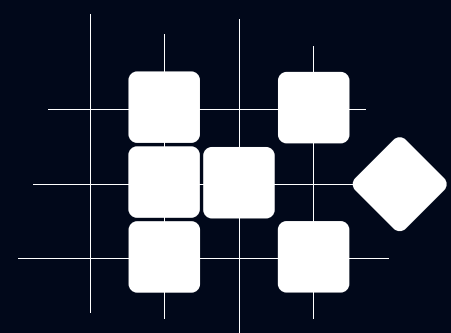
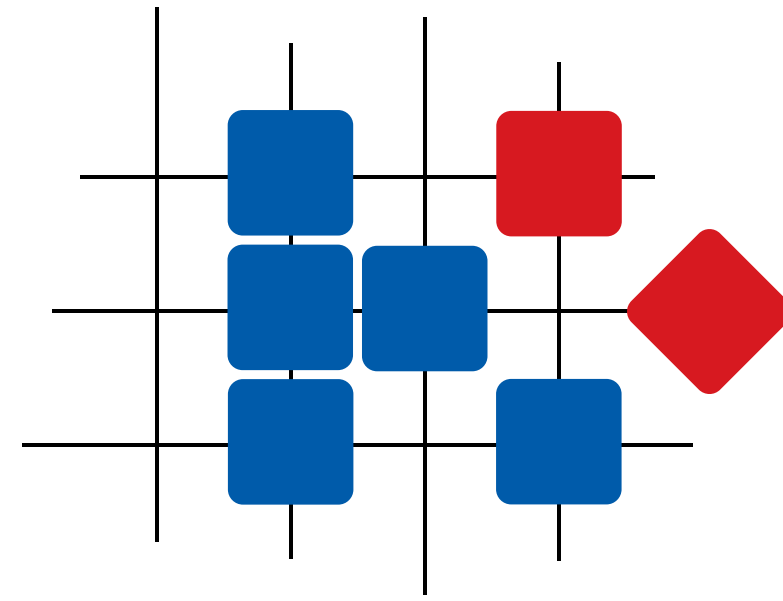


2022 ANNUAL ACTIVITY REPORT

ZAGREB, MAY 2023



HAKOM



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 2022. The financial statement and final statement are integral parts of this Report.

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*Tonko Obuljen,
predsjednik Vijeća*

On 1 July 2022, the Croatian Parliament adopted the new Electronic Communications Act, harmonising the regulatory framework in the Republic of Croatia with the EU Electronic Communications Code. For HAKOM this marked the beginning of the period in which it was necessary to harmonise a series of existing implementing regulations and adopt several new ones.

The previous year in the electronic communications market was marked by the preparation of several important regulatory decisions. We started a new round of analyses of the market of wholesale local access provided at a fixed location and the market of wholesale central access provided at a fixed location for mass-market products. These are complex analyses of further market development, which will ensure investments and better-quality services to end users. We also prepared the auction for the radiofrequency spectrum management for mobile communications networks, as part of which electronic bidding started in January this year and ended in March. Decisions were adopted on amendments to the standard offer of Hrvatski Telekom, as well as regarding one-off fees for the provision of wholesale services at regulated markets. The reasonable rate of return on invested capital in fixed and mobile networks (WACC) was also updated. The Council appointed the universal services operator in electronic communications. Market revenues increased by 3.8 percent, while operators' investments remained at 2021 levels, increasing 1 percent.

The postal services market continued to develop in accordance with the trends started over the previous period. Total revenues increased, the number of letter items decreased, while the number of delivered parcels rose considerably. The quantity of universal postal services has been uninterruptedly decreasing, largely due to the substitution

of traditional postal services with electronic services. Hrvatska pošta (HP) executed 87.4 percent of all services in the market, which led to its share in total market revenues reaching 58.1 percent. The number of postal offices in the postal network was 1,016, unchanged from the last year, although some postal offices were relocated.

There were 17 freight carriers and one passenger carrier operating in the rail services market. They operated on 2,617 km of railway lines, managed by the largest service facility operator – HŽ Infrastruktura (HŽI). Although 37.3 percent more passengers were transported than in 2021, the number of transported passengers has still not returned to pre-pandemic levels. The transported tonnes of goods increased by 5.9 percent and new freight carriers increased their share in transported goods by 1.7 percent. The revenues of the infrastructure manager rose by some 3 percent, with 84 percent of its revenues being generated from the minimum access package. Comprehensive investments in the railway infrastructure are underway, significantly affecting traffic organisation. The year was also marked by HAKOM chairing the organisation of independent European regulators for railway services (IRG Rail).

During the year we participated in the EU project "Strengthening capacity for the implementation of impact assessment of regulations", which is to be completed in 2023. By introducing the new methodology, HAKOM will join the few regulatory authorities in the European Union that conduct such an assessment. In 2022, the Council held a total of 35 meetings.

Reviewing the past year and the situation in the three different markets that HAKOM regulates, we may say that it was a successful year, especially if one takes into concern the unforeseeable circumstances caused by the war in Ukraine.



Miran Gosta, ravnatelj

It is with pride that I can stress that HAKOM's continued efforts invested in improving work processes bore fruit in 2022 with a considerable increase in efficiency and productivity of the administrative service in carrying out expert, technical and administrative tasks. The number of resolved requests for establishing special conditions for construction increased by 18 percent in 2022, while the number of approved requests for issuing main project certificates went up by as much as 28 percent. Despite this considerable growth in the workload, our users not only avoided problems but experienced shortened resolution deadlines, higher transparency, and financial savings. The number of licences issued for the use of the RF spectrum increased 8 percent. In addition, HAKOM issued more than 14,000 compliance certificates. The advantages of our system for the electronic issuance of licences, e-Licences, was recognised by our users who submitted more than 94 percent of their requests electronically. HAKOM also initiated an upgrade of the e-Licence system which will enable requests to be submitted electronically for all 8 types of licences for the use of the radiofrequency spectrum issued by HAKOM. Speedy and quality service in public authority procedures and efficient assistance to our users remained our highest priority.

HAKOM's role in resolving disputes between users and electronic communications operators, postal services providers and rail passenger carriers is exceptionally important. HAKOM continuously harmonises implementing regulations relating to user protection with actual demands of the market, monitors how operators implement regulations, informs users of their rights and obligations and characteristics of services provided to them, and takes care of especially vulnerable social groups. The number of disputes between users and electronic communications operators filed with HAKOM decreased in 2022, by as much as 31.5 percent. This is a noteworthy and positive market change because operators are today more efficient at resolving user complaints, applying HAKOM's recommendations and practices. It is noteworthy that HAKOM's active role in the improvement of operator's services was key in achieving such results.

I would also like to underline that the operation of our inspection services, focused on the

prevention of violations of prescribed requirements and on the benefit of users and the entire market, is important for achieving HAKOM's regulatory objectives. In 2022, HAKOM undertook numerous inspection activities in the field of electronic communications, postal services and rail services and ensured compliance with regulatory provisions, enabled universal service, protected the rights of users and travellers, improved the quality of communication networks, ensured compliance of radio equipment and promoted the security and integrity of networks and services.

A new control and measuring station was constructed in 2022 at Osoršćica on the Island of Lošinj, resulting in the increase of HAKOM's RF spectrum control capacity in the County of Istria and the Kvarner region, as well as its capacity for the monitoring and detection of interferences in the greater area of Northern and Central Adriatic. This construction has an important role in ensuring the security of our national critical infrastructure and the national security system. Long-term interferences of Croatian TV channels coming from Italy have to the greatest extent been removed. However, in the FM frequency band there are interferences at more than a hundred Croatian FM radio frequencies across the coast and on different islands, which resulted in 616 interference cases being reported in 2022.

HAKOM modernised the Central Administrative Database of Ported Numbers (CADB) and ensured a reliable and efficient system for number porting so that users can switch operators easily, keep their number and continue using their phone services without interruptions. Aiming to improve the operation of our organisation, we started implementing a new ERP system and effected all necessary adjustments for the changeover to the euro.

HAKOM's administrative service is dedicated to HAKOM's mission and values: transparency, reliability, and independence. In this way we take care of the resources entrusted to us for management in the name of the Republic of Croatia, but also of our employees and assets. Dedication, expertise, and effort by all of us at HAKOM are the foundation for the implementation of the laws under our jurisdiction and for the legal security of all market stakeholders.

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SUMMARY



ELECTRONIC COMMUNICATIONS

The Croatian electronic communications market continued to develop despite the uncertainties in the global environment spurred by the war in Ukraine, although it also displayed clear signs of caution. Investments in networks with high data transfer capacity continued, and a significant advance was achieved in 2022 regarding 5G signal coverage by all three mobile communications operators. Total investments increased slightly from 2021, amounting to little over HRK 3bn (EUR 398m), of which investments in the network and network equipment, which also increased, totalled HRK 1.9bn (EUR 252bn). Market revenues totalled almost HRK 12bn (EUR 1.6bn), growing by 3.8 percent. Consequently, operators invested an average of about 25 percent of their revenues, which is a result in line with previous years. The year was marked by the entry into force of the new Electronic Communications Act (ECA) early in July. With this Act the Republic of Croatia harmonised its provisions with the EU Electronic Communications Code (EECC) and HAKOM began the process of drafting implementing acts prescribed under the ECA.

The greatest revenues in the market were generated by the broadband internet access service, totalling some HRK 5.7bn (EUR 750m), of which HRK 3.8bn (EUR 500m) was accounted for by mobile networks and some HRK 1.9bn (EUR 250m) by fixed networks. Broadband internet access with high speeds, that is, very high capacity networks (VHCN), such as optical fibre and cable DOCSIS networks, covered 61.5 percent of all households in the middle of the year, of which only 20 percent in rural areas. More than 380,000 users contracted VHCN connections at the end of the year, which means that more than a third of all users contracted internet access speed exceeding 100 Mbit/s. At the same time, 5G signal coverage across the Republic of Croatia increased considerably, going up from 34 percent of covered households to 82.5 percent, of which the rise in rural areas was from 9 to 73.5 percent. Revenues from telephone services in mobile communication networks grew in 2022, totalling HRK 3.8bn (EUR 500m), while revenues from telephone services in fixed networks continued to decline, generating revenues below HRK 1.2bn (EUR 160m). Paid television achieved similar results as the year before, generating some HRK 870m (EUR 115m).

Network neutrality is respected in Croatia, and with HAKOM's help operators adjusted to the decision of the Court of Justice of the European Union with regard to zero-rated services (services whose transfer is not included in the tariffs, for example internet traffic exclusively for Facebook, You Tube etc.), which clarified dilemmas within the EU regarding this issue, although no Croatian users ever problematised the offers of operators with such practices. Cyber security and IT systems security became an unavoidable requirement in providing services, so that operators had to award more attention to this issue. Four significant security incidents were reported in 2022: one related to unauthorised downloading of users' personal data, including a threat to

disclose them, while the remaining three had to do with the interruption in the accessibility of the fixed internet service, broadcasting or e-mail services.

As regards more important activities planned for this year, an analysis was conducted of the wholesale local access provided at a fixed location and the market of wholesale central access provided at a fixed location for mass-market products. In 2022, analyses were prepared up to the phase of public consultations. In addition to the activities mentioned, final decisions were adopted regarding amendments to the standard offers of Hrvatski Telekom, as well as regarding one-off fees for the provision of wholesale services at regulated markets. A reasonable rate of return on invested capital in the fixed and mobile networks was updated, and the implementation and application of provisions on common fixed and mobile termination rates monitored, a decision was adopted regarding the universal service operator and an annual report published on the implementation of Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 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 services¹.

The electronic communications market saw a total of 81 inspection supervisions being initiated and 387 inspections and controls performed, one misdemeanour proceedings and four motions for indictment being filed. The focus of inspection supervisions in 2022 was placed on compliance with regulatory obligations, the enabling of the universal service, the protection of users' rights, the quality and safety of communication networks, the conformity of radio equipment, the efficient use of the radiofrequency spectrum, network neutrality, the prevention of unwanted electronic communications, and access to and the use of infrastructure.

POSTAL SERVICES

The trends in the postal services market remained unchanged: total revenues grew, the volume of letter items declined, and the parcel segment of the market grew considerably. The universal service has been uninterruptedly decreasing its volume, primarily due to the efficient and effective replacement of traditional postal services with electronic services, as well as due to increasing digitalisation. In 2022, total revenues grew 5.9 percent, to almost HRK 2.1bn (EUR 278m), although the total number of services provided decreased by half of a percentage point to some 267 million postal items – the number of pieces of printed matter was down by 0.8 percent, letter items by 1.6 percent, while parcels were the only market segment that grew, by 7.3 percent, to more than 33 million items.

The market shares of postal services providers by the number of services rendered changed slightly, and Hrvatska pošta (HP) as the universal service provider accounted for 87.4 percent of all services provided in the market at the end of 2022, 0.4 more than in the previous year. At the same time, HP's share in total market revenues decreased by 1.6 percent, totalling 58.1 percent. As compared to 2021, both HP and other providers increased their revenues, with HP's revenues rising 3.1 percent and those of other providers 10.1 percent.

The decrease in the number of provided traditional postal services from the framework of the universal service reduced the share of these services to 50.4 percent of the total of 267 million items in 2022. The second largest share with some 83 million of different items was held by other postal services, while interchangeable postal services accounted for almost 50 million items. The results of measuring the quality of universal service provision in domestic traffic showed that the service was satisfactory and within the prescribed framework. The postal office network comprised 1,016 postal offices, the same as in the previous year, while some postal offices were re-located.

The unfair financial burden on HP as the designated universal service provider in the HR territory was HRK 99.7m (EUR 13.2 m). In 2022, postal inspectors carried out 39 inspection supervisions, of which some activities were related to following-up of the compliance with previously adopted decisions. Inspection supervisions for the most part concerned HP as the universal service provider. The focus of inspection supervisions related to the performance of universal service was directed at the quality of service and rights of postal services users.

ŽELJEZNIČKE USLUGE

There were altogether 17 freight carriers and one passenger carrier – HŽ Putnički prijevoz – operating in the rail market. The rail infrastructure of 2,617 km, of which 994 km of lines is electrified, were managed by the largest service facility operator – HŽ Infrastruktura (HŽI) – same as in the previous year. Some 18.6 million passengers were transported, approx. 37.3 percent more than in 2021. However, the number of transported passengers has still not reached the pre-pandemic levels of 2019, when almost 20 million passengers travelled by rail. The railway network was used to transport a total of 16.3 million of tonnes of goods, i.e. 5.9 percent more than in 2021. New freight carriers increased their share in transported goods by 1.7 percent. The revenues of the infrastructure manager HŽI grew some 3 percent in 2022, with almost 84 percent of its revenues being generated from the minimum access package.

Network Reports submitted by the infrastructure manager for 2022, 2023 and 2024 were analy-

sed and proposals were put forward for increasing the transparency of data for the 2023/2024 timetable. During the year, HAKOM gave an unbinding opinion on HŽI's draft business plan, concluding that the draft was detailed and comprehensive and contained all the parts required for a company like HŽI. Drafted this way, it provides a quality basis for the implementation of control procedures and for monitoring the results achieved compared to the plan. Instructions were prepared in 2022 for the completion of regulatory financial reports for historic carriers who are at the same time service facilities operators. All three of these companies submitted their reports in a timely fashion. The year was also marked by HAKOM chairing the organisation of independent European regulators for railway services (IRG Rail), after co-chairing it last year.

Consultations were carried out with the representatives of freight and passenger rail transport service users, which is meant to provide guidance on the improvement of market conditions and the accessibility of information and service facilities. Users remained most satisfied with the price, accessibility, and comfort of travel, and were also satisfied with the friendliness of staff on trains and at facilities. However, one of the frequent complains was lack of information on trains regarding train delays and halts. The surveyed passengers confirmed the trend of dissatisfaction with travel duration, train accuracy, accessibility of information on disruption of service, train cleanliness and facilities cleanliness. The survey findings serve as guidelines to the infrastructure manager and passenger carrier on how to improve their services.

In 2022, 10 inspection supervisions were conducted, as well as 261 inspections and controls in order to ensure compliance with specific legal provisions, provisions of specific implementing regulations or articles of Regulation 1371/2007. There were 6 inspection supervisions of the infrastructure manager and 4 supervision inspections over the passenger carrier. The focus was on passenger rights, although some inspections dealt with issues of infrastructure access.

RF SPECTRUM MANAGEMENT

This year HAKOM, as the authority competent for the management of the radiofrequency spectrum in the HR, met its plans related to this natural resource. Following a successful public auction and the allocation of the so-called pioneering 5G frequency bands in 2021, a new public auction was launched in 2022 for the 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands, for which licences expire at the end of 2024, in order to ensure regulatory predictability and stable and predictable investment conditions in Croatian mobile communication networks. In addition to these bands, the remaining spectrum in the 3600 MHz band was offered

⁴ Electronic bidding started on 16 January 2023 and the decision on allocation was adopted on 8 March 2023.

at the auction for smaller, regional operators. The coverage of the HR territory with 5G signal considerably increased in 2022. Additional 2,314 5G base stations became operational in 2022, their number reaching 3,315 at the end of the year, whereby operators continued complying with their obligation to provide 5G signal coverage.

A licence for the use of the radiofrequency spectrum to provide the service of managing the digital radio electronic communications network (DAB+), for the multiplex MUX 1 (174-240 MHz frequency band), was issued in 2022. The commercial operation started with 90 percent of the population of the Republic of Croatia being covered by mobile reception, which was ensured through 10 digital radio transmitters. The second phase of the DAB+ network implementation was realized in 2022, with 16 additional transmitters, ensuring coverage for more than 96 percent of the population of the Republic of Croatia and a 93 percent coverage of the Croatian motorways.

There were altogether 154 analogue radio networks (FM) in operation, of which 11 public networks (Croatian Radio-Television (HRT) with 3 state and 8 regional levels) and 143 commercial networks (3 state, 2 regional, 18 county and 120 city/local levels). The signal quality of the analogue radio is satisfactory across Croatia, except in coastal areas where interferences are present from the Italian Republic, which was requested to put a stop to broadcasting of uncoordinated Italian FM stations, a request which was substantiated with more than 5,500 reports on harmful interferences only relating to the FM radio over the last 10 years. However, despite years-long efforts and renewed promises from the Italian side, provided before international authorities, harmful interferences from Italian FM stations are still present, in contrast to TV interferences, which were successfully eliminated at the end of 2022. TV interferences were eliminated in such a way that HAKOM submitted a request to the EU Radio Spectrum Policy Group (RSPG) in 2021 requesting it to mediate and issue an opinion proposing a coordinated solution to cross-border harmful interferences. The RSPG adopted an opinion, suggesting a solution, pursuant to which, with certain delays, but faced with HAKOM's unwavering efforts and determination, the Italian Republic removed identified TV interference by the end of 2022. Drawing on this positive experience in eliminating UHF TV interferences through EU bodies, HAKOM submitted a second request to the RSPG in November 2022, requesting it to intermediate and issue an opinion, proposing a coordinated solution for Italian cross-border harmful FM radio interferences. At the meeting late in November, the RSPG accepted the suggestion and requested from its Good Offices Sub-Group for an action plan to be prepared.

The control and monitoring of the spectrum included, in addition to protection against interferences, measurements aimed at protection against unauthorised electromagnetic field levels, which included measurements in the areas of increased sensitivity where people reside. All these measurement reports were disclosed and are publicly available. The daily and periodic measu-

rements of the radiofrequency spectrum and planned measuring campaigns were carried out in line with plans. The measuring system is regularly maintained, and a new remotely managed measuring station was put into operation at Osorščica on the island Lošinj.

USER PROTECTION

As of 2018, the number of disputes related to electronic communication services resolved before HAKOM has been registering a mild downward trend. In 2022, the decline was 31.5 percent from 2021 and represents a considerable positive shift in the market, especially as regards the manner in which operators resolve consumer complaints (the number of disputes declined from 1,285 to 893). The bulk of undertaken activities included creating preconditions for improved user protection such as: consumer information and education, monitoring complaint resolution by operators, cooperation with the representatives of consumer complaint commissions and consumer protection associations, as well as the regular analysis of general terms and conditions, special conditions, and price lists. Throughout this period users had access to free applications, such as HAKOMetar and HAKOMetar Plus, Cost Estimate and the "Do Not Call" Register.

There was a significant drop in the number of received requests for the resolution of disputes concerning postal services in 2022 relative to previous years with the average time required for their resolution being reduced. This was a result of inspection supervisions carried out in 2022 over the operations of individual providers of postal services throughout the HR territory. There were altogether 123 requests for resolution of disputes received in 2022, about 61 percent less than in the previous year. The greatest number of the total received requests, 111 or 90 percent of them, were related to disputes with the universal service provider, HP, while 10 percent were related to other postal services providers. By type of complaint, most complains were about failure to provide the postal service, damage to or loss of postal items.

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

As regards rail passenger transport, 6 decisions were adopted pursuant to the requests of passengers, of which 4 cases were rejected, 1 was dismissed, and 1 refused. There were no positive, negative, and partially positive cases. During the same period the carrier received 6,726 passenger complaints, of which almost a half were related to the request for reimbursement, some to train delays and other had to do with staff behaviour, timetables, Tariff 101, technical faults of rail carriages, ticket sale system, online timetable and cleanliness.

Special attention, as always, was devoted to vulnerable consumer groups – the elderly, persons with disabilities and children. Activities planned for the protection of children were conducted during the year, including marking the Safer Internet Day. HAKOM continued cooperating with the Faculty of Electrical Engineering and Computing of the University of Zagreb as part of its programme of increasing the accessibility of the electronic communications market, rail and post, which gathers interested associations of persons with disabilities and market stakeholders.

HAKOM'S OTHER ACTIVITIES

The implementation of the Framework National Programme for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments (FNP) continued, in which HAKOM performed its role of the Competent Authority for the FNP and as part of which 21 projects are being implemented. These projects cover a total of 126 local and regional self-government units, and it is expected that by the end of 2023 156,000 households, i.e. 236,000 housing units will be covered (mostly with FTTH).

In 2022, the chairman of the Council of HAKOM was elected as the chairman of the Body of European Regulators for Electronic Communications (BEREC) for 2024. As a result, HAKOM's role in 2023 was a significant one, because as the chairman elect HAKOM's chairperson is obligated to prepare BEREC's programme of operations for 2024 and organize a public forum of BEREC's stakeholders in Brussels².

In addition to continuing to develop its operations and its organisational climate, introducing a system of performance evaluation, systematic education and competence development, HAKOM launched a project to introduce an assessment of the regulatory impact of regulations and decisions (Regulatory Impact Assessment, RIA) in the field of electronic communications, postal and railway services.

² BEREC Stakeholder Forum was held in March 2023.

FINANCIAL STATEMENT

In 2022, HAKOM's total revenues amounted to HRK 64,891,312 (EUR 8,612,557), with the largest share being accounted for by radiofrequency spectrum management fees, followed by fees for other HAKOM's business operations and fees for address and number space management. The decrease in revenues from the previous period stemmed primarily from the reduction in individual fees and the possibility of payment in instalments to spend the surplus in revenues transferred from previous years. At the same time, expenditures amounted to HRK 94,371,240 (EUR 12,525,215). The shortage in revenues of the current year was covered by the surplus in revenues from previous years.

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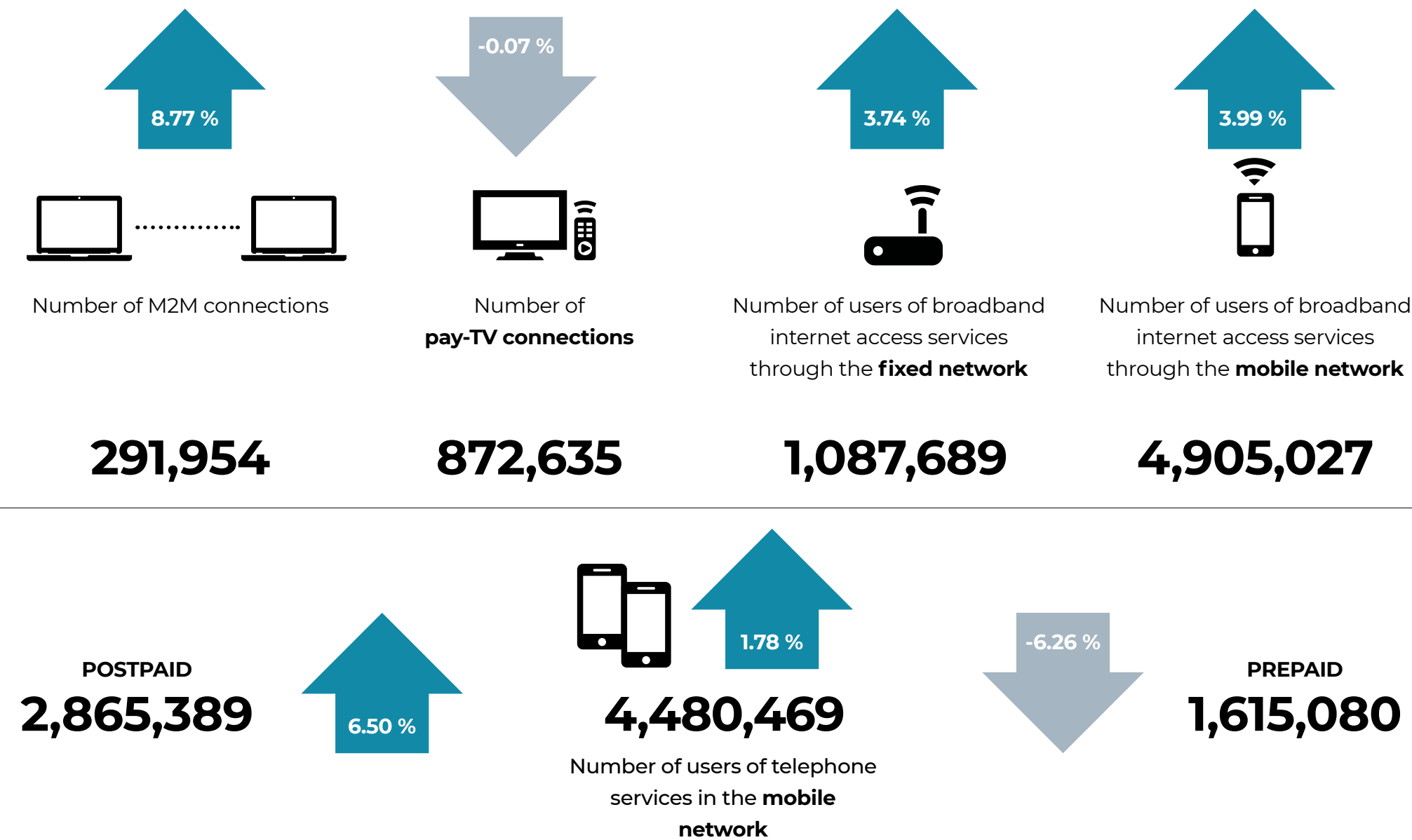
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The war in Ukraine fostered the development of an insecure global environment, which also affected the Croatian economy, electronic communications operators and all users. Despite the situation, the Croatian electronic communications market continued to develop and grow without, for the time being, losing the momentum attained over the past several years, but clearly displaying signs of concern and caution. The greatest step forward in 2022 was made in relation to most recent technologies that enable very high access speeds – in the period from the second quarter 2021 until the end of the second quarter 2022, the coverage by very high capacity networks (VHCN³) increased by more than 8 percent (in mid-2022, more than 960,000 user units had access to at least one VHCN network), while the coverage of households with 5G signal of at least one operator reached 82.5 percent in the middle of the year. Most activities planned in HAKOM's 2022 Annual Work Programme were realised according to plan, while for only a small number of the activities deadlines had to be extended due to objective circumstances arising in the meantime. The most important activities include the market analysis of the market for wholesale local access provided at a fixed location (M1/2020) and the market for wholesale central access provided at a fixed location for mass-market products (M3b/2014), which in 2022 reached the phase of public consultations and the beginning of the auction⁴ for awarding the radiofrequency (RF) spectrum for mobile communications, the licences for which expire in the autumn of 2024. In addition, 2022 was marked by the adoption of final decisions regarding amendments to reference offers of Hrvatski Telekom (HT) and the setting of one-off fees for the provision of wholesale services at regulated markets, by the updating of the Weighted average cost of capital (WACC) in the fixed and mobile networks, by the analysis of different regulatory approaches for Mobile Virtual Network Operators (MVNO), by the monitoring of the implementation and application of the provisions on common fixed and mobile termination rates (FTR and MTR), by the decision on the universal service provider, the annual report being published on the implementation of Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 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, as well as by the updating and modernisation of the Central Administrative Database of Ported Numbers (CADPN).

3 Under VHCN networks we understand cable networks DOCSIS 3.x and optical fibre networks FTTH, FTTB and FTTP.
4 The auction proceedings were launched in 2022, electronic bidding commenced on 16 January 2023 and the decision to award was adopted on 8 March 2023.

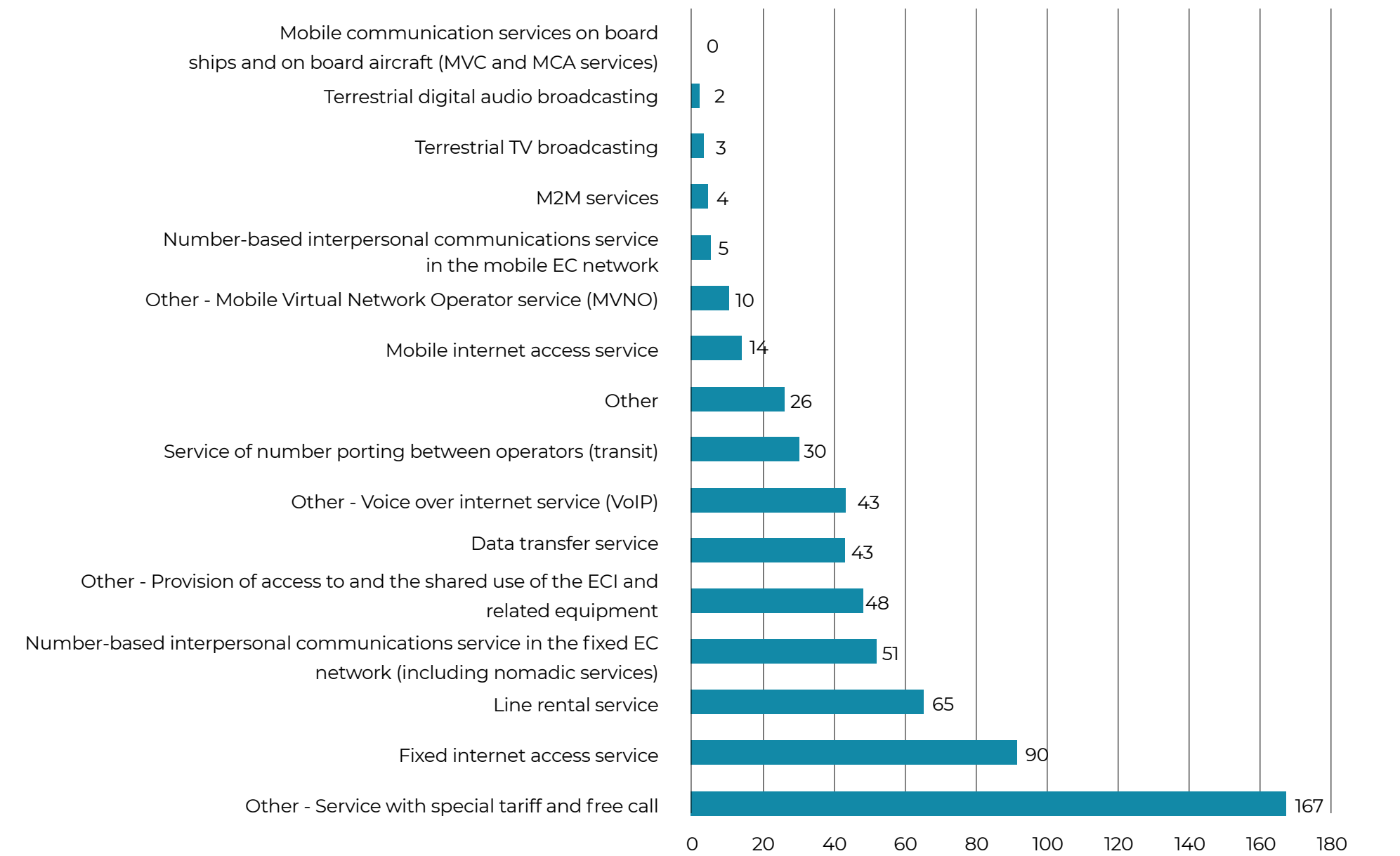
Figure 2.1 Basic electronic communications market data



MARKET OVERVIEW

Operators

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



The operators of public electronic communications networks and publicly available electronic communications services must notify HAKOM of the start, changes to and completion of the provision of the activity of electronic communications networks and services. Requests are digitalised in the e-Operator system; when the database was updated in 2022, altogether 49 prior notifications of the completion of activities were submitted and 60 prior notifications of the start of provision of services.

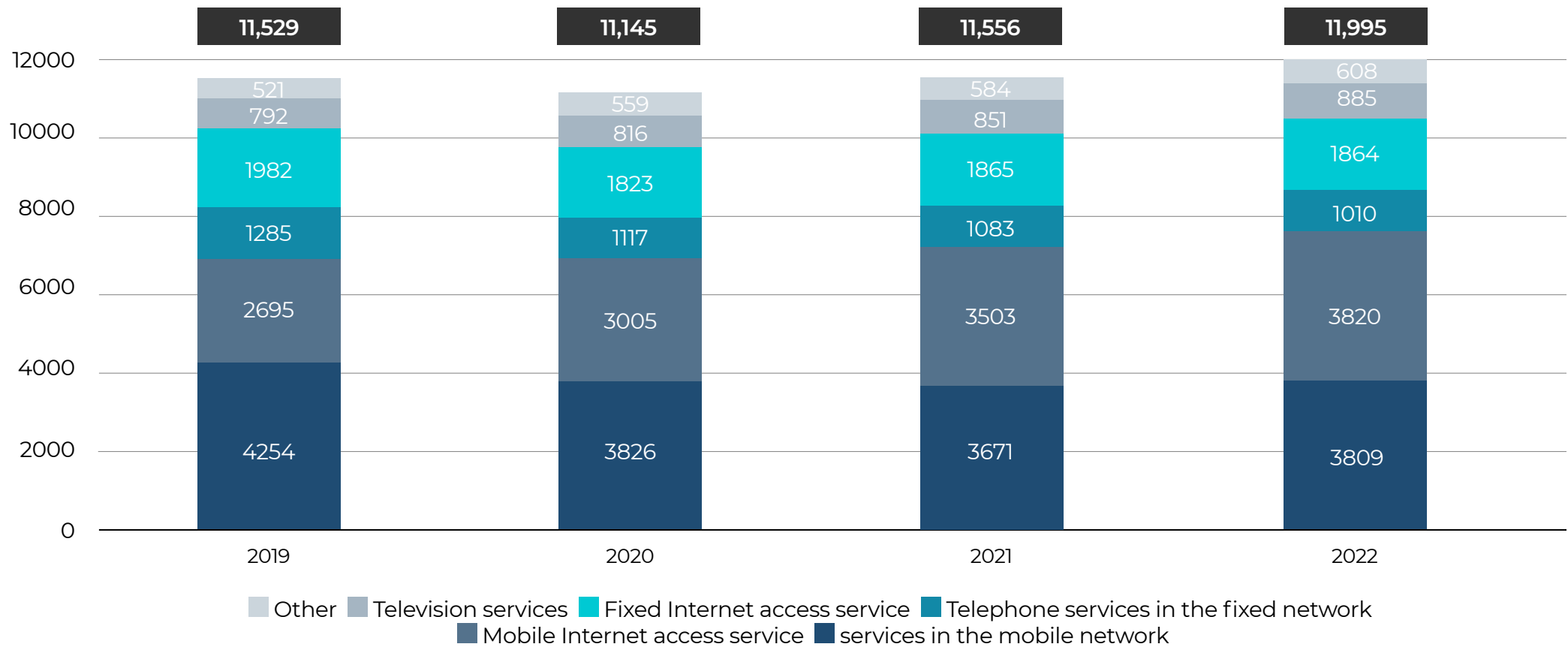
The e-Operator system currently comprises 323 registered operators, providing a total of 601 electronic communications services and activities in the territory of the Republic of Croatia (HR).

Market revenues

The upward trend in the growth of revenues continued in 2022, with total revenues reaching almost HRK 12bn at the end of the year. The greatest contribution to the rise in revenues in 2022 came from services via mobile networks, which registered an increase of HRK 455m, while revenues from services provided via fixed networks declined slightly. This turned the revenue ratio between mobile and fixed networks even more unfavourable for fixed networks (in 2022 the revenue ratio was 64: 36 in favour of mobile networks).

When revenue structure is reviewed, much as over previous years, the most considerable revenues were generated from the internet access service, which accounted for more than 47 per cent of total revenues and the highest individual rise in revenues was again, as over previous years, realised by the internet access service via mobile networks. For the first time this service became the greatest source of revenues in the electronic communications market. On the other hand, the greatest individual decline in revenues was realised by telephony services in fixed networks, only continuing the trend started in previous years. The revenues from Pay TV services also continued to grow, becoming an ever more significant source of revenues for operators despite the rising trend of using various OTT services, which are increasingly substituting the traditional service pay TV services.

Figure 2.3 Total revenues of the electronic communications market (in HRK million)



5 Service based on the last and the highest application layer of the IP protocol.

Figure 2.4 Operator revenue shares in the fixed network market and fixed network revenue shares in total revenues

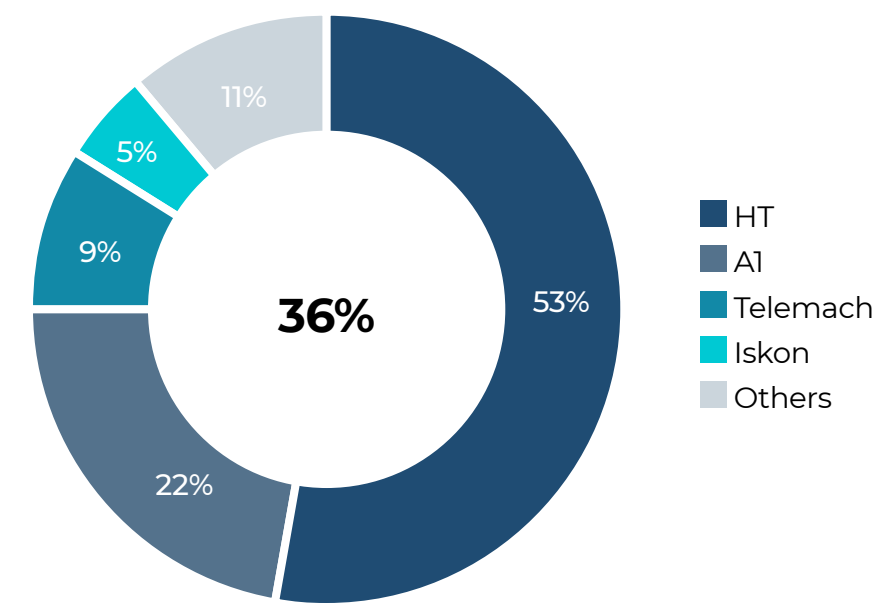


Figure 2.5 Operator revenue shares in the mobile network market and mobile network revenue shares

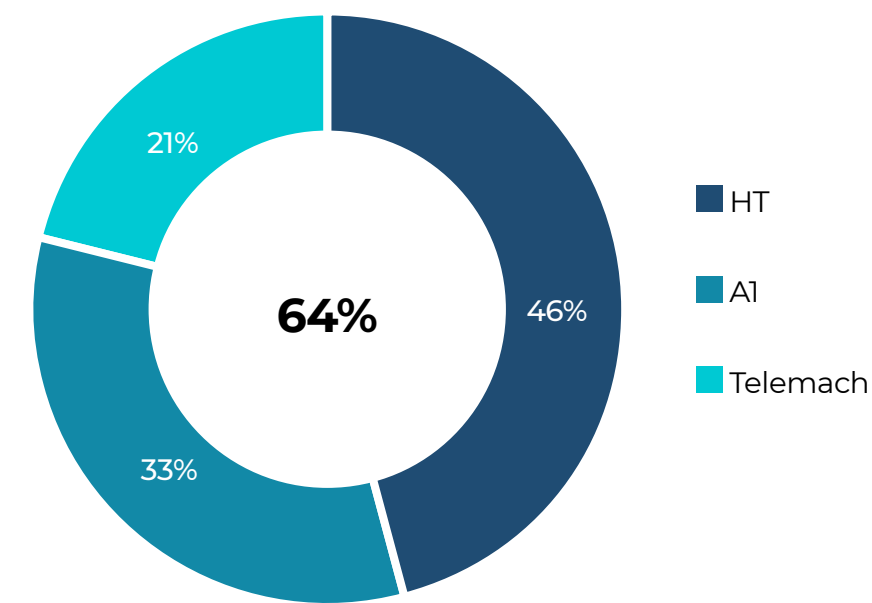
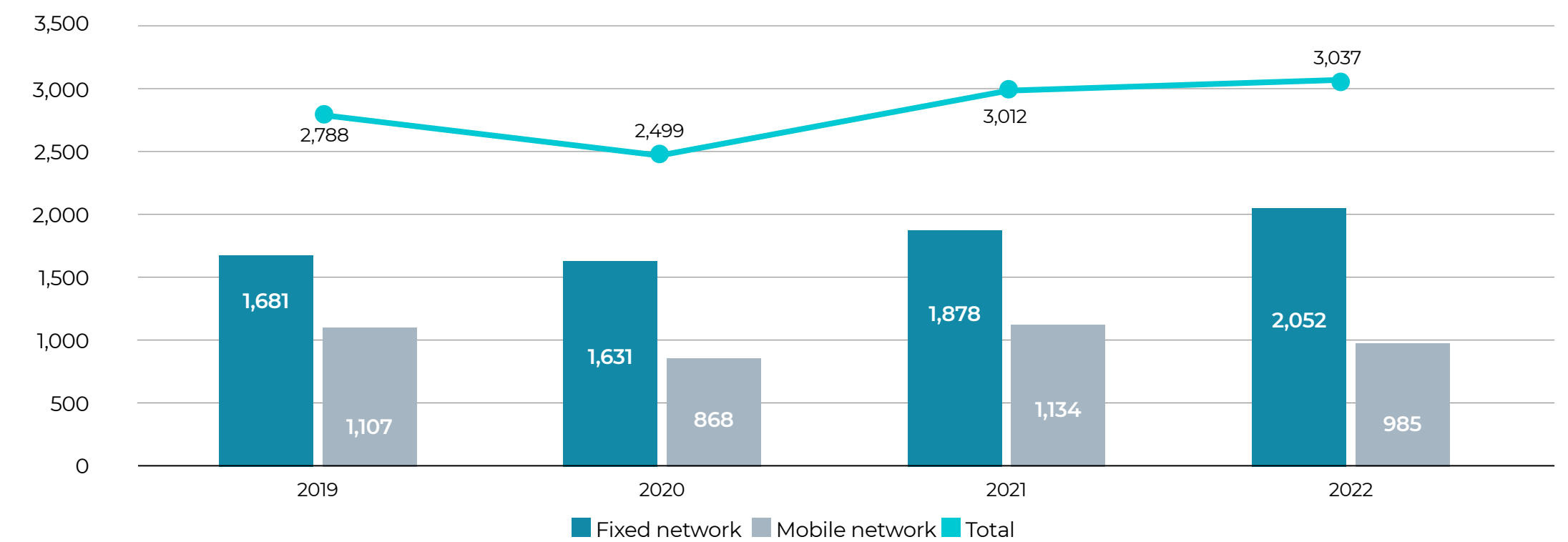


Figure 2.6 Total investments by electronic communications operators (in HRK million)

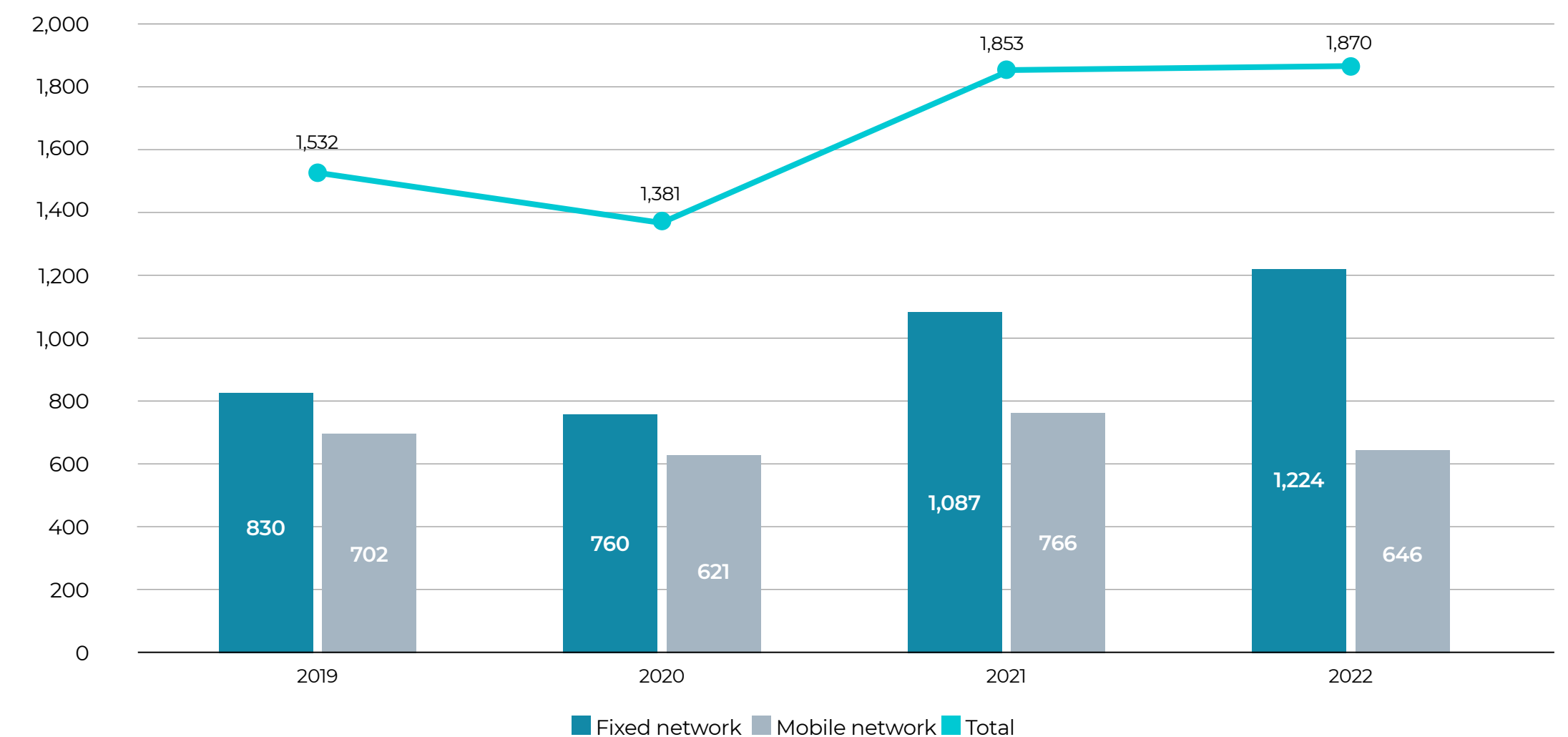


Investments

Total investments of electronic communications operators slightly increased from previous years. However, it is evident that investments in the fixed network rose by almost 10 percent, while investments in the mobile network decreased by 13 percent. As for investments in the fixed network, they continued the trend started over previous years, while the decline in investments in the mobile network was a consequence of the completion of operators' investment cycle after obtaining licences for the RF spectrum, as well as of the fact that investments in the RF spectrum in 2021 were much more substantial than in 2022. In view of the new spectrum allocation at the beginning of 2023, the upcoming periods are expected to see a renewed growth of investments in mobile networks.

Investments in the network and network equipment grew slightly from 2021. However, when the structure of these investments is analysed, it becomes evident that investments in the fixed network grew considerably (almost 13 percent), while investments in network equipment in mobile networks fell by 13 percent. The increase in network equipment in fixed networks may be explained by investments in new VHCN networks, which grow by a total of almost 6 percent from 2021 and by as much as 128 percent from 2020.

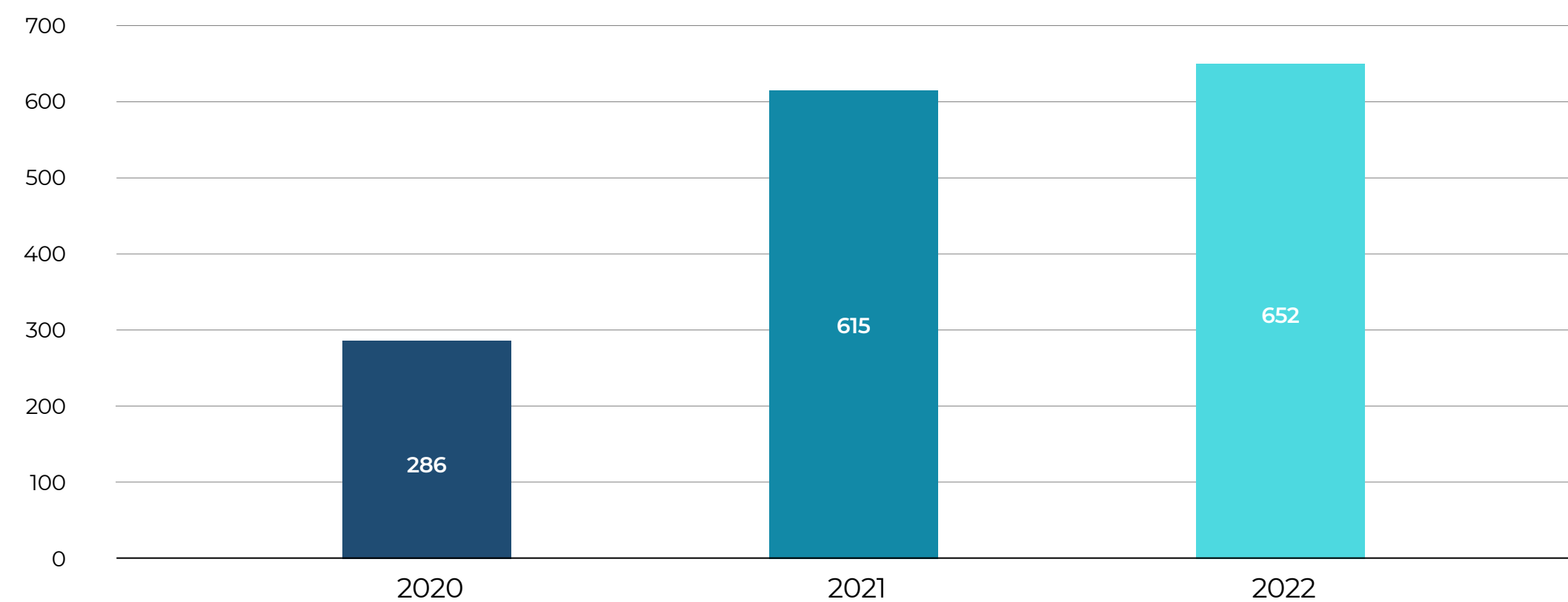
Figure 2.7 Operator investments in the network and network equipment (in HRK million)



BROADBAND INTERNET ACCESS SERVICE

By revenue, the broadband internet access service is the most significant service in the market with revenues slightly below HRK 5.7bn and steadily rising. This increase in revenues was aided by the internet access service provided via mobile networks, while revenues from fixed networks were maintained at stable levels of slightly below HRK 2bn. The increase in revenues from the broadband internet access service generated via fixed networks can also be expected in the up-

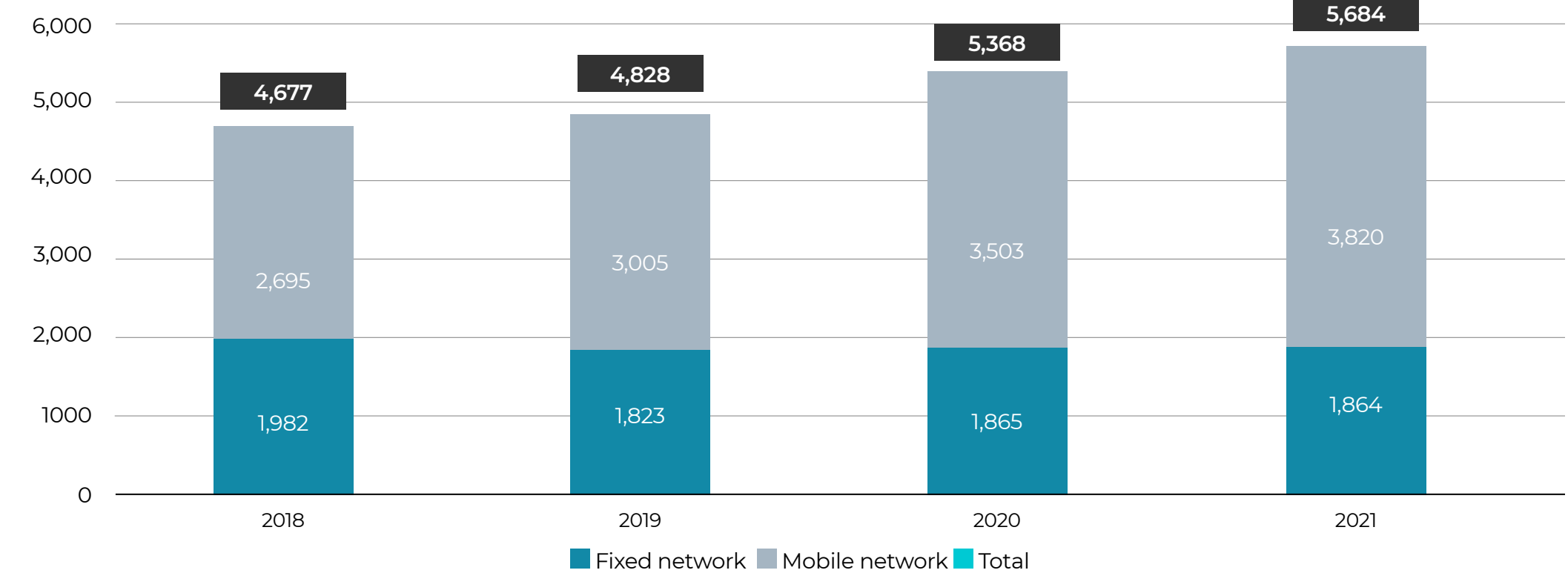
Figure 2.8 Investments in VHCN networks (in HRK million)



coming period following the expectedly better utilisation of the newly deployed VHCN networks in which operators have been investing intensively over the past years.

The upward trend in the use of 4D bundled services continued in 2022, indicating a further increase in the number of users that use the same operator (both in the mobile and fixed network) for all services. The trend also shows the importance of offering such 4D packages and the great impact of this option on the level of market competition. In this context, it is worth stressing that by entering the market of services provided via fixed networks, Telemach Hrvatska (Telemach) became the third operator operating at the national level and being able to offer 4D packages to end users, which is positive for the preservation of market competition. The competitiveness of operators who currently cannot offer 4D packages because they do not have their own mobile networks with national coverage will become increasingly dependent on the availability of offers for MVNO access.

Figure 2.9 Total revenues in the broadband internet access market (in HRK million)

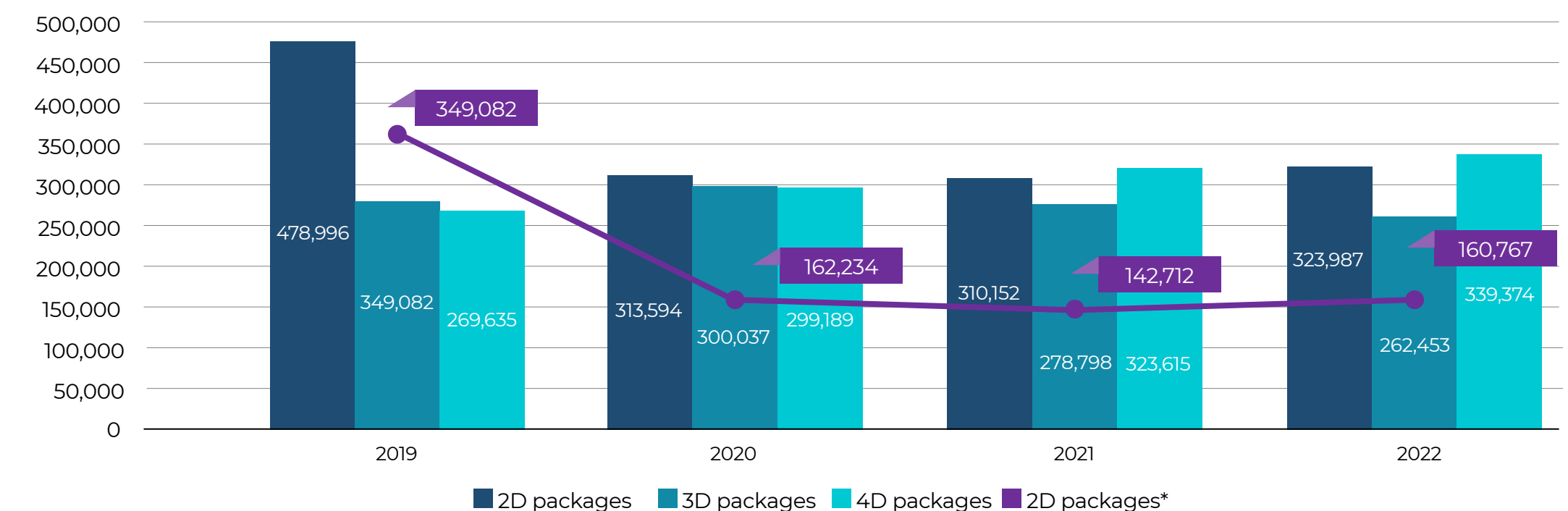


Availability of VHCN networks

The European Union's (EU's) main strategic broadband access development objectives are:

- all European households covered by a network that enables broadband access with a download speed of at least 100 Mbit/s by 2025;
- all urban areas and all major terrestrial transport paths covered by 5G network by 2025;
- all main socio-economic drivers connected to a gigabit network by 2025;
- all European households covered by a network that enables broadband access of at least 1 Gbit/s by 2030;
- all inhabited areas covered by 5G network by 2030.

Figure 2.10 Number of service packages



In this context it is important to monitor coverage with 5G and VHCN networks (which are at the moment FTTH, FTTB, FTTDP and DOCSIS 3.1.) that currently enable downloading speeds of at least 100 Mbit/s, while 1 Gbit/s speed is provided already or may be provided through simple upgrading of these networks.

Over the last few years operators have invested considerable funds in deploying 5G and VHCN networks, as visible from the continued increase in coverage. However, it is noteworthy that commercial investments by operators are predominantly directed towards areas in which such investments are the most cost-effective, such as urban and sub-urban, densely populated areas. On the other hand, such investments in rural areas are mostly not cost-effective, so commercial operators do not make them, which leads to great differences in VHCN coverage in rural and urban areas. In order for the strategic objectives of broadband access development to be fully achieved in rural areas as well, it will be necessary to subsidise a share of costs of deploying VHCN networks in these areas through different state subsidy programmes.

The take-up rate, i.e. utilisation (number of active connections in relation to the number of potential users that have access to the VHCN) of newly built VHCN networks is one of the most important factors of the cost-effectiveness of building such networks. Namely, VHCN networks require considerable investments, which bring returns to operators only if such networks are used. Despite the currently low utilisation rate (ratio of FTTH connections to the number of potential users having access to FTTH networks) of FTTH networks, at the end of last year, for the first time, the number of connections exceeded the number of ADSL connections. There was also a noticeable increase in demand for ever higher access rates, so that at the end of 2022 more than 68 percent of end users had contractual access speeds exceeding 30 Mbit/s, and more than 35 percent used speeds exceeding 100 Mbit/s. Therefore, considering the rising trend in demand for higher access speeds and the currently poor utilisation rate of newly built FTTH networks, future periods are expected to see strong growth in VHCN connections. Specifically, poor utilisation of FTTH networks is for the most part a consequence of the fact that most FTTH networks are relatively recently deployed and that some time should pass until users migrate from the existing copper network to the FTTH network. Better utilisation is also expected to be spurred by the deregulation of FTTH networks of the HT group in large towns.

Figure 2.11 VHCN coverage (% of households)

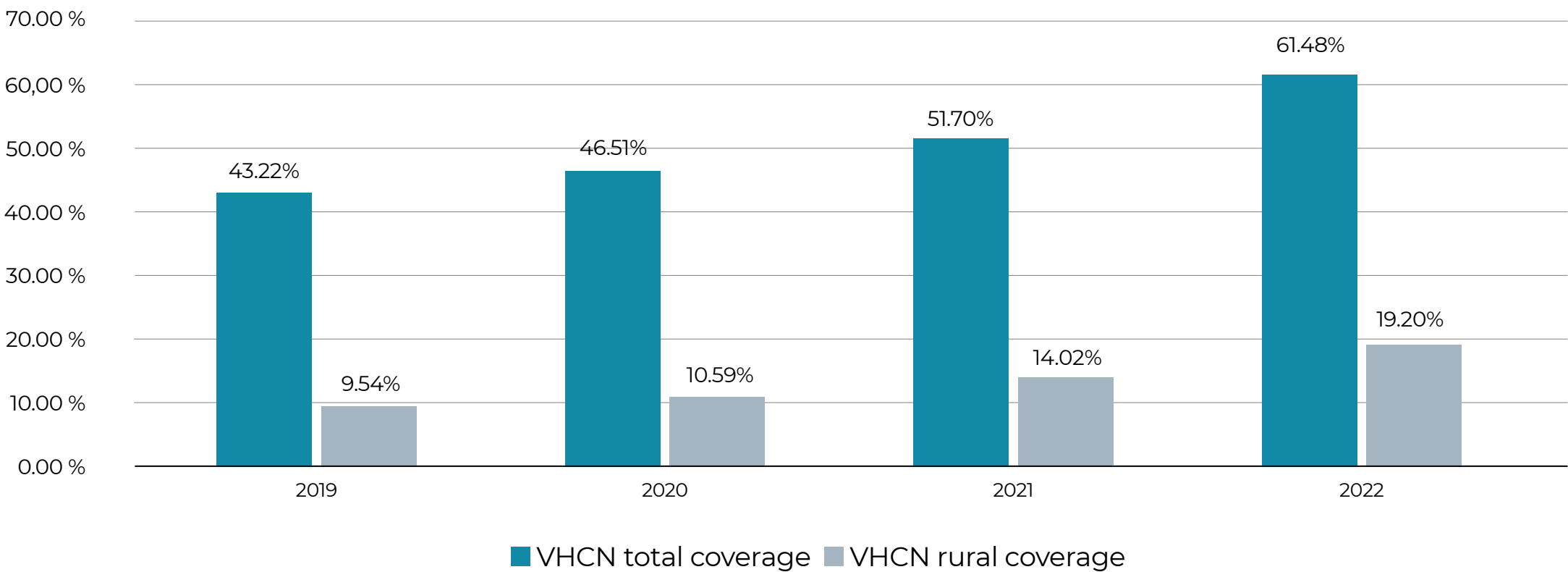


Figure 2.12 5G coverage (% of households)

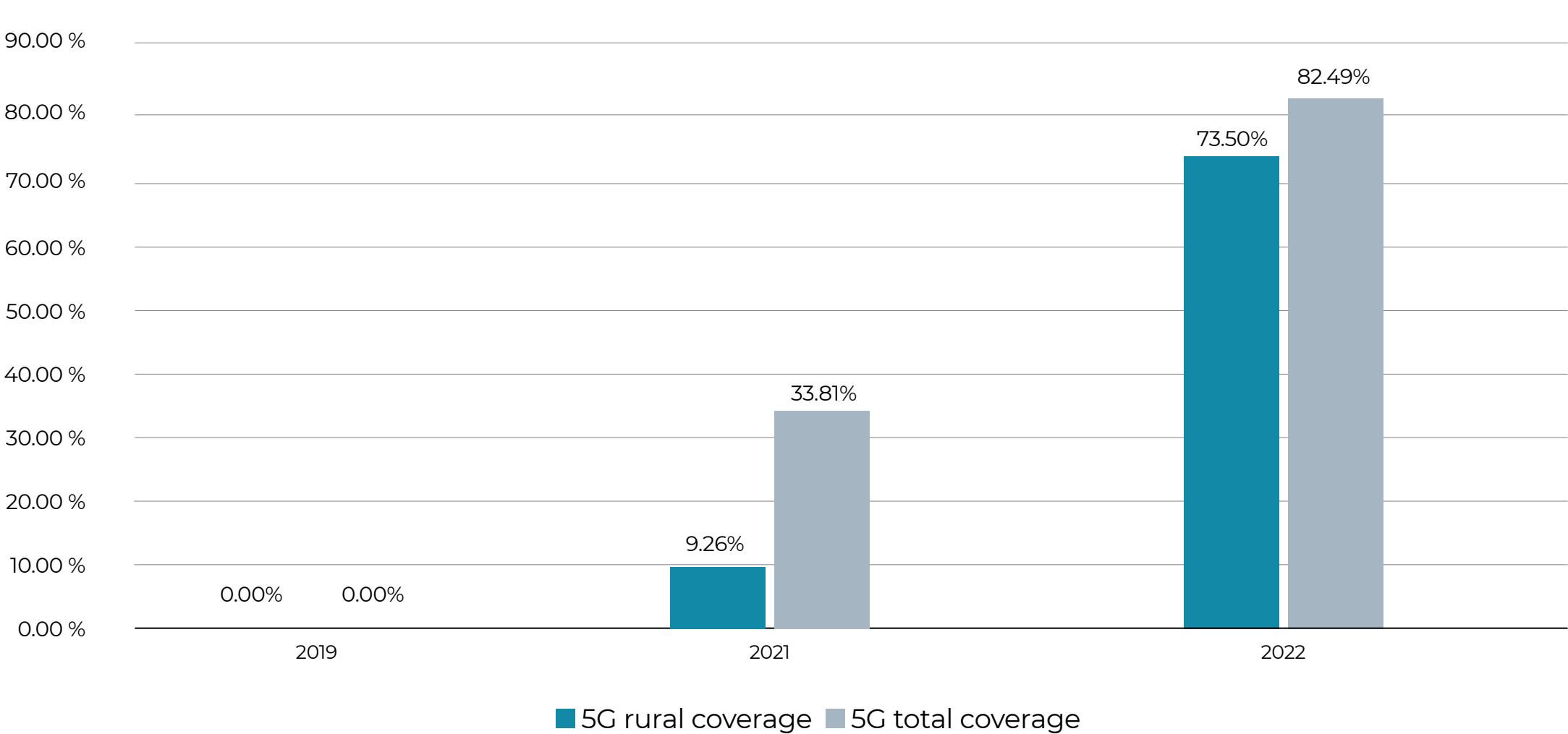


Figure 2.13 Connections by technology of access networks

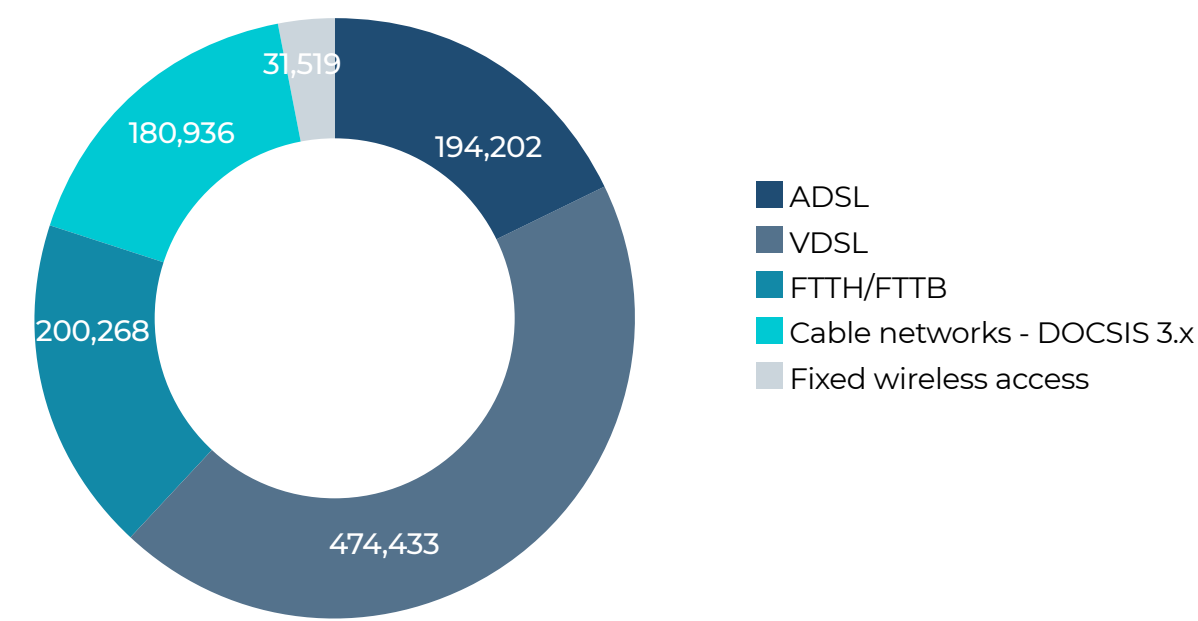
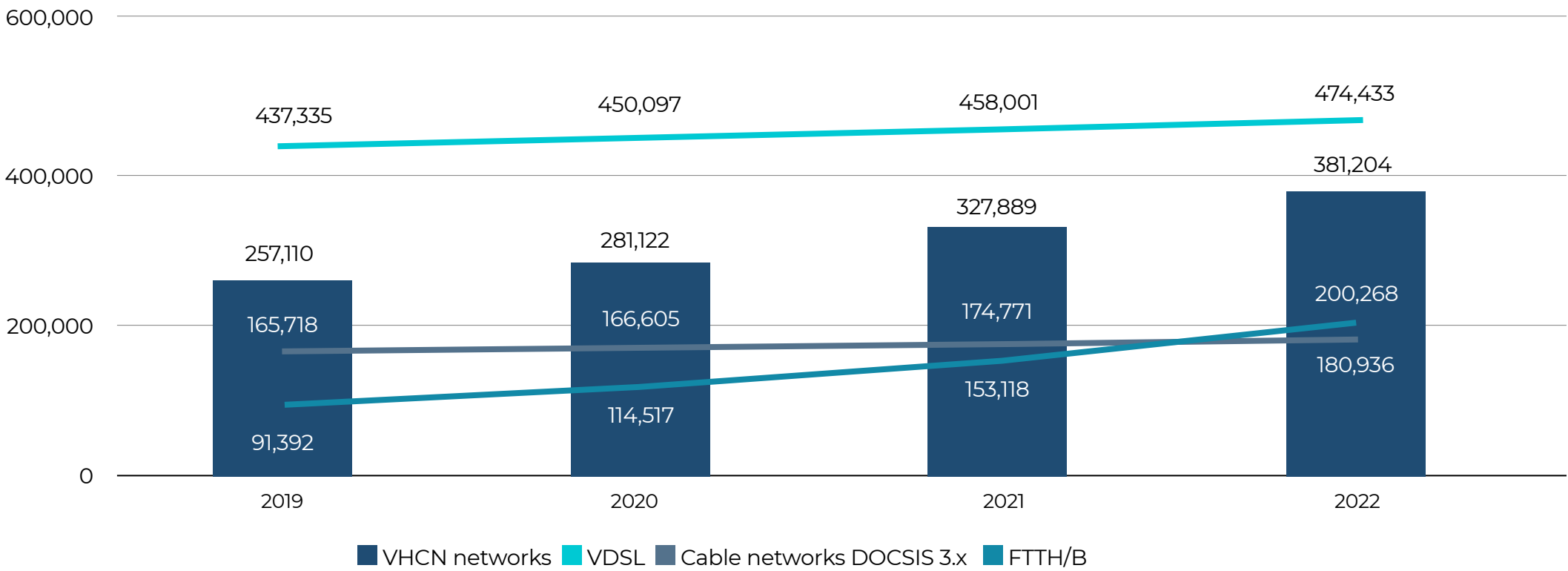


Figure 2.15 Number of VHCN connections



In addition to the upward trend in the growth of high-speed connections, last year also saw a continuation in the upward trend in traffic in both fixed and mobile networks. Greater digitalisation of all segments of the society, especially data-intensive applications like video streaming services and online video games, contributed the most to the expected rise in traffic.

Figure 2.14 Number of fixed connections by speed

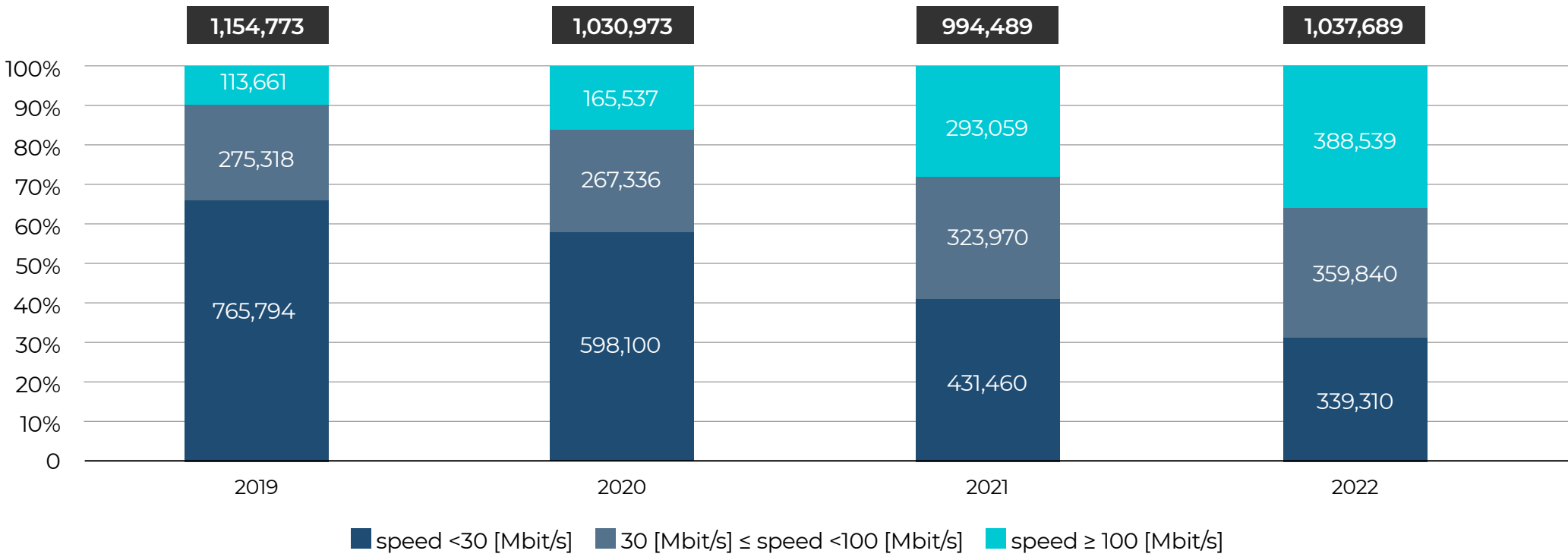
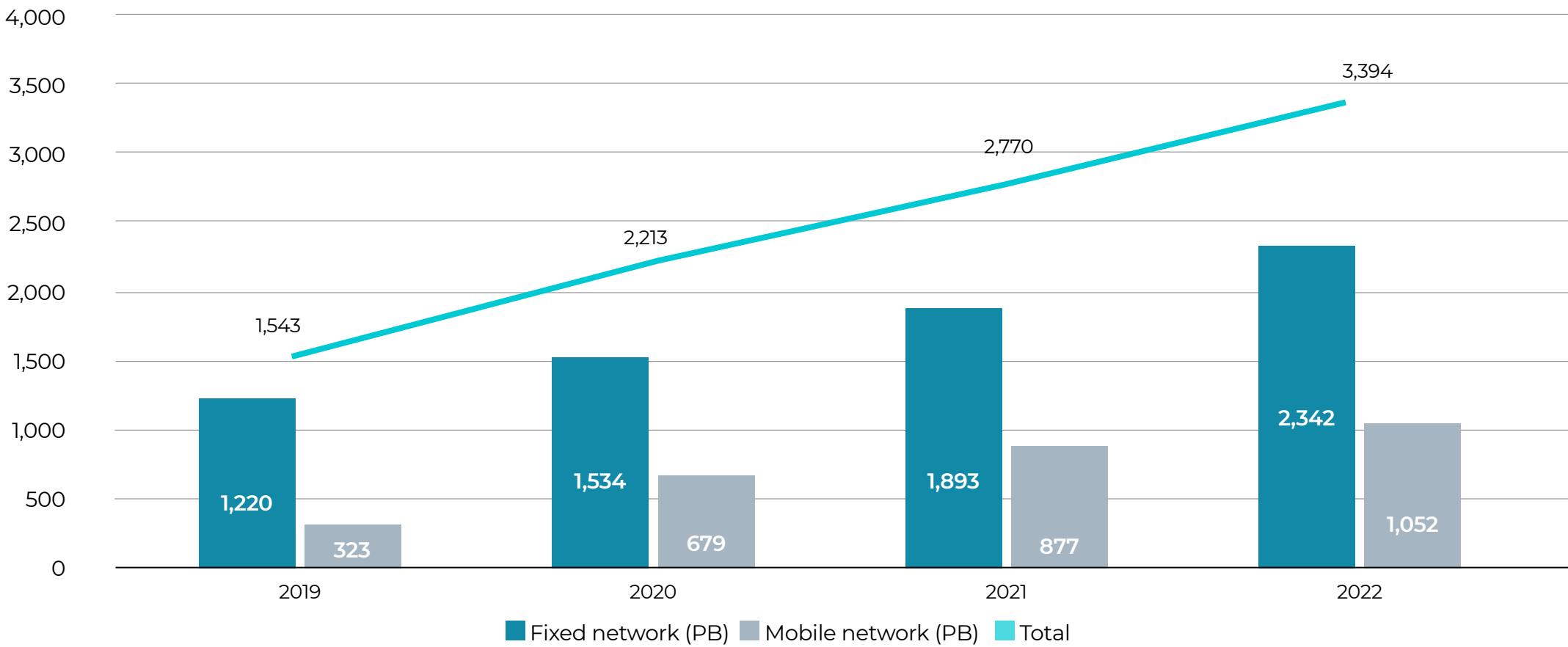


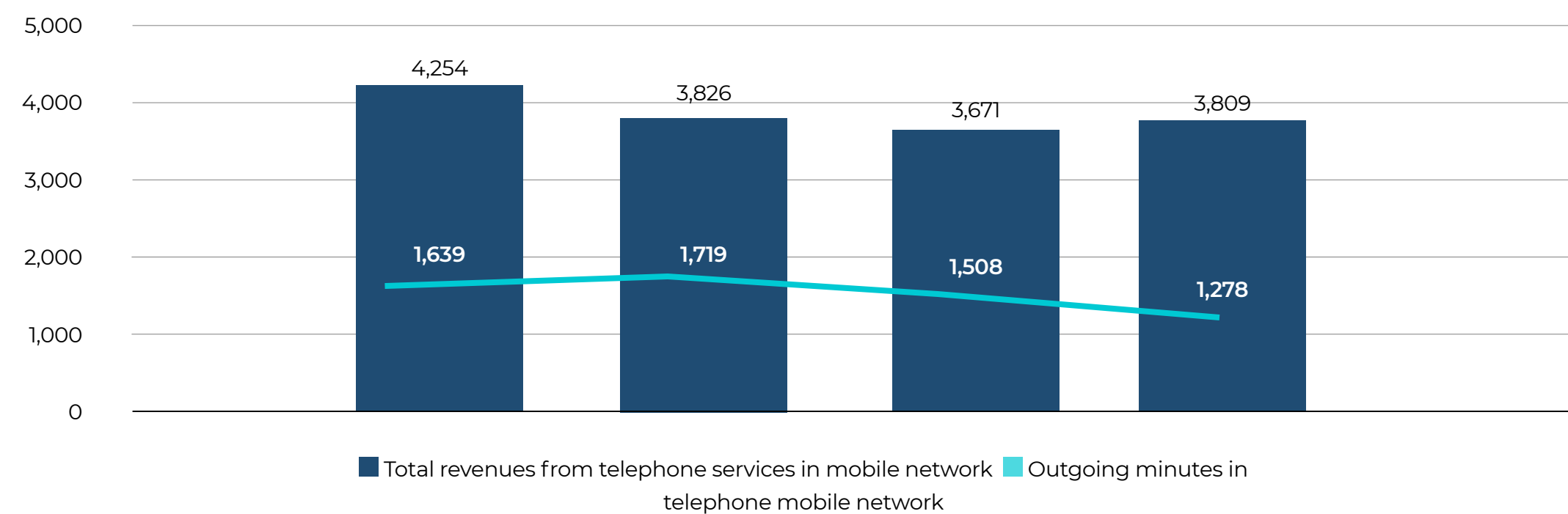
Figure 2.16 Data traffic



TELEPHONE SERVICES IN THE MOBILE NETWORK

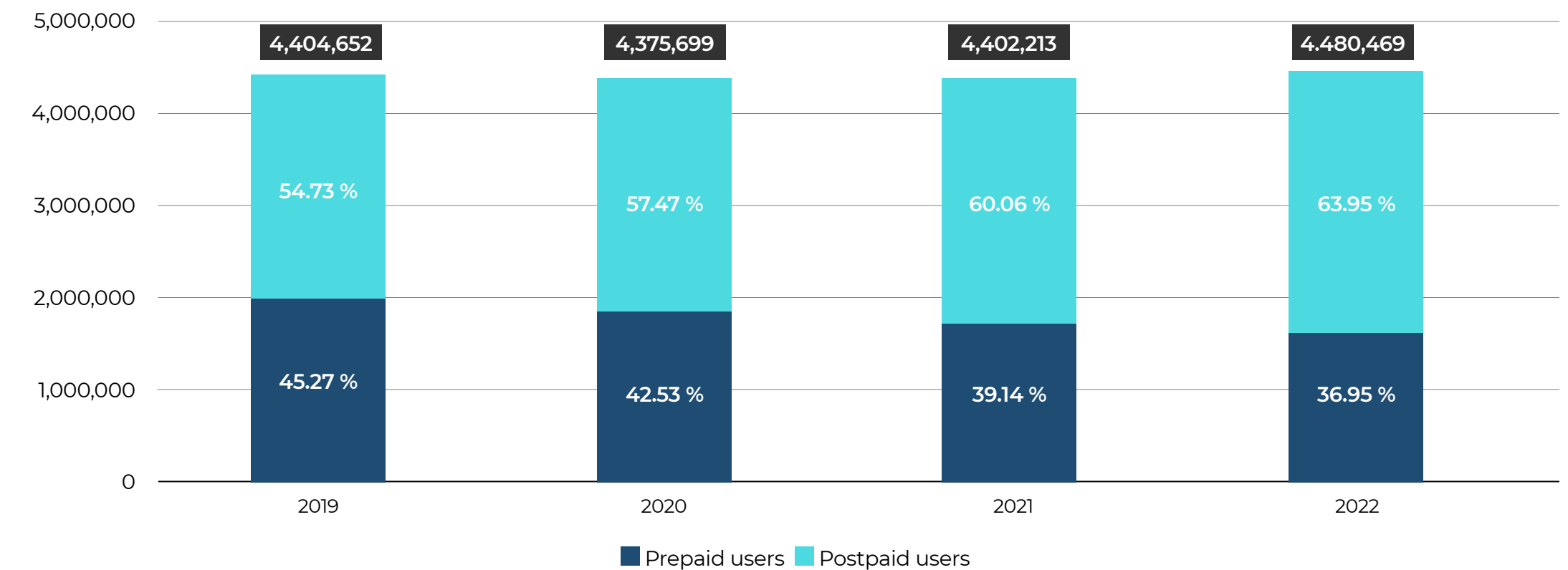
Revenues from telephone services, after having decreased in the last two years and despite the continued downward trend in outgoing minutes, grew in 2022, which can be attributed to the increase in the price of services. However, despite this year's revenue growth, there is a steady trend of decline in the use of traditional telephone services that are being increasingly substituted by OTT services like Viber and WhatsApp.

Figure 2.17 Total revenues from telephone services in the mobile network (in HRK million)



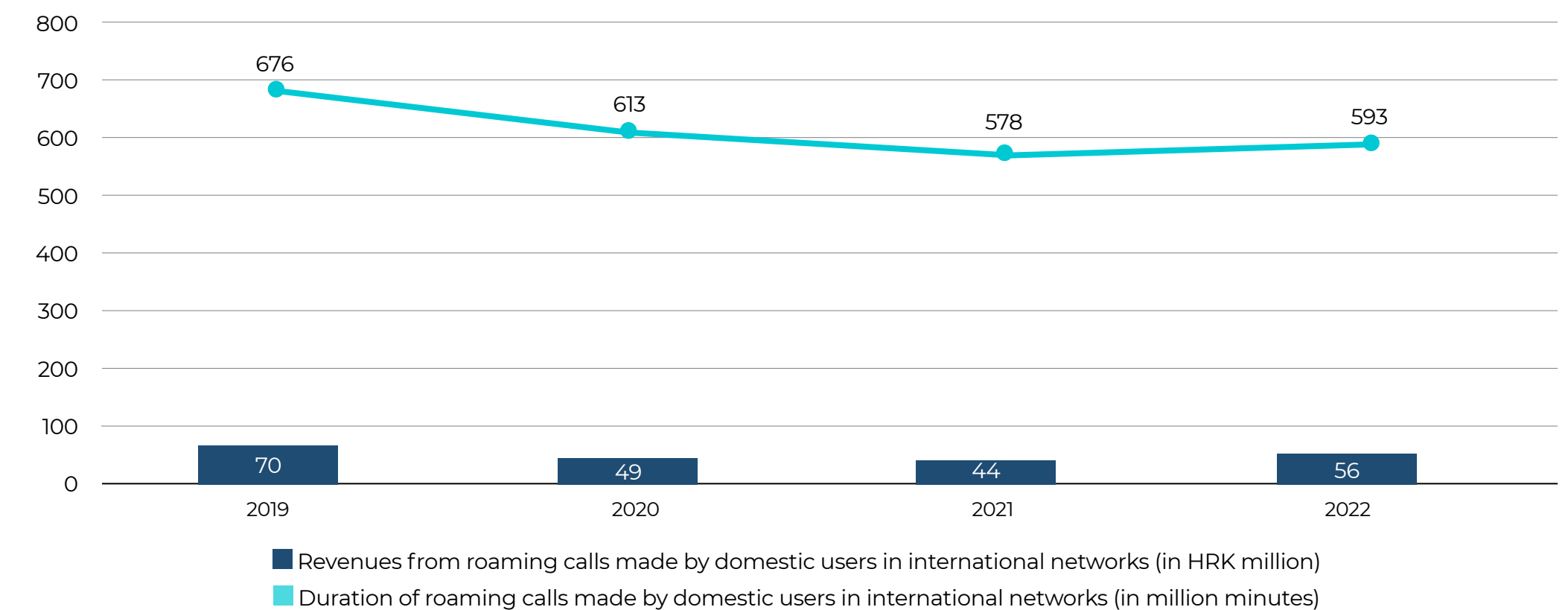
In 2022, the upward trend in the share of users in a subscriber relationship with operators continued, which was directly linked to the increase in 4D packages and increased tying of services in mobile and fixed networks that is possible only under a subscriber relationship in mobile networks.

Figure 2.18 Distribution of users by type of relationship

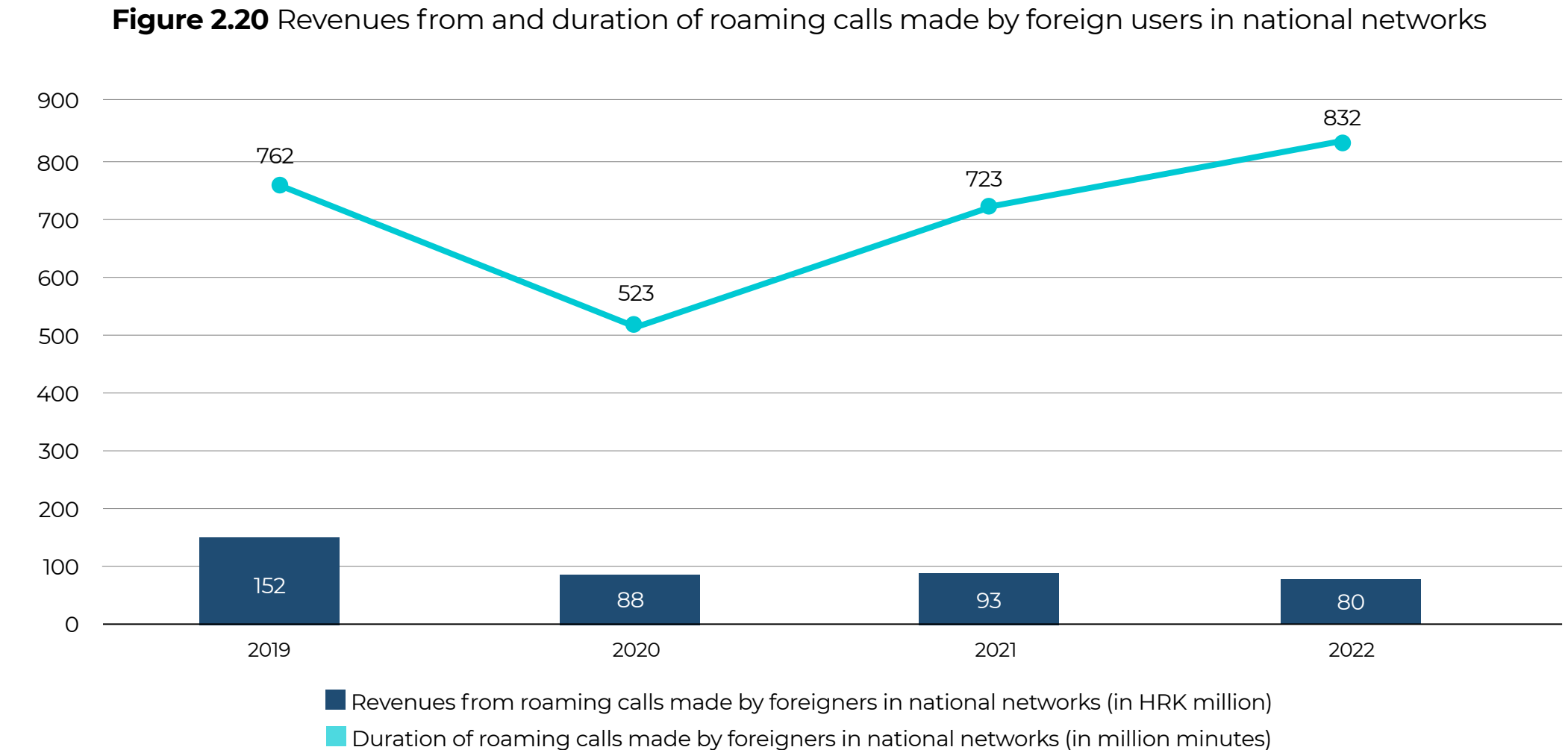


After two years of the pandemic and fewer travels of Croatian users abroad, which was reflected in a decrease in roaming traffic and related revenues, in 2022 both the traffic and roaming revenues from domestic users slightly increased.

Figure 2.19 Revenues from and duration of roaming calls made by domestic users in international networks



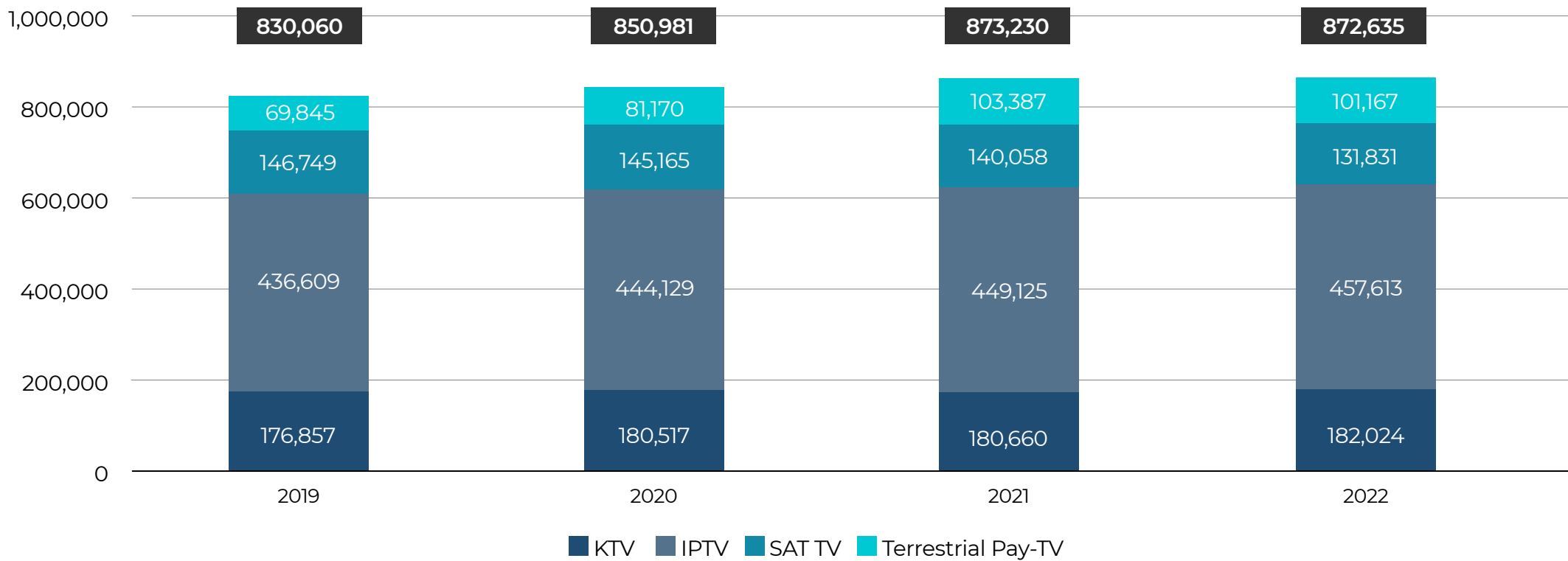
On the other hand, although traffic from roaming calls made by foreigners in Croatian mobile networks continued to grow in 2022 as a result of a good tourist season, exceeding even the levels in the pre-pandemic 2019, revenues from roaming calls made by foreigners even decreased from 2021. This can be explained by roaming regulation, which caused roaming fees for foreigners from EU Member States being substantially reduced, resulting in an increase in traffic paired with the concurrent reduction in revenues.



TELEVISION AND PAY TV

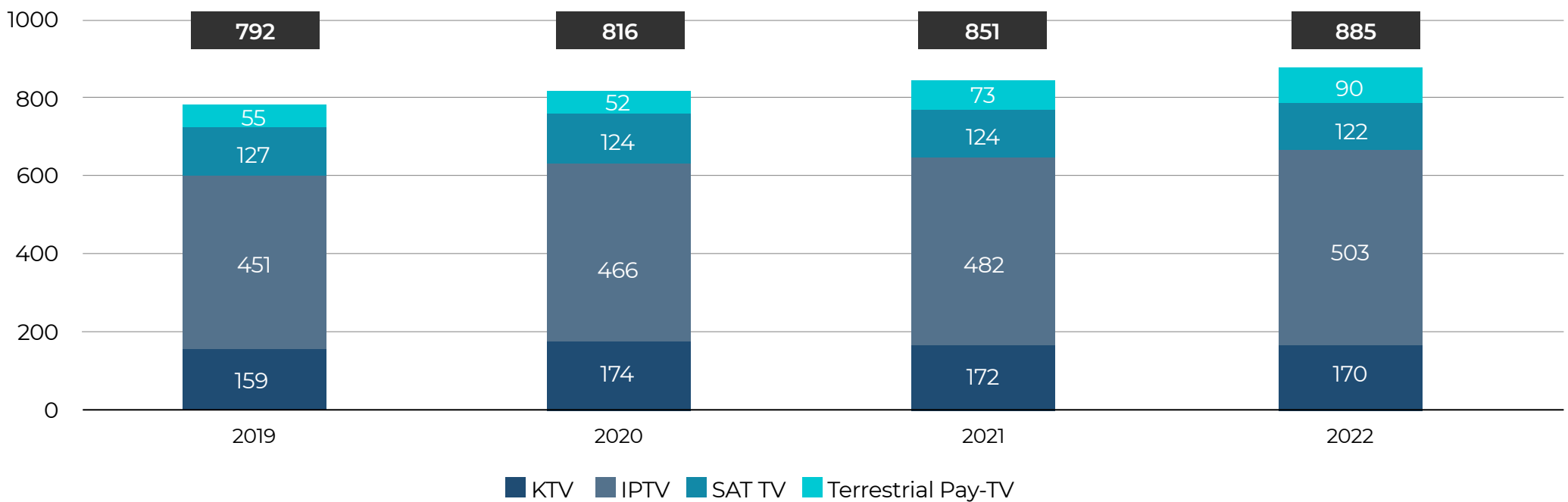
Croatian users are provided access to the TV distribution service through the TV broadcast from terrestrial transmitters (Free-to-air) and various forms of paid TV platforms (Pay-TV). Paid TV registered a decrease in the number of Pay-TV users. This can be explained by the increase in the use of various streaming services (e.g. Netflix, HBO MAX) and OTT services, which provide a substitute service for different forms of Pay-TV. This trend could continue in the upcoming period, so it can be expected that operators will adjust their retail offers. Broken down by type of technology, it is evident that the number of terrestrial TV and satellite TV connections is in decline, while IPTV and cable TV continued their rise.

Figure 2.21 Pay-TV connections by technology



Despite the slight decrease in the total number of Pay-TV connections, revenues grew by 4 per cent in 2022 from 2021. This was predominantly accounted for by the increase in revenues from IPTV service, which also registered an increase in the number of connections. However, it is interesting to stress that it came from a substantial increase in revenues from terrestrial Pay-TV despite the decline in the number of users.

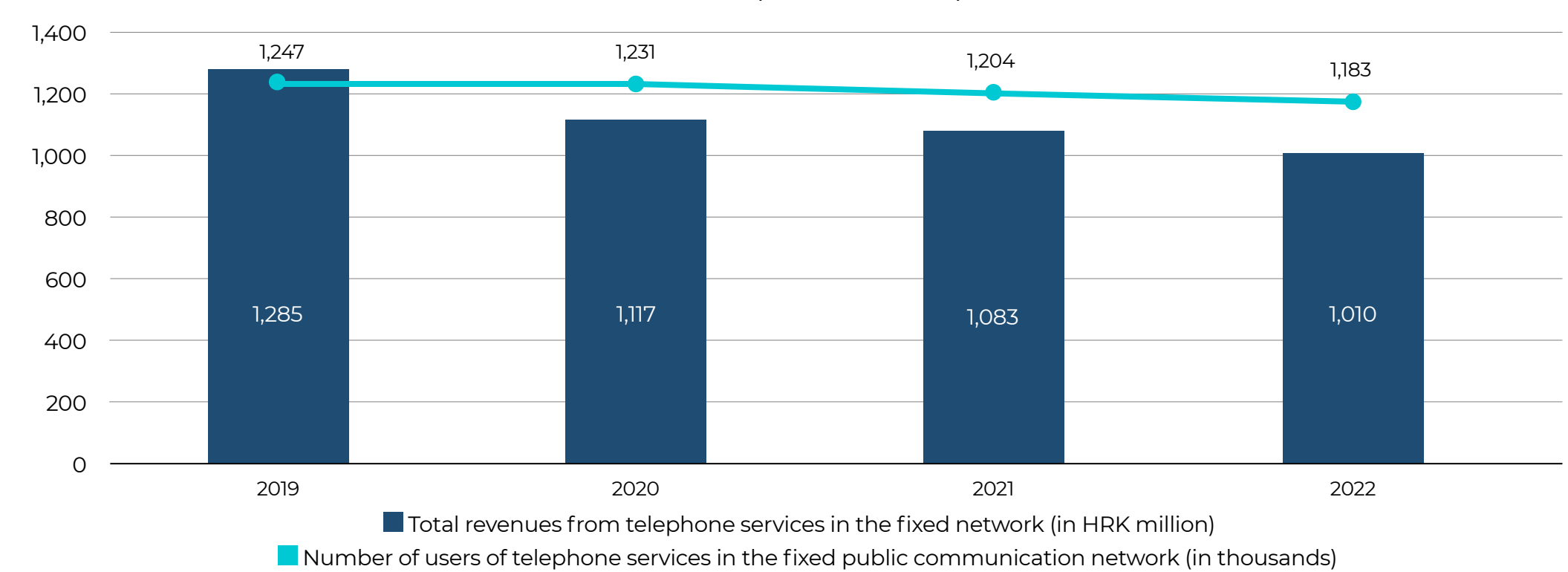
Figure 2.22 Revenues from Pay-TV service by technology (in HRK million)



TELEPHONE SERVICES IN THE FIXED NETWORK

In line with trends and expectations, telephone services in the fixed network are in decline, both in terms of the number of users and in terms of revenues. This is a consequence of long-standing trends in the replacement of this telephone service with the service in mobile networks and as of late with various OTT services, such as Viber and WhatsApp. The observed trend of declining user numbers and revenues related to this service will surely continue in the forthcoming period.

Figure 2.23 Total revenues from and the number of users of the telephone service in the fixed network (in HRK million)

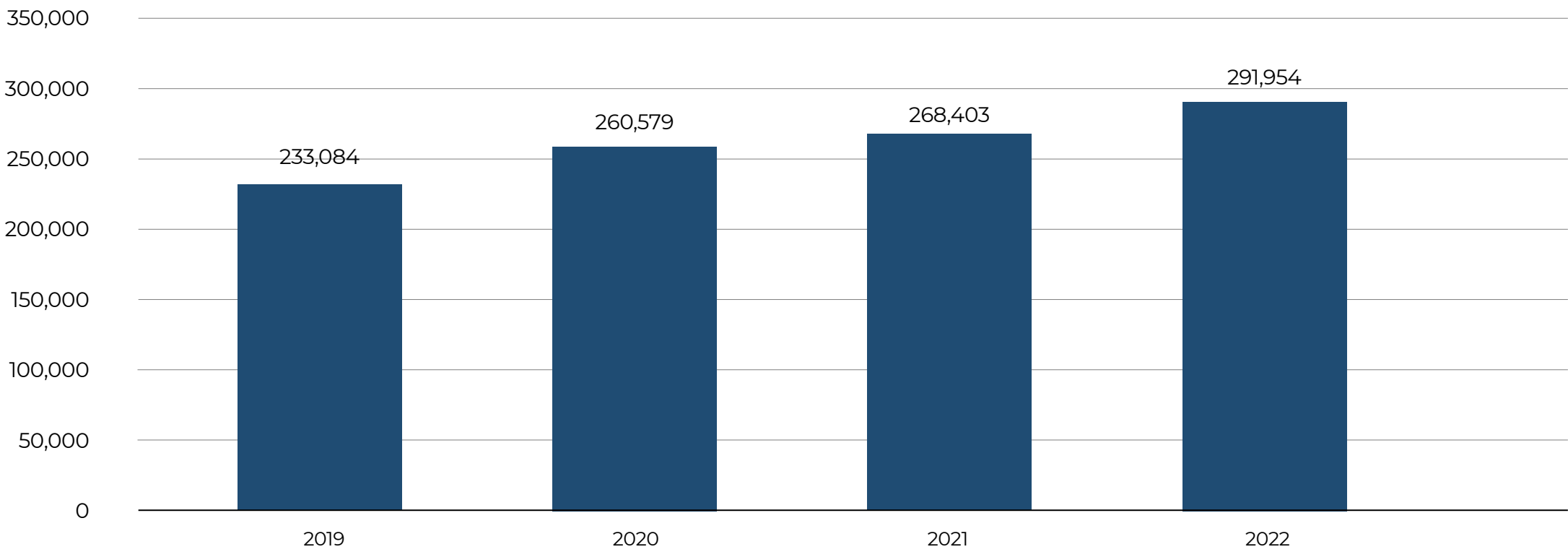


M2M SERVICES

Machine-to-machine communication (M2M) and Internet of Things have considerable growth potential. The introduction of 5G is expected to increase the number of M2M services, with the new network serving as a basis for Industry 4.0. HAKOM amended the Numbering Plan in order to determine the appropriate numbering for services based on M2M/IoT applications, such as networked cars. Current growth estimates for IoT services suggest a demand for an increased amount of uniquely identifiable devices, that is, requests for numbering, because it is assigned to each individual device. Some of IoT services provided by operators include: NB IOT (Narrow Band Internet of Things) – a network technology that interlinks devices connecting to the internet and communicating with each other (IoT devices), and M2M services – provided by opera-

tors as solutions for fleet management, fiscalisation and smart city (computer communication network in traffic, video surveillance, public city bike system, electric car chargers, municipal waste collection records, smart city lighting, smart parking or LAN/WiFi networks with advanced functionalities).

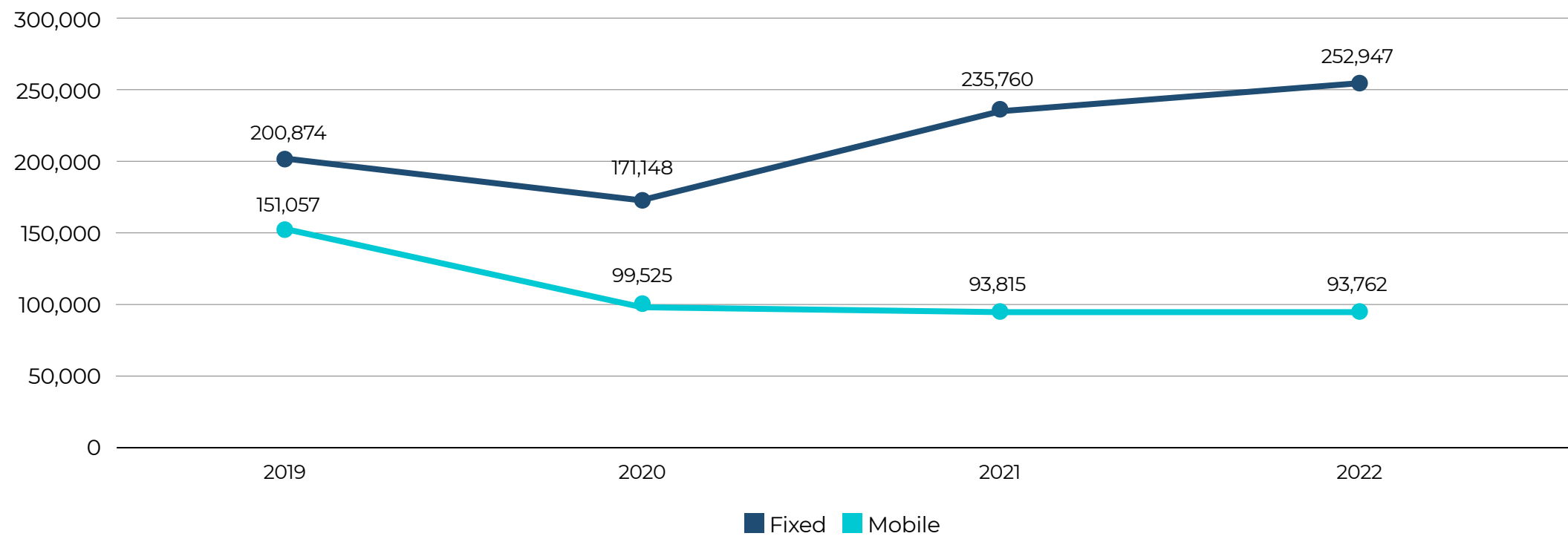
Figure 2.24 Number of M2M connections



SWITCHING OPERATORS/NUMBER PORTING

Already back in 2005, HAKOM introduced the number porting service, so that users could select the optimal operator in accordance with their needs and habits and switch to another operator's network while keeping the existing number.

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

Figure 2.25 Number of ported numbers in the fixed and mobile networks

The upward trend in the number of ported numbers in the mobile network continued in 2022, while the number of ported numbers in the fixed network remained roughly the same. The dynamics of change of numbers in both the mobile and the fixed network is expected to continue the trends started over the previous year (slightly increasing in the mobile network and levelling out in the fixed network).

UNIVERSAL SERVICES

Universal services in electronic communications are the electronic communications services of a specified quality that must be available to all end-users at an affordable price throughout the HR territory, regardless of their geographical location, with as little distortion of competition as possible. At the end of 2021, HAKOM conducted an analysis of the status of existing universal services, outside the scope of services laid down by Article 84 of Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code. Based on this analysis, HAKOM adopted a [Decision](#) in the middle of December 2021, establishing that the service of the access of end-users to at least one comprehensive directory of all subscribers to publicly available telephone services and the access of end users, including the users of public payphones, to notification (information) services on subscriber numbers, is provided exclusively until the end of the obligation laid down in the decision on the designation of operator of the designated universal service because the interest for this service considerably declined.

A public invitation was made in the period from 28 April to 6 June 2002, within the framework of which operators, end users, interested groups and associations of disabled persons had an opportunity to provide their opinions on the quality of universal services provided in the HR. Pursuant to the public invitation and information obtained from operators HAKOM conducted the [Analysis of the quality of universal services in electronic communications in the HR](#). The results indicated that it is necessary to continue providing, at a minimum, the following services from the scope of universal services: the availability of telephone service and internet access service and of access to public payphones in the entire territory of the RH. When providing these services, it is necessary to also ensure measures and services for disabled persons, as the category of users from vulnerable social groups. Considering the existing offers from other operators, as well as the fact that in the public invitation no one expressed interest for providing the universal service, the provision of these universal services had to again be imposed as an obligation. Therefore, a decision was adopted in September 2022, designating HT as the universal operator for the provision of telephone and internet access services, as well as of access to public payphones in the entire HR territory for a period of two years.

Accordingly, HT as the universal operator, is obliged to enable **a minimum internet access speed of 7 Mbt/s to each end user in the HR territory at a fixed location** which, at the time of submission of the request, it cannot provide with any of the standard packages from its offer. **HT also has an obligation to make this package available to the socially vulnerable group of end users, with a discount of 65 percent on the monthly fee (previous years it was 50 percent), without this discount being conditioned on entering into an obligatory subscriber relationship that would potentially aggravate a user's financial situation.** In addition, HAKOM prescribed additional discounts and special conditions for disabled persons. Special conditions for the socially vulnerable groups of end-users enable access to the internet access service and the public payphone service to the most vulnerable social group, i.e. access to the use of the minimum range of digital services (e.g., access to public services and educational digital content for children and young people).

INTERNET NEUTRALITY, OPENNESS AND QUALITY

In the Republic of Croatia, HAKOM is responsible for the implementation of regulations connected with protecting open internet access pursuant to Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 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. In order to adequately perform this task, already in 2016, HAKOM appointed a multidisciplinary team for the implementation of rules on

internet neutrality in order to be able to adequately react to a wide spectrum of challenges currently falling within the scope of this Regulation. The team also deals with various issues connected with internet neutrality, procedures, interpretations, and discussions with operators providing internet access services (resolving complains from end users, conducting market research, gathering information, in particular related to technical information of network monitoring).

On 1 March 2022, the Council of the European Union adopted Council Regulation (EU) 2022/350 of 1 March 2022 amending Regulation (EU) No 833/2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine and Council Decision (CFSP) 2022/351 of 1 March 2022 amending Decision 2014/512/CFSP concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine. Pursuant to Council Regulation (EU) 2022/350 of 1 March 2022 (new Article 2f), that is, pursuant Council Decision (CFSP) 2022/351 of 1 March 2022 (new Article 4g), it is prohibited for operators to broadcast or to enable, facilitate or otherwise contribute to broadcast, any content by the following legal persons: RT – Russia Today English, RT – Russia Today UK, RT – Russia Today Germany, RT – Russia Today France, RT-Russia Today Spanish, Sputnik, by any means such as cable, satellite, IP-TV, internet service providers, internet video-sharing platforms or applications. Pursuant to the said provision it is required that broadcasting be suspended by any internet sites, platforms or applications, or any other transmission or distribution, which means that the internet service providers (ISPs) suspended broadcasting or disabled access to the said internet sites. As part of BEREC's work group, HAKOM participated in the creation of the list of domains and sub-domains to be blocked pursuant to the mentioned Regulation by all European ISPs. HAKOM will continue to closely monitor the situation and in cases of future amendments to regulations actively strive to ensure compliance by all ISPs operating in the Croatian market.

HAKOM monitors commercial practices of ISPs on an ongoing basis. During the past period its focus was on zero-rated services (services that do not consume data traffic from the tariff) and the situation in the market with a view of new products or services in order to ensure compliance with the Regulation. There are several zero-rated services in the Croatian market, such as the service of music and video streaming and social networks. End users filed no complaints with HAKOM, however, on 2 September 2021, the Court of Justice of the European Union delivered judgements ([C-34/20](#) – Telekom Deutschland, [C-854/19](#) – Vodafone and [C-5/20](#) – Vodafone) in which it established that the deliberated practice of providing zero-rated services was contrary to the purpose and objective of the Regulation. Judgements of the Court apply to all zero-rated services containing any form of unequal treatment, including offers based on differentiated payment without differentiated traffic management. This means that all or most of the existing zero-rated services within the EU are prohibited because they are incompatible with the obligation to safeguard equal and non-discriminatory treatment of traffic, as stipulated in Article 3 of

the Regulation, because traffic, based on business interests, is not treated equally. In this context, HAKOM initiated appropriate national implementing and monitoring activities (based on conducted internal consultations and discussions, informal and/or formal dialogues with ISPs offering zero-rated services and information collected from ISPs). The purpose of these activities was to prepare for the revision of BEREC's guidelines in accordance with the Judgement of the European Court of Justice in the part relating to the provisions of existing Guidelines which do not process differentiated traffic fees as unequal treatment of traffic.

Since the Court's interpretation is legally binding it was necessary to align the practices of Croatian ISP-s regarding future provision of zero-rated service with the opinions stated in these judgements. In order to ensure regulatory predictability, both for ISP-s and end users, **HAKOM adopted an expert opinion deciding to conduct inspection supervision as of 1 July 2022 of the prohibition to market, contract and provide zero-rated services, and, as of 1 January 2023, conduct comprehensive inspection supervision of the prohibition to market, contract and provide zero-rated service, whereby special care will be taken that end users are provided with transparent information on the conditions of the use of services during the transition period.**

HAKOM received no complaints from end users regarding difficulties in the use of the internet access service relating to blocking or slowing down the use of certain applications and services or price discrimination. There were also no major changes in relation to the introduction of new products or services. Generally speaking, public knowledge on open internet access and the readiness of ISPs for cooperation can be described as very positive. The [Annual Report on the Implementation of Regulation \(EU\) 2015/2120](#) for 2022 once again confirmed the continuously positive picture of the open internet access in the HR⁶. HAKOM will continue to monitor the market to ensure compliance with the Regulation and it will take measures as appropriate. Only two inspection decisions were adopted during the reporting period, with all the addressed issues resolved, as a rule, through the dialogue with ISPs.

The overall state of network neutrality in Croatia is generally positive, indicating that the internet ecosystem can continue to flourish as an engine of innovation. This was proven by the Regulation and Guidelines as they contributed to the gradual increase in the quality of internet access in the Republic of Croatia, primarily through increasing the transparency of information on services provided, non-discriminatory open access to internet content, services and applications. HAKOM's supervisory and measurement tools are available and currently appropriate for the analysis and monitoring of derogations from the provisions of the Regulation. In the cases of violations of network neutrality rules, after consultations with HAKOM, operators addressed the issues and eliminated the irregularities.

⁶ The report is published and submitted to the European Commission and BEREC.

Survey on habits and experiences of users

An [online survey on habits and experiences with the use of internet in the Republic of Croatia](#) was conducted on a representative sample of a thousand interviewees, aged 18 to 65, in November and December 2022. It is a regular annual survey conducted for the Croatian Regulatory Authority for Network Industries (HAKOM) by the Ipsos agency.

The survey showed that the most frequently used communication services were mobile voice service (98 percent), internet access service (82 percent) and fixed voice service (64 percent). Most users (76 percent) use internet access service as part of the service bundle, while 89 percent of users believes that the service bundle contains all the services they need. Most of the users, as many as 92 percent of them, use the home WiFi network to connect to the internet in the household, while 51 percent of them connect via the mobile network. The most used internet connection devices are smartphones (97 percent) and laptops (87 percent), while desktop computers are used by 46 percent of the respondents.

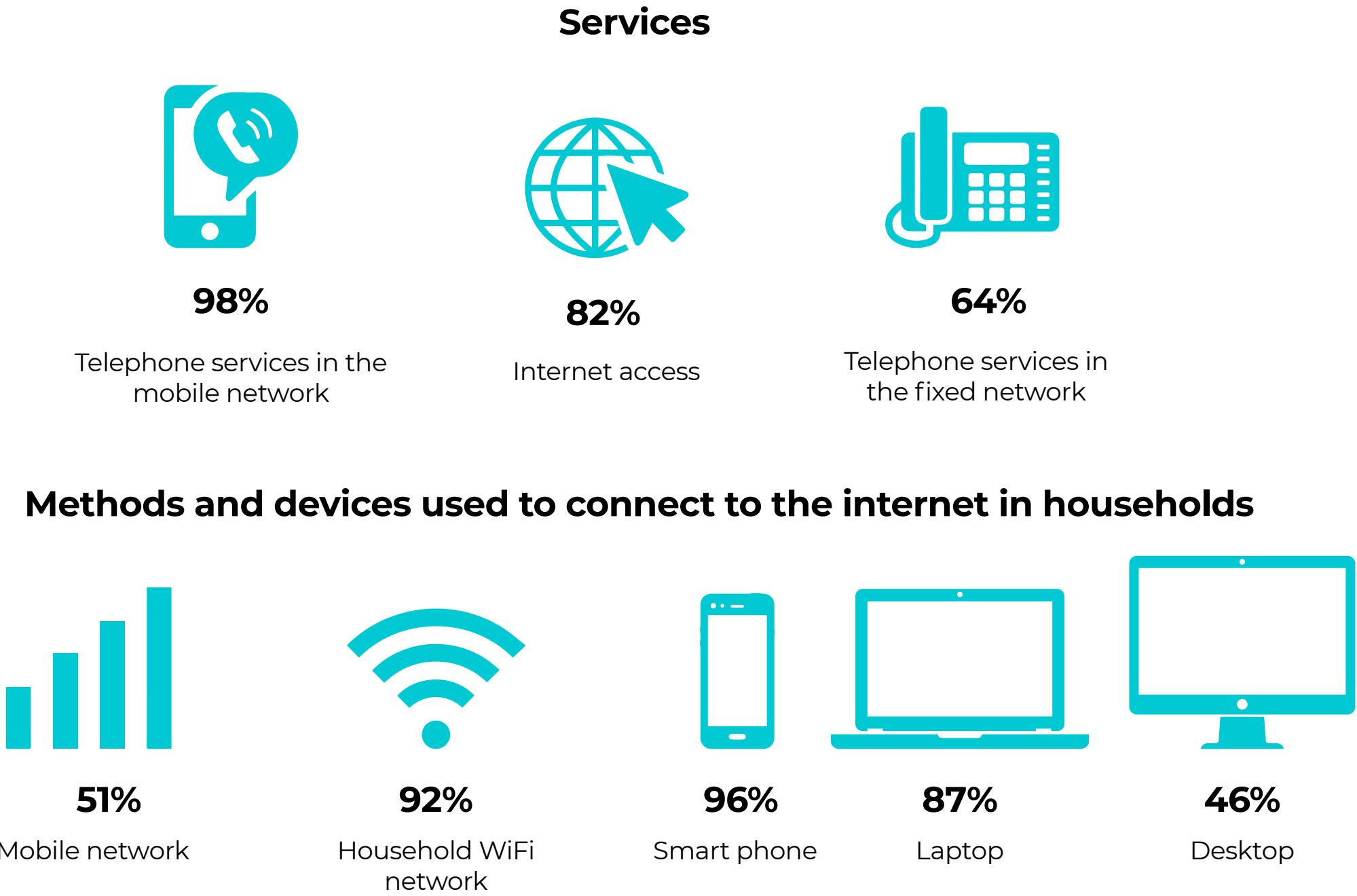
The difference in the price of ADSL/VDSL and optical connections from 5 to 10 percent would motivate about a half of the current users using copper technology to switch to optical connections. Most users with speeds below 100 Mbit/s do not consider internet speed as usage restriction, in the context that they do not use some demanding services because of low internet speed, 33 percent of users would like to have higher speeds, but are not willing to pay more than 10 percent for it than their current price. In comparison to the last year's survey, the number of users who think they do not need higher speeds is slightly higher (25 percent). Most users stated that they were informed on maximum, normal and minimum internet speed by their operators. Users do not have a habit or regularly checking speed – most of them do that when they notice that internet speed has changed.

Thirty percent of users has never checked their internet speed with any of the tools for measuring internet speed. Most users are not familiar with HAKOM's applications, so the survey showed that 21 percent of the respondents used HAKOMetar for measurements in the fixed network and 10 percent used HAKOMetar Plus for measurements in the mobile network. The most frequent difficulties were service interruption, poor internet speed and problems with the WiFi network. **Most internet users had the experience of contacting customer service, and 68 percent of them contacted them more than once. In general, users were satisfied, more with the quality of response than with the speed of response.**

When selecting an operator, internet speed, package price and the quality of the customer service remained most important to responders in 2022 as well. One quarter would change their

current operator if the price went up by 10 percent. One third of respondents did not change operators in the last three years. Those who did more often did it because of a lower price offered by competitors or slower internet with their existing operators. Almost all internet users undertake some form of activity to secure their internet security. Most often they avoid downloading application from unknown sources, protect their personal data and do not initiate contact with unknown persons. Despite this, 14 percent stated they experienced a cyber-attack or cyber bullying. Such attacks, and violence, is rarely reported (some 18 percent of cases)

Figure 2.26 Results of the survey on user habits and experiences



HAKOMetar and HAKOMetar Plus

In order to improve the monitoring of contractual conditions for the quality (speed) of the broadband internet access service, prescribed at the EU level by the Regulation, HAKOM has since 2012 been enabling end-users and operators the free use of the certified tool for measuring access speed in the fixed network - **HAKOMetar**. The test results are acceptable as evidence in end-user complaint resolution processes as, pursuant to the [Ordinance on the manner and conditions for the provision of electronic communications networks and services](#), operators are required to indicate in contracts and advertisements the minimum, regular and maximum speeds, and the minimum speed must not be less than 70 percent of the maximum speed. In 2022, more than 1,700 individual measurements were performed, that is, more than a 1,000 measurement cycles were started, with only 10 completed measurement cycles, conducted by users themselves, eligible for the submission of complaints due to too low speed. These figures indicate that contracted speeds are provided in a large percentage and that only a small share of users was denied the guaranteed internet access quality.

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

Measurement results (more than 1,111,000 individual measurements since the application became operational, of which some 136,000 were carried out in 2022) are informative and do not constitute evidence in possible complaint resolution proceedings.

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 operators' published information on coverage maps and available speeds in mobile networks is consistent with the results of user measurements.

Figure 2.27 Internet access speeds measured by HAKOMetar Plus

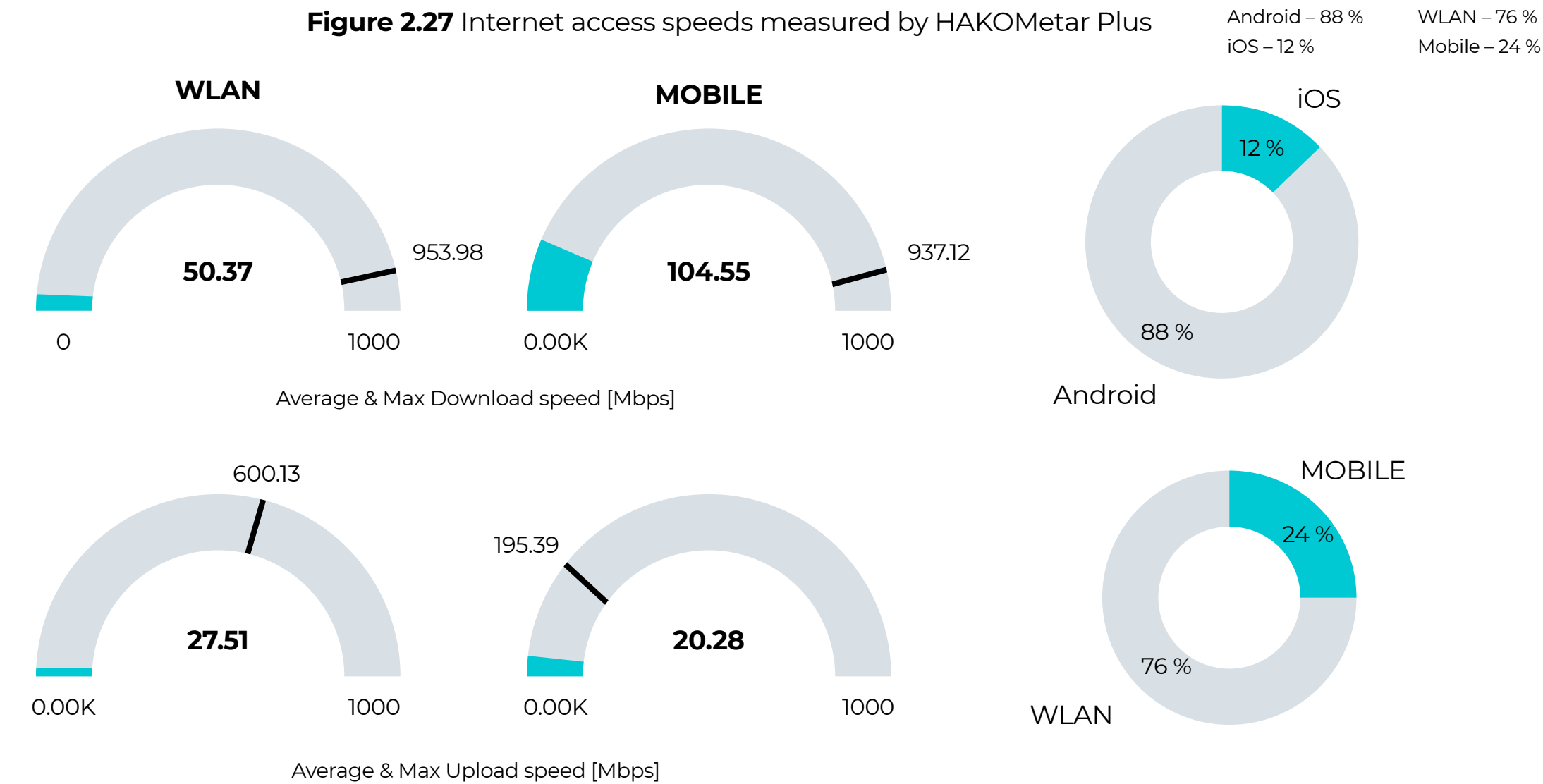
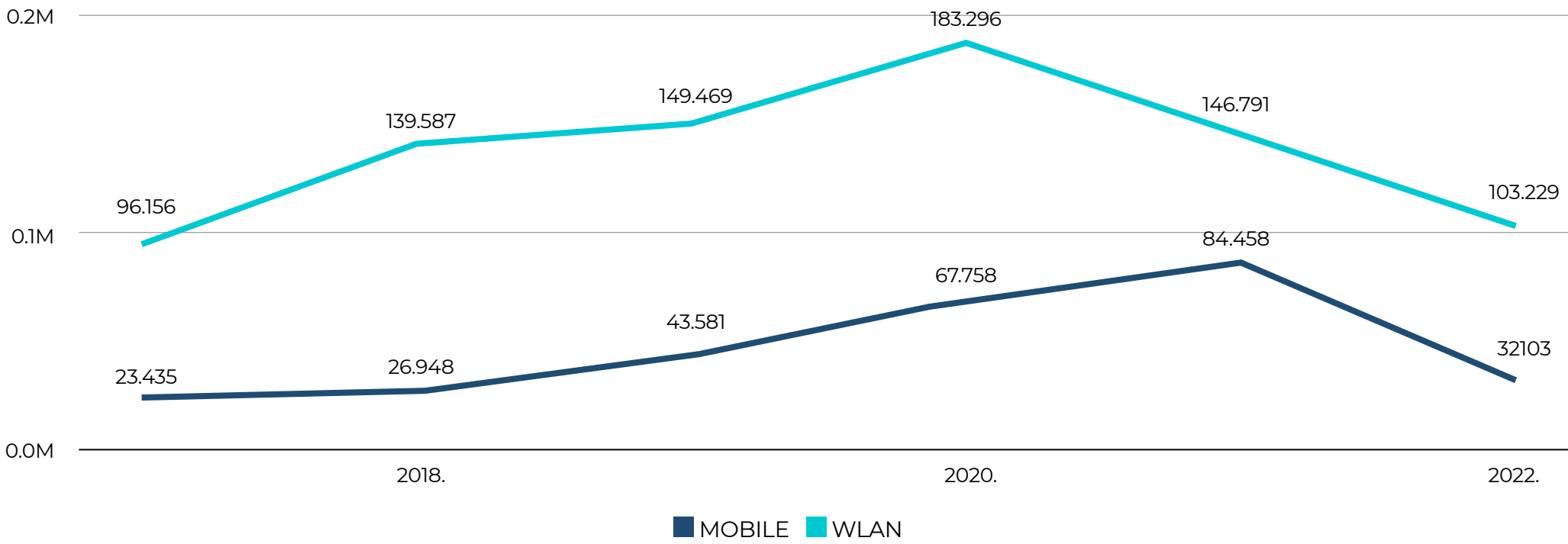


Figure 2.28 HAKOMetar Plus measurement statistics



NETWORK AND SERVICE SECURITY

The Ordinance on the manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services lays down minimum security measures, the manner of reporting to HAKOM on incidents and reporting criteria. In 2022, HAKOM received and analysed different security incidents and reported major ones, those in which the security or integrity of communications networks or services were jeopardised, to the European Network and Information Security Agency (ENISA) and competent national regulatory authorities of other EU Member States. In 2022, there were 4 major security incidents: 1 related to unauthorised downloading of users' personal data and threatening to publish them, while other 3 were related to interruption in fixed internet service, broadcasting, and e-mail service. Cyber security continues to become increasingly more important both at the national level and at the EU level. Therefore, **HAKOM carried out 4 inspection supervisions ex officio in 2022** related to undertaking adequate measures for the purpose of ensuring the security of networks and services. In addition to national cooperation (national working group for NIS²⁷ implementation was appointed), HAKOM was very active in 2022 in the field of cybersecurity, cooperating with the competent EU authorities, including the network and information system group (NIS Group).

MANAGEMENT OF ADDRESS AND NUMBER SPACE

HAKOM has a statutory duty to efficiently manage the addressing and numbering space in the RH for the purpose of ensuring efficient use of addresses and numbers. In doing so HAKOM carries out the following activities:

- amends the Addressing Plan and the Numbering Plan in accordance with requirements and changes in the market;
- supervises the use, assignment, revocation and transfer of addresses and numbers to operators in line with the Addressing Plan and the Numbering Plan;
- supervises the procedure of number porting, supervises the work of the Central Administrative Database of Ported Numbers (CADPN), providing for its maintenance, development, testing, updating and making all the necessary changes to keep it functional and tailored to the needs of the market.

One of HAKOM's important roles is the efficient management of the addressing and numbering space in the RH. Transparent, objective, uniform and unbiased assignment of addresses and numbers to operators allows for a fair competition in the electronic communications market at all times.

7 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A823%3AFIN>

As the number of operators increases, so does demand for addresses and numbers. This is paired with the trend of the use of new technologies and consequently the emerging of new services, which makes for more complex technical and regulatory conditions.

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

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

	2021	2022
PRIMARY ASSIGNMENT	130	79
REVOCATION	29	13
TRANSFER OF RIGHT	3	10

Table 2.2 Types of number allocation requests

Usluge nepokretne elektroničke komunikacijske mreže	32
Short six-digit SMS/MMS codes	24
Freephone services	8
Mobile network access codes	4
Mobile network codes	3

The most required types of numbering in 2022 were for fixed electronic communications network services, six-digit SMS/MMS codes for mobile network services, freephone services (800), mobile network access codes and mobile network codes.

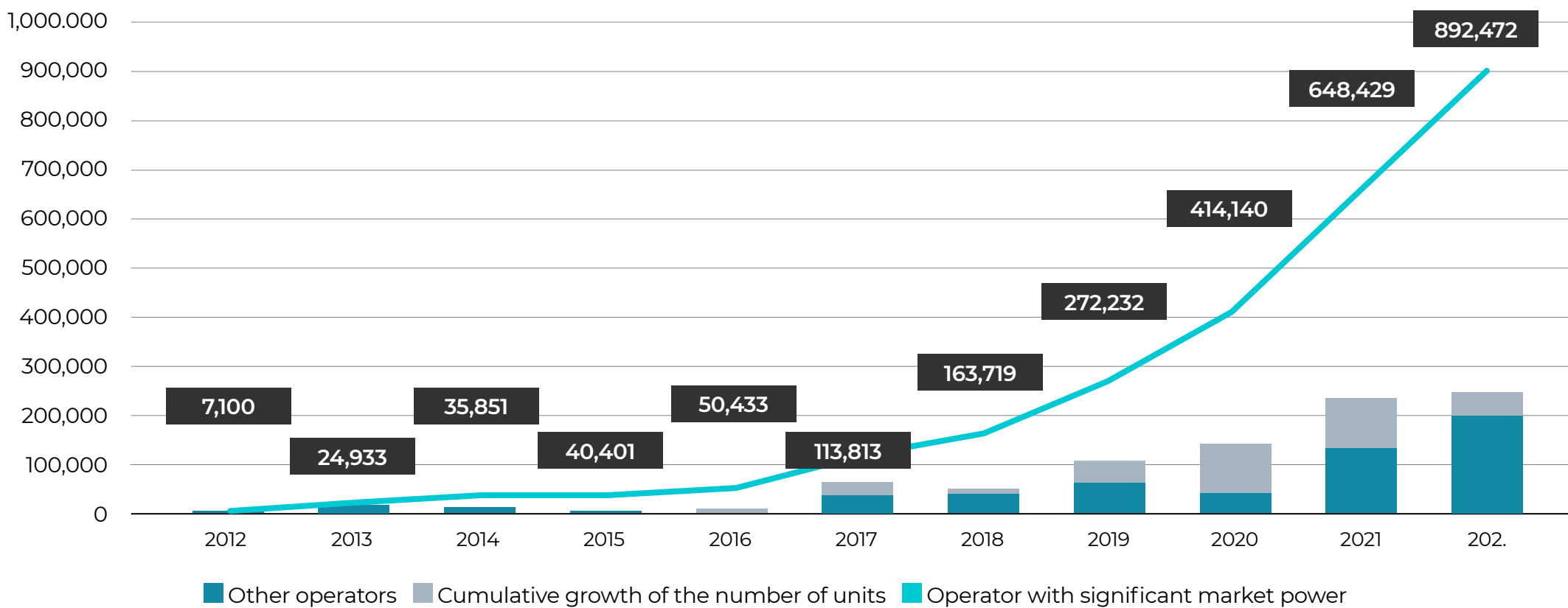
The free numbering space, that is, the quantity of numbers available for primary assignment to operators, currently completely meets market needs. The CABP was updated and modernised in 2022.

Table 2.3 Numbers available for primary assignment

Numbering type	Free numbers	Percentage (%)
060 (60xxxx) general content	9,941	99.41 %
064 (64xxxx) (services with child-inappropriate content)	9,999	99.99 %
072 (common access code services)	988,049	98.80 %
074 (personal number services)	997,394	99.74 %
075 (personal number services)	987,312	98.73 %
800 Usluga besplatnog poziva	806,590	80.66 %
Services in the fixed network (all counties)	21,868,000	80.99 %
Services in the mobile network	45,750,000	45.75 %
M2M services	47,500,000	97.50 %

CONSTRUCTION OF THE ELECTRONIC COMMUNICATIONS INFRASTRUCTURE

Market development data and indicators for the electronic communications market that HAKOM regularly collects and publishes suggest an uninterrupted growth of demand for the broadband internet access service and the IPTV service. For electronic communications network operators and service providers to meet the growing demand and maintain service quality levels, network capacities and end-user access speeds should be increased, which requires major investments. Current data on the availability of broadband access speeds show that in large towns where operators' commercial interest is greater, the availability of high-speed networks is much larger than in rural areas. Data on broadband access availability are collected on a quarterly basis and aggregate results are published and presented on the HAKOM's GIS portal <http://mapiranje.hakom.hr/hr-HR/SirokopojasniPristup>. The portal also publishes the notices of intent to build optical fibre distribution networks, which operators are obligated to report in accordance with the Ordinance on optical fibre distribution networks.

Figure 2.29 Number of users of optical fibre distribution networks – notices of intent to build

The total number of potential users covered by the notice of intent to build optical fibre distribution networks in 2022 increased by 244,043 or 37.6 percent from the previous year, so that at the end of the year the number of covered potential users totalled 892,472. 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. By the end of 2022, other operators made several times larger investments in the construction of the optical fibre infrastructure than in the previous year, while the operator with significant market power invested less than other operators, despite recording an investment growth from the previous year. Investments in rural and suburban areas are expected to increase in the period to come, with the bulk of these investments to be co-financed from EU funds.

Cooperation with State Geodetic Administration (SGA)

HAKOM and SGA cooperate in establishing the common database of the cadastre of electronic communications infrastructure (ECI) and other related equipment. In 2022, cooperation was satisfactory; however, the preconditions for providing support to HAKOM's business processes were not met due to the partial verification of data that infrastructure operators submitted to

SGA, which are part of a common data base ensuring access to spatial data regarding the constructed electronic communications infrastructure in the Republic of Croatia. Therefore, projects planned by HAKOM were postponed until the upcoming period, i.e. after the common database is fully verified (for the entire territory of the HR) by SGA.

ACCESS TO AND USE OF THE ELECTRONIC COMMUNICATIONS INFRASTRUCTURE

The access to and the use of the ECI are important for the electronic communications market. The processes related to the common use of the ECI include preparing the proposals of legislative acts, subordinate legislation, regulations, instructions and forms required for the access to and the shared use of cable ducts, the shared use of the physical infrastructure and optical fibre installations in buildings, collocation, resolving disputes between infrastructure operators and beneficiary operators, determining technical conditions and regulating the existing situation regarding the shared use of cable ducts.

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

Right of way is the right of access to and the installation, use, repair and maintenance of the electronic communications network and electronic communications infrastructure and associated facilities, including cable ducts, and other related rights, which impose a burden on a real estate on which the electronic communications infrastructure and associated facilities have been constructed. Based on the request of the infrastructure operator, HAKOM issues right of way certificates. In addition, at the request of the public property 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 is established, as well as the quantity and type of infrastructure and the amount of fee for the right of way. The right of way certificate is issued pursuant to the [Electronic Communications Act](#) 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 public property managers or real estate owners).

In the course of 2022, natural persons filed 484 requests for issuing the right of way certificates and a total of 337 certificates were issued. The total length of the route for which the right of way certificates was issued is 60,390.73 metres. As regards the regulation of property-law relations

between infrastructure operators and public property managers or real estate owners, a total of 21 new requests were received in 2022 for the regulation of these relations between local self-government units (LSUs) and the infrastructure operator in the following cities: Požega, Varaždin (x2 – A1 Hrvatska d.o.o. (A1) i Infrastruktura d.o.o.) Sveta Nedjelja, Krapina, Beli Manastir, Kraljevica, Delnice i Grubišno Polje te općine: Donja Voća, Klenovnik, Višnjan, Martijanec, Poličnik, Gornji Bogičevci, Kali, Drenovci, Kapela, Kistanje and Veliko Trojstvo; a revision of the Study for a right of way for the County Road Administration (CRA) of the Varaždin County (supplement). A total of 80 requests filed by LSUs and CRAs were addressed, i.e., an infrastructure operator was identified in the LSU administrative area and the CRA area. These included 21 requests received in 2022 and 59 requests from the previous period. It should be noted that HAKOM's resolution of requests is conditioned on the accuracy of the documentation, so that it is possible to have several decisions (partial, final and supplementary) related to the same case. In this manner LSUs and CRAs regulate property-law relations with infrastructure operators that have illegally set up their ECI on the real estate in their ownership. The goal of regulating these relations is to achieve monetary compensation for the use of the real estate.

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

Year	2015	2016	2017	2018	2019	2020	2021	2022
Number of requests	175	140	49	93	87	47	51	21

Public authority operations

HAKOM, as a public authority competent for activities prescribed by statutory regulations on physical planning and construction, participates in the procedures of providing guidelines for preparing physical plans, providing opinions on physical planning documents, establishing special conditions for construction and granting main project certificates.

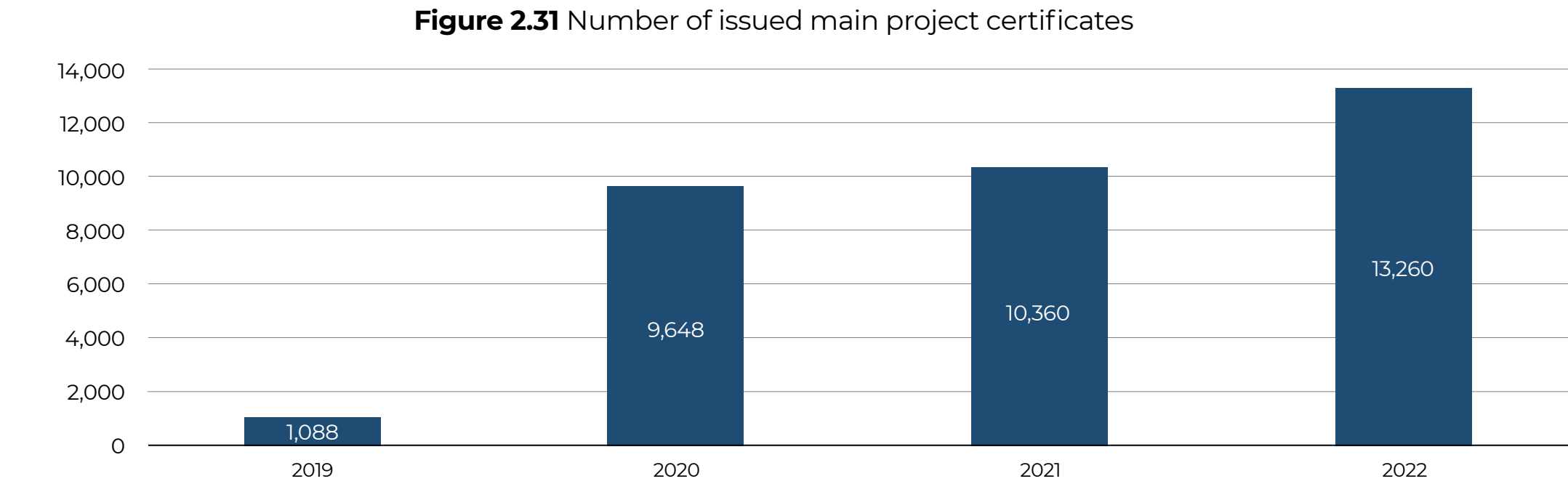
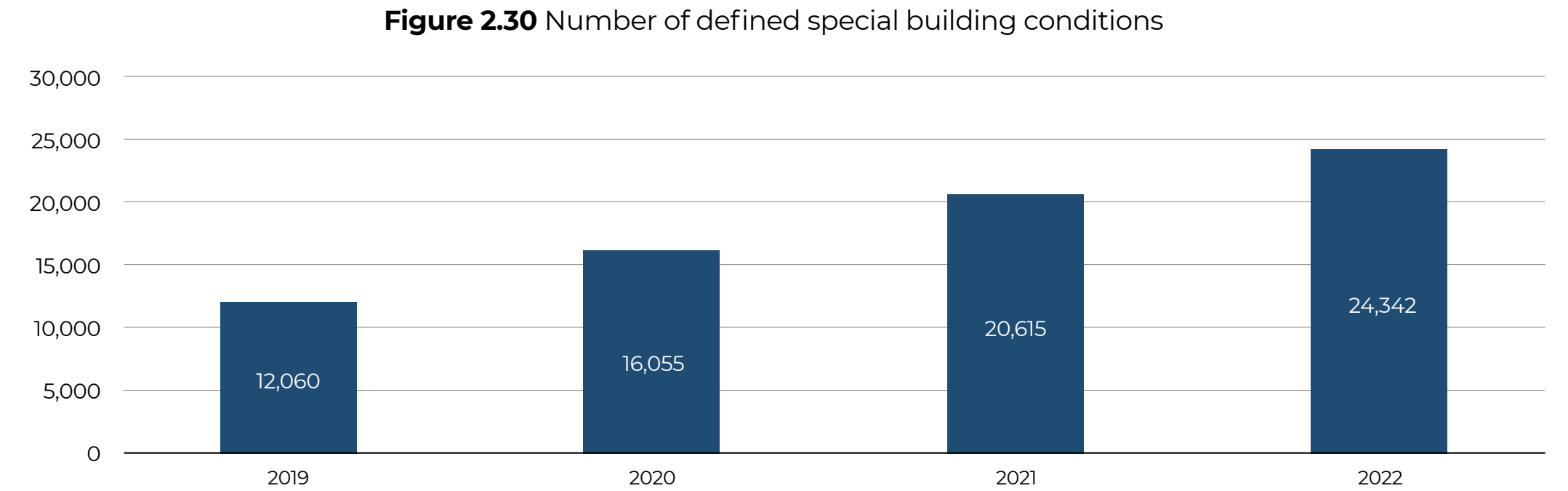
Issuing requests (guidelines) for preparing physical plans and providing opinions on physical planning documents

HAKOM participates in the procedure of adopting physical planning documents that serve as the basis for seamless construction of the ECI and other associated facilities. Pursuant to the Physical Planning Act, HAKOM regularly participates in the adoption of physical plans by issuing guidelines and opinions, defining the manner of network planning without restricting their

development and taking care that requirements for the protection of public health, space and environment are met. In 2022, HAKOM issued 726 documents with requests (guidelines) to be complied with during the development of physical plans at all levels. During the year, HAKOM also participated in public consultations considering proposals for physical plans at all levels, issuing 383 opinions concerning proposed physical plans.

Defining special building conditions and issuing main project certificates

For interventions into space, within the ECI zone and other associated facilities, as well as in the safety zones and the radio corridors of certain radio stations, HAKOM establishes special building conditions and issues approvals for the main projects in compliance with the Physical Planning Act and the Building Act. In 2022, the number of requests for defining special building conditions and requests for approvals of the main projects increased.



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

The mark "Broadband Internet Access Ready" for newly built and fully reconstructed buildings

At the end of 2022, HAKOM started analysing possible procedures for assigning the mark "Broadband Internet Access Ready" to all newly built buildings and those that have undergone comprehensive reconstruction works to clearly denote that they are ready to receive high speed networks.

OVERVIEW OF REGULATORY MEASURES

Key regulatory activities marked the end of 2022 and the beginning of 2023. A decision was adopted in November, setting the new rate of return on invested capital, the weighted average cost of capital (WACC). December saw the adoption of decisions on the new amounts of one-off fees that are an important part of wholesale services that HT, as an operator with significant market power, must offer to other operators in the market. In January 2023, HAKOM started public consultations regarding decisions on the market analysis of wholesale local access provided at a fixed location (M1/2020) and the market of wholesale central access provided at a fixed location for mass-market products (M3b/2014). These two markets are important for providing the broadband internet access service at the retail level. Building on the conducted analysis, in its decisions HAKOM proposed a new, or rather, a different approach to market regulation.

The new Roaming Regulation entered into force in mid-2022, so care continued to be taken about operators' adequate implementation of the provisions of the Delegated Act on a common call termination rate, adopted late in 2020.

Market analysis of relevant markets

In 2022, HAKOM worked on the market analysis of wholesale local access provided at a fixed location (M1/2020) and the market of wholesale central access provided at a fixed location for mass-market products (M3b/2014). These two wholesale markets are connected to the provision of the retail service of broadband internet access, but also of other electronic communications services, such as the IPTV service and telephone service in the fixed network. HAKOM conducted

a detailed geographic analysis in 2022, at the local self-government unit level (town/municipality/city neighbourhood in the City of Zagreb), preparing decisions in relation to which public consultations were launched in January 2023. In these decisions on market analyses, HAKOM proposed another approach to market regulation aiming to achieve its strategic objectives, such as promoting investments in very high capacity networks (VHCN) and developing market competition, to bring the greatest benefits to end users and the economy as a whole.

For the first time in its analyses, HAKOM carried out market segmentation by technology, that is, divided the market to the low capacity market and the high capacity market. The low capacity market comprises the services of broadband access via copper network, broadband access services at a fixed location via mobile networks and broadband access services via fixed wireless access. The high capacity market comprises services provided via VHCN networks.

In addition to segmenting the market to the low and high capacity market, HAKOM, for the first time, conducted a detailed geographic analysis of the market and, after establishing that there were large differences in market competition among different geographic areas, also carried out a geographic segmentation of the market. The mentioned geographic analysis, i.e. segmentation, was carried out for the large capacity market, which comprises all services provided via optical fibre and cable networks because those are networks being equally built by HT and other market operators, but not equally in all geographic areas, which leads to geographic differences in the level of market competition. On the other side, for the low capacity market dominated by services provided via copper network such analysis is not necessary given that only HT has a copper network, as the incumbent operator, while building copper networks is not feasible for other operators. As a result, there are no geographic differences in market competition among different areas in the Republic of Croatia.

Pursuant to the geographic segmentation, the market does no longer cover, as was the case after all analyses conducted thus far, the entire territory of the Republic of Croatia, but rather, the territory is divided in smaller geographic units and an analysis of the level of market competition was conducted for each of the individual units. HAKOM concluded that the most adequate geographic unit for analysis of the level of market competition must not be too small or too big, a municipality or town, or a city neighbourhood in the case of the City of Zagreb. Consequently, HAKOM analysed the level of market competition in 572 separate geographic units. The conducted analysis showed that for the first time conditions were created for certain areas in the high capacity market in the Republic of Croatia to be fully deregulated, that is, that these areas did not need ex ante regulation. These areas (competitive areas) include 79 geographic units, i.e. 14 percent of geographic units, home to some 41 percent of the total population (approximately 1.6 million inhabitants). On the other hand, non-competitive areas, that is, areas which will remain

regulated, comprise 493 geographic units or some 86 percent of geographic units, home to 59 percent of the population (approximately 2.3 million inhabitants). HAKOM plans to carry out a notification procedure and adopt the final decision in 2023.

The model of Equivalence of Input (Eol) is closely connected to the previously mentioned analyses. Namely, in its newly proposed analyses of broadband markets, pursuant to available EU practices and knowledge of difficulties faced by operators contracting optical fibre services, HAKOM proposed that an Eol obligation be imposed on HT, as an operator with significant market power. Taking into consideration the complexity of the Eol obligation, HAKOM will, based on operators' proposals and comments collected as part of public consultations regarding the mentioned analyses, in a separate procedure, lay down all the details connected with meeting this obligation.

One-off fees

HT, as an operator with significant market power, was imposed certain regulatory obligations which, among other things, include the obligation of access to different wholesale products/services. Other operators provide services to end users through these different wholesale services (eg. Bitstream service, FA-PON service, LLU service). In order to ensure conditions for efficient market competition it is important that the prices of these wholesale services be cost-oriented. One-off fees constitute an important part of wholesale services and include, for instance, activation, deactivation and migration fees.

HAKOM initiated the procedure for changing one-off fees under the premises that HT's applicable one-off fees, which are based on costs arising from the cost model from 2012, need to be updated in order to reflect relevant costs, since based on the results of the new BU-LRIC cost model monthly fees were laid down in 2021 for the previously mentioned wholesale services. HAKOM adopted the decisions specifying new levels of one-off fees in December 2022 with new one-off fees being applied as of 1 April 2023.

Weighted average cost of capital (WACC)

The Decision setting the weighted average cost of capital (WACC) for services in the public communications network was adopted in November 2022. It was decided that the rate of return of the invested capital is to be increased by an additional risk premium for services via the FTTH/FTTB/FTTDP access.

The European Commission (EC) noticed considerable differences in the methodology of the assessment of the value of parameters for the calculation of WACC for services provided via electronic communications networks, as well as the lack of consistency in the application of the methodology. Therefore, the EC felt that such methodological inconsistencies could distort investment incentives in the Digital Single Market and undermine the development of the internal market by hindering the creation of convergent conditions for investment in electronic communications networks. Consequently, in November 2019 the EC issued a Notice on the calculation of the cost of capital for legacy infrastructure in the context of the Commission's review of national notifications in the EU electronic communications sectors which features a detailed description of the methodology for the calculation of WACC parameters.

HAKOM applied the methodology described in the Notice for the first time in this Decision, as well as data from the BEREC's report for the WACC. Based on the update of all parameters, HAKOM calculated the WACC for the public communications network of 4.71 percent. The additional risk premium for FTTH/FTTB in the amount of 1.55 percent was obtained based on the comparable values method pursuant to available data collected by BEREC. The new WACC value is applied as of 1 January 2023 until the new updated WACC is applied.

Other regulatory activities

In 2022, HAKOM prepared an internal document entitled "Different regulatory approaches for Mobile Virtual Network Operators (MVNOs)". The document established the legal basis for the MVNO approach and analysed different regulatory approaches in the EU. In addition, it provided an overview of different MVNO business models, described stakeholders in the MVNO market, key conditions for establishing a MVNO, as well as opportunities and benefits of MVNOs. In addition, it analysed possible regulatory approaches to setting access prices for MVNO operators in the Republic of Croatia, together with the advantages and disadvantages of every access model. The procedure of amending the [Reference offer for the service of access to the passive optical access network at the location of distribution node for optical distribution networks \(FA-PON\), as well as the Standard offer for the wholesale broadband access service \(NBSA\)](#) was completed in April. The offers define the time limits and conditions of providing FA-PON and NBSA services realised via the FTTH technology when building optical fibre distribution networks (ODN). These time limits and conditions were uniform irrespective of the status of ODN construction. Considering that different status of ODN construction can have its specifics, which requires different approaches in terms of time limits and the manner of realisation of wholesale services, these amendments adapted the said time limits.

In 2022, HAKOM gave its opinion on wholesale conditions and network access fees that are co-financed from EU funds. Namely, the FNP envisages the development of the next generation broadband access infrastructure in the areas where there is no sufficient commercial interest for investments by operators and service providers in the market. Therefore, it is justified to co-finance the building of the broadband infrastructure with public funds, that is, through state incentives. The provisions of the FNP lay down that the operator of the network built with incentives is required to propose fees and conditions for wholesale access in accordance with the rules specified in the FNP. As part of this requirement, the network operator is obligated to submit to HAKOM a proposal of fees and conditions for access, including a detailed description of methods and/or benchmark values applied when drafting the proposal. After that HAKOM gives its opinion on the proposed fees and conditions. In February 2022, HAKOM thus gave positive opinions on wholesale conditions and fees for access to optical fibre networks that AI Hrvatska, with co-financing from EU funds, has been building in the areas of the towns of Solin, Kaštela and Ivanić Grad. In addition, in June 2022 HAKOM issued positive opinions on wholesale conditions and fees for access to wireless networks that AI Hrvatska has also been building with co-financing from EU funds, in the areas of the same towns. In addition to the opinion regarding wholesale conditions and fees for network access being built by AI Hrvatska and co-financed from EU funds, HAKOM provided a positive opinion in November 2022 regarding the wholesale conditions and fees for access to wireless networks being built by HT, which are also co-financed from EU funds. The same regulated wholesale conditions and fees from HT's Reference offer apply to optical fibre networks HT has been building, co-financed from EU funds, because HT is an operator with considerable market power for services provided via optical fibre networks.

With its June and December decisions, HAKOM, in line with the procedure prescribed in the applicable market analyses, enabled a portion of copper network to be switched off. Namely, the [June decision](#) provided for a switch off of a part of the copper network at the location at Gornje Jelenje, while the [December decision](#) provided for the switch off of the copper network at the location at Kozjak. Both locations are isolated locations in which HT migrated all active users, with their agreement, to solutions in the mobile communication network, which in these areas has sufficient capacity for the provision of service of equal or higher in quality to the service realised by the existing copper access network.

At the end of December 2020, the European Commission adopted a Delegated Regulation setting single maximum Union-wide voice termination rates for mobile (MTR) and fixed networks (FTR). In relation to the FTR, as of 1 January 2022 the single EU-wide price is in force, totalling 0.0007 €/min. It will not change in the years to come. Considering that the single MTR price enters into force in 2024 and that it will amount to 0.0020 €/min, HAKOM agreed on additional adjustments with operators in 2022 in terms of lowering the MTR price so that the price totalled 0.0055 €/min. As of 1 January 2023, a new price is applied, totalling 0.0040 €/min.

The new Roaming Regulation entered into force on 1 July 2022. The individual articles of the Regulation (eg. obligation of the roaming provider to provide information on numerical ranges for services under special tariffs and alternative means of access to emergency services) apply as of 1 June 2023. This Regulation ceases to be valid on 30 June 2032.

The Regulation introduced new measures to increase transparency, including transparency with regard to the use of value-added services while roaming and the use of roaming on non-terrestrial public mobile communication networks, and to ensure a genuine RLAH experience in terms of quality of service and access to emergency services while roaming. The Regulation defines that the European Commission will submit reports to the European Parliament and to the Council in 2025 and 2029, followed, if appropriate, by a legislative proposal to amend the Regulation. Because of rapid market developments and the rapid roll-out of new technologies, the European Commission should assess whether it is appropriate to make a legislative proposal to amend this Regulation when issuing its first report in 2025. With the start of application of the Roaming Regulation, BEREC's tasks changed so BEREC updated its documents/guidelines on wholesale and retail sale, including guidelines for new provisions on the quality of service. HAKOM's experts participated in the preparation of wholesale guidelines.

In March 2022, operators Terrakom and Akton initiated regulatory dispute proceedings before HAKOM for the purpose of obtaining a decision related to the conditions for the use of the wholesale service Data centre connectivity. Namely, Terrakom and Akton initiated regulatory dispute proceedings before HAKOM due to the alleged change in the interpretation and application of the conditions for the use of the wholesale service of Data centre connectivity without the completion of the procedure for amending HT's reference offer for the service of wholesale high quality access that defines the said conditions for use. In June 2022, HAKOM adopted decisions accepting Terrakom and Akton's requests and ordering HT to continue providing the service of Data centre connectivity and realise all requests in accordance with the applicable Standard offer of Hrvatski Telekom d.d. for the service of wholesale high quality access from Appendix 16 to the Conditions for the use of HT's wholesale service of Data centre connectivity.

After the said decisions in regulatory disputes regarding the conditions for the use of the service of Data centre connectivity were adopted, in July 2022, HT requested that the price of the service Data centre connectivity be changed. Namely, HT felt that the decision on prices in the market of wholesale high-quality access considerably reduced the price of Data centre connectivity, and did not ensure the coverage of costs because the foreseen demand and quantity in the bottom up cost model did not correspond to the actual demand. An analysis of HT's request and review of the data regarding demand for high-quality access services led HAKOM to the conclusion that such increase in demand for Data centre connectivity relative to other high-quality access ser-

vices caused HT not to be compensated for actual costs, which is not in line with the regulatory obligation of cost-effectiveness of wholesale prices and could lead to distortions in the market. Due to the aforesaid, HAKOM initiated the procedure for changing the Standard offer and on 21 October 2022 adopted a Decision pursuant to which, until the end of the proceedings, no new contracts for wholesale service of Data centre connectivity from the Standard offer for the service of wholesale high-quality access can be made. In addition, with an interim Decision of April 2023, until the end of the proceedings of changing the Standard offer for high-quality access service, HAKOM ordered HT to stop providing the retail service Hybrid Cloud because it cannot be replicated via HT's wholesale services. At the end of April, public consultations were launched regarding the decision ordering HT to terminate the wholesale service of Data centre connectivity and, prior to the renewed start of the provision of the Hybrid Cloud service, to define the conditions for the use of the new wholesale service which will provide for its technical and economic replication.

INSPECTION ACTIVITIES

Inspection activities (inspection supervisions, inspections, and other related activities) were conducted in accordance with the principles of proportionality and appropriateness, while the areas of focus were primarily defined in the [2022 Annual Work Programme](#). Inspection supervisions conducted in 2022 focused on compliance with regulatory obligations, the enabling of universal service, protection of users, quality and safety of communication networks, conformity of radio equipment, effective use of the radiofrequency spectrum, network neutrality, prevention of unsolicited electronic communication as well as access to and use of infrastructure. Altogether 81 inspection supervisions were conducted in the electronic communications sectors, 387 inspections and on-site examinations were performed, and one misdemeanour proceedings and four motions for indictment were filed. A more detailed report on all HAKOM's inspection activities in 2022 may be found in the Report on the implementation of the inspections plan for 2022. All inspection decisions are public and available at HAKOM's website.

Considerable attention was in 2022 devoted to inspection supervision ex officio for the purpose of ensuring and implementing measures to protect THE security and integrity of network services. This served as the basis for the enactment of three decisions and one decision on dismissal. Of the four decisions, two were related to the verification of the implementation of measures to protect security and integrity of networks and operator services, while two were related to the verification of the security of networks and services by external audit. A follow-up of the implementation of the decisions was conducted in relation to all four supervision inspections and in two cases motion for indictment was submitted against AI and Telemach.

Operators' compliance with regulatory obligations was subject to four inspection supervisions. Two decisions on dismissal were adopted relating to failure to submit quarterly indicators of development of the electronic communications market. After being requested to respond operators submitted all the necessary data. One supervision inspection was initiated against HT in relation to the realisation of the service involving a network expansion of up to 300m, HT's retail price for services of leased lines, the provision of the same wholesale services and the violation of regulatory obligations.

Four inspection supervisions were performed against operators late in 2021 to verify operator practices in cases where end users were not ensured the contracted, that is, minimum broadband access speed. The operators concerned were HT, Iskon, Optima and AI. One decision on execution was issued in 2022 in relation to the previously mentioned inspection supervision, that is, the decision on execution to HT for failure to act pursuant to the order of the inspector. HT appealed against the said decision and in January 2023 the High Administrative Court of the Republic of Croatia reached its decision refusing the appeal of HT as the plaintiff for the decision to be annulled. Inspection supervisions related to the protection of users were conducted with the focus on the control of the implementation of the provisions of the Ordinance on amendments to the Ordinance on the manner and conditions for the provision of electronic communications networks and services, in particular the control of compliance with the rules applied when concluding contracts remotely and outside business premises. The plan included 32 inspection supervisions and 74 inspections and a total of 32 inspection supervisions and 115 on-site examinations and inspections were conducted. As a result of the increased number of inspections and on-site examinations, operators were given instructions and suggestions regarding their operation, which were implemented without the initiation of further inspection activities.

In 2022, 21 inspection supervision was conducted due to delays in service provision caused by operator switching in the fixed electronic communications network and due to user complaints about the untimely number porting in the mobile electronic communications network, leading to 10 decisions being adopted and nine decisions on dismissal. Two supervision inspections were dismissed with an official annotation being made in the case file.

The inspection supervisions of HT's aggregation and access networks continued. On-site examinations and verifications of actions made pursuant to previously adopted decisions established progress was achieved in the implementation of activities required to increase the safety of networks and equipment, as well as progress in improvements made to facilities and access networks subject to supervision inspection.

Verifications were carried out of actions taken to comply with the decisions of HAKOM's inspe-

ctors regarding the restoration of the coastal nodes of cables of aggregation and transmission rings. Verifications were made at the restored nodes in Primorje-Gorski Kotar County. A large portion of regular inspection activities was focused on the construction and re-location of electronic communications infrastructure.

The control and supervision of the spectrum are performed regularly without any difficulties. As part of regular control and supervision of the radiofrequency spectrum inspection supervision is initiated only in cases of established violations of the Electronic Communications Act.

Selected cases of inspection supervisions in 2022:

- Regulatory obligation of the supervision of prices related to mobile tariff offered independently or as part of a package of services under different conditions – inspection supervision over HT was initiated in relation to the regulatory obligation of the supervision of prices and the cost accounting obligation. A Decision was adopted, ordering HT to conclude subscriber contract for independent mobile tariffs XS, S, M, L and Unlimited GB with private users under the same conditions as subscriber contracts with users within the framework of the Magenta 1 offer, that is, to ensure users the same discounts and benefits relating to the amounts of monthly fees and the same quantity of data traffic and call minutes as under the Magenta 1.
- Ensuring and implementing the measures of protecting the security and integrity of networks and services during security incidents – inspection supervision was initiated over AI in relation to the verification of the implementation of measures of protecting the security and integrity of networks and services of the operator, a security incident breaching the confidentiality of personal data of some 100,000 users. A Decision was adopted ordering AI to undertake appropriate technical and organisational measures for the purpose of ensuring the security and integrity of its networks and services and preventing and mitigating the impacts of security breaches on users, as well as to implement procedures to ensure detection and timely reporting of security incidents.
- Verification of network and services security via an ISMS external revision pursuant to ISO 27001 – inspection supervision was initiated over Telemach in relation to establishing Telemach's compliance with the provisions of Article 41 of the ECA. The Decision imposed on the operator an obligation to harmonise its operations with the provisions of Article 41 of the Electronic Communications Act and of the Ordinance on the manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services and to undertake appropriate technical and organisational measures for the purpose of ensuring the security and integrity of its network and services, that is, to eliminate the established deficiencies and harmonise its operations.

- Verification of network and services security via an ISMS external revision pursuant to ISO 27001 – inspection supervision was initiated over HT (CLASS: UP/I-344-07/22-01/63) in relation to establishing HT's compliance with the provisions of Article 41 of the ECA. The Decision imposed on the operator an obligation to harmonise its operations with the provisions of Article 41 of the Electronic Communications Act and of the Ordinance on the manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services and to undertake appropriate technical and organisational measures for the purpose of ensuring the security and integrity of its network and services, that is, to eliminate the established deficiencies and harmonise its operations in line with Ordinance on the manner and deadlines for the implementation of measures for the protection of security and integrity of networks and services.
- Universal services quality parameters – inspection supervision was initiated over HT in relation to the compliance of the values of universal services quality indicators for 2020 and 2021 with indicator values stipulated in Articles 10 and 13 of the Ordinance on universal services (Fault repair time for access line and Customer service response time). The Decision imposed on the operator an obligation to harmonise universal service quality indicator the Fault repair time for access line with the Ordinance and the indicator Customer service response time with the parameter values specified in the Ordinance.
- User information – on-site examinations were conducted at the outlets of operators A1 Hrvatska d.o.o., Hrvatski Telekom d.d. and Telemach Hrvatska d.o.o. regarding the provision of information to users regarding user rights (provisions of the Ordinance on services and the Ordinance on number porting), findings/conclusions were delivered to operators and meetings were held for the purpose of providing accurate, clear and complete information on services. The operator Telemach Hrvatska d.o.o. had the best results and it may be assumed that their employees provide predominantly accurate and complete information to their users at their outlets. Next to follow was operator A1 Hrvatska d.o.o., while Hrvatski Telekom d.d. realised the worst results.

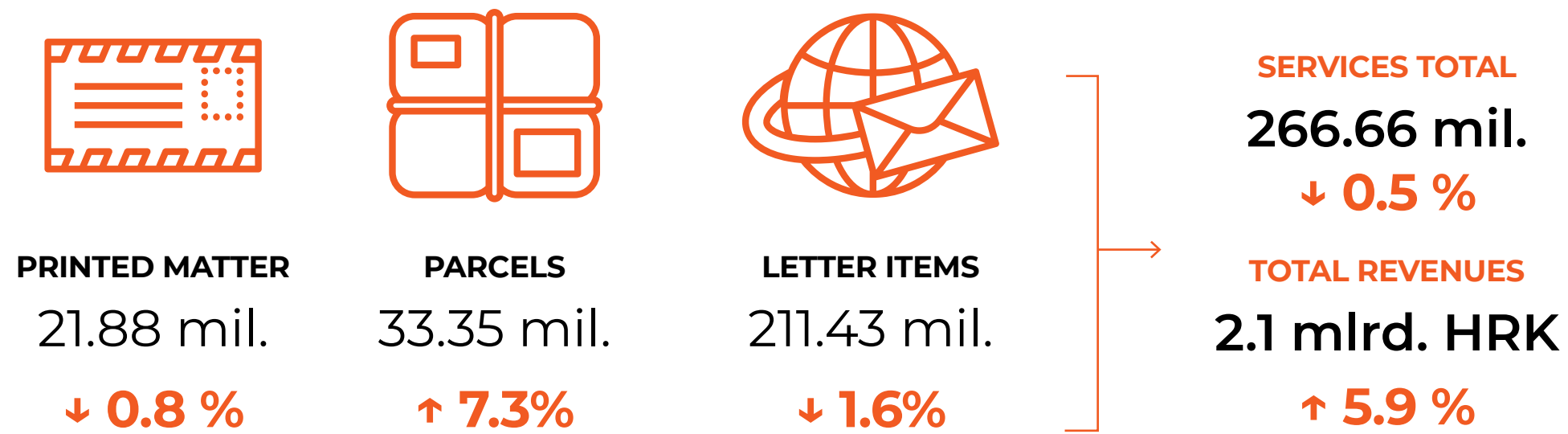


03

POSTAL SERVICES

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Figure 3.1 Basic data on postal services market



In current times of global changes and disturbances in the European and the global market, postal services continued to play a significant role for the economy and continued to be the generator of development and the functioning of the society. Therefore, they rightly carry the epithet of the services of general interest. The recognisable trends in the postal market continued: uninterrupted growth of total revenues, decline in the volume of the letter segment and substantial growth in the parcel segment of the market. The universal service, guaranteed by the state, has been uninterruptedly shrinking in volume, primarily due to the effective and efficient replacement of traditional postal services with electronic services, and increasing service digitalisation. In these transitional times it is necessary to find acceptable solutions for the universal service obligation in terms of the obligation of the 5-day delivery and the distribution of the network of postal offices. These challenges have long been discussed at the EU level and the EC has been requested to propose a new framework in the regulation of postal activity and universal service obligation by adopting a new postal directive.

MARKET OVERVIEW

In 2022, the postal services market in the HR was greatly impacted by the unstable environment caused by the pandemic and the war in Ukraine, not to mention further digitalisation of the society. In the past several years traditional means of communication have been increasingly replaced by electronic communication accompanied by the increased demand for services related to e-commerce. All this has led to the decrease in the number of letters and the increase in the number of parcels. Consequently, traditional and other postal services as well have been under

constant pressure, which has resulted in new ways of delivering postal services and adding new values by adjusting and/ or supplementing existing services or introducing new ones.

As expected, the downward trend started in previous years continued, thus reducing the total number of postal services by 266.66 million from 2021. However, it is worth noting that the decrease slowed down. The decrease in postal services was predominantly impacted by the reduction in the number of letter items, while at the same time the number of parcels grew to record levels in 2022, continuing the trend from previous years, predominantly thanks to services related to e-commerce. The result was an increase in the share of parcels in the overall market. The trends in the postal market of the HR are almost identical to the trends observed in other EU Member States, so it may be concluded that Croatia follows trends.

The unstable environment was especially visible in cross-border traffic which was additionally affected by the implementation of the EU legislative framework regarding the removal of VAT exemptions when importing goods in the value of up to EUR 22 from non-EU countries. All of this affected the demand for and the volume of e-commerce, as the greatest generator of postal services in international traffic. As result, the number of services declined, as well as their share in total traffic, continuing the negative trend. Realistically it is expected that international traffic will normalise, contributing to the growth of cross-border services.

A smaller number of total services did not affect revenues, which grew in 2022, in line with expectations, registering record levels, as a continuation of positive trends. For the most part, this was a result of the growth in the number of parcels, that is, value-added services, whose prices are higher, and to a smaller extent of the growth in the prices of individual services.

It is expected that certain trends will continue, with providers of postal services directing the growth and development of their business towards meeting the demands and needs of users by innovation in existing services and offering new services, especially in the segment related to e-commerce, which boasts the greatest potential.

Providers in the postal services market

There was a total of 24 postal services providers in the market of postal services at the end of 2022, same as in the previous year. However, there were certain changes since during the year one provider submitted an application to provide other postal services, while one provider, pursuant to the [Postal Services Act \(PSA\)](#), was removed from the Registry of providers for failing to provide registered services during a period exceeding one year.

Pursuant to the PSA, HP-Hrvatska pošta d.d. (HP), as the largest provider of postal services in the market, is the only provider having the right and the obligation to provide the universal postal service in the HR for the period of 15 years since the entry into force of the PSA. In addition to the universal service, HP is also the provider of interchangeable and other postal services. HP also provides other non-postal services (financial services, sale of goods, etc.) through its network of postal offices, which, although available in the free market and can be provided by other providers as well, have a considerable impact on certain areas (islands, less densely populated areas, etc.). The majority of postal services providers in the market, some 18 of them, are registered to provide other postal services as well, of which three also provide interchangeable services, while five are registered exclusively to provide interchangeable postal services. Among the registered providers, postal services are also provided by companies that operate in the global and/or regional postal markets, such as DHL, DPD, FedEx, UPS, GLS, Intereuropa, etc.), providing service through their own networks as notified providers or in partnership with other providers in the HR.

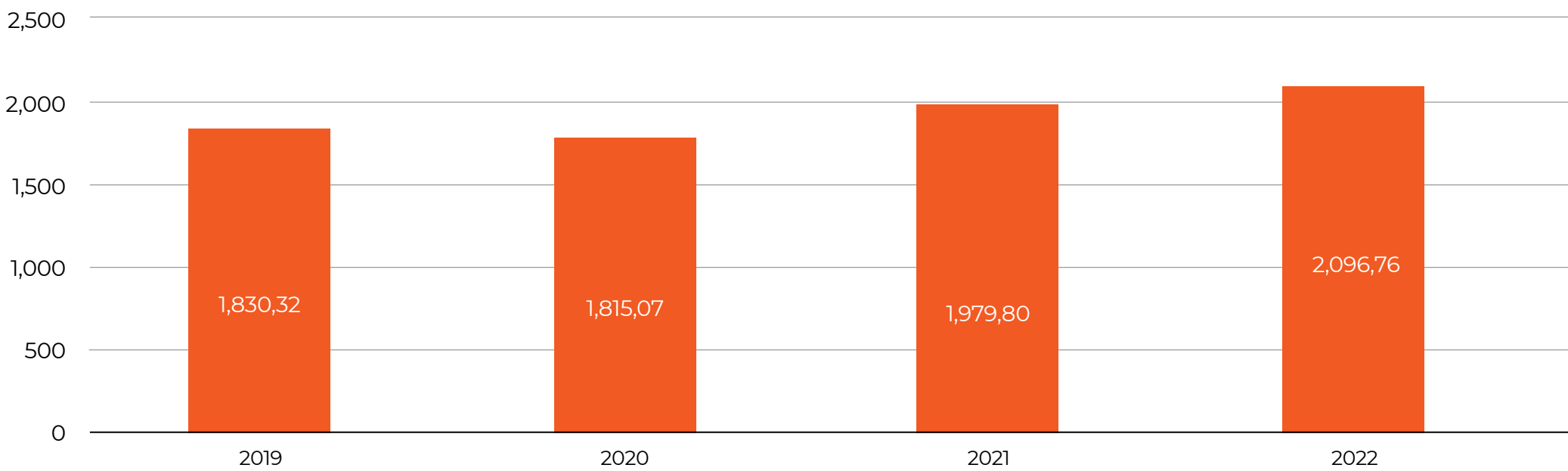
A half of postal services providers provided their services only in domestic traffic, among which three provided their service in the limited area of one or more Croatian counties and/or cities, while the other half of providers provided services in both domestic and international traffic. At the end of 2022, all postal services providers employed a total of 11,772 workers to perform postal services, almost the same number as the year before. To rationalise their operations and improve the quality of delivery, service providers continued introducing new access points in 2022 where users can claim but also submit their parcels. Thus, the number of facilities of other business entities (shops, gas stations, etc.) increased, as well as the number of parcel delivery lockers whose number grew to a total of 422 lockers⁸ at the end of 2022, by more than 172 percent from 2021.

Revenues from the provision of postal services

The postal market registered a rise in revenues in 2022, continuing positive developments started over previous years, regardless of the decrease in the total number of services. The greatest contribution to the increase in revenues came from the increase in the number of parcels, i.e. services of higher value (services with added value), whose revenues neutralised the reduction in revenues from other services caused by their decline. To a smaller degree, the growth in revenues was also affected by the increase in prices of some services. Total revenues were HRK 2,096,762,168, some 116.9m higher than in the previous year, which was a rise of 5.9 percent.

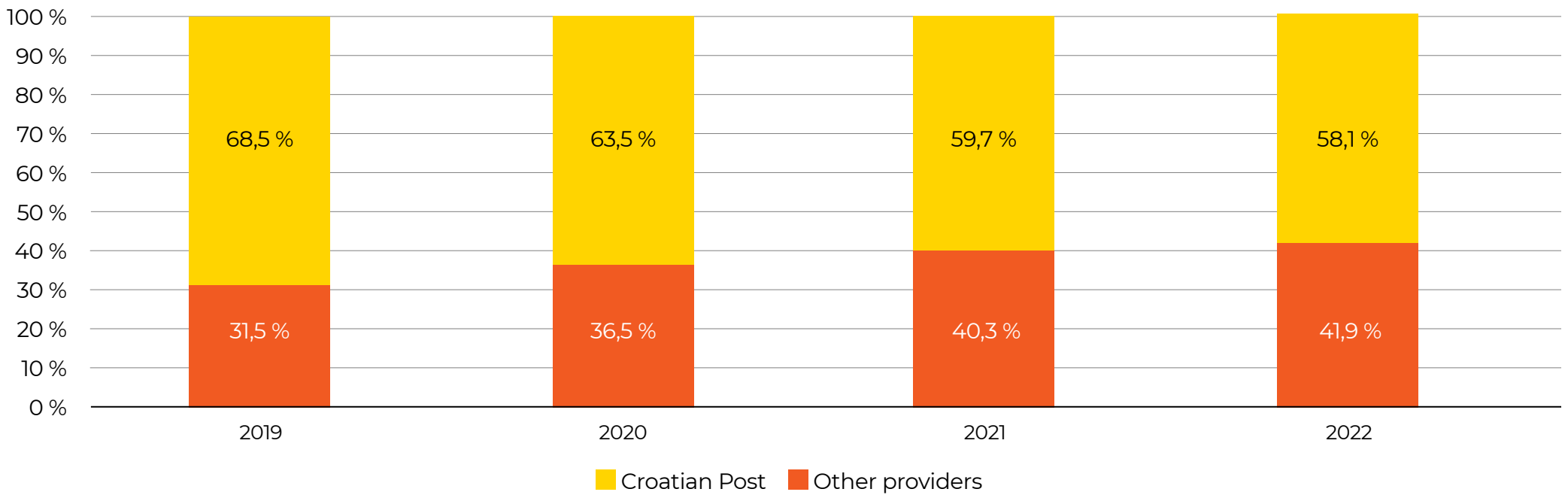
⁸ Automated devices for parcel submission and delivery.

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



Both HP and other providers increased their revenues from the previous year. HP increased its revenues by 3.1 percent, while other providers increased theirs by 10.1 percent. By increasing their revenues by HRK 80.6m other providers also increased their share in total revenues, which continued their growth started in previous years. Their share in 2022 thus totalled some 42 percent and slowly neared HP's share.

Figure 3.3 Providers' shares in total revenues

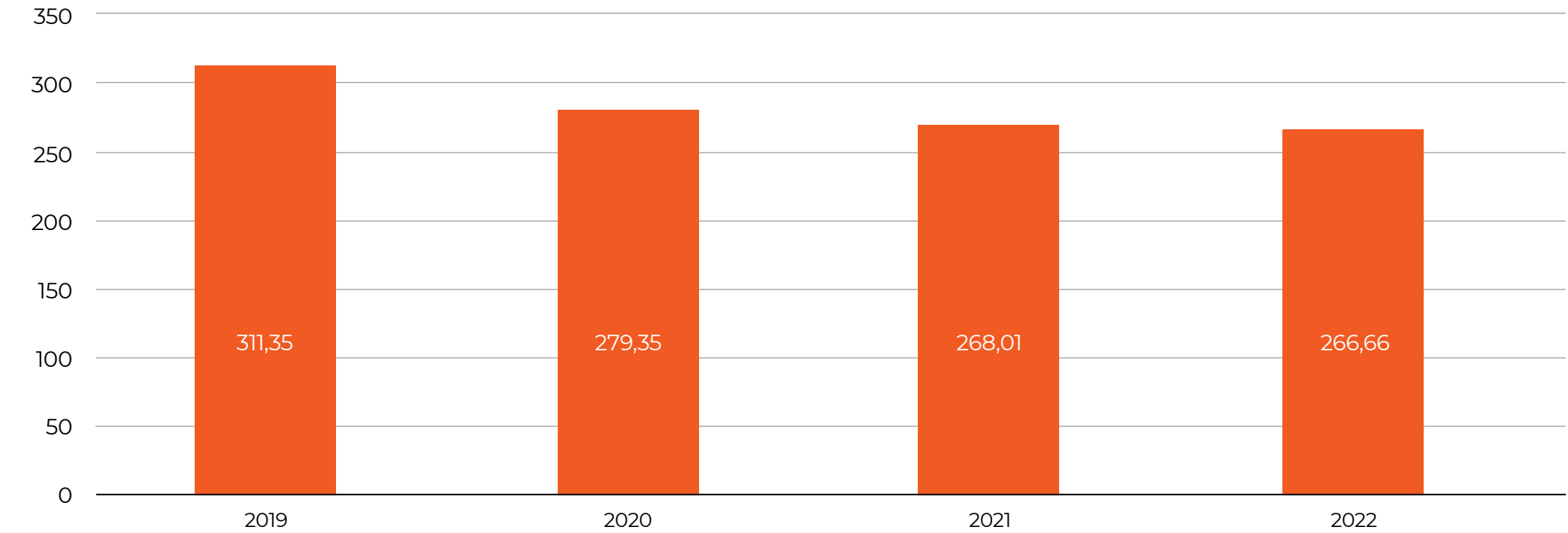


Namely, other providers generate the bulk of their revenues from the provision of higher-value services within other postal services that grew uninterruptedly, while HP derives the largest share of its revenues from providing “traditional” postal services within the universal service, which have observed a negative trend. As previously forecasted, revenues from the provision of higher-value services were not only higher in 2022 than revenues from the provision of traditional services, but the difference between them even increased. This trend is expected to continue in the future, considering the potential of e-commerce and associated postal service.

POSTAL SERVICES

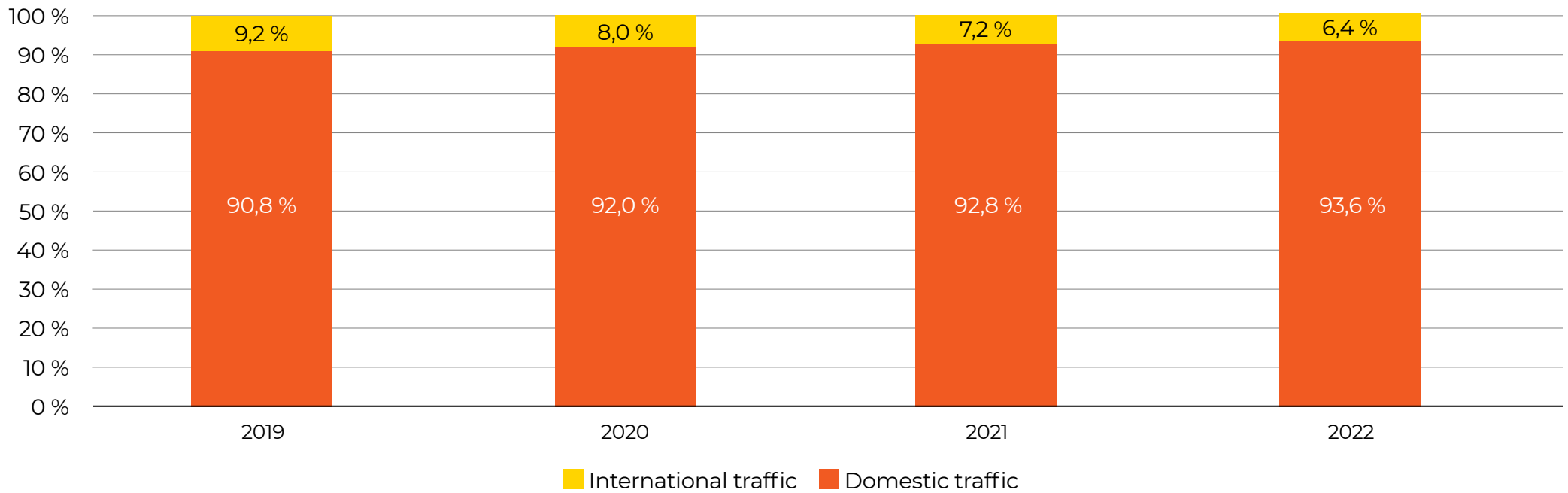
The total number of postal services has been on the uninterrupted downward path so 2022 was no exception. This was expected considering that the postal market in the HR follows the trends observed in other markets of EU Member States. Namely, the digitalisation of our society unavoidably brings other more modern ways of communication that have been increasingly replacing postal communication. As a result, the decline in the number of postal services is unavoidable. However, it is evident that the negative trend lost momentum in 2022 since there were 266,659,223 realised postal services, a decline of 0.5 percent from the previous year.

Figure 3.4 Total number of postal services (in million)



International postal traffic was again in 2022 marked by unfavourable environment (the pandemic, the war in Ukraine, EU's legislative framework regarding the removal of VAT exemption when importing goods in the value of up to EUR 22 from non-EU countries), which all affected the demand for and the volume of e-commerce as the greatest generator of postal services in international traffic. All this resulted in the decline in the number of services in international traffic, continuing the trend started in previous years. There was a total of 17.2 million cross-border services realised in 2022, some 2.1 million less than in the previous year, which was a decline of 10.8 percent. Lower number of services also affected the share of international traffic in total traffic, which decreased as well, also continuing the downward trend. As a result, their share in 2022 totalled 6.4 percent, which was one of the lowest shares in the past several years. It can realistically be expected that cross-border traffic will normalise in the upcoming period, which will surely contribute to the increase in the number of services.

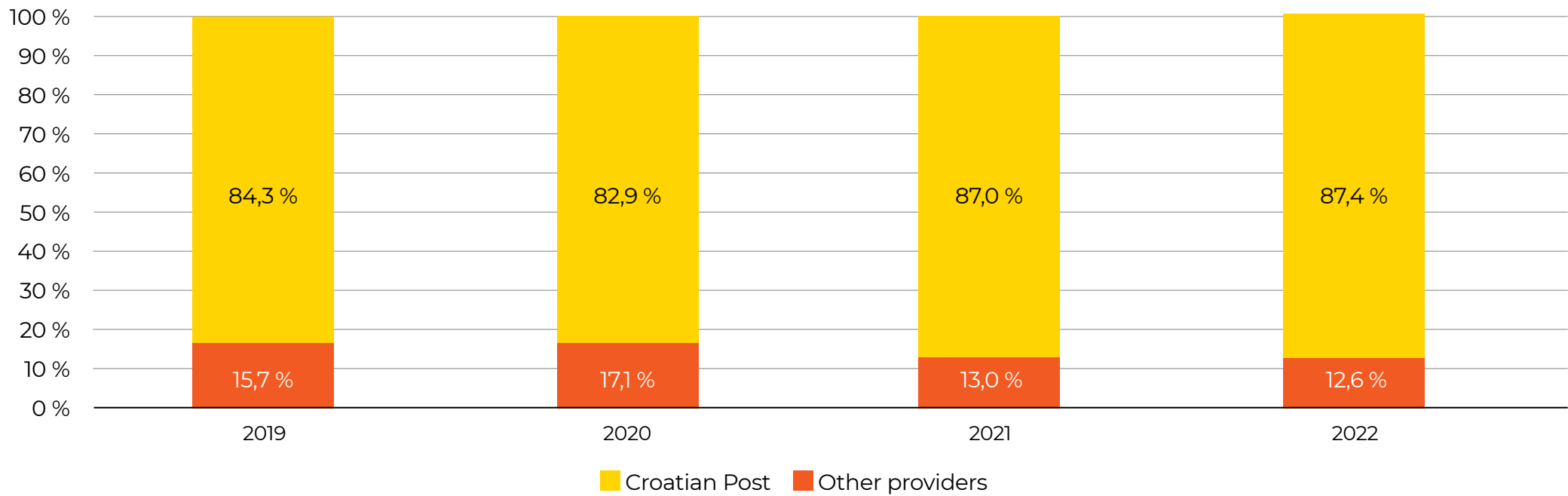
Figure 3.5 Shares of postal services by types of traffic



By the number of services provided in 2022, HP continues to be the largest postal services provider in the market, accounting for a share of 87.4 percent with 233.1 million realised services. However, as already stated, by total postal revenues, HP, although having a larger share than other providers, is not as dominant since its share in total revenues amounted to some 58 percent.

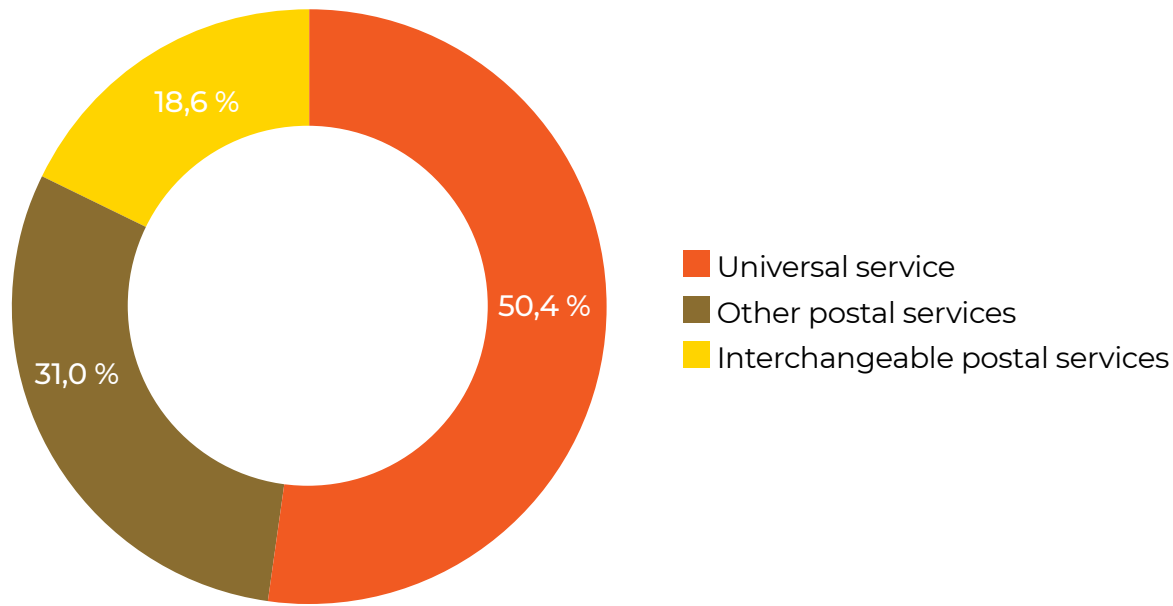


Figure 3.6 Provider market shares by number of provided services



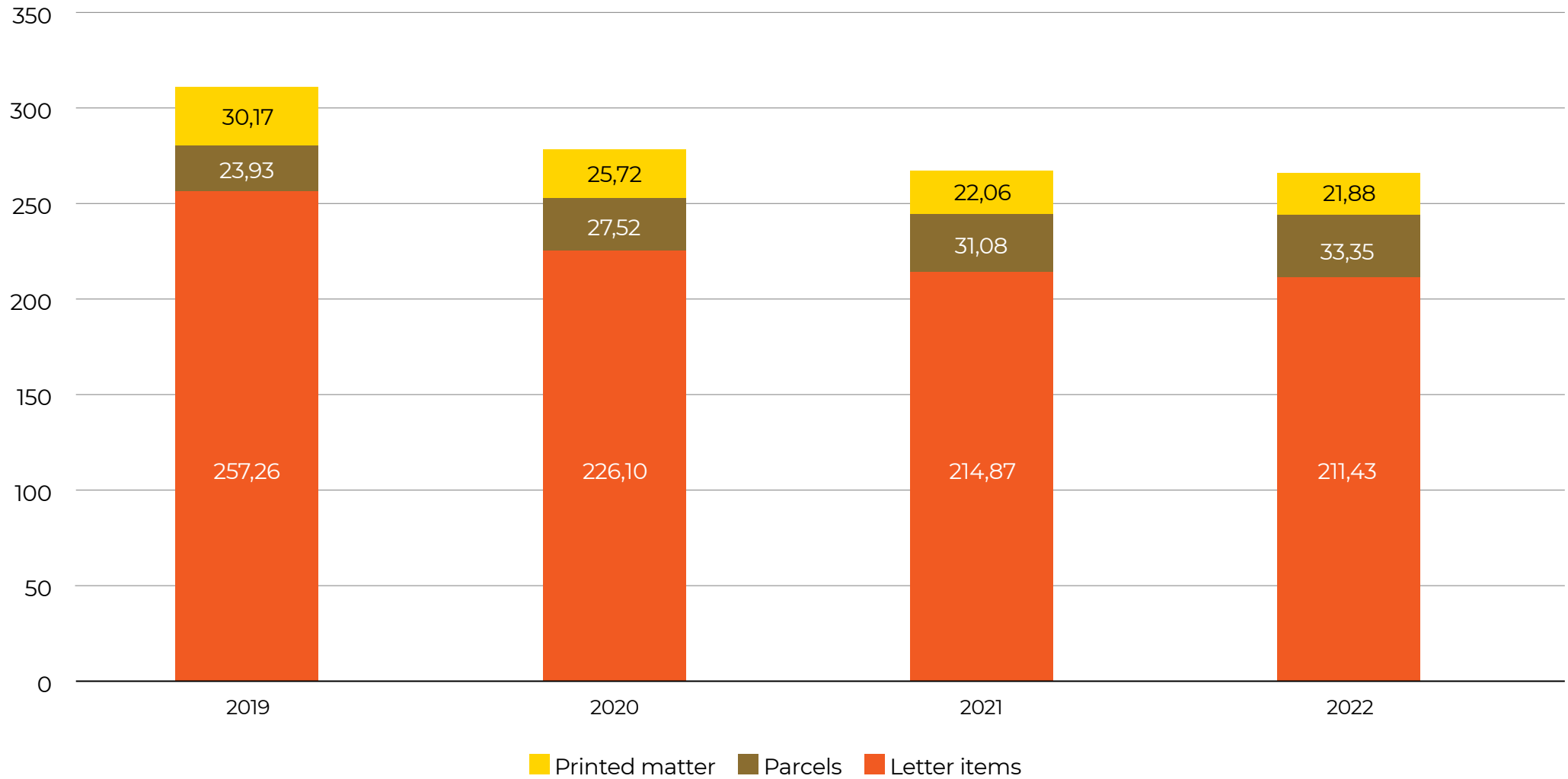
It is noteworthy, that relative to 2021 both HP and other providers decreased the number of their services, with a more substantial decrease being registered by other providers (3.4 percent). Broken down by type of service, the universal service with 50.4 percent accounts for the highest share in the total number of postal services, but it needs to be stressed that this share has decreased by some 11 percent over the last three years, primarily as a result of the decrease in traditional services from the framework of the universal service that were hit the hardest by the pandemic. Other postal services accounted for a share of 31 percent, while interchangeable postal services made up the smallest share of 18.6 percent.

Figure 3.7 Shares of types of postal services



Changes in the postal market caused by the pandemic were also visible in 2022 in the demand for certain types of postal services. The number of letter items continued to decline, while the number of parcels continued to increase, identical as in the markets of other EU Member States, leading to the conclusion that the postal market in the HR follows trends. A total of 211.4 million letter items were realised in 2022, some 3.4 million less than in 2021, while the number of parcels grew by 2.3 million, which was a growth of 7.3 percent from 2021. In the period from 2019 to 2022, the number of letter items reduced by some 18 percent, while the number of parcels increased by some 39 percent.

Figure 3.8 Number of postal services by type (in million)



All of the above also contributed to the change in the shares of individual types of postal services. Thus, the share of parcels grew, while the share of letter items fell, continuing the trend from previous years. The share of parcels of 12.5 in 2022 was the highest in the market thus far, boasting continued upward tendencies due to the expected increase in e-commerce of which parcel delivery services are an unavoidable part.

Figure 3.9 Shares of postal services by type



Universal service

The universal service⁹ is a set of different postal services in domestic and international traffic the provision of which is in the interest of the HR and which, in addition to adhering to certain standard of quality, needs to be available at an affordable price and under the same conditions to all users of postal services throughout the territory of the HR. The only provider of the universal service in the HR is HP that acquired the right and the obligation to provide this service pursuant to the ZSA. In 2022, a total of 134,343,670 services were realised, down by 4.4 from the year before. This was an expected development with the negative trend being continued since the impact of digitalisation and the pandemic is most prominent precisely in this segment, as best seen from the data that some 58 million of these services were “lost” in the period from 2019 to 2022. The trend is more than likely to continue. However, data from the past few years show that the decline slowed down.

The universal service accounted for some 50.4 percent of the total market of postal services, down 2 percent from 2021 and the smallest share of these services thus far. The smaller number of services also impacted revenues, so a total of HRK 767.2 million were generated from the provision of the universal service in 2022, 2.5 percent less than in the previous year. Within the scope of the universal service, letter items accounted for the largest share, of 81.4 percent, slightly more than in 2021. The second to follow were registered mail items with a share of 17.4 percent, while all other services accounted for a share of 1.2 percent.

⁹ The universal service includes postal services in domestic and international traffic: clearance, sorting, transport and distribution of letter items of up to 2 kilograms, parcels of up to 10 kilograms, of registered mail and value-added items and cecograms of up to 7 kilograms and sorting, transport, and distribution of parcels up to 20 kilograms in international inbound traffic.

Figure 3.10 Total number of services within the scope the universal service

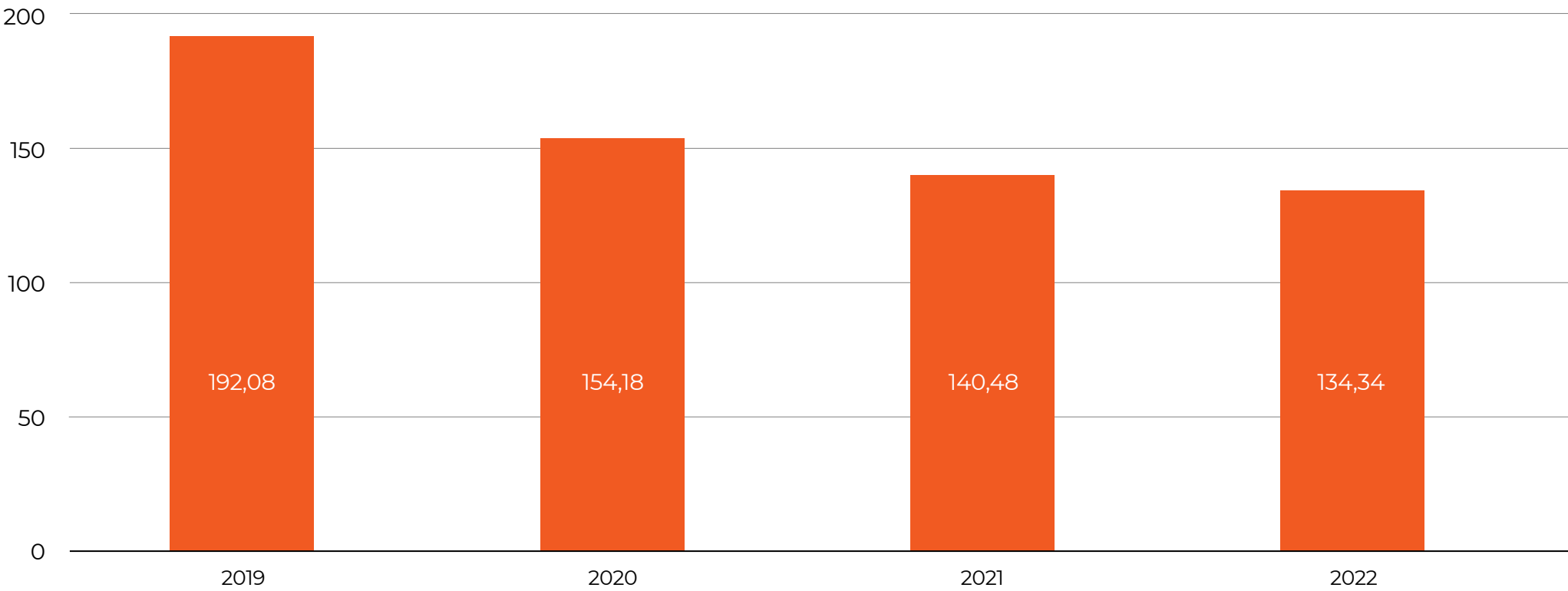
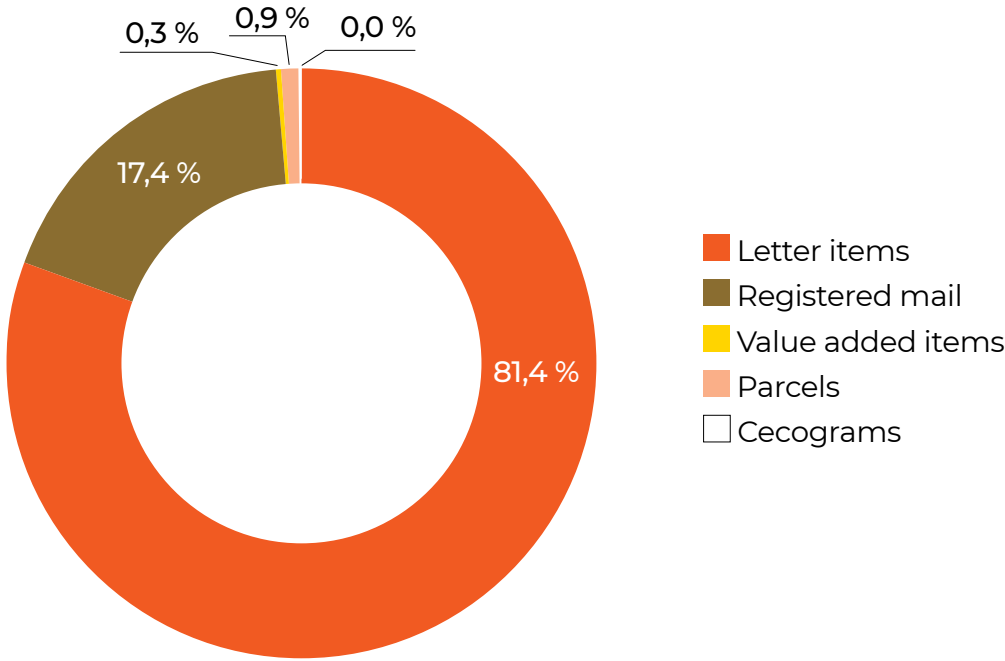


Figure 3.11 Shares of services provided within the scope of universal service by type



The universal service as a service of general interest, with its defining characteristics being primarily affordability and availability in the entire territory of the HR will continue to maintain its role. However, its significance will diminish with time due to it being substituted by more modern and acceptable ways of communication. This will consequently lead to further decline in the number of these services in line with trends across EU Member States.

A share of services from the scope of the universal service was realised within the scope of **inter-changeable postal services**¹⁰ which, in addition to the universal service providers may be provided by other providers. As a result, these services were provided by nine providers in 2022. Some 49.7 million of these services were realised in 2022, 5.5 percent more than 2021, their growth thus continuing. This was to one extent a result of the “spillover” of certain services from the scope of the universal service since those are the same or similar services, while to the other it was also related to increased demand. The share of interchangeable services grew as well, by one percent, and did revenues from the provision of these services, so revenues in 2022 reached a total of 126.3 million or 14 percent more than in the previous year.

Other postal services

Other postal services are services outside the scope of the universal service or interchangeable postal services. Those are basic postal services (letters and parcels) with some added value¹¹, the so-called, express parcels, printed matter and direct mail¹².

This segment of the postal services market is one of the most dynamic once since the majority of providers provides precisely these services and competition is the strongest. Within the framework of these services providers have the best opportunity to offer services to users that are best suited to their needs and demands and are given the opportunity for further growth and for increasing their overall revenues. This means primarily the development of new ways of providing services connected to e-commerce, by adding new value and/or supplementing the existing services or introducing new ones.

A total of 82,647,173 of other postal services were realised in 2022, 2.7 percent more than in the previous year, with their share in the total market increasing by 1 percent.

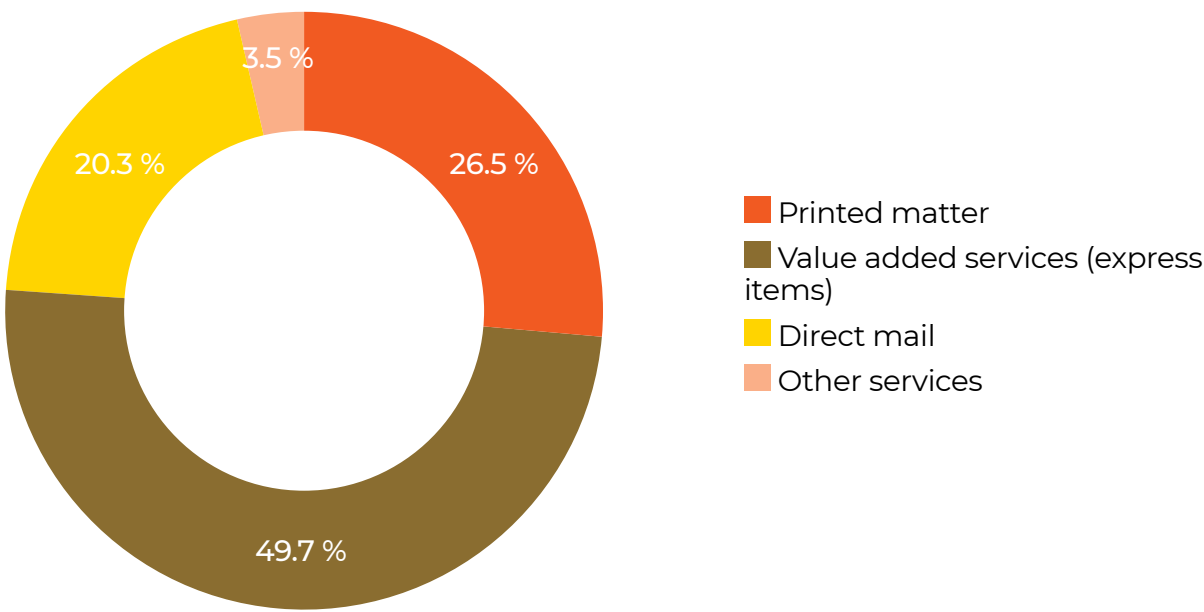
¹⁰ Postal services from the scope of universal service, which may deviate from the conditions of universal service, such as the obligation of daily delivery or the obligation to provide services in the entire territory of the country, but may from the user standpoint be viewed as being within the scope of universal service because they are sufficiently interchangeable with the universal service.
¹¹ Added value means clearing items when called by users, enabling tracking, observing contracted delivery times, etc.
¹² Direct mail – a postal item consisting solely of advertising, marketing or publicity material and comprising an identical message Except the addressee's name, address, and identification number, as well as other modifications that do not change the nature of the message, which is sent in at least 500 copies.

Figure 3.12 Total number of other postal services (in million)



The increase in total number of other postal services affected changes in the structure of performed services, continuing the trend from previous years in 2022. The number of express parcels grew by 4.4 million from the previous year, resulting in almost a half of other postal services having some added value and their share increasing by some 4 percent from 2021. At the same time the number and the share of all other services decreased. The greatest impact of the change in service structure, i.e. the increase in the number of expe-

Figure 3.13 Shares of services realised within the scope of other postal services by type



ss services, was visible in revenues realised from other postal services. Namely, a total of HRK 1,203,224,740 was generated in 2022, 121.3 million or some 11 percent more than in 2021, continuing the upward trend from the previous year. In the structure of total postal revenues in 2022, revenues from other postal services made up some 57 percent or 2.7 percent more than in the previous year, although these services account for some 31 percent of all services in the market.

These data are only a confirmation of previous statements on the potential of high-quality services arising primarily within the framework of e-commerce, where providers can increase their revenues with a smaller number of services or share in the market. This is best visible from indicators on value added services, i.e. express services, which, with a share of 15.4 percent in the total market, generated some 53 percent of total revenues, 2.9 percent more than in the year before. Positive trends are sure to continue and high-quality services will increase, consequently contributing to the rise in total revenues of service providers.

REGULATORY ACTIVITIES

HAKOM's regulatory activities in 2022 were carried out in line with its Annual Work Programme and were, in addition to regular obligations, directed at the implementation of the amended provisions of the [Ordinance on the performance of the universal service](#) (Ordinance) relating to the organisation of the postal offices network of the universal service provider HP and new access to the postal network, as well as to the new method of calculation of the discount on the universal service. The focus of all these activities was primarily on ensuring the performance of the universal service and on user protection.

A share of regulatory activities was directed at the new customs procedures pertaining to postal items because it was necessary to align customs and postal procedures when submitting goods from postal items for customs inspection and calculating VAT in the new digitalised procedure, which was put in place to the satisfaction of users and all other stakeholders.

In 2022, HAKOM verified the compliance of the terms and conditions for access to HP's postal network and the prices for access with the provisions of the Ordinance relating to network access, as well as their implementation.

In addition, a project was launched, analysing the organisation and density of the existing network of postal offices with the objective of preparing a new proposal, which would, among other thin-

gs, be tailored to the needs of users in view of the new population census, but also take into account the rationalisation of the costs of the postal network itself.

For the purpose of monitoring the situation and development in the postal market in the HR, HAKOM continued collecting and analysing data based on which different reports were prepared, with the most important indicators being publicly disclosed and presented to the public. A large number of activities was directed at checking new and amended general terms and conditions, and price lists of postal services providers and their compliance with the provisions of the PSA, as well as the Act on the Introduction of the Euro as the Official Currency in Croatia, while a smaller share of activities was connected with the registration/termination of registration of service providers.

The greatest number of regulatory activities was directed at the performance of the universal service, monitoring compliance with prescribed obligations of service providers when it comes to coverage and quality, but also at the supervision and regulation of the prices of the universal service. As a result, pursuant to the procedure laid down in the Methodology for the regulation of prices of the universal service, i.e. HP's request for the revision of the price cap, a new calculation was made, permitting an increase in the prices for services from the basket of services falling under the scope of the universal service¹³.

At the same time, an analysis was conducted of the existing price cap model, which resulted in amendments of the mentioned methodology, which served as the basis for the new price cap calculation for the period 2023 to 2025. In addition, HAKOM adopted a Decision setting the highest permissible average weighted price increase for HP, the universal service provider, for a basket of services. The implementation of the price of the universal service was also analysed in contracts with large users, that is, HP's policy for granting discounts, resulting in the repealing of operational discounts. A review of the HP's regulatory report for 2021 was conducted in accordance with the provisions of the PSA and HAKOM issued the Statement of Compliance of the Methodology of Accounting Separation. In addition, at the end of the year, after having reviewed the HP's request for reimbursement of the cost of the unfair financial burden arising from the provision of the universal service, HAKOM adopted the Decision on the amount of net cost.

Preventive activities for the protection of users were undertaken on a continuous basis, HAKOM responded to numerous user submissions and resolved disputes between providers and users, as well as conducted a survey of the satisfaction and needs of users of postal services in the HR.

¹³ Basket of services from the scope of the universal service: postal item up to 50 g in domestic and international traffic and registered postal item up to 50 g in domestic and international traffic.

Expert opinions were provided at the request of users regarding the implementation of the PSA and other regulations from the scope of postal services.

Numerous planned inspections were carried out, as well as several extraordinary inspections, primarily at the requests of users of postal services. In carrying out inspection supervisions, attention was focused on the fulfilment of the prescribed obligations by providers of the universal service, the quality of performance of the universal service and protection of user rights.

All regular and operative obligations connected with the implementation of international legislative acts were completed in time. An analysis and assessment of individual prices of universal service was conducted pursuant to the provisions of the Regulation on cross-border parcel delivery services, submitted to the EC and published on its website.

Cooperation with all stakeholders of the Croatian, the European and the global postal system continued, with the cooperation with the European Regulators Group for Postal Services (ERGP) being especially noteworthy. HAKOM's representatives thus participated in the work of all its working groups, as well as in ERGP's plenary sessions. HAKOM also hosted one of the meetings of the ERGP's contact group, organised in Zadar. A share of international activities was realised in the working groups of the European Committee for Postal Regulation (CERP) and at meetings of the Postal Directive Committee (PDC). Traditionally, a round table was organised of all stakeholders in the postal services market where current topics relevant for the postal services sector were discussed. In conclusion, all planned and extraordinary regulatory activities were completed in accordance with the 2022 Annual Plan.

Price Cap Calculation for the period 2023 - 2025

HAKOM launched the project of Price Cap Calculation for the period 2023-2025 in May 2022, aiming to analyse the existing Price Cap model and verify compliance of the prices of the universal service with Article 46, paragraph (1) of the PSA. Pursuant to the results of the analysis it implemented certain amendments and supplements to the methodology for the regulation of prices of the universal service. Public consultations were held in October and November regarding the draft of the said document, during which no proposals or comments pertaining to it were received, so the [Methodology for the regulation of prices of the universal service](#) (hereinafter: Methodology) was adopted at HAKOM's Council Meeting of 22 November 2022. The most significant changes to the Methodology were related to the change in the manner of determining the basis year, the requirement to conduct the analysis of realised derogations from the planned values of key parameters twice a year, the introduction of the materiality threshold, the additional expla-

nation of capital investments and an additional chapter being added to explain the calculation model in more detail.

Based on the adopted Methodology, a new [Price Cap Calculation for the universal service for the period 2023-2025](#) was prepared and the [Decision setting the highest permissible average weighted price increase by the universal service provider HP](#) (Decision) for a basket of prices from the scope of the universal service for the period from 12 January 2023 to 31 December 2025 adopted. With the new calculation and Decision, HAKOM laid down that the permissible growth of the average weighted price of the basket of said services was 26.5 percent in the entire three-year regulatory period, which represents a permissible correction of prices that accounts for the annual changes in the general level of prices (inflation).

Accounting separation (Regulatory Financial Statement)

The PSA prescribes the obligation of accounting separation with special emphasis on the provider of the universal service. The provider of the universal service, HP, submitted to HAKOM in June 2022 the Regulatory Financial Statement (RFS) for 2021, which was prepared in compliance with [Instructions on accounting separation and cost accounting of the universal service provider](#) (Instructions) issued by HAKOM.

Pursuant to the provisions of the PSA, HAKOM is obligated to initiate ex officio the procedure to verify the accounting separation of revenues and expenses of the provider of the universal service, which also includes an audit by an independent body. The audit company Crowe Horwath Revizija d.o.o. which was selected in a public procurement procedure, conducted the RFS audit, concluding that the RFS for 2021 was prepared in compliance with the Instructions and that it corresponded to cost accounting documents. Accordingly, HP prepared its annual financial statements for the year ended 31 December 2021 in accordance with the International Financial Reporting Standards.

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 2021 complied with all prescribed requirements by its form, content and methodology.

Universal service provider's net cost

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

At the end of June 2022, HP submitted to HAKOM a Request for the reimbursement of the cost of unfair financial burden in 2021 arising from its obligation to provide the universal service (Request). Based on the Request, the difference in HP's financial results including the obligation to provide the universal service and without it would be HRK 128,983,047, which was, according to HP's stipulation, the amount of net cost of the universal service for 2021.

In accordance with the provisions of the PSA and the Instructions on the calculation and reimbursement of the net cost of the universal service and assessment of the unfair financial burden, and with the help of independent consultant, the company Crowe Horwath revizija d.o.o., HAKOM conducted a verification of HP's calculation of net cost.

The procedure determined the amount of net cost of HRK 99,680,608, so the corrected amount represented the amount for which it cannot be expected to be borne by the universal service provider, that is, that all the conditions have been met to determine that the net cost represents an unfair burden on the provider of the universal service. In its [Decision](#) HAKOM established that the net cost for 2021 was HRK 99,680,608, which is 29,302,439 less than the amount that HP stated in its Request.

Universal service prices

In 2022, HAKOM continued to undertake activities within its competence pursuant to the PSA, which is to monitor and regulate the universal service prices and determine whether they comply with the provisions of the PSA and guidelines of the EU Postal Directive. In the Decision setting the highest permissible weighted price increase for a basket of services from the scope of the universal service for the period 2020-2022, of 12 March 2020 (2020 Decision), HAKOM laid down the highest permissible price increase of 6.17 percent for the weighted price of a basket of services for the period from 12 March 2020 to 31 December. In May 2022, HP submitted a Request for the 2022 Decision to be revised (Request), that is, that the price cap that can be set pursuant Methodology for the regulation of prices of the universal service in certain cases be revised. To determine the merits of the submitted Request, HAKOM employed an independent consulting company, BDO Savjetovanje d.o.o. (BDO). During the procedure, the submitted new data on key

parameters and projections were analysed and based on this analysis a new calculation of the price cap for the period 2020-2022 was conducted, permitting the average weighted price increase for a basket of services of 13.84 percent. Since by that time in the regulatory period HP had used 6.09 percent of the permitted price increase for the basket of services, HAKOM allowed HP to, until the end of the regulatory period (end 2022) additionally increase the price of the basket of services by 7.75 percent, which HP did, increasing the price of the "Letter of up to 50 g in domestic traffic" from HRK 3.3 to HRK 3.55.

In 2022, HAKOM intensively and in cooperation with HP, by analysing the implementation of the price of the universal service in contracts with large users, conducted a procedure of harmonising HP's price list with the provisions of the PSA, so that prices and special conditions on the list are transparent, understandable and available to everyone under the same conditions. The result of the procedure was that HP completed the initiated procedure of amending its discounts policy, started at the end of 2021, by providing in its price list, applicable from 1 January 2023, only a discount relating to the quantity of submitted letter items, while operative discounts were repealed.

For the purpose of the said procedure, HAKOM in December 2022 published an Expert opinion on the contracting of an unchangeable (fixed) price of universal service for letter items, expressing its opinion that contracting unchangeable (fixed) unit price of the universal service for letter items in written contracts with users of postal services, in such a way that this price is not related to the price on the price list applicable on the day when the item is received, represents a divergence from the terms and conditions for the provision of the universal service. When the provider of the universal service as the provider offers the universal service than such offered unit price for letter items from the scope of the universal service must be stipulated as a variable price. Where the client contracts a fixed price, the provider of the universal service has at its disposal the model for forming an individual offer and price towards the client as the user of postal services, which can no longer be considered a universal service.

Regulation on cross-border parcel delivery services

The provisions of the [Regulation on cross-border parcel delivery services](#) (Regulation)¹⁴ and its implementing acts have been in force for several years and their transposition into national framework brought about, among other things, new regulatory tasks and obligations for the regulatory authorities of Member States, and HAKOM among them. The objective of the Regulation

¹⁴ Regulation (EU) 2018/64 of the European Parliament and of the Council.

is to remove cross-border barriers in the traffic of postal items and thus ensure domestic consumers and entrepreneurs all the advantages of a single European market.

As in previous years, in 2022 HAKOM fulfilled all its obligations under the Regulation. Through the prescribed questionnaires it collected different data on cross-border delivery services (prices, quantities, revenues, employees, etc.). Pursuant to the Regulation and based on the collected prices of postal services of the universal service provider, HP, an assessment procedure was conducted for cross-border tariffs charged for each single-piece postal item, that is, their revalorisation/assessment of justification. Based on the said assessment procedure, HAKOM concluded that cross-border tariffs for letter items cannot be assessed as unjustly high. In addition, it was assessed that the prices of parcels in international traffic with EU Member States were justified, although a review of tariffs for countries in the third delivery zone showed that they were above the justification threshold set by the EC. The reason for this is low bilateral quantities and high transport costs and charges. HAKOM submitted all processed data and the assessment of cross-border tariffs to the EC, which publishes them at the dedicated website for cross-border delivery services.

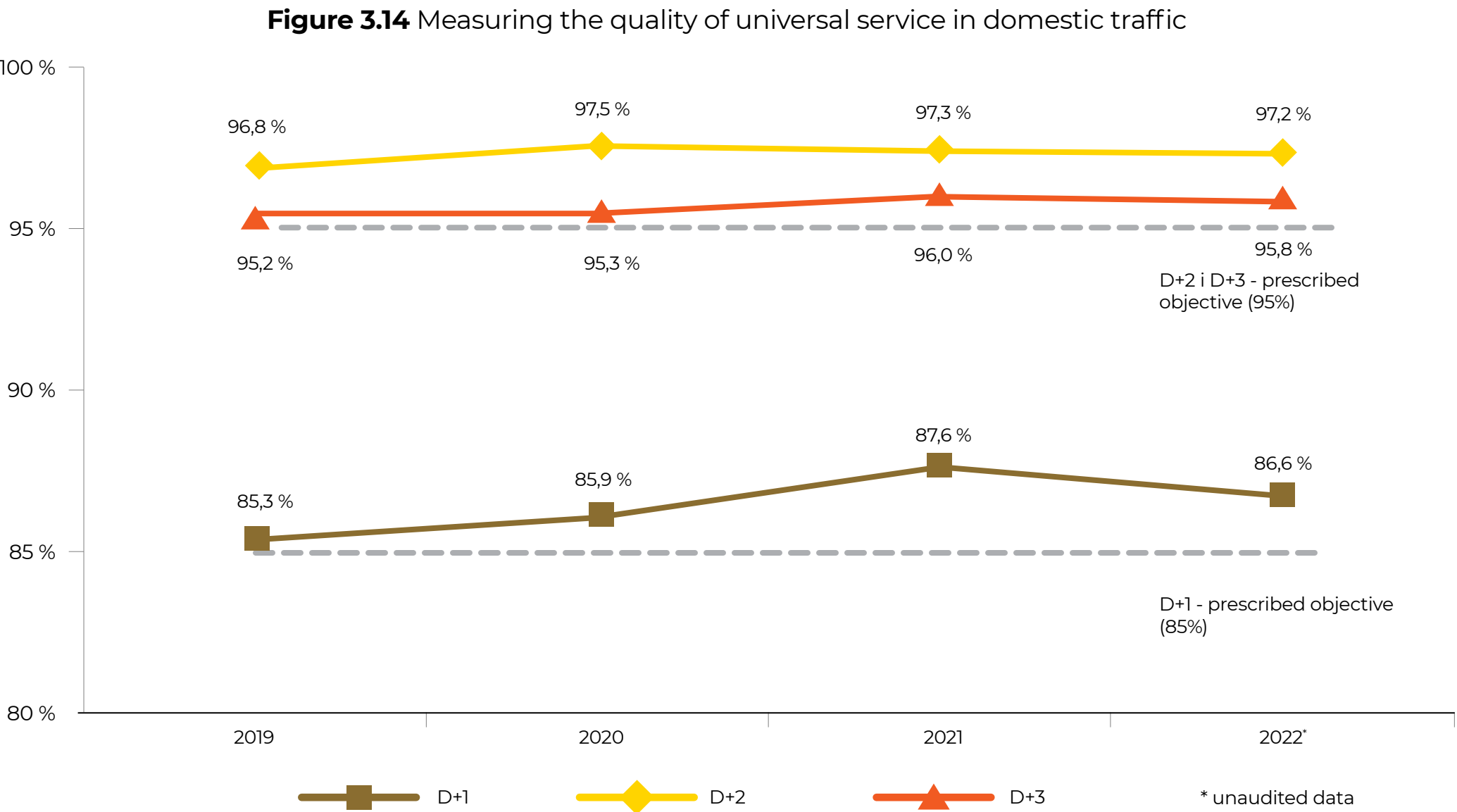
Quality of universal service performance

As every year, HAKOM also directed its regulatory activities towards meeting the prescribed standards of the quality of universal service provision, i.e. towards supervising and monitoring its quality due to its significance, especially during such challenging times as 2022 was, when, at times, “normal” performance of the universal service was put into question. Namely, quality is directly linked to user satisfaction, so it is the objective of all EU Member States, including the HR, to meet the prescribed quality levels. The measurement and quality criteria to be met by the universal service provider in the HR in both domestic and international traffic are prescribed by the PSA and the Ordinance. There are two quality parameters, one related to ensuring the delivery of postal items within prescribed deadlines¹⁵, which is determined by measuring the time of transfer of certain items from clearance to delivery, and another, which is related to measuring the number of claims and compensation claims. Quality measurements are carried out in accordance with the prescribed norms and it is the obligation of the universal service provider to submit a Report on the quality of universal service performance (Report) to HAKOM.

¹⁵ Universal service providers in domestic traffic must ensure the delivery of 85 percent of postal items of the fastest category (priority items) in one working day, i.e. 95 percent within two working days, and for all other shipments 95 percent within three working days. In international postal traffic with EU Member States universal service providers must ensure the delivery of 85 percent of the fastest category items within three working days, i.e. 97 percent within five working days.

According to the 2022 Report, HP conducted two measurements of the quality of performance of the universal service by measuring the transfer of international priority letter items. One measurement was within the framework of the Universal Postal Union (UPU) between the HR and individual UPU members, while the other had to do with the UNEX measurement of traffic between the HR and other EU Member States with established flows in international traffic. The results obtained through UNEX measurement, conducted by the IPC, indicated that quality improved from the previous year but that prescribed criteria have not been met. Some 54.2 percent of shipments were delivered within D+3 time limit, and 80.6 percent of priority items within the D+5 time limit. Such results were not completely unexpected, considering the difficulties in international postal traffic caused by the pandemic, as was confirmed by HP itself in its Report. Measurement results of other EU Member States showed that the HR was no exception as other Member States also failed to meet the prescribed criteria.

HP measured the quality of the universal service in domestic traffic by monitoring the conveyance of priority and non-priority letter items. In 2022, measurement was continued throughout the year and the results indicated that all the prescribed criteria were met. This means that 86.6 percent of priority postal items was delivered within the D+1 time limit, 97.2 percent within the D+2 time limit and 95.8 percent of non-priority postal items within the D+3 time limit.



In 2022, HP measured the number of complaints and compensation claims which showed that postal services users submitted altogether 24,482 complaints related the performance of the universal service. Most user complaints, some 53 percent, were related to domestic traffic and the remaining part to international traffic. Service users most often submitted complaints due to loss of or damage to postal items, failure to provide service or non-compliance with delivery deadlines. HP resolved 99 percent of all complaints within the statutory deadline. Based on the presented results of the universal service performance quality it may be concluded that the quality of the universal service in 2022 was satisfactory.

Universal service provider's postal network

The universal service provider is obligated to establish, maintain and develop a postal network throughout the territory of the HR in the manner prescribed by the PSA and the Ordinance which additionally prescribes the density of the access point network¹⁶.

The focus of HAKOM's activities in 2022 was primarily on compliance with the prescribed criteria related to density and office hours of postal offices, especially considering the challenges faced in providing the universal service during the pandemic. In 2022, the approval granted by the Ministry of the Sea, Transport and Infrastructure (MSTI) regarding the measures to be implemented with the objective of protecting the health and life of HP's employees and users of postal services in the territory of the HR obtained at the request of HP was still in force. HP, in accordance with the pandemic prevention measures, undertook adequate measures. As a result, some postal offices remained operational although implementing amended working hours, which meant that some postal offices remained working two or three days a week with shorter working hours. As the situation normalised, individual measures were relaxed, and office hours of postal offices were restored to their usual timetables adjusted to the needs of users.

As over previous years, HP continued with the model of re-locating individual unprofitable postal offices to more frequented locations in 2022, in line with its strategy of re-locating postal offices for the purpose of better service accessibility, with a view to rationalise its operation and also utilise the market potential of such locations. Some postal offices were relocated to new facilities in order to provide users, as well as employees, with improved facilities for work and provision

of services. Relocations did not affect the total number of postal offices, so the total number of postal offices remained unchanged, counting 1,016 offices, which, however, were differently distributed throughout the territory of the HR.

HP as the universal service provider is obligated to provide access to its postal network to other postal services providers, consolidators and users for services belonging to the scope of interchangeable services. In 2022, two providers of interchangeable postal services and one consolidator made use of the possibility.

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

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

One of more important activities within HAKOM's competence is also to monitor and analyse the situation in and the development of the postal services market. With this aim, HAKOM continued to collect different statistical, financial and other data from postal services providers on a quarterly and annual level, the coverage of which was in line with the PSA. After being processed, the data collected this way were used for the analyses that provided HAKOM with insight into the situation and developments in the postal services market in the HR, the adoption of regulatory decisions, as well as the preparation of different reports.

The data were also used to comply with the requirements of different European authorities competent for monitoring and analysing the situation in the EU postal market (EC, ERGP, UPU), to respond to different external queries (media, providers, etc.), as well as to cater for the obligations towards different government bodies and institutions (MSTI, Central Bureau of Statistics, Croatian Competition Agency, etc.).

The most important indicators of the state of and developments in the postal services market in the HR were regularly published on HAKOM's website, within the scope of [e-market](#), which also provides an [updated list of postal services providers](#) together with the list of services they provide. In line with the PSA, HAKOM, among other things, maintains and regularly updates a data base, that is, a registry of providers, containing all prescribed data.

¹⁶ The postal offices network must be organised so that one postal office covers the area of a maximum of 80km², that is a maximum of 6,000 inhabitants, and needs to count a minimum of 700 regular postal offices

While analysing the situation in the market in 2022, HAKOM identified new business activity by several companies from the segment of e-commerce whose goods were delivered to end users, as a rule as postal items, that suggested postal services were being performed. Consequently, these companies were called to comply with the PSA and undergo the procedure of registration for the performance of postal services.

Network access

In accordance with amendments to the Ordinance, in 2022 HAKOM carried out verification procedures of the compliance and implementation of the provisions of the Ordinance on amendments with HP's general bylaws, regulating postal network access services. When it receives Access terms and conditions and Access price list, HAKOM verifies whether the terms and conditions and the price list are in line with the PSA and amendments to the Ordinance, that is, whether the price of access to the postal network are set in line with the principles laid down in the Ordinance, as well as verifies other documents submitted by HP.

Other regulatory activities and tasks

As part of its activities in 2022, HAKOM issued several expert opinions and explanations related to the implementation of the PSA and other regulations adopted pursuant to the PSA. Among other things it carried out procedures related to registration/unlisting of the postal services providers and verified the compliance of submitted general terms and conditions and price lists of service providers with the PSA. Special attention was directed at the verification and compliance of postal services prices with the Act on the Introduction of the Euro as the Official Currency in the HR, primarily verifying the recalculation of prices from the kuna to the euro so it would not come to "rounding" or the increase in existing prices. A share of regulatory activities was also directed at the new procedure related to customs procedures regarding postal items since it was necessary to harmonise customs and postal procedures when submitting goods from postal items for customs inspection and calculating VAT via a new digitalised procedure. Specifically, postal services providers as representatives of customs administration applied different methods and charged differently for their services of submitting items for customs inspection so customers were not treated equally because the end price for the same goods depended on the country of entry of the goods to the EU. Although HAKOM is not competent for the provisions of the law governing the customs process and foreign currency payments, HAKOM, already back in 2021, launched several initiatives for this issue to be resolved to the satisfaction of all interested stakeholders, especially postal services users. After several meetings and consultations with all

stakeholders, including providing expert assistance to the Croatian Competition Agency in running the proceedings, a joint solution was reached late in the year to the benefit of all interested parties.

Continuing the good practice of interactive communication with stakeholders in the postal services market in the HR, HAKOM organised the 9th round table of stakeholders in the postal services market in Zagreb in December 2022. The most important topic of the round table was green transition and sustainable operation of the providers of postal services, where, following presentations by representatives of HAKOM and FTTS, participants exchanged their experiences in an open discussion, discussing the ways in which they have been adapting their operations to national efforts directed at reduction of the carbon footprint and impact on the environment while providing postal services. HAKOM's representatives held presentations providing an overview of the situation and trends in the HR and the EU markets of postal services and results of the social survey of the satisfaction and needs of postal services users (natural person). The opportunity was also used to exchange information on other recent developments in the postal market.

As over previous years, in 2022, HAKOM provided users of postal services with information on the queries on the performance of postal services via a direct telephone line each working day. Users were also provided with the option of submitting their queries via e-mail or an online app "Ask Us", available on HAKOM's website.

One of HAKOM's activities in 2022 was directed at surveying the satisfaction and needs of postal services users in the HR. For this purpose, a survey was conducted in June and August aimed at monitoring the use of postal services and satisfaction of individual users with prices, deadlines, and quality of postal services. HAKOM also surveyed how well users were informed on services of all postal services providers and how well informed they were regarding sending items, submitting complaints, online shopping, as well as their familiarity with and use of automated parcel delivery lockers. For the most part the survey focused on HP, as the national provider of the universal service in the HR, while the rest of the survey included other postal services providers in the market. The results were published on HAKOM's website.

In accordance with the amendments to the Ordinance and new data from the HR population census, in the third quarter of 2022, the project of analysing the organisation and density of postal offices network was launched, the objective of which was to analyse the postal network, prepare a proposal of the new/amended organisation of the postal network and implement changes to the Ordinance; over the upcoming medium-term horizon, prepare a projection of the possible impact of the proposed new organisation of the postal network on reduction in net cost.

INSPECTION ACTIVITIES

Postal inspectors conducted 39 inspection supervisions in 2022, of which a part of activities was related to implementation follow-up pursuant to previously adopted decisions. Inspection supervision proceedings ended in two decisions being adopted and the elimination of established deficiencies was laid down in related minutes. One motion for indictment was submitted to initiate misdemeanour proceedings. All decisions adopted following inspection supervision proceedings were public. When determining the merits for initiating inspection supervision proceedings ex officio, stipulations and other notifications indicating the infringement of the provisions of the PSA were taken into consideration.

Inspection supervisions were for the most part conducted over HP as the provider of the universal service. In the conduct of inspection supervision related to the performance of the universal service attention was directed at the quality of the service performance and the rights of users of postal services. Decisions were adopted as part of inspection supervision proceedings in relation to the performance of the universal service, by which HP was ordered to remove irregularities, deficiencies and omissions established by the inspection supervision and minutes were drafted ordering the elimination of deficiencies established by the inspection supervision, last but not least, motion for indictment was submitted to initiate misdemeanour proceedings, in particular: A [Decision](#) was adopted, ordering HP to, when providing the universal service in domestic traffic, ensure to all users the delivery of received letters, as a rule, by delivering them to their letter box, within the final deadline for delivery of postal items in domestic traffic as regulated by its General terms and conditions for the performance of the universal service.

An inspection supervision was initiated against HP regarding the obligation to organise the delivery of a postal item to the home address or business premises of every natural or legal person, five days a week since HP failed to provide such delivery for a total of 2,753 households in 28 settlements populated by more than 1,000 inhabitants (more than 500 on islands) as was foreseen under the Ordinance. Following the receipt of the minutes from the postal inspector, ordering the elimination of deficiencies established in inspection supervisions and other actions undertaken for the purpose of conducting inspection oversight, HP ensured, i.e. organised, the prescribed delivery for all households with the population exceeding 1,000 inhabitants (more than 500 on islands). An exception to the rule mentioned above are five households belonging to the settlement of Mali Lošinj, which in accordance with HP's explanation are located at the island of Koluđarac to which there are no ship lines or roads on the island.

In addition, inspection supervision was initiated over HP in relation to the meeting of the obligation under which, HP, as the universal service provider, must ensure all users, at least five days

a week, one receipt of a postal item, including the receipt of postal items in international traffic addressed to recipients from UPU Member States, considering that it was possible to send letter items and parcels via HP, as the universal service provider, to 86 countries and only letter items to 49 countries. With regard to this, HP was ordered in the minutes prepared by the postal inspector to undertake the necessary activities for the purpose of preventing potential irregularities, deficiencies or omissions, which HP implemented. Thereafter, it was possible to send letter items and parcels to 255 countries.

At the proposal of the postal inspector, HAKOM submitted a motion for indictment against HP for failure to deliver two incoming registered mail items in international traffic although the signature was registered on the electronic communication device as evidence that the said postal items were delivered to the address of the recipient. The Municipal Misdemeanour Court in Zagreb ruled on the matter on 6 June 2022, declaring HP guilty and ordering a fine in accordance with the law.


When conducting inspection supervisions over the performance of interchangeable and other postal services, the attention was focused on the fulfilment of the prescribed obligations by providers of interchangeable and other postal services relating to the rights of the users of postal services. Inspections supervisions were conducted over three providers of postal services: HP, Overseas Trade Co. Ltd. d.o.o. and General Logistics Systems Croatia d.o.o.

Based on submissions received and other notifications relating to two legal persons, inspectors verified compliance with the provisions of Article 17 of the PSA which prescribes that the right to provide interchangeable postal services and other postal services is acquired by a legal or natural person after submitting a written application to HAKOM. The first inspection supervision established that in the first case the legal person does not provide postal services as it may be concluded from the content of its website and in relation to another, following the receipt of the submission of one postal services provider, stipulating that the legal person in question was providing postal services without having applied to HAKOM pursuant to Article 17 of the PSA, a [Decision](#) was adopted terminating the inspection supervision over that legal person. The provider of postal services that made the submission initiated administrative proceedings against this [Decision](#) before the High Administrative Court of the HR, which ruled against it and rejected the claim.

In addition, in two Decisions HAKOM rejected as unfounded the complaints submitted against inspector notifications, notifying the petitioners that pursuant to the submissions no conditions exist for initiating inspection supervisions ex officio. The petitioners initiated administrative proceedings before the Administrative Court in Split which adopted two decisions, one partly refusing the claim ([Decision](#)), and the other fully refusing the claim ([Decision](#)).

04

RAIL SERVICES

An abstract graphic of a train composed of green wireframe lines and dots, moving from left to right. The train's body is formed by a series of connected points and lines, giving it a digital, network-like appearance. The wheels are also represented by clusters of points. The train is set against a dark green background with some light green streaks and dots, suggesting motion and connectivity.

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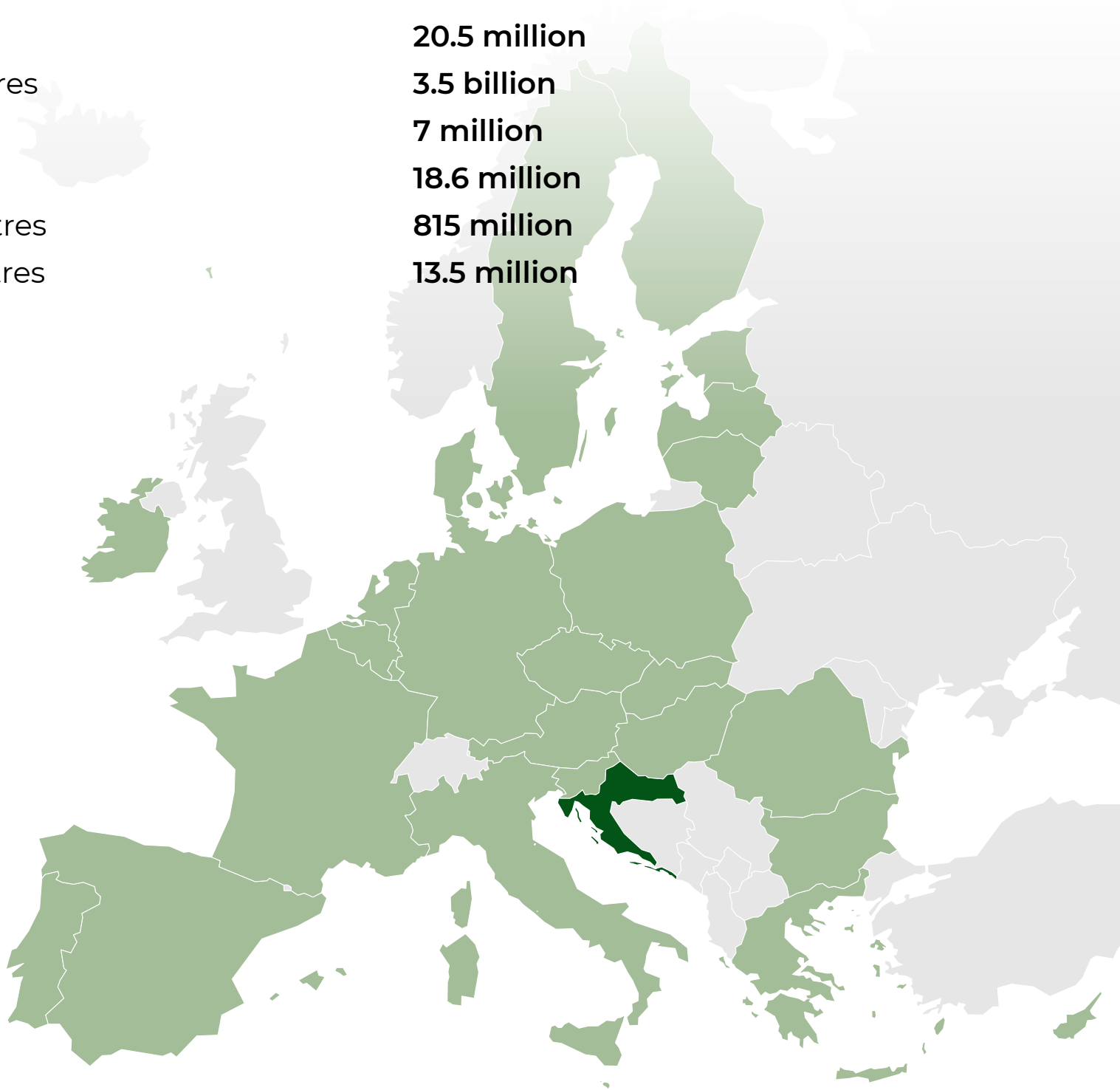
With its regulatory activities pursuant to the Act on the Regulation of the rail Services Market and the Protection of Passenger Rights in Rail Transport (ARRSM) and the Railway Act (RA), HAKOM ensures clear and non-discriminatory conditions for providing railway services. Its role is also significant with regard to the protection of passenger rights in railway transport, which may not be infringed upon or limited in any way. With these objectives in mind, HAKOM regularly performed inspection supervisions to eliminate identified irregularities in the rail market as quickly and as efficiently as possible and to protect passenger rights. In its work HAKOM strives to promote the implementation of advanced technologies and synergy that a regulatory authority for several network industries brings along because it is precisely such solutions that can foster faster development.

MARKET OVERVIEW

Figure 4.1 Basic information on railway infrastructure and operation of railway operators at the end of 2022

REPUBLIC OF CROATIA

Infrastructure manager	HŽ Infrastruktura d.o.o.
Length of railway network in the HR	2617 km
Number of freight undertakings	17
Number of passenger railway undertakings	1
Maritime ports	5
Inland waterway ports	3
Goods transported (t)	16.3 million
Total train kilometres	20.5 million
Total net tonne kilometres	3.5 billion
Freight train kilometres	7 million
Passengers carried	18.6 million
Total passenger kilometres	815 million
Passenger train kilometres	13.5 million

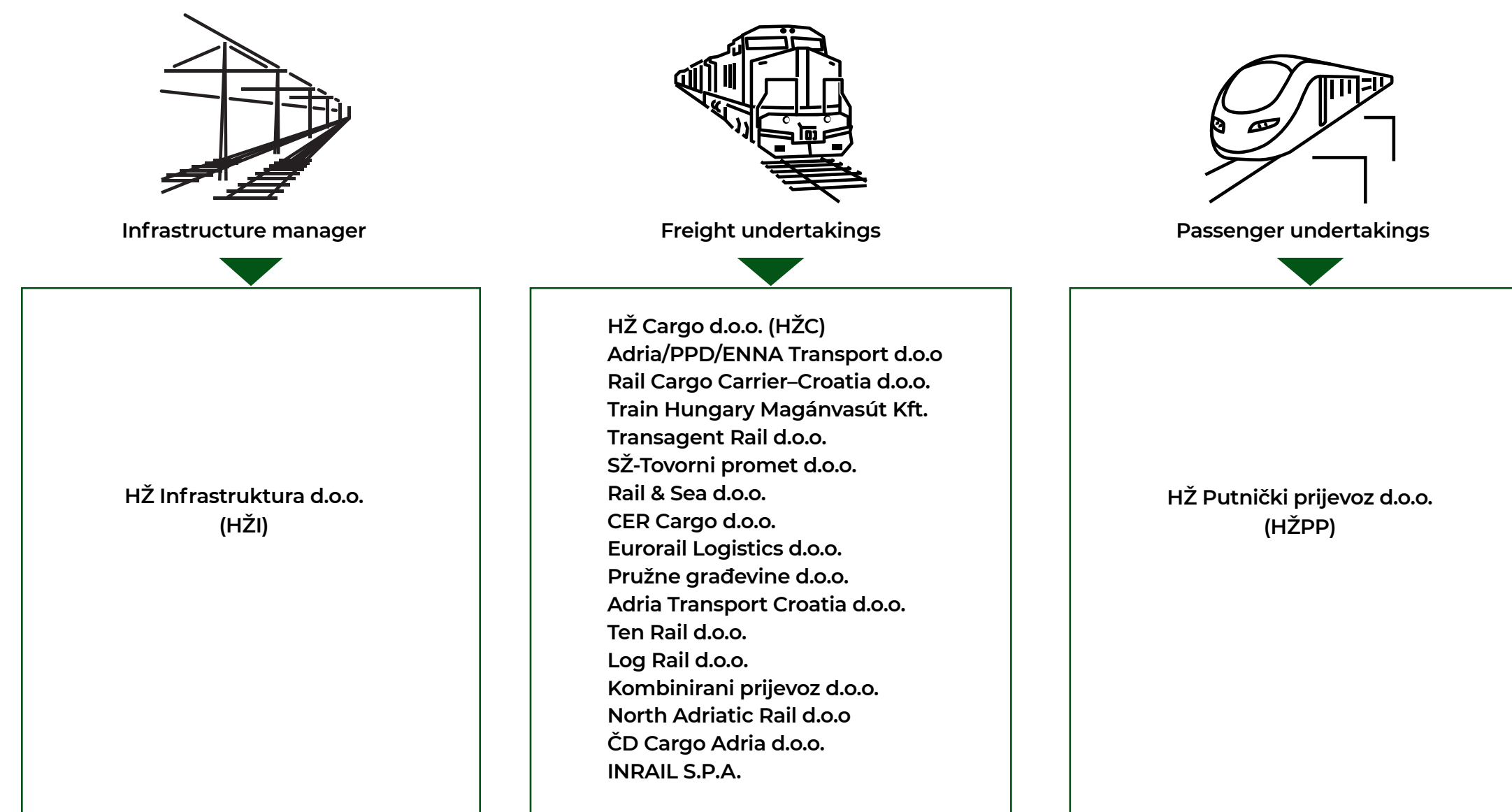


Stakeholders in the rail services market

The number of registered freight carriers has been continually rising. By regularly consulting the European Railway Agency Database of Interoperability and Safety, ERADIS¹⁷, and cooperating with the infrastructure manager, HAKOM established that four new freight carriers were registered in 2022 in the HR market. At the end of the year there were altogether 17 freight railway carriers operating in the market. However, three did not perform the goods transporting services.

There is one passenger incumbent that continues to be registered in the HR market although the passenger transport market was liberalised in 2019 when the RA entered into force.

Figure 4.2 HR rail services market



¹⁷ IRG-Rail, Independent Regulators' Group - Rail

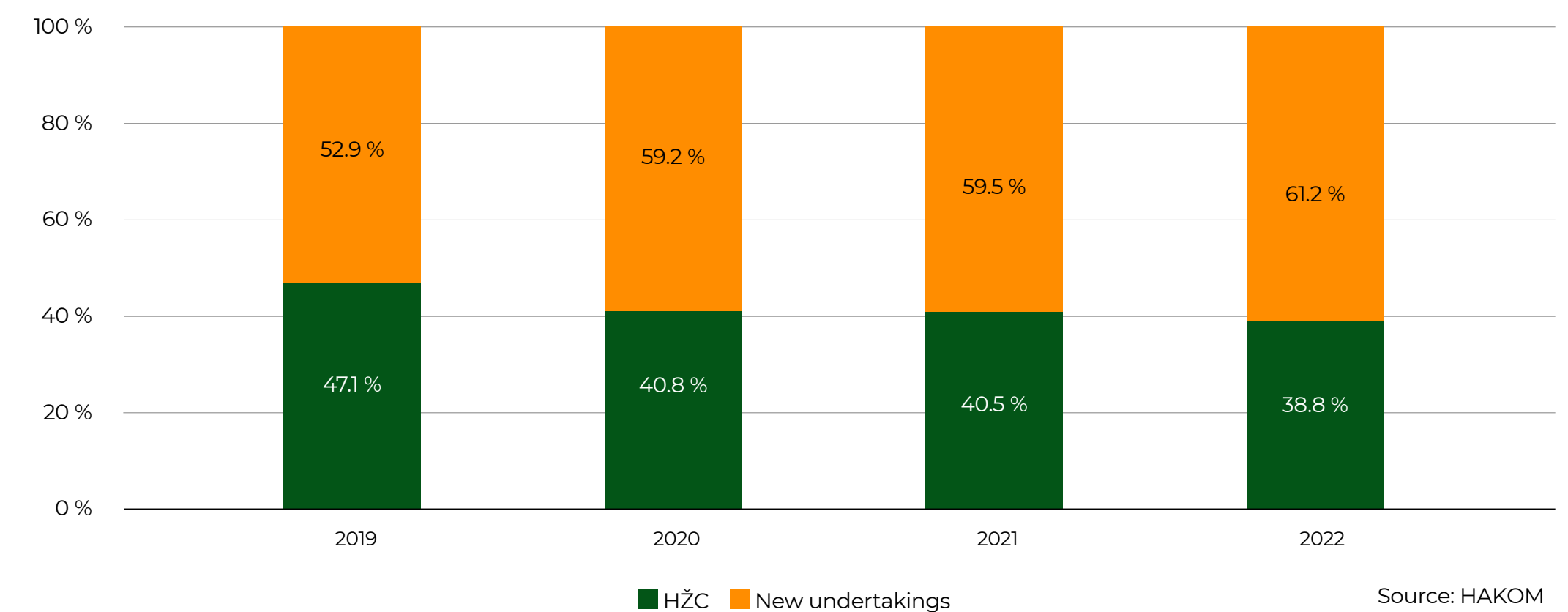
Performance indicators by railway undertakings in the rail services market

In accordance with the ARRSM, HAKOM monitors market competition in the rail services market and collects the data required for regulating the rail services market and the data required for statistical monitoring of the market. All newly registered undertakings are obligated to notify HAKOM of their registration. The data collection forms are sent to all of them on a quarterly basis and the data collected are published and forwarded to the European Commission.

The data collected on the operation of railway undertakings clearly show that the pandemic impacted numerous industrial sectors. However, rail freight transport was quick to recover. In 2022, the rail network was used to transport a total of 16.3 million tonnes of goods, 5.9 percent more than in the previous year.

In 2022, the share of new railway undertakings in total transported goods increased by 1.7 percent from 2021. However, this is not the indicator of a decrease in the quantity of transported goods by the incumbent, who transported 1.4 percent more goods than in 2021 but rather of the fact that new undertakings participated in a greater percentage in the total increase of transported goods.

Figure 4.3 Market shares by goods transported in railway freight traffic



The number of total realised tonne-kilometres of all undertakings increased by 9.4 percent in 2022. Similar as with regard to the indicator of goods transported in railway freight traffic, new undertakings registered a higher increase than the incumbent. New undertakings thus registered an increase in realised tonne-kilometres of 12 percent, and the incumbent carrier of 7.1 percent. The consequence of this is further increase in the market share of new undertakings, which reached 47 percent at the end of the year and suggests efficient market competition.

Figure 4.4 Shares of tonne kilometres in railway freight traffic

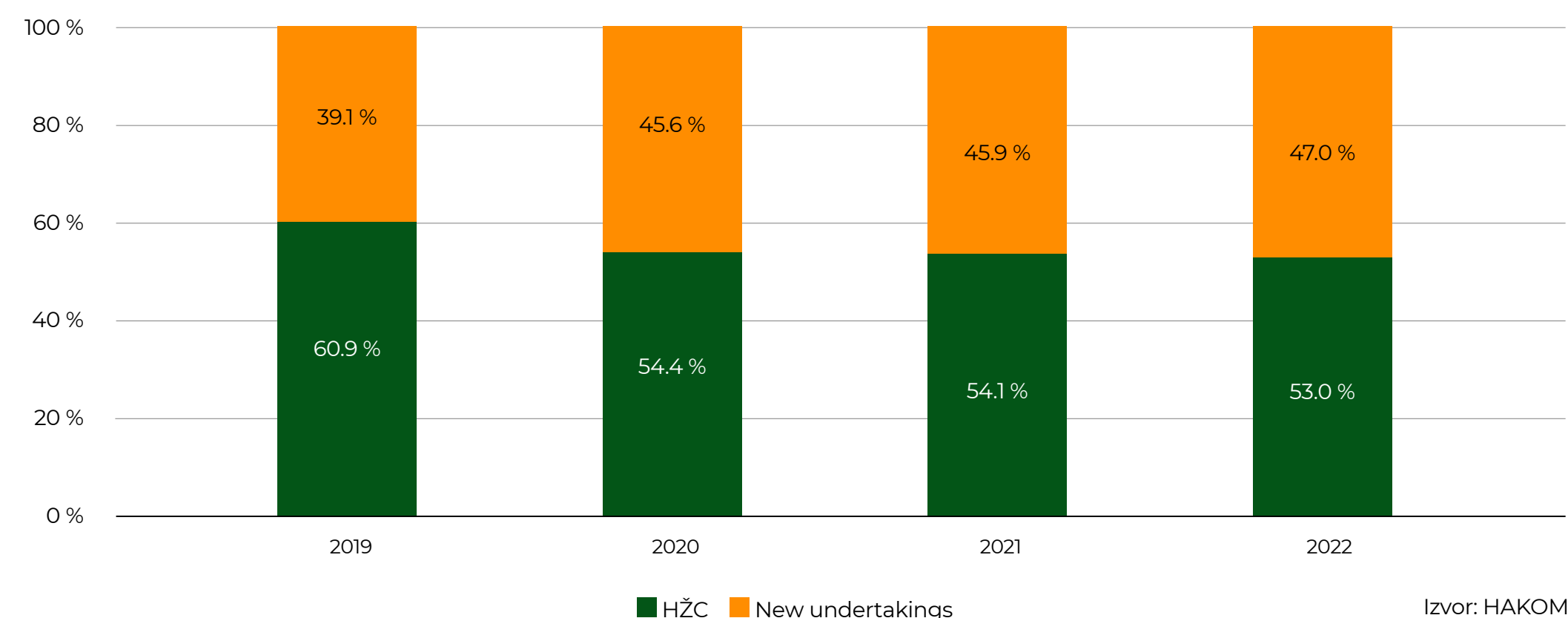
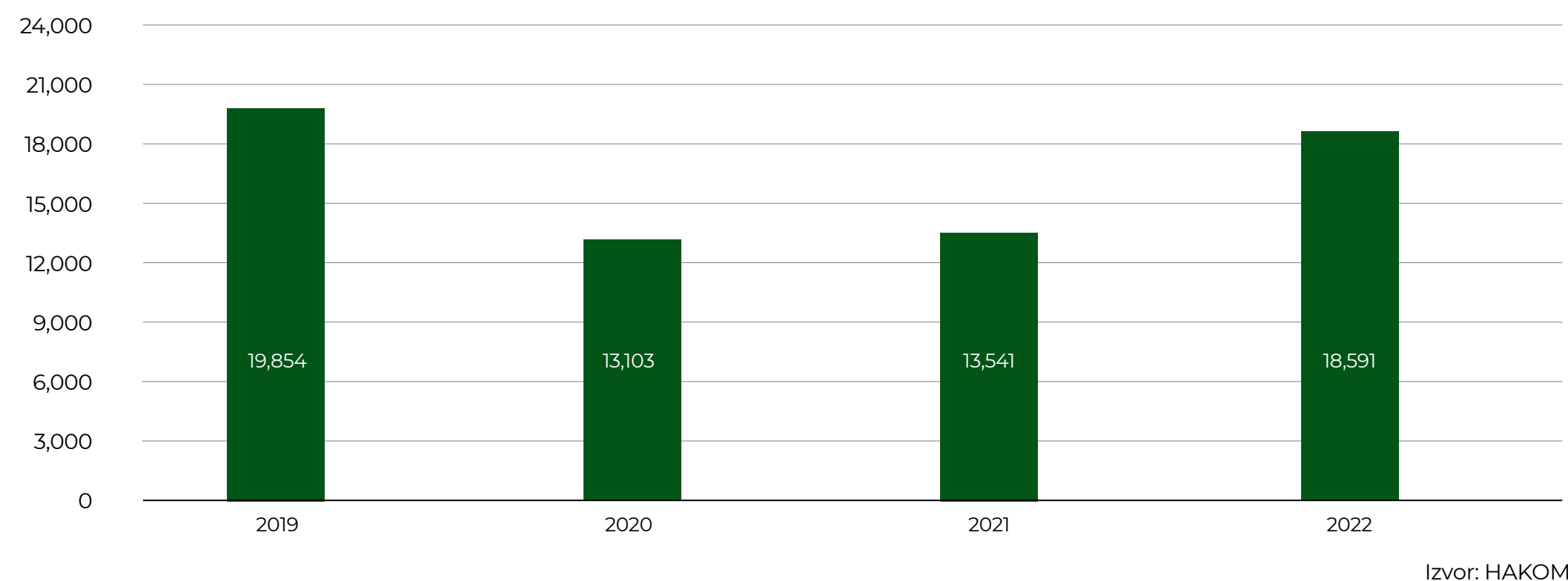


Figure 4.5 Number of transported passengers (in thousands)



During the pandemic the number of passengers in railway transport drastically decreased, to start rising again in 2022, going up by 37.3 percent from 2021. However, the number of transported passengers has still not returned to pre-pandemic levels.

RAILWAY INFRASTRUCTURE AND SERVICE FACILITIES

Pursuant to the RA, HŽ Infrastruktura (HŽI), as well as service facilities operators, are obligated to ensure all interested railway undertakings the right of access to railway infrastructure and the use of tracks that connect maritime ports, inland waterway ports and other service facilities 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.

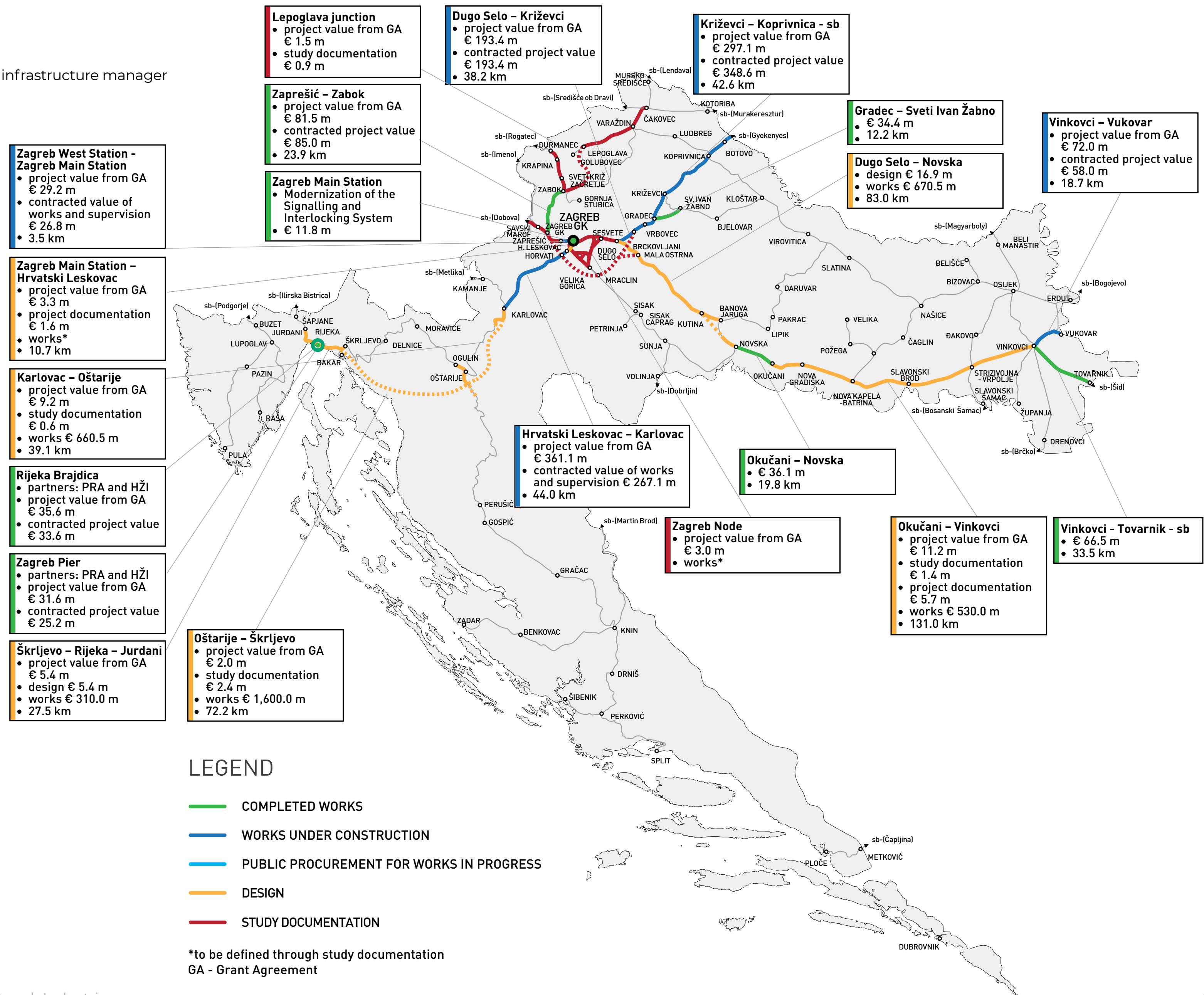
As part of NS HŽI also publishes a list of service facilities it operates, the services it provides and the associated fees. In accordance with Commission Implementing Regulation (EU) 2017/2177 of 22 November 2017 on access to service facilities and rail-related services (Implementing Regulation 2017/2177), operators of service facilities are obligated to publish a service facility description. HAKOM established by a review that HŽI regularly publishes an invitation for submission of documents or links to service facility description to other service facility operators. The received documents or links to the service facility descriptions are then published as an Attachment to the said NS.

Pursuant to the RA, HAKOM keeps the [Register of the railway services of service facilities operators](#), which it regularly publishes on its website.

HŽI continued to manage 2,617 km of railway infrastructure, of which 2,341 km single-track and 276 km double-track railway lines. According to the NS data, the length of electrified tracks increased from 980 km to 994 km or by 38 percent, of which 991 km are with the alternating current system of electrification with 25 kV and 50 Hz, while the remaining 3 kilometres are electrified with 3 kV DC power supply system. The electrification of HR railway lines continues to lag behind the EU average of 56 percent¹⁸. In addition to improving the quality of transport and reducing operating costs, electrification has a strong impact on gas emissions. All this makes it necessary to continue with further electrification and modernisation of the electric traction power system to achieve reliable and quality railway transport services oriented towards protecting the environment as the ultimate objective of all EU Member States.

¹⁸ 11th Annual Market Monitoring Report.

Figure 4.6 Investments of infrastructure manager



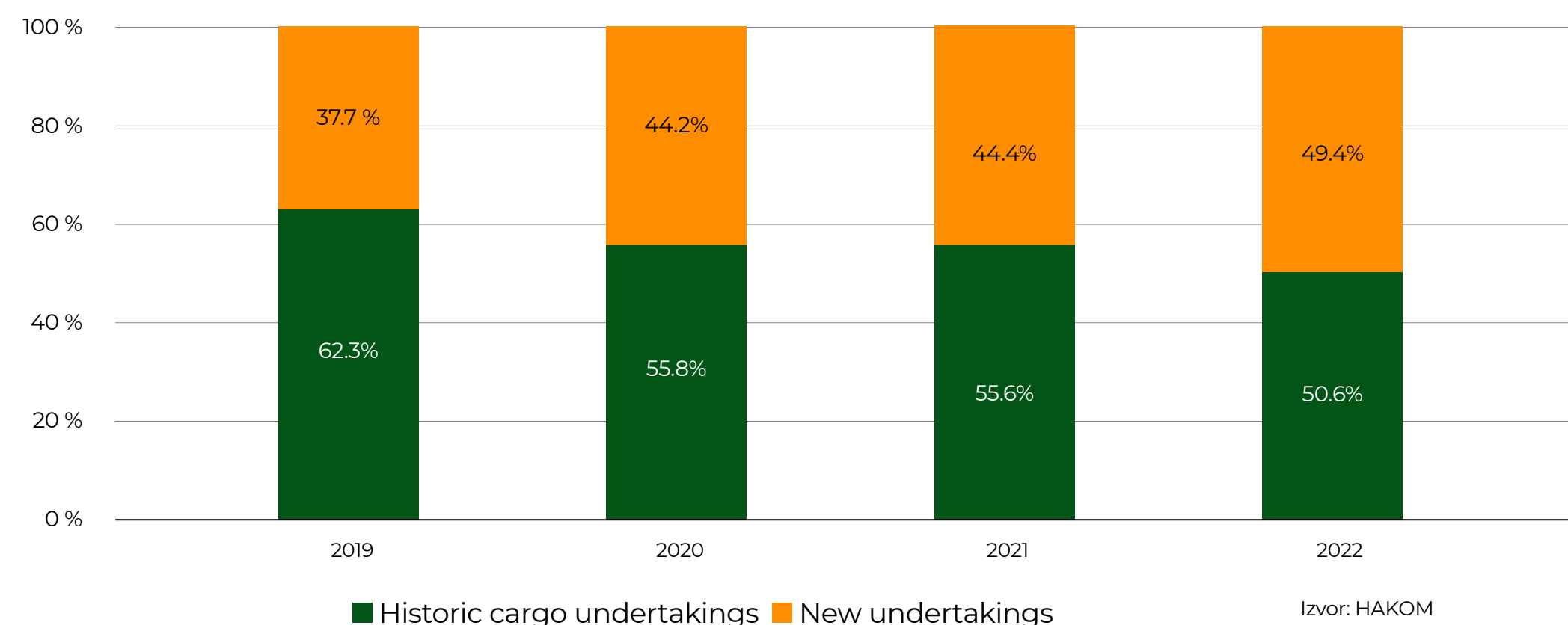
Izvor: HŽI

INFRASTRUCTURE USAGE

The basic functions of infrastructure management are deciding on the allocation of train paths, which includes the preparation and the assessment of availability of infrastructure capacity, and deciding on charges.

The indicators of infrastructure usage are train-kilometres (tkm) realised by railway undertakings. The passenger undertaking realised 13,526,442 tkm in 2022, while freight undertakings realised a total of 7,013,081 tkm. The incumbent freight carrier decreased its tkm by 8.1 percent and new ones increased theirs by 12.1 from the previous year. New undertakings thus increased their share in total tkm to 49.4 percent compared to the incumbent undertaking.

Figure 4.7 Shares of infrastructure use by freight carriers in train-kilometres



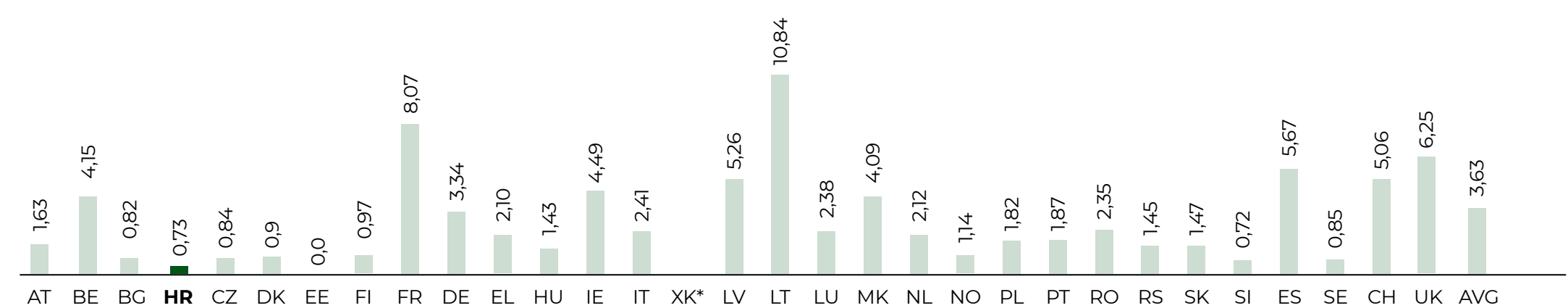
The minimum access package

HŽI provides the basic minimum access package (MAP) of services, which encompasses the processing of applications for the allocation of infrastructure capacity, the rights of use of the allocated infrastructure capacity, the use of railway infrastructure, including turnouts and notes. The MAP also includes the management of train traffic, including signalisation, regulation, train re-

ception and dispatch as well as communication and providing information on train movement, the usage of available equipment for supply of electricity required for towing trains and the provision of other information required to realise or perform the service for which the capacity has been allocated.

The average price per train-kilometre for the MAP of services in the HR for the 2021/2022 timetable was HRK 5.8. According to the latest report of the Independent Regulators' Group (IRG-Rail) on market supervision in 2021, the MAP charge in the HR was almost the lowest in the EU market, totalling on average a mere 0.73 EUR/tkm. HAKOM je u 2022. započeo projekt „Analiza raspodjela troškova i izračuna naknada za MPP upravitelja infrastrukture u RH“. Svrha ovog projekta bila je provođenje zakonske obveze HAKOM-a sveobuhvatnom analizom procesa knjiženja i raspodjele troškova te provjerom metodologije na temelju koje je prosječna naknada za MPP u RH trenutno među najnižima u EU-u.

Figure 4.8 Charges for MAP in EU Member States



Source: Group - Rail¹⁹

In 2022, HAKOM launched the project “Analysis of the cost distribution and charges calculation for MAP of infrastructure manager in the HR”, aiming to comply with its regulatory obligation through comprehensive analysis of the process of cost reporting and distribution, and review of the methodology used, pursuant to which the average charge for MAP in the HR is currently among the lowest in the EU.

Of the rail services provided, charges for MAP make up the most important item in HŽI's revenues. In addition to the RA and the ARSM, the manner in which this charge is calculated is laid down by [Directive 2012/34/EU](#) establishing a single European railway area and Commission Im-

¹⁹ IRG-Rail, Independent Regulators' Group-Rail.

plementing [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 objective of this project was primarily to analyse whether statutory provisions and the provisions of the said directive and regulation on the manner of cost distribution to direct (acceptable) and unacceptable were correctly implemented and to analyse the reason for selecting and the manner of calculating all components (variables) of the formula for calculating the charge for MAP.

Revenues and charges of HŽI

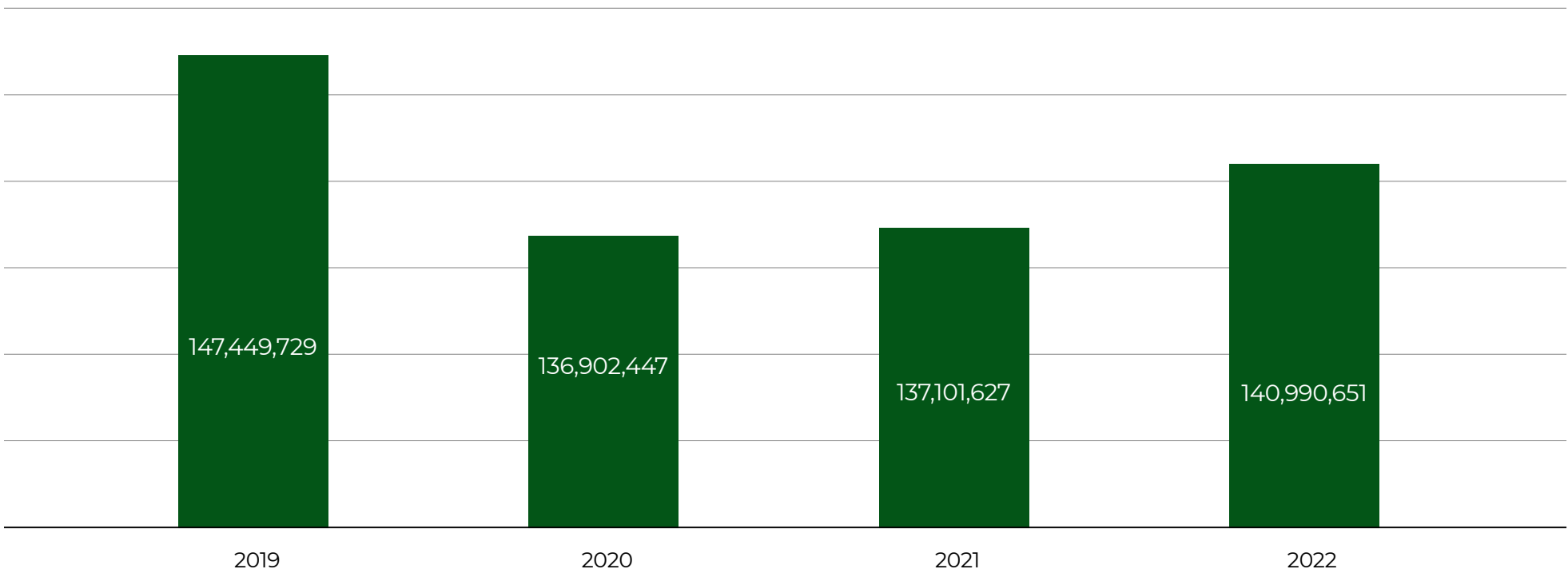
The charges for rail services collected by the HŽI are related to MAP, access to service facilities and services provided at those facilities, including track access to those service facilities and additional and auxiliary services. In accordance with Commission Implementing Regulation (EU) 2015/909 the level of the charge 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 the NS, in accordance with

the provisions of the RA. HŽI and service facilities operators are completely independent in the calculation of the price for access and usage of railway services, while HAKOM’s role is to supervise the infrastructure manager and service facilities operators when setting these charges. For instance, whether the correct methodology has been applied. HAKOM is authorised to supervise negotiations between the applicants and infrastructure manager on the amount of charges for railway services to ensure equal and non-discriminatory right to service utilisation.

In the first year of the pandemic, HŽI revenues from rail services declined by approximately 7 percent to start recovering slowly in the next year. In 2022, HŽI revenues were almost 3 percent higher than in the year before.

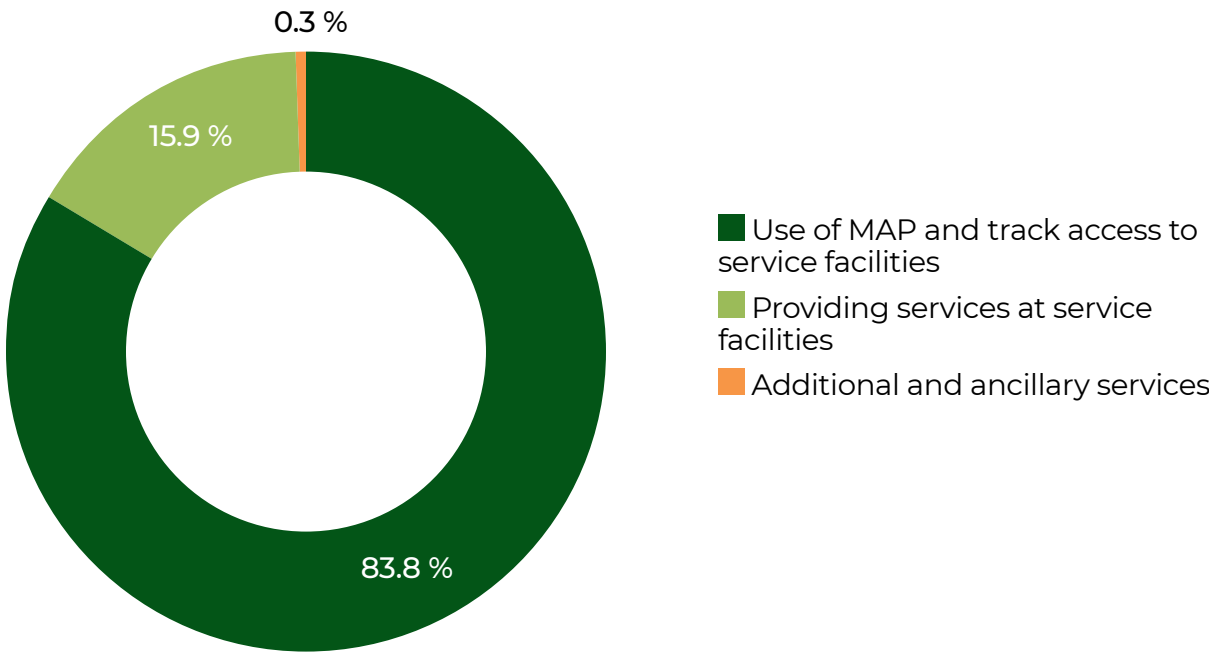
HŽI continued to generate its greatest revenues from MAP, which in 2022 accounted for 83.8 percent of revenues generated from providing rail services. Of other services, the greatest decline was registered in relation to the weighting service and services of shunting for weighting, where revenues from this service went down by 66 percent in 2022 from the previous year. Although revenues from the transport of exceptional consignment increased from 2021, it continued to account for less than 1 percent of the share in total revenues from rail services.

Figure 4.9 HŽI revenues from railway services (in HRK)



Source: HŽI

Figure 4.10 Shares of rail services in HŽI revenues



CHAIRING THE IRG RAIL

IRG-Rail was established in 2011 as the organisation for cooperation, information exchange and sharing of best practices among independent national railway regulators in order to face current and future regulatory challenges in railways and to promote a consistent application of the European regulatory framework. In 2022, HAKOM chaired the IRG-Rail, while the year before it had a co-chairing role.

In 2022, two strategy committee meetings were held, in February and September, two network meetings, in May and October, and two plenary assemblies in May and November. HAKOM also hosted the Working Group for Access to Service Facilities. Meetings were also held with different organisations within the railway system, such as the Alliance of Passenger Rail New Entrants (ALLRAIL), European Passengers' Federation (EPF), European Rail Freight Association (ERFA) and Rail Net Europe (RNE) on building up common understanding to meet the challenges of the railway sector lying ahead.

During the year when it was chair, HAKOM placed the focus on regulatory aspects of the use of advanced technologies including algorithms, machine learning and artificial intelligence²⁰ in line with the adopted Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence. The results of the research conducted were presented at the plenary assembly in May. The use of these technologies provides for collection and processing of market data, strengthening of railway competitiveness and supporting intramodality in the transport of goods and passengers. If implemented in a timely manner, these technologies will enable railway development as the ecologically most acceptable means of transport. From the regulatory standing point, it is necessary that these technologies are not used to disrupt market competition and to discriminate. Regulators also need to educate their experts in a timely manner.

During the year of its presidency HAKOM initiated a research on the manner of improving cooperation within working groups. The research enabled IRG-Rail to additionally assess the current human resources limitations faced by regulators and spur discussion and systematic search for available incentives in their home states to result in greater representation of experts in working groups.

²⁰ COM (2021) 206: Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative Acts.

In 2022, IRG-Rail continued its monitoring of the impact of and the recovery from the pandemic in the European rail market, with the Tenth Annual Market Monitoring Report focusing on these aspects. This was the third publication that focused on impacts of the pandemic which significantly affected the European transport system since 2020. IRG-Rail will continue monitoring these issues together with burning issues such as changes in the prices of energy and their impact on transport. In addition, IRG-Rail is encouraged to continue monitoring developments in the European railway sector through feedback obtained from relevant stakeholders, including the European Commission. Finally, IRG-Rail was invited by the European Union Agency for Railways (ERA) to join its railway statistics groups with four persons being appointed as IRG-Rail representatives.

As over previous years, IRG-Rail provided the European Commission with expert advice based on experiences and regulatory practice of national regulators, which enabled IRG-Rail and its members to participate in shaping initiatives in the area of European railway legislation.

REGULATORY ACTIVITIES

Infrastructure manager's Network Statement (NS)

Pursuant to its competence in the segment of regulating the rail services market, HAKOM continuously checks the content of the NS and in the draft phase of the document analyses the content and compliance with regulations, as well as notifies the infrastructure manager on possible necessary amendments to disputed provisions. In addition, HAKOM monitors and reviews amendments to 2022 NS, 2023 NS and 2024 NS on an ongoing basis. In relation to the 2023/2024 train schedule, HAKOM submitted to HŽI objections and questions aimed at increasing the transparency of data available in the NS. The objections were related to the lack of information regarding the service of track access to pumping facilities provided by the HŽI, that is individual train stations and regarding the lack of direct links to descriptions of service facilities of other service facility operators. In addition, questions were submitted as regards the harmonisation of working hours of border train stations with market needs. HAKOM established that with regard to 2024 NS infrastructure manager changed the methodology for the calculation of the minimum access package and charges for the minimum access package in the part relating to the changes in the equivalent of weight category, line parameters, train path equivalent in passenger and freight transport, the locomotive train path equivalent and basic price per train kilometre, whereby the MAP charge increased from 15 to 17 percent.

It was established that only a few service facilities operators complied with the requirements of Article 25, paragraph (1) of the RA and submitted the descriptions of service facilities to HŽI for publication within the framework of the 2024 NS, thus creating the preconditions for more in-depth regulatory activities in 2023.

Providing a non-binding opinion on HŽI Infrastruktura d.o.o. Draft 2022 Business Plan (including the 2022 Investment Plan)

Pursuant to Article 20 of the RA, the infrastructure manager is obligated to adopt a business plan by end of February of the year to which the plan pertains, at the latest. It is also obligated prior to adopting a business plan to ensure existing applicants, and upon request potential applicants, access to relevant data, as well as give them the opportunity to express their opinion in connection to access and utilisation conditions, efficiency, availability and development of railway infrastructure. The draft business plan with possible opinions of existing, or potential applicants, must be delivered to HAKOM, which provides a non-binding opinion.

It was concluded in the opinion that in essence draft business plan was prepared in great detail and comprehensively and that it contains all the parts that a plan of a company of HŽI size and importance should have. Drafted in this way it provides a good quality foundation for control procedures, that is, review of planned and realised results.

If one reviews plans vis-à-vis revenues realised in the previous periods, it is noticeable that there were no major discrepancies in financially important categories and sub-categories, leading to the conclusion that revenue plans were realistically projected, i.e. that realised revenues were at the satisfactory level of planned revenues.

It is HAKOM's opinion that activities planned by HŽI were described in detail and included a large number of useful information not only for HŽI but for all stakeholders. However, comparison with planned investment activities for the previous two years made it evident that the amounts of realised investment activities did not follow the planned amounts. For example, the revision of the investment plan in 2020 reduced the funds for projects co-financed from EU funds by HRK 1,033,100,000, or 66 percent, from the initial 2020 investment plan. Due to exceptional, not only financial but also general economic importance of these investment projects, it is necessary to plan projects and amounts that are feasible. When these investment projects are realistically and objectively planned, efforts should be invested to realise planned projects in their full scope and within set time limits since they have a considerable impact on traffic and quality of transport services.

Organising round tables

The 13th Round table and a panel discussion on the topic “Liberalisation of the rail transport market in the HR – on the eve of the 10th anniversary of new freight carriers emerging” were co-organised by HAKOM and the Croatian Chamber of Economy (CCE). The Railway Act, which entered into force on 23 July 2013, completely liberalised the market for freight railway transport, ensuring the right of access to rail infrastructure for the provision of all types of rail freight transport and free access to infrastructure connecting maritime and inland waterway ports and other service facilities. It was concluded that the liberalisation of the rail services market opened new markets and strengthened the national economy as part of a single EU railway market, while HR's geographic position brought comparative advantages in the development of traffic in general, with a significant role of rail traffic. Liberalisation strongly contributes to changes in the operations of market stakeholders, ensures choice, stimulates quality and market competition.

The 14th Round table and a panel discussion on the topic “Croatia in the railway network of the TEN-T and RFC corridor – are we connected to Europe?” organised jointly by HAKOM and Rail Alliance gathered the representatives of carriers, HŽI, the Ministry of Sea, Transport and Infrastructure and the Department of Logistics and Mobility of the University North. They discussed the position of the HR in rail corridors and whether Croatian railway paths and ports were well mapped in European corridors, as well as what persons responsible are undertaking to gain a better status and thus the opportunity for financing reconstruction and modernisation. At times when European railway maps are being drawn and the financing plan for the next 10 years is being deliberated, the EC is discussing amendments to the expansion of the TEN-T network in Croatia.

Regulatory financial statements (RFS)

To prevent the infrastructure manager, service facility operators or rail carriers to possibly disrupt market competition, especially through excessive and/or discriminatory charges for rail infrastructure access, unequal realisation of access rights, mutual incentives, excessive and/or discriminatory prices of additional or auxiliary services, HAKOM undertook all the necessary monitoring measures, including verifying compliance with the provisions on accounting separation. RFIs are therefore regularly used to collect financial data of the infrastructure manager, required to paint a picture on the competitiveness in the rail services market, primarily for monitoring and control of the structure and the level of charges for access to railway infrastructure.

Instructions for preparing RFS were created in 2022 for incumbent carriers which are at the same time service facilities operators. These instructions are also exclusively related to the content and form of collecting accounting information and regulatory reporting. Reporting business events by separately reporting expenses and revenues by individual service will enable oversight over systematic cost distribution. This will contribute to the development of the single European market for railway services through cooperation and exchange of information with regulatory authorities of the rail services markets of other EU Member States and the European Commission. All three companies submitted their RFS in a timely fashion, and all statements were submitted in line with specified instructions.

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

During September, October and November 2022, pursuant to its statutory mandate, HAKOM carried out regular consultations with the representatives of users of railway freight and passenger transport services using a predefined online survey questionnaire. The survey included 20 users of rail freight transport services, which graded the quality of transport services and courtesy of carriers and service facility operators. The analysis of the answers indicated that most companies used rail transport daily or several times a week. As the major reason for opting for rail transport they listed the availability of transport and favourable prices, and as reasons for dissatisfaction they listed slowness and disorganised service as regards facilities operators, and lack of carriages, delivery deadlines, management incompetence, lack of workforce and inconsistency when it comes to carriers. Most users felt that rail transport would be more competitive when infrastructure manager would plan its works, or plan them more in advance, on rail infrastructure and when these works would be completed in accordance with plans, as well as when it would improve the way in which border crossing of trains are organised. In addition, they stated that carriers should minimise delays, modernise, and increase transport capacities. improve notification systems, as well as exert influence over infrastructure manager with the objective to better coordinate track closing and train traffic organisation. The critical spots when it comes to rail freight transport are predominantly related to rail infrastructure (frequent and uncoordinated closing and reconstruction of lines, slowness, lack of reliability and poorly organised cross-border clearance of trains) and the operation of rail carriers (prices, informatisation, dated vehicle fleet, lack of reliability).

HAKOM conducted regular consultations with the representatives of users of rail passenger transport services, also through a predefined online survey questionnaire. A field survey was conducted for the first time, employing the face-to-face survey method at train stations in 5

cities (Zagreb, Split, Rijeka, Osijek and Varaždin). The survey was conducted from September to November 2022 and included 632 participants.

Users remained satisfied with the price, accessibility, and comfort of travel, as well as service by train staff and staff at facilities. However, passengers often complained about lack of information provided on train delays and stops.

Surveyed passengers confirmed the dissatisfaction trend with the duration of travel, train punctuality, availability of information on service disruptions, cleanliness of trains and facilities. The quality standard of the above is at relatively low level, as HAKOM has been continuously alerting the passenger carrier and infrastructure manager, among other things through its inspections. The accessibility of facilities, especially for persons with disabilities and reduced mobility, should be harmonised to comply with technical specification for interoperability for persons with disabilities and reduced mobility.

More details on the analysis of the survey of users of railway freight and passenger transport services are published on [HAKOM's website](#).

Regulatory dispute

In September 2022, HAKOM received a request by the rail carrier ENNA TRANSPORT d.o.o. in connection to services and charges of HŽI pursuant to Article 15 of ARRS. The applicant applied for a reduction in charges charged by the infrastructure manager. Namely, the minimum access package charge for freight trains, where the weight category of train path in freight transport (TR), the basic price per train kilometre for freight trains (Cv1km), as well as line parameters of lines belonging to a line category (L) and charges for reserve capacity/non-usage of allocated train paths should be corrected downwards. The carrier claimed that its request pertained to the 2021/2022 timetable in force and future timetables and Network Statements until the infrastructure was brought to the satisfactory level. An oral discussion was held, at which the applicant supplemented its request and asked that a system of service quality indicators be introduced, as well as a dispute settlement system. A decision was adopted, partially granting the applicant's request, whereby HŽI was ordered to specify and put in place a comprehensive system of service quality indicators for all rail freight carriers in accordance with Article 51 of the RA, as well as to introduce a special system of resolving disputes connected with the system of quality indicators, pursuant to Annex 5, item 9 (g) of the RA, starting from the entry into force of the 2023/2024 timetable.

INSPECTION ACTIVITIES

at protecting the end users of rail services, the needs of special social groups and just implementation of laws and other regulations under its competence. The objective of these inspection supervisions is to ensure transparent and efficient market competition and access to public passenger transport.

By implementing Regulation (EC) 1371/2007 of the European Parliament and of the Council on rail passenger's rights and obligations, in addition to tasks related to inspection supervision, HAKOM ex officio analysed procedures related to the protection of passenger rights, indicated omissions and stimulated the provision of better quality services offered in rail passenger transport. HAKOM, thus, ex officio initiated the procedure for amending the general conditions of the transport agreement of the rail passenger carrier and ordered the elimination of irregularities and compliance with national regulations.

In 2022, HAKOM conducted 10 inspection supervisions and 261 inspections and controls for the purpose of ensuring compliance with individual regulatory provisions, provisions of special implementing regulation or Articles of Regulation (EC) 1371/2007. The infrastructure manager was the subject of 6 inspection supervisions and passenger carrier of 4 inspection supervisions. Special focus was laid on passenger rights, although some inspection supervisions also dealt with issues related to infrastructure access.

In 2022, HAKOM ex officio verified the implementation of the RA and subordinate legislation, especially in relation to the obligations of the infrastructure management to provide information to passengers on train timetables. As part of inspection supervision of HŽI with regard to its fulfilment of obligations under the [Ordinance on timetables in railway transport](#) and preparation and publication of train timetable excerpts for passengers 134 inspections of train stations and stops were conducted. Inspection supervision over HŽ Putnički prijevoz d.o.o. was also conducted in relation to verifying the fulfilment of the obligation specified in the Ordinance, under which HŽ Putnički prijevoz is obligated to publish in electronic form on its website the departure and arrival of all its trains, at least seven days prior to the beginning of the new timetable or amendments or supplements to the timetable.

Inspection supervisions also verified the implementation of the RA with regard to other obligations of the infrastructure manager. In particular, the obligation of the infrastructure manager relating to the preparation of urgent measures plan stipulating which authorities need to be notified in cases of serious accident or disruptions in train operations as well as the obligation of the infrastructure manager to, once a year, publish the average annual efficiency level achieved

by railway carriers based on basic parameters agreed within the framework of the transport quality indicator system.

The railway accident near Rajići, near Novska, prompted the initiation of inspection supervision over HŽ Putnički prijevoz d.o.o. for the purpose of verifying compliance with the obligation under Article 13 of Regulation (EC) 1371/2007 relating to passengers killed or injured in a train. In the event of a tragic outcome such as death or injuries sustained in an accident, the subject under supervision is obligated, without delay and not later than 15 days after the establishment of the identity of the natural person entitled to compensation, make such advance payments as may be required to meet immediate economic needs on a basis proportional to the damage suffered. An advance payment may not be less than EUR 21,000.00 per passenger in the event of death. As part of all inspection supervisions decisions were issued by which inspectors ordered subjects under supervision to comply with regulations.

Inspection supervisions also verified the conditions and availability of information at facilities and on trains, with special attention being awarded to providing easily accessible information on nearest train stations with staff and directly available assistance for persons with disabilities and persons with reduced mobility at train stations without staff. Two inspection supervisions were carried out, consisting of altogether 110 inspections.

Further, HAKOM carried out inspection supervisions of the availability and provision of information on options for ticket purchase when there is no ticket office or machine at the train station of their departure and provision of information prior to the travel at 36 offices pursuant to the obligations under Article 9, paragraph (5) and Annex II, Part I of the Regulation.

In 2022, inspection supervision was continued pursuant to Regulation (EC) 1371/2007 under which railway passenger carrier is obligated to provide the passenger information during the journey at least on on-board services, delays, next station, main connections and security and safety issues. HŽ putnički prijevoz (HŽPP) continued not to comply with the inspector's decision, failing to fully meet the obligation of providing information to passengers during the journey.



05

RF SPECTRUM MANAGEMENT

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RF SPECTRUM MANAGEMENT

Under the ECA adopted in 2022 radiofrequency (RF) spectrum management and use is recognised as a natural limited resource of interest to the Republic of Croatia, and its efficient management as one of HAKOM’s main tasks. When performing its task of RF spectrum management, HAKOM carries out the procedures of determining spectrum use, creation of allocation plans, frequency plans and defining network technical parameters, issuing licences and approvals for the RF spectrum use and spectrum control and monitoring on the national and international level, adhering to the principles of objectivity, transparency, competitiveness, proportionality and non-discrimination.

The RF spectrum as a limited natural resource of interest to the Republic of Croatia is of great importance for the development of electronic communications, with broadband networks and services being expected to provide an irreplaceable contribution to the development of all branches of the industry and economy and the digital society as a whole, both across the EU and in

the HR. The RF spectrum use in the HR is internationally coordinated in accordance with the regulations of the International Telecommunication Union (ITU), European Conference of Postal and Telecommunications Administrations (CEPT), and international implementation treaties, and is additionally harmonised among EU Member states and neighbouring countries. The RF spectrum management and control ensure smooth operation of radiocommunication services and indirectly the safety of human life and the protection of health and property.

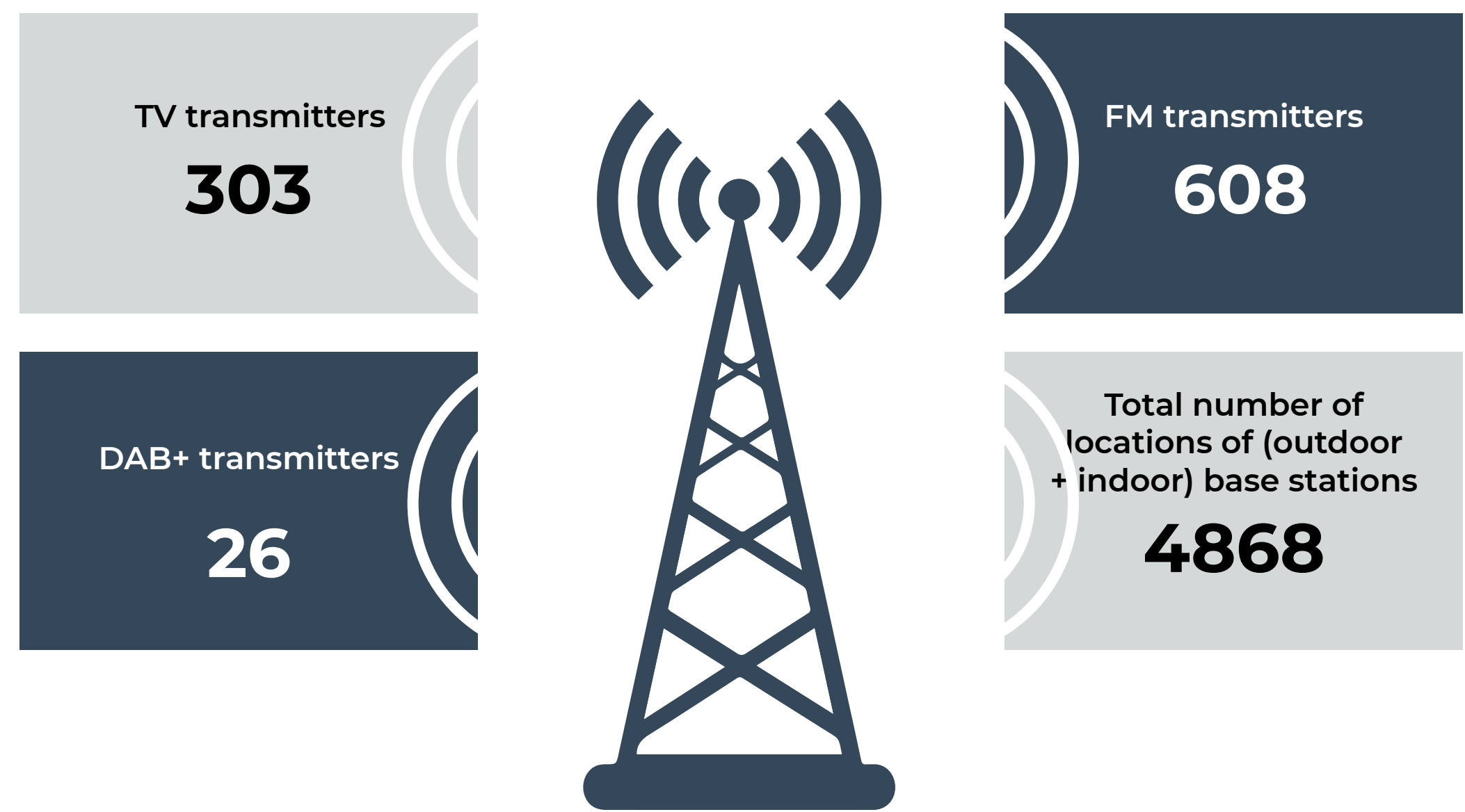
EFFECTIVE USE OF THE RF SPECTRUM

Continued the trend started during the corona virus pandemic in 2020 and 2021, which contributed to further increase in the demand for the RF spectrum in the HR to satisfy the needs to increase the capacities of existing electronic communication networks or making new ones operational.

In this context, HAKOM recognised the needs of its users and in 2022 planned the upgrade of the existing application for submitting applications and issuing licences electronically (e-Licenses) with two additional services for satellite and aeronautical communications. However, during the project preparation it was decided to concurrently develop and implement the solution for the remaining three types of licences, in amateur service and for mobile and fixed radio stations, which will speed up the planned process of HAKOM’s e-operation development and thus round off the e-Licenses services, with HAKOM offering its users the possibility of electronically submitting applications for all licences for the use of the RF spectrum issued at request, altogether 8 of them. When the project is completed in 2023, this will additionally contribute to HAKOM’s e-operations and the improvement in the quality of provided services, which has already been recognised by users using the existing e-Licenses services (use of spectrum for broadcasting, microwave links and vessels) who submitted more than 94 percent of requests electronically. In addition to the listed applications for licence issuance, users are also provided with an application for Licence overview, enabling overview of general and individual licenses for RF spectrum use.

The entry into force of the new ECA in 2022, the changeover to the new currency, the euro, and HAKOM adopting a financial plan, called for the adoption of the Ordinance on payment of fees for HAKOM’s business operations, which adjusted fee prices and prescribed them in the euro. Pursuant to the ECA, HAKOM had a year to adopt new subordinate legislation within its competence and thus several regulations covering the area of RF spectrum management. The first to be adopted was the Ordinance on amateur radio communications, an ordinance regulating in

Figure 5.1 Basic data on radio stations



more detail the requirements for the radio-amateur exam and the terms and conditions for issuing licences for the use of radiofrequency spectrum in amateur service, the terms and conditions for issuing licences to foreign citizens and the procedure for remote control of amateur radio station in the territory of the Republic of Croatia. The Ordinance also laid down the new type of amateur radio station in amateur satellite service: for terrestrial stations in amateur satellite service and for space objects performing activities in space in the amateur satellite service.

Within the framework of the e-Agency programme, e-initialling, e-signature and e-stamp were introduced, as well as individual electronic signing of documents and authentication of electronically signed documents. This service enables the issuing of electronic licences and users to have insight into electronic licences via different electronic channels.

Activities aiming at ensuring the frequency resources for the national coverage of the HR within the framework of the fixed-satellite service via a geostationary orbital position in accordance with Appendix 30B of ITU's Radio Regulations were continued in 2022. After HAKOM opted for the position at 63°E that enables the coverage of Europe, Africa, Asia and the western part of Australia, the process of international alignment with earlier registered satellite networks in the fixed-satellite services continued. To make this process easier, HAKOM in 2022 continued its activities within the framework of the initiative for amending the provisions of Appendix 30B to ITU Radio Regulations so that countries that up to the present had no allocated geostationary position for national coverage within the framework of the fixed-satellite service get priority and a special status during international alignment. Amendments to the provisions of Appendix 30B to ITU Radio Regulations are expected to be made during the next World Radiocommunication Conference (WRC) to be held late in 2023.

To cater to the previously expressed interest for the launching of the Croatian nanosatellite in the low earth orbit (LEO), HAKOM continued adjusting national regulations defining the rights and obligations of the operators of space activities. This was additionally regulated by the above-mentioned Ordinance on amateur radio communications which laid down the obligations of licence carriers for amateur radio station in amateur satellite service in case of performance of space activities.

A meeting was held within the framework of the 5G working group, as part of which the results of the implementation of 5G networks were presented in accordance with the licences allocated for pioneer bands 700 MHz, 3600 MHz and 26 GHz at the national level, i.e. the RF 3600 MHz spectrum at the regional level. The conditions from the licences are also replicated by the measures from the National Plan for Broadband Development in the Republic of Croatia in the period from 2021 to 2027, and 5G implementation at the national level is carried out in accordance with

issued licences. Certain difficulties have been observed with licence carriers at the regional level, potentially leading to delays in the fulfilment of conditions defined in the licences, which has subsequently resulted in their request for the postponement of the initially set deadlines.

Since licences for the use of the RF spectrum for frequency bands currently used for 2G, 3G and 5G (800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz) are expiring in 2024, to ensure regulatory predictability as well as stable and predictable conditions for investments in electronic communication services using the RF spectrum, in 2022, HAKOM started with preparations and the implementation of the procedure of allocation of the said spectrum as described in more detail in this section.

The continuation of the second phase of the construction of the DAB+ network continued in 2022, ensuring coverage of 96 percent of the population of the Republic of Croatia and coverage of 93 percent of all motorways, which is presented in more detail further down in this section.

Due to technological advancements and market development in the segment of short-range devices and radio devices with a negligible risk of interferences, and for the purpose of adopting implementing decisions of the European Commission and alignment with the ERC Recommendation 70-03 and other decisions of the Electronic Communications Committee (ECC), new or amended licences were issued. HAKOM thus issued new general licences for tracking and collecting data in the 915 to 919.4 MHz frequency band, earth stations on board aircraft in fixed-satellite service within frequency bands of 12.75 to 13.25/ from 10.7 to 12.75 GHz and earth stations in fixed-satellite service in the frequency band from 48.2 to 50.2 GHz.

At HAKOM's proposal, the MSTI adopted the Ordinance on amendments to the Ordinance on the allocation of the radiofrequency spectrum in 2022, changing the Radiofrequency Allocation Table.

Table 5.1 RF spectrum management – documents issued

Type of documents issued	Quantity
RF spectrum use licences	5140
Approvals for services of particular importance	30
Compliance certificates	14.447
Fiscalisation certificates	9

Within the scope of its regular activities of RF spectrum management, HAKOM issues licences for the RF spectrum use, approvals for services of particular importance and compliance certificates to radio stations, and, in accordance with the Ordinance on fiscalisation in cash transactions, certificates confirming inability to establish an internet connection to exchange data with the Ministry of Finance and the Tax Authority. The number of issued licences and compliance certificates increased from 2021.

By participating in the work of international working groups, primarily CEPT CPG (Conference Preparatory Group), HAKOM started preparing for the World Radiocommunication Conference usually organised every four years by the ITU.

The preparation process starts at the end of the previous WRC and includes the preparation of surveys related to the items on the agenda of ITU working groups and preparatory conferences, CPMs (Conference Preparatory Meeting). Radio Regulations (RR) that represent the basic international agreement on the manner of use of radio frequencies and satellite orbits at global level and define the procedures for spectrum and orbit allocation, technical conditions for spectrum use, as well as for the allocation of frequency bands in the Allocation Table are amended at each WRC.

PUBLIC AUCTION FOR PUBLIC MOBILE COMMUNICATIONS NETWORK

The licences to operators of public mobile communications networks for the use of the RF spectrum at the national level in the frequency bands 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz expire at the end of 2024. Therefore, HAKOM, to ensure regulatory predictability, stable and predictable conditions for investments in electronic communications services using the RF spectrum, after having completed public consultations in 2021, opted for spectrum allocation by means of a 2022/2023 public auction. In addition, since part of the spectrum remained unallocated in the RF 2021 spectrum allocation within the frequency band of 3600 MHz at the regional level, HAKOM decided to offer it to interested bidders again in these auction proceedings.

As part of preparations for the said RF spectrum allocation proceedings, HAKOM prepared and carried out public procurement proceedings for the procurement of consulting services and adequate software solution for designing and carrying out the electronic process of public auction and confidential bidding for all participants, as is common practice for regulators in the EU and globally.

In cooperation with consultants, HAKOM prepared an Information memorandum on the public auction framework for the allocation of rights for the use of the radiofrequency spectrum in the 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2600 MHz and 3600 MHz frequency bands, which underwent public consultation proceedings in August. Based on received and accepted comments, documents were supplemented, and a public auction was launched for the issuance of licences for the use of the RF spectrum for mobile communications networks at national and regional level.

In addition, for the purpose of harmonising the duration of all new licences for the use of RF spectrum in 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands as of October 2024, HAKOM carried out public consultations on amendments of the conditions of currently applicable licences, so that at the public auction the entire spectrum in the said frequency band could be allocated as of the same date, thus ensuring harmonised and efficient use of the RF spectrum.

Public auction proceedings were launched on 12 October 2022. The necessary conditions for participation in the public auction at the national level for the 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands were met by AI Hrvatska d.o.o., Hrvatski Telekom d.d. and Telemach Hrvatska d.o.o. Regarding the frequency band 3600 MHz, Digicom d.o.o. and Markoja d.o.o. met all the necessary conditions for participation in the public auction at the regional (county) level.

The bidding procedure was conducted at the beginning of 2023 and the decision on the selection of the best bidders and licence issuance was adopted on 8 March 2023. The bidding process included the main bidding phase and the frequency block allocation phase. In the main bidding phase, in one or more rounds, bidders simultaneously submitted bids for the right to use one or more frequency blocks for all frequency bands, the so-called Simultaneous Multi-Round Auction (SMRA), which resulted in a total of 309 rounds. The main bidding phase, which determined the quantity of the radiofrequency spectrum to be allocated to each bidder, was then followed by the allocation phase that determined the final distribution of the radiofrequency spectrum among bidders, i.e. the exact position of each bidder's frequency blocks within a certain frequency band, based on bidding via "sealed" offers for each frequency band individually. Licences are issued for a period of 15 years for all allocation areas with the possibility of extension at expiry for a maximum of 5 years, pursuant to EU regulations, i.e. pursuant to the new ECA.

The results of the bidding in the public auction procedure for 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands at the national level:

Frequency band	Operator	Main phase – quantity (MHz)	Position allocation phase (MHz)	Initial price (EUR)	Amount – initial phase (EUR)	Amount – allocation phase (EUR)	Total (EUR)
800 MHz	A1 Hrvatska	2 x 10	811-821/852-862	14,000,000,00	19,600,000,00	-	19,600,000,00
	Hrvatski Telekom	2 x 10	801-811/842-852	14,000,000,00	19,600,000,00	16,011,00	19,616,011,00
	Telemach Hrvatska	2 x 10	791-801/832-842	14,000,000,00	19,880,000,00	131,011,00	20,011,011,00
900 MHz	A1 Hrvatska	2 x 15	900-915/945-960	21,000,000,00	28,840,000,00	-	28,840,000,00
	Hrvatski Telekom	2 x 15	885-900/930-945	21,000,000,00	28,840,000,00	202,50	28,840,202,50
	Telemach Hrvatska	2 x 5	880-885/925-930	7,000,000,00	9,520,000,00	200,50	9,520,200,50
1800 MHz	A1 Hrvatska	2 x 25	1760-1785/1855-1880	10,000,000,00	27,340,000,00	-	27,340,000,00
	Hrvatski Telekom	2 x 30	1710-1740/1805-1835	12,000,000,00	32,940,000,00	80,385,00	33,020,385,00
	Telemach Hrvatska	2 x 20	1740-1760/1835-1855	8,000,000,00	21,880,000,00	30,902,00	21,910,902,00
2100 MHz	A1 Hrvatska	2 x 15	1920-1935/2110-2125	6,000,000,00	30,000,000,00	-	30,000,000,00
	Hrvatski Telekom	2 x 25	1955-1980/2145-2170	10,000,000,00	50,240,000,00	-	50,240,000,00
	Telemach Hrvatska	2 x 20	1935-1955/2125-2145	8,000,000,00	40,160,000,00	2,883,00	40,162,883,00
2600 MHz	A1 Hrvatska	2 x 25	2545-2570/2665-2690	3,500,000,00	3,500,000,00	-	3,500,000,00
	Hrvatski Telekom	2 x 25	2520-2545/2640-2665	3,500,000,00	3,598,000,00	-	3,598,000,00
	Telemach Hrvatska	2 x 20	2500-2520/2620-2640	2,800,000,00	2,800,000,00	-	2,800,000,00

The total amount of fees for the use of the RF spectrum achieved at the public auction for 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands at the national level was EUR 338,999,595.00.

The coverage of 99.4 percent of the population in the territory of the Republic of Croatia by 31 December 2029 was set as a requirement for frequency bands at the national level, with the minimum reception signal strength of -110 dBm. This, in most cases, ensures a satisfactory service quality, i.e. user experience in the use of the broadband mobile communication service with speeds of at least 10 (DL)/2 (UL) Mbit/s in open space.

The spectrum in the 3600 MHz frequency band that was not allocated in the 2021 auction was reallocated at the regional (county) level to create business opportunities for smaller, regional operators and encourage the variety of services and provide end users with greater choices. The outcome of the auction is shown in the following table:

Selected bidder	Allocation area	Main phase – quantity (MHz)	Initial price (HRK)	Main phase (HRK)	Allocation phase (HRK)	Total fee amount (HRK)
Digicom	Brodsko-posavska	20	19,000,00	19,000,00	-	19,000,00
	Krapinsko-zagorska	20+10	19,000,00	19,000,00	-	19,000,00
	City of Zagreb	10+10	38,000,00	38,000,00	-	38,000,00
Markoja	Bjelovarsko-bilogorska	30+10	28,500,00	28,500,00	-	28,500,00
	Karlovačka	30	28,500,00	29,450,00	-	29,450,00
	Ličko-senjska	10	1,900,00	1,900,00	-	1,900,00
	Osječko-baranjska	30	28,500,00	28,500,00	-	28,500,00
	Požeško-slavonska	30	11,400,00	11,400,00	-	11,400,00
	Virovitičko-podravska	30+10	11,400,00	11,400,00	-	11,400,00

Bidding at the regional level took place in 3 rounds in the main bidding phase, without the need to conduct an award phase.

The frequency block from 3400 to 3410 MHz was awarded to the bidder for the frequency block from 3410 to 3420 MHz free of additional charges, while the total amount of fees for the use of the RF spectrum that was achieved at the public auction for the 3600 MHz frequency band at the regional level was EUR 187,150.00.

The total amount of fees for the use of the RF spectrum at the national and regional level, which was achieved at the public auction, amounted to EUR 339,186,745.00. Fees collected through the auction are paid in full to the benefit of the state budget.

The currently granted licences for 800 MHz, 900 MHz, 1800 MHz, 2100 MHz and 2600 MHz frequency bands expire in 2024 so this allocation ensures the uninterrupted operation of public mobile communications networks and provision of services to end.

DIGITAL RADIO (DAB+) IN COMMERCIAL OPERATION

At the end of 2021, a licence was issued for the use of the radiofrequency spectrum for the provision of service of managing the electronic communications network for the digital radio, for multiplex MUX 1, in the territory of the Republic of Croatia (frequency band from 174 to 240 MHz). The licence in question was granted for a period of 15 years, thus, after four years of test broadcasting, the commercial operation of the digital radio (DAB+) in the Republic of Croatia was launched. The commercial operation was started with the coverage of 90 percent of the population of the Republic of Croatia by mobile reception and it was ensured by 10 digital radio transmitters. In 2022, the licence holder, company Odašiljači i Veze d.o.o., completed the second phase of the DAB+ network development, i.e. 16 additional transmitters, ensuring coverage that exceeds 96 percent of the population of the Republic of Croatia and motorway coverage of 93 percent.

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

In 2022, HAKOM continued its international activities of ensuring the technical preconditions for future operation of digital radio without interference. It also held numerous meetings with market stakeholders (Agency for Electronic media (AEM), OIV, HURiN, existing and future broadcasters) to popularise and increase interest in further development of the digital radio platform in the Republic of Croatia.

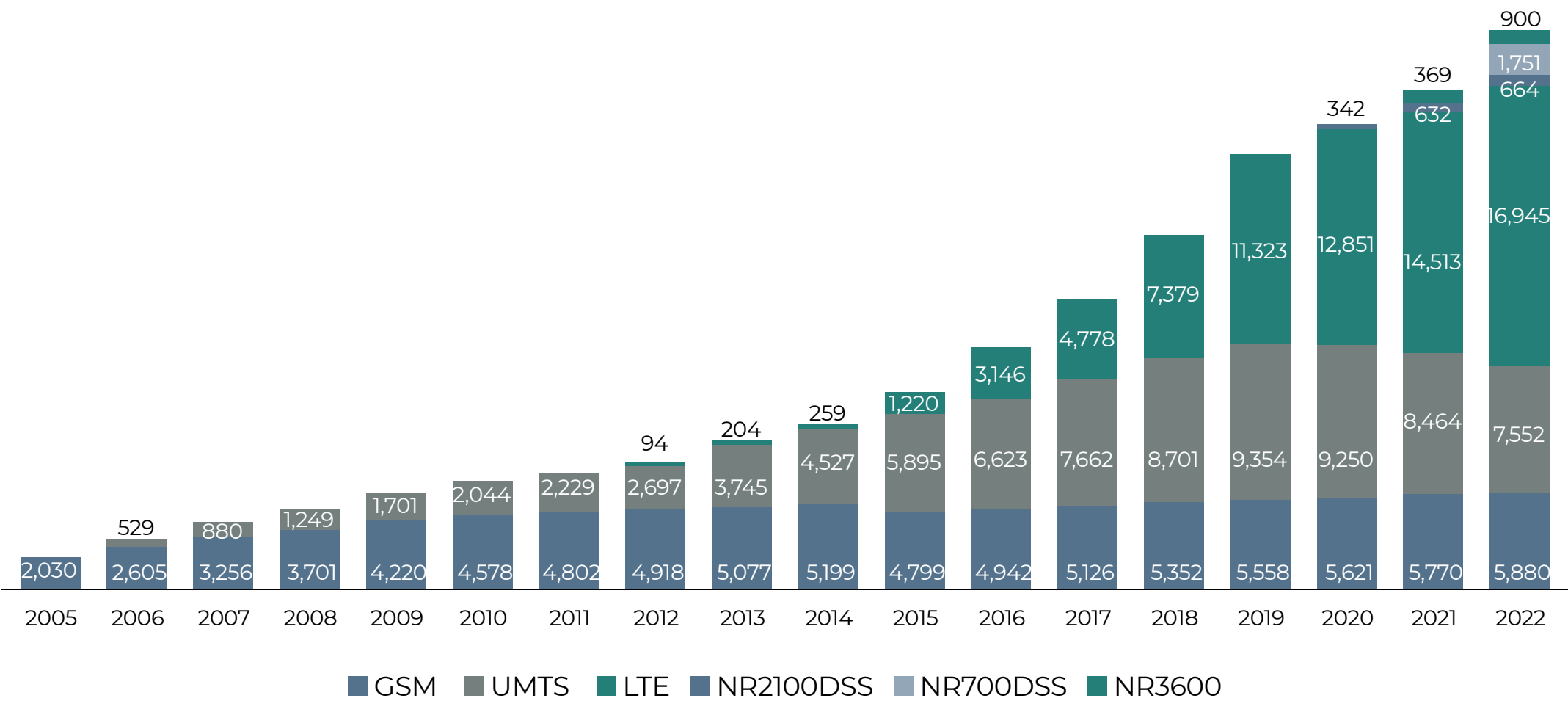
PUBLIC MOBILE COMMUNICATION NETWORKS

To facilitate the use of LTE, 5G NR and more advanced systems, HAKOM launched public consultations in June 2022 on the Allocation plan for 900 MHz and 1800 MHz frequency bands. The plan laid down the channel width of 5 MHz, not excluding the use for GSM systems with the channel width of 200 kHz in 900 MHz band.

The use of the RF spectrum in 3400 to 3450 frequency bands for Varaždin and Međimurje Counties, pursuant to granted licences to Eco Net, should have started on 5 November 2023. However, since the previous user freed up the said spectrum ahead of time, HAKOM, pursuant to Eco Nets expression of interest, conducted public consultations and altered the issued licence, enabling the licence holder to start using the spectrum in question from 8 June 2022.

HAKOM received requests for the extension of the time limit for putting into operation at least one base station in each county for which the licence was issued from several holders of licences for the use of RF spectrum in the 3600 MHz frequency band at the regional (county). This was subject to public consultations and the deadline was pushed forward to 12 August 2023.

Figure 5.2 Number of base stations



PRIVATE MOBILE COMMUNICATION NETWORKS

The number of issued new licences is close to the figures over previous years. Most new networks operate in digital mode.

The majority of new licences were issued to HEP which has been expanding its data network. Licences were issued for the operation of the HEP TETRA network in Istria, in the 410 to 430 MHz frequency bands. In addition, licences were issued for the operation of the new radar network of the Croatian Meteorological and Hydrological Service, in the 5 GHz frequency band.

In March, HAKOM conducted public consultations on the Allocation plan for 874.4 to 880.0 MHz, 919.4 to 925.0 MHz and 1900 to 1910 MHz frequency bands for Railway Mobile Radio (RMR). The said plan was adopted for the purpose of implementing Decision (EU) 2021/1730 and enabled new railway communications systems to make use of the mentioned bands.

The Croatian Firefighters Association still uses the analogue repeaters in 136 to 174 MHz frequency band. Licences were granted for their operation in the analogue network in certain counties. The decision of the Croatian Firefighters Association on their selection of the future unique firefighter's network to successfully resolve coverage and connect all units through a single system is still pending.

The models of the future broadband PPDR network (Public Protection and Disaster Relief Network) were deliberated with the Ministry of Defence. Pursuant to the provisions of the new ECA, work started on the new PPDR Ordinance, which is expected to be completed in 2023.

Cooperation was continued with the Ministry of Defence with regard to the issuance of necessary authorisations for the use of the RF spectrum, as well as for the purposes of NATO forces in the Republic of Croatia.

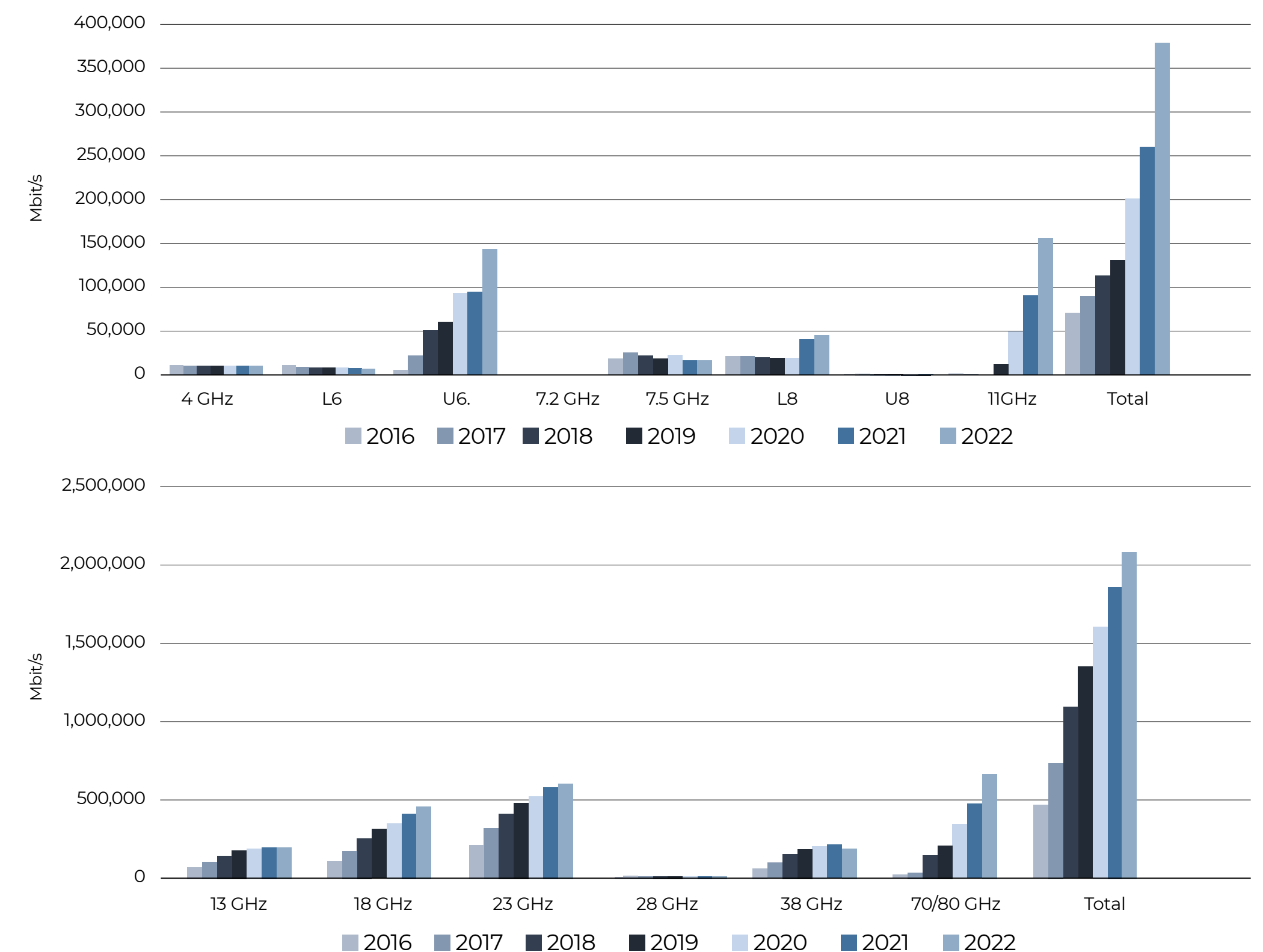
The international frequency coordination for the operation of private mobile communication networks with countries in the region, primarily Austria, Hungary and Slovenia, was continued.

MICROVAVE AND SATELLITE NETWORKS

Within the framework of its regular activities, adhering to the principles of effective use of the RF spectrum, HAKOM carried out frequency planning and international coordination of microwa-

ve links, thus ensuring continuous operation of microwave links in the territory of the HR and in international context, in accordance with the provisions of the International Agreement on the co-ordination of frequencies for the fixed service and the land mobile service (HCM Agreement). In 2022, 1,322 licences and authorisations for microwave links were issued. Of the total number of issued licences, 532 were for new links, 384 for amendments in technical parameters of existing links (predominantly relating to the increase in transfer capacity of the operator of mobile communication network) and 405 for extensions in the validity of existing links. The total number of active microwave links was 5118 at the end of 2022, which was 1.2 percent more than at the end of 2021.

Figure 5.3 transfer capacity of microwave links over the years



The upward trend in the growth of the transfer capacity of microwave links continued, with it rising by slightly more than 16 percent. This was a result of further upgrading of mobile communication networks and the increase in data traffic which is a trend expected to continue in the coming years, resulting in the continuation of the increase in transfer capacity of microwave links in the upcoming period. One was able to notice a significant growth of transfer capacity in the upper 6 GHz (U6), 11 GHz and 70/80 GHz, stable growth in the lower 8 GHz (L8), 18 GHz and 23 GHz frequency bands, stagnation in the 7.5 GHz and upper 8 GHz (U8) frequency bands and a decline in the lower 6 GHz (L6), 7.2 GHz, 13 GHz, 28 GHz and 38 GHz frequency bands.

The trend of significant growth in the transfer capacity in the 11 GHz frequency band continued (rising by 73 percent from the end of 2021) because in some locations in the 13 GHz frequency band it came to saturation and lack of available radio channels, so the 11 GHz frequency band served as an alternative. This was also reflected in the decline in transfer capacity in 13 GHz frequency band. There was also a noticeable decline in the number of connections and transfer capacity in the 38 GHz frequency band, used predominantly to connect base stations in mobile communication networks at distances shorter than 3 km. This is caused by the increasingly more intensive use of the 70/80 GHz frequency band (transfer capacity increasing by more than 40 percent from the previous year), which at similar distances may offer connections of several times higher transfer capacities and due to simplified licencing procedure at significantly lower cost. The average transfer capacity of digital microwave links in 2022 was 499 Mbit/s, which was an increase of almost 15 percent from the previous year.

As part of its regular activities, HAKOM processed requests for satellite link licences and applications for the installation of radio stations in the satellite service (operating on the basis of issued general licences). In 2022, two licences were issued for earth stations for the use of the RF spectrum in satellite service. Received coordination requests for satellite networks were analysed and processed in accordance with ITU procedures.

Considering the interest expressed previously to launch a Croatian nanosatellite in the LEO orbit, HAKOM continued adjusting national regulations defining the rights and obligations of operators of space activities. The new Ordinance on amateur radio communications was adopted in 2022, prescribing the obligations of licence holders for amateur radio stations in amateur satellite service in case of performance of space activities. In addition, HAKOM will provide the operators of space activities with regulatory support, primarily in relation to the ITU internationally mandated procedures.

After having provided all the necessary information on regulatory conditions for the operation of the non-geostationary satellite network Starling by the company SpaceX and the non-geo-

stationary satellite network of the company OneWeb, in 2022, HAKOM offered the same to the company Amazon, which, within the framework of the Kuiper project, plans to put its non-geostationary satellite network into operation.

Activities aiming at ensuring the frequency resources for national coverage of the HR within the framework of the fixed-satellite service via a geostationary orbital position in accordance with Appendix 30B of ITU's Radio Regulations were continued in 2022. After opting for the position at 63°E that enables the coverage of Europe, Africa, Asia and western parts of Australia, the international harmonisation with previously registered satellite networks in fixed satellite service is underway.

To make this process easier, HAKOM joined the initiative aiming to amend the provisions of Appendix 30 B of the ITU Radio Regulations so that countries that did not have an allocated orbital position for national coverage within the framework of the fixed-satellite service be given priority and a special status in international alignment. The group of countries that launched the initiative, along with the HR, comprises Bosnia and Herzegovina, North Macedonia, Serbia, Moldova, Georgia, South Sudan and Rwanda. Amendments to the provisions of Appendix 30 B of the ITU Radio Regulations are expected during the next WRC. With the allocation of the geostationary orbital position, the HR will have frequency resources ensured making it possible to achieve national coverage for links within the fixed satellite service in 4500 to 4800 MHz, 10.70 to 10.95 GHz and 11.20 to 11.45 GHz frequency band for downlink and 6725 to 7025 MHz and 12.75 to 13.25 GHz for uplink.

RADIO NETWORKS

Work on the planning and optimisation of analogue radio networks in the 87.5 to 108 MHz (FM) frequency bands continued in 2022, as well as on the international harmonisation of technical parameters of radio stations. This is a precondition for ensuring technical parameters for the improvement of the quality of coverage of existing radio broadcasters or for granting new concessions for the provision of radio media services.

There were altogether 154 analogue radio networks (FM) operating in the Republic of Croatia late in 2022: 11 public (HRT: 3 on state and 8 on regional level) and 143 commercial (3 on state, 18 on county and 120 on city/local level). There is still interest in launching new radio stations and in improving the coverage quality of existing radio stations. In 2022, HAKOM conducted several detailed technical analyses in order to, given the congestion of the radiofrequency spectrum,

determine the possibility of approving new requests. In addition, HAKOM prepared and regularly submitted to the AEM the technical parameters for opening a public tender for 6 concessions for performing the activity of providing the media service of radio and technical parameters for the extension of the coverage of three existing radio concessions. The AEM was also regularly submitted notifications on amendments of technical parameters for existing radio stations, as well as submitted responses to queries on the existence of technical conditions for awarding new concessions in individual areas.

Data on assigned and free frequencies and radio concessions were published in the database for the RF spectrum in the radio segment on HAKOM's website. The data were regularly updated in 2022 based on results of international coordination, planning and optimisation or cooperation with the AEM.

In addition to technical conditions for concessions, HAKOM processed applications for licences for the use of the RF spectrum in radio broadcasting and issued new licences for putting into operation new transmitters, it amended data from existing licences and renewed the licences for transmitters with expired licences. Based on the regulatory framework and ability to issue temporary licences, HAKOM approved and issued a number of licences for temporary use of the RF spectrum in radio broadcasting (FM frequency area) for the purpose of broadcasting radio programme for temporary events of entertaining, religious, cultural, sporting or educational character.

In addition to the activities on the digital radio platform (DAB+), HAKOM participated in a total of 12 multilateral coordination meetings in 2022 with representatives of competent authorities of neighbouring countries to ensure the preconditions for replanning the VHF III frequency band and to internationally harmonise the technical parameters for digital radio transmitters (DAB+). The objective of these activities was a more efficient allocation of available frequency resources in the VHF III band and international harmonisation of the technical parameters for transmitters to ensure future uninterrupted digital operation.

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

TELEVISION NETWORKS

In 2022, there were 4 terrestrial digital television networks with national coverage in the Republic of Croatia. All national and local free-to-air networks (multiplexes M1, M2 and L1) transmit DVB-T2, H.265/HEVC encoded signal in HD quality. Two national networks transmit DVB-T2 multiplex MUX C and MUX E, H.264/AVC encoded signal. Within multiplexes MUX C and MUX E EVO TV transmits pay-TV programmes.

In accordance with the issued licences for the use of the RF spectrum for digital television, an operator of digital television networks may optimise the network by putting into operation new transmitters or by changing the parameters of the existing network. HAKOM issued the necessary technical parameters and certificates of compliance of the radio station for all transmitters put into operation in 2022. Changes in technical parameters and data on new transmitters were regularly updated and published in the RF database for television, published on HAKOM's website.

In accordance with international agreement GE06, the procedure of coordinating radio stations with neighbouring countries continued and the international DTT radio stations were regularly analysed, as published via the ITU BR IFIC notification (Radiocommunication Bureau International Frequency Information Circular), which might have impacted internationally harmonised networks of transmitters of the Republic of Croatia.

In addition, the migration of digital terrestrial television to DVB-T2 system completed activities on the freeing of the spectrum in the 694-790 MHz band in the Republic of Croatia, which is already used for the introduction of the wireless broadband access service (5G). In addition, activities related to the harmonisation of the timetable and deadlines for freeing up the DD2 spectrum (700 MHz band) were carried out with neighbouring countries in which this has not yet been completed in order to ensure the preconditions in the Republic of Croatia for the introduction of the wireless broadband access service and ensure operation without interferences caused by TV transmitters from neighbouring countries. Within the framework of said activities, HAKOM also conducted a comprehensive analysis of the new Albanian UHF plan (freeing up of the 700 MHz band) and, resulting from the coordination process, the interests of the Republic of Croatia were successfully protected when it comes to the prevention of Albanian interference of TV channels in the Split and Dubrovnik regions.

SPECTRUM CONTROL

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

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

On location at the peak of Osorščica, on the island of Lošinj, a control and measuring station was constructed in 2022, providing for the control of the RF spectrum in the County of Istria and on Kvarner islands and examining and determining interferences in the greater area of Northern and Central Adriatic. The new construction enabled goniometry and connection to the existing KMP/KMS system for the purpose of faster and more precise determination of the location of the



Figure 5.4 Control and measuring station Osorščica

signal source. The new construction expanded HR's capacities when it comes to ensuring facilities that represent part of the national critical infrastructure and system of national security. The measuring station was certified for use on 23 November 2023 and is completely integrated in the existing network of stations for radiofrequency spectrum monitoring.

The measuring station at Osorščica enables control of the radiofrequency spectrum from 9 kHz to 3 GHz. This frequency area is controlled with sophisticated measuring equipment (measuring antennas and receivers) and software support compatible with the measuring system. Within the frequency area of up to 3 GHz the control and measuring station provides for the following types of measuring:

- measuring of the strength of electric field;
- locating unknown signal sources;
- collecting data on local density of traffic and interferences;
- measuring frequency;
- measuring modulation;
- measuring of band width;
- identification of emissions;
- determining source direction and location;
- determining location of illegal sources;
- monitoring of illegal sources;
- possibility of 24-hour measurement;
- other tasks.

In addition to the construction of a new control and measuring station, access path to the control and measuring station at the island of Pašman was completely reconstructed since access to the facility used to be very difficult. In accordance with the 2022 Plan of activities, HAKOM prepared all the necessary documents for the construction of the control and measuring station at the location of Bilogora. The public procurement process for the construction of the station was initiated at the end of 2022. Amendments to the county zoning plan were adopted for HAKOM's control and measuring centre and all the necessary documents for erecting the antenna pole with measuring equipment in order for the measuring centre in Split to be fully operational at one location was prepared.

A new measuring vehicle was procured in procurement proceedings, which will be additionally upgraded with measuring equipment and thus ensure better technical characteristics of the measuring system for monitoring and control of the radiofrequency spectrum.

Measuring activities

In accordance with the 2022 measurement plan, all envisaged measuring campaigns were successfully completed. Their focus was on the protection from interferences, measuring of electromagnetic fields (EMF), verification of the coverage of mobile telecommunications network and checking of compliance of WAS/RLAN devices with valid general licences for this frequency band. The operation of radio stations with microwave links and radio broadcasting 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, especially those for the purpose of cooperation within the Radio Spectrum Policy Group of the EC – RSPG.

Some 4,000 measurements were carried out in 2022 as part of daily and periodical measurements, while there were some 700 field measurements.

Detailed measurements were also conducted regarding mobile telecommunications networks with more than 400,000 measurement points in the territory of the entire Republic of Croatia and more than 6,500 kilometres covered to check compliance with the conditions from Regulation (EU) No 531/2012 of the European Parliament and of the Council of 13 June 2012 on roaming on public mobile communications networks within the Union (TSM Regulation), all for the purpose of publishing detailed maps of mobile telecommunications network.

Within the framework of checking compliance of WAS/RLAN devices, HAKOM established cooperation with the authorities of Bosnia and Herzegovina, i.e. the Regulatory agency for communications (RAK), which resulted in the exchange of experience and transfer of knowledge aiming to regulate the WAS/RLAN frequency area and ensure uninterrupted operation of meteorological radars within the 5600 do 5650 MHz frequency bands.

Electromagnetic field measurement

In 2022, electromagnetic field measurements were carried out in the areas of increased sensitivity with an aim to protect human health from electromagnetic fields. Legal persons authorised for EMF measuring regularly submitted measurement results, confirming compliance with the set standards.

All measurement reports, indicating the location of the measurements are available to the public on HAKOM's GIS portal. This portal also enables browsing through data on locations and basic te-

chnical characteristics of base stations in public mobile communication networks and radio stations in broadcasting service. This way citizens can always access measurement data, including historic measurements for previous years. HAKOM also notified the Office of the Ombudswoman of the Republic of Croatia on all measurements of exposure to electromagnetic fields (72 points) that it had conducted in the territory of the Republic of Croatia in 2022 to check the conditions from the Ordinance on the protection from electromagnetic fields (OG 146/14, 31/19). Reports on exposure to electromagnetic fields in the areas of increased sensitivity are available at HAKOM's website with names in the drop-down menu: <http://mapiranje.hakom.hr/CellRadiationMeasure>.

Measurement reports feature details on measurement locations for measurements carried out collectively for all base stations.

HAKOM recently obtained a mobile measuring probe for measuring exposure to electromagnetic fields which can be placed at user's location to uninterruptedly monitor exposure over several days. The movable measuring probe is used regularly with user consent and measuring reports are available at HAKOM's website.

Interferences

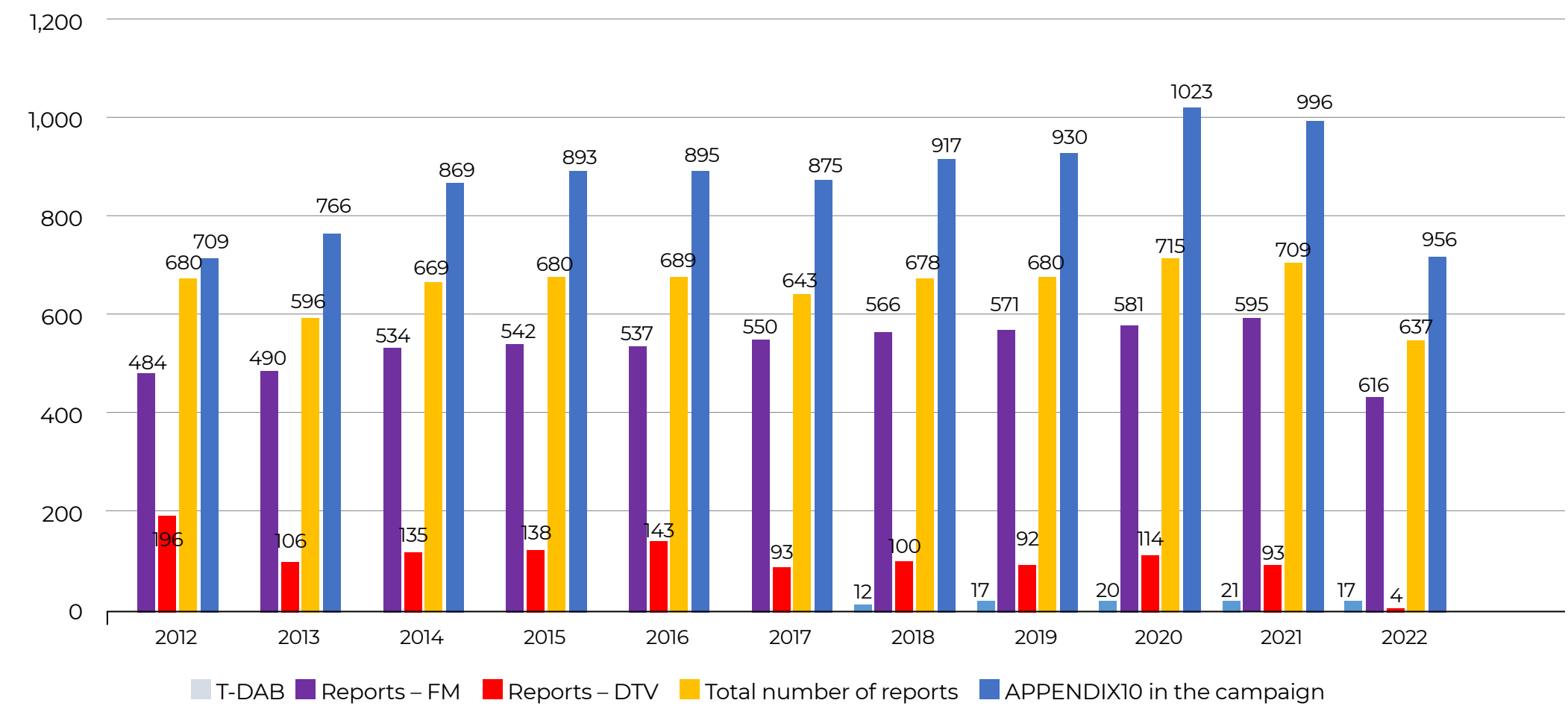
Uninterrupted operation of the electronic communication system and related services is ensured through identifying and eliminating the sources of interferences in radio communications. Special attention is awarded to state administration bodies competent for search and rescue, emergency services, maritime 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 interferences by domestic RF spectrum users was 71, less than in 2021, when there were 101, with a higher share in maritime services. There were 16 foreign interferences reported to HAKOM in 2022.

The planned campaign of measuring Italian interferences of radio and TV signals in the coastal areas was carried out with the aim of monitoring the situation and presence of interference at the frequencies allocated to the HR pursuant to international agreements and plans for radio and television frequencies (GE84 and GE06). Measurements conducted in 2022 confirmed that there was a certain number of interferences from FM radios from the Italian Republic, preventing quality reception of Croatian radio programmes along the entire coast. Interferences with Croatian television channels were mostly eliminated. The 2022 measuring campaign established a small number of areas where interferences were detected or lack of reception of Croatian TV content, which resulted in interferences being reported to the Italian administration.

In the FM frequency area, interferences were identified in relation to more than a hundred Croatian FM radio frequencies along the coast and on islands. In 2022, 616 reports of interferences were submitted, and a comparison of statistics over the last 11 years are presented in the Figure. For several years now, at multilateral meetings organised by ITU and EC's RSPG Good Office meetings, HAKOM has been drawing attention to the occurrence of uncoordinated Italian T-DAB transmitters and to likely problems that are now present in the FM segment. In the last few years, the Italian administration has been promising that it would resolve the problem of interferences in the FM area by putting into operation the digital terrestrial radio transmitter (T-DAB) in VHF III band and that it would not use Croatian channels in that area. However, there are several Italian digital terrestrial radio transmitters (T-DAB) operating in the VHF III band that use Croatian channels and do not comply with the technical parameters defined under the International Radio and Television Agreement signed in Geneva in 2006. This was confirmed by measurements in 2022.

In 2022, HAKOM again notified the Ministry of Sea, Traffic and Infrastructure and the Ministry of External and European Affairs of the years-long problem of Italian interferences to the operation of Croatian radio transmitters.

Figure 5.5 Interferences reported to the Italian Republic in line with the ITU procedure





06

CONSUMER PROTECTION

CONSUMER PROTECTION **71**
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CONSUMER PROTECTION

The specificity of the electronic communications market consumer protection stems from the market dynamics, or changes that are to the largest extent caused by the development of new technologies and services. According to the preliminary data of the Croatian Bureau of Statistics, 3.8 million inhabitants lived in the Republic of Croatia in 2022, and according to the data provided by HAKOM, there were 1.72 million users of fixed electronic communication networks and more than 4.65 million users of mobile electronic communication networks in the same year. The above figures clearly show that electronic communication services have become irreplaceable in everyday private and business life of the majority of the inhabitants. Since the continued advancement in technology contributes to the development of existing and the creation of new services, it can be expected that the importance of electronic communication services will also increase in the forthcoming period. All of this, accompanied by the high dynamics of the market itself, points to the complexity of consumer protection. HAKOM, through its activities, ensures a high level of protection for end users, and pays particular attention to the needs of special social groups, in particular end users with disabilities and children.

One of HAKOM's key activities in the protection of users of electronic communication services is related to dispute resolution between the end users of services and operators through which end users have the possibility to resolve a problem with the operator free of charge or initiating a procedure at court. In addition, HAKOM implements a series of activities directed at ensuring preconditions of a high level of protection of service users. Among these, the most important ones are related to the alignment of current regulations with actual market requirements, monitoring how an operator implements applicable regulations, informing service users about their rights and obligations and about the characteristics of services, taking into consideration special social groups.

After the trend of a moderate decrease in the number of disputes resolved before HAKOM was recorded in the period from 2018 to 2022, in 2022, this decrease was 31.5 percent from the previous year and represents a significant positive change in the market, in particular with regard to the manner in which the operator addresses objections and complaints raised by service users. The mentioned changes are also the result of activities carried out by HAKOM in the previous period, with special emphasis on activities directed at the improvement of the work of operators' services.

Since the new ECA entered into force on 12 July 2022, for the purpose of detecting and eliminating potential problems in a timely manner, HAKOM took account of the implementation of new/amended provisions implemented by the operator and of informing consumers about the

changes. The most important changes were related to the extension of the time limit from the previous 30 days to the time limit of 2 months within which a service user is entitled to terminate the contract without the compensation for the early termination of the contractual obligation as well as the reimbursement of the unused cash amount in case when the operator amends general terms and conditions, which are less favourable to users (unless amendments are of administrative nature, are not detrimental to the service user and are not directly prescribed by the regulations of the Republic of Croatia and EU law). Also, with the aim of increasing transparency and comparability of operators' offers, the new ECA determines the operators' obligation to provide service users with a complete and easily understandable contract summary, which must contain the prescribed information shown in advance in a specific manner and that upon the entry into the contract becomes an integral part of the contract.

User dispute resolution

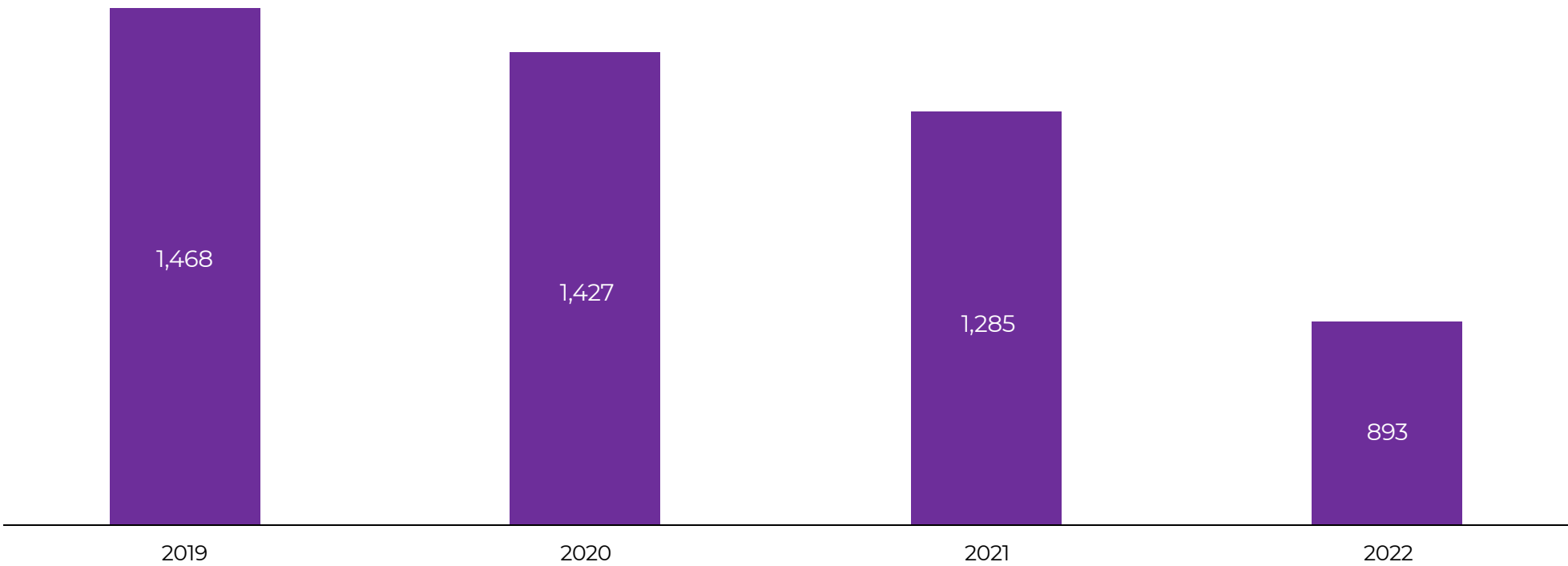
The ECA determines the right of the end user to submit a motion for the resolution of a dispute to HAKOM concerning the amount of the bill, the quality of provided services, the violation of subscriber contracts or the violation of the right concerning the protection of open internet access. HAKOM resolves disputes between users and operators based on the opinion of the consumer complaints commission, in the work of which, in addition to HAKOM's experts, also participate the representatives of consumer protection associations. The statutory precondition for initiating a dispute is to complete a two-instance procedure with the operator, which consists of filing an objection or a complaint with the operator. In case end users are dissatisfied with the response 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 the Administrative Court.

The results of disputes are used in the analysis of the situation in the market, based on which HAKOM gets insight into the key issues, proposes and implements 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 terms and conditions, the familiarity of users with their rights, etc.

In 2022, 893 disputes were resolved, which was a decrease of 30.5 percent from 2021. Since the number of decisions has been decreasing for the fifth consecutive year, in 2022 the number of decisions decreased significantly in terms of percentage than in the previous year (in 2021 it was 10 percent from 2020).

However, 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,

Figure 6.1 Number of disputes in electronic communications



changes in technology for the provision of services, etc.), when evaluating their importance for the situation in the market, it is necessary to take account of the specific circumstances. For instance, HAKOM directs a significant share of its activities at encouraging operators to improve the performance of their customer support services.

Figure 6.2 Number of disputes by operator

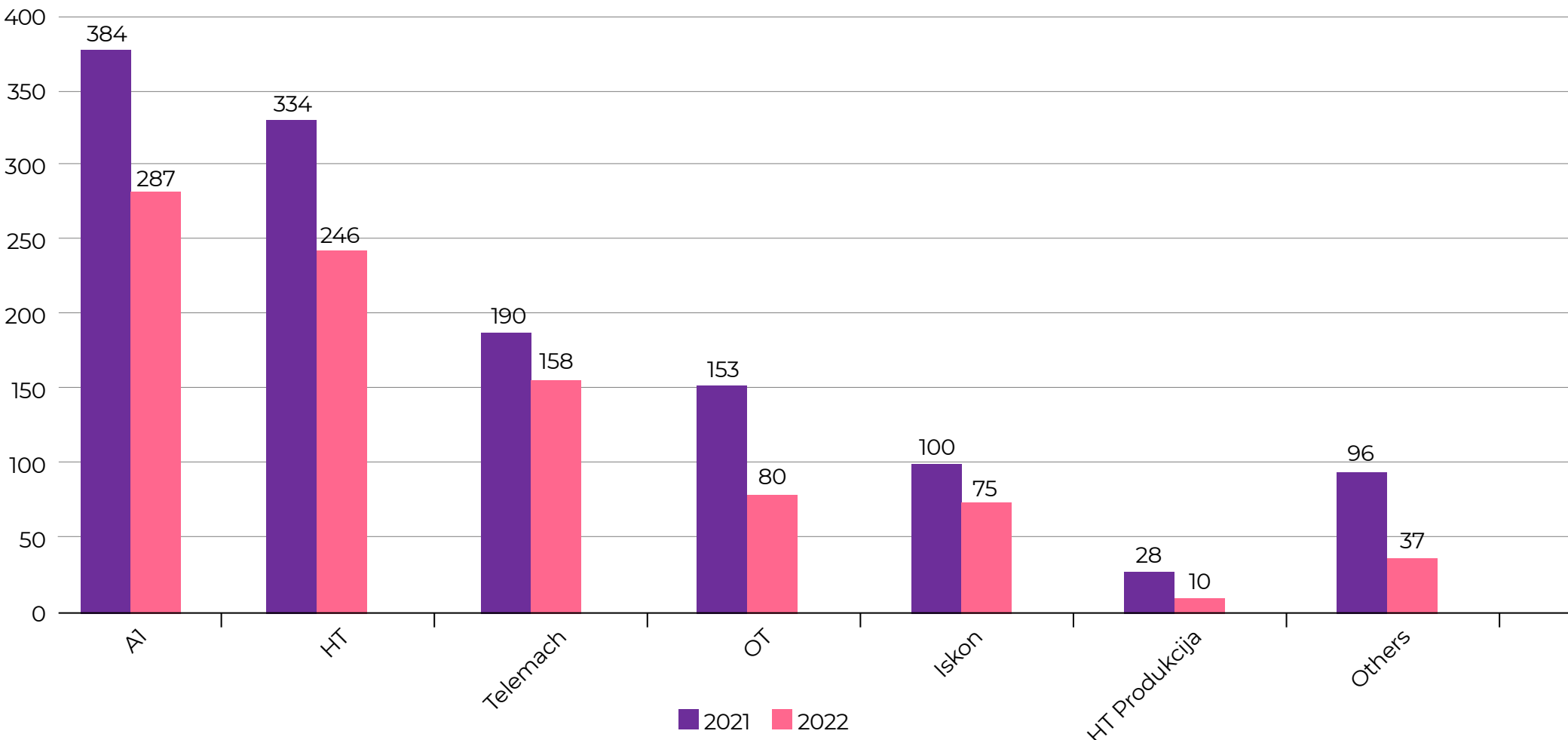
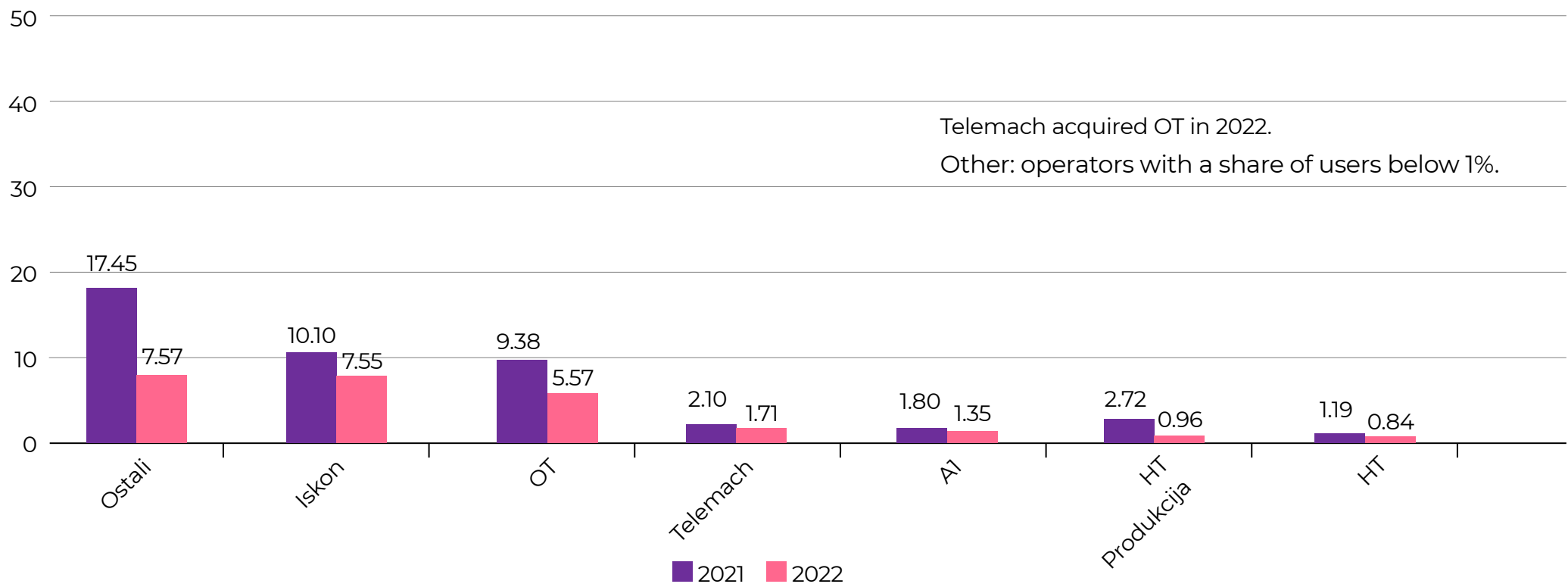


Figure 6.3 Average number of disputes per every 10,000 users of each operator



6.4 Number of disputes by operator in 2022 from 2021

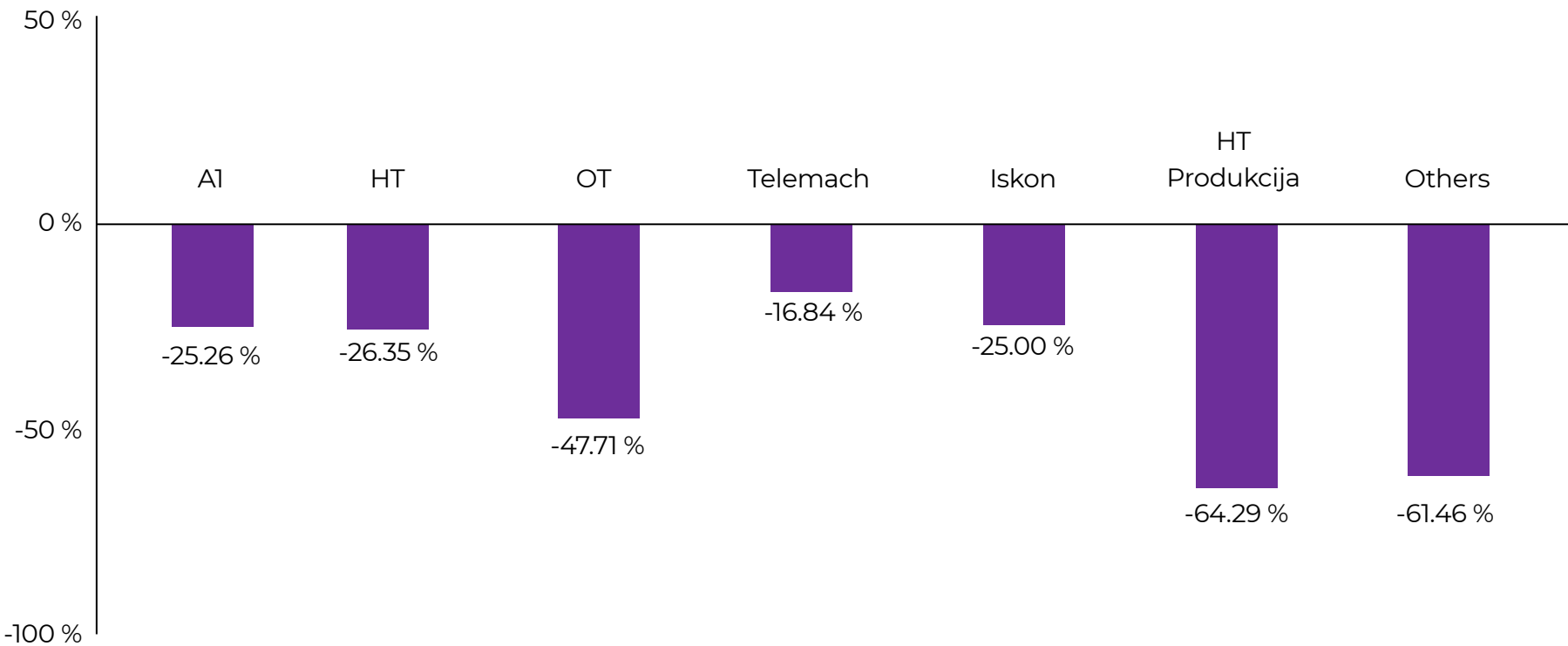
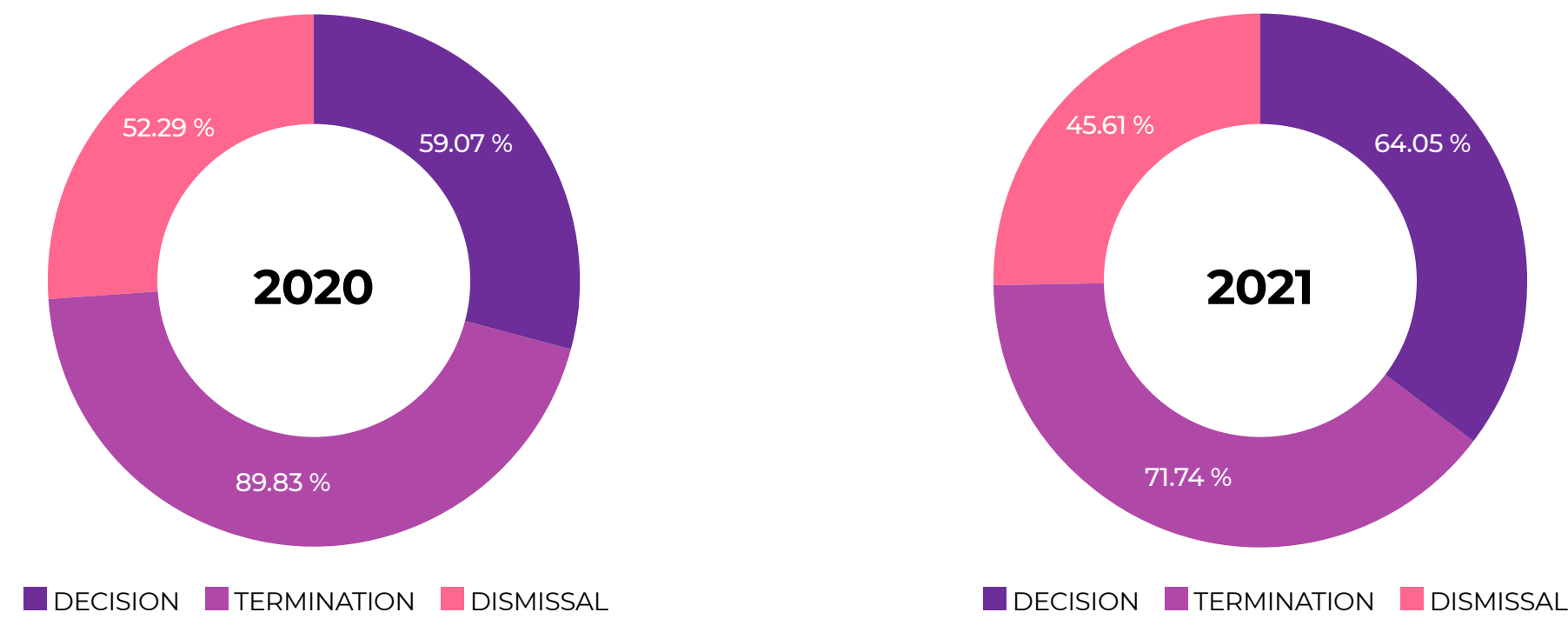
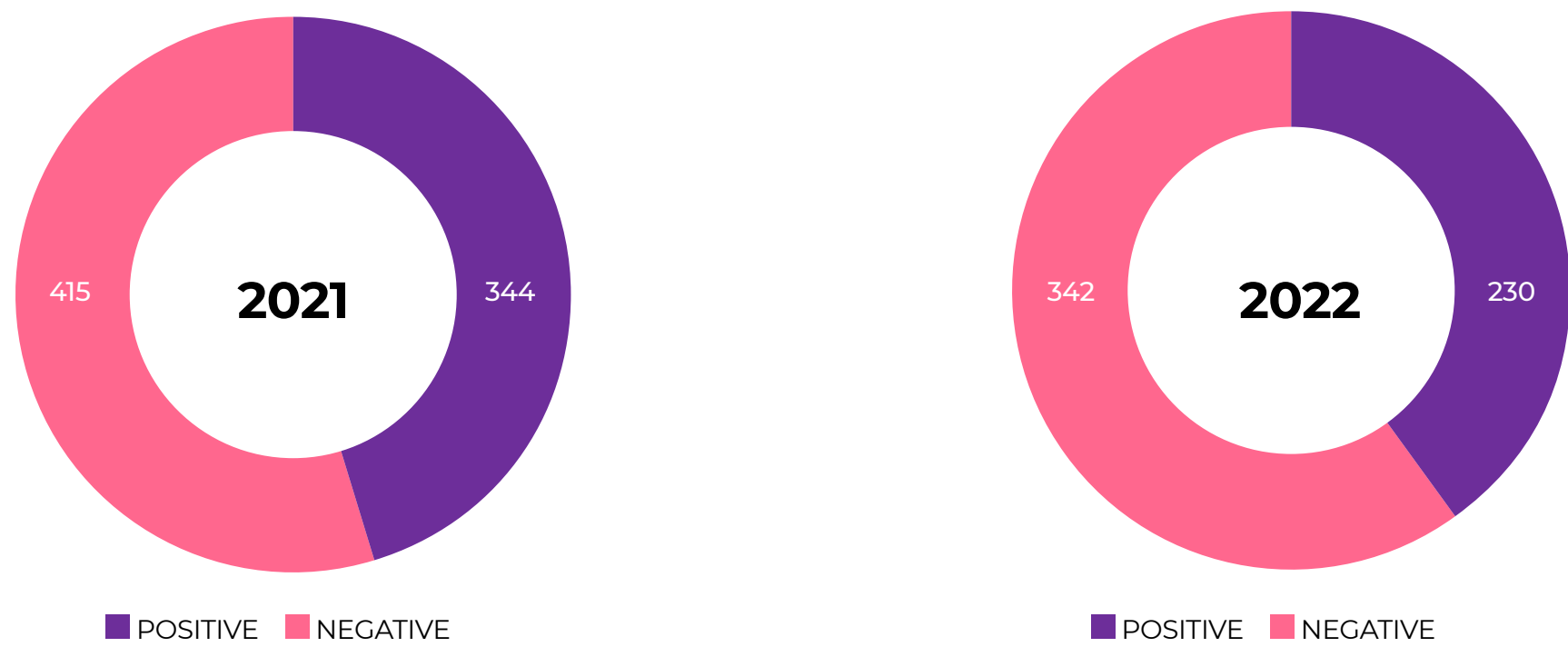


Figure 6.5 Ratio of disputes by type in 2021 and 2022



Of the total number of user requests for dispute resolution in 2022, 321 were resolved by adopting a decision on dismissal or termination that were resolved without the need to deliberate the merits of the case. In 2022, the share of such decisions declined in the number of resolved disputes, accounting for 36 percent, while in the previous year it was 41 percent. The decisions on termination were most frequently reached because operators subsequently, after the end user turned to HAKOM, changed its initial decision adopted when resolving the complaint and the end user raised no objections. As such dispute resolutions point to weaknesses in the work

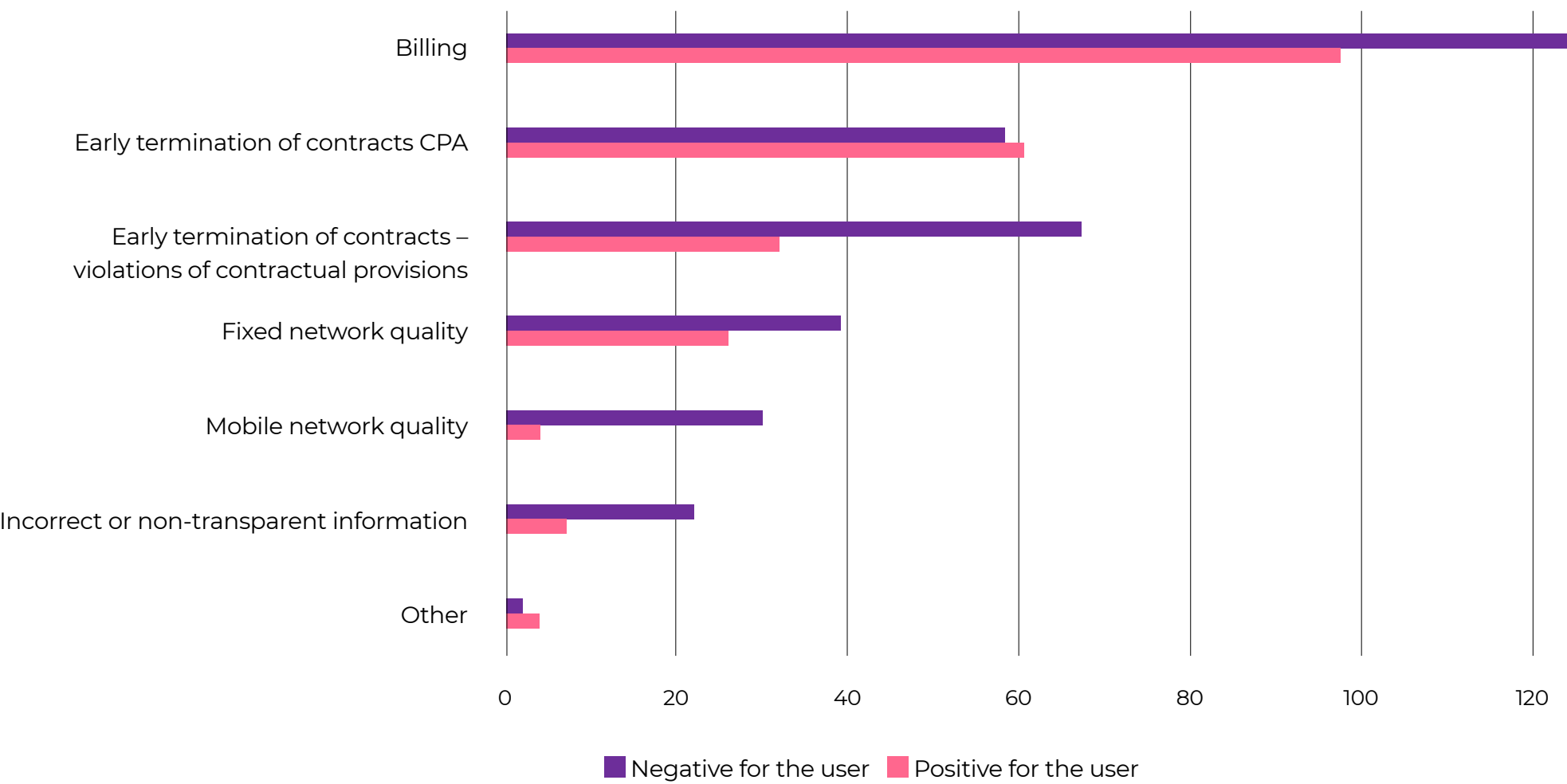
Figure 6.6 Ratio of positive to negative decisions for the user in 2021 and 2022



of operators' customer support service, on several occasions HAKOM warned operators that they should improve the work of their services in resolving user objections and complaints and that the adoption of such decisions should be an exception. The decisions on dismissal were most frequently adopted because the issue was not under HAKOM's jurisdiction or due to the expiry of statutory deadlines for dispute resolution.

Most disputes between operators and users in 2022, 572 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 complaints commissions, proceed as HAKOM would proceed in a particular case, then the HAKOM's

Figure 6.7 Ratio of decisions by reasons for disputes in 2022



decision in the dispute is consequently negative for the user or confirms decisions taken by operators. The fact that 40.21 percent of decisions in 2022 were adopted in favour of the user, while in 2021 that share totalled 45.32 percent, indicates that the work of operators' services in resolving user objections and complaints has improved.



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

Monitoring the work of operators in resolving objections and complaints

With an aim to achieve the most efficient resolution of user objections and complaints, i.e. compliance of the work of operators' services and commissions with applicable regulations, in 2022,

the practice of publishing the [semi-annual](#) and [annual](#) reports on disputes of end users in electronic communications was continued, with the reports based on HAKOM's decisions in the mentioned disputes. In 2022, the emphasis was made on resolving objections in the first instance and on the termination of contracts, in particular the contracts concluded remotely because the entry into such contracts, in addition to ECA provisions, is also regulated by the CPA. In 2022, the number of objections and complaints in the first and second instances decreased in most of the operators, as shown in Figures 6.8 and 6.9.

Cooperation with operators' consumer complaints commissions

Operators' consumer complaints commissions are the last step in which end users, before turning to HAKOM with the request for dispute resolution, resolve the problem directly with the operator. Therefore, also taking into consideration the fact that 6.63 percent of users that had filed their complaints to operators' commissions turned to HAKOM in 2022, in order to detect and eliminate problems in the work of the mentioned operators' service as efficiently as possible, in 2022, HAKOM continued its practice of holding semi-annual meetings with commission representatives of all operators with major market shares. At the meetings, operators were acquainted with the results of the analysis of operators' work when resolving user objections and complaints. Based on this analysis and taking into consideration the results of the analysis of HAKOM's decisions in disputes as well as information provided by users, operators were proposed specific measures for improving the performance of their services, in particular the work of the commissions when resolving user complaints.

Analysis of general terms and conditions, special conditions and price lists

These documents form part of each subscriber contract. Taking into account the fact that they should comply with the applicable law and subordinate legislation, as well as the fact that the lack of knowledge or understanding of specific provisions in these documents is one of the most frequent causes for disputes, HAKOM monitored their amendments and, upon need, requested from operators to make certain corrections. In 2022, special emphasis was placed on provisions governing the issue of contract termination without the collection of the compensation for the early termination in the event that an operator changes the agreed terms and conditions so that they are less favourable for the user (unless they are of administrative nature and are not detrimental for the user and are not directly prescribed by the regulations of the Republic of Croatia and EU law) and to the issue of introducing the contractual provision based on which operators are entitled to adjust service prices with the annual inflation rate, and based on which users do not have the right to terminate the contract without the payment of the compensation for the early termination. With the aim of avoiding any misunderstandings when introducing the

Figure 6.8 Number of disputes by operator in the first instance in 2022 relative to 2021

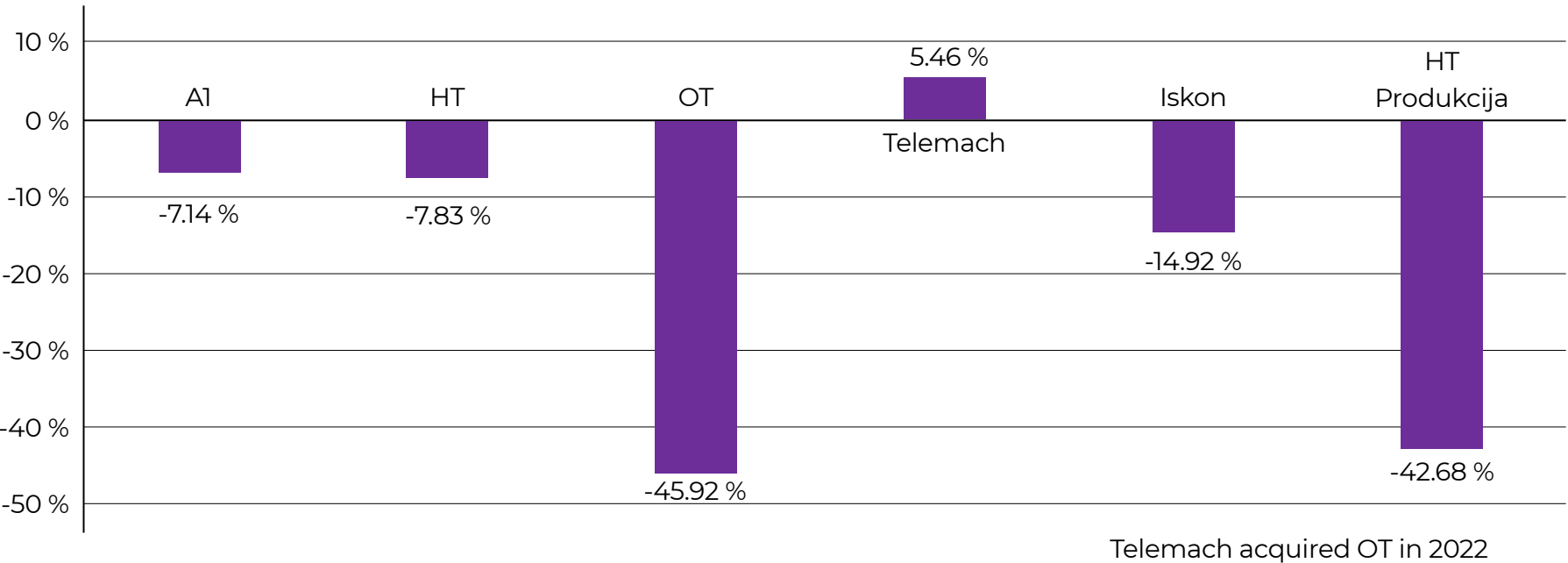
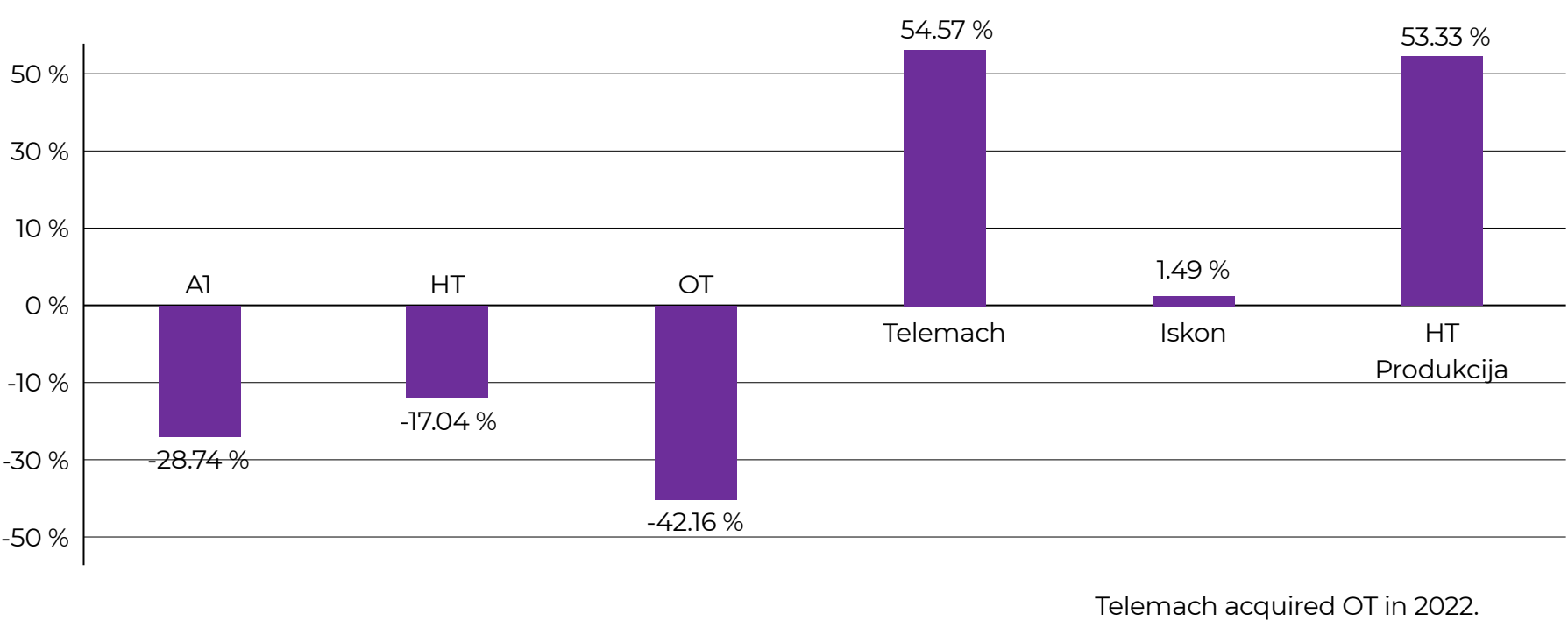


Figure 6.9 Number of disputes by operator in the second instance in 2022 relative to 2021



provisions concerning indexation, on 3 November 2022, HAKOM published an [Expert opinion on the possibility of adjusting the prices of public communications services to the annual rate of inflation](#) (for the purpose of avoiding potential misunderstandings, it is worth noting that, on 6 February 2022, HAKOM also published an [amendment](#) to the above expert opinion).

Information and education of users

Taking into account the fact that a well-informed user is the precondition for successful protection of end users, in 2022, as well as in previous years, HAKOM paid particular attention to informing and educating users through different communication channels. In addition to the relevant information available on the official website, users can obtain all necessary information and answers to specific questions through several different communication channels (direct telephone contact with HAKOM's experts, regular mail, e-mail, the "Ask Us" application and social media). For instance, 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. and from 12.30 to 3.30 p.m. Users were also informed through direct contacts with representatives of consumer protection associations, appearances of HAKOM's experts on TV and radio shows concerning consumer protection and through cooperation with other authorities competent for consumer protection policies. For instance, in 2022, HAKOM responded to fifteen invitations to visit consumer protection associations (e.g. Vrbovsko, Opatija, Brod Moravice, Rijeka, Garešnica, Daruvar, etc.). Also, by recognising the importance of consumer protection associations, on 7 October 2022, HAKOM held a round table with representatives of consumer protection associations on the topic of the rights of consumers and the obligations of service providers in the area of electronic communications, postal and rail services. Since the new Electronic Communications Act entered into force on 12 July 2022, the representatives of associations were informed about the amendments that concern service users. Another topic discussed at the round table included the possibilities of certain improvements that would contribute to an easier and more efficient resolution of difficulties experienced by service users.

Furthermore, in October 2022, HAKOM organised the traditional, ninth Market Day, gathering the representatives of operators, the economy, consumer protection associations and the regulators trying to find the answer to some of the currently topical issues in the electronic communications market, which included a panel discussion on the new rules for a transparent contracting of services and contract termination, in particular with regard to the implementation of the contract summary. Another issue that was discussed was the issue of the return of equipment (e.g. the modem), i.e. the user's obligation to pay a certain fee for the equipment in case it is not returned to the operator at the time of the contract termination. Since operators currently, as a rule, do not calculate the depreciation of the used equipment, HAKOM has notified operators about the

need to harmonise the procedure of all operators so that the price of the fee for not returned equipment is deducted by depreciation.

With the aim of informing and educating users in 2022, a leaflet was prepared containing information that each user should know when using electronic communication services in mobile and fixed networks, which was also published in electronic form in 2023. Printed [leaflet](#) copies were made available to counselling centres, consumer associations and operators. In addition, in 2022, HAKOM began developing video recordings with regard to the collection of the roaming service within the EU/EEA. The video will be available at [HAKOM's YouTube channel](#) on which two educational videos are currently available on the quality of services in mobile and fixed networks developed in 2021 and three educational video recordings on how to file objections, enter into distance contracts and child protection on the internet developed in 2019.

In 2022, with the aim to enhance user experience, service users were able to use the following applications:

- [HAKOMetar](#), which serves for measuring internet speeds in fixed networks. Measurement results may be used for all cases of objections to operators and for dispute resolution.
- [HAKOMetar plus](#), which serves for measuring internet speeds in mobile/wireless networks. Data traffic usage from the contracted tariff package is not calculated for the first ten measurements in a single month. The application enables a presentation of the statistics of measurement results, a presentation of measurement on a chart and a presentation of the quality of signals of all networks based on user measurements.
- [Cost estimate](#), which makes it easier for the users of telephone or internet access services to find the most favourable tariff in accordance with their telephone or internet usage habits.
- [Do Not Call Register](#), which serves to check whether the number is entered in the Register. By entering their telephone number in the Register, users confirm they do not want to be contacted for advertising and sales purposes by merchants. At the end of 2022, there were 65,942 telephone numbers entered in the Register.

PROTECTION OF POSTAL SERVICE USERS

In 2022, the number of received user requests decreased significantly from previous years and, in practice, the period required for their resolution was shortened. This is a direct result of inspection supervisions that in 2022 were carried over the operation of individual postal service providers throughout the HR. In addition to the above, a survey of the satisfaction of postal service users was conducted and a round table was organised for consumer associations as well as lectures in certain local self-government units at which the participants were informed in detail about the rights and obligations of the CPA.

According to the provisions of the CPA, a user of postal services may submit a written objection to a postal services provider in an objection resolution process in the cases of loss of a postal item, non-compliance with the deadline for transfer and delivery, if the postal service was not provided in part or in full, and in the cases of damage or loss of contents of a postal item. A user has the right to submit a complaint (consumer complaint) to the consumer complaints commission of the postal services provider to a written reply of the service provider. In case of a continued dispute regarding the complaint, the user may submit a request for dispute resolution to HAKOM within the statutory time limit.

Figure 6.10 Number of user disputes in the postal services market

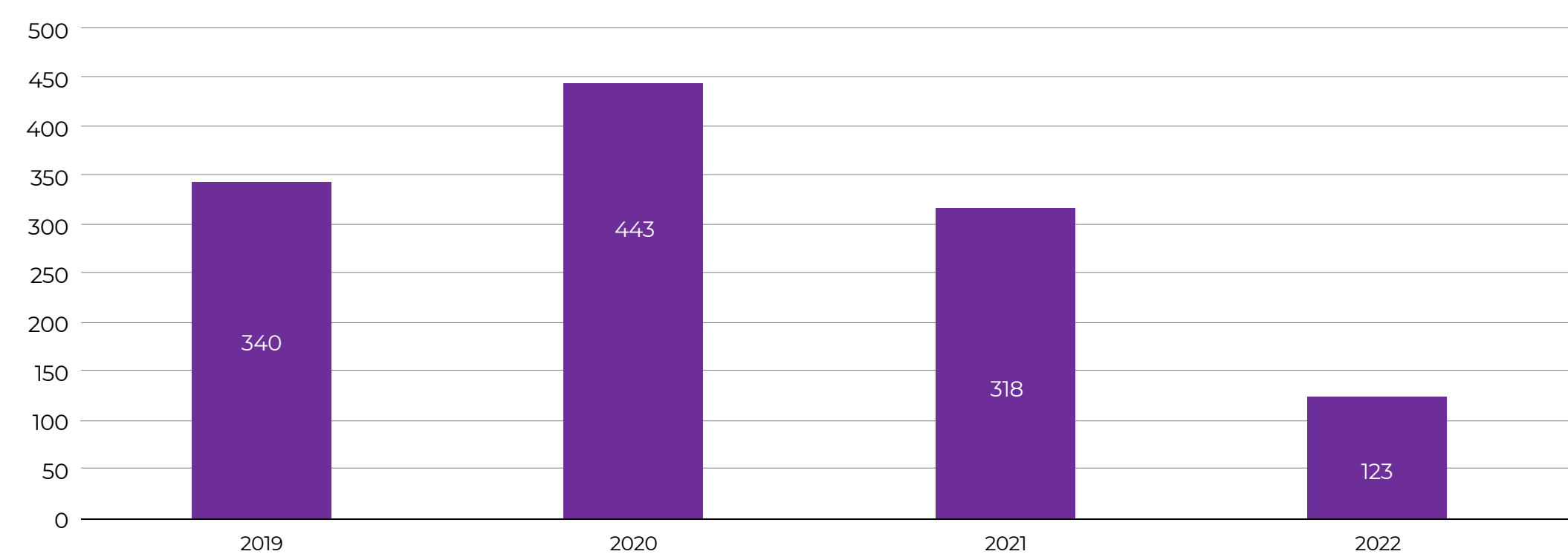
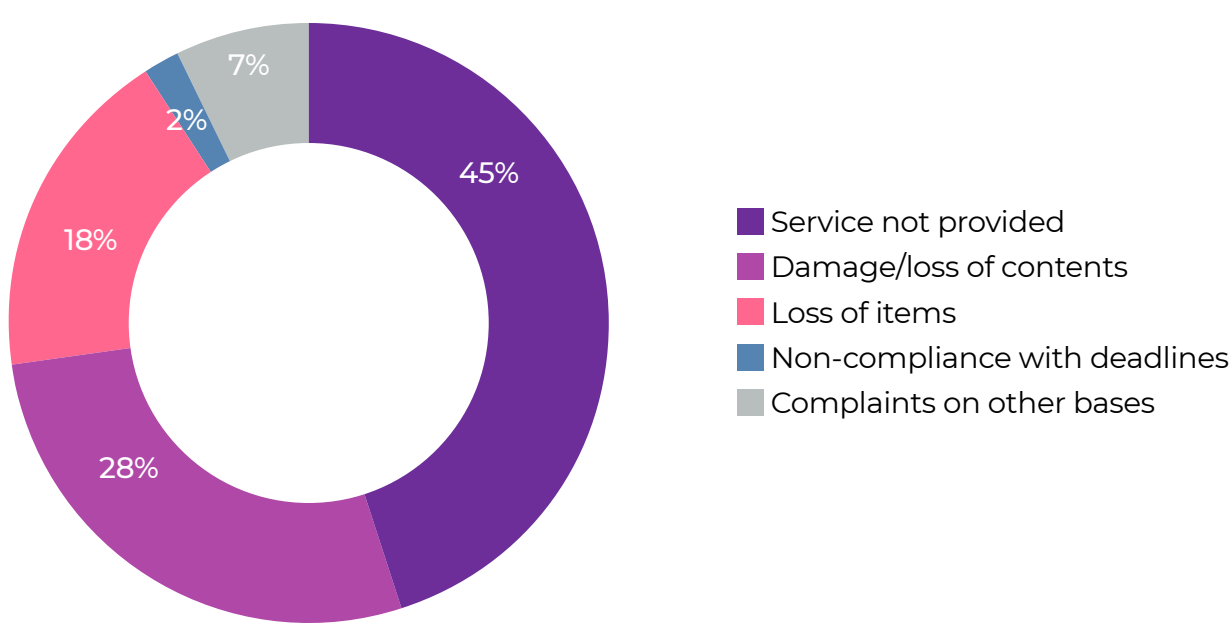


Figure 6.11 Shares of types of complaints in received requests in the postal services market



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.

In all, there were 123 dispute resolution requests in 2022, or down by about 61 percent than in the previous year. The largest number of the total received requests, 111 or 90 percent of them, were related to disputes with the universal service provider, HP, and ten percent to other postal service providers.

According to the type of the contracted postal services, the most represented were registered mail and parcels within the universal service with 37 percent and 30 percent, respectively, and parcel 24, which belongs to other postal services accounting for 19 percent. The analysis has also shown that users complain more about the services in domestic traffic, accounting for three fourths of all requests.

In all, 128 disputes were resolved in 2022, of which 110 were received in 2022, while 18 were transferred from 2021. Pursuant to the decision, 87 requests were rejected, and 34 requests were adopted or partially adopted. In five cases a decision on termination was reached (at users' requests because they resolved the disputes amicably with postal services providers), while two cases ended with the adoption of a decision on dismissal because such requests did not refer to objections referred to in Article 54 of the PSA, or were not submitted in a timely manner or were submitted by unauthorised persons.

PROTECTION OF PASSENGERS IN RAILWAY PASSENGER TRANSPORT

Pursuant to the ARRSM, HAKOM is also competent for the protection of passenger rights and for resolving passenger requests against the decisions of the consumer complaints commission of railway undertakings.

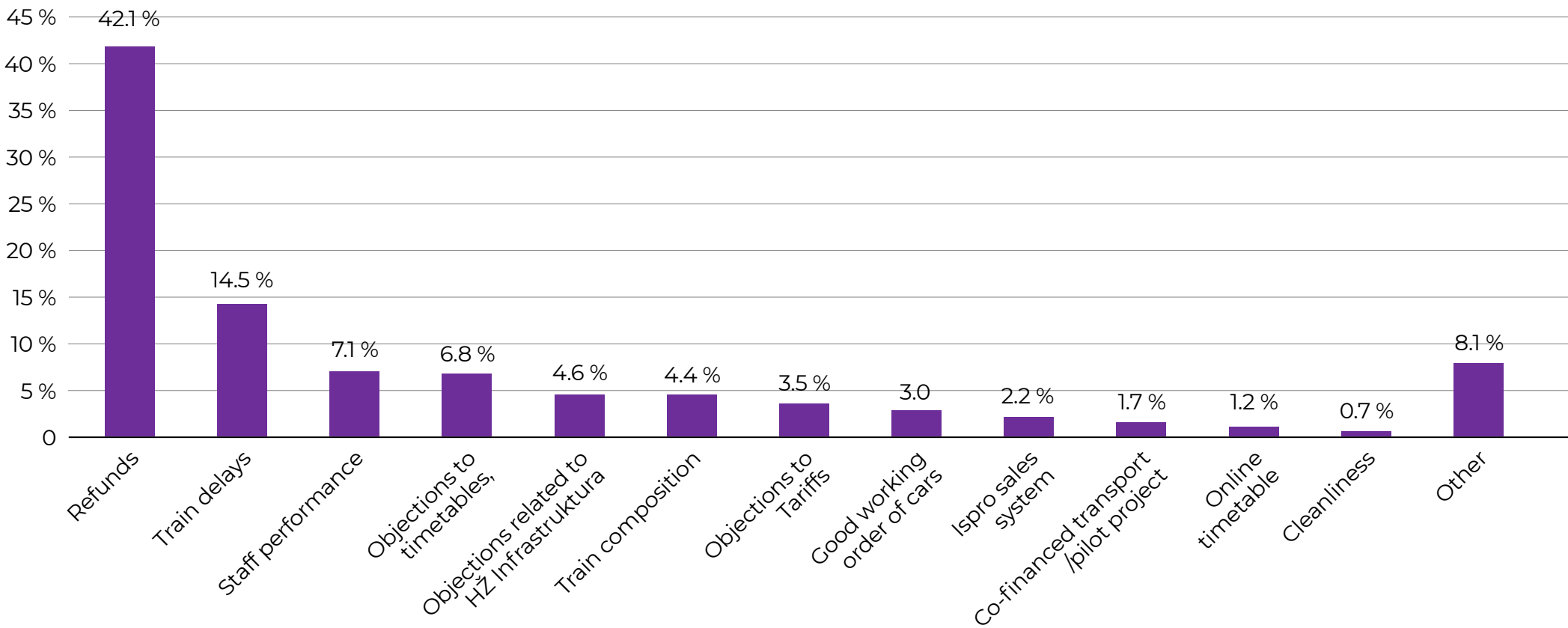
Passengers are entitled to submit a written objection to a railway undertaking for the protection of their rights prescribed by Regulation 1371/2007, the ARRSM and the Act on Transportation Contracts in Railway Traffic, the RA and the General Terms and Conditions of the passenger transportation contract.

In accordance with the provisions of the ARRSM, a passenger may submit a written complaint to the railway undertaking for the protection of his or her rights as laid down in Regulation 1371/2007, the 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 and requests to HAKOM are regulated by the ARRSM. Six decisions pursuant to passenger requests were adopted in 2022, of which four cases were dismissed, one case was suspended and one rejected. There were no positive, negative or partially positive cases.

The most frequent reasons for passenger complaints referred to the implementation of Regulation 1371/2007 and the general terms and conditions of the transport contract, the tariff for the transport of passengers in domestic traffic (Tariff 101), i.e. to reimbursements for the unused part of season tickets, special offers and discount ticket prices, the train schedule and data on the HŽPP website. With this regard, HAKOM initiated the procedure to amend the General Terms and Conditions of the transportation contract and Tariff 101 of the passenger railway operator ex officio and ordered the elimination of irregularities and the harmonisation with national regulations. The most important changes refer to the frequent delays, so that passengers constantly using the service of the season ticket, in the case of frequent delays, exercise the right to the reimbursement of the part of the amount of the season ticket. Another novelty is the possibility of return or exchange of the tickets that were purchased through the website/application.

HŽPP received 6,726 passenger complaints in 2022. Almost half of the complaints referred to the reimbursement of money, followed by train delays, while other complaints referred to staff performance, the train schedule, the 101 Tariff, the good working order of cars, the Ispro sale system, the online time schedule and cleanliness.

Figure 6.12 Passenger complaints



It can be concluded from the market research of the users of passenger rail transport services that, according to the age structure, there have not been any significant changes from the previous research, i.e. that of the total number of surveyed passengers, 91 percent of them belong to the working population that uses the rail transport services on a regular basis.

Broken down by the structure of residence, the majority of the surveyed passengers live in the City of Zagreb (47%) and in the County of Varaždin (13%). In 13 counties the response was below three percent.

The surveyed users mostly used the train to commute to work, go to university and for leisure. Rail passenger transport was used the least for health services, going to school, shopping and other. Although working from home had an impact on a decrease in commuting, most of the respondents used rail transport on a daily basis.

As in previous years, affordable prices were the primary reason for using train transport services, according to the responses obtained from a third of the respondents, followed by transport accessibility. The fact that only six percent of the respondents opt for the train because of the frequency of service is an indicator of the insufficient number of departures and the time of departure non-compliant with the shifts at work, university or school, which makes rail transport unattractive and uncompetitive to other means of transport. More on the Consultation Analysis is available on the HAKOM's website.

PROTECTION OF PERSONS WITH DISABILITIES

HAKOM organised the International Conference on "Accessible Future" on the topic of persons with disabilities in the modern (digital) society, which was held in Zagreb in June 2022. Conference participants included the representatives of associations of persons with disabilities, ITU representatives, the representatives of European regulatory bodies in electronic communications, professors at the Faculty of Electrical Engineering and Computing, University of Zagreb (FER), professors of the Faculty of Engineering, University of Rijeka, experts in technology and standardisation, the representatives of ministries and electronic communication services market operators. The conference was also an opportunity for strengthening regional cooperation among national regulatory authorities in South East Europe. Participants had an opportunity to learn about the specific problems of persons with disabilities and the new technologies and plans for future accessible solutions. The topics addressed at the conference included the new legislative framework in the field of electronic communications. Also addressed were the provisions of [Directive \(EU\) 2016/2102](#) on the accessibility of the websites and mobile applications of public sector bodies and [Directive \(EU\) 2019/882](#) on the accessibility requirements for products and services, which are yet to be transposed into the legislation of the Republic of Croatia. It was concluded that it was necessary to involve the associations of persons with disabilities in the procedure of developing accessible solutions and prepare a Manual for an appropriate manner of approaching persons with disabilities, maintain the FER-associations-stakeholders connection in the markets regulated by HAKOM, implement the project of accessibility concerning the railway transport, distribute the approach helper application for people with disabilities ("Susretnica" in Croatian) in primary schools in the HR, intensify regional cooperation among regulators to disseminate knowledge and ideas, support the accessibility of applicative solutions with regard to the 112 number, educate seniors about the manner of using electronic communication services and engage in projects that support persons with disabilities. Digitalisation experts, persons and children with disabilities participated in the development of the above mentioned Manual and the "Susretnica" application. Through the usage of digital technologies, the Manual and the application promote the principles of equality and respect of diversity. The initiative was also supported by the Ombudswoman for Persons with Disabilities, who believes that "Susretnica" is a good tool. In the course of the year, the project on accessibility was implemented in cooperation with FER. The project had a three-fold focus: i) raise social awareness of the topic of persons with disabilities in the society, (ii) improve digital and physical accessibility in the markets of electronic communications, postal services and rail transport and (iii) analyse the application of new technologies with regard to persons with disabilities.

CHILD PROTECTION

The Safer Internet Day, traditionally marked on the second Tuesday in February, was marked on 8 February 2022. On this occasion the "Pledge for a Better Internet" conference was held, at which HAKOM's redesigned the [brochure on the protection of children and youth on the internet](#) was presented, entitled "How to protect yourself in the world of the internet and mobile phones" as well as other educational content for teachers, students and parents, aimed at increasing competencies for the appropriate, responsible, purposeful and safe usage of the internet and all digital technologies. The brochure contains practical and useful advice about the dangers of and safety on the internet, the protection of privacy and personal data as well as about responsible behaviour on and use of social networks. It is part of HAKOM's programme of informing children and parents that has been implemented in cooperation with the Ministry of Science and Education since 2016. The brochure has been sent to all primary schools in the HR to be distributed to five-grade pupils. HAKOM's comprehensive survey on the habits and experiences of internet users in the HR was also presented at the conference. The survey was conducted in December 2021 and included 1,003 respondents aged 18 to 65. In order to approach younger generations through the project on child protection on the internet, a video was prepared that was distributed through social networks and support was provided to associations dealing with child protection.



07

HAKOM'S OTHER ACTIVITIES

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BROADBAND COMPETENCE OFFICE

HAKOM is a member of an EU-wide Broadband Competence Offices Network (BCO Network). In 2022, HAKOM's representatives participated in several meetings and workshops organised by the BCO Network, aimed at sharing knowledge and experiences among Member States and addressing practical issues related to the development of broadband access networks.

In 2022, HAKOM organised and held a workshop for the units of local and regional self-government on the topic of physical planning of radio networks and the construction of the ECI using incentives from EU funds.

FRAMEWORK NATIONAL PROGRAMME

The implementation of the National Framework Programme for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments (NFP) continued, in which HAKOM performs its role of the Competent Authority for the Framework Programme (CAFP). Twenty-one projects are being implemented as part of the NFP, of which sixteen under model A – private DBO (Design, Build, Operate) model, and five under model B – public DBO model. These projects cover a total of 126 units of local and regional self-government, so that it is expected that 156,000 households, i.e. 236,000 housing units, will be covered (mostly with FTTH) by the end of 2023. Total investment costs amount to about 160 MEUR, of which 94 MEUR is allocated through grants from the financial perspective 2014 – 2021.

Table 7.1 Projects agreed within the call based on the NFP

NOSITELJ PROJEKTA	OBUHVAT	INVESTICIJSKI MODEL	POTPISNIK UGOVORA O BESPOVRAT. SREDST.	INVESTICIJSKI TROŠKOVI (mil. HRK) (prihvatljivi troškovi)	BESPOVRATNA SREDSTVA (mil. HRK)
Poreč City	Poreč City and Municipalities Funtana. Kaštelir-Labinci. Sveti Lovreč. Tar-Vabriga. Višnjan. Vižinada. Vrsar and Tinjan	model A	HT	56	27.9
Rovinj City	Cities Rovinj-Rovigno and Vodnjan-Dignano and Municipalities Bale-Valle. Kanfanar. Svetvinčenat and Žminj	model A	HT	60.2	30
Kaštela City	Cities Kaštela. Split and Trogir and Municipalities Lečevica. Marina. Okrug. Prgomet. Primorski Dolac and Seget	model A	AI	110.8	51.6
Zaprešić City	City Zaprešić and Municipalities Brdovec. Dubravica. Jakovlje. Luka. Marija Gorica. Pušća	model A	HT	54.1	26.9
Medulin Municipality	Municipalities Medulin. Barban. Ližnjan-Lisignano. Marčana	model A	HT	46.2	22.9
Ivanić Grad City	Cities Ivanić-Grad and Dugo Selo and Municipalities Brckovljani. Kloštar Ivanić and Križ	model A	AI	75.3	36
Dubrovnik City	Dubrovnik City. Municipalities Dubrovačko Primorje. Konavle and Župa Dubrovačka	model A	HT	72.1	36
Mursko Središće City	City Mursko Središće and Municipalities Gornji Mihaljevec. Nedelišće. Selnica. Strahoninec. Sveti Juraj na Bregu. Sveti Martin na Muri. Šenkovec and Štrigova	model A	HT	48.9	24.1
Vukovar City	Cities Vukovar and Ilok. Municipalities Bogdanovci. Borovo. Lovas. Negoslavci. Nuštar. Tompojevci. Tovarnik. Trpinja	model A	HT	60	29.8
Sveta Nedelja City	Cities Samobor and Sveta Nedelja. Municipality Stupnik	model A	HT	65.5	32.5
Ludbreg City	City Ludbreg. Municipalities Mali Bukovec. Martijanec. Sveti Đurđ and Veliki Bukovec	model A	HT	28	13.9

Solin City	Solin City	model A	A1	15.4	7.5
Gospić City	Cities Gospić and Otočac. Municipality Plitvice Lakes	model B	Grad Gospić	95.4	75.3
Brod-Posavina County (B)	Municipalities Donji Andrijević, Garčin, Gornja Vrba, Gundinci, Klakar, Oprisavci, Sikirevci, Slavonski Šamac, Velika Kopanica, Vrpolje	model A	HT	36.4	18
Krk City	City Krk, Municipalities Baška, Dobrinj, Malinska-Dubašnica, Omišalj, Punat and Vrbnik	model B	Grad Krk	81.9	61
Virovitica-Podravina County	Municipalities Crnac, Čačinci, Čadavica, Mikleuš, Nova Bukovica, Sopje, Voćin and Zdenci	model B	Virovitičko-podravska županija	49.6	35.9
Sukošan Municipality	Municipalities Sukošan, Galovac, Sveti Filip i Jakov and Škabrnja	model B	Općina Sukošan	51.9	37.6
Omiš City	Omiš City, Municipalities Dugi Rat, Podstrana and Zadvarje	model A	HT	45	20.1
Đurmanec Municipality	City Krapina, Municipalities Đurmanec, Jesenje, Petrovsko and Radoboj	model A	HT	44.3	22
Osijek-Baranja County (C)	Municipalities Antunovac, Čepin, Erdut, Ernestinovo, Šodolovci	model A	HT	38.9	19.4
Donja Voća Municipality*	City Lepoglava and Municipalities Bednja, Cestica, Donja Voća, Klenovnik, Marušćevac, Petrijanec and Vinica	model B	Općina Donja Voća	92.7	64.5
TOTAL				1,228.60	692.5

*Municipality Donja Voća withdrew from the project.

National Recovery and Resilience Plan

Under the National Recovery and Resilience Plan from 2021 to 2026 (NRRP) additional grants in the amount of 106 MEUR are ensured for the continuation of the implementation of the NFP. These funds will enable the co-financing of a certain number of projects for the development of the broadband access infrastructure to the units of local and regional self-government, which were not co-financed in the financial perspective 2014 to 2020. In order to enable the continuation of the NFP implementation, in 2022, the CAFP worked on the verification and granting of Broadband Infrastructure Development Plans in Areas Lacking Sufficient Commercial Interest for Investments (BIDPs). Thirty-eight BIDPs were granted for which certificates of their conformity with NFP structural rules were issued, by which the units of local and regional self-government as competent authorities met the conditions for the submission of applications to the call for grants. The Directorate for EU Funds of the Ministry of the Sea, Transport and Infrastructure is expected to publish the call in 2023.

Connectivity toolbox

Following the adoption of the EC Recommendation [\(EU\) 2020/1307](#) on the adoption of the Connectivity Toolbox for fostering connectivity (hereinafter: Toolbox), which includes a set of examples of best practices aimed at reducing the costs of deploying very high capacity networks, providing timely and investment-friendly access to the radiofrequency spectrum for 5G networks and establishing a special working group for the development of the Connectivity Toolbox in 2020, HAKOM, as the representative of the HR intensively participated in the development of the Toolbox in the first quarter of 2021. The Connectivity Toolbox is based on the best practices of Member States, and was agreed in March 2021. According to the obligations from the Toolbox, in April 2021, HAKOM prepared the Croatian Roadmap for the implementation of selected best practices. For the purpose of defining specific activities and deadlines within the Roadmap, HAKOM set up a working group consisting of representatives of the Croatian Employers' Association, operators and state administration bodies competent for the implementation of individual measures.

Two meetings of the working group for the implementation of the Croatian Roadmap were held and as a follow-up to the conclusions of the meetings, in 2022, HAKOM prepared a Report on its implementation. It is noteworthy that a large part of the measures, i.e. best practices, was also at the same time part of reform measures within the National Recovery and Resilience Plan and they were mostly implemented by amending the regulatory framework.

COOPERATION

HAKOM, as the regulator of three markets, is involved in the work of numerous bodies and working groups, and it also cooperates with other public authorities. Below is an overview of HAKOM's involvement in different events presented by the name of the authority, working or expert group, divided into international and domestic cooperation. Each cooperation in 2022 is briefly described. For more information, visit HAKOM's website.

International cooperation

HAKOM actively participates in the work of institutions and bodies of the European Union and relevant international organisations in the area of electronic communications, postal and rail services.

European Union

HAKOM regularly monitors the procedure for the adoption of EU regulations in the EU Council preparatory bodies, in particular in the Working Party on Telecommunications and Information Society, the Working Party on Postal Services and the Working Party on Land Transport, as well as in other working parties that discuss legislative proposals within the scope of HAKOM's activity. HAKOM participates in the EU legislative procedure as a co-author of the national position or as a body providing comments in the EU legislative procedure.

In 2022, HAKOM was a co-author of the position for the Proposal for a Regulation on privacy and the protection of personal data in electronic communications (e-Privacy Regulation). This activity continues in 2023 because the legislative procedure for the adoption of this Regulation is not completed.

HAKOM participated in the procedure for the adoption of a strategic document on EU digital targets covered in the [Decision 2022/2481](#) establishing the Digital Decade policy programme 2030, which was adopted in December 2022. As one of the competent authorities, HAKOM will be responsible for the implementation of the targets of secure, resilient, performant and sustainable digital infrastructures.

HAKOM participated in discussions on the Proposal of the Directive of the European Parliament and of the Council on measures for a high common level of cybersecurity across the Union and repealing [Directive \(EU\) 2016/1148](#) (NIS 2 Directive), which was adopted in December 2022. HAKOM will also participate in the transposition of this Directive into the national legislation.

HAKOM also participated in the adoption of [Regulation 2022/2065](#) of 19 October 2022 on a Single Market For Digital Services (Digital Services Act (DSA)) and [Regulation 2022/1925](#) of 14 September 2022 on contestable and fair markets in the digital sector (Digital Markets Act (DMA)). It is expected that

HAKOM will be included in the process of drafting national regulations and defining competent bodies for the implementation of the two regulations.

In addition, HAKOM participated in discussions on the Proposal for a Regulation on harmonised rules on fair access to and use of data (Data Act). The legislative procedure for the adoption of this Regulation is still ongoing so that this activity will continue in 2023.

HAKOM's representatives participated in the work of the following **committees of the European Commission**:

The Radio Spectrum Committee (RSC) – 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. The Committee decided on several implementing regulations concerning the use of the RF spectrum at the EU level.

The Communications Committee (COCOM) – assists the EC in adopting implementing acts concerning the regulatory framework for electronic communications.

The CEF Coordination Committee – assists the EC in implementing Regulation (EU) 2021/1153 establishing the Connecting Europe Facility.

The Postal Directive Committee (PDC) – monitors the application of EU postal legislation (Postal Directive and other acts) in Member States and steers the regulation of the single postal services market. In 2022, two regular PDC meetings were held at which, in addition to the usual reports on activities in the postal sector, specific topics of discussion included sustainable operations in postal activity, declaring goods in postal parcels for customs clearance with regard to the IOSS system and the digital customs declaration as well as the need for the standardisation of the basic definitions of postal services with the objective of the single regulation of the postal market.

HAKOM's representatives were active in the work of the **expert working groups of the European Commission**, consultative bodies set up to provide the European Commission with expertise in the specific fields of work, and in particular in the work of **RSPG**, **HLIG**, **EG112** and **ENRRB**:

Radio Spectrum Policy Group (RSPG) – a high-level advisory group assisting the EC in the development of RF spectrum policy – in particular regarding the coordination of approaches, coordinated conditions of availability and efficiency of the RF spectrum use and establishing and functioning of the internal market. The RSPG adopts opinions, positions and reports, and advises the EC at the strategic level.



Italian TV (UHF) interferences are resolved and a new procedure of resolving FM (VHF) interferences has been initiated

As a follow-up to the several-year long problem of Italian interferences, and taking into consideration that the EECC emphasises the RSPG as the forum for resolving disputes in relation to cross-border harmful interference between Member States, pursuant to Article 28, paragraph (3) of the EECC, in early 2021, HAKOM submitted a request to the RSPG to use its good offices and issue opinions proposing a coordinated solution regarding cross-border harmful interferences originating from the Italian Republic, in order to ensure uninterrupted use of the harmonised radiofrequency spectrum in the territory of the HR in accordance with EU law. Specifically, the subject of the request was an urgent addressing of interferences on the existing TV channels in operation (21, 22, 23, 27, 28, 29, 33, 34, 35, 39, 41, 43 and 45) and priority addressing the interference in the 700 MHz band, since HAKOM planned to assign licences for wireless broadband networks of the fifth generation (5G) in the territory of the HR. The RSPG accepted the request and on 16 June 2021 adopted an opinion with the proposed coordinated resolution, based on which the Italian Republic, with a certain delay and HAKOM's persistent efforts and activities, eliminated the identified interferences by the end of 2022.

Building on this positive experience in resolving UHF interferences, HAKOM again used the possibility of protecting the RF spectrum, prescribed by the EECC, in particular in Article 45, which defines radiofrequency spectrum as a public good that has an important social, cultural and economic value and that Member States ensure the effective management of the radiofrequency spectrum for electronic communications networks and services. In applying this Article, Member States must respect relevant international agreements, including the ITU Radio Regulations and other agreements adopted in the framework of the ITU applicable to the radiofrequency spectrum, such as the agreements reached at regional conferences, including the Regional Geneva Agreement of 1984 (ITU Geneva Agreement GE84, hereinafter: GE84) for the FM radio band 87.5 MHz – 108 MHz, which, in this case, is infringed by the Italian Republic. For more than ten years, HAKOM has emphasised the huge problem of Italian interferences to Croatian FM radio transmitters, which has been ongoing for several decades and resulted in interfered reception or a complete loss of receipt of FM radio programmes in the Croatian territory along the Adriatic coast. Through its measuring campaigns, HAKOM constantly identifies the operation of a large number of Italian transmitters that operate contrary to the ITU Radio Regulations and the agreement as well as the GE84 plan, about which, in addition to the Italian administration, both the ITU and

the RSPG have been informed. HAKOM has requested from the Italian Republic to stop broadcasting Italian uncoordinated broadcasting stations that cause harmful interference to Croatian coordinated broadcasting networks, which has been supported by more than 6,500 different reports of harmful interferences to the radio and TV in the last ten years. However, despite HAKOM's several-year efforts and promises made by the Italian side, presented before the RSPG and the ITU, harmful interferences caused by Italian FM broadcasting stations are still present. Therefore, in November 2022, HAKOM submitted a request to the RSPG to use its good offices and issue an opinion proposing a coordinated solution to the Italian Republic regarding cross-border harmful interferences. At its meeting held on 23 November 2023, the RSPG accepted the submitted request and requested from its Sub-group on cross-border coordination (Good Offices) to prepare an action plan to address the mentioned interferences. The first results of the action plan preparation are expected in 2023.

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

EG112 – In 2022, HAKOM's experts participated in preparing the delegated act referred to in Article 109, paragraph (8) of the EECC, which was discussed within this working group. It prescribes measures necessary to ensure the compatibility, interoperability, quality, reliability and the constant access of communication to emergency services in the Union in terms of determining caller location, access for end users with a disability and redirecting calls to the most appropriate PSAP, which was adopted in December 2022.

The European Network of Rail Regulatory Bodies (ENRRB) is the EC advisory body, which discusses issues and exchanges practices under the competence of regulation of the rail services market of importance for the work of regulatory authorities. For the purposes of the work of the

ENRRB, a database of regulatory bodies (DAREBO) was established. In 2022, HAKOM participated in the 22nd ENRRB meeting at which relevant events in the rail sector in Member States were presented.

RMMS – The working group for monitoring the conditions of the single European market and for the collection of data on market conditions. Member States collect and submit data to the European Commission. Each year, Member States submit to the EC the data specified in the rail market monitoring questionnaire (TRAMOS), and every two years the EC submits the report to the European Parliament and to the Council. HAKOM submitted the data on the condition in the rail services market in the HR on time.

Single European Railway Area Forum (SERAF) – HAKOM is a member of the expert group for the support to the European Commission in the railway field in the preparation of proposals, expert analyses and documents foreseen in [Directive 2012/34/EU](#) on a Single European Railway Market. The expert group enables discussion and cooperation of the EC, Member States, rail associations and different stakeholders in the rail sector.

Network of regulators (BEREC, ERGP, IRG Rail)

The EU regulatory framework for the field of electronic communications, post and rail foresees the connecting of competent national regulatory authorities in the network of European regulatory bodies, which through their activities aim at assisting the EC to harmonise the implementation of the regulatory framework.

HAKOM thus participates in the work of the following:

1. **BEREC** – the network of regulators for electronic communications
2. **ERGP** – the network of regulators for postal services
3. **IRG Rail** – the network of regulators for rail services.

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

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

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

HAKOM's experts actively participated in the work of the working groups, the Contact Network and the Board of Regulators and the Management Board. In 2022, BEREC adopted about forty documents in accordance with its [annual work programme](#).



In addition, in October 2022, the Chair of the Council, Mr Obuljen, was elected BEREC Chair for 2024, as a result of which, having in mind the rotating leadership of the BEREC's Troika, in 2023 HAKOM takes over the role of the Incoming Chair. Since one of the duties of the Incoming Chair is to prepare the proposal of the BEREC's Work Programme for 2024, these activities already began at the end of 2022. HAKOM is also responsible for organising the Stakeholder Forum that was held on 30 March 2023.

Having in mind the role of the BEREC's Chair, in the next three years, 2023, 2024 and 2025, a significant engagement of HAKOM's experts is expected in the tasks of BEREC's administration.

ERGP – In 2022, HAKOM continued to participate in the work of the European Regulators Group for Postal Services (ERGP). Working group meetings were mostly held online via (virtual) platforms and discussed and addressed the issues related to the universal service, regulatory accounting, the prices of postal services, the situation and indicators of developments in the postal services market, the quality of services, consumer satisfaction and protection, the cross-border traffic of postal items and other issues. At the same time, the ERGP also supported the EC in providing assistance and advice in relation to the field of postal services, and in particular with regard to the issues of the provision of postal services in Member States in the post-COVID period and the impact of the war in Ukraine.

In October 2022, HAKOM was the host to the second annual meeting of the ERGP Contact Group, which was held in Zadar. The meeting was held on the eve of the 23rd regular plenary ERGP session and it was an occasion to exchange experiences of the EC and ERGP representatives regarding the changes in the postal services markets, potential changes in the regulatory framework and the challenges of the further harmonisation in the area of postal services in the forthcoming period. In addition to the above, HAKOM's representatives actively participated in the ERGP plenary sessions in June and November 2022 in Madrid.

IRG Rail – The IRG Rail is an organisation for cooperation, information exchange and the sharing of best practices between national railway regulators in order for them to efficiently face current and future regulatory challenges in railways and promote a consistent application of the European regulatory framework.

HAKOM's rail experts actively participate in the work of six working groups – Access, Access to Service Facilities, Charges, Charges for Service Facilities, Market Monitoring and Emerging Legislative Proposals in the special Multimodality Group. Within the work of these groups, more than 25 meetings were held, in addition to plenary sessions and network meetings and all IRG Rail inquiries on the situation in the rail services market in the HR were addressed.

CEPT

CEPT is an independent regional organisation which cooperates with the European Union, the European Free Trade Association and other relevant intergovernmental organisations as well as with other organisations concerned with post and electronic communications. In CEPT's work, HAKOM's expert are primarily involved in the work of the ECC and CERP committees.

The European Committee for Postal Regulation (CERP) – CERP is responsible for postal regulation in Europe and coordination and preparation for Universal Postal Union meetings. In the course of the whole of 2022, in coordination and cooperation with the MSTI, HAKOM participated in the work of the Committee at plenary meetings and the UPU and Policy working groups. The focus of the working groups was related to the valorisation and implementation of decisions adopted at the ordinary UPU Congress and preparations for a coordinated appearance at the UPU Extraordinary Congress.

Electronic Communications Committee (ECC) – The Electronic Communications Committee (ECC) is the umbrella organisation within CEPT responsible for the adoption of decisions and recommendations in the field of electronic communications important for the management of the RF spectrum and numbering space. The ECC oversees the work of the WGFM, WGSE, ECC PT1, CPG and NaN working groups. In 2022, HAKOM regularly monitored the work of the ECC and the results of the meetings that include a series of adopted decisions and recommendations that HAKOM implements in national regulations. The most important activities in 2022 related to preparing common European positions for the forthcoming World Radiocommunication Conference WRC 2023 and preparing common European positions for the ITU's 21st Plenipotentiary Conference (PP-22).



Working Group Frequency Management (WGFM) – The task of the working group is the harmonisation of the utilisation of the RF spectrum to enable a constant development of its use in the areas of mobile, fixed, maritime, aviation (including unmanned aerial vehicles), satellite and short range communications. In 2022, HAKOM regularly participated in this working group's meetings.

FM22 Project Team for RF spectrum monitoring – The FM22 Project Team is part of the WGFM Working Group and deals with the topic of control and monitoring of the RF spectrum. HAKOM's representatives participated in developing harmonised measurement techniques and procedures for the monitoring of the RF spectrum in 2022.

FM44 Project Team for satellite communications – The FM44 Project Team is part of the WGFM and deals with the issues of satellite communications. Given the intensified development of new satellite systems, HAKOM participated in the work of this project team having in mind the impact of new satellite systems on the existing microwave and satellite connections in the HR.

SRD/MG Project Team (Short Range Devices/Maintenance Group) – The SRD/MG is another project team within the WGFM responsible for a large number of short-range devices. Short-range devices are present everywhere in different professional activities or used for private purposes, so that new types are constantly appearing in the market or the existing ones are changing. Therefore, it was also important for HAKOM to participate in the work of this project team in 2022. In addition, with regard to the large economic impact of the industry of these devices on the economy of the European Union, the importance of regulation of this area has also been recognised by the European Commission, which charged the CEPT with a regular updating of SRD devices through the work of the SRD/MB project team.



Working Group Spectrum Engineering – The ECC working group is responsible for the technical issues of RF spectrum management. HAKOM participated in its work in 2022. The working group is tasked with the analysis of the possibilities of a joint use of the RF spectrum between the mobile, fixed and satellite services and short-range devices.

SE19 Project Team for fixed service – The SE19 Project Team is responsible for the development of channel arrangements for the fixed service, the issues of sharing the spectrum in the bands allocated to this service, the issues of new technologies in the fixed service, such as the application of multipoints with adaptive antennas, etc. HAKOM actively participated in preparing the reports on the use of bands for the fixed service and the trends in the use of microwave connections in Europe.

SE21 Project Team for the issues of unwanted interferences – The SE21 Project Team is responsible for the issues of unwanted and spurious SE21 emissions and it is, among other things, also responsible for the issues of measurements of adaptive antenna systems on site, i.e. outside laboratory conditions. Adaptive antenna systems are part of the 5G mobile network base stations. In 2022, HAKOM followed the work of this project team because of the importance of the topic.

SE45 Project Team for RLANs – Since HAKOM supported the task that relates to checking the possibility of use of the frequency band of the upper 6 GHz (6425 – 7125 MHz) for Radio Local Area Networks (RLAN), in 2022, HAKOM representatives participated in the work of this project team. The above topic is also related to the task AI 1.2 for the forthcoming WRC-23.



HCM Agreement – HCM (Harmonized Calculation Method) is an international agreement for the coordination of radio frequencies in the mobile and fixed services, also signed by the HR. In 2022, HAKOM participated in the work of the HCM TWG working group, tasked with the adjustment and amendments in the agreement in accordance with the development of radio technologies of microwave connections and mobile systems.

CPG (Conference Preparatory Group) – Within the preparations for the WRC-23 HAKOM participated in the work of this working group aimed at preparing common European positions with the assistance of A, B, C, D project teams and the ECC PT1 working group. Common European positions represent CEPT's compromising position regarding 35 topics for the WRC23 from all areas of radio communications.

CPG PTD (CEPT) and ITU TG 6/1 – Within the preparations for the 2023 World Radiocommunication Conference as one of the key topics HAKOM has recognised the topic on the agenda under which the future of the UHF frequency band (470 – 694 MHz) in Region 1 should be agreed. This band is currently used for broadcasting and the topic is discussed within CEPT's CPG PTD project team, i.e. the ITU-R TG 6/1 working group, in whose work HAKOM's representatives participated in 2022.

CPG PTB (CEPT) and ITU WP4A – The PTB project team within the CPG working group is responsible for satellite communications, as the ITU's WP4A working group deals with the equitable use of satellite orbits and the RF spectrum for the fixed-satellite service and the broadcast satellite service. HAKOM actively participated in the work of both groups, in particular following topic E under item 7 of the agenda of the forthcoming WRC-23. Under this topic and the item on the agenda HAKOM advocated for the amendments to the provisions of Appendix 30B of the ITU Radio regulations to be made so that countries that so far have not had a geostationary-orbi-

tal position assigned for national coverage in the fixed-satellite service should have priority and a special status in the international harmonisation.



WG NaN – HAKOM monitored and participated in the work of the ECC Numbering and Network Working Group (WG NaN), which is responsible for the development of policies in numbering, appointments and addressing, and for providing advice on technical regulatory matters to provide incentives and support innovations and competition in electronic communications.

ADCO RED – European cooperation on market surveillance takes place through informal groups of market surveillance authorities, called Administrative Cooperation Groups (AdCos). EU Member States appoint the members of these groups who represent national authorities competent for market surveillance. ADCO RED deals with surveillance in relation to the Radio Equipment Directive and HAKOM's representative regularly participates in the work of this group.

European Network and Information Security Agency (ENISA) – In 2022, HAKOM continued to participate in ENISA's working meetings, in particular in the ECASEC, Article 13a working group, which deals with a harmonised implementation of EU provisions from the existing 2002 regulatory framework on security and integrity of networks and services, necessary security measures and incident reporting. HAKOM also participated in developing the ENISA guidelines, which support Member States in the implementation of strategic and technical measures from the 5G Toolbox in the national legal frameworks.

NIS Cooperation Group – In the Network and Information Systems (NIS) Cooperation Group, with the assistance of the EC and ENISA, the Member States monitored the implementation of a Toolbox with a common set of measures that can mitigate the main cybersecurity risks of 5G networks.

NEB – HAKOM is a member of the network of national authorities for the enforcement of Regulation on Rail Passengers' Rights and Obligations, which, once a year and under the auspices of the EC, exchange experiences with the aim to establish best practices for the protection of rail passenger rights, their harmonisation and propose changes to the legislative framework. The topics discussed at the October meeting included the need for a stronger protection of passengers, the rights of persons with disabilities, reimbursements for delays/cancellations of trips and the consequences of the pandemic. The need for the development of a unified form for passenger complaints is emphasised, which should be adapted to persons with disabilities. The need for the unification of the document for online reimbursements in case of delays was pointed out.

ITU

The International Telecommunication Union (ITU) is the umbrella international organisation in the area of information and communication technologies and services as well as the oldest specialised agency within the United Nations. In 2022, together with the representatives of the competent Ministry and the Ambassador of the HR to Romania HAKOM participated in the ITU Plenipotentiary Conference (PP-22), which was held in Bucharest from 26 September to 14 October 2022. The Plenipotentiary Conference is held regularly every four years so that ITU member states adopt key decisions of importance for the future ITU role, its work and organisation and to establish plans for the further development of information and communication technologies and services at the global level in the forthcoming period.

In addition, in 2022, HAKOM's experts also participated in the work of the working groups within the ITU (for example, WP4A, TG 6/1).

ITSO

In 2022, HAKOM participated in the work of the 40th assembly of the International Telecommunications Satellite Organization (ITSO). Important decisions were adopted at this assembly, which ensure the continuity and the ongoing work of the ITSO, and the term of office of Director General, Mr. Patrick Masambu, was extended to the new period. It was decided that in the period until the next assembly two working groups will be set up and tasked with detecting the weak points and proposing improvements in the work and financing of the ITSO and the protection of the common legacy (frequency resources in geostationary-orbital positions) of all ITSO agreement member states.

ICANN (GAC)

As a representative of the HR, HAKOM continued to participate in the work of the Governmental Advisory Committee (GAC) within the Internet Corporation for Assigned Names and Numbers (ICANN) organisation. The GAC is an advisory committee with the main task to ensure the protection of public interest in matters of internet governance. The main topics in 2021 related to the issues of privacy in the WHOIS service, improvements in the governance processes used at the ICANN and the issues of the protection of human rights in such processes as well as the issues of the protection of geographical and other protected names in the TLD domains assignment processes. In 2022, HAKOM coordinated the proposals of RC positions with relevant ministries and with CARNet as the .HR top-level domain manager.

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 com-

prises the Mediterranean countries, as well as other countries (23 in total). HAKOM has been a full member of EMERG since 2015, and it has participated in the plenary sessions, workshops and meetings organised by EMERG. In 2022, it is worth mentioning the EMERG workshop in cooperation with the faculty of Politecnico di Milano on solutions for connection challenges, including the costs of energy, with special emphasis on the role of 5G networks and comparable technologies in the Euro-Mediterranean region. The workshop is part of the EMERG's plan for 2022 chaired by the Israeli Ministry of Communications (MOC) in cooperation with the Italian national regulatory authority for communications (AGCOM), Politecnico di Milano and the Israeli Institute for Technology (Technion).

NATO

HAKOM participated in "Cyber Coalition 2022", NATO's largest cyber defence exercise, which was organised by the Allied Command Transformation (ACT). The aim was to strengthen coordination and collaboration between the NATO alliance and its members and to improve the ability to deter, defend and counter threats in and through cyberspace.

OECD

In 2022, Croatia officially started negotiations on joining the Organization for Economic Cooperation and Development (OECD). Within the negotiations, HAKOM's experts provide support to other competent state administration bodies with regard to the analysis of the alignment with the OECD legal documents, in particular in the area of Science, Technology and Innovation.

Domestic cooperation

Ministry of the Sea, Transport and Infrastructure – At the end of 2022, HAKOM agreed the initial positions with the MSTI for the most important points of the forthcoming World Radiocommunication Conference, WRC-23, which will be held at the end of 2023. Cooperation continued in the area of rail services market, so that in 2022 meetings were held for the purpose of improving the situation on the rail services market and strengthening the existing communication and coordination. HAKOM representatives are also included in the working groups for the preparation of the Draft proposals for amendments to the RA, the ARRSM and the Proposal for the Act on Transportation Contracts in Railway Traffic.

Ministry of Health – HAKOM continued cooperation with the Ministry of Health on the issues of electromagnetic fields. Measure M3 of the National Plan for Broadband Development concerns the information and education of the public on electromagnetic fields. Both HAKOM and the

Ministry of Health are responsible for its implementation. Within the implementation of the activities defined by measure M3, long-term activities have been agreed that will result in the common system for the collection of data of authorised companies and a larger number of better quality publicly available information.

Ministry of the Interior – Within the regular cooperation with the MoI, in 2022, the issues that were addressed included a long-term solution for MoI's needs for RF spectrum and the ensuring of conditions for the provision of precedence in the use of electronic communication services, the manner of implementation of specific PPDR functionalities and national roaming.

CERT – In 2022, HAKOM cooperated with the National CERT with regard to computer security incidents reported by operators in 2022. Operators continue to report computer security incidents to the PiXi Platform in a timely manner, in accordance with the Ordinance on the manner and time limits for the protection of security and integrity of networks and services, based on the criteria described in the National taxonomy for computer security incidents.

Consumer protection associations – HAKOM openly cooperates with consumer protection associations and shares knowledge and experiences with all interested parties, which, in addition to regular dialogues with the associations also includes lectures/consultations for consumers (associations call HAKOM to hold a consultation). In 2022, noteworthy was the cooperation with the Croatian Consumer Protection Association (HUZP), Consumer Protection Association of the City of Samobor, (*Potrošačica* in Croatian) – the Association for the Protection of Consumers of Croatia, the Consumer Protection Association of the County of Bjelovar-Bilogora, the Consumer Centre Association, the Consumer Protection Centre of the County of Vukovar-Sirmium "Voice of Consumers" and the Dalmatian Consumer Association.

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

Croatian Railway Safety Agency – HAKOM cooperates with the Croatian Railway Safety Agency, the body responsible for the safety and interoperability of the railway system with the aim of preventing distortion of competition or for traffic safety. In October, a meeting was held on the topic of the inactivity of freight rail carriers, light travel, inspection supervision of the rail infrastructure, the compliance of HŽPP vehicles with Regulation 2021/782 (the number of bicycle places) and Regulation 454/2011 (information systems in the vehicle).

The Office of the National Security Council – In 2022, HAKOM chaired the internal working group of the National Security Council for cybersecurity for 5G. Priority tasks in 2022 included the implementation of measures from the 5G Toolbox as well as the coordination of RC positions in communication with partners within the EU and broader on issues of the 5G network security.

Government Legislation Office – HAKOM cooperated with the **Government Legislation Office** within the project "Strengthening the capacity for the implementation of regulatory impact assessment", which will enable the Government Legislation Office and HAKOM to perform practical regulatory impact assessment, develop better regulations and make optimal decisions in the interest of citizens and the economy. HAKOM joined the RIA coordinators' national network led by the Office and it appointed its representative. The project is co-financed by the EU (under the Technical Support Instrument) and the German Federal Ministry of Economic Affairs and Energy.

PUBLICITY OF HAKOM'S OPERATIONS

The publicity of HAKOM's operations is evident in the maximum availability of information on the basis of regulations in effect of the HR. Restrictions with regard to public access to HAKOM's work only exist to the extent that personal data or official and business secrets are protected. All relevant information, in particular the information defined by regulations, was regularly published on the website, including HAKOM's decisions and rulings, and decisions and judgements made in connection with HAKOM's decisions. Complete subordinate legislation within HAKOM's competence is also published with unofficial consolidated texts for ease of reference.

The website is updated with: adopted decisions and other administrative acts and received judgements of the Administrative Court and the High Administrative Court of the HR as well as final misdemeanour rulings; 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; data for databases of all registers; publication of statistical data on the markets of electronic communications, postal and rail services.

In addition to the transparent presentation of data or information in the field of HAKOM's regulatory work, an important segment of its public activity includes public consultations that are held for all decisions that may have a significant impact on market stakeholders. In 2022, 30 public consultations were initiated. Twenty-eight consultations were conducted as part of a special section of HAKOM's website E-Consultation, while two consultations were conducted via the [e-Consultation](#).

HAKOM occasionally published special releases about important events, alerts to users, decisions, judgements and regulations related to the electronic communications, postal and rail services markets. News from the area of HAKOM’s competence was regularly published on its website. In all, there were 87 such releases.

It has become a common task for the regulator to participate in radio and television broadcasts aimed at informing the public, primarily consumers, about important issues in the field of electronic communications, postal and rail services. The largest part of such public appearances was related to electronic communications consumer protection issues, and the majority of public appearances occurred on the public radio and television as part of informative programmes or specialised consumer-related broadcasts. In 2022, there were 87 requests for information submitted by the media, of which 44 were written answers, there were 26 requests for appearances in electronic media and 17 related to statements.

Citizens can contact HAKOM directly and get information every working day from 9 a.m. to 11.30 a.m. through special telephone lines for individual areas. In addition, citizens can forward queries by means of the "Ask Us" application available on the website. In 2022, 400 queries were received through this application. Finally, citizens can contact individual departments at their e-mail addresses, published on the website, or use a special address for proposals, complaints and praise regarding HAKOM’s work.

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

HAKOM received 15 requests for access to information under special regulations pursuant to the Act on the Right of Access to Information. All requests were resolved within the time limit and the Information Officer received a report on the implementation of the Act on the Right of Access to Information in 2022.

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, enforcement proceedings against legal and natural persons for non-payment of fees for the right of use of addresses, numbers and RF spectrum (State Budget) and for HAKOM’s work, as well as procedures where HAKOM applied for its claims against a debtor upon whom pre-bankruptcy or bankruptcy proceedings have been initiated.

Administrative disputes

No appeal is allowed against HAKOM’s decisions adopted in administrative proceedings, but judicial protection is provided as part of an administrative dispute. An administrative dispute is initiated by filing a lawsuit with the competent court. The High Administrative Court of the Republic of Croatia is competent for administrative disputes initiated against decisions adopted by the Council of HAKOM in the field of electronic communications, postal and rail services, and against decisions adopted by HAKOM’s inspectors in the cases of very serious and serious violations of the ECA and the PSA.

Figure 7.1 Statistics on administrative complaints

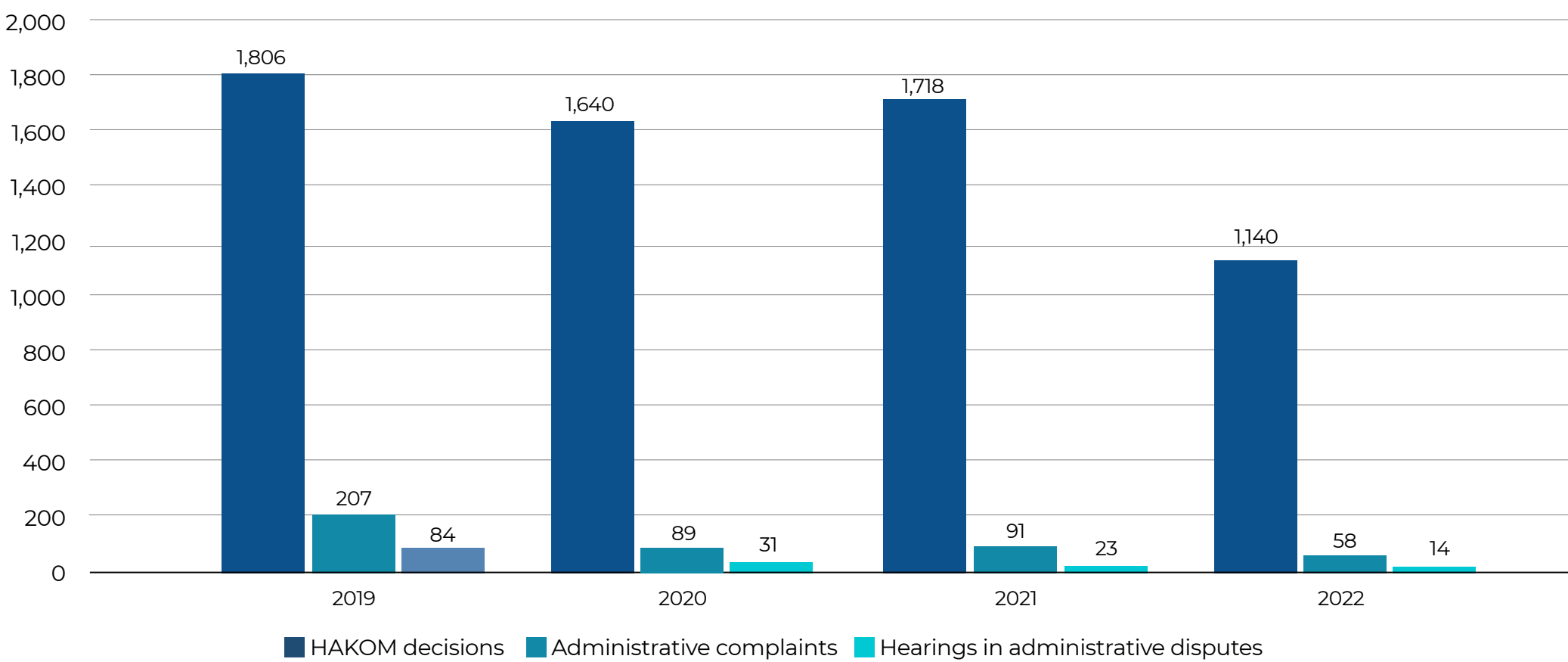


Figure 7.2 Number of administrative complaints by type of decision

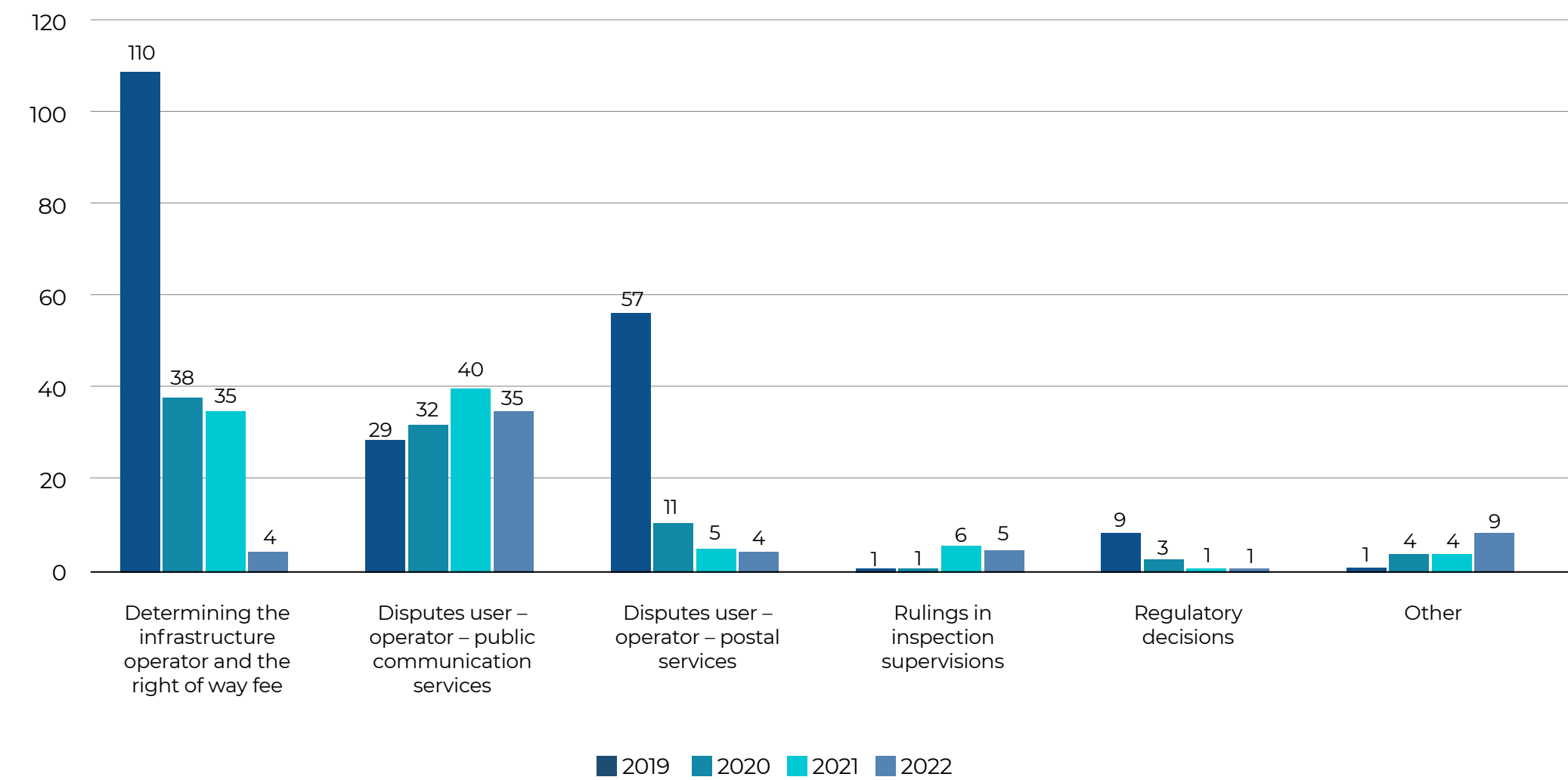
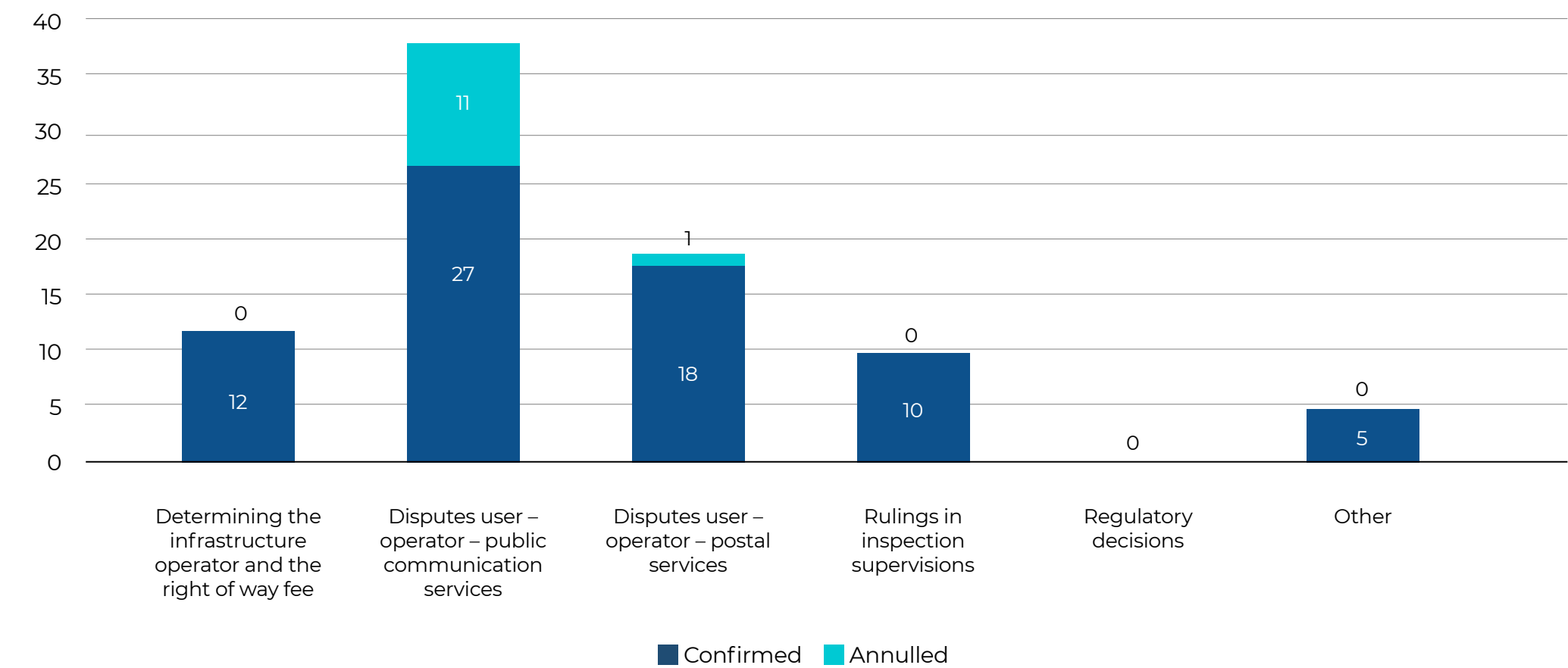


Figure 7.3 Statistics on judgements in administrative disputes



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

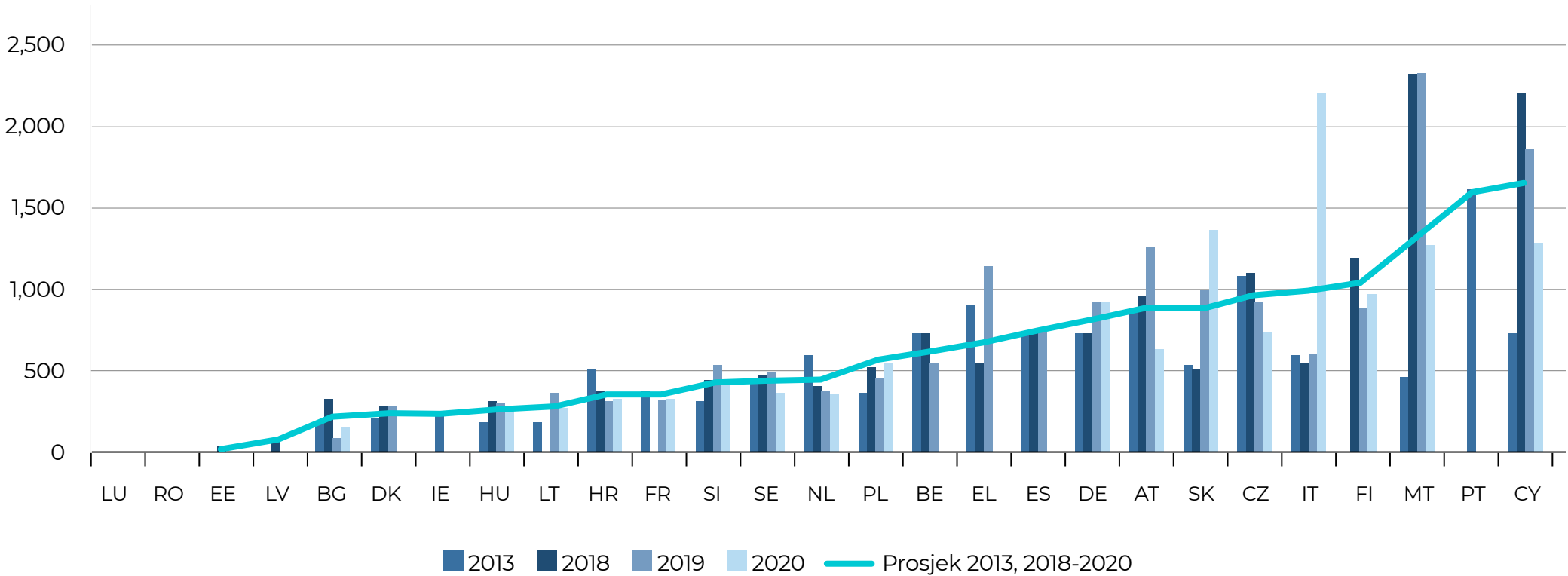
The analysis of the filed administrative complaints shows that a large number of complaints (35 complaints, or 60.3 percent) was filed in the cases of resolving disputes between users and operators of public communication services. In 2022, HAKOM resolved 983 disputes between users and operators of public communication services, so that the number of filed complaints relative to the number of resolved disputes accounts for only 3.6 percent. In the cases for determining the infrastructure operator and the right of way fee there were 4 (6.9 percent) complaints filed, which, compared with the previous year, is a decrease of 31 filed complaints. The remaining 19 complaints (32.8 percent) were filed in the cases of inspection supervision (5), in the disputes between users and postal service providers (4), in regulatory disputes (1) and in other cases (9).

The majority of confirmed HAKOM's decisions are cases for resolving a dispute between users and operators of public communication services (27), while the majority of annulled decisions (11) also concerns the cases for resolving a dispute between users and operators of public communication services. It is also worth noting that, in all, 72 (85.7 percent) HAKOM's decisions were confirmed, while a total of 12 (14.3 percent) HAKOM's decisions were annulled.

It is important to mention that the HR, with the average duration of court proceedings conducted by applying the ECA of around 310 days is ranked the 10th in the EU Justice Scoreboard statistics according to the efficiency of proceedings.

A comparative detailed overview of the duration of court proceedings conducted by the national courts of the EU Member States is shown in Figure 7.4.

Figure 7.4 Duration of court proceedings in electronic communications
(Source: The EU Justice Scoreboard 2022)



Misdemeanour proceedings

In 2022, five judgements were adopted, two of which were final. Three procedures are still ongoing before the High Misdemeanour Court of the Republic of Croatia. Of all of the adopted judgements, noteworthy is the judgement of the High Misdemeanour Court of the Republic of Croatia under reference number: Ppž-12702/2021 confirming the judgement of the Municipal Misdemeanour Court in Zagreb, reference number: PpG-3161/2019, by which HT was found guilty and fined with the amount of EUR 4,782,970.56/HRK 36,037,291.70 for the violation of regulatory obligations within the L Best Tariff.

Three other proceedings for the violation of regulatory obligations are still ongoing. Other proceedings are conducted for the following misdemeanours: concluding subscriber contracts contrary to law and subordinate legislation, failure to provide postal services in the prescribed manner, breach of the obligation to report a security incident, the violation of regulations on the minimum agreed speed of broadband Internet and the use of the ECI without a contract. A settlement was reached in one case in which the operator admitted guilt and was imposed a fine in the amount of EUR 26,544.56/HRK 200,000.00.

In 2022, HAKOM filed six motions for indictment in the field of electronic communications and post.

Enforcement proceedings

In 2022, based on enforcement proceedings initiated in the total amount of EUR 9,537.07/HRK 71,857.05, the amount of EUR 5,648.57/HRK 42,559.15 was collected, while for the remaining amount, the enforcement collection is still pending.

Pre-bankruptcy and bankruptcy proceedings

In 2022, HAKOM submitted one request for the settlement of its claims in the pre-bankruptcy proceedings for the total amount of EUR 1,313.33 EUR/HRK 9,895.27.

In 2022, HAKOM submitted one request for the settlement of its claims in the bankruptcy proceedings for the total amount of EUR 3,332.72/HRK 25,110.39.

No amount was collected based on the previously concluded pre-bankruptcy settlements. Receivables in the amount of EUR 38,799.74/HRK 292,336.61 were written off and erased from the accounts due to the winding down and erasure from the court register of an entity.

PERSONAL DATA PROTECTION

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

In 2022, HAKOM also followed the activities of the adoption of new EU legislative acts and new legislative initiatives also relating to the protection of personal data, such as e-privacy Regulation and the Data Act.

e-AGENCY

The e-Agency programme is based on the digitalisation of operation, which requires numerous application systems. Application systems are designed for external and internal users and are especially important for HAKOM's operations. HAKOM is constantly working on improving and modernising the existing application systems and introducing new ones. Continuous investments are also made in the maintenance and upgrading of the IS/IT infrastructure to enable the operation and development of all application systems.

In 2022, the new database of ported numbers (CABP) was upgraded, ensuring a higher level of consumer satisfaction when switching operators. The database of ported numbers is an exceptionally important system that must not be inaccessible because it influences the experience of users when switching operators and porting numbers (downtime means that users cannot make phone calls while the system is not in operation). This is a project in which all operators had to participate, representing a technical and organisational challenge, which was successfully overcome.

Connection to the e-Citizens (NIAS) system was successfully implemented, which will enable users the service through the e-Citizens – eRightofWay platform.

Digital initialling and electronic signing of documents was expanded as part of the continuation of the digitalisation of operation. This has enabled an additionally expanded digital processing of documents from the time of their production until the final approval of the individual document (without the need of printing it out on paper), and HAKOM's business processes have been adapted to the digital operation.

The project of virtualisation of the measurement environment of the control and measuring system was successfully concluded, by which the intervention time in the event of malfunctions was shortened and significant savings were made in the procurement of new equipment.

Among the more relevant projects that were launched in 2022, the start of the implementation of two new systems can be highlighted (the transfer to the new ERP and the upgrading of e-Licences). In addition to these projects, adjustments to all necessary systems for the changeover to the euro were successfully implemented.

In-house trainings of employees on information security were held as a component part of operation in the digital environment of the e-Agency. The aim of the education was to raise awareness of information security, strengthen the knowledge and perception of the importance of en-

suring the security of data and information and other information assets, with special emphasis on the new working environment (remote working...).

COMPTENCE AND BUSINESS DEVELOPMENT

In order to fulfil one of its main strategic goals, achieve business and operational excellence and enable organisational growth and development, in 2022, HAKOM launched its several-year long project of the development of organisational culture with the objective of its improvement and fostering a positive organisational environment. In the course of the year, HAKOM systematically invested in and promoted the acquiring of new knowledge and skills for the development of competent employees that can respond to the existing and future challenges and be competitive with the requirements and needs of the EU and domestic electronic communications, postal and rail service markets. The implementation of the career development system is coming to an end in accordance with the plans and planned activities for 2022. During the year, the process for an objective employee performance assessment was introduced and work was continued on the catalogue of personal, general and specific competences of HAKOM.

The efficient regulatory approach has a positive impact on the market, reduces the administrative burden and prevents excessive costs and enables better quality services, fosters innovations and investments. HAKOM is constantly investing in the strengthening of its own capacities with the aim of improved planning, implementation and evaluation of own regulatory activities. In early 2022, [the project was launched](#) for the introduction of the **Regulatory Impact Assessment (RIA)** methodology in the area of electronic communications, postal and rail services.

The project, under the official title "Strengthening capacity for the implementation of impact assessment of regulations in Croatia", is implemented by the German Gesellschaft für Internationale Zusammenarbeit (GIZ) in cooperation with the Directorate General for Support of Structural Reforms of the European Commission²¹.

Regulatory impact assessment is a systematic approach to assessing the potential effects of a proposed regulation or policy prior to its implementation. RIA's primary purpose is to provide policy-makers with evidence-based information about the likely costs, benefits and unintended

²¹ The project was commissioned by the German Federal Ministry of Economic Affairs and Climate Policy, with co-financing from the Technical Support Instrument of the European Union (TSI).

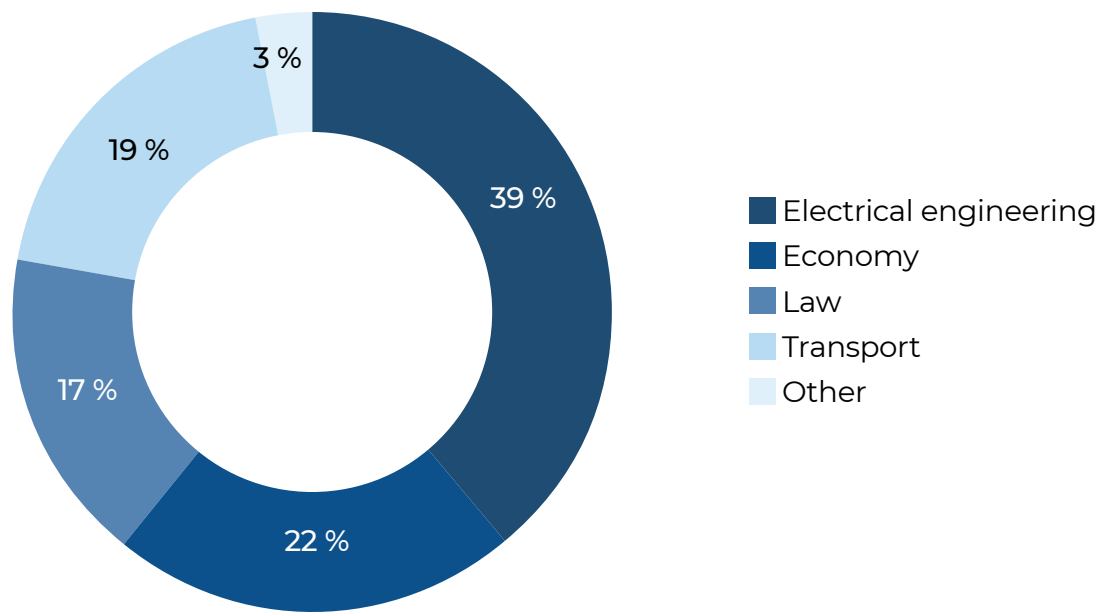
consequences of the proposed regulatory course. RIA helps policy-makers adopt informed decisions and balance the advantages of regulation in relation to costs. It also provides an opportunity for stakeholders to provide feedback and contribute to the overall regulatory process.

In 2022, the current situation in HAKOM was screened and recommendations were given on how to implement the RIA in operations. Then, HAKOM's draft Methodology with guidelines was prepared that was tested during the pilot-project completed at the end of the year. The project with GIZ will formally close at the end of August 2023. Until then, the training of experts will be conducted and the process will be set up, while a deeper implementation of RIA in HAKOM will continue autonomously. It is expected that the process will be fully set up at the level of the whole organisation in the beginning of 2024.

of employees hold postgraduate master of science degrees, and 28 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. Thirty-nine percent of employees have higher education in the field of electrical engineering, 22 percent in economy, 19 percent in the field of transport engineering, and 17 percent in law. The rest of the employees have other professions. Twenty-five employees have completed university and specialist undergraduate studies, and 24 employees have completed secondary education.

STAFF

Figure 7.5 Structure of employees according to fields



HAKOM is managed by the Council consisting 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 2022, HAKOM had 188 employees, of which 139 had completed university or specialist graduate studies. Of this number, 4 percent of employees have completed postgraduate university doctoral studies, 12 percent



08

FINANCIAL STATEMENT

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INTRODUCTION

The Croatian Regulatory Authority for Network Industries (hereinafter: HAKOM), pursuant to Article 20, paragraph (1), sub-paragraph (6) of the Electronic Communications Act (Official Gazette 76/22; 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 2022. This report is an integral part of the HAKOM 2022 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, 20/2021 and 114/2022; hereinafter: RA).

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

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

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

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

In accordance with the Act on Execution of the State Budget of the Republic of Croatia for 2022 (Official Gazette 62/2022 and 131/2022), 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 2022 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 2022, HAKOM generated assigned revenues, EU aid, revenues from the sale of non-financial assets and other revenues, which were not fully sufficient to cover all expenditures of HAKOM, so that the surplus of revenues carried forward from previous years was partially used. The deficit in revenues in 2022 was the result of reduced assigned revenues due to a decrease in individual fees and enabling payment in instalments. The fees were reduced with the intention of using surplus revenues from previous periods. The remaining surplus of revenues carried forward is planned to be used in the coming period for the financing of part of the expenditures for the purchase of produced long-term assets and for additional investments in non-financial assets.

REVENUES

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 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 the total annual gross revenues generated by infrastructure managers in the previous calendar year.

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

The calculation and amount of fees and the manner of payment of fees for the financing of HA-

Table 1 Revenue overview (in HRK)

Account from Acc. Plan	HAKOM revenues	Realised in 2022
63	Aid from abroad and from entities within the general budget	83,857
632	Aid from international organisations and EU institutions and bodies	83,857
64	Revenues from assets	26,867
641	Revenues from financial assets	26,867
65	Revenues from oper. and admin., fees, fees pursuant to special legislation and fees	64,601,736
652	Revenues under special regulations	64,601,736
66	Revenues from the sale of goods and services provided, revenues from donations and returns on protested guarantees	2,000
663	Donations from legal and natural persons outside the general budget and return of donations on protested guarantees	2,000
68	Penalties, administrative measures and other revenues	36,026
683	Other revenues	36,026
6	Operating revenues	64,750,486
72	Revenues from the sale of produced long-term assets	140,826
722	Revenues from the sale of plant and equipment	600
723	Revenues from the sale of transport equipment	140,226
7	Revenues from the sale of non-financial assets	140,826
	HAKOM TOTAL REVENUES	64,891,312

KOM'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 2022 amounted to HRK 64,601,736 and were down by 36% from the performance in 2021. The decrease in revenues was mostly the result of the reduction of certain fees and the possibility of payment in instalments based on the Ordinance on the payment of fees for the performance of activities of HAKOM. The fees were reduced with the aim to use surplus revenues accumulated from previous periods. In the previous year, a public auction procedure was also conducted, after

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

Prihodi od upravnih i admin. pristojbi, pristojbi po posebnim propisima i naknada	Realised in 2022
1. Revenues from the fees for the radiofrequency spectrum management	30,375,692
2. Revenues from the fees for the addressing and numbering space management	6,815,470
3. Revenues from the fees for the performance of other activities of HAKOM in the percentage of the total annual gross revenues of the operators in the previous calendar year in the activities of electronic communications networks and services on the market, except broadcasters broadcasting their radio or television programmes through their own electronic communications networks, which they use solely for this purpose	19,526,533
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	5,276,707
5. Revenues from the fees for performing HAKOM's activities in the field of rail market regulation, as a percentage of the total annual gross revenues generated by infrastructure managers in the previous year	2,332,829
6. Other revenues from operating and administrative fees	274,505
TOTAL	64,601,736

which licences for the use of the radiofrequency (RF) spectrum for 5G mobile communication networks in the territory of HR were issued. Fees were collected based on these licences, which was not realised in 2022.

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

Aid from abroad and from entities within the general budget consists of current aid from EU institutions and bodies in the form of refunds for official travel expenses, which amounted to HRK 83,857 in 2022. Of the total amount of EU aid, HRK 60,391 related to refunds for official travel expenses from BEREC and HRK 23,466 from other EU bodies. The increase in revenues from current aid from EU institutions and bodies, relative to the previous year, is the result of increased foreign official travel in 2022 after it was restricted previously 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 26,867.

Other revenues in the amount of HRK 36,026 relate to reimbursements based on the Sponsorship Agreement, collected cancelled licences, the return of enforcement costs, etc.

In 2022, capital donations were recorded in the amount of HRK 2,000 and relate to a handmade Chinese vase that HAKOM received from the Huawei Company. The Commission for asset value assessment conducted the procedure of internal assessment of the value of the vase and it was recorded in HAKOM's accounts.

Revenues from the sale of produced long-term assets were recorded in 2022 in the amount of HRK 140,826 and were largely generated from the sale of two 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 sealed written offers, and the criterion for the selection of the best offer was the highest offered selling price.

EXPENDITURES

HAKOM's expenditure in 2022 amounted to HRK 94,371,240.

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 2022, 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 2022, financial resources were spent on the following:

1. operating expenditure (class 3)

- a) employee expenditure – the payment of salaries and other employees' expenses;
- b) material expenditure – compensation of expenses to employees (official trips for radiofrequency measurements, interference studies, technical inspections, participation in regular meetings and conferences of European bodies where HAKOM has its representatives, compensation for employee transport costs, professional development of employees), the costs of office supplies, other materials for the needs of regular operation and literature, in accordance with the regular needs of employees, overheads and fuel costs for HAKOM's official vehicles, phone, internet,

post and transport, the services of regular and investment maintenance of vehicles, measuring devices, control and measuring centres and control and measuring stations (works on the reconstruction of the access road for Veliki Bokolj CMS and Osorščica CMS), publicity and information services (promotional materials, the production of a video on the occasion of the Safer Internet Day, different brochures for consumer protection, Privacy Calculator at – privatnost.hakom.hr, the production of the animation video on the topics of interference and EU roaming), utilities, rents and lease (in 2022, a new business premises lease agreement at more favourable prices was concluded), health services (employees' check-ups), intellectual services (audit services, consultation services for the preparation, implementation and evaluation of the electronic auction procedure for the RF spectrum allocation, the services of checking the accuracy of the calculation of universal service provider's net cost, the services of defining the procedures of measuring the quality of services in public mobile networks, consultation services – the provision of regulatory information, consultation services with education – ISO27001 audit, etc.), computer services (software maintenance – CABP, GIS, CHIRplus, HRNet, Navision, web applications, e-Licences, e-Operator, "Do Not Call" application, Centrix, etc.), other services, premiums for the insurance of vehicles, property and employees, representation expenses (International Conference "Accessible Future", the meeting of the IRG Rail members, Electronic Communications Market Day, the Round Table of rail service shareholders, etc.), charges and fees, membership fees, etc.;

c) financial expenditure – banking services and payment operations services, negative exchange rate differences;

d) compensations to citizens and households based on insurance and other fees – undergraduate, graduate and postgraduate studies for two employees;

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

- a) expenditure on the acquisition of non-produced long-term assets – licences;
- b) expenditure on the acquisition of produced long-term assets – computers and computer equipment, measuring and control devices for the purposes of radiofrequency spectrum control and management, software, communication equipment, the construction of power facilities for the purpose of connecting the Veliki Bokolj CMS and Bilogora CMS to the electricity distribution grid, and the acquisition of a new measuring vehicle, etc.;
- c) expenditure on additional investments in non-financial assets – the upgrading of Navision, e-Licences, e-Operator, e-Main Project, the HAKOMetar plus application, the SAT application, etc.

Table 3 Expenditure overview (in HRK)

Account from Acc. Plan	HAKOM	expenditure	Electronic communications area	Postal services area	Railway market regulation services area
	Expenditure total	94,371,240	86,911,992	4,360,213	3,099,035
3	Operating expenditure	83,939,555	76,480,307	4,360,213	3,099,035
31	Employee expenses	50,945,411	46,924,910	2,444,025	1,576,476
311	Salaries (gross)	37,577,541	34,604,561	1,804,634	1,168,346
312	Other employee expenses	7,122,922	6,570,015	339,714	213,193
313	Contributions on salaries	6,244,948	5,750,334	299,677	194,937
32	Material expenditure	32,904,119	29,469,994	1,913,593	1,520,532
321	Compensations of expenses to employees	3,232,589	2,849,049	207,344	176,196
322	Expenditures for materials and energy	3,018,165	2,726,068	166,672	125,425
323	Expenditure for services	25,150,404	22,647,587	1,469,477	1,033,340
324	Compensation of expenses to unemployed persons	0	0	0	0
329	Other unmentioned operating expenditure	1,502,961	1,247,290	70,100	185,571
34	Financial expenditure	54,182	49,560	2,595	2,027
343	Other financial expenditure	54,182	49,560	2,595	2,027
37	Compensations to citizens and households based on insurance and other fees	35,843	35,843	0	0
372	Other compensations to citizens and households from the budget	35,843	35,843	0	0
4	Expenditure on the acquisition of non-financial assets	10,431,685	10,431,685	0	0
41	Expenditure on the acquisition of non-produced long-term assets	84,375	84,375	0	0
412	Intangible assets	84,375	84,375	0	0
42	Expenditure on the acquisition of produced long-term assets	7,922,537	7,922,537	0	0
421	Buildings	663,728	663,728	0	0
422	Plant and equipment	3,687,633	3,687,633	0	0
423	Transport vehicles	1,167,990	1,167,990	0	0
426	Intangible produced assets	2,403,186	2,403,186	0	0
45	Expenses for additional investments on non-financial assets	2,424,773	2,424,773	0	0
451	Additional investments in buildings	282,680	282,680	0	0
452	Additional investments in plant and equipment	118,812	118,812	0	0
454	Additional investments in other non-financial assets	2,023,281	2,023,281	0	0

The most represented expenditure in HAKOM's total expenditure is employee expenditure, amounting to HRK 50,945,411, while material expenditures are the second most represented group of expenditure, amounting to HRK 32,904,119 in 2022. The most significant material expenditure is related to the expenditure for services, of which the expenditure for rents and leases is the most represented expenditure, followed by the expenditure for computer services, intellectual and personal services, regular and investment maintenance services, other services, etc.

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

Account from Acc. Plan	HAKOM expenditure	HAKOM	Electronic communications area	Postal services area	Railway market regulation services area
31	Employee expenses	54,0	54,0	56,0	50,9
32	Material expenditure	34,8	33,9	43,9	49,0
34	Financial expenditure	0,1	0,1	0,1	0,1
37	Compensations to citizens and households based on insurance and other fees	0,0	0,0	0,0	0,0
41	Expenditure on the acquisition of non-produced long-term assets	0,1	0,1	0,0	0,0
42	Expenditure on the acquisition of produced long-term assets	8,4	9,1	0,0	0,0
45	Expenses for additional investments on non-financial assets	2,6	2,8	0,0	0,0
TOTAL		100	100	100	100

SURPLUS REVENUE

On 1 January 2022, HAKOM had surplus operating revenue of HRK 51,338,860 and deficit in revenues from non-financial assets of HRK 7,019,654 recorded in the basic accounts of sub-group 922 in the Balance Sheet. In March 2022, the Decision on the distribution of results was adopted, by which the deficit in revenues from non-financial assets was fully covered by surplus operating revenues. The remaining surplus operating revenue stood at HRK 44,319,206.

In 2022, an operating revenue deficit was recorded, amounting to HRK 19,189,070, and deficit in revenues from non-financial assets amounted to HRK 10,290,858. In order for the result at the end of the budget year to reflect a more realistic balance of results by activities, results were adjusted for the situations prescribed by the Ordinance on budget accounting and the accounting plan. After the conducted adjustment in 2022, an operating revenue surplus was recorded, amounting to HRK 19,050,243 and deficit in revenues from non-financial assets amounted to HRK 10,429,685.

At the end of 2022, total surplus operating revenue amounted to HRK 25,268,963 and deficit in revenues from non-financial assets amounted to HRK 10,429,685.

In March 2023, the Decision on the distribution of results was adopted, by which the deficit in revenues from non-financial assets in the amount of EUR 1,384,257 (HRK 10,429,685 – converted at the fixed exchange rate of EUR 1 = HRK 7.53450) 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 revenue totalled EUR 1,969,511 (HRK 14,839,278 – converted at the fixed exchange rate EUR 1 = HRK 7.53450) available in the coming period.

BUDGET EXECUTION

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

Table 5 Budget execution (in HRK and %)

	Execution 2021 (HRK)	Plan 2022 (HRK)	Execution 2022 (HRK)	Index execution 2022/plan 2022	Index execution 2022/2021
3107 – Development of the postal services and electronic communications markets	84,562,746	111,410,915	94,660,466	85	112

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

	ITEM	Plan	Realised	%
3 + 4	EXPENDITURE TOTAL	111,410,915	94,660,466	85
3	Operating expenditure	97,047,588	84,267,092	87
31	Employee expenses	54,400,209	50,891,178	94
32	Material expenditure	42,226,080	33,298,168	79
34	Financial expenditure	170,049	53,236	31
37	Compensations to citizens and households based on insurance	187,500	24,510	13
38	Other expenditure	63,750	0	0
4	Expenditure on the acquisition of non-financial assets	14,363,327	10,393,374	72
41	Expenditure on the acquisition of non-produced long-term assets	114,500	84,375	74
42	Expenditure on the acquisition of produced long-term assets	11,660,750	7,920,537	68
45	Expenses for additional investments on non-financial assets	2,588,077	2,388,462	92
6 + 7	TOTAL INCOME	66,134,725	64,889,312	98
6	Operating revenues	66,024,725	64,748,486	98
63	Aid from abroad and from entities within the general budget	300,000	83,857	28
64	Revenues from assets	191,000	26,867	14
65	Revenues from administrative and operating fees	65,423,725	64,601,736	99
68	Penalties, administrative measures and other revenues	110,000	36,026	33
7	Revenues from the sale of non-financial assets	110,000	140,826	128
72	Revenues from the sale of produced long-term assets	110,000	140,826	128

In the preparation of financial plans and monitoring budget execution, 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 2,000 representing a capital donation (the Chinese vase), 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 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 2022

Entities subject to budget accounting and preparing financial statements within the budget system prepare and submit their financial statements for 2022 in accordance with the provisions of the Ordinance on financial reporting in budget accounting (Official Gazette 37/2022).

The Annual Financial Statements of HAKOM for 2022 were submitted on 30 January 2023 through the web application of the Ministry of Finance (Financial reporting within the budget system and the Register of budgetary and extra-budgetary users – RKPFI), the State Audit Office and the line ministry.

Copies of the signed HAKOM's Annual Financial Statements for 2022 are published on HAKOM's website [HAKOM's website](#):

Budget statements, budget and extra-budgetary user statements for the period: 1 January 2022 – 31 December 2022 – Reference page

1. Statement of revenue and expenditure, receipts and expenses for the period: 1 January 2022 – 31 December 2022 – Form: PR-RAS
2. Balance Sheet as of 31 December 2022 – Form: BIL
3. Statement of expenditure by functional classification for the period: 1 January 2022 – 31 December 2022 – Form: RAS-functional
4. Statement of changes in the value and volume of assets and liabilities for the period: 1 January 2022 – 31 December 2022 – Form: P-VRIO
5. Statement of liabilities for the period: 1 January 2022 – 31 December 2022 – Form: LIABILITIES
6. Notes to the financial statements of HAKOM for the period 1 January 2022 – 31 December 2022

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ABBREVIATIONS

Abbreviations:

A1 – A1 Hrvatska

ADSL – Asymmetric Digital Subscriber Line

AEM – Agency for Electronic Media

ARRSM – Act on the Regulation of Rail Services Market

BCO – Broadband Competence Office

BEREC – Body of European Regulators for Electronic Communications

BIDP – Broadband Infrastructure Development Plan

CADPN – Central Administrative Database of Ported Numbers

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

CEPT – European Conference of Postal and Telecommunications Administrations)

CERP – European Committee for Postal Regulation

CPG – Conference Preparatory Group (WRC preparatory group)

DAB+ –Digital Audio Broadcasting

DVB-T – Digital Video Broadcasting –Terrestrial

EC – European Commission

ECA – Electronic Communications Act

ECC – Electronic Communications Committee

ECI – Electronic Communications Infrastructure

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

EECC – European Electronic Communications Code

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

EMP – electromagnetic field

ENISA – European Network and Information Security Agency

ENRRB – European Network of Rail Regulatory Bodies

ERGP – European Regulators Group for Postal Services

EU – European Union

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

FM – Frequency Modulation

FTTB – Fiber To The Building

FTTDP – Fiber To The Distribution Point

FTTH – Fiber To The Home

GIZ (Gesellschaft für Internationale Zusammenarbeit) – German Corporation for International Cooperation

HAKOM – Croatian Regulatory Authority for Network Industries

HCM Agreement (Harmonized Calculation Method) – 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.

HŽI – HŽ infrastruktura

HŽPP – HŽ putnički prijevoz

IoM – (Railway) Network Report

IoT – Internet of Things

IPTV – Internet Protocol Television)

IRG-Rail – Independent Regulators' Group – Rail

ISP – Internet Service Provider

ITU – International Telecommunication Union

LEO – Low Earth Orbit

LSU – local self-government unit

M2M – Machine to Machine

MMS – Multimedia Message Service

MPP – minimum access package in the rail services market

MSTI – Ministry of the Sea, Transport and Infrastructure

MVNO – Mobile Virtual Network Operator

NFP – National Framework Programme for the Development of Broadband Infrastructure in Areas Lacking Sufficient Commercial Interest for Investments

OTT – Over-the-top service

PAY-TV – Television programmes with payment

PSA – Postal Services Act

RA – Railway Act

RF – Radiofrequency

RFI – Regulatory Financial Statement

RSC – Radio Spectrum Committee
RSPG – Radio Spectrum Policy Group)
SGA – State Geodetic Administration
SMS – Short Message Service
T-DAB – Terrestrial Digital Audio Broadcasting
 Telemach – Telemach Hrvatska
TV – Television
UPU – Universal Postal Union
VDSL – Very-high-bit-rate Digital Subscriber Line
VHCN – Very High Capacity Network
WIFI – Local wireless network within the 2.5/5 GHz frequency band
WLAN – Wireless Local Area Network
ZZP – Consumer Protection Act
ŽUC – County roads administration

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