one, operating activities were carried out in accordance with the annual work programme, while on the other activities took place that were directed at tackling unplanned events associated with the consequences of the pandemic and the earthquake. They both had the same objective, continued and sustainable provision of postal services and further development of the postal market in the HR. Under such circumstances, the focus was on ensuring the provision of universal service in the entire territory of the RH and on the protection of the rights of users.

In accordance with the annual work programme several regulations were drafted and adopted, among which stress should be laid on the Instructions on acc ounting separation and cost accounting and the Decision establishing the amount of compensation for net cost arising from the provision of universal service that represented unfair burden in 2019. A procedure was carried out establishing the accessibility and cost orientation price of universal service that enables the sustainability and the development of the universal service, regulation was drafted on the price cap for four most frequent letter items in the 2020 – 2022. Aiming at further liberalisation of the letter segment of the postal market, but also at the sustainability of universal service provision, a public consultation was initiated on amendments to the Ordinance on the performance of the universal service, as well as the project of the regulation of prices for access to the postal network of the public operator. The collection and analysis of data obtained from provides of postal services continued, aimed at monitoring the situation in and the development of the postal market in the RH. Additional data were also collected to ensure the most precise possible overview of the consequences of the pandemic and, where necessary, proactive measures.

Reports of new postal services providers were received regularly and were harmonised with the provisions of the PSA, as well as general terms and conditions of postal services providers when there were changes in their operations. Special attention was directed to resolving user disputes, 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, associations and one provider.

Regulatory and operational commitments related to the implementation of international regulations were honoured in time and an analysis and assessment of individual prices of the universal service was conducted in accordance with Regulation on cross-border parcel delivery services. It was delivered to the EC and published on its website. Cooperation was continued with the ERPG and the EC regarding the preparations for the decision on the possible adoption of new

postal directive, but also regarding reforms of the Universal Postal Union, its reorganisation and opening towards new stakeholders. Additional contribution was reflected in cooperation and continued reporting on the situation in the single postal market resulting from the changes in the way postal services were performed caused by consequences of the pandemic and the earthquake.

Numerous extraordinary activities were carried out as a result of unforeseen events, starting from coordination between the Crisis Management Committee and postal services providers, aimed uninterrupted provision of postal services during lockdown, through monitoring and notification of users as regards temporary changes in the provision of postal services (for instance, as regards changes in the manner of delivery, working hours of postal offices, etc.) and disturbances in international postal traffic to extraordinary inspections caused by exceeded deadlines in the transfer of postal items.

Instructions on accounting separation and cost accounting

In order to improve the model of separated cost accounting in the segment of the calculation methodology of the universal service cost calculation, a project was launched in the fourth quarter of 2019 that resulted in the adoption of the Decision by HAKOM's Council in March, pursuant to which the provider of universal service HP applies accounting separation in the manner and within the time limits set forth in the Instructions on accounting separation and cost accounting. The adoption of the Decision on the adoption of Instructions on accounting separation and cost accounting was preceded by public consultations in February 2020.

The Instructions yield more detailed and more precise data on cost and income distribution by individual activity and service and enable the fulfilment of basic regulatory tasks, which primarily relates to control and prevention of unpermitted spillover of costs between regulated and unregulated services from the HP's portfolio, as well as efficient monitoring of the profitability of individual products and services.

Accounting separation (Regulatory report)

In June 2020, HP submitted the Regulatory Financial Statement (RFS) for 2019 together with the associated documentation. It was compiled in accordance with the Instructions. Pursuant to the provisions of Article 47 of the PSA, HAKOM initiated the procedure of the credibility check of accounting separation of revenues expenses of the said provider of the universal service, which includes audit by an independent body. The audit company BDO Croatia d.o.o. (BDO) that was selected in public procurement procedure, audited the RFS for 2019 and in June 2020 concluded that HP's RFS for 2019 was prepared in accordance with the Instructions and in line with cost accounting documentation.

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 2019 complies with all prescribed requirements by its form, content and methodology.

Universal service provider's net cost

At the end of June 2020, HAKOM received the Request for the reimbursement of the cost of an unfair financial burden (net cost) in 2019 arising from its obligation to provide the universal service. The Request was submitted by the provider of the universal service HP pursuant to Article 48 of the PSA. Enclosed to the Request was the Commercial scenario and the 2019 net cost calculation for 2019. Pursuant to HP's documentation, the difference in HP's financial results that included the obligation to provide the universal service and without it would amount to HRK 106,982,571, which according to HP's claims was the amount of net cost of universal service for 2019.

In cooperation with the independent audit company BDO, HAKOM undertook to verify the accuracy of the calculation submitted together with HP's Request. The elements of the net cost calculation were discussed in a series of workshops with the representatives of BDO and HP, where it was established that the actual net cost instead of the amount of HRK 106,982,571 stipulated in HP's request totalled HRK 92,845,875. This was HRK 14,136,696 less than stated in the request. A Decision establishing that the amount of HRK 92,845,875 represented an unfair financial burden was adopted in October.

Universal service prices

For the purpose of implementing Article 46 of the PSA, HAKOM ex officio carried out the procedure of establishing the accessibility and cost orientation of the price of universal service provided by the service provider HP.

In November 2016, HAKOM adopted the document Creation and introduction of methodology for regulation of universal service prices for the period 2017 – 2019, describing the main parameters of the price cap method and the criteria for the implementation of the said methodology. Since the

existing methodology defined the regulatory period to which the price cap method was applied from 1 January 2017 to 31 December 2019, in September 2019 HAKOM started the analysis of the amendment of the existing methodology for the purpose of extending the ex-ante regulation of universal service prices.

Based on the analysis, the existing methodology was amended in the part of establishing the new regulatory period from 15 March 2020 to 31 December 2022, during which the following will apply: price cap, the new period for reviewing Opex and Capex projections, the value of the consumer price index and the new discounted rate. Other methodology criteria remained unchanged.

Considering that the "price cap method" proved to be an efficient tool for regulating the universal service price, HAKOM created the document Methodology for the regulation of prices of universal postal services (the Method ol ogy) in orde r to lay down basic rules and the criteria for the new regulatory period 2020 - 2022. The Methodology served as the basis for the new Calculation of the price caps for the universal postal service in the period from 2020 to 2022.

In March 2020, HAKOM adopted the Decision setting the highest permissible average weighted price increase from the current HP's Tariffs of 6.17 percent for a basket of services from the scope of the universal service, which consists of a letter of up to 50 grams in domestic and international traffic and a registered letter or parcel of up to 50 rams in domestic and international traffic. The price cap is set for the period from 12 March 2020 to 31 December 2022. The permitted price adjustment relates to nominal prices from the applicable HP Tariffs in domestic and international traffic for universal services from the basket.

In accordance with the Decision, as of 1 September 2020 HP started applying the new price for the service from the basket of services "Letter up to 50 g – domestic traffic", now totalling HRK 3.30 (previously HRK 3.10). In addition to this change, as of the beginning of September, HP also started applying new prices for postal services in domestic traffic from the scope of the universal service, in particular for: postcards (new price HRK 3.30), IBRS postcard (HRK 3.30), IBRS/CCRI letter up to 50 grams (HRK 3.30), parcels of up to 10 kilograms (increase in price of HRK 5.00 for each weight rate), optional service of return receipt (HRK 3.30); consequently the price of delivery of judicial documents increased by HRK 0.20 for each weight rate as a correction of price due to the increase in the price of return receipt. This increase in the price of the universal service "Letter of up to 50 grams – domestic traffic" from HRK 3.10 to HRK 3.30 is the first price change since 2010.
An audit of the divergence of key parameters that affect the calculation of the price cap was carried out in December 2020, pursuant to the Decision and based on audited data for 2019, establishing that it is not necessary to adjust the highest permitted average weighted increase in prices of 6.17 for a basket of services from the scope of universal service.

Regulation (EU) 2018/644 on cross-border parcel delivery services

Ensuring the transposition of Regul ation (EU) 2018/644 of the European Parlia ment and of the Council on cross-border parcel delivery services and of the Commission Implementing Regulation (EU) 2018/1263 of 20 September 2018 establishing the forms for the submission of information by parcel delivery service providers pursuant to Regulation (EU) 2018/644 into national frameworks, includes, among other things, new tasks and obligations for regulatory authorities, but also for providers of postal services. The Regulation is in force since May 2018, aiming to remove barriers in cross-border parcel delivery services, i.e. ensuring all advantages of a single European market to domestic consumers and entrepreneurs. One of its objectives is also the development of services from the segment of e-trade in EU Member States but also by creating the legal framework for a more efficient regulatory oversight of the parcel delivery market and regulation of cross-border parcel delivery services.

In 2020, HAKOM completed all prescribed obligations from the Regulation. Various data on cross-border services were collected from postal services providers through prescribed questionnaires (prices, quantities, revenues, number of employees, etc.) Pursuant to the Tariffs for postal services submitted by the universal service provider HP, HAKOM, in accordance with the Regulation, completed the process of assessing cross-border tariffs applied to individual postal items, i.e. their revaluation/justification assessment. The assessment showed that the prices of letter items in international traffic may be high, but also that, in comparison with the previous year, individual prices (standard letter of up to 2 kilograms) were justified. In addition, it was established the prices of parcels in international traffic with Member States were justified, except for the third zone where prices were above the assessed justified price laid by the EC. The data processed and the assessment of cross-border tariffs was submitted to EC for publication on its dedicated EC website for cross-border parcel delivery services.

Quality of universal service performance

User satisfaction of postal services users is connected with the quality of service provision. Therefore, HAKOM directed its regulatory activities again in 2020 on meeting the prescribed quality of universal service provision, i.e. on supervising and monitoring quality. Namely, the objective to which all EU Member States within the framework of the single postal services market strive is to attain the prescribed quality levels. 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. There are two quality parameters: one is

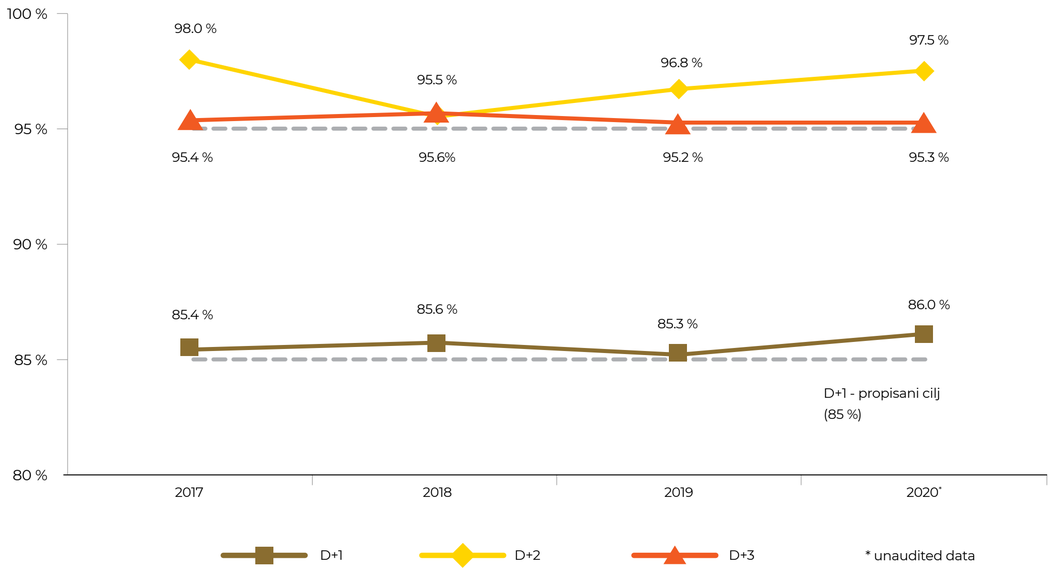
related to the delivery of postal items within the prescribed deadlines[9] and it is determined by measuring the time of transfer of certain items from clearance to delivery, while the other is to measure the number of complaints and compensatio n claims. Quali ty measurement is carried out in accordance with prescribed norms and the universal service provider is obligated to submit to HAKOM the Report on the quality of universal service performance.

HP as the universal service provider, carried out several quality measurements of the quality of performance of the universal service in 2020, of which one also concentrated on the measurement of quality in international traffic. It measured the quality of transfer of priority postal items between the HRK and other EU countries and the results obtained showed that not only did it not meet all the prescribed quality criteria but that it came to a significant decline since 39.9 percent of shipments were delivered within the D+3 time limit and 63.1 percent within the D+5 time limit. HP stated that this was a result of the halt in international postal traffic caused by disturbances in air traffic that were related to the pandemic. EU measurement results showed that HP was no exception as the decline in quality was present across the EU.

In domestic traffic the quality of universal service was measured by monitoring the transfer of priority and non-priority letter items. Although independent and continuous measurement was prescribed throughout the year, the circumstances caused by the pandemic, prevented measurements in the period from 16 March to 22 April 2020. In accordance with regulations and the procedure agreed prior to the beginning of the measurement, at the HP's request HAKOM declared the period as an event of force majeure, excluding it from 2020 quality measurement calculations. The results obtained showed that in the past year, despite all the difficulties in postal traffic, all prescribed criteria were met, 86.0 percent of priority letters were delivered within the D+1 time limit, 97.5 within the D+2 limit and 95.3 percent of non-priority letters were delivered within the D+3 time limit.

[9] Universal service providers in domestic traffic must ensure the delivery of 85 percent of postal items of the fastest category (priority(p itrioemsrity) itwitemshi)n 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.

Figure 3.12 Measuring the quality of universal service in domestic traffic



In 2020, HP also counted the number of complaints and damage claims. Accordingly, users of postal services submitted altogether 31,242 complaints to the provision of universal service. Of the total number of complaints, 52.7 percent were related to services in domestic traffic, while others concerned services in international traffic. The most common reasons for filing complaints were shipment loss, failure to perform services or exceeded deadline for delivery. HP resolved some 95 percent of all complaints within the legal deadline. Based on the indicators of the quality of universal service performance it may be concluded that universal service performance in 2020 was satisfactory.

Universal service provider's postal network

Ensuring universal service provision throughout the territory of the HR in the manner prescribed by the PSA and the Ordinance includes the obligation of the universal service provider to establish, maintain and develop a postal network. The Ordinance additionally prescribes the density of the access point network.
HAKOM's focus in 2020 was on activities related to monitoring whether HP complies with the pre-

scribed access point network density but under considerably different circumstances than over the previous year. Namely, due to the pandemic, HP was granted approval by the Ministry of the Sea, Transport and Infrastructure (MSTI) in accordance with its application of 16 March 2020, to apply extraordinary operating measures with the aim of protecting the health and life of HP's employees and users of postal services in the territory of the HR. The said measures may remain in force until the pandemic is declared over. One of the measures undertaken by HP was to temporarily close individual postal offices, as well as to cut working hours of the remaining ones. Additional problem in the operation of postal offices occurred due to the earthquake, as well as the deterioration in the epidemiological situation at the end of the year, which also led to changes in the postal network. Damaged postal offices were temporarily closed and working hours of individual offices shortened. It is noteworthy that HP undertook appropriate measures and with time, as the situation normalised, relaxed is measures, opening the temporarily closed offices and extending working hours.

HP continued implementing the model of relocating individual non-profitable postal offices with an aim to rationalise its operations. Postal offices were relocated to more frequent areas with greater fluctuation of people thus avoiding permanently closing them and several offices were relocated from their previous locations to new locations in shopping centres.
HP as the universal service provider is obligated to enable access to its post office network to other providers so this right continued to be used by two providers of interchangeable postal services in 2020.

Regardless of the circumstances and environment in which postal offices operated in 2020, the prescribed density of postal offices network and the performance of the universal service were never put into question. To the contrary, postal traffic continued throughout this period, although with occasional difficulties.

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

Monitoring the situation in and the development of the postal services market in the HR was one of HAKOM's important activities. It continued to collect different statistical, financial and other data from postal services providers and the data requested complied with the PSA. The data processed were used in different analyses that provided HAKOM insight into the situation and developments in the postal services market and creation of various reports. The data were also used to comply with the various requirements of European authorities that monitor and analyse the situation in the single EU market (EC, ERGP, UPU), prepare responses to different external queries (newspapers, providers, etc.) and for the CBS.
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's website also provides a regularly updated list of all postal services providers with a list of services they provide. HAKOM regularly maintained the prescribed database, that is, the registry of providers.

Other regulatory activities and tasks

In 2020, HAKOM launched two projects: an Analysis of the access to the postal network of the universal service provider (Project AAPN) and an Analysis of the Value Added Tax Implementation (Project VAT). Project AAPN was initiated with an aim to determine possible hurdles and/or limitation in the use of the existing postal network of HP, as the universal service provided designated under PSA. The analysis, among other things, established that there was no satisfactory level of competition in the letter segment of this part of the postal services market because of established limitations in the use of the postal network. As a result of the conclusions derived from the analysis, one of HAKOM's regulatory measures directed at eliminating the established barriers and redefining the existing conditions for access to the postal network was to propose amendments to the Ordinance on the performance of the universal service in the third quarter of 2020, in the part relating to access to the postal network on which public consultations were completed in the fourth quarter of 2020.

Project VAT concentrated on the analysis of the implementation of the value added tax (VAT) to HP's postal services and its rebate policies with the impact on the overall postal services market in the HR. The main purpose of this project was the analysis of exemption from VAT when performing the universal service and HP's rebate policy as a potential obstacle to competition in the market. The aim was to establish whether there were obstacles to competition in the market and propose possible regulatory measures within the framework of the existing regulatory framework for their removal, especially in the segment of providing bulk mail. It was concluded after the completion of the project in July 2020, which, among other things, established that there were certain obstacles to market competition, that the best solution was to amend the legislative framework.

Of other activities, it is important to mention the active support provided to users of postal services through timely notifications of all temporary changes to the provision of postal services and disturbances in postal traffic during the entire time of the pandemic and in the aftermath of the earthquake. Some activities were also related to coordination between the Crisis Management Committee and providers of postal services aimed at ensuring uninterrupted provision of postal services. Several expert opinions and explanations were provided in 2020 relating to the application of the PSA and legislation adopted pursuant to the PSA. As over the previous year, in 2020 HAKO contin-

ued with daily provision of information to postal services users regarding various queries via a direct telephone line, e-mail or internet application Ask us available on HAKOM's website.

INSPECTION ACTIVITIES

Inspection supervision in 2020 was related to the performance of the universal service, interchangeable services and other services prescribed by the PSA. During the year, the postal inspector performed inspection supervision in 42 cases. Within the framework of inspection supervision there were 22 inspections and on-site inspections, two motions for indictment were submitted for the purpose of initiating misdemeanour proceedings and removal of identified deficiencies were ordered in the minutes of one inspection. In addition, supervised entities were sent 21 document from the postal inspector, including requests for submission of data and documentation necessary for the performance of inspection supervision, while entities submitting petitions were sent 41 document by the postal inspector, including notifications on actions undertaken or lack of merit for the initiation of the inspection supervision ex officio. Based on 12 notifications of activities undertaken that the postal inspector submitted to petitioners, supervised entities, pursuant to (requested and) submitted comments ultimately enabled petitioners to realise their rights under the PSA and the stipulations from the petitions were taken into consideration during analysis of inspection supervision conducted ex officio and performed in accordance with the provisions of Article 59 of the PSA. With regard to the situation caused by the spread of the COVID-19 disease, in the period from 11 March to 5 May 2020, only those activities were undertaken for the purpose of inspection supervision for which it was deemed that they do not jeopardise life and health and public safety. No evaluations and on-site inspections were performed during the period in question and supervised entities were not sent inspection documents that would require any activity by supervised entities, i.e. their employees.

The focus of inspection supervision of the provision of the universal service was on the fulfilment of prescribed obligations by the universal service provider (HP) as regards the quality of the universal service, the rights of users of postal services, as well as the obligation to enable access to its postal network.

Due to misdemeanours punishable pursuant to the provisions of Article 64, paragraph (2), item (7) of the PSA, the postal inspector submitted two motions for the submission of indictments for the purpose of initiating misdemeanour proceedings against HP because of failure to deliver data and documents required for the performance of inspection supervision within the set deadline and in connection with compliance with the provisions of Article 54, paragraph (4) of the PSA.

Based on the petition of the postal services provider, company LIDER EXPRESS d.o.o., Ulica sv. Roka 3, Žrnovnica, an inspection supervision was performed of HP in connection with the fulfilment of the obligation to enable access to postal network in accordance with the provisions of Article 53 of the PSA. The inspection conducted on 7 and 8 May 2020 in connection to postal items that LIDER submitted to HP before 17 February 2020 in the sense of the provisions of Article 12 of HP's Standard offer, established certain irregularities, i.e. omissions by HP. For postal items that LIDER submitted to HP after 17 February 2020 no irregularities within the competence of the postal inspector were established. Therefore, the postal inspector notified LIDER in the document of 15 May 2020 that in relation to the stipulations from its petition there was no basis to undertake further measures falling within the competence of the postal inspector under Article 59 and Article 60 of the PSA. After receiving the document from the postal inspector, LIDER raised no further requests falling within the competence of the postal inspector that were connected to the stipulations from the petition.

Inspection supervision was performed, acting at the petition of the Municipal misdemeanour court in Zagreb establishing that in the course of providing postal services HP lost two postal items the sender of which was the Court, as a result of which it was suspected that in the said cases HP committed misdemeanours punishable under Article 63, paragraph (2), item (7) of the PSA. However, enclosing an explanation in connection with the case at hand the postal inspector notified the Court, as the injured party, that HAKOM, as the authorised prosecutor, does not, as a rule, initiate misdemeanour proceedings in cases when the provider of postal services as the perpetrator pays the prescribed compensation of for the loss of postal items under the provisions of Article 57 of the PSA. It is noteworthy here that pursuant to the provisions of the Misdemeanour Act, the injured party is also the authorised prosecutor at the request of whom misdemeanour proceedings may be initiated and conducted in accordance with Article 83 of the Misdemeanour Act, as well as that only the Court has territorial jurisdiction for trials in proceedings that are initiated by HAKOM as the authorised prosecutor with the Court.

The focus of inspection supervision of interchangeable and other postal services was on providers of interchangeable and other postal services complying with requirements relating to the rights of users of postal services. Inspection supervision was performed of three postal services providers HP, LIDER EXPRESS d.o.o., Zagreb and SCHENKER d.o.o.

Acting at the petition of the European consumer excellence centre from Zagreb of 17 August 2020 that stipulated that inbound postal items coming from abroad are left at the HP's sorting centre in Velika Gorica for months and that they are not delivered to recipients in the HR, postal inspector carried out an inspection. The inspection was conducted at the premises of the sorting centre and was related to handling of regular postal items not subject to customs procedure (including small parcels) that came to the HP's sorting centre from third countries outside the EU. The said inspection established no irregularities. In addition, for individual postal items that were subject to inspection it was established that some of the track-and-trace internet sights displayed incorrect information on the arrival of these items to the HR, as well as that the transfer of larger number of postal items from their countries of origination to the HR sometimes lasted several months.

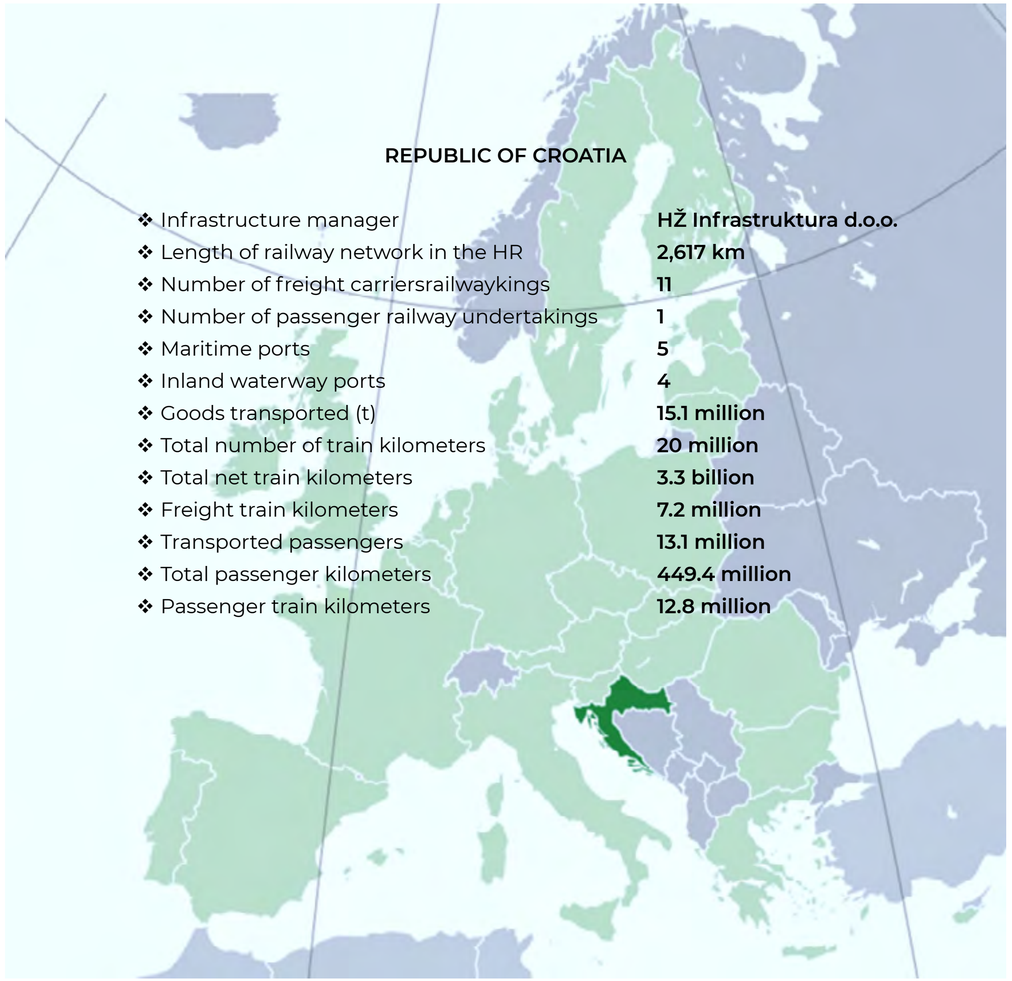
04

RAIL SERVICES

The rail services market in the HR in essence consists of rail services in freight and passenger transport, complying with national and EU laws on the provision of rail services. The railway infrastructure is defined by the Railway Act (RA) as a public good in general use that is to be made available to all railway undertakings under equal and transparent terms. The liberalisation of the railway market enabled access to railway infrastructure, service facilities and services they provide to all applicants for access to infrastructure capacity. The quality of rail services provided to users of rail transport in the liberalised market is a reflection of competition in the market which ultimately contributes to the reduction of the costs of railway infrastructure maintenance and traffic management by the amount that is paid by the applicants. Market development is reflected in the increase in the number of users but also in the number of services provided, as well as the services used. HAKOM strives to foster market competition through non-discriminatory approach to railway infrastructure, service facilities and services and to ensure equal terms and conditions to all applicants for allocation of infrastructure capacity.

MARKET OVERVIEW

Table 4.1 Basic information on railway infrastructure and operation of railway operators at the end of 2020



Stakeholders in the rail services market

The railway infrastructure manager HŽ Infrastruktura d.o.o. (HŽI) is at the same time the largest service facilities operator in the rail services market in the HR. The rail services market grows more complex and challenging as the number of active freight carries increases, while at the same time there is only one railway infrastructure manager and a limited number of service facilities operators. This remains a significant issue in terms of possible obstacles to market access that may slow down its further development. Due to the specifics of a market like this, HAKOM applies continued monitoring in order to ensure transparency of tenders and services provide.

Pursuant to Article 14, paragraph (4) of 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 accordance with the ARRSM, data required for regulating the rail services market and for statistical monitoring are collected. Regular consultation of ERADIS[10] and cooperation with the infrastructure manager established that new freight carriers were registered in 2020 in the HR market. New rail operators were informed of their obligation of timely data submission to HAKOM in accordance with Article 16 of the ARRSM.

At the end of 2020, there were 11 freigh railway undertakings registered in the RH:

- HŽ Cargo d.o.o.
- ENNA Transport d.o.o.
- Rail Cargo Carrier – Croatia d.o.o. Train Hungary Magánvasút Kft. Transagent Rail d.o.o.
- SŽ Tovorni promet d.o.o. Rail
- & Sea d.o.o.
- CER Cargo d.o.o. Eurorail
- Logistics d.o.o. Pružne
- građevine d.o.o.
- Adria Transport Croatia d.o.o.

Nine of the 11 registered freight railway undertakings carried freight, the company Pružne građevine d.o.o. conducted transport for own purposes and transportation undertaking CER Cargo d.o.o. was inactive.

There continued to be only one registered passenger undertaking HŽ Putnički prijevoz d.o.o. (HŽPP).

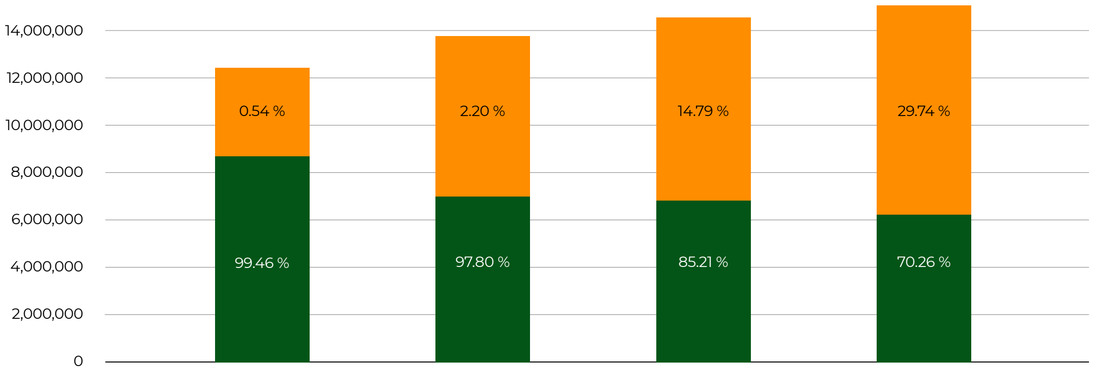
In June 2020, HAKOM was notified of planned new services of rail passenger transport relating to the transport on the following lines: Prag – Rijeka from 1 July 2020, Bratislava - Split from 1 July 2021, Prag – Split – Rijeka from 1 July 2021.

Performance indicators by railway unertakings in the rail services market

In 2020, 290,727 trains were in transport on the railway network, of which 214,042 passenger and 76,685 freight trains.

A total of 15.1 million tonnes of goods were transported in the HR from January to December 2020, or 4.2 percent more than in 2019. The new railway undertakings have been increasing the quantity of goods transported in the rail market year after year. In 2020, they transported 16.7 percent more goods than in the previous year, while the domestic incumbent decreased its share in transported goods in the market for the transport of goods by transporting 9.7 percent less goods than in 2019.

Figure 4.1 Goods transported by the share of domestic incumbent and new freight railway carriers undertakings (in tonnes)



	2017	2018	2019	2020
New carriers	3,683,356	6,758,156	7,683,432	8,964,781
HŽ Cargo	8,701,329	6,993,962	6,843,534	6,176,461

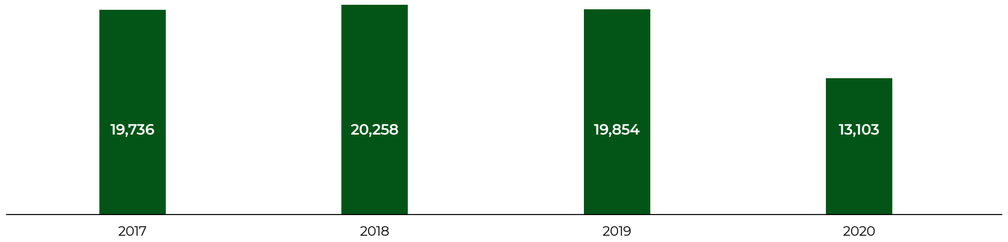
The domestic incumbent reduced its share of total tonne kilometres by 5.89 percent from 2019, while new rail operators strengthened their position in the market and increased their share in total tonne kilometres.

[10] European Railway Agency Database of Interoperability and Safety.

Figure 4.2 Shares of tonne kilometres (tkm) in railway freight raffic

The COVID-19 pandemic had an additional negative effect on years-long negative trends in the transport of passengers. A total of 13.1 million passengers used the services of rail passenger traffic, 34 percent less than in 2019. A total of 449.4 million passenger kilometres were realised, 38.7 percent less than in the previous year.

Figure 4.3 Number of transported passengers (in million)



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. Pursuant to 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 referred to in Annex 2, item (2) of 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 2020, HŽI published the 2022 Draft Network Statement within the legally prescribed deadline. However, it was late with the publication of the 2022 for the 2021/2022 timetable.

The situation in the railway network in the HR remained unchanged in 2020. HŽI managed the 2617 km long railway network, of which 2343 km are single-track and 274 km are double-track railway lines. Only 980 km are electrified with the alternating current system of electrification, of which 977 km with 25 kV, 50 Hz, while the remaining three kilometres are electrified with 3 kV DC power supply system. Of the total length of the railway infrastructure only 38 percent is electrified. In addition to the quality of transport and reduction of operating costs, electrification has a strong impact on the environmental dimension of this type of traffic. Orientation towards traffic that is least damaging to the environment is the objective of all EU Member States.

Table 4.2 Average commercial speed of trains (km/h)

Average commercial speed of trains (km/h)										
Train speed in km/h	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Average commercial speed of trains	36.1	33.43	32.76	33.53	34.7	35.33	33.57	**32.95**	**32.09**	**32.38**
Passenger trains	46.54	44.81	44.35	46.36	47.82	47.97	47.52	**46.63**	**45.93**	**45.57**
Freight trains	21.44	21.04	21.17	20.67	21.57	22.69	19.62	**18.96**	**18.24**	**19.19**

In accordance with the RA, HAKOM created Register of the railway services of service facilities operators and published it on its website.

INFRASTRUCTURE USAGE

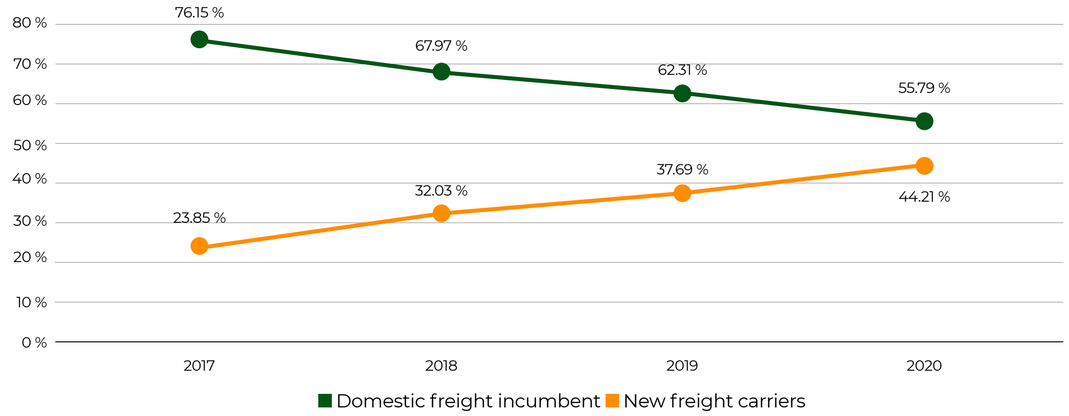
The basic conditions for access to railway infrastructure in the HR are laid down by the RA, Act on Multimodal Travel Information and the Railway Interoperability and Safety System Act and other regulations.
The basic functions of infrastructure management are deciding on allocation of train paths, which includes the preparation and the assessment of availability and allocation of individual train pates and deciding on charges.

Table 4.3 Use of rail services in the RH as provided by HŽ Infrastruktura

Rail services market	2017 Total	2018 Total	2019 Total	2020 Total
Revenues from rail services (HRK)	145,753,101.90	146,142,903.30	147,012,562.00	136,676,245.03
Minimum access package	113,465,181.68	114,907,849.02	116,460,291.00	112,542,490.88
Garage services	1,898,608.85	2,039,898.00	2,138,030.00	2,457,778.62
Assembling/disassembling services	18,692,075.18	18,039,243.00	17,381,118.00	14,222,116.24
Weighing services	265,518.00	116,532.00	134,190.00	148,500.00
Shunting for weighting of wagons	84,824.30	41,946.00	47,456.00	48,438.60
Passenger station use	9,729,696.88	9,705,263.00	9,803,124.00	6,941,667.05
Transport of exceptional consignment	81,220.58	244,688.28	109,546.00	103,670.11
Sale of tickets and cashier accounting activities	1,535,976.43	1,047,484.00	938,807.00	211,583.53

A review of train kilometres shows that new freight carriers continued their upward trend and realised 29.7 percent more train kilometres, while the domestic incumbent decreased its train kilometres by one percent. The positive performance indicators by freight carriers were, among other things, a result of free infrastructure capacity amid the lockdown, during which passenger transport was stopped.

Figure 4.4 Overview of infrastructure used by the share of freight undertakings in train-kilometres



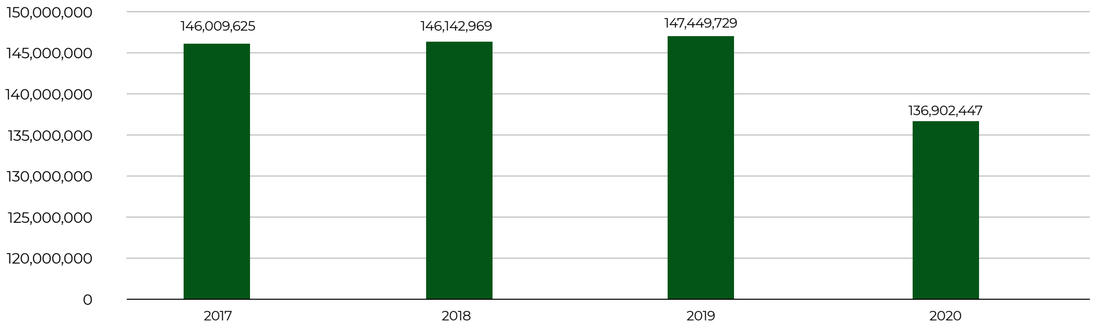
Revenues and charges

The only infrastructure manager in the HR 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 the 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. In addition, 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. 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.

The global COVID-19 pandemic reflected itself on the rail services market as well. Freight traffic increased during the pandemic, while passenger traffic was stopped from 22 March to 10 May 2020.

This impacted total revenues of the infrastructure manager, which was seven percent lower than in 2019 in the segment of railway services.

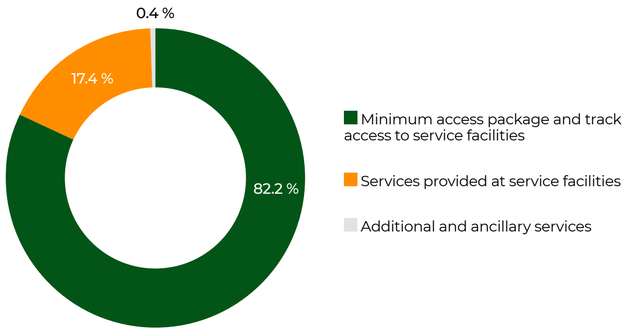
Figure 4.5 HŽI revenues from railway services (in million HRK)



Source: HŽI

Usluge koje su prijevoznici manje koristili u 2020. su usluge formiranja, rasformiranja i promjene sastava vlakova te usluge korištenja putničkih kolodvora, kolodvorskih zgrada i ostalih objekata za prijam i otpremu putnika, što je pokazatelj spriječenosti putničkog prijevoznika da obavlja uslugu tijekom *lockdowna*. Najveći prihod HŽI i dalje ostvaruje iz minimalnog pristupnog paketa.

Figure 4.6 Shares of rail services in HŽI revenues by type of service



REGULATORY ACTIVITIES

In 2020, HAKOM continued with the proceedings it started ex officio relating to service facilities for the supply of fuel and access to these facilities under the management of HŽI. In the call for tenders published by HŽI in 2018, the lease of all 16 facilities was taken by the company Crodux derivati dva d.o.o. from Zagreb. Considering that up to that moment the facilities were managed by two carriers: HŽ Cargo d.o.o. (HŽC) and HŽPP, the issue arose relating to the provision of the service of access to these tracks and of setting the route to these facilities. Although HŽI took over the said service from HŽPP this was not the case with HŽC, which for its service of providing access to tracks and setting routes charged a fee of HRK 1250. HAKOM requested from HŽC to adjust the fee to actual costs of the provision of this service. In November 2020, HŽPP published amendments to its Pricelist for ancillary services, by which it stopped providing the service of fuel supply and track access to service facility for the supply of fuel, while on 13 December 2020 HŽC in the published Description of service facility altered the price of providing the service of track access to service facility for supply of fuel to HRK 200. The description of the service facility was published at the following link: http://www.hzcargo. hr/upload/Opis_usluznog_objekta.pdf.

At the end of 2020, Crodux established supply with petroleum product eurodiesel B7 at all 16 pump stations that were the subject of the Agreement on the lease of facilities for supply of fuel to rail transport vehicle. Considering that that free and uninterrupted supply of fuel to rail transport vehicles was enabled there was no need to further continue the procedure and impose regulatory measures.
HAKOM issued two expert opinions regarding the requests by railway carriers that are available on its website. The first opinion is related to the possibility of application of differentiated charge for the use of pump facilities depending on the consumption of oil products of each individual railway undertaking and to the compliance of the differentiated charge with the provisions of Articles 24 and 25 of the RA. The second expert opinion is related to the possibility to set the charge for the use of pump facilities in the function of additional rail services in different amounts depending on different categories of consumption, all under the condition that the price list is publicly and transparently published to be applied by all users of these services. HAKOM responded to the petition by the operator of a maritime port operator who requested a written opinion on shunting services which will be directly by a rail carrierrailway undertaking.

A notification was received from HŽPP on the planned new rail passenger service: Prague – Rijeka, starting from 1 July 2020, Bratislava – Split, starting from 1 July 2021, and Prague – Split – Rijeka, starting from 1 July 2021. In accordance with Article 4, paragraph (4) of the Commission Implementing Regulation (EU) of 20 November 2018 laying down procedure and criteria for the application of the economic equilibrium test pursuant to Article 11 of Directive 2012/34/EU, HAKOM published it on its website and notified the MSTI and HŽI. In relation to the published notification no authorised entity requested an economic equilibrium test (EET).
Through a series of measures HR regulations provided for the opening of the national railway market and the fostering of competition in the passenger rail market, which include the requirement that access to

railway infrastructure be enabled in a fair and transparent manner. However, there is the possibility of access to railway infrastructure being limited if between a given place of departure and a given destination one or more public service contracts cover the same route or an alternative route and if the right of access of the new service would compromise the economic equilibrium of such public service contracts. The Commission Implementing Regulation 2018/1795 is applied from 1 January 2019 to the timetable starting on 12 December 2020 and sets the procedure and the criteria for EET application.

In 2020, HAKOM prepared a proposal of the Guidelines for EET application, which was presented for public consultation from 4 January to 2 February 2021. HAKOM's Council, at its meeting held on 25 February 2021 decided to adopt the Guidelines for carrying out the economic equilibrium test, which are published on HAKOM's website.

With its suggestions HAKOM participated in amendments to IOT and the defining of additional documents for better functioning of the market.

INSPECTION ACTIVITIES

An inspection supervision of the railway passenger incumbent HŽPP started in February 2020 for the purpose of checking its compliance with the requirements of Article 28 of Regulation (EC) No 1371/2007 of the European Parliament and the Council of 23 October 2007 on rail passengers' rights and obligations (Regulation 1371/2007) in the part of the quality of service. The cause for inspection supervision were written submissions by passengers stipulating frequent journeys in cold carriages. Air temperature in carriages was measured, establishing that carriages at the Koprivnica station were not heated, i.e. that their temperature ranged between 4.4 °C and 8.2 °C mere 10 minutes before the train's departure. Other trains/carriages covered by the supervision were preheated before departure. HŽPP's attention was drawn to the irregularity in the conclusion requesting removal of the established irregularity and submission of evidence on measures undertaken. It was subsequently established that these irregularities were removed and HŽPP undertook to maintain appropriate pre-journey air temperatures in all trains prior to departure.

Inspection supervision was also performed of the station manager HŽI for the purpose of establishing facts with respect to existence of non-discriminatory rules on access to transport of disabled persons and persons with reduced mobility in accordance with Article 19, paragraph (1) of Regulation 1371/2007 and provision of assistance free of charge to disabled persons or persons with reduced mobility on departure from, transit through or arrival at, a staffed railway station. As evidence of its actions HŽI submitted Guidelines for of the official same-level crossing at Zagreb's main station and for the use of platform lifts for embarking and disembarking of disabled persons, which was related exclusively to the Zagreb Main Station an represents and internal bylaw from which it may be derived that the procedure has been harmonised between the railier incumbent HŽPP and HŽI, but not with organisations representing disabled persons and persons with reduced mobility. The said Guidelines did not provide technical specifications for the lift in terms of capacity (maximum height, width, length, weight of wheelchair including passenger, etc.) and the information is not publicly available to passengers. Although in its Statement HŽI stipulated that it has 10 lifts available, information on train stations where these lifts are located was not publicly available. In May 2020, HŽI was issued a decision ordering the removal of irregularities. In July, HŽI submitted evidence that the order was complied with: Guidelines on procedure for transport of disabled persons and persons with reduced mobility and orders by station chief on the appointment of personnel to operate these lifts, as well as minutes from the meeting between HŽPP and HŽI. Accordingly, evidence on the removal of established irregularities was deemed submitted.

In 2020, HAKOM carried out 29 inspection supervisions of service facilities operators for the purpose of establishing facts regarding compliance with requirements of Article 25, paragraph (1) of the RA relating to publication of information pursuant to Implementing Regulation (EU) 2017/2177 of 22 November 2017 on access to service facilities and rail-related services (Implementing Regulation). Pursuant to the Implementing Regulation, operators of service facilities are obligated to make publicly available information on the conditions of service provision, information on charges and access to service facilities and services and publish a service facility description.
It was established that no operator had published a service facility description in accordance with the provisions of Article 4 of Implementing Regulation and that some operators did not even have a description published. Operators were issued decisions by inspectors and were ordered to establish a description of the service facilities and services for which they are responsible and/or adjust the existing ones and make them publicly available in accordance with Article 5 of the Implementing Regulation.
The inspection supervision of HŽPP initiated back in 2017 for the purpose of establishing compliance with the requirement to provide information during the journey in accordance with Regulation (No) 1371/2007, Annex II, Part II (Information during the journey) continued. Inspection supervision covered the provision of information to passengers during the journey in all types of trains in order to reliably establish the facts on the situation regarding the provision of information to passengers during the journey. Even after the decision of 2019, HŽPP focused exclusively on the provision of one type of information – information announcing the next station and neglected to provide other four categories of information during the journey. As the only solution HŽPP listed the instalment of automatic visual and sound announcement of stations/stops, which is not prescribed by Regulation No 1371/2007. The same result may be achieved in other more acceptable (financially and in terms of time) ways, using existing resources. As one of the possible practical ways to solve this problem, HAKOM suggested to HŽPP to engage train crew members (engine and others) and use of already built-in technical solutions of train loudspeaker system in carriages and the engine area. In April 2020, HŽPP was issued a decision on the execution of the decision with the deadline for compliance until 23 April 2021.
In addition to the mentioned inspection supervisions, HAKOM visited the facilities of the infrastructure manager, points of sale of the carrier and checked the availability of information without having established any irregularities.

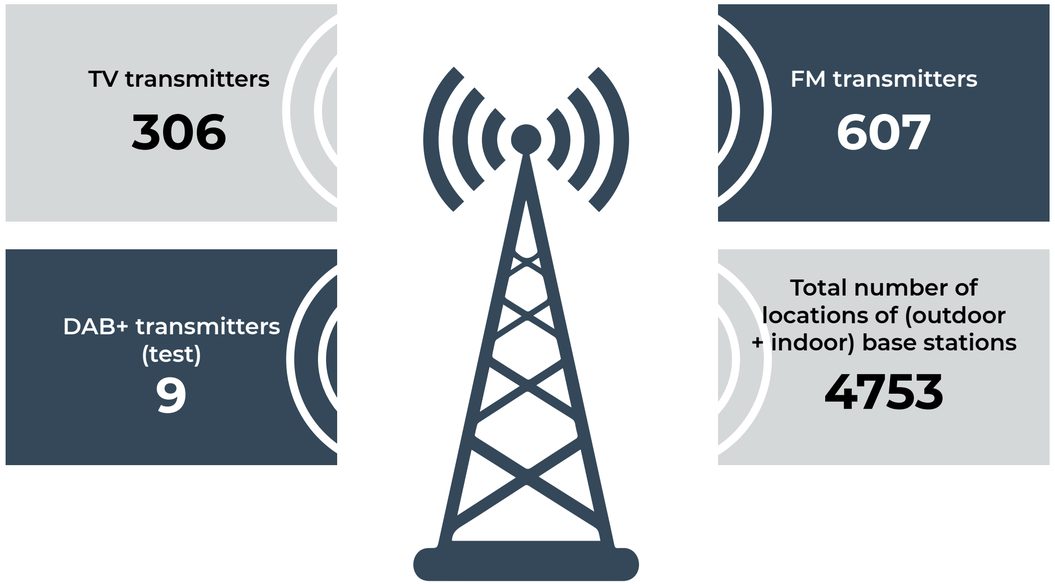
05

RF SPECTRUM MANAGEMENT

RF SPECTRUM MANAGEMENT

Effective spectrum management is one of HAKOM's main tasks. It includes 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. Wireless broadband networks, especially the 5G network, are expected to enable a major step forward and contribute greatly to the development of Industry 4.0 and the economy as a whole. The RF spectrum in the HR is internationally coordinated and used in accordance with the regulations of the ITU and the CEPT, as well as with international treaties, and the RF spectrum use is additionally harmonised among EU Member States and neighbouring countries. The RF spectrum management and control ensure a 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

As was the case with other economic activities, RF spectrum management in 2020 was marked by the coronavirus pandemic and two strong earthquakes that hit Croatia. These extraordinary circumstances underlined the significance of radio-communication for the timely provision of information to the public, crisis communication with areas hit by the earthquake and in enabling distance working (working from home). HAKOM adjusted its operation to the new situation. It recognised the need to speed up and improve the licensing process. With regard to legal entities, which hold numerous licences, it organised for licences and invoices for the use of RF spectrum to be sent in electronic form. In addition, all users were enabled to submit requests for the use of the RF spectrum to the e-mail address ZahtjevZaDozvolu@hakom.hr also for those types of services that were not encompassed by the e-Licence service.

One of the more important activities was related to the creation of a special section on HAKOM's website dedicated to 5G technology. The 5G website[11] contains simple explanations of the 5G technology, its technical characteristics and possible implementation. It also describes the EU and the RH strategies for introducing new technology and 5G network in the HR, listing currently conducted tests and locations of base stations used to test the functionalities of the 5G technology. The section on electromagnetic fields explains the relevant regulations and HAKOM's role in the control of electromagnetic fields. The content of this website is regularly updated and refreshed.

With regard to activities in 2020, one should stress the completion of the transfer of the digital terrestrial television to the DVB-T2 system and the H.265/ HEVC encoding standard, which released the 700 MHz band for the introduction of the new, fifth generation of mobile networks (5G). For this purpose, new licences were issued for the use of the RF spectrum to ensure the transition from digital terrestrial television to the DVB-T2 system and the H.265/HEVC encoding system. The new system can offer users more content with higher-video and audio -quality and ensure the competitiveness of the terrestrial television platform in the upcoming period.
The test operation of the DAB+ digital terrestrial radio was continued to cover more than three million of HR citizens. This additionally contributed to the popularisation of digital terrestrial radio. Preparations were also started for the commercial operation of the DAB+ in the HR.

The procedure was started in 2020 for the allocation of the geostationary satellite orbit for the fixed-satellite service in accordance with Appendix 30 B to the ITU Radio Regulations. The allocation of the geostationary orbital position will ensure for the HR frequency resources that will enable it to achieve national coverage for links within the framework of the fixed-satellite service.
Considering that interest was expressed over previous years for launching of the Croatian nano-

[11] https://www.hakom.hr/default.aspx?id=10530

satellite in the LEO orbit, HAKOM started adjusting national regulations in 2020 that would define the rights and obligations of the operators of space activities.

After the earthquake near the town of Petrinja at the end of December 2020, HAKOM received multiple requests for urgent set up of microwave links and for increasing existing capacities in the Banovina area. The connecting of areas hit by the earthquake was accomplished within a short time, as well as the increase in communication traffic amid the new circumstances.

In 2020, HAKOM completed two procedures for public consultations on amendments to the Table of frequency allocations which constitutes an integral part of the Ordinance on the allocation of the radiofrequency spectrum and allocates the frequency bands for individual radiocommunication services in accordance with ITU's Radio Regulations. These amendments were necessary due to the pending introduction of the 5G system to individual frequency bands as well as due to the need for harmonisation with the results of the 2019 World Radiocommunication Conference (WRC-19). In addition, again in compliance with the results of the WRC-19 and for the purpose of compliance with the relevant EU decisions and ERC Recommendation 70-03, new general licences were issued or the existing ones were amended. HAKOM continued to keep and maintain the list of registered radio stations installed that operate pursuant to general licences. All applicable general licenses are available on HAKOM's website under Licences.

Within the scope of its regular activities, HAKOM issues RF spectrum use licences, approvals for services of particular importance and compliance certificates to radio stations, as well as certificates confirming inability to establish an internet connection to exchange data with the Ministry of Finance and the Tax Authority. The number of issued licences decreased by five percent from the year before, while the number of compliance certificates increased by some 30 percent.

Table 5.1 RF spectrum management – documents issued

Type of documentation issued	quantity
RF spectrum use licences	4,751
Approvals for services of particular importance	29
Compliance certificates	14,772
Fiscalisation certificates	4

In cooperation with the MSTI, the project of integration of the service Croatian vessel register and e-Vessels was launched, aiming to additionally improve the quality of service for users registering their vessels and being issued licences for the use of RF spectrum, at the same time ensuring faster and better interinstitutional exchange of data and information.

FIFTH GENERATION OF MOBILE COMMUNICATION NETWORKS (5G)

The allocation of the RF spectrum for 5G mobile communication networks was planned in 2020. However, the crisis caused by the pandemic postponed it for 2021. Despite this, in 2020 activity related to the introduction of 5G technology in was intensive, both on international and domestic level.

Two public consultations were held on the future spectrum allocation for 5G. The first public consultation on the allocation of frequency bands 700 MHz, 1500 MHz, 3,6 GHz and 26 GHz was initiated in 2019 and completed in January 2020. The second public consultation was held in mid-2020 and encompassed eight main 5G frequency bands (700 MHz, 3,6 GHz and 26 GHz) and frequency bands currently used by operators of mobile communication networks for 2G, 3G and 4G technology – 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz. Pursuant to the comments received within the framework of these two discussions HAKOM decided that main 5G frequency bands will be allocated by a public auction in the first half of 2021. In order to ensure the preconditions for assignment of at least 300 MHz within the 3.6 GHz band at the national level in the auction, HAKOM decided to revoke the license of the existing user of the spectrum in the area of Međimurje and Varaždin counties and issue a new license with amended conditions for spectrum use. The existing user continued to provide services within the 3400 – 3470 MHz band in the TDD mode.

The deadlines for the allocation of basic 5G frequency bands are connected with the deadlines set by the EECC and Decision (EU) 2017/899 of the European parliament and of the Council on the use of the 470-790 MHz frequency band in the Union. The common EU schedule for the introduction of 5G technology includes, among other things, the identification and coverage of at least one major city by the end of 2020 and uninterrupted 5G coverage of urban areas and main terrestrial transport paths by 2025.

Within the framework of the 5G working group, HAKOM proposed to the representatives of all three mobile telecommunication operators in the HR and the representatives of the MSTI the city of Osijek as the first major city in the Republic of Croatia where the 5G network would be set up and deployed for commercial operation by 30 December 2020. The proposal was submitted to the Government of the HR and the final decision[12] on the designation of the City of Osijek as the first 5G city in Croatia was adopted in January 2020. Due to the delay of the RF spectrum allocation for 5G the provision of commercial 5G services in Osijek under full 5G functionality was postponed for 2021.

As part of preparations for the RF spectrum allocation, HAKOM prepared and completed a public procurement procedure for the procurement of consulting services necessary to design and carry

[12] https://vlada.gov.hr/sjednice/203-sjednica-vlade-republike-hrvatske-28610/28610

out the electronic procedure of the public auction. The Auction is held via a software solution that enables secure and confidential bidding for all participants. Leasing the software as part of consulting services is common practice for regulators in the EU and worldwide.

The testing of 5G functionalities that started in 2019 continued throughout 2020. Temporary licences for the use of RF spectrum in the 3.6 GHz frequency band were issued for the area of the City of Zagreb (including the area of the City of Samobor, the City of Sveta Nedjelja and Franjo Tuđman Airport), City of Osijek, City of Rijeka, City of Split, island of Krk, City of Dubrovnik, City of Hvar, City of Novalja, City of Jastrebarsko, City of Rab, City of Bjelovar, City of Novska and City of Varaždin. Except in the 3.6 GHz frequency band, HAKOM issued temporary licences for testing the dynamic spectrum sharing (DSS) in the 2100 MHz band for the area of the City of Zagreb, City of Samobor, City of Sveta Nedjelja and City of Sisak. DSS represents a software upgrade of existing base stations and enables frequency sharing between 4G and 5G technology within the same frequency band without requiring new antenna systems and equipment. The sharing of resources between 4G and 5G technology depends on the traffic needs of users for each technology in the given area where the resources are dynamically distributed over time. In addition, at the end of 2020, HAKOM issued a temporary licence for the purpose of technical testing of 5G technology in the 700 MHz frequency band for the areas of the City of Zagreb and the City of Zaprešić.

A panel discussion on the topic “Readiness of HR for 5G?” was held within the framework of HAKOM’s “Market Day“, held as part of the international MIPRO 2020. The challenges of 5G introduction were discussed with representatives of relevant stakeholders from the market, the City of Osijek and MSTI. The discussion postulated infrastructure development and public perception of 5G network as currently the biggest challenges to speedy 5G implementation.

The work of the 5G working group on dealing with the challenges related to the introduction of 5G technology continued in 2020. Infrastructure development and public fear from the effects of 5G technology on health were recognised as the biggest challenges to 5G introduction. Therefore, 5G working group devoted most of its time to tackling these issues, holding two meetings of the umbrella working group, one meeting of the sub-group for infrastructure and two meetings of the sub-group for EMP and small cells. The sub-group for infrastructure deals with the issue of infrastructure construction necessary for the introduction of 5G networks, including installation of equipment on existing constructions (antenna receivers), erecting antenna poles, development of optical fibers network and co-financing from EU funds. The sub-group for EMP and small cells deals with the issues related to the assessment of EMP levels for base stations, regulations related to erection of small cells and the technical aspects of regulations on protection from electromagnetic fields.

Commission Recommendation (EU) 2020/1307 on a common Union toolbox for reducing the cost of deploying very high capacity networks and ensuring timely and investment-friendly access to 5G radio spectrum, to foster connectivity in support of economic recovery from the COVID-19 crisis in the Union[13] was adopted in September 2020. Following the adoption of the Recommendation, in October 2020, a separate working group was appointed with the preparation of stimulative guidelines for fostering connectivity in support of economic recovery from the COVID-19 crisis in the Union (Union Connectivity Toolbox; hereinafter: Connectivity Toolbox). The special working group has two sub-groups – one in charge of issues related to cost reduction and one related to the issues of access to 5 G spectrum. The Connectivity Toolbox will be created based on best practices of Member States, while the time limit for its development is March 2021. HAKOM participated in the work of the special work group and its sub-groups, representing HR, which continued in 2021.

In October 2020, following the completion of public consultations, plans for the allocation of 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz bands were amended. The said frequency bands were harmonized at European level, prescribing technical conditions that enable their use for 5G communication networks as well. The amendment of allocation plans provided for the use of 5G technology in these bands in HR as well. The implementation of 5G technology, as well as the selection of bands in which it will be implemented, will depend on the plans of individual operators. Two out of three operators used this possibility and with the help of DSS implemented 5G at the end of 2020 in the 2100 MHz frequency band.

TRANSITION TO DVB-T2 AND RELEASING OF 700 MHZ (Second digital dividend)

The replanning of the 470-790 MHz frequency band, which was, until recently, used for digital television, is of strategic interest for the HR and was one of the more important tasks in 2020. A part of this band, i.e. the 694-790 MHz band (the so-called second digital dividend, DD2), is planned to be used for introducing wireless broadband access services as one of the first bands for introducing 5G networks.

Technology developments have brought a new and more efficient DVB-T2 digital television system and H.265/HEVC encoding. By using new standards, it is possible to use the RF more efficiently, utilising a smaller portion of the spectrum to transmit existing channels and improve

13 https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32020H1307&from=E

their quality. This frees up the RF spectrum of the second digital dividend for the introduction of the wireless broadband access services. The switchover of free terrestrial digital broadcasting services from DVB-T to DVB-T2 and H.265/HEVC system started in September 2019 and continued together with the transition of the pay-TV in 2020, to be fully completed in November 2020. In the upcoming period, the new system can ensure the competitiveness of the terrestrial distribution platform. This time-consuming and financially demanding process was carefully planned and implemented as it affected all participants in the terrestrial digital television market.

The Government of the HR adopted the proposed National Action Plan for the use of the 470 – 790 MHz (NPD) frequency band in May 2020.

The implementation of activities under the National Action Plan continued in 2020, especially those related to the issuance of new licences for the use of RF spectrum that ensured the switchover of the digital terrestrial television to the new DVB-T2 and H.265/HEVC system. This enables high definition (HD) programme broadcasting and freeing up of the DD2 spectrum for the introduction of wireless broadband approach. The coronavirus pandemic led to the postponement of the migration to the DVB-T2 system. Consequently, new licences were issued in 2020 for all multiplex terrestrial televisions operating in the Republic of Croatia. Multiplex M2 achieved full coverage in November 2019, while multiplexes M1 and L1 started transmissions and achieved full coverage by mid-November 2020. This affected approximately 720 households, i.e. 48 percent of households using digital terrestrial television as the primary way of receiving digital television. The switchover of all digital television networks to the 470–694 MHz frequency band will free up the DD2 for the introduction of the public 5G mobile communication network.

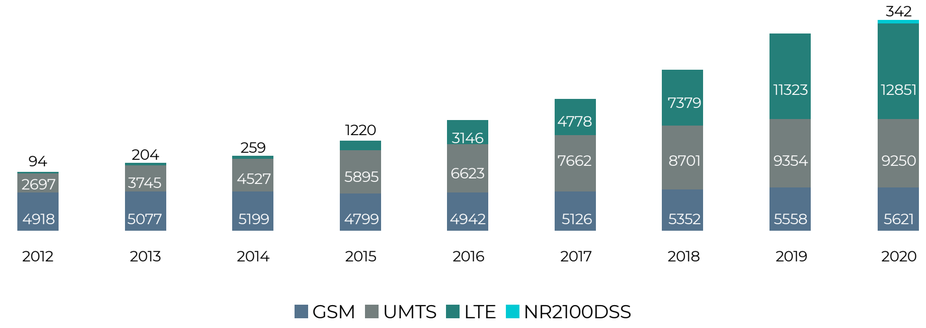
The continued operation of LTE base stations in the 790-862 MHz frequency band, which may interfere with end-user television reception (because television receivers and antenna amplifiers are pre-adapted for reception throughout the 470-862 MHz band), so operators of mobile communication networks continued removing such interferences in 2020, while HAKOM was included in the process in a control and supervisory capacity.

PUBLIC MOBILE COMMUNICATION NETWORKS

Network development and construction of new base stations continued in 2020 despite the extraordinary conditions due to the crisis caused by the pandemic and the earthquake. The circumstances under which it was operated in 2020 underlined the importance of wireless communications and accessibility of mobile communication networks to all users. Operators of mobile communication networks were fast to respond to increased demand for capacity and improved coverage in areas struck by the earthquake, while the rise in the number of base stations is visible in the next Figure.

In June 2020, the MSTI amended the Ordinance on payment of fees for rig ht to use of addresses, numb ers and RF spectrum. Pursuant to these amendments the fees for the use of radiofrequency spectrum for public mobile communications networks were reduced to a half of their previous amount which freed up additional funds for investment in network development. The amendments to allocation plans for frequency bands currently used for 2G, 3G and 4G technology and the use of DSS enabled the commercial provision of 5G services. Two operators implemented DSS in the 2100 MHz frequency band and the first NR2100DSS base stations were reported in 2020.

Figure 5.2 Number of base stations



The specifications of 5G DSS networks are very similar to the specifications of 4G LTE+ (LTE advanced) networks currently in operation. Considering that both networks operate within the same frequency bands, no great differences in performance are expected for the end user as yet. User performance largely depends on the manner of prioritisation between 4G and 5G technology and the number of users, which in turn depends on equipment capacities and operator requirements. Since no great number of 5G user devices is available on the market, the actual improvements provided by this network will be evident in the accessibility and speed of implementation of 5G services in the network of the individual operator. The full operationality of 5G network with much greater speeds, much lower latency and a large number of connected devices will be achieved when the main 5G frequency bands are allocated.

PRIVATE MOBILE COMMUNICATION NETWORKS

Although no large new networks were built on national level, the number of issued licences for the use of the radiofrequency spectrum for mobile radio stations and for fixed radio stations remained and the number of authorisations remained at same level as in 2018 and 2019. Most new networks operate in digital mode.

Talks were continued with Hrvatska elektroprivreda relating to their new unified network for the entire territory of the Republic of Croatia. Thus far, only Slavonia was covered by the TETRA network and the decision on the coverage of other parts of Croatia is still pending.

A new general licenc e in the 8 70 – 874,4 MHz fre quency band was issued, enabling easier coverage of large cities with IoT networks. This is especially important for the construction of the network for remote reading of water and gas meters, and various other sensors.

Cooperation continued with the Ministry of Defence on the removal of possible interruptions and the enabling of the operation of domestic military and NATO forces in the part of the spectrum that is intended for simultaneous operations of civil and military services.

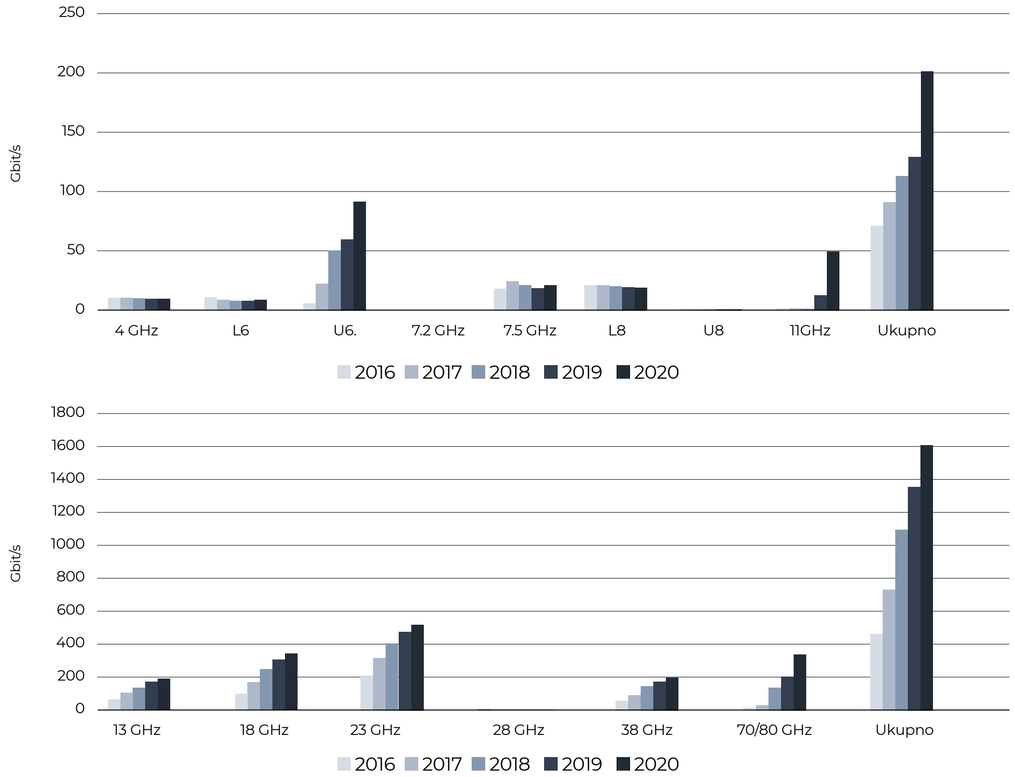
The international frequency coordination for the operation of private mobile communication networks continued, primarily with Slovenia, Austria and Hungary. A new regional agreement was prepared and signed with these countries relating to the 450 – 470 MHz frequency band that also takes into consideration the broadband operation mode.

MICROVAVE AND SATTELTE NETWORKS

Within the framework of its regular activities, 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 (Harmonized Calculation Method).

In 2020, 1314 licences for microwave links were issued, which was an increase of slightly more than 4.5 percent from the previous year. The total number of active microwave links at the end of 2020 neared 5000 and is currently 4895. Most issued licences were related to the increase of the transfer capacity of already active links of operators of mobile communication networks.

Figure 5.3 Total transfer capacity of microwave links



The upward trend in the growth of transfer capacity continued with the growth of almost 22 percent from the previous year This was a result of further upgrading of mobile communication networks to the fourth generation (4G) and points to user tendency to increasingly depend on data transfer over wireless networks. This trend may be expected to continue in the coming years, while additional requests for the increase in transfer capacity of microwave links are expected as a result of the implementation of 5G networks. One was able to notice a continuance in significant growth of transfer capacity in the upper 6 GHz (U6), 11 GHz and 70/80 GHz, frequency bands, stagnation in the frequency bands below 10 GHz and stable growth in 13 GHz, 18 GHz, 23 GHz and 38 GHz frequency bands.

In accordance with the needs of mobile communication network operators for broader channels, HAKOM amended the Radio frequency assignment plan for frequency bands used for microwave links in 2020 and enabled the use of broader bands in the 11 GHz frequency band. Accordingly, strong growth in transfer capacity in the 11 GHz frequency band continued from the end of 2019, up to four times. The reason for this is that in some locations in the 13 GHz frequency band it came to a saturation and a lack of available radio channels for the realisation of the required transfer capacities, so that 11 GHz frequency band served as an alternative. 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 2020 showed an increase in transfer capacity of over 65 percent from the previous year. The average transfer capacity of digital microwave links in 2020 was 383 Mbit/s, which was an increase of slightly less than 18 percent from the previous year.

As part of its regular activities, HAKOM processed requests received for satellite links licences and applications for the installation of radio stations in the satellite service (operating on the basis of issued general licenses). In 2020, four licences were issued for earth stations 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.

During the year, HAKOM worked intensively together with the company Viasat, which plans to build a larger number of earth station in satellite service in the territory of the HR in the upcoming period. Potential locations for earth stations were planed and harmonised with ground systems that share the frequency resource.

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 would define the rights and obligations of operators of space activities. In addition, HAKOM will provide the operators of space activities with regulatory support, primarily in relation to the ITU internationally mandated rules. The temporary licence for the earth station for the use of RF spectrum in satellite service was extended in 2020 for one more year to test the non-geostationary satellite network of the company OneWeb that plans to launch some 7000 satellite into the LEO orbit and provide services of broadband access all over the world. At the end of 2020, HAKOM also received an initial query as regards regulatory conditions for the operation of the non-geostationary satellite network Starling by the company SpaceX, which plans to start with commercial provision of broadband access in 2021 in Croatia, as well through its network of totally planned over 40,000 satellites.

The procedure for the allocation of the geostationary orbital position for fixed-satellite service was initiated before the ITU in accordance with Appendix 30B of ITU's Radio Regulations. When awarded the geostationary orbital position the HR will have ensured frequency resources for national coverages for links within the framework of the fixed-satellite service in the 4500 – 4800 MHz, 10.70– 10.95 GHz and 11.20 – 11.45 GHz frequency bands for downlink and 6725 – 7025 MHz and 12.75 – 13.25 GHz for uplink.

RADIO NETWORKS

Activities relating to the planning and optimisation of radio networks in the 87.6-107.9 MHz (FM) frequency band continued, as well as activities relating to international coordination 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 2020, there were altogether 152 analogue FM radio networks in the HR: 11 public (HRT: 3 on state and 8 on regional level) and 141 commercial (3 on state, 3 on regional, 18 on county and 117 on city/local level). There is still interest in launching new radio stations and in improving the coverage quality of existing radio stations. In 2020 HAKOM conducted a number of detailed technical analyses to determine the possibility of approving such requests considering the congestion of the radio spectrum. In addition, HAKOM prepared and submitted to the Agency for Electronic Media (AEM) technical parameters for launching a public tender for awarding 17 concessions for the provision of radio media service.

Data on free frequencies and on the already assigned frequencies were published in the database for the RF spectrum in the radio segment and are publicly available on HAKOM's website. In 2020, the said data were regularly updated on the basis of results of international coordination, planning and optimisation and cooperation with the AEM.

The AEM was regularly notified of amendments to technical parameters of existing broadcasters and replies were provided to queries regarding the granting of concessions in individual areas. In addition, 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. Within the legal framework of temporary licences, HAKOM approved a number of licences for temporary use of the RF spectrum in radio broadcasting for the purpose of radio programme broadcasting for temporary entertainment, religious and educational events. Amid the pandemic and social distancing measures in 2020 the number of applications for the use of FM frequencies for temporary events, such as drive-in cinemas, greatly increased. HAKOM issued temporary licences for the use of FM frequencies for 19 such events, which was a substantial increase from only three licences issued in 2019.

At the end of 2020, OIV was approved the continuation of experimental transmission of digital radio from the locations Učka, Sljeme, Ivanščica, Belje, Brač-Vidova gora, Psunj, Srđ, Ugljan and Zagreb-Prisavlje. Provisional licences were issued for the use of the RF spectrum in broadcasting for digital radio that are valid until 15 November 2021. In addition to experimental transmission, HAKOM received an expression of interest for new testing projects, as well as for the launching of a commercial digital radio. With regard to this, at the end of 2020, HAKOM prepared the Recommendation on minimum technical requirements for DAB+ signal receivers a (published in January 2021) and carried out appropriate amendments of the Radio Freque ncy Al location Plan for terrestrial broadcasting services. In 2020, HAKOM participated in two bilateral meetings and four multilateral coordination meetings with representatives of authorities of neighbouring countries to examine the option of replanning of the VHF III frequency band and to internationally harmonise the technical parameters for digital radio transmitters.

In accordance with international agreements GE84 and GE06, the procedure of coordination of radio stations with neighbouring countries continued in 2020 (Austria, Bosnia and Herzegovina, Montenegro, Italy, Hungary, Germany, Slovakia, Slovenia and Serbia). HAKOM received and replied to a large number of requests for the 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 published in the ITU BRIFIC (Radiocommunication Bureau International Frequency Information Circular) notification were analysed on a regular basis, especially those that could possibly influence the internationally harmonised network of transmitters in the HR. AT ITU's request, HAKOM revised the technical parameters of FM transmitters registered with the MIFR (Master International Frequency Register) in the period from 1982 to 2013 and Part A of the GE84 agreement in the period from 1994 to 2014.

TELEVISION

The migration of digital terrestrial television free-to-air services from the DVB-T to DVB-T2 and H.265/HEVC encoding system started in 2019 in Croatia and was completed in November 2020. Due to the impacts of the coronavirus pandemic, migration to the DVB-T2 system was postponed which consequently resulted in the issuance of new licences for all multiplex digital terrestrial televisions operating in the Republic of Croatia.

A tender procedure was completed in 2019 and licences were issued multiplexes M1, M2 and L1 with the new digital television standard (DVB-T2 standard with H.265/HEVC encoding system). Multiplex M2 achieved full coverage in November 2019, while multiplexes M1 and L1 become operational and achieved full coverage in mid-November 2020.

There are four operational digital terrestrial television networks in the HR with national coverage and two networks with local coverage. All national and local free-to-air networks (multiplexes M1, M2 and L1) broadcast DVB-T2 signal with H.265/HEVC encoding system in HD quality. Two national networks transmit the DVB-T2 signal of MUX C and E multiplexes, which are coded in the H.264/AVC standard. AY TV programmes of the EVO TV platform are broadcasted within MUX C and E multiplexes. 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 2020.

Preparatory activities for freeing up the spectrum in the 694-790 MHz band, that was used by digital television until mid-November 2020, continued. After that it will be used for the introduction of wireless broadband access services. The procedure for the international coordination of Croatian DVB-T/DVB-T2 stations with the neighbouring countries continued as well, 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. Activities regarding the harmonisation of the timetable with the neighbouring countries for feeing up the DD2 spectrum were also continued, thus creating the preconditions for a successful migration to the DVB-T2 system and for releasing the DD2 spectrum to introduce the wireless broadband access services.

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 also uses these 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.

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 2020 measurement plan, focusing on interference protection and measurement of the level of electromagnetic fields (EMF). 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.

More than 4,300 measurements were conducted in 2020 within the framework of daily and periodical measurements by immovable control and measuring stations, while there were some 1,200 field measurements. This was less than in 2019 due to the pandemic and limited movement.

Electromagnetic field measurement

In 2020, 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 por tal. 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

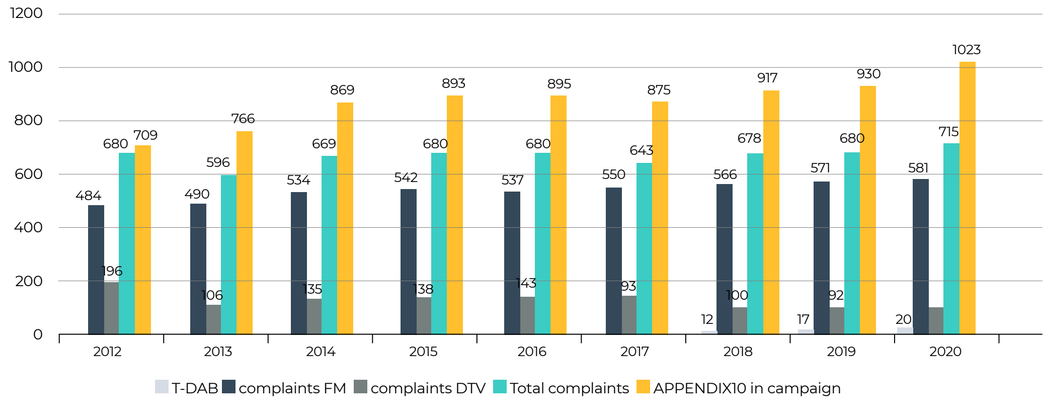
Uninterrupted operation of the electronic communication system and related services is ensured by identifying and eliminating the sources of interferences in radio communications. Special attention is awarded to state administration bodies competent for search and rescue, emergency services, maritime 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 domestic interferences was 95 and remained at 2019 levels when there were 109 interferences. The number of reported interferences in frequency area of maritime and aviation was evenly distributed.

A signal measuring campaign for FM radio and TV was carried out during summer months along the coast with the aim of monitoring the situation and presence of interference at frequencies allocated to Croatia in accordance with the international agreements and plans for radio and television frequencies (GE84 and GE06). Measurements conducted in 2020 confirmed that there was still a certain number of interferences 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, HAKOM has been drawing attention at multilateral meetings organized by ITU and RSPG Good Office meetings to the occurrence of uncoordinated Italian T-DAB transmitters and to possible problems that have arisen today in FM area. Measurements conducted in 2020 showed that the number of measured and proven interferences increased from 2019.

Figure 5.4 Italian interferences



06

CONSUMER PROTECTION

PROTECTION OF USERS OF ELECTRONIC COMMUNICATIONS

The complexity of the protection of users of electronic communications results from the growing importance of electronic communication services. The development of new technologies and services, which are becoming almost irreplaceable in everyday life, leads to a constant market growth and an increase in the number of their users. In 2020, electronic communication services were commonly used by almost all citizens of the HR. There were 1.65m users of fixed network communications, more than 4.47m users of mobile network communications, 1.03m users of internet services in fixed communication networks and more than 850,000 pay-TV connections registered.

In 2020, the importance of electronic communications became particularly pronounced during the period when, due to the pandemic and the coronavirus, a large share of activities of most citizens was carried out using public communication services (e.g. distance learning, working from home, etc.). Taking into account the difficult timely implementation of certain obligations or the exercise of the rights in the user-operator relationship, HAKOM and operators agreed the advisable practice to be applied in the newly created circumstances. Although all of the provisions of applicable regulations remained in force, operators were advised to apply a "more flexible" approach to users, which included the following recommendations: enable a longer period of duration of the temporary disconnection of services at the request of a user, flexibility in the payment of bills for the provided services (e.g. for the time being, not to charge interest on payments made after the due date), flexibility in counting the time limits for the submission of complaints, maximum shortening of time limits for the connection of temporarily disconnected services (with the recommendation not to charge the reconnection fee), etc.

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 activities that might be deemed preventive because, among other things, they prevent in advance undesirable situations in which users might be deprived as the weaker party in a contractual relationship with an operator. Disputes resolved before HAKOM are the most important corrective tool in consumer protection, enabling users to resolve their issues with the operator cost-free or without involving the courts. HAKOM's other 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.

Considerin g that a greater par t of am endments to the Ordinance on the manner and conditions for provision of electronic communications networks and services entered into force on 1 January 2020, for the purpose of the timely detection and elimination of possible issues, HAKOM took particular care of the implementation of the amendments into the operators' business operations. In informing the users, emphasis is placed on informing them about their rights arising from the amendments to the Ordinance. The mentioned "new rights" referred primarily to increased transparency when concluding distance contracts (alignment with amendments to the Consumer Protection Act (CPA)), the shortening or setting of time limits within which an operator is obligated to complete certain activities (e.g. repair a malfunction, transfer a contract from one person to another, provide users with information on the amount of charge for early contract termination, realise services in fixed electronic communications network, etc.), the right of the users to compensation for delayed repair of a malfunction, etc. In addition, 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, HAKOM continued its activities aimed at improving the performance of operators' services. These activities led to better quality in the work of operators' services with their own users, as particularly seen in operators' second-instance decisions that are more aligned with HAKOM's decisions, compared with the previous years.

DISPUTES

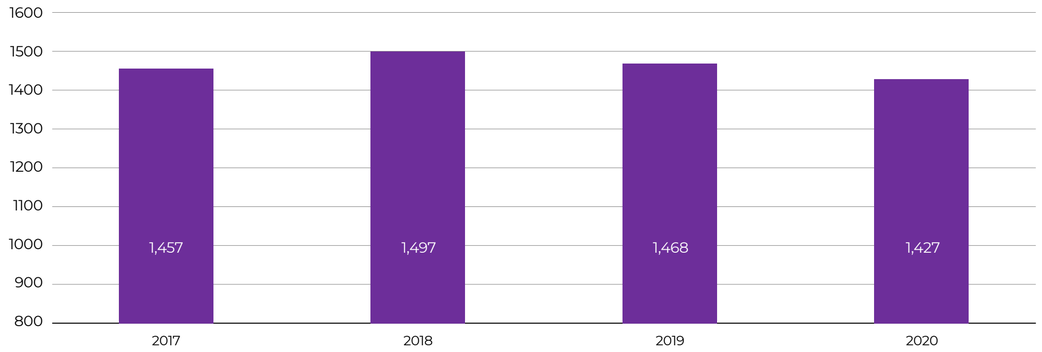
The ECA determines the right of the user to submit a motion for the resolution of a dispute to HAKOM concerning the amount of the bill, the quality of provided services, the violations of subscriber contracts or the violations of the right to open internet access. HAKOM resolves disputes between users and operators based on the opinion of the Consumer 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, which provides insight into the key issues and which serves 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 2020, 1,427 disputes were resolved, which was a decrease of 2.79 percent from 2019. Although this means that the number of disputes has not increased for two consecutive years, it is important to emphasise that the oscillation in the number of disputes has been relatively low for the past four years (ca. +/– 2 – 3 percent). It can be concluded that there are no significant changes relative to the previous periods.

Since 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, etc.), when evaluating their importance for the assessment of 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 informing the users, among other things, about the rights to file complaints to operators and the legislative procedure, as a result of which it is reasonable to expect that a certain number of disputes is related to those users that have not filed complaints previously because they did not have the information about how to initiate a dispute.

Figure 6.1 Number of disputes in electronic communications



The key performance indicators of the analysis include the total number of disputes of each operator, the ratio of the number of disputes to the total number of users of operators and the result of dispute resolution conducted by HAKOM (the ratio of positive to negative decisions adopted by HAKOM). Namely, a comparison of these indicators with the previous years' results provides the information about the individual operator, as well as about the quality of work of its customer support service. A rise in the number of disputes of a specific operator that cannot be correlated with the increase in the operator's user base indicates a decline in the quality of the service provision and/or weaknesses in the work of the operator's services.

Figure 6.2 Number of disputes by operator

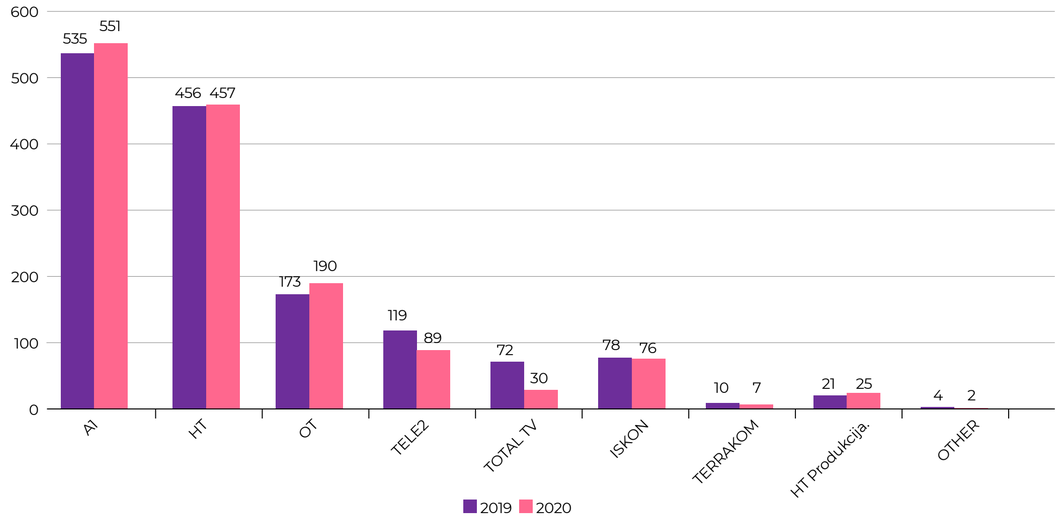


Figure 6.3 Average number of disputes per every 10,000 users of each operator

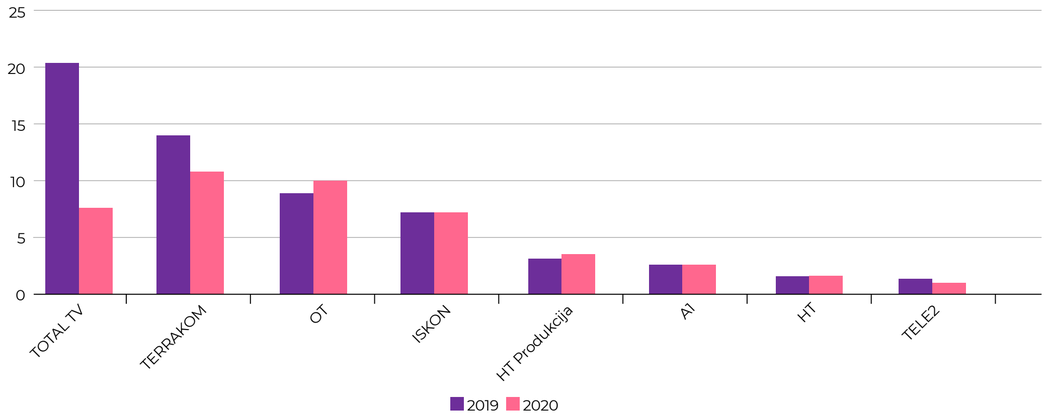
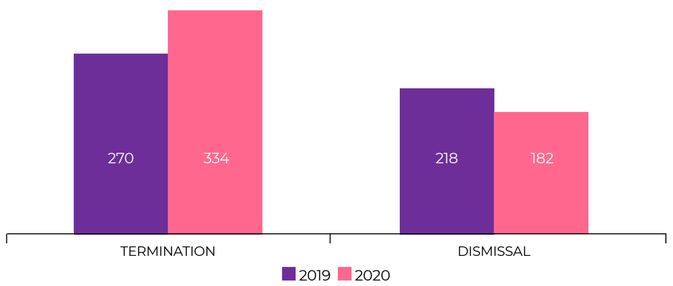
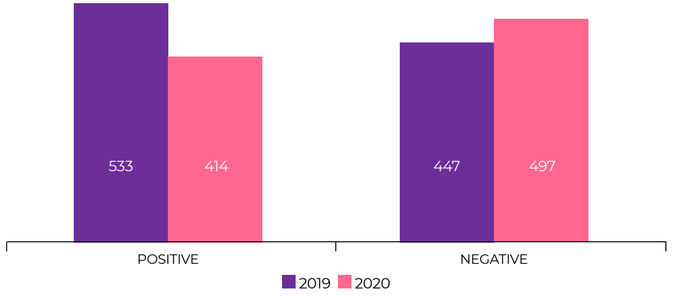


Figure 6.4 Ratio of decisions by type of dispute



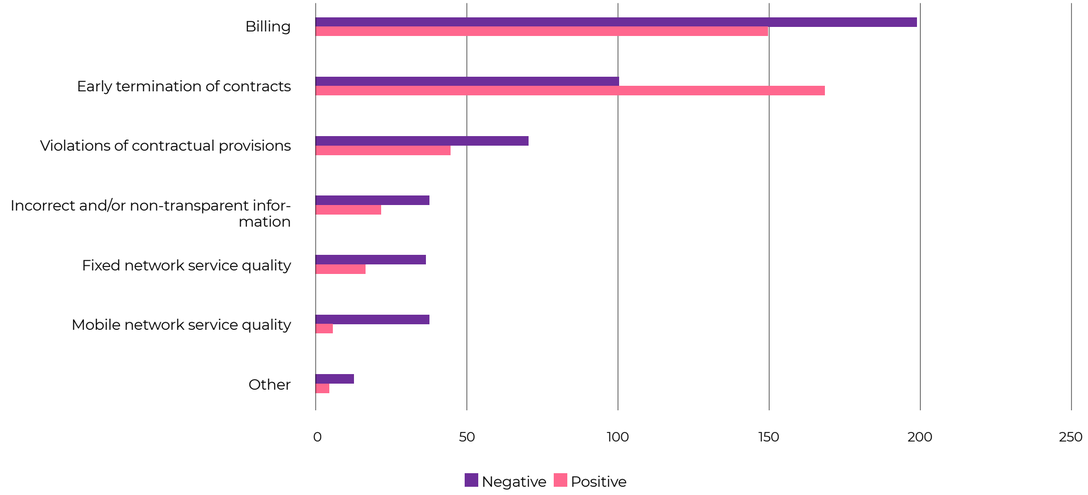
Of the total number user requests for dispute resolution in 2020, 516 were resolved by adopting a decision on dismissal or termination that were resolved without the need to deliberate the merits of the case. The growth of such decisions by six percent from the previous year is predominantly caused by the increase in the number of decisions on termination, which grew by about 24 percent. They 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 decisions point to weaknesses in the work of operators' customer support service, operators have been warned that they should reduce the number of such disputes and that the adoption of such decisions on the termination of proceedings should be an exception. The number of decisions on dismissal declined by 16.51 percent. They were predominantly reached because the issue was not under HAKOM's jurisdiction or due to the expiry of statutory procedural deadlines. This leads to the conclusion that users were better informed about their rights to file complaints and about the prescribed statutory deadlines.

Figure 6.5 Ratio of positive to negative decisions for the user



Most disputes between operators and users, 911 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. Specifically, 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, i.e. HAKOM confirms decisions taken by operators in such complaints. The fact that 45.44 percent of decisions in 2020 were in favour of the user, while in 2019 that share totalled 54.39 percent, indicates certain improvement in the work of operators' services in resolving user complaints.

Figure 6.6 Most frequent reasons for initiating disputes in 2020



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 the violations of the provisions of the Consumer Protection Act (CPA). It is stress worthy that in the previous year a significant number of disputes, over 14 percent of them, was related to the early termination of contracts pursuant to the CPA, while in 2020, their share dropped to below seven percent. The decline was largely due to the fact that new statutory provisions regulating the conclusion of distance contracts entered into force on 1 August 2019.

As previously stated, 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 basis of and the precondition for successful protection is a well-informed user who, in addition to all information available on the official website, obtains all relevant 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). 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 or radio shows concerning consumer protection and through cooperation with other authorities competent for consumer protection policies. Since a greater part of amendments to the Ordinance on the manner and conditions for provision of electronic communications networks and services that had been adopted in 2019 entered into force on 1 January 2020, HAKOM paid special attention to familiarising service users with new rights. The most important amendments relate to increased transparency when concluding distance contracts (alignment with amendments to the CPA), the right of the user to reimbursement in the case of a delayed repair of a malfunction and the shortening or setting of time limits within which the operator is obligated to complete certain activities (e.g. repair a malfunction, transfer a contract from one person to another, provide users with information on the amount of charge for early contract termination, realise services in fixed electronic communications network, etc.). In September 2020, HAKOM's "Market Day" was held at the 43rd International Convention on Information, Communication and Electronic Technology (MIPRO 2020), where a panel was held on the Transparency of the terms of use of public communication services.

With the aim of informing users, a user leaflet was prepared and published with information every user should know about services in the mobile and fixed networks and printed copies were made available to consumer counselling centres, consumer associations and operators. In addition, users could also obtain more information on how to file a complaint, how to conclude a distance contract and how to protect children on the internet through three educational videos available on HAKOM's YouTube channel.

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 in 2020, the practice of publishing semi-annual and annual reports on the work of operators' commissions based on HAKOM's decision 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. Since in 2020 operators' second instance decisions were less frequently modified at third instance, it can be concluded that operators adopt HAKOM's practice.

• Cooperation with the representatives of operators' Consumer Complaints Commissions – In order to detect and eliminate problems in the work of operators' services as efficiently as possible, semi-annual meetings were held with the representatives of the commissions of all operators with major market shares, making them acquainted with the results of the analysis and proposing specific measures for improving their performance.

• The analysis of general terms and conditions, special conditions and price lists – These documents are an integral part of a subscriber contract and should comply with the applicable law and subordinate legislation. Lack of knowledge or understanding of specific provisions represents one of the most frequent causes for disputes and HAKOM monitored the amendments and, upon need, requested from operators to make certain corrections.

In 2020, the most important changes related to operators' general terms and conditions of operation and alignment with amendments to the Ordinance on the manner and conditions of provision of electronic communications networks and services.

With the aim of enhancing user experience, users were provided with the following free applications:
– HAKOMetar – 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 – 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 – 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 – 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 2020, more than 54,661 telephone numbers were entered in the Register.

PROTECTION OF POSTAL SERVICE USERS

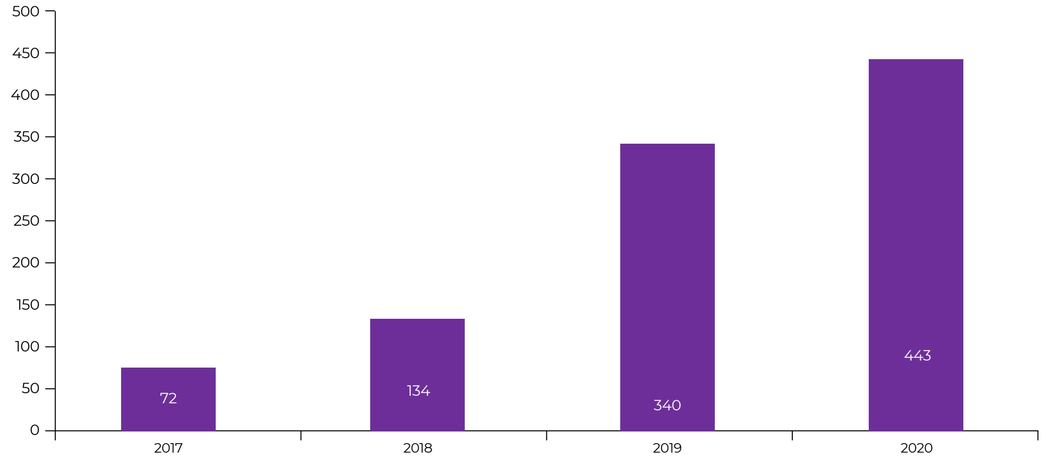
In 2020, due to the specific situation with the pandemic and two strong earthquakes, certain difficulties in regular carrying out of postal traffic occurred. Considering the situation, HAKOM monitored the developments during the whole time and provided support to postal service users, most frequently by informing them in a timely manner about changes in the postal traffic and responded to numerous queries. HAKOM also contributed to the adoption of HP's decision to enable reimbursement to users for the share of the paid price for postal services in international traffic, although HP was not held accountable for failing to meet its obligation as the disruption in traffic in March was considered to be a force majeure event.

In the course of the year, HAKOM continued to perform its regular activity of user dispute resolution pursuant to the provisions of the PSA. A user of postal services may submit a written complaint to a postal service provider in a complaint resolution process in the case 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.

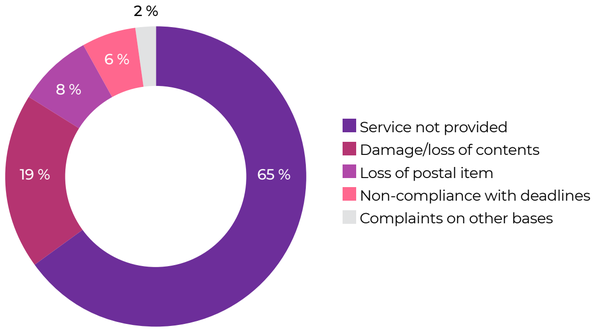
The number of dispute settlement requests rose considerably in 2020. In all, there were 443 requests, or up by about 30 percent than in the previous year. The largest number of received requests, 415 of them, were related to disputes with the universal service provider, HP, and 28 to other postal service providers. It is worth noting that more than two hundred almost identical requests were filed by a single user, which indicates to a certain abuse of user rights.

Figure 6.7 Number of user disputes in the postal services market



As regards the types of complaints, most were complaints about service not provided, a total of 288, followed by complaints related to the damage of postal items due to which 83 disputes were initiated. There were 36 complaints due to the loss of postal items, 25 due to non-compliance with the deadline for transfer and delivery and 11 complaints on other bases.

Figure 6.8 Shares of types of complaints in received requests



If the types of services the complaints related to were analysed, most disputes, around 61 percent, related to registered mail items (which also included judicial documents and documents sent under administrative, tax and other proceedings, which were 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, 428 disputes were resolved in 2020, of which 410 were received in 2020, while 18 were transferred from 2019. Pursuant to the decision, 323 requests were rejected, and 82 requests were accepted or partially accepted. In 14 cases a decision on termination was reached, while nine 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 RAIL PASSENGER TRANSPORT

Pursuant to the ARRSM, 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 by Regulation (EC) No 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passengers' rights and obligations (Regulation 1371/2007), the ARRSM 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 or requests to HAKOM are regulated by Articles 30 and 31 of the ARRSM.

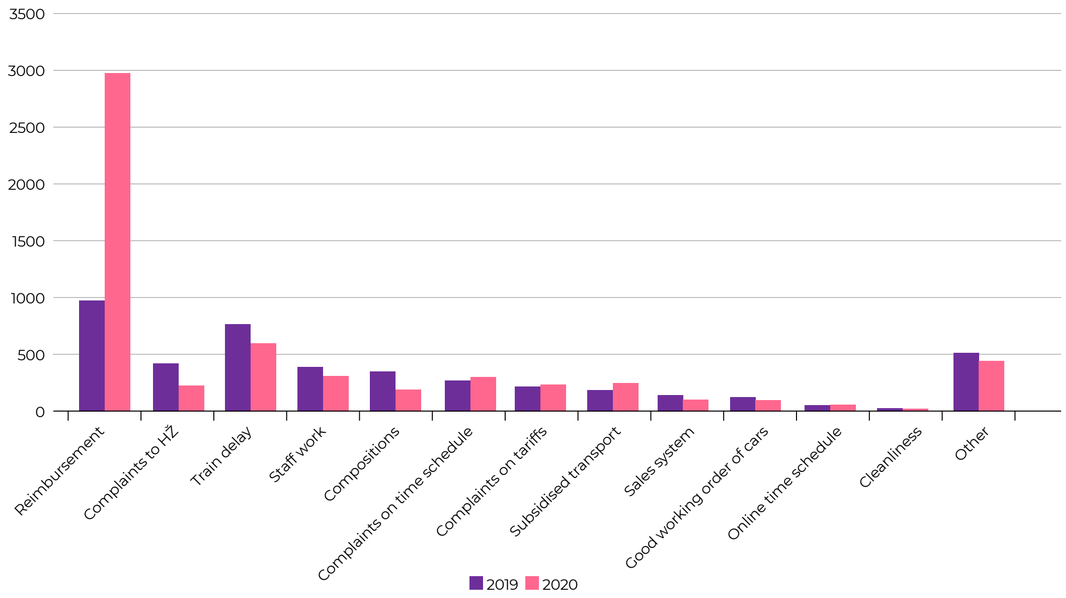
Disputes are resolved by decisions adopted pursuant to the opinion of the Consumer Complaints Commission, an advisory body established at HAKOM, in accordance with the Consumer Protection Act. HAKOM's decisions are final and may not be appealed, but administrative proceedings may be initiated before a local competent administrative court.

Four times more decisions initiated pursuant to passenger requests were adopted in 2020 than in 2019. The requests were related to reimbursements for unused tickets, especially season tickets (monthly, annual), substitute transport, absence of support to persons with reduced mobility and persons with disabilities, as well as train delays.

In December 2020, leaflets and posters on the rights and obligations of rail passengers were prepared aimed at informing passengers about their rights, as well as their obligations when travelling by train (materials were distributed in January 2021, in cooperation with HŽPP). The brochure was prepared in compliance with Regulation (EC) No 1371/2007 and ARRSM explaining that a train ticket represents a transport contract. By purchasing a ticket, the passenger also accepts the general terms and conditions of the transport contract published on the HŽPP website. The brochure particularly emphasises support to persons with disabilities and persons with reduced mobility, in addition to the description of the procedure for filing complaints and consumer complaints as well as the role of HAKOM in the protection of passenger rights.

In all, 5,809 complaints and 149 consumer complaints were addressed to HŽPP in 2020, most of which related to reimbursements for purchased tickets, subsidised transport, train delays, the work of HŽPP staff, tariffs, etc.

Figure 6.9 Number and type of passenger complaints to rail carrier – HŽPP



ACCESSIBILITY (PERSONS WITH DISABILITIES)

The confirmation of continued good cooperation between the Faculty of Electrical Engineering and Computing (FER) and HAKOM in the area of digital accessibility for persons with disabilities came from the “Project of the Year” industry award won for the “Accessible Website for Persons with Disabilities”, awarded by PMI Croatia (Project Management Institute). The project was realised in 2019, while in 2020, cooperation continued on a new project “The accessibility of mobile applications and raising public awareness of the challenges people with disabilities face”. The Methodology for creating accessible websites was published in the beginning of the year, and later followed by the Methodology for the development of accessible software solutions. Within the 2020 project, the new ICT-AAC “Su sret nica” a pplication was publishe d, available for devices with the Android and iOS operational systems and for internet browsers, which was presented at the virtual convention in December 2020. People with disabilities approach helper (“Susretnica” in Croatian) is a “serious game” (designed for purposes other than entertainment). It has been created to raise awareness of the importance of the proper approach to persons with various disabilities. The purpose of the application is to show on practical and everyday life examples of what is proper, raise our awareness and teach us how to behave and how to approach persons with disabilities. The application has been developed in cooperation with associations whose members are people with various disabilities. It includes different everyday situations we may come across.

A prototype of accessible software solution for mobile devices has been developed based on the needs shown by the target users of accessibility. The prototype serves the purpose of a model application with the optimum set of accessibility options, potentially useful to all those interested in integrating accessibility into the existing or new mobile applications in accordance with the Universal Design. In terms of content, the prototype and the accessible website contain telecom operators’ offers for youth, persons with disabilities and the elderly.

The Methodology for the development of accessible mobile software solutions was created based on the experience gained from working with the prototype. The objective is to transfer knowl-

edge gained during research on specific needs of users in Croatia with regard to the accessibility of mobile applications and the methods of implementation for all who wish to improve the accessibility of existing mobile applications and develop new ones without barriers for users. The Methodology in PDF format is publicly available on HAKOM's website.

CHILD PROTECTION

HAKOM places special emphasis on protecting children as users of electronic communication services. "Safer Internet Day" was marked in the beginning of the year, in February, in cooperation with the Centre for Missing and Exploited Children (the Safer Internet Centre – SIC) and Partners in Learning as partners.

Within the framework of HAKOM's programme for raising awareness among children and parents in primary schools, the brochure "How to protect yourself in the world of intern et and mo bile phones " was updat ed again. The brochure was printed in 50,000 copies and in cooperation with the Ministry of Science and Education sent in sufficient quantities to all primary schools for the parents of 5th grade pupils in the school year 2020/2021. The programme will continue in the forthcoming period.

In addition to the brochure that contains practical and useful advice for parents on computer protection, privacy and personal data protection, acceptable behaviour and responsible use of social networks as well as possible dangers on the internet, and is part of HAKOM's programme of informing children and parents, education is also implemented on the SINI – Safe on the Internet platform, on which children and youth, parents and educational exp erts can b e educated. The latter were also offered professional training via this digital platform, primarily through different webinars.

07

OTHER HAKOM ACTIVITIES

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 2020. HAKOM was appointed as the Competent Authority for the Framework Programme (CAFP) by a Decision of the Government of the Republic of Croatia in July 2016.

The FNP is a state aid programme directed at achieving national strategic objectives set out in the Strategy for Broadband Development in the Republic of Croatia for 2016 – 2020 and the Digital Agenda for Europe for the period up to 2020, relating to achieving general broadband coverage at minimum speeds of 30 Mbit/s and 50 percent of households subscribing to broadband access with speeds of a minimum of 100 Mbit/s. This represents a precondition for the use of advanced e-services, digital operations and the application of advanced technologies, and has a direct impact on economic development, contributes to GDP growth and positive demographic developments, especially in the rural and remote areas of the HR.

HAKOM's basic roles as the CAFP are the coordination of the FNP implementation on the national level and the compliance verification of individual Broadband Infrastructure Development Plans (BIDPs) with the FNP, a consulting role regarding competent authorities for individual projects (CAPs), and the approval of BIDPs and other activities prescribed by the FNP. Individual broadband infrastructure development projects aim to increase coverage by the next generation broadband access network in the areas of the HR without operators' commercial interest. The competent authorities of individual projects under the FNP are public authorities at local and/or regional level (municipalities, cities and counties). The precondition for the participation in the procedure for grant allocation for these projects was that the competent authority for the individual project prepares the BIDP and that it is approved by the CAFP.

In 2020, the Ministry of Regional Development and EU Funds, as a continuation of the first two phases from 2019, published the third and final phase of the call for the award of grants for the "Deployment of Next Generation Networks (NGN)/Next Generation Access Networks (NGA) in NGA white areas". Individual projects were evaluated and selected based on the approved BIDPs and grant agreements were signed with operators and local self-government units. Twenty-one grant agreements were signed. Sixteen projects are being implemented 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 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.

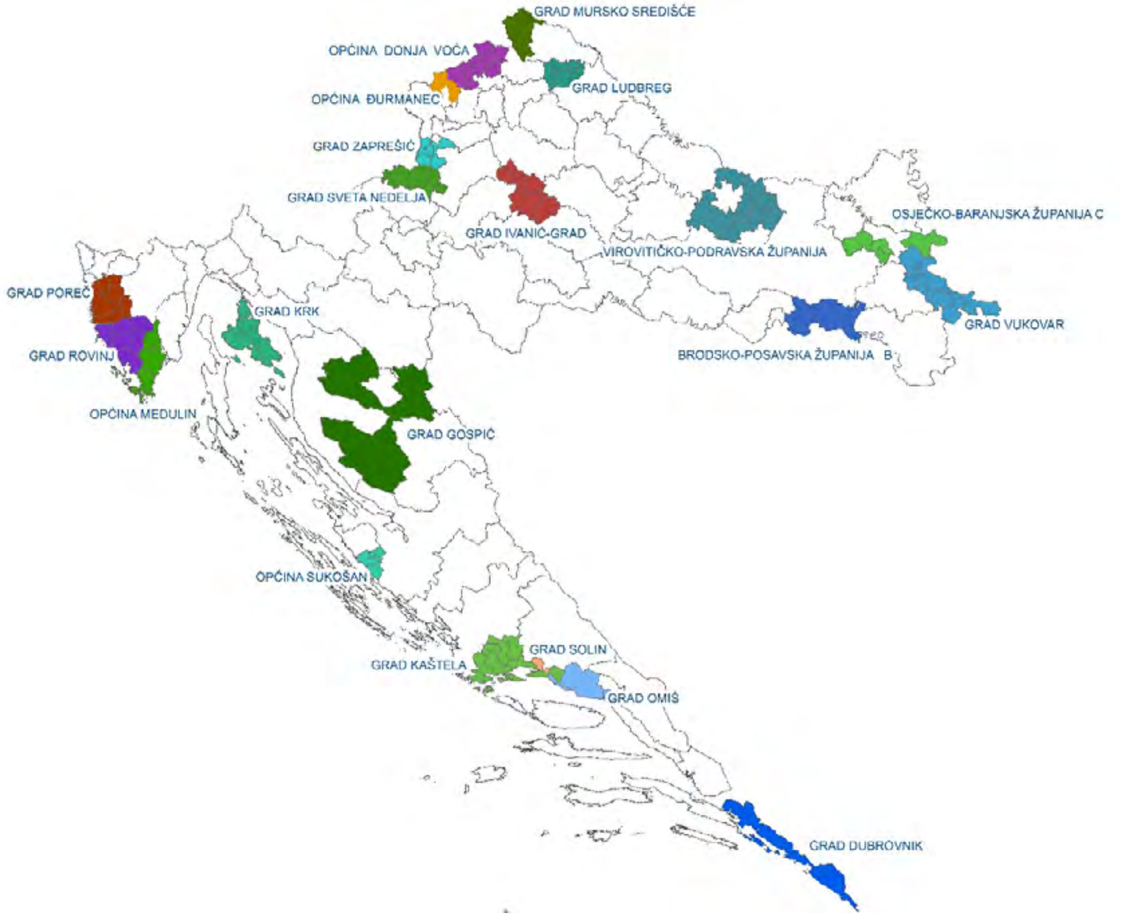
Individual projects for which grant agreements have been signed are presented in the table below.

Table 7.1 List of projects for which co-financing agreements were signed

COMPETENT AUTHORITY	SCOPE	NO. OF INCLUDED HOUSING UNITS	GRANT BENEFICIARY
Poreč City	Poreč City and Municipalities Funtana, Kaštelir-Labinci, Sveti Lovreč, Tar- Vabriga, Višnjan, Vižinada, Vrsar and Tinjan	9,80	HT
Rovinj City	Cities Rovinj-Rovigno and Vodnjan-Dignano and Municipalities Bale-Valle, Kanfanar, Svetvinčenat and Žminj	8,505	HT
Kaštela City	Cities Kaštela, Split and Trogir and Municipalities Lećevica, Marina, Okrug, Prgomet, Primorski Dolac and Seget	22,729	A1
Zaprešić City	Zaprešić City and Municipalities Brdovec, Dubravica, Jakovlje, Luka, Marija Gorica, Pušća	12,519	HT
Medulin Municipality	Municipalities Medulin, Barban, Ližnjan-Lisignano, Marčana	10,538	HT
Ivanić-Grad City	Cities Ivanić-Grad and Dugo Selo and Municipalities Brckovljani, Kloštar Ivanić and Križ	17,360	A1
Dubrovnik City	Dubrovnik City, Municipalities Dubrovačko Primorje, Konavle and Župa Dubrovačka	11,089	HT
Mursko Središće City	Mursko Središće City and Municipalities Gornji Mihaljevec, Nedelišće, Selnica, Strahoninec, Sveti Juraj na Bregu, Sveti Martin na Muri, Šenkovec and Štrigova	10,952	HT
Vukovar City	Cities Vukovar and Ilok, Municipalities Bogdanovci, Borovo, Lovas, Negoslavci, Nuštar, Tompojevci, Tovarnik, Trpinja	15,156	HT

COMPETENT AUTHORITY	SCOPE	NO. OF INCLUDED HOUSING UNITS	GRANT BENEFICIARY
Sveta Nedelja City	Cities Samobor and Sveta Nedelja, Municipality Stupnik	14,679	HT
Ludbreg City	Ludbreg City, Municipalities Mali Bukovec, Martijanec, Sveti Đurđ and Veliki Bukovec	7,806	HT
Solin City	Solin City	2,510	A1
Gospić City	Cities Gospić and Otočac, Municipality Plitvička jezera	15,502	Gospić City
Brod-Posavina County (B)	Municipalities Donji Andrijevci, Garčin, Gornja Vrba, Gundinci, Klakar, Oprisavci, Sikirevci, Slavonski Šamac, Velika Kopanica, Vrpolje	7,85	HT
Krk City	Krk City, Municipalities Baška, Dobrinj, Malinska-Dubašnica, Omišalj, Punat and Vrbnik	11,461	Krk City
Virovitica-Podravina County	Municipalities Crnac, Čačinci, Čađavica, Mikleuš, Nova Bukovica, Sopje, Voćin and Zdenci	5,80	Virovitica-Podravina County
Sukošan Municipality	Municipalities Sukošan, Galovac, Sveti Filip i Jakov and Škabrnja	7,306	Sukošan Municipality
Omiš City	Omiš City, Municipalities Dugi Rat, Podstrana and Zadvarje	9,70	HT
Đurmanec Municipality	Krapina City, Municipalities Đurmanec, Jesenje, Petrovsko and Radoboj	9,260	HT
Osijek-Baranja County	Municipalities Antunovac, Čepin, Erdut, Ernestinovo, Šodolovci	9,603	HT
Donja Voća Municipality	Lepoglava City and Municipalities Bednja, Cestica, Donja Voća, Klenovnik, Marušćevec, Petrijanec and Vinica	15,830	Donja Voća Municipality

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



With the aim of ensuring the transparency of the implementation of individual projects under the FNP, all relevant information regarding initiated projects, as well as other information, are regularly published on the central website nop.hakom.hr.

BROADBAND COMPETENCE OFFICE

HAKOM has been performing the role of the Broadband Competence Office since mid-2016 and it is a member of an EU-wide Broadband Competence Offices Network (BCO Network). In 2020, HAKOM's representatives participated in several meetings and workshops organised by the BCO with an aim of sharing knowledge and experience among Member States and addressing practical issues.

Within the Broadband Competence Office, HAKOM continuously informed the public and potential competent authorities for the "WiFi4EU" initiative, instructing them on the ways and possibilities to use grants under the initiative and assisted municipalities and cities in registering and applying for the tender.
In 2020, the fourth and the last round of fund allocation through vouchers for individual municipalities and cities in the EU was realised. The initiative aims to strengthen local "free and non-discriminatory" wireless connectivity and to promote citizen connectivity in public places such as squares, parks, libraries, museums, public institutions, health centres, etc. In the four rounds of voucher allocation (one in 2020, two in 2019 and one in 2018) 460 of HR self-government units won individual vouchers worth EUR 15,000 or EUR 6,900,000 in total. This means that almost 80 percent of Croatian municipalities and cities won the said vouchers and 371 of them already implemented WiFi solutions and opened their networks for free public use.

As the Broadband Competence Office, HAKOM is a member of the Connecting Europe Facility (CEF) Expert Group for the digital sector. The Regulation establishing CEF is an EU financial instrument aimed at investing in transport, energy and digital infrastructure, as well as achieving synergies among the three sectors. In working in this expert group, HAKOM participated in the preparation of the following thematic units: "5G Communities", "5G corridors", "Submarine cables deployment" and "Operational Digital Platforms".

In 2020, HAKOM participated in the preparation of the National Plan for the Development of Broadband Access in the HR for the period from 2021 to 2027.

The process of programming the new 2021– 2027 financial period of the European Union began at the end of 2020 and working groups were set up for the preparation of programming documents and operational programmes relating to cohesion policy. HAKOM appointed its members to the Smarter Croatia Working Group (corresponds to the EU policy objective "A smarter Europe by innovative & smart economic transformation) participating in the preparation of the Competitiveness and Cohesion Operational Programme 2021 – 2027.

COOPERATION

HAKOM, as the regulator of three markets and a public authority focusing on a multidisciplinary approach, is often involved in many 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.

International cooperation

European Union

It is worth mentioning that during the Croatian Presidency of the Council of the EU, from 1 January 2020 to 30 June 2020, some of HAKOM's experts were assigned to the **Permanent Representation of the Republic of Croatia to the EU** in Brussels to be engaged in the work of the Transport, Telecommunications and Energy Council.

HAKOM's experts also participated in the meetings of the **Working Party on Telecommunications and Information Society**, where they represented the views of the HR in discussions on the proposals of acts. The central topic in 2020 was still the discussion of 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). These activities slowed down after February due to the COVID-19 pandemic.

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). The Radio Spectrum Committee 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 facilitates the communication of national regulators with the EC before implementation to ensure that the measures are adapted to the different situations of individual Member States. Among the EU decisions adopted in 2020, the following should be highlighted: (EU) 2020/590 amending Decision (EU) 2019/784 as regards an update of relevant technical conditions applicable to the 24,25-27,5 GHz frequency band, (EU) 2020/667 amending Decision 2012/688/EU as regards an update of relevant technical conditions applicable to the frequency bands 1 920-1 980 MHz and 2 110-2 170 MHz, (EU) 2020/636 amending Deci-

sion 2008/477/EC as regards an update of relevant technical conditions applicable to the 2 500-2 690 MHz frequency band and (EU) 2020/1426 on the harmonised use of radio spectrum in the 5 875-5 935 MHz frequency band for safety-related applications of intelligent transport systems (ITS) and repealing Decision 2008/671/EC.

The Communications Committee, **COCOM**, assists the EC in adopting implementing and delegated acts in the field of application of the directives governing the electronic communications market. In addition, the Committee is a forum for the exchange of experiences of Member States and the EC in the implementation of European and national regulations in the field of electronic communications. HAKOM's representatives participated in the work of COCOM together with MSTI's representatives.

HAKOM also participates in the work of the **Radio Spectrum Policy Group** (RSPG), which operates within the EC and advises on strategic issues regarding the RF spectrum management in the EU and the policy of 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, peer review and sharing experiences of Member States in spectrum allocation, the programme of RF spectrum management policies and activities relating to cross-border coordination. 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

The President of the Council of HAKOM held the role of BEREC's Vice-Chair in 2020, as a result of which HAKOM's activities were adapted to its role as they required a detailed monitoring of the work on BEREC's documents, primarily with regard to the topic of open internet in the area of HAKOM's responsibility as Vice-Chair, as well as other issues within the work of the Miniboard (all BEREC Vice-Chairs).

Many HAKOM's experts were involved in the work of BEREC's working groups or other BEREC's bodies, primarily in drafting documents established by BEREC's work programme for 2020.
The preparation of guidelines mandatory to be adopted based on the Code was continued. A series of reports on market data (roaming report, regulatory accounting, termination rates, WACC, etc.) and opinions on Commission's legislative proposals and implementing acts (DSA and DMA, the Recommendation on Relevant Markets, a single maximum Union-wide voice termination rates for services in mobile and fixed communication networks) were adopted, as well as other documents.

HAKOM is a member of the 5G Cybersecurity Working Group (Cybersecurity 5G WG) in which the implementation of a toolbox together with a joint set of measures to offset the main 5G network security risks is closely monitored at the level of the EU Member States.

The BEREC's "Carry-over work on Database on general authorisation notifications transmitted to competent authorities" Working Group adopted a decision on the common terminology of electronic communications services and networks for the implementation of the national database of the individual Member State. The Working Group prepared a template for the submission of a prior notification of the beginning/termination of the provision of electronic communications networks and services. The template is a document based on which all Member States send their reports to BEREC's single EU operators' database. HAKOM tested the compliance of the existing e-Operator database with BEREC's single test database. Operators were notified of the need to harmonise the new terminology with the old names for services in the e-Operator system (mapping of services).

The guidelines on common criteria for the management of numbering resources and numbers with a right of extraterritorial use and the process of connecting and sending the data of registered operators in the HR according to BEREC's single database (prior notification and BEREC's guidelines) were prepared within BEREC's Emergency Communications (EG112) group.

DSA

In July 2020, HAKOM set up a working group with the task to monitor the development of the future European legislative framework for digital platforms and analyse digital platforms at the European and national levels. Since it is necessary to establish the economic and regulatory impact of digital platforms on competition and possible regulatory measures in the future regulatory framework, the organisational structure of the working group covers economic, legal and technological aspects.

The legislative proposals of the European Commission, the Regulation on digital services (Digital Services Act; DSA) and the Regulation on digital markets (Digital Market Act; DMA), were published in December 2020.

As proposed, Member States will have to designate competent authorities – Digital Services Coordinators – for the supervision of compliance of services established in their territory with the new rules and for the participation in the cooperation mechanism at the European level based on the proposed Digital Services Act.

The draft DSA explicitly mentions electronic communications' regulators as potential Digital Services Coordinators. The Digital Services Coordinator would act as the single contact point for the Commission, the Board, the Digital Services Coordinators of other Member States, as well as for other competent authorities in a Member State relative to all the issues associated with the application of the DSA. Accordingly, it is necessary to ensure that those authorities act in complete independence from private and public bodies, without the obligation or possibility to seek or receive instructions, including from the government, and without prejudice to the specific duties to cooperate with other competent authorities, the Digital Services Coordinators, the Board and the Commission. On the other hand, the independence of these authorities should not mean that they cannot be subject, in accordance with national constitutions and without endangering the achievement of the objectives of this Regulation, to national control or monitoring mechanisms regarding their financial expenditure or to judicial review, or that they should not have the possibility to consult other national authorities, including law enforcement authorities or crisis management authorities, where appropriate.

HAKOM's current legal position complies with the requirements of independence and impartiality of the proposed Digital Service Coordinator at national level. This HAKOM's role also builds upon its previous experience in working with users, the experience in a similar institutional mechanism at the EU level (BEREC), the establishment and ongoing work, education, digital platforms working groups within HAKOM, continued cooperation with the Ministry of Economy and Sustainable Development (MESD) as the line ministry for the DSA proposal and the CCA with regard to the DMA proposal. The existing knowledge of digital services, which are closely linked to electronic communication services, is also an advantage.

ITU i CEPT

Participation in the work of the **CEPT** bodies is important, so that regulations in the HR could be harmonised with the CEPT regulations on time. Due to the pandemic, from March 2020, all working group meetings were held via internet applications. HAKOM participated in the umbrella working group of the **Electronic Communications Committee (ECC)**, where decisions and recommendations regarding the management of the RF spectrum and number space are made as a result of the work of the working groups.

The **Working Group Frequency Management (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.

Participation also continued in the work of the **FM44 Project Team**, which deals with satellite connection issues. Considering the development of new satellite systems, it is necessary to monitor their impact on existing microwave and satellite connections in the HR, as well as other communication systems.

In January 2020, HAKOM organised a meeting in Split of the **Working Group Spectrum Engineering (WGSE)**, responsible for the analysis of sharing capabilities of the RF spectrum between different radiocommunication services. The working group, with the help of project teams, analyses the possibility and the ways of sharing the RF spectrum between short-range devices (SRD) and mobile, fixed and satellite services.

The HR is a signatory to the **HCM (Harmonized Calculation Method) Agreement**, which defines unique criteria and methods for interstate coordination of the operation of private mobile networks and routing. In 2020, the HCM Agreement was revised and the parameters of individual radio stations were coordinated with the signatories – neighbouring countries (Austria, Hungary and Slovenia). HAKOM participated in the work of the **HCM TWG** Working Group that in 2020 paid special attention to studying the potential adverse effect on radio stations in the fixed service due to the growing number of satellite networks within which, among others, terminals on aeroplanes, vessels and trains operate.

HAKOM continued to participate in the work of the **ECC PT1** project team, which deals with the area of IMT (International Mobile Telecommunications) technologies in the development of regulations for the existing and new generations of mobile communications and RF planning. PT1 is in charge of preparing the topics for the WRC-23 relating to IMT and active antenna systems on which work began in 2020. This comprises the identification of new frequency bands for IMT in the mid-band – 3 300-3 400 MHz and 6 425-7 025 MHz in Region 1 and 7 025-7 125 MHz on a global level, the allocation of the 3 600-3 800 MHz band to the mobile service on a primary basis and the consideration of the applicable limitations for active antenna systems.

HAKOM participated in the work of the **CPG PTD (CEPT) and ITU TG 6/1** working groups with the main task to prepare for the WRC 2023, relating to the future use of the UHF spectrum.

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 2020, reports from other working groups were also monitored, at the level of analysis of output documents.

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 5GHz WLAN interference, as well as standardisation, measurement uncertainty of standards and better coordination in the adoption of standards.

In 2020, 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; sub-allocation and number hosting (implementation models, rights of use and obligations for E.164 numbers across the electronic communications supply chain;
- measuring and evaluating Mobile Internet Access Service Quality (Mobile IASQ);
- the role of E.164 numbers in the cases of international fraud (verification of irregular EU/EEA numbers), numbers for the provision of OTT (Over The Top) services;
- OTA (Over The Air) switching using eSIM/eUICC.

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)[14] . 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 2020, three virtual workshops were held under the auspices of EMERG: broadband strategy, international roaming and network neutrality.

ENISA

In 2020, HAKOM continued to participate in the working meetings of the **European Network and Information Security Agency (ENISA)** in the Article 13a working group, which assists in the 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.

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 knowledge with other Member States and stakeholders in the HR. The main topics that were discussed included the strengthening of the multistakeholder internet governance model, the IGF reform as an open forum that should maintain global presence and relevance, the DNS system cyber security, human rights in cyber space, 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.

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. In 2020, the addressing of alignment with the GDPR continued, enhancing the governance processes used in the ICANN as well as the issue of the protection of human rights in these processes and the issue of the protection of geographical names in the TLD domains assignment processes. In 2020, HAKOM coordinated the proposal of HR positions with CARNet as the .HR top-level domain manager.

14 http://www.emergonline.org/about-emerg

ERGP

In 2020, HAKOM participated in the work of the **European Regulators Group for Postal Services (ERGP)**. Working group meetings were held online (via virtual platforms) and discussed and addressed the issues related to the universal service, 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. The ERGP continued to provide support to the EC by providing technical assistance and advice in the field of postal services. The topics to which the ERGP paid special attention in 2020 included the provision of postal services in the Member States during the COVID-19 pandemic and the related challenges of the European postal system, the initiative to amend the Postal Directive, trends, challenges and the strategic directions of the ERGP for the forthcoming period and the application of knew knowledge and technologies in postal activity. HAKOM's representatives attended the ERGP plenary sessions in June and November 2020.

PDC

The Postal Directive Committee (PDC) is an EC working body in the field of postal services that serves as a scrutiny body for 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. 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. In 2020, 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.

CERP

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 topics primarily focused on the work of the Universal Postal Union (UPU) and the discussion of a sustainable opening of the UPU to other stakeholders in the postal system, the new regulation and distribution of universal postal services transit costs and the modification of the model of membership fees and the financing of the UPU.

UPU - POC

The Postal Operations Council (POC) is the technical and operational body of the UPU consisting of 40 Member States elected at the Congress. The POC meets, as a rule, once a year at the UPU headquarters in Bern, Switzerland. The POC's work programme focuses on the period between the two UPU congresses and on assisting Member States and their selected/appointed national postal service providers in modernising and upgrading their postal products and services. It focuses on operational, economic and commercial aspects of the postal business, and makes recommendations to the Member States regarding standards for technological, operational or other processes, where uniform practice is necessary. A representative of HAKOM participated in the meeting held in October 2020.

IRG Rail

The IRG Rail is the organisation of independent European regulators for railway services established in 2011, and now includes 31 members. The organisation has strengthened international cooperation between rail regulatory bodies. However, it has become obvious over the past several years that its structure should be improved in order to adapt it to the current large network and an increasingly more complex rail sector and legislative framework.

HAKOM's rail experts participate in the work of six working groups – Access, Access to Service Facilities, Charges, Charges for Service Facilities, Market Monitoring and Emerging Legislative Proposals. Cooperation comprised the participation in over 20 meetings, responding to 15 questionnaires and 20 queries of the IRG Rail.

In January 2020, HAKOM participated in the meeting of the IRG Rail strategy at which members agreed the process directed at improving the work of the IRG Rail. The "High Policy Group" was established, comprising the representatives of the members authorised for negotiations on behalf of its national regulatory authority, tasked with preparing proposals on the direction of improvement of the IRG-Rail's work. The adoption of documents was planned for the plenary session in 2021, and an ad hoc group for preparing draft documents (Drafting Group) in charge of preparing specific solutions was formed. HAKOM also has its representative in this group. In addition to the above, HAKOM actively participated in preparing the Eighth Annual Market Monitoring Report, which was published on the IRG Rail website.

At the IRG-Rail meeting in November 2020, a member of the HAKOM Council was unanimously appointed as IRG-Rail (Co-)Chair in 2021/2022. As a result, in 2021, HAKOM is carrying out the tasks of the IRG-Rail Co-Chair, and in 2022, it will perform the tasks of the Chair.

ENRRB (European Network of Rail Regulatory Bodies)

The 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 2020, HAKOM participated in the 19th ENRRB meeting held in January, as well as in the workshop on anti-competitive and anti-discriminatory practice in the rail sector. The meeting also included a round table on current events in the Member States, with regard to the practice of regulatory authorities and organisational changes that occurred in the period after the previous meeting held in May 2019. Regulatory authorities for rail and competition authorities participated in the workshop on anti-competitive and non-discriminatory practice in the rail sector. The workshop was co-organised by two EC Directorates General for competition and transport. The topics of the workshop included the previous experiences relating to the sale of transport tickets, i.e. the common use of sales offices, the issue of the access to service facilities for fleet maintenance, shunting services, as well as the fleet. The representatives of the European Commission presented the Siemens-Alstom merger case, and the issue of the award of contracts on public services, particularly in the context of state aid was another important topic.

NEB

The meeting of the National Enforcement Bodies under Regulation (EC) No 1371/2007 on rail passengers' rights and obligations (NEB) was held in 2020. The objective of the meeting was to exchange experiences, establish best practices for the protection of the users of rail passenger transport and harmonise practices and propose changes to the EU legislative framework. An important information was the dramatic decline in rail passenger transport by 70 percent in the period from March to September 2020. Good cooperation with national authorities is also worth mentioning, and three main topics in the future work have been highlighted: the promotion of passenger rights, the development of the sales and ticket distribution markets and the issue of sharing data among market participants.

With regard to the amendments to Regulation 1371/2007, the EC representatives initiated a trialogue among the EU institutions and a political agreement was reached in October 2020. The adoption of the amendments to the Regulation is expected in the first half of 2021. A transition period of two years is foreseen, and some of the most important changes refer to: combined tickets, real-time information (the infrastructure manager should distribute information to carriers, ticket sellers, passengers), the announcement period, the transport of bicycles, the application of the force majeure, non-discrimination, the complaints procedure and the basis for the exemptions from the application of the Regulation. Exceptions with regard to regional/urban services will still be possible.

It was emphasised at the meeting that 2021 was the European Year of Rail, and for this purpose, so far 80 different initiatives/events had been collected. "The Study of EU regulatory framework for rail passenger rights – a comparative good practice analysis" was presented, which encompasses the air, rail, road and water transport. The aim is to eliminate the existing deficiencies, raise awareness of passenger rights, strengthen the NEBs and harmonise the legislative framework. The EU barometer showed a low level of passenger awareness about their rights (43 percent).

Domestic cooperation

HAKOM intensively cooperates with the **Ministry of the Sea, Transport and Infrastructure** in drafting strategic documents, acts and subordinate legislation within the MSTI's competence and the markets it regulates. In 2020, experts of all profiles participated in the working group for drafting the proposal of the new ECA aligned with the European Electronic Communications Code (EECC). In cooperation with the MSTI, an expert group was formed at HAKOM tasked with transposing Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (OJ L 321, 17.12.2018) into the Croatian legal system. The group worked on preparing the draft proposal of the ECA by providing technical and legal support to the MSTI.

As part of the development of the National Development Strategy 2030, and in accordance with the obligations of the HR towards the EU related to the development of broadband access, HAKOM also participated in the preparation of the National Plan for the Development of Broadband Access in the HR for the period from 2021 to 2027, where 5G activities will play a significant role.

Technical and other required support was provided in preparing the amendments to the Ordinance on Payment of Fees for Right to Use Addresses, Numbers and Radio Frequency Spectrum. It is worth mentioning that the fee for the use of the radio frequency spectrum for public mobile communication networks was reduced by 50 percent according to the Action Plan of the Government of the HR, within the competence of the MSTI.

The project of the integration of the Register of Vessels service and e-Vessels as part of the e-Agency was launched in cooperation with the MSTI. This will enhance the quality of the service for users

and at the same time ensure a faster and improved inter-institutional exchange of information. Cooperation with the MSTI was also realised in the rail services market. In 2020, joint meetings were held regarding the harmonisation of positions on different topics, such as the provision of the fuel supply service, access to refuelling facilities, fees for the provision of services and the ordinance on the train schedule. Pursuant to the RA, HAKOM has the obligation to comply with Commission Implementing Regulation (EU) 2015/1100 of 7 July 2015 on the reporting obligations of the Member States in the framework of rail market monitoring and it collects and submits EC's market data, so that it has been agreed that HAKOM submits data to the MSTI. Since HAKOM participates in drafting laws and subordinate legislation, it was proposed to analyse the Act on Transportation Contracts in Railway Traffic. Following this proposal, the MSTI set up a working group, which included the participation of HAKOM's experts.

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 2020, 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 for civic training and education on the relevant topics as well as with the **Education and Teacher Training Agency** with regard to child protection.

Cooperation with **consumer protection associations** was implemented through lectures given for the interested public, organised by different associations dealing with consumer protection issues. In 2020, noteworthy was the cooperation with the following associations: Customer (Potrošačica in Croatian), Međimurski potrošač, the Association for Consumer Protection of the City of Samobor, the Association for Consumer Protection Garešnica and others.

Cooperation with the **Ministry of the Interior (MoI)** (the Civil Protection Directorate) focused on preparing the proposal of 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. In addition, HAKOM 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 disease caused by the corona virus and COVID-19. Number 113 was introduced to disburden the calls to number 112.

HAKOM continued its cooperation with the **Croatian Railway Safety Agency** responsible for the safety and interoperability of the railway system with the aim of preventing negative effects on competition or traffic safety. HAKOM held a meeting with the Croatian Railway Safety Agency to establish the conditions under which railway routes may be set and switches changed, the status of the shunting service and special purpose vehicles and workshops for the maintenance of such vehicles.

HAKOM's experts are members of the **Monitoring Committee for the Operational Program Competitiveness and Cohesion 2014 – 2020.** HAKOM's experts were also members of the working group for the preparation of the Call for Proposals for Grants for the Deployment of Next Generation Networks (NGN)/Next Generation Access Networks (NGA) in NGA white areas. This call defined the objectives, conditions and procedures for grants intended for the preparation and implementation of projects.

The seventh HAKOM's "Market Day" was held as part of the International Convention on Information, Communication and Electronic Technology **MIPRO 2020.** The Convention was held virtually with the participation of the representatives of institutions, operators and local self-government units to discuss different topics at a round table. The topics included the deployment of 5G technology, the wholesale conditions of access to newly-built networks and the transparency of conditions for the use of public communication services. On this occasion, the most important activities of HAKOM in the electronic communications market were presented to the participants.

PUBLICITY OF HAKOM'S OPERATIONS

The publicity of HAKOM's operations is an important segment of its activity, 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 published with unofficial consolidated texts for ease of reference.
The website is regularly updated with:
(a) 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;
(b) 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;
(c) data for databases of all registers;
(d) 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 an impact on market participants. In 2020, 26 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. Releases from the area of HAKOM's competence were regularly published on its website. There were 135 such releases in the past year.

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.

Citizens can contact HAKOM directly and get information every workin g day from 9 a.m. t o 11. 30 a.m. thr ough special telephone lines for individual areas. In addition, queries can be forwarded by means of the "Ask Us" application available on the website. In 2020, 765 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 continued to be active. It is used to provide information and user support. Its primary objective is to raise awareness and knowledge of the rights and obligations and provide prompt and important information when necessary, such as to alert to fraud or a failure on an operator's network. In addition to Facebook, Twitter and LinkedIn are also used as other social networks for communication.

HAKOM received 34 reques ts for a ccess 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.

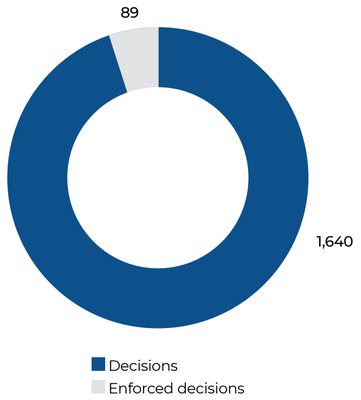
The High Administrative Court of the Republic of Croatia is competent for administrative disputes initiated against decisions adopted by the Council of HAKOM in the field of electronic communications, postal and rail services, and against decisions adopted by HAKOM's inspectors in the cases of very serious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

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.

Figure 7.2 Statistics on administrative complaints

2020	Number
HAKOM decisions	1640
Administrative complaints against HAKOM decisions	89
Hearings held for administrative disputes	31

Type of decision	Number of lawsuits
Determining the infrastructure operator and the right of way fee	38
Disputes user – operator – electronic communications	32
Disputes user – operator – postal services	11
Regulatory decisions	3
For the purpose of accessing or sharing ECI and associated facilities	3
For the purpose of inspection supervision	1
For the purpose of the revocation of a license for use of the RF spectrum on a vessel	1
Total	**89**



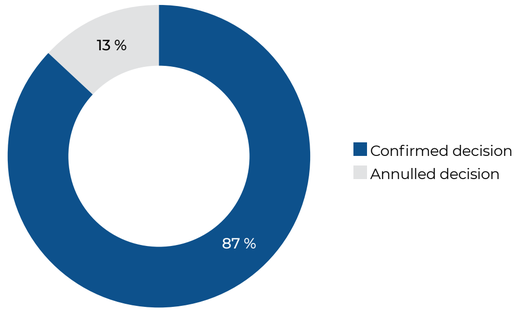
The analysis of the filed administrative complaints shows that the majority of the administrative complaints (42.7 percent) was filed in the equivalent cases by HT against decisions adopted in the proceedings initiated by LSUs for the purpose of determining the infrastructure operator and determining the right of way fee for HT infrastructure in the area of individual LSUs. A large number of complaints (36 percent) was also filed in disputes between users and operators of public communication services.

Table 7.2 Statistics on judgements regarding administrative complaints judgements

Type of decision	Number of judgements	Confirmed decision	Annulled decision
Determining the infrastructure operator and the right of way fee	65	60	5
Disputes user – operator – electronic communications	42	36	6
Disputes user – operator – postal services	27	19	8
Regulatory decisions	8	8	0
Rulings in inspection supervisions	2	1	1
Other	14	13	1
Total	**158**	**137**	**21**

The majority of confirmed decisions are cases for determining the infrastructure operator and the right of way fee (60), while the majority of annulled decisions (8) concerns the cases initiated for resolving a dispute between a postal service user and a postal service provider.

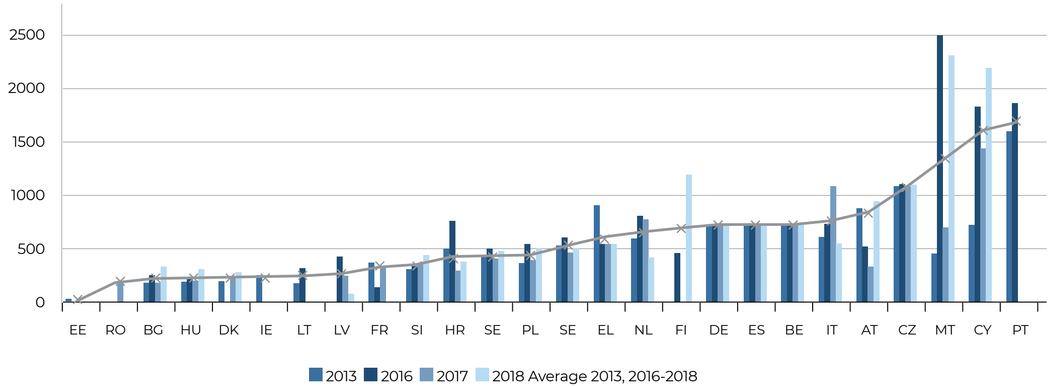
Figure 7.3 Statistics on administrative complaints



It is important to mention that the HR, with the average duration of court proceedings of around 400 days by applying the ECA, is ranked the 11th 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.

Figure 7.4 Duration of court proceedings in electronic communications (Source: The EU Justice Scoreboard 2020)



Misdemeanour

In 2020, three final judgements were adopted, which refer to cases concerning the determining the infrastructure operator and the right of way fee. In 2020, HAKOM did not file any motions for indictment.

Enforcement

In 2020, based on enforcement proceedings initiated in the total amount of HRK 131,295.11, the amount of HRK 61,844.08 was collected. The enforced collection of the amount of HRK 48,855.72 is pending, as well as litigation proceedings for the amount of HRK 20,595.31.

Pre-bankruptcy and bankruptcy proceedings

In 2020, HAKOM did not submit any requests for the settlement of its claims in the pre-bankruptcy proceedings. However, the amount of HRK 403,344.95 was collected based on the previously concluded pre-bankruptcy settlements.

HAKOM submitted three requests for the settlement of its claims in bankruptcy proceedings for the total amount of claims of HRK 5,420.79 (the proceedings are ongoing). The amount of HRK 23.33 was collected based on the division of the bankruptcy estate of the previously registered claims.

PERSONAL DATA PROTECTION

In 2020, HAKOM regularly responded to the queries and complaints of users and interested parties with regard to personal data protection or the protection of privacy in electronic communications received at HAKOM's published addresses. In all, five inspection procedures were conducted in relation to the violation of personal data and the violation of privacy. Such reports and procedures in the largest number of cases relate to the issues of unsolicited communications and the use of information stored in the terminal equipment of users (cookies) contrary to the provision of Article 100 of the ECA.

Since in the first half of 2020 the Republic of Croatia presided over the Council of the EU, HAKOM's experts worked intensively on the new proposal of the ePrivacy Regulation within the Permanent Representation of the HR to the EU and the Telecommunications and Information Society Working Group. The Regulation should replace the existing ePrivacy Directive, which was transposed into Croatian legislation in the ECA. Following the initiation of negotiations with the European Parliament in early 2021, a further intensified monitoring of the adoption of the Regulation and the beginning of its implementation is expected.

e-AGENCY

The e-Agency programme is based on the digitalisation of operation with the aim of bringing services to end-users remotely through the internet interface in a quick, efficient and safe way, at reduced costs, with the ultimate goal of digitalisation of the entire operation and achieving a paperless operation.

Due to the epidemiological measures and the COVID-19 pandemic, in order to maintain the continuity of operation, HAKOM's employees were provided with computer equipment and the required licences necessary for working from home. Infrastructure was also prepared and the

system was configured for the remote access to internal information resources through the VPN network, without jeopardising the security of HAKOM's information systems. A video-conference system was set up for the purpose of holding virtual meetings at the level of the whole organisation and employees were trained to work from a remote location.

COMPETENCE DEVELOPMENT

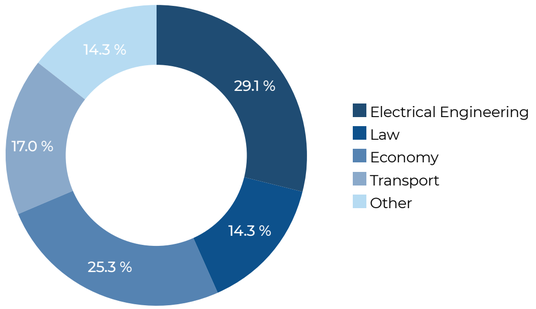
Problem solving, organisational skills, focus on users and critical and creative thinking are the key competences that HAKOM expects from its employees. Thus, the promotion of **lifelong learning** continued in 2020 as well as constant investments in the education of employees in order to develop the required competences that are considered to be the main drivers of success. In order to improve and accelerate business processes and internal procedures relating to training and education, a new module for the management of education and training was introduced in 2020.

In addition to the promotion of lifelong learning, the **development of the organisational culture and environment** was also continued in order to enhance motivation, communication and co-operation of all team members, team effectiveness and improvement of the work of the organisation.

The implementation of the **Regulatory Impact Analysis (RIA) system** was initiated with the goal to improve the existing decision-making system. Internal guidelines were prepared for the implementation of the impact analysis. In accordance with the internal guidelines, an analysis of different options and the assessment of their impact on wholesale prices in the process of decision-making was conducted as a pilot-project in 2020. By the end of 2020, funds were received within the framework of the new cycle of the Technical Support Instrument (TSI) "21HR30 Enhancement of implementation of regulatory impact assessment system in Croatian Regulatory Authority for Network Industries merged with 21HR31 Support to effective implementation of ex-post regulatory impact assessment (RIA) on a national level". This activity will be carried forward to 2021 and 2022. The project is expected to deliver an analysis of the guidelines prepared so far, the proposals for their improvement as well as the proposals for the setting up of the RIA process at the level of HAKOM as a whole.

STAFF

Figure 7.5 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 2020, HAKOM had 187 employees, of which 138 had completed university or specialist graduate studies.

Of this number, four percent of employees have completed postgraduate doctoral studies, 11 percent of employees hold postgraduate master of science degrees, and 25 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, 25 percent in economics, 17 percent in the field of transport engineering, and 14 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

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 2020. This report is an integral part of the 2020 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. The members of the Council are appointed for a period of five years with the possibility of reappointment. On 27 April 2018, The Croatian Parliament adopted the Decision on the appointment of the President, Deputy President and Members of the Council of HAKOM (Official Gazette 41/2018).

HAKOM's administrative and technical affairs are performed by the HAKOM's 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 2020 (Official Gazette 117/2019, 32/2020, 42/2020, 58/2020 and 124/2020), 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 2020 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
Chapter: 06565
Activity: 8413 Regulation of and contribution to more efficient operation of businesses

In 2020, HAKOM generated the assigned revenues, EU assistance and revenues from the sale of non-financial assets, which were not fully sufficient to cover all HAKOM's expenditures, so that the surplus of revenues carried forward from the previous years was partially used. At the end of 2020, a deficit of revenues was generated, which was largely the result of the impact of court proceedings (described in more detail in Chapter 3). The remaining surplus of revenues carried forward is planned to be used in the coming period for the coverage of expenditures of produced long-term assets and for additional investments in other non-financial assets.

REVENUES

Table 1 Revenue overview (in HRK)

Account from Acc. Plan		HAKOM revenues	Realised in 2020
63		Aid from abroad and from entities within the general budget	95,033
	632	Aid from international organisations and EU institutions and bodies	95,033
64		Revenues from assets	75,856
	641	Revenues from financial assets	75,856
65		Revenues from oper., and admin., fees, fees pursuant to special legislation and fees	85,523,292
	652	Revenues under special regulations	85,523,292
68		Penalties, administrative measures and other revenues	119,849
	683	Other revenues	119,849
6		**Operating revenues**	**85,814,030**
72		Revenues from the sale of produced long-term assets	437,850
	722	Revenues from the sale of plant and equipmen	775
	723	Revenues from the sale of transport vehicles	437,075
7		**Revenues from the sale of non-financial assets**	**437,850**
		HAKOM TOTAL REVENUES	**86.251.880**

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;
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 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;
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 the 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 2020 amounted to HRK 85,523,292. Under the Ordinance on the payment of fees for the performance of HAKOM's activities some fees were reduced, which resulted in the decrease in revenues pursuant to special legislation in 2019. The most significant part of revenues under special legislation are revenues from radiofrequency spectrum management fees.

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

	Revenues from administrative and operating fees, fees pursuant to special legislation and fees	Realised in 2020
1.	Revenues from the fees for the radiofrequency spectrum management	52,882,135
2.	Revenues from the fees for the addressing and numbering space management	6,811,482
3.	Revenues from the fees 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 electronic media broadcasters broadcasting their radio or television programmes through their own electronic communications networks, which they use solely for this purpose	20,212,048
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	3,654,210
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 calendar year	1,621,947
6.	Other revenues from administrative and operating fees	341,470
	TOTAL	**85,523,292**

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 in the total amount of HRK 95,033. The decline in revenues from current aid from EU institutions and bodies, compared with 2019, is the result of limited, and in a certain period of 2020 even banned foreign official travel 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 75,856.

Other revenues in the amount of HRK 119,849 largely relate to salary in-kind for the private use of official vehicles.

In 2020, revenues from the sale of produced long-term assets were recorded in the amount of HRK 437,850 and were largely generated from the sale of nine HAKOM's official vehicles older than eight years. The sale of the official vehicles was conducted based on the public tender on the sale of official vehicles. The official vehicles were sold by collecting closed written offers, and the criterion for the selection of the best offer was the highest offered selling price.

EXPENDITURES

HAKOM's expenditure in 2020 amounted to HRK 104,322,842.

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 2020, 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 2020, financial resources were spent on the acquisition of non-financial assets (computers and computer equipment, measuring and control devices for the purposes of radiofrequency spectrum control and management, computer programmes, passenger cars, equipment for maintenance and protection, etc.), for the payment of salaries and other employee benefits, for covering employees' expenses (official trips for radiofrequency measurements, interference studies, technical inspections, to a smaller 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, etc.), for the costs of office supplies and literature, in accordance with the regular needs of employees, overheads and fuel costs for HAKOM's official vehicles, for the services of regular and investment maintenance of vehicles, measuring devices, control and measuring centres and control and measuring stations, for publicity and information services (HAKOM informed the public about the protection of children on the internet, consumer protection and rights, the development of the electronic communications market, ECI/ECM manual with examples was prepared, etc.), as well as for utilities, rents and lease, health services, intellectual services, computer services, insurance premiums, legal costs and other operating expenditure.

Material expenditure, accounting for the largest share in total expenditure, amounted to HRK 49,822,141 in 2020. The most significant 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, regular and investment maintenance services, other services, etc.

Other unmentioned operating expenditure is a significant item of material expenditure, largely relating to the legal costs in the amount of HRK 21,476,265. Of the above amount, HRK 21,452,827 account for the enforcement of the arbitration award in the arbitration proceedings before the International Centre for Settlement of Investment Disputes (ICSID case ARB15/5), in which the Republic of Croatia was ordered to compensate the costs of the procedure of the claimant B3 Croatian Courier Cooperatief U.A. in the amount of USD 554,616 and EUR 3,659,607. Based on the letter of the State Attorney's Office of the Republic of Croatia of 5 December 2019, the payment of the costs of the procedure should be made by the Ministry of the Sea, Transport and Infrastructure (hereinafter: the MSTI) in the amount of USD 554,616 and EUR 840,600 and HAKOM should pay EUR 2,819,007 as the second authority from whose scope of work the arbitration proceedings have arisen (due to the treatment in the area of postal services in the period 2012 – 2014). In the agreement concluded between HAKOM and the MSTI on 16 January 2020, with regard to meeting the obligations based on the mentioned arbitration award, it was established that the Ministry had paid the amount of HRK 10,000,000 (representing the equivalent of USD 554,616 and EUR 840,600), and HAKOM had undertaken to settle the remaining arbitration costs in the amount of EUR 2,819,007. It was established in the agreement that for the payment of its share of arbitration costs HAKOM required consent from the Government of the Republic of Croatia to burden HAKOM's own assets (pursuant to the provisions of the Statute of HAKOM and Article 16, paragraph (10) of the ECA), that it should adopt amendments to HAKOM's financial plan for 2020 and conduct public consultation, based on the provisions of Article 22 of the ECA. The Government of the Republic of Croatia, at its session held on 26 March 2020, adopted the Decision on granting prior consent to the President of the Council of HAKOM to burden HAKOM's assets, thus granting prior consent to the President of the Council of HAKOM to burden HAKOM's assets in the amount of EUR 2,819,007, in kuna equivalent, in accordance with the request submitted by HAKOM on 21 February 2020. Based on the mentioned Decision, HAKOM settled the aforementioned obligation on 27 March 2020 in the full kuna equivalent amount of HRK 21,452,827.

The second most represented group in HAKOM's total expenditure is employee expenditure, amounting to HRK 46,499,403, higher than in 2019, when employee expenditure amounted to HRK 43,613,001. The increase in expenditure was the result of the increase in the number of employees. At the end of 2019, HAKOM employed 182 employees, while at the end of 2020 there were five more employees, 187 in total.

Table 3 Expenditure overview (in HRK)

Account from Acc.	HAKOM expenditure Plan	HAKOM	Electronic communications services area	Postal services area	Railway market regulation services area
	Expenditure total	**104,322,842**	**99,401,460**	**3,383,919**	**1,537,463**
3	Operating expenditure	96,698,002	91,776,620	3,383,919	1,537,463
31	**Employee expenses**	**46,499,403**	**43,594,427**	**2,008,516**	**896,460**
311	Salaries (gross)	35,539,943	33,410,845	1,465,595	663,503
312	Other employee expenses	5,134,060	4,709,483	301,098	123,479
313	Contribution on salaries	5,825,400	5,474,099	241,823	109,478
32	**Material expenditure**	**49,822,141**	**47,866,102**	**1,375,169**	**580,870**
321	Compensations of expenses to employees	2,382,981	2,240,916	87,250	54,815
322	Expenditures for materials and energy	1,902,834	1,759,861	91,933	51,040
323	Expenditure for services	22,932,791	21,282,177	1,183,489	467,125
324	Compensation of expenses to unemployed persons	5,442	5,442	0	0
329	Other unmentioned operating expenditure	22,598,093	22,577,706	12,497	7,890
34	**Financial expenditure**	**197,165**	**196,798**	**234**	**133**
343	Other financial expenditure	197,165	196,798	234	133
37	**Compensations to citizens and households based on insurance and other fees**	**179,293**	**119,293**	**0**	**60,000**
372	Other compensations to citizens and households from the budget	179,293	119,293	0	60,000
4	Expenditure on the acquisition of non-financial assets	7,624,840	7,624,840	0	0
42	**Expenditure on the acquisition of produced long-term assets**	**5,349,408**	**5,349,408**	**0**	**0**
422	Facilities and equipment	3,561,062	3,561,062	0	0
423	Transport vehicles	1,328,284	1,328,284	0	0
426	Intangible produced assets	460,062	460,062	0	0
45	**Expenses for additional investments on non-financial assets**	**2,275,432**	**2,275,432**	**0**	**0**
452	Additional investments in plant and equipment	14,119	14,119	0	0
454	Additional investments in other financial assets	2,261,313	2,261,313	0	0

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

Account from Acc.	HAKOM expenditure Plan	HAKOM	Electronic communications services area	Postal services area	Railway market regulation services area
31	Employee expenses	44.6	43.9	59.4	58.3
32	Material expenditure	47.7	48.1	40.6	37.8
34	Financial expenditure	0.2	0.2	0	0
37	Compensations to citizens and households based on insurance and other fees	0.2	0.1	0	3.9
42	Expenditure on the acquisition of produced long-term assets	5.1	5.4	0	0
45	Expenses for additional investments on non-financial assets	2.2	2.3	0	0
	TOTAL	**100**	**100**	**100**	**100**

SURPLUS REVENUE

On 1 January 2020, HAKOM had surplus operating revenue of HRK 51,242,258 and deficit in revenues from non-financial assets of HRK 4,178,574 recorded in the basic accounts of sub-group 922 in the Balance Sheet. In March 2020, 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. In September 2020, the Decision on the adjustment of the operating result was adopted, by which the operating result increased by HRK 58,196 to HRK 47,121,880.

In 2020, deficit in operating revenues amounted to HRK 10,883,971 and deficit in revenues from non-financial assets amounted to HRK 7,186,991. The surplus operating revenues account (carried forward) was offset against the deficit in operating revenues from 2020, which resulted in the surplus operating revenues in the amount of HRK 36,237,909. 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 correction in 2020, total surplus operating revenue amounted to HRK 36,675,758 and deficit in revenues from non-financial assets amounted to HRK 7,624,840.

In March 2021, the Decision on the distribution of results was adopted, by which the deficit in revenues from non-financial assets in the amount of HRK 7,624,840 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 29,050,918, available in the coming period.

The Decision on planning the spending of surplus funds was also adopted in April 2021. The Decision includes the purpose and manner in which the share of the generated surplus revenues from the previous years will be used. The use of the surplus revenues in the amount of HRK 12,253,712 was planned in 2021 in accordance with the Financial Plan of HAKOM for 2021. The manner and the purpose for which the remaining amount of surplus revenues will be used in 2021 (after the mentioned amount will have been used) will be established by the Amendments to the Financial Plan of HAKOM for 2021.

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 2019 (HRK)	Plan 2020 (HRK)	Execution 2020 (HRK)	Index execution 2020/plan 2020	Index execution 2020/2019
3107 - Development of the postal services and electronic communications markets	77,481,200	123,742,526	105,677,201	85	136

Table 6 Budget execution – analytics (in HRK and %)

	ITEM	Plan	Realised	%
3 + 4	EXPENDITURE TOTAL	123,742,526	105,677,201	85
3	Operating expenditure	113,423,042	97,761,665	86
31	Employee expenses	50,847,379	46,063,400	91
32	Material expenditure	61,989,363	51,323,371	83
34	Financial expenditure	323,800	195,601	60
37	Compensations to citizens and households based on insurance	187,500	179,293	96
38	Other expenditure	75,000	0	0
4	Expenditure on the acquisition of non-financial assets	10,319,484	7,915,536	77
41	Expenditure on the acquisition of non-produced long-term assets	250,000	0	0
42	Expenditure on the acquisition of produced long-term assets	6,405,734	5,349,408	84
45	Expenses for additional investments on non-financial assets	3,663,750	2,566,128	70
6 + 7	TOTAL REVENUES	82,930,742	86,151,449	104
6	Operating revenues	82,630,742	85,714,324	104
63	Aid from abroad and from entities within the general budget	100,000	95,033	95
64	Revenues from assets	295,000	75,856	26
65	Revenues from administrative and operating fees	82,175,742	85,523,292	104
68	Penalties, administrative measures and other revenues	60,000	20,143	34
7	Revenues from the sale of non-financial assets	300,000	437,125	146
72	Revenues from the sale of produced long-term assets	300,000	437,125	146

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 100,431, representing the calculation of salary in-kind, 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 2020

Entities subject to budget accounting and preparing financial statements within the budget system prepare and submit their financial statements for 2020 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 and 145/2020).

HAKOM's Annual Financial Statements for 2020 were submitted to the State Audit Office, the Financial Agency and the competent ministry on 28 January 2021.

Copies of the signed forms of HAKOM's Annual Financial Statements for 2020 are published on HAKOM's website:
Budget statements, budget and extra-budgetary user statements for the period: 1 January 2020 – 31 December 2020 – Reference page

1. Statement of revenue and expenditure, receivables and expenses for the period: 1 January 2020 – 31 December 2020 –Form: PR-RAS
2. Balance sheet as of 31 December 2020 – Form: BIL
3. Statement of expenditure by Functional classification for the period: 1 January 2020 – 31 December 2020 – Form: RAS-Functional
4. Statement of changes in the value and volume of assets and liabilities for the period: 1 January 2020 – 31 December 2020 – Form: P-VRIO
5. Statement of liabilities for the period: 1 January 2020 – 31 December 2020 – Form: LIABILITIES
6. Notes to the financial statements of HAKOM for the period 1 January 2020 – 31 December 2020

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ANNEXES

Abbreviations:

A1 – A1 Hrvatska
ADSL – Asymmetric Digital Subscriber Line
AEM – Agency for Electronic Media
ARRSM – Act on the Regulation of Rail Services Market
ASZ – Croatian Railway Safety Agency
B2B (Business to Business) – electronic commerce for the exchange of services and data
BCO – Broadband Competence Office
BDO – auditing company
BEREC – Body of European Regulators for Electronic Communications BIDP – Broadband Infrastructure Development Plan
CADPN – Central Administrative Data Base of Ported Numbers
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 COCOM – Communications Committee
CPA – Consumer Protection Act
DAB – Digital Audio Broadcasting
DMA (Digital Market Act) – EU Regulation on digital markets
DOCSIS – Data Over Cable Service Interface Specification
DSA (Digital Services Act) – EU Regulation on digital services
DSS – Dynamic Spectrum Sharing
DVB-T – Digital Video Broadcasting –Terrestrial
EBT – economic balance test
ECA – Electronic Communications Act
ECC – Electronic Communications Committee
EEA – European Economic Area – the entire territory of the EU and Iceland, Liechtenstein and Norway
EC – European Commission
ECI – Electronic Communications Infrastructure
EECC – European Electronic Communications Code
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
GDPR – EU General Data Protection Regulation
GSM – Global System for Mobile Communications
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
HRT – Hrvatska radiotelevizija
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
LSU – local self-government unit
LDAP (Light weight Directory Access Protocol) – industry standard application protocol
LEO – Low Earth Orbit
LTE – Long-Term Evolution – technology enabling very high speeds of data transfer via the system of mobile 4G

communications
MPPCSA – Ministry of Physical Planning, Construction and State Assets MSTI – Ministry of the Sea, Transport and Infrastructure
MST – Margin Squeeze Test
MoI – Ministry of the Interior
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
M2M – Machine to Machine, communication between two machines
NGA – Next Generation Access – next generation access network
NAT (Network Address Translation) – a method of mapping an IP address space
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
RF – Radiofrequency
RFS – Regulatory Financial Statement
RIA – Regulatory Impact Assessment
RSC – Radio Spectrum Committee
RSPG – Radio Spectrum Policy Group
SMP – Significant Market Power
SMS – Short Message Service
TDD (Time Division Duplex) – a signal duplexing technique in the time domain
Telemach – Telemach Hrvatska
T-DAB – Terrestrial Digital Audio Broadcasting
TV – television
UMTS – Universal Mobile Telecommunications System (3G mobile network) 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
VPN – Virtual Private Network
PSA – Postal Services Act
RA – Railway Act

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HAKOM