# Annual Report of the Electronic Communications Office of Iceland 2023

Fjarskiptastofa

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The Electronic Communications Office of Iceland
Suðurlandsbraut 4, 108 Reykjavík

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# A word from the managing director

## The Status of Cybersecurity in Iceland

The development of the ECOI's cybersecurity capacity began in earnest 3 years ago, after the Act on cyber and information security of important infrastructure was approved and funded. In the time that has passed since then, the Electronic Communications Office has redoubled its activities, on one hand through the increased efforts of the cybersecurity team CERT-IS and, on the other hand, with the creation of a new division for digital security, which works on risk assessments, incident investigations and the introduction of operating systems for cyber and information security of important infrastructure.

It may be said that within the Electronic Communications Office, cyber security monitoring takes place on two levels. On the one hand, there is the role of CERT-IS, which mostly involves providing assistance to parties who are the targets of cyber attacks and to minimise the damage, and on the other hand to analyze situational awareness and situational picture of cybersecurity in the relevant network domain, and to issue warnings about impending danger. The cybersecurity team CERT-IS has increased the extent of its activities to a considerable extent in the last 3 years. In this regard it may be mentioned that this year the cybersecurity team received the SKÝ prize for digital services, and that the joint Sweden-Iceland team was the winner of the largest cybersecurity exercise in the world, Locked Shields.

In the field of digital security, efforts are made to prevent cyber attacks by carrying out risk assessments and follow-up through the introduction of operating systems for cyber and information

security of important infrastructure.This division hosted a cybersecurity conference in October of 2023 which emphasised the importance of cybersecurity on a broad level and also presented what the future will hold in light of the NIS2 legislation. The focus of the division is on preventive actions to toughen up cybersecurity and enable parties to respond to impending danger and attacks in a systematic manner that is consistent with the best implementation within the EEA.

A considerable amount of experience has already been gained through these efforts. The self-assessments of companies are taken into consideration and in some cases audits are carried out as a consequence of those assessments. Parties are advised of opportunities for improvement, and binding instructions regarding improvements may even be imposed on them if this is warranted by the self-assessment. Furthermore, cyber security incidents are investigated in accordance with a standardised process. Investigation begins with a preliminary assessment and, if warranted, an administrative investigation is then started to follow up on that. Experience shows that administrative investigations are only carried out in exceptional cases, which involve very serious incidents where the parties involved are in significant disagreement regarding the facts and severity of cases, and if there are indications of a considerable lack of a functioning operating system for cybersecurity or that the minimum legal requirements are not being met.

The following lessons can be learned from the experience that has already been gained: The understanding which technicians have regarding the configuration and necessity of security measures is sometimes limited to the field of experience defined by the technological approach of individual companies for which they work. Sometimes there may even be a reluctance to respond to indications. It also seems that parties do not give adequate attention to defining their responsibilities when it comes to outsourcing certain service components, so that it is ensured that the relevant party can actually be responsible for their activities, as required by law. This is no surprise. Highly experienced individuals, who are in many respects very competent in the operation of their systems, find it objectionable that a public body that does not have the principal function of operating information or technology systems should even venture to offer an opinion about how to conduct such activities. In this context, it is important to point out that the ECOI's methodology is based on the methodology and guidelines of parties such as the European Union Agency for Cybersecurity (ENISA), which has had workgroups developing these guidelines for many years. It is also important to mention that there are highly experienced individuals working within the ECOI who have many years' experience of scrutinising quality systems and operating systems for cybersecurity, and in the implementation of operations of this kind. A vital part is to strengthen the cooperation and dialogue regarding the requirements that result from the regulatory framework so that the operators of important systems in Iceland are on equal footing with their colleagues in Europe in this regard.

The current Network and Information Security Directive, commonly referred to as NIS1, is based on an EU regulatory framework from 2016 that was introduced in this country in 2019. NIS2 is underway and will probably be introduced into Icelandic law in 2026. Even though a parliamentary bill has not yet been submitted, it is clear what the major changes will be. First it should be mentioned that the scope of the laws will be expanded considerably to that it will apply to many more parties than is currently the case. Even more emphasis is placed on preventive actions

and to promote an active operating system for cyber and information security with risk assessment, security tests and incident investigation. Much importance is attached to international cooperation, both within the EU and with parties who have joint interests, such as our allied nations within NATO.

In the ECOI's assessment it is important to discuss the structure and organisational structure of cyber security issues in this country in this context, in a detailed and honest manner. Icelanders are a micro-nation with a highly technological society that is dependent on various kinds of computer and telecommunication systems. Due to the fact that we are a small society, the cooperation within the administration and with the market in general is even more important in this country than in many other places.It could be said that it is basically unavoidable for us to work in close cooperation! Cybersecurity does not come cheap and will get even more expensive in the future. However, failure to implement actual, efficient measures to ensure cybersecurity would be even more costly and leave us vulnerable to criminal elements and foreign powers who wish to intrude into the functioning of Icelandic society.

In light of the fact that there are foreign powers that overtly and covertly employ terror groups to harass and harm other states it is clear that cybersecurity is largely about protecting the independence of the nation and is therefore a matter of national security and public interest. Iceland is among the targets of these terror groups and it may be assumed that the cyber threats that we currently face are of no less severity than in our neighbouring countries. Icelandic cybersecurity legislation has been mostly tailored to civil administration procedures. In recent years, the Electronic Communications Office and CERT-IS have engaged in large-scale and ever-growing cooperation regarding cybersecurity with NATO, with the help of the Ministry of Foreign Affairs. This cooperation has not been widely publicised, but the dialogue needs to be made more open and wide-reaching. Us Icelanders

must face the fact that cyberthreats are an international phenomenon and there are verified instances that the most dangerous terror groups that serve the interests of foreign states such as Russia, Iran, North-Korea and China are also actively targeting our country. These groups therefore direct their attention to Iceland and in light of our country's location, high technological level and weak cybersecurity, Iceland is in a vulnerable position in this regard

Therefore, these factors must also be taken into consideration in the introduction of NIS2, and it must be ensured that the administration will be effective in all sectors of society when cyberthreats are addressed, and not along the lines that lead to the projects of individual ministries, as tends to be case far too often today. In many foreign countries, so-called cybersecurity centers have been established, for the purpose of co-ordinating all cybersecurity-related activities in the community. This is an option worth considering for our country, to ensure an integral vision of the status of cybersecurity in all sectors of society. This co-ordination would include situational awareness of cyberthreats in all sectors of society, risk assessment regarding cyberthreats on the same level, an overview of the status of cyber defences and potential weaknesses that the most important parties in this country may have to address, the capacity to defend against threats and reduce their effect, efficient communication of information about impending cyberthreats, the organisation of incident handling in all sectors of society, co-operation with the market in general, co-ordination of investigations of cyber incidents, communication of information to the general public and companies regarding cyberthreats and preventive actions along with efficient policy making and active implementation planning with regard to cybersecurity. It must also be ensured that funding includes all important aspects of cybersecurity irrespective of which administrative bodies are involved, so that individual important aspects are not underfunded, as is currently the case.

## Development of the telecommunications market in Iceland

In 2022, a significant transformation occurred in the Icelandic telecommunications market when Ardian bought Míla. This meant the severance of the connections in ownership and administration between Síminn and Míla, companies that for many years formed a vertically integrated group of companies. This should create the opportunity for Míla to sell its wholesale products to all customers without the competitors of Síminn having to fear that this will work against them in competition. The development of competition in the wholesale telecommunications market, where Míla is still the most powerful company, is a sensitive, long-term process. Míla's chief competitors are Ljósleiðarinn at national level, Tengir in the Northeast of Iceland, Snerpa in the West Fjords, Austurljós in the East of Iceland, Eygló in the Westman Islands, plus many other, smaller-scale network service providers.

The installation of telecommunications networks on a national level is an expensive and time-consuming task that requires access to patient funding. A high rate of interest is a problem for those who need to finance long-term projects, with interest rates around or higher than 10%. It may be assumed that the ownership and financial structure of Ljósleiðarinn has recently been causing trouble for the company with regard to its plans for the

development and implementation of operations at the national level. The company's efforts in recent months to strengthen its position by widening ownership have yet to yield results.This is an ongoing process and it is proper to wait and see how it progresses. The results will potentially have an effect on the development of competition in the infrastructure part of the telecommunications market in the long term. The telecommunications regulatory framework does not directly address the ownership of telecommunications companies in this regard. However, the competitive position on the market is considered, and the ECOI's principal tool for analysing competition is in the form of so-called market analyses.

The purpose of market analyses is to ascertain whether there is active competition on telecommunications markets, and to determine what measures shall be taken in the form of imposing obligations if competition is not active, in certain parts of the country as the case may be, and thereby improve conditions for consumers. It must also be considered whether the proliferation of high-speed networks under market conditions is unsatisfactory when it comes to determining obligations, where there is no active competition.

The markets that are still considered to require intervention from public authorities to strengthen competition through market analyses are the leased line markets (trunk networks and terminal part) on one hand and the access markets on the other hand (local loops and bit streaming). In the autumn of 2023, the ECOI issued a draft of a new market analysis for local loops and bit streaming. There it is stated that competition in the local loop and bit streaming market has developed a great deal and that there is competition in areas where nearly 80% of the entire population resides. This is on one hand due to the extensive installation of fibre-optic systems in which market participants have engaged, and on the other hand because of technological developments whereby the capacity of high-speed mobile networks, 4G and 5G, has increased to such extent that there is substitutability at the retail level and on the wholesale market for bit streaming, but not on the wholesale market for local loops. In this analysis, a new methodology is also employed to assess competition based

on the conditions in each and every municipality of the country instead of looking at the country as a whole as was previously done, and the ECOI analysed the situation in a total of 81 geographical markets in these two markets.

The purpose of competition in the telecommunications market is of course ultimately that consumers will enjoy advantageous terms, good service, high quality and a wide range of options. To improve consumers' access to comparable information about telecommunications services and the price for such services, the Electronic Communications Office entered into cooperation with Aurbjörg in order to publish a comparison of prices for various telecommunications services (see: ***MIN.AURBJORG.IS/FJARSKIPTI***). There it is currently possible to compare prices for packages, mobile phone subscriptions, home networks, "Frelsi" subscriptions and landlines.

## Resilience

The development of competition in telecommunications infrastructure is not only important for competitive considerations. It is the opinion of the ECOI that it is important that market participants and the general public have access to more than one supplier and a diverse range of telecommunications infrastructure for telecommunications services for reasons of security. Competition and separate networks promote a higher level of national security and improve the public interest. This has been put to the test, such as when the submarine cable that connected to the Westman Islands was severed, and when volcanic eruptions and lava flow caused fibre-optic connections to Grindavík to be cut. During these incidents, neither the Westman Islands nor Grindavík lost all their connections because consideration had already been given to improving resilience by connecting these municipalities by many diverse routes.

This year, work was done on preparations for two tasks where the goal was to improve the resilience of telecommunications. On the one hand there are the preparations for policy formulation regarding the resilience of telecommunications routes, that mostly concerns the arrangement of auxiliary routes for basic connections and on the other hand there is the work to update the regulation on telecommunications security, which includes plans for establishing certain minimum requirements for the security of important telecommunications locations (equipment housing and transmitter locations). The long-term objectives of the authorities are that all rural areas in Iceland will be connected through a minimum of two active and separate trunk routes.

## Issue of frequency authorisations for mobile networks

The ECOI issued in 2023 renewed spectrum licences for mobile networks in this country for the next 20 years. This means that the groundwork has been put in place for the development of mobile networks over the next 2 decades in this country. Installation of 5G mobile networks is now fully underway and the service already reaches nearly all rural areas. Spectrum licences include the requirement that the expansion of high-speed mobile networks (4G and 5G) will not be less than the expansion of GSM and 3G today. There is also a requirement for uninterrupted service in the trunk route system. Installation of this kind is somewhat costly and improvements will be introduced in a number of steps. In this manner the security of users is increased even further and there is an improvement in the service that is available

to them.It is also proper to reiterate here that it is planned to shut off the GSM and 3G service before the end of 2025. This will result in streamlining and savings, and it may be assumed that various parties who use this old technology will need to update their equipment as a consequence.

## Technological developments that require attention

More technical tasks need to be resolved. With the development of mobile networks to 5G there will be an increasing need for highly precise clock signals. This need may also apply to electrical power systems, financial systems and elsewhere. Until now, market participants have mostly received such clock signals from satellites that provide geo-spatial positioning service (GNSS). If such service is interrupted, domestic atomic clocks will to some extent be capable to maintain correct and precise clock signals for about 2 weeks. In light of the unstable state of affairs in the world today, interruptions in the service of satellites that provide geo-spatial positioning have become significantly more frequent. Society's capacity to maintain correct clock signals in this country needs to be strengthened, for example with the involvement of the university community in a task of this kind.

Modern encryption has been based on using complex mathematical methods to make data indecipherable. It has been assumed that it is not possible to decipher such encryption with conventional computers. By using the quantum computers of the future, presumably it will be possible to decipher all traditional encryption. Encryption is used very widely. It is in fact the basis for trade and trust on the internet and in all electronic commerce. Some encryption products may remain relevant for many years after encryption, such as electronically signed agreements among many other things. Therefore, many states have already begun preparations for this development and are now taking measures to respond. This includes efforts to develop quantum-proof encryption algorithms. It is important that such preparations are also initiated in this country in order to prevent uncertainty regarding the electronic products that have already been created or will be created over the next years, and are intended to remain viable in the future under the protection of encryption.

## The perfect storm

When many synergetic factors are combined at the same time their total effects may be even stronger than they would have had separately. The concept is often applied to catastrophic situations, but can also be used to refer in general to positive conditions.

We are living in an age of great technological advancements on a seemingly unprecedented scale. General telecommunications networks, both fixed networks and mobile networks, are currently of such efficacy and accessibility that connection speed rarely impedes the implementation of technological solutions that are available to the public at this stage, such as cloud solutions. Artificial intelligence has improved by leaps and bounds and it is predicted that artificial intelligence will approximate human capabilities, or even exceed them, before the middle of the century. It is now a commonly held view that highly developed quantum computers will be available in the first half of this century, possibly even in the next decade. The advent of such computers will completely revolutionise humankind's ability to take on previously impossible tasks, for example in the fields of pharmaceutical development, engineering, chemistry and information technology. Materials technology and microtechnology are developing in great strides, among other things due to the aforesaid technological progress. And this list is far from exhaustive. These forms of technology are then used to develop new solutions that are of a highly-developed nature, partially based on computer technology, permanently connected and incorporating artificial intelligence.

It is still unclear whether this perfect storm will lead us to catastrophe or prosperity. This will be our responsibility, and may depend on the way in which we treat this new technology. Yet it is crystal clear that if the cybersecurity measures that are applied to new solutions will be found wanting, this will certainly increase the risk of catastrophic situations becoming a reality.

# General information about the ECOI

There has been a great deal of development within the Electronic Communications Office of Iceland in recent years, a trend that continued in the year 2023. This growth is due to the increased emphasis placed by the government on cybersecurity and telecommunication security. The number of full-time equivalent positions has been steadily increasing since 2021, which meant that at the end of 2023 their number had risen to 51. The most important development was the expansion of the CERT-IS cybersecurity team and the strengthening of the Office's capacity to take action in the field of digital security.

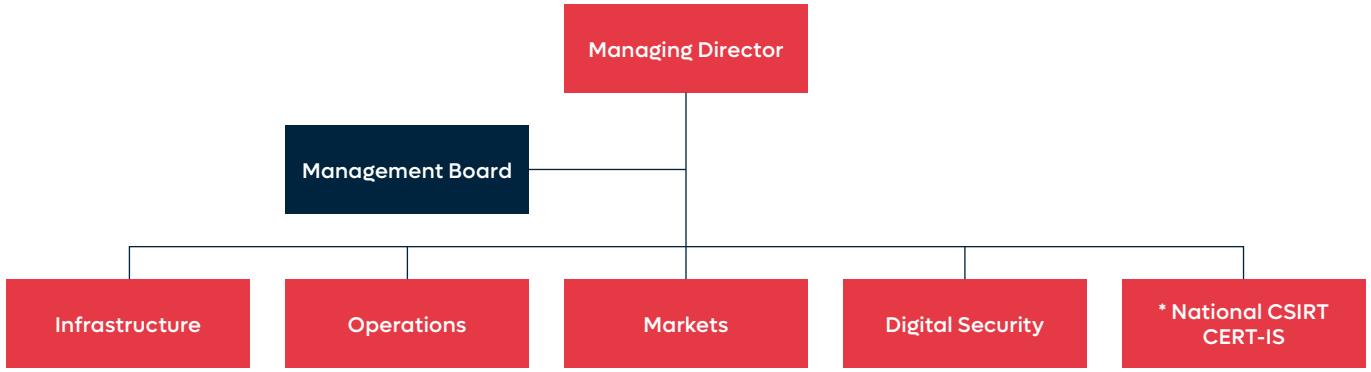
There is an added emphasis on the development of telecommunications networks and immense importance is attached to the security of telecommunications systems and the protection of consumers.

Work continued on maintaining the Electronic Communications Office of Iceland's certifications with regard to equal pay policy and security of control systems (ÍST 85:2012 and ISO/IEC 27001). The Office also achieved level 4 in Green Steps in government operations, and plans to complete level 5 by obtaining environmental certification.

The Managing Director of the Electronic Communications Office is Hrafnkell V. Gíslason.

The executive board is comprised of the Managing Director and heads of divisions.

The Office had 27 full-time equivalent positions at the beginning of the year 2020 and that number had increased to 51 at the end of the year 2023.




*The national CSIRT shall be organisationally separated from the supervisory role of Fjarskiptastofa in the field of digital security.

# The policy and objectives of the Electronic Communications Office of Iceland

## The future vision of the Electronic Communications Office

The Electronic Communications Office of Iceland wishes to be an innovative partner in the development of a secure digital community, as the functionality of modern societies depends on strong and secure telecommunications systems and ongoing innovation in this field.

## The values of the Electronic Communications Office

The values of the Electronic Communications Office of Iceland form the frame for the institution's activities, and staff members can refer to them for support when it comes to prioritisation and focus in communications both inside and outside the institution. These values are grounded in the Office's role and they serve as incentives that support the vision for the future.

We show **INTEGRITY** by

- respecting both external and internal interested parties
- living up to the trust that is invested in us
- promoting social responsibility

We show **PROFESSIONAL KNOWLEDGE** by

- providing services in a professional manner
- acting professionally in all aspects of our work
- continually seeking to obtain more knowledge

We show **INNOVATION** by

- seeking new methods and solutions
- being willing to cooperate and work in partnerships
- having a clear vision for the future

Policies which the Electronic Communications Office has established with regard to its activities:

- Human resources policy
- Security policy
- Social media policy
- Equal pay policy
- Policy on the handling of personal data
- The Electronic Communications Office of Iceland’s policy on the security and functionality of telecommunications infrastructure
- The Electronic Communications Office of Iceland’s policy on the structure and implementation of surveillance of operators of digital infrastructure

## ISO/IEC 27000 certification for the management of information security at the Electronic Communications Office of Iceland

The Electronic Communications Office of Iceland takes information and operational security very seriously. The Office has in recent years worked according to an information security management system based on ISO/IEC 27001 and received ISO/IEC 27001 accreditation in 2020.When the management system was originally introduced, it was assumed that the CERT-IS cybersecurity team would be outside its scope. In 2020 it was decided to expand the scope of the management system so that it would also apply to the cybersecurity team.

## Equal pay certification of the Electronic Communications Office of Iceland

The Electronic Communications Office of Iceland was awarded equal pay certification in February of 2021. The Office's main objective with the equal pay certification is to combat the gender pay gap and to promote gender equality in the labour market.

The Office has introduced to its quality system the equal pay standard ÍST 85:2012, which is a management standard for equal pay systems. This includes the establishment of objectives focused on ensuring that the equal pay system is subject to monitoring and that it is consistent with the Office's policy. This involves, among other things, performing a wage analysis at least once a year, and the benchmark shall be that the gender discrepancy in the relevant population is no more than 5%. In 2023, this percentage proved to be 2.1%. In addition, the wage model is presented to employees once a year.

This certification ensures that we use professional work methods that will prevent direct and indirect discrimination on the basis of gender.

## Environmental issues, sustainability and the social responsibilities of the Electronic Communications Office of Iceland

The Paris Agreement, which has been ratified by many states, stipulates that the objective shall be to keep global warming below 2 degrees Celsius and as close to 1.5 degrees as possible. The Icelandic government has signed and ratified the Agreement and the Icelandic government has set a target for the country to have achieved carbon neutrality no later than 2040.

According to the Climate Act, the Government of Iceland, governmental institutions and companies that are majority-owned by the state have an obligation to establish a climate policy for themselves with defined objectives regarding a reduction in greenhouse gas emissions and carbon offsetting. The Electronic Communications Office of Iceland has established such a policy for itself, which is consistent with these objectives set by the government.

In 2023, work continued on climate policy actions and a goal was set whereby the 5th step would be completed by obtaining the ISO 14001 environmental certification.

## The Electronic Communications Office of Iceland's environmental and climate policy

The Electronic Communications Office of Iceland's environmental and climate policy was published in May 2021. The purpose of this policy is to make a targeted reduction in the effects of the CO2 emissions generated by the institution's activities, set a good example for other institutions and companies, and communicate results in order to have a direct and indirect impact on the country's climate obligations.

The policy is based on the following: the Environment Agency's guidelines regarding climate policies of public entities, the Icelandic government's commitments with regard to the Paris Agreement, the Icelandic government's climate action plan, the statement issued by the directors of the institutions of the Ministry of the Environment, Energy and Climate regarding reductions in greenhouse gas emissions and carbon neutrality, the United Nations Sustainable Development Goals and Green Steps.

By the year 2030, the Office will reduce its CO2 emissions by a total of 40%, with due consideration of the number of the Office's staff members, relative to the year 2019 which are generated by the following activities:

- International and domestic flights, by encouraging teleconferences and different work procedures
- Employees' commutes to and from work, through added support for eco-friendly transportation methods
- Driving in connection with the activities of the Electronic Communications Office of Iceland, by replacing the Office's own vehicles and setting requirements for car rentals and taxi services to provide non-fossil fuel vehicles
- Waste, through efforts to ensure less waste generation and more sorting
- Energy use, through energy-efficiency measures
- Employee meals

The Electronic Communications Office of Iceland also aims to achieve carbon neutrality in its activities by carbon-offsetting all remaining emissions through established methods.

The Electronic Communications Office also aims to meet legal requirements relating to environmental and climate issues, and to promote constant improvements.

This policy is subject to annual review with regard to changes and developments that have an impact on climate issues. The Electronic Communications Office of Iceland's environmental and climate policy applies to all activities of the Office, its employees, buildings, installations and projects.

In order to support the goals of this policy, the Electronic Communications Office of Iceland works according to an approved action plan which includes measures to reduce CO2 emissions caused by aviation and other transportation, by encouraging the importance of teleconferences, flexible work hours and remote working, and also by making transportation agreements with employees. All measures that concern matters such as eco-friendly purchasing, monitoring of water and energy consumption, less food waste and even better sorting of waste produced by the Office.

The environmental and climate policy is supported by the introduction of Green Steps and green accounting.

## Introduction of Green Steps

Green Steps in government activities is an Environment Agency project that aims to achieve a targeted reduction in the environmental impact of government institutions. The introduction of Green Steps in the activities of the Electronic Communications Office of Iceland has been successful, despite the fact that the global pandemic did not make it easy.

In 2023, various actions were taken in connection with the introduction of Green Steps. Among these are:

- examining food waste on a regular basis
- reducing the use of packaging

- increasing the number of transportation agreements
- organic sorting of waste is now an option, and in fact waste is now sorted into 8 categories
- requesting eco-friendly taxis and rental cars where available

## Green accounting

The Electronic Communications Office of Iceland, which is a part of Green Steps, keeps track of its purchasing and waste production with regard to environmental and climate goals. The Office's carbon footprint is calculated using the results of its green accounting and of the travel habits survey which the employees are invited to complete every year.

Options are being considered regarding how to simplify management and the supply of information in the context of green accounting and the Electronic Communications Office of Iceland's carbon footprint. Monitoring of the volumes involved in:

- the purchase of fuel
- electricity and hot water consumption
- travels undertaken as part of the work of the ECOI, both aviation and automobile travel
- employees' commutes to and from work
- disposal and sorting of waste

The Electronic Communications Office of Iceland's largest emission factor by far is that resulting from flights. The Electronic Communications Office of Iceland stresses the importance of cooperating with its sister organisations and international connections such as the ITU, EU institutions and BEREC. Mutual knowledge acquisition, both at the domestic and international level, is a vital part of the Office's activities. The number of flights taken by employees decreased significantly during the Covid years of 2020 and 2021.

In 2023, the number of flight trips increased, which can also be explained by the fact that the number of employees of the Electronic Communications Office of Iceland is now nearly half as high as it was at the beginning of 2021, which is mostly due to the number of the staff of the CERT-IS cybersecurity team and the division of digital security.

It is anticipated in the Electronic Communications Office of Iceland's environmental and climate policy that the institution's carbon footprint will decrease by 40% from the year 2019 until the year 2030. An increased emphasis on teleconferencing will promote these goals, and the efficacy of teleconferences has been established.Therefore, the Electronic Communications Office of Iceland is part of an eco-friendly work group within BEREC, which among other things works towards finding ways in which to measure and reduce the carbon footprint of the telecommunication sector. Needless to say, this participation has hitherto only taken place through teleconferences.

The Electronic Communications Office of Iceland's objectives to reduce emissions may be ambitious, and yet they are in line with the framework established by the government and will be reviewed whenever changes occur in the circumstances or organisation of the institution.

# Organisation and operation of divisions

## Telecommunications Infrastructure

The Telecommunications Infrastructure Division is responsible for organising the resources for telecommunications (frequencies and numbers) and the allocation of authorisations for these resources. The Division also monitors frequencies, which includes measuring, responding to and resolving interference issues. By mapping and analysing the current and planned telecommunications infrastructure and related infrastructure, the Division promotes the development of infrastructure in cooperation with government authorities and market participants. The Infrastructure Division also has a response and coordination role with regard to the telecommunications sector in the event of disruption to operations, such as can occur during natural disasters. The Division also works towards increasing the resilience of telecommunications networks, in cooperation with the government and market participants. The Head of the Division is Þorleifur Jónasson. Other members of the Division are Bjarni Sigurðsson, Hjalti Pálmason, Hörður R. Harðarson, Njörður Tómasson, Óskar Sæmundsson, Páll Sveinn Guðmundsson, Sigurður Ísleifsson, Sigurjón Ingvason and Þorgeir Sigurðarson.

## Operations

The role of the Operations Division is to ensure continuous and streamlined operations, and to ensure that the operations are in accordance with the accredited quality processes of the Office. We strive to make the ECOI a place where people like to work. This includes efforts to ensure that the Office is a workplace where good health is promoted and we emphasise the importance of equality and balancing work and home life. The Head of the Division is Hrefna Ingólfsdóttir. Other members of the Division are Ásta Guðrún Jóhannsdóttir, Birna G. Magnadóttir, Hanna G. Daníelsdóttir and Ingibjörg Hallbjörnsdóttir.

## Administration

The Administrative Division, which combines legal and practical tasks, coordinates the Office's administrative matters and directs competition and consumer affairs. This Division performs market analyses and imposes obligations on the market participants which have significant market power. The Head of the Division is Björn Geirsson. The staff of the Division are Anna María Reynisdóttir, Arnar Stefánsson, Birgir Óli Einarsson, Guðmann Bragi Birgisson, Hulda Ástþórsdóttir, Kristjana Torfadóttir, Óskar Hafliði Ragnarsson and Snorri Þór Daðason.

## Digital Security

Digital Security is where monitoring is performed to ensure that parties meet the minimum requirements in the field of cybersecurity. These are requirements that concern the organisation of cybersecurity issues and the risk management frameworks of telecommunications companies, digital infrastructure and providers of digital services. The Division does research work regarding risks and incidents that occur, and carries out preventive audits and risk assessments. The Division also has a coordination role towards other supervising authorities in the field of cybersecurity for the purpose of promoting a coordinated implementation of cybersecurity laws. In addition, the Division has a monitoring function with regard to trust services, and confers upon parties full accreditation for providing trust services.

The Head of the Division is Unnur Kristín Sveinbjarnardóttir, and other staff are Anton Björn M. Helgason, Arna Hrönn Ágústsdóttir, Arnar Freyr Guðmundsson, Bjarni Hallgrímur Bjarnason, Björn Þór Rögnvaldsson, Margrét Valgerður Helgadóttir, Pétur Sævald Hilmarsson, Þórdís Rafnsdóttir and Sigrún Lilja Sigmarsdóttir.

### The CERT-IS cyber security incident response team

The principal tasks of the CERT-IS cybersecurity team concern situational awareness of the state of cybersecurity issues and responding to cyber incidents when they occur, and the organisation of CERT-IS is set up to reflect these main points of focus. By having the cybersecurity team as an independent organisational unit, we can guarantee that information and incidents will be handled independently and entirely separate from other divisions. The Director of CERT-IS is Guðmundur Arnar Sigmundsson.

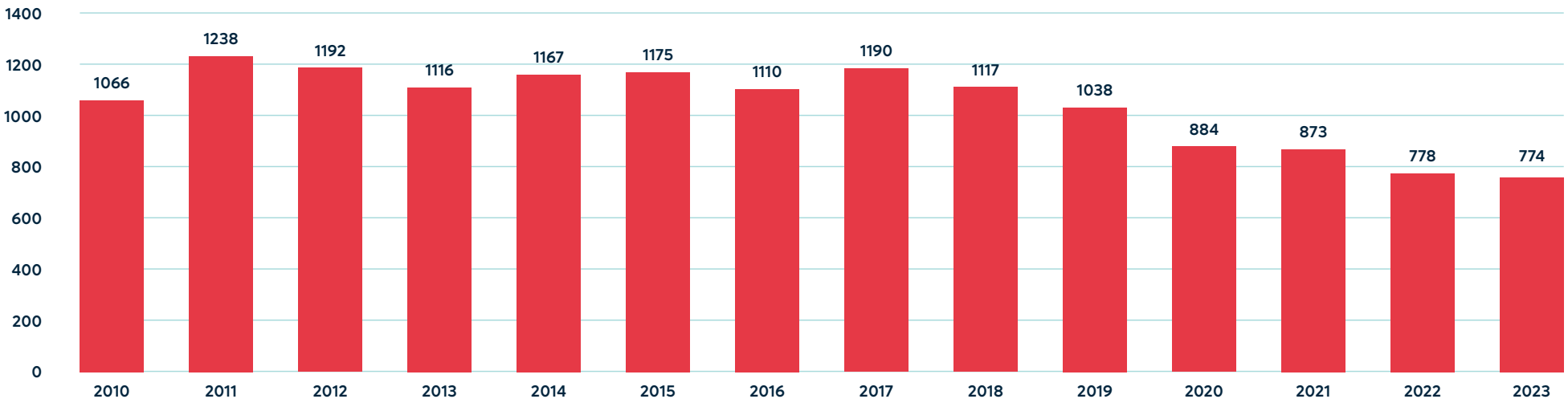
**The Staff Association of the Electronic Communications Office** is a dynamic association of staff members with the main purpose of maintaining good morale and cultivating a good atmosphere at work. The Staff Association works efficiently with the Office and arranges events of various kinds at regular intervals each year, with different emphases depending on the season. The Staff Association also arranges trips abroad for educational and informational purposes, on average every two years.

# Activities of the Electronic Communications Office 2023

## Case handling time and case workload

In 2023 a total of 774 cases were recorded in the ECOI's case list, which is a similar number of cases from last year as indicated by the following graph, and the number of cases tends to drop with every year that passes. Cases added to the list vary widely in nature, and included consumer complaints, interference complaints, complaints regarding the basic running of the Office itself, as well as cases concerning employees' day-to-day duties, such as market and cost analyses, frequency allocations, the issuing of permits, and inspections of telecommunication equipment in marine vessels, to give but a few examples.

**Number of cases filed with the Electronic Communications Office of Iceland in the years 2010–2023**

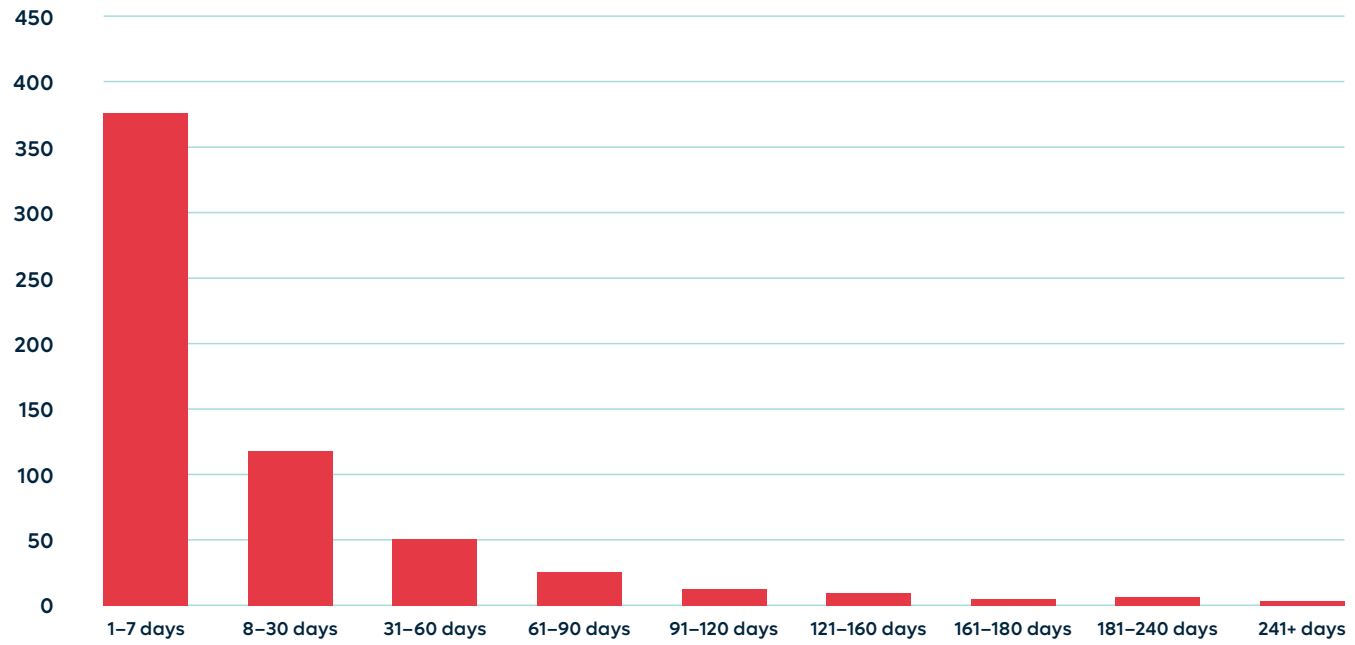


According to Article 16 of Act No. 75/2021 on the Electronic Communications Office of Iceland, the Office is required to resolve complaints as soon as possible, and within four months at the latest, unless

there are exceptional circumstances that need to be taken into consideration. In an ever-changing and fast-paced competitive market, it is important that disputes are resolved quickly and conclusively, without compromising quality standards. Consequently, the time it takes to process complaints lodged with the Office is monitored closely. Unresolved cases added to the list more than four months ago are designated yellow and cases older than eight months are designated red.

Out of the 774 cases created in the year 2023, 616 fall into these two categories. This is a proportion similar to that of recent years. When these numbers are added up for the beginning of 2024, a total of 604 cases were closed with the processing times indicated on the following bar graph.

**Handling time for closed cases – cases created in 2023**



There are therefore 12 unresolved cases, and most of them were created in the latter part or towards the end of 2023.

The graph indicates that the vast majority of cases are resolved, i.e. just over 96% of them, within the 120 day time limit required by law.

Cases that are filed with the Office by market participants or their customers have reduced in number in recent years. The number of disputes that telecommunication companies have submitted to the Office for resolution has been getting lower and a form of equilibrium, or predictability, has been established regarding the implementation of rules and obligations in the competitive environment. This can possibly be traced to the fact that monitoring of market participants has in later years increasingly been in the form of cases regarding the running of the Office, which are in general larger in scope and more complex than the resolution of cases submitted. Such cases regarding the running of the Office involve, among other things, resolving disputes that the Office would potentially have received as multiple submitted cases, each of which concerning a separate issue. Questions or disputes that arise after a decision has been made regarding such cases may however often be answered with reference to this decision, without requiring a case or administrative decision to be formally filed.

# Various key figures from the activities of the Electronic Communications Office in 2023

## Frequencies allocated

| | |
|---|---|
| Radio and TV stations | 15 |
| Backbone links (number of links) | 35 |
| Mobile station systems on VHF and UHF | 70 |
| MF and HF | 0 |
| Short-term radio broadcasting | 40 |
| Temporary licences | 200 |

## Codes allocated

| | |
|---|---|
| Number of allocated codes | 2.723.440 |

## Interference complaints

| | |
|---|---|
| Interference complaints | 222 |

## Issues of radio equipment permits

| | |
|---|---|
| Aircraft | 59 |
| Marine vessels | 391 |
| Mobile surface stations on very high frequency – VHF | 166 |
| Mobile surface stations on ultra high frequency – UHF | 4 |
| Mobile surface stations on medium frequency – MF | 1 |
| Handheld stations on very high frequency – VHF | 426 |
| UHF handheld stations | 84 |
| VHF land-based master stations | 1 |
| UHF land-based master stations | 0 |
| Emergency locator transmitters (PLB) | 14 |
| Paging systems | 0 |

## Radio equipment inspections on maritime vessels and open motor boats

| | |
|---|---|
| Boats shorter than 24 m, inspected by inspection agencies and the Icelandic Transport Authority | 1192 |
| Boats longer than 24 m and ships | 156 |
| Pleasure craft inspected by owners | 89 |

## Inspections of boats and ships – by region

| | |
|---|---|
| Reykjavík | 38 |
| North West | 24 |
| North East | 33 |
| South | 44 |
| South West | 15 |
| Ships registered abroad | 2 |
| Ships inspected abroad/not by the ECOI | 4 |

## Allocation of MMSI numbers

| | |
|---|---|
| Numbers for ships | 250 |

## Issues of user licences

| | |
|---|---|
| Amateurs, Icelandic | 16 |
| Amateurs, international | 0 |
| Amateurs, misc. | 30 |

## Registered ground stations

### Fixed-base stations

| | |
|---|---|
| VHF stations | 322 |
| UHF stations | 52 |
| MF-SSB stations | 23 |
| Paging devices | 16 |

### Mobile stations in cars

| | |
|---|---|
| MF-SSB stations | 460 |
| VHF stations | 7167 |
| UHF stations | 127 |

## Handheld stations and beacons

| | |
|---|---|
| VHF stations | 8126 |
| UHF stations | 2031 |
| Markers (beacons) | 44 |
| PLB emergency buoys (406 MHz) | 123 |
| Miscellaneous equipment | 153 |

## Ship stations

| | |
|---|---|
| Medium frequency stations MF | 8 |
| Medium frequency and shortwave stations MF/HF | 184 |
| VHF stations | 3110 |
| Emergency radios GMDSS | 617 |
| Radar transponders SART | 118 |
| Radar transponders SART-AIS | 146 |
| Navtex | 204 |
| Emergency buoys, free-floating (406 MHz) | 361 |
| Emergency buoys in lifeboats and on board (406 MHz) | 2495 |
| Inmarsat B | 0 |
| Inmarsat C | 213 |
| Inmarsat M | 5 |
| Automatic identification systems (AIS) | 1892 |

## Overview of publications

A list of all the Electronic Communications Office's publications can be found on the Office's website:

***PUBLISHED MATERIAL (FJARSKIPTASTOFA.IS)***

## Comparative statistics on the use of electronic communications in eight countries

A statistical report is published annually in cooperation with the Electronic Communications Office of Iceland and its sister institutions in the Nordic countries and in the Baltics. The report gathers comparative data on the use of the main electronic communications services and on developments over recent years in the eight countries. On the whole, the use of electronic communications is very similar in these countries and their citizens use comparable technologies in a similar way. Despite this, there are nonetheless variations in the usage and development of specific services.

The Nordic comparative report can be accessed on ***THE INSTITUTION'S WEBSITE UNDER PUBLICATIONS***.

## Statistical reports from the Electronic Communications Office

Twice a year, the Electronic Communications Office of Iceland gathers data from telecommunication companies registered in Iceland on various metrics relating to telecommunications operations and services. The institution processes this data into statistical reports that summarize the main metrics and companies operating on the Icelandic telecommunications market. The reports are published twice a year: in the second quarter for the whole preceding year and a mid-year status update in the fourth quarter. The aim is to improve information provision and increase transparency on this market. The ECOI's reports are equivalent to those published by its sister institutions in neighbouring countries.

***THE REPORTS CAN BE FOUND ON THE INSTITUTION'S WEBSITE.***

## Among the principal statistical information about the Icelandic telecommunications market in 2023 are the following:

In the telephone market, the trends of previous years continue as both users and minutes decrease in number from one year to another, and this reduction in customers and minutes can be seen in both households and companies. Landline subscribers decrease by 11.3% between years and minutes decrease by 16.8%. Síminn is the largest company in the landline market with a share of over 67% at the end of 2023. The number of PSTN lines is decreasing rapidly year-on-year, but the aim is to close the system in 2024.

The total number of mobile phone subscriptions increases between years, by 5.2%. There has been an increase in mobile subscriptions, whereas pre-paid subscriptions have decreased in number. The number of mobile phone call minutes was 1,085 million minutes in 2023, compared with 1,144 million minutes in the previous year.

The volume of data on mobile phone networks keeps increasing although this increase has abated somewhat as it was about 20.9% between years and as in the preceding years the increase

relates to the introduction of 4G and 5G. Relatively higher volumes of mobile network data are used by phones than by other devices that have a solely data application, such as tablets or 4G or 5G network equipment.

Internet connections increased slightly between years, whereas fibre-optic connections increased greatly with a corresponding decrease in xDSL connections: at the end of 2023 fibre-optic connections accounted for almost 89% of all internet connections and the number of fibre-optic connections is currently about 129 thousand connections.

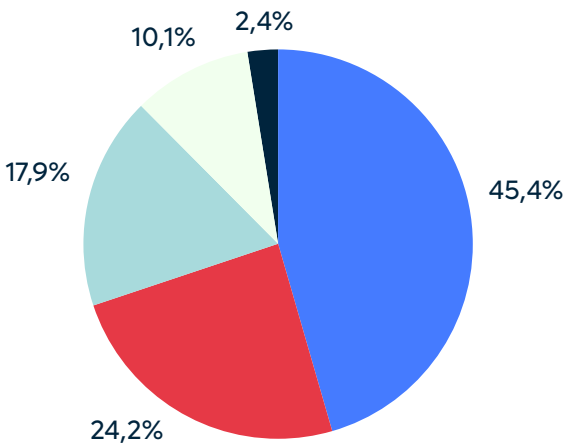
The total volume of data on fixed-line networks increased by over 6% between the years and about 91% of the amount of data is from downloading and 9% from uploading.

Subscribers with Internet Protocol television (IPTV) were 79,317 at year-end 2023, compared with 79,968 in the previous year, and have therefore decreased by about 1% from the previous year. The total number of package subscriptions increased in 2023 or by 7.3% and three services are the most common.

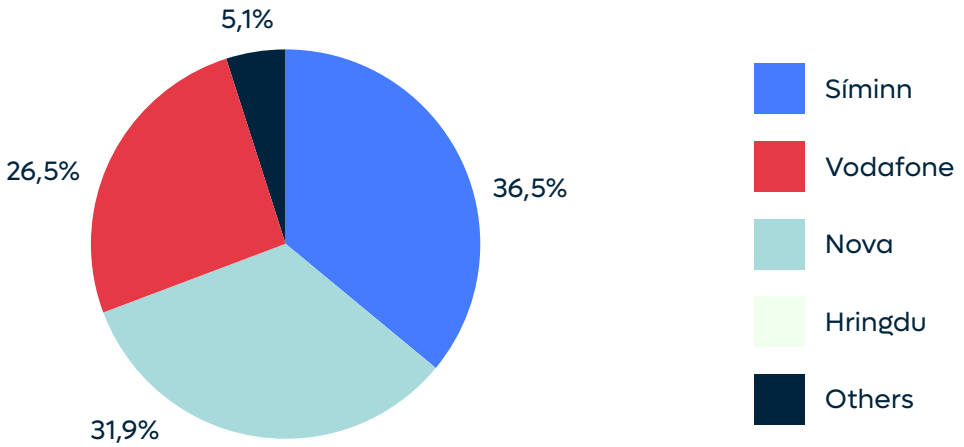
Turnover in the telecommunications market increased in the year 2023; income from landlines decreased but income from fixed-line networks, mobile phone operations, data transmission and internet services, telephone services and other mass media services has increased.

Investment in the telecommunications market is mostly in fixed-line networks, such as in connection with the installation of fibre-optic cable and mobile phone operation.

**Number of internet connections**
Market share by company




**Mobile phone subscriptions**
Market share by company



# The electronic communications market

The electronic communications market is constantly changing in step with technological developments and changes in the legal environment, both in Iceland and on an international level.

## New rules regarding general authorisation for operating telecommunications networks or providing telecommunications services

Last year, the Electronic communications office issued new rules regarding general authorisation for operating telecommunications networks or providing telecommunications services. Operation of general telecommunications services is subject to general authorisation rather than specific licensing for telecommunication activities from public bodies.The arrangement for issuing operating licences for telecommunications activities was abandoned in this country a good many years ago. Nevertheless, the rules regarding general authorisation can be regarded as an equivalent of operating licences for telecommunications companies in our country.

The new rules replaced the identically named rules no. 345/2005 and are intended to address in more detail the rights and obligations stipulated by Articles 7-9 of the Electronic Communications Act no. 70/2022.

Even though it does not include any material alterations of great significance, the list of requirements for general authorisation is somewhat different in the new Electronic Communications Act. With the introduction of Directive (EU) 2018/1972 into the Electronic Communications Act specific requirements are added that apply to telecommunications companies that operate telecommunications networks. These are requirements such as certain measures to protect public health, requirements regarding maintenance of the integrity of general telecommunications networks and compliance with limitations on illegal or harmful material.

## Re-examination of rules regarding numbers, number sequences and addresses in the field of telecommunications

No significant alterations were made to the rules regarding numbers and codes in telecommunications with the new telecommunications directive of the European Parliament and of the Council.

Last year, new rules were issued regarding numbers, number sequences and addresses in the field of telecommunications. The new rules replace older rules no. 590/2015 regarding the organisation, allocation and use of numbers, number sequences and addresses, as amended. The objective with the new rules is the same as for the older rules, i.e. to provide for efficient allocation of numbers for various services.

The principal innovation with the new rules concerns requirements for the allocation of numbers, cf. Article 6 of the rules, whereby now there is the option for parties other than telecommunications companies to request, in certain cases, for the allocation of numbers for their own use. Article 11 of the rules states that the transfer of numbers is permitted provided that specific requirements are met.

It should also be mentioned that paragraph 4 of Article 6 provides the option for authorising allocation of numbers for services that extend over borders within the EEA area (cross-border and pan-European services) and refers to the benchmarks and rules from BEREC (Body of European Regulators of Electronic Communications) regarding the requirements for such allocation.

Following consultation and processing of potential notes from bodies to which the proposed measures shall be referred for consideration, the new rules will be established on the basis of paragraph 3 of Article 20 of the Electronic Communications Act no. 70/2022, and will enter into effect upon publication in the Government Gazette.

## Consultation with home owners regarding the choice of installation routes

Telecommunications companies have a rich claim on access to land and structures for the installment of telecommunication cables and other telecommunications facilities. The provisions of the Electronic Communications Act in this regard go back a long way in the history of Icelandic telecommunications law, and this was examined thoroughly in the recent decision of the Electronic Communications Office no. 8/2022 regarding Ljósleiðarinn ehf.'s access to land in Þykkvabær. These rights of telecommunications companies and potential disputes with landowners are mostly put to the test with regard to the installation of telecommunication towers or trunk routes that need to be located on privately owned land in rural areas.

However, rights and obligations regarding the access of telecommunications companies to land also apply in urban areas, where it is common for home owners to be long-term lessees of lots owned by a municipality. Last year, a case surfaced that clarified the legal position in such circumstances, where a telecommunications company failed to consult with home owners regarding the choice of an installation route within the boundaries of the lot.

This case, cf. decision no. 11/2023, concerned a lot owned by the City of Reykjavík, but leased for a long term to a lot lessee, as is frequently the case for real estate lots owned by municipalities. The City of Reykjavík confirmed that the right to consultation regarding the choice of installation route in accordance with Article 34 of the Electronic Communications Act was in the hands of the home owner (lessee) in accordance with their agreed right of possession over the lot.

In the opinion of the ECOI, the aforesaid decision constitutes a general precedent for home owners who have similar long-term lease agreements with a municipality regarding the use of a lot, i.e. that they have the right to consult with telecommunications companies regarding the choice of installation routes within the boundaries of a lot.

## Initial investigation of the implementation of financial separation at Orkufjarskipti

The operation of telecommunications networks is in some regards similar to infrastructure services, such as the installation of underground cables, the operation of technology spaces etc. Therefore, there may be opportunities for synergy in the installation and operation of telecommunications networks concomitantly with the infrastructure of utility companies. It is known in many places in Europe, including this country, that a utility company may own and operate telecommunications companies within the utility company's group of enterprises. In light of the fact that utility companies sometimes operate on the basis of exclusive rights or a franchise agreement, it has been included in telecommunication legislation that telecommunications activities of utility companies shall be financially separate within the

group and that it shall be ensured that competitive telecommunication activities are not subsidized by funds created through the utility companies' provision of utility services.

Last year, at the instigation of the Electronic Communications Office, the Office began an initial investigation into the implementation of the financial separation of Orkufjarskipti hf. within Landsvirkjun (The National Power Company)'s group of enterprises. Orkufjarskipti hf. is a company of which Landsvirkjun and Landsnet share equal ownership, and the purpose of the company is to own and operate a secure telecommunications system for electricity control and to lease access to it to such extent as is possible and permitted by law.

The Electronic Communications Office's initial investigation included requesting information about the separation of income from associated and unassociated parties, the areas where Orkufjarskipti hf. provides service to unassociated parties, copies of the company's credit agreements, and information about grants which the company has received in the last 10 years in connection with installation of telecommunications systems, where the grant came from and for what purpose it was granted. In its initial investigation, the Office also referred to the company's annual accounts for 2021, and examined Orkufjarskipti hf.'s list of tariffs, the depreciable life of fibre-optics and the company's service agreement with Landsvirkjun and Landsnet.

The Electronic Communications Office informed Orkufjarskipti hf. that the Office's initial investigation of the implementation of financial separation could also shed light on whether the company operates entirely on market principles, e.g. with regard to debt financing of construction projects, or if it will be considered to receive government support to some extent. This could be significant for the company's position with regard to Article

8 of Act no. 125/2019 on measures for efficient development of high-capacity electronic communications networks, the provisions of which concern the co-ordination of civil-engineering activities. The Electronic Communications Office's examination of the aforesaid data would therefore also include this matter of contention.

The findings of the Electronic Communications Office's initial investigation did not indicate that there was cause for the Office to examine more closely the implementation of financial separation of Orkufjarskipti hf. within Landsvirkjun's group of enterprises, although the Office did make a note regarding the service agreement for telecommunications services wherein it is stated in accompanying document III regarding facilities at the termination point that the buyer does not charge for facilities, electricity feed nor electricity consumption. In the assessment of the Electronic Communications Office, such arrangement is inconsistent with Article 10 of the Electronic Communications Act wherein it is stated that companies shall keep their telecommunications activities financially separate as if in the case of unrelated companies.

As regards the assessment of the position of Orkufjarskipti hf. in the context of Article 8 of Act no. 125/2019 on measures for efficient development of high-capacity electronic communications networks, the institution concluded that the findings from the initial investigation did not warrant a more detailed consideration of potential matters of contention relating to this.

A draft of the findings of the Electronic Communications Office's initial investigation was sent to Orkufjarskipti hf. and the company was given the opportunity to comment on the contents of the report, and a time limit until 21 August 2023 was specified for submitting eventual notes to the Electronic Communications Office and inform the Office if the implementation of improvements in accordance with its initial findings was accepted.

The Electronic Communications Office received a reply from Orkufjarskipti hf. by letter dated 23 August 2023, wherein it was stated that the company had nothing to note regarding the Electronic Communications Office's initial investigation and that it was agreed to implement the improvement issue that was reviewed in the report.

## New regulation on the implementation of market analyses in the field of telecommunications

The Electronic Communications Office has the statutory role to promote active competition in the field of telecommunications. More precisely, the Office is intended to work against disruptions or limitations of competition in the telecommunications market. In this context, the Office must give adequate consideration to potential different requirements that apply to infrastructure competition and the facilities available to consumers in different areas of the country, and only impose obligations on parties in advance to such extent as necessary in order to ensure active and permanent competition in the interest of end-users, and to reduce or lift such obligations as soon as this requirement is met.

One of the ECOI's principal policy instruments for obtaining the aforesaid objectives is performing so-called market analyses, whereby the institution is intended to be able to assess the status of competition in the various telecommunications submarkets. The purpose of market analyses is to ascertain whether

there is active competition in place on telecommunications markets and to determine the application of resources if it is found that competition is not active, in different areas of the country as the case may be, and thereby improve the lot of consumers. This involves defining the relevant service markets, including by assessing potential substitution effects between the various types of service, defining the relevant geographical market, assessing market conditions by geographical demarcation and whether a telecommunications company or companies are in possession of significant market power in certain areas of the country, if the case involves more than one geographical market. Such assessment is affected by whether the relevant telecommunications company meets the requirements for being considered a wholesale-only operator. After that, appropriate obligations are imposed on the telecommunications companies that are considered to hold significant market power in the country as a whole or in specific areas, in order to promote increased competition.

The European Electronic Communications Code Directive 2018/1972/EB (the Code) was introduced into Icelandic law by the Electronic Communications Act no. 70/2022, which entered into effect on 1 September 2022. This Directive included certain alterations to the arrangement of market analyses, even though their arrangement is mostly consistent with the earlier methods. Among the chief innovations, in addition to the goal of strengthening competition, is that the objective with market analyses is now also to promote the proliferation of high-speed networks. Added emphasis is now placed on analysing telecommunications markets with reference to anticipated developments in the near future, and that the starting point of such analyses shall be the assessment of the connected retail market or markets.

However, the principal changes concerned provisions regarding obligations, and the objective with obligations is to create advantages for consumers with regard to price, quality, options and access to high-speed networks. One innovation is that the ECOI has fewer obligations that can be imposed on telecommunications companies that are considered wholesale-only operators, and therefore are not active at the retail level. The ECOI also has the duty to examine whether access to structures, such as buildings, pipes, installation routes, towers and the like, is sufficient without other obligations. Another innovation is that telecommunications companies that are designated as holding significant market power can offer commitments to the ECOI which would then replace obligations. The ECOI can make such commitments binding. Lastly, it is proper to mention the provisions that concern joint investment in new, high-capacity, high-speed networks, and if certain requirements are met a party with significant market power can benefit from less onerous obligations regarding the high-speed networks that will be installed after authorisation from the ECOI has been granted. The ECOI will then make binding the commitments that concern such joint investment.

In light of the fact that the implementation of market analyses is subject to a specific statutory process that furthermore is based on a certain methodology and instructions or guidelines which the EFTA Surveillance Authority issues, it was considered that there was reason to re-examine the regulation on market analyses as soon as possible. Following open consultation with stakeholders, the Minister of Higher Education, Science and Innovation issued a regulation on market analyses in the field of telecommunications, which were published in the Government Gazette on 9 June 2023.

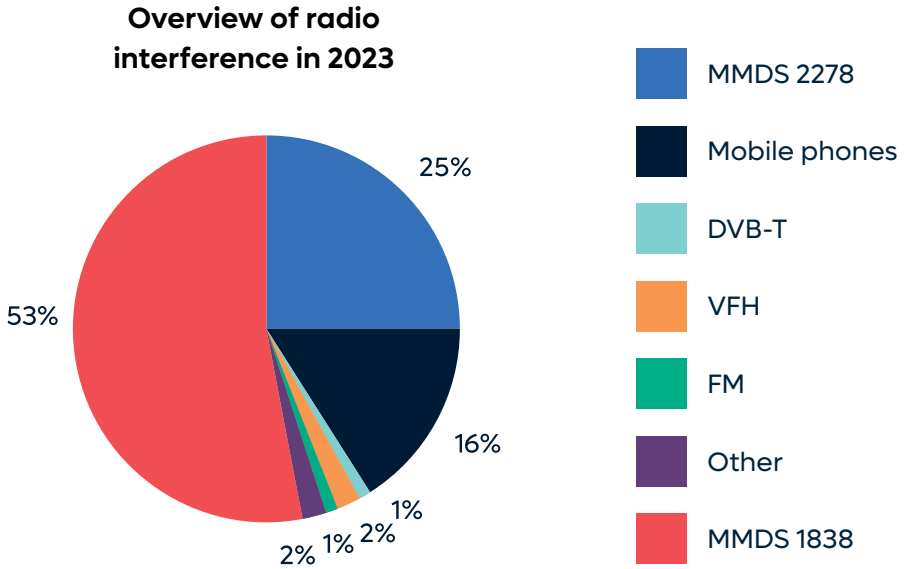
## Monitoring the airwaves – The Electronic Communications Office of Iceland's interference monitoring

The frequency spectrum is a limited natural resource, and it must be used in an efficient manner in order to have a telecommunications network that can function without interference. Technologically, communications devices are rapidly advancing and it is therefore necessary to manage the frequency spectrum efficiently. This is a key point in ensuring the interoperation of various radio systems without them interfering with each other. Spectrum monitoring serves as the eyes and ears when it comes to the organisation and allocation of frequencies. Permission to use a frequency under a frequency authorisation is not a guarantee that the frequency will be used as described in the ECOI's authorisation. Frequencies are used twenty-four hours a day, seven days a week, all year round. Most telecommunication companies that provide services on an allocated frequency range maintain 24-hour monitoring of the services.

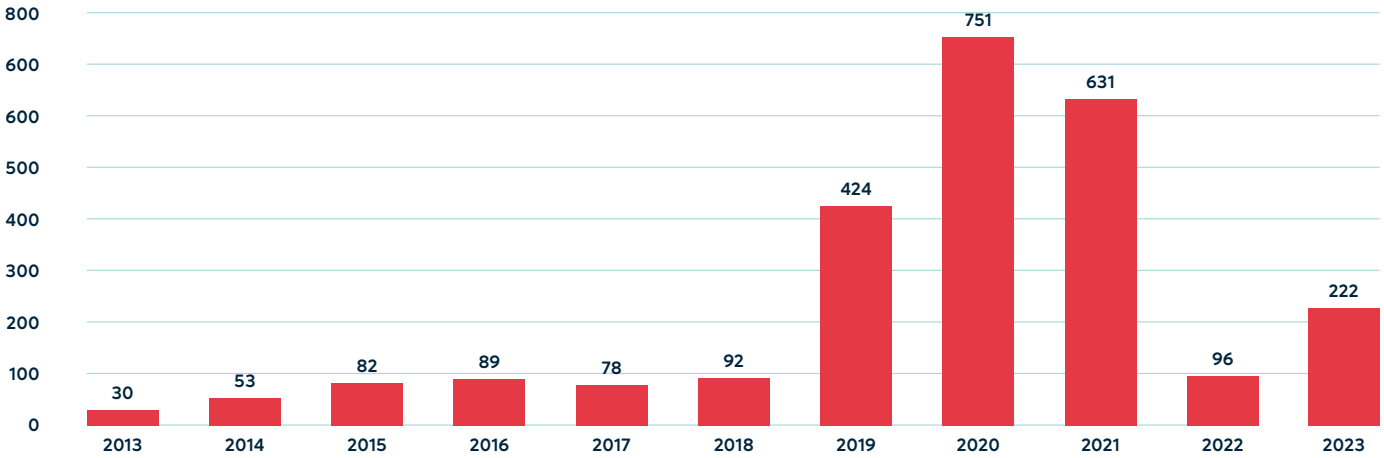
## Overview of radio interference in 2023

In 2023, the number of interference instances was 222, and they are itemized in image 1. Reports of interference from mobile phone systems accounted for about 93% of interference in 2023. Interference from MMDS 1838 and MMDS 2278 results from old frequency converters, and other kinds of interference which occurs in the mobile phone systems, such as echoes, interference from lights. Interference that is labelled MMDS 1838 has a frequency converter on 1838 MHz, MMDS on 2278 MHz. About 80% of interference was due to MMDS cases, and it is expected that this will be finished in 2024. Not much of this still remains, about 22 (MMDS1838) that have an effect on the mobile phone system whereas there are 63 (2278 MMDS) that have an effect on the Tetra system in the Greater Reykjavík Area. There are instances of fires resulting from MMDS frequency converters that are running and therefore it is important to complete their disconnection to such extent as is possible and to send letters to home owners where the MMDS frequency converter cannot be found.

The number of reported instances of interference in 2023 was 222, which is an increase from 2022 that is accounted for by the fact that more work was done on disconnecting MMDS interference.




**Number of reported instances of interference 2013 to 2023**



## Access to telecommunications service and the quality of connections

The authorities emphasise the importance of achieving a level of access to telecommunication services and a quality of service that is among the best available in the world. This is reflected in the goals of the authorities that are stated in both the budget for 2024–2028 and in the proposed parliamentary resolution for policy-formulating actions to strengthen the knowledge society until the year 2025.

## Objectives and indicators

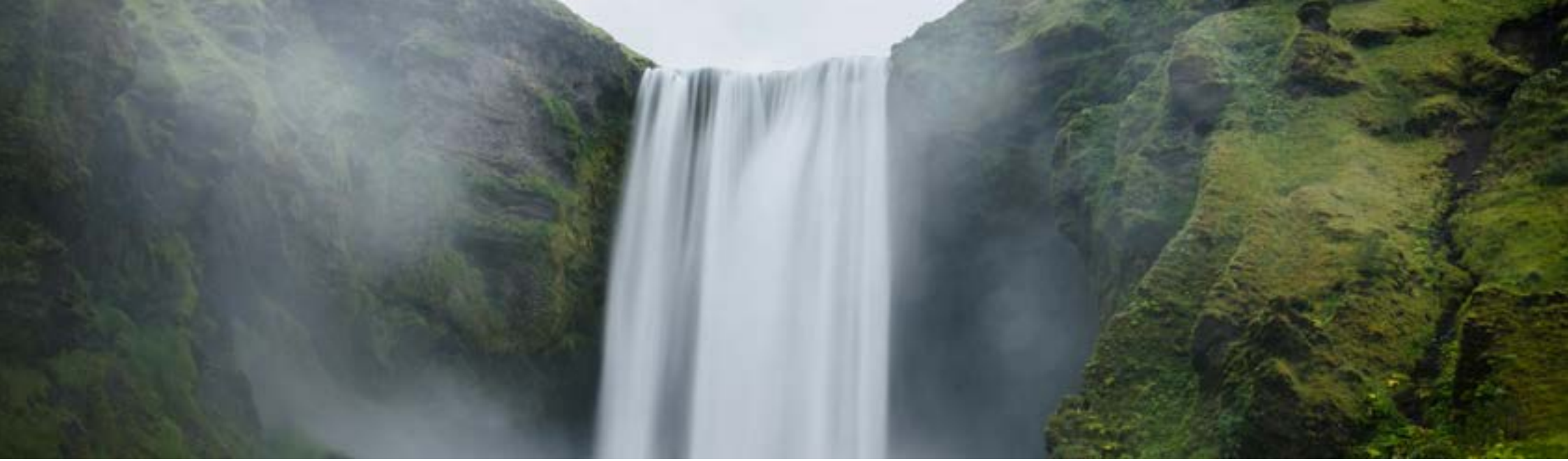
Access to high-speed connections keeps increasing, and this is especially due to the effects of the Telecommunications Fund project for providing fibre-optic connection to the rural areas of the country, which was formally completed in 2022.

The remainder would then be rural areas with a high population density. Today, nearly everyone has high-speed connections based on xDSL technology. The government considers that evidence of market failure has not been demonstrated with regard to the rollout of fibre broadband in rural population centres. Pressure from local authorities and residents is likely to result in market-driven efforts to improve high-speed connections in these areas over the following years, either through the installation of fibre-optic cables, the development of powerful 5G services, or a combination of these solutions.

Nearly all homes and workplaces in Iceland have access to mobile network services with voice communications and high-speed network. The high-speed mobile network can certainly vary in quality and it is likely that there will be a difference in quality between urban and rural areas.

The situation is somewhat different when it comes to access to mobile network services along Iceland's highways. Accessibility goals have not been fully realised there. It is clear that market participants and the authorities face the challenge of improving mobile network access in Iceland along the country's high-

| Objectives | HM | Indicators | Status 2023 | Projection 2025 | Projection 2029 |
|---|---|---|---|---|---|
| Allri byggð bjóðist aðgangur að áreiðanlegu háhraðanetsambandi og á öllum helstu stofnvegum sé áreiðanlegt farnetssamband. | 11.5 | 1.1 Fjöldi þéttbýlisstaða og byggðakjarna (alls 102) þar sem innan við 80% heimila og fyrirtækja hafa aðgang að fjarskiptatengingu um ljósleiðara. | 51 | 38 | 0 |
| | | 1.2. Fjöldi km á stofnvegum þar sem ekki næst áreiðanlegt talsamband og að lágmarki 10 Mb farnetssamband óháð markaðsaðila. | 124 | 80 | 0 |



ways. This is also especially important in connection with the development of 5G mobile network service in the long term, and the ECOI has been cooperating with market participants in the preparations for the reissue of frequency authorisations which are scheduled for implementation in 2023 to establish cooperation and shareability in order to expedite and ensure access to high-speed mobile network service along the major trunk roads in the country.

The Electronic Communications Office had quality and access measurements carried out in the autumn of 2023, by an independent external party, Rohde & Schwarz which has been at the forefront when it comes to matters such as cordless telecommunications and measurements of the quality thereof.

The purpose of the quality test, which was carried out in September and October of 2023, was to obtain information about the quality of the service that the three largest mobile phone companies in this country provide to their customers when it comes to telephone calls and data signalling rate in internet use, including streaming service.

Emphasis was placed on three different areas, i.e. the Greater Reykjavík Area, larger settlements in rural areas, with populations over 1000 people, and the major highways. The test included over 90% of inhabited areas in the country, and was conducted in the manner of driving about 9 thousand kilometres and taking measurements at the same time. Over 17 thousand phone calls were made and more than 160 thousand instances of data validation were carried out. Also specifically tested was the situation in the three major shopping centres in the country, Kringlan, Smáralind and Glerártorg, by walking around in each of them for a number of hours and taking measurements.

On the enclosed map it is indicated how the areas were divided, the Greater Reykjavík Area (yellow) towns (green) and highways (blue).

The method of measurement that was used is co-ordinated and standardised by the European Telecommunications Standards Institute (ETSI) whereby a grade/points are awarded depending on the findings for each factor measured, and the importance thereof for the overall findings, on one hand in the assessment of the quality of phone calls and data transmission on the other hand. The measurements involved simulating typical behaviour on the part of users of the general mobile network (telephone calls, Internet browsing etc.).

Quality tests such as these provide the Electronic Communications Office with a valuable overview of the capacity of each mobile phone system in the country, in addition to enabling the Office to assess the quality of all the mobile phone systems based on international standards and thus compare them to mobile phone systems abroad that have been tested in the same manner.

The principal findings of the quality tests are that the Icelandic mobile phone system is measured as comparable to other European mobile phone systems.


On the enclosed map it is indicated how the areas were divided, the Greater Reykjavík Area (yellow) towns (green) and highways (blue).

## Network speed and quality of telecommunication networks in Iceland

Based on the analysis by the ECOI of Ookla® Speedtest Intelligence® data, 2023.

### Fixed networks Internet

Download speed

Average speed 279.750 Mbps

Median speed 158.953 Mbps

(The entire year of 2023)[1]

### Fixed networks Internet

Upload speed

Average speed 276.995 Mbps

Median speed 172.508 Mbps

(The entire year of 2023)[1]

### Mobile networks

Download speed

Average speed 204.79 Mbps

Median speed 162.02 Mbps

(The entire year of 2023)[2]

### Mobile networks

Upload speed

Average speed 23.73 Mbps

Median speed 22.30 Mbps

(The entire year of 2023)[2]

### Mobile networks 5G

Download speed

Average speed 332.02 Mbps

Median speed 265.19 Mbps

(The entire year of 2023)[2]

### Farnet 5G

Upload speed

Average speed 32.76 Mbps

Median speed 23.62 Mbps

(The entire year of 2023)[2]

[1] Information from Hringiðan, Nova, Síminn, Hringdu, Snerpa og Vodafone

[2] Information from Nova, Síminn, Vodafone

## Explanations of terms

### Average speed

is calculated by adding up all measurement values and then dividing that sum by the number of measurements. Calculated average speed can be sensitive to deviations, i.e. very high or very low measurement results or if the number of measurements is limited.

### Median speed

Statistically speaking, the median value is less likely to be affected by unusual numbers such as a limited number of measurements and if the measured speed is unusually high.

The results of FST's analysis is that Iceland ranks first globally when it comes to the quality of telecommunication services, regardless of whether the terms average speed or median value are used.

Image published with permission from Míla

## Reliability of telecommunication networks and their resilience

Digitalisation is indicative of the development of our society and the change is very rapid. All residents, companies, public institutions and critical societal infrastructure require access to secure and powerful telecommunication networks and services. Telecommunication networks play a key role when it comes to digital services, and are in fact the foundation on which digital service is based. The Electronic Communications Office of Iceland therefore considers that it is necessary to ensure that the foundation is reliable and has a high capacity.

There has recently been operational disruption to telecommunication systems where telecommunication services for the general public have become temporarily unavailable. There have been vociferous calls for the authorities to prevent such situations from occurring again. In the Electronic Communications Office of Iceland's risk assessment for the National Security Council in

2022, it was stated clearly that there is a certain market failure with regard to the security of telecommunications, due to the fact that telecommunication companies in Iceland are not prepared to, nor do they have a legal obligation to, take the utmost measures to ensure the resilience of telecommunications in all situations, such as against large-scale, rare events.

The Infrastructure Division of the Electronic Communications Office of Iceland is working on the presentation of a plan regarding ways in which to promote the development and continuing proliferation of telecommunication networks in Iceland with the aim of achieving a higher level of reliability and resilience of the telecommunication networks in the country. Work is ongoing on formulating policy regarding dependable and resilient telecommunications networks, which includes objectives and indicators for the next 10 years. The aim is to issue the policy this year.

Similarly, the Division is working in cooperation with the Department of Civil Protection and Emergency Management towards the completion of a contingency plan for operational disruptions due to natural hazards as well as an internal process to address operational disruptions within the telecommunication networks. Channels of communication have been established to ensure a minimal response time in incident management.

Reykjanes was the scene of persistent seismic activity this year and in the autumn a volcanic eruption occurred near Grindavík that posed a great risk for all infrastructure. The telecommunications systems performed well under these catastrophic circumstances, although minor interference occurred due to repeated power outages (electricity supply) and malfunctions in standby power units. This can be attributed to good co-operation between the telecommunications companies, and all communications between them take place on the Electronic Communications Office's response channel on MS Teams. In November and early December of 2023, protective measures were initiated with the aim of installing secure auxiliary telecommunication stations at Hópsnes, Vogastapi and Reykjanesviti. This was done so that telecommunications could be maintained despite possible severance of contact to the telecommunications stations in Grindavík and at Þorbjörn.

## The Electronic Communications Office of Iceland's market analyses of the telecommunications market 2023

Market analyses of the telecommunication market form a significant part of the Office’s operations. They constitute the most important policy instrument for the ECOI to safeguard competition and thereby support fair pricing, innovation, and improved access to services across the country. They are used to safeguard competition by analysing the position of market participants on telecommunications wholesale markets and by imposing appropriate obligations where competition is not considered adequate, in certain areas of the country as may be appropriate at each time. Market analyses are also intended to promote increased and more rapid proliferation of high-speed telecommunications networks in this country.Market analyses are the basis for decisions on whether to impose, maintain, change, or lift specific regulatory obligations on electronic communications companies that have been designated as having significant market power.

The production of a market analysis report can be divided into three phases:

1. Defining the relevant service markets and geographical markets
2. Analysing the relevant markets, determining whether there is active competition in these markets, and making a decision as to whether there are one or more companies with significant market power
3. Making a decision as to whether obligations should be imposed, amended, or withdrawn with regard to companies with significant market power

The ECOI carries out analyses of the markets specified in the recommendations from the EFTA Surveillance Authority (ESA) in accordance with the Electronic Communications Act and Iceland's obligations under the EEA Agreement. Furthermore, the Electronic Communications Act requires the ECOI to define these markets in accordance with the circumstances specific to Iceland. The ECOI's market definitions may therefore be expected to vary from those in the recommendations. In addition, the ECOI is permitted to review additional telecommunications markets over and above those specified in the recommendation. The ESA recommendation currently in force was issued on 11 May 2016 and lists considerably fewer markets than in previous ESA recommendations on the same subject, published in 2004 and 2008, respectively. In general, it was considered that not all the markets in the recommendation from 2008 still met the requirements for imposing restrictions in advance. The markets that must be reviewed under the current ESA recommendation from 2016 are the following wholesale markets:

**Market 1**
Voice call termination on individual public telephone networks provided at a fixed location

**Market 2**
Voice call termination on individual mobile networks

**Market 3**

a) Local access with a fixed connection

b) Central access provided at a fixed location for mass-market products

**Market 4**
High-quality access provided at a fixed location

The Post and Telecom Administration's analyses of the following wholesale markets, based on the ESA recommendation from 2008, remain in effect:

**Market 6**
The terminal part of leased lines (PTA Decision no. 8/2014), which has now become market 4 as described earlier, and which will be analysed again in 2024.

In addition to this, the analysis of the following wholesale market based on the ESA recommendation from 2004 remains in effect:

Trunk line segments of leased lines, previously market 14 (PTA Decision No. 21/2015), which will be analysed again in 2024.

## Main tasks in the field of market analysis in 2023

During the year, analyses were performed on wholesale markets in accordance with the Office's annual plan. In October 2021, the Electronic Communications Office of Iceland completed its analysis of markets 3a, local access with fixed connection, and 3b, central access with fixed connection for mass-market products, cf. the Electronic Communications Office's decision no. 5/2021 of 19 October 2021. In that analysis it was revealed that the ECOI would reassess whether there was reason to reconsider the geographical definition of these markets, for reasons such as if Ardian's purchase of Míla would go through, for example. This finally happened in September of 2022. The ECOI therefore began subsequently to re-examine the aforesaid market analysis, which mostly took place in 2023, and will be completed in May of 2024. This analysis is enormous in scope and complexity and well over one thousand pages in length.

By Decision no. 9/2023, dated 15 September 2023, the Electronic Communications Office made the provisional decision to impose obligations on Míla in the aforesaid markets, consistent with the obligations which the Rulings Committee for Electronic Communications and Postal Affairs had imposed on Míla with its decision of 29 December 2022, which addressed the complaint submitted by Míla and Síminn regarding the aforesaid market analysis decision of the ECOI of October 2021. The reason for the aforesaid provisional decision was that the Committee had defined a time of validity for its decision of 29 December until 15 September 2023. As the ECOI was unable to complete its analysis of the aforesaid markets before that time period elapsed, the ECOI considered that it was necessary to make the aforesaid provisional decision in order to ensure legal security and to prevent that there would be a period of time where no obligations applied to Míla between market analyses.

Míla and Ljósleiðarinn submitted a complaint regarding the aforesaid provisional decision, and with the Committee's decision dated 20 December, regarding case no. 1/2023, the Committee dismissed the complaints as in the Committee's assessment the decision could not be appealed as it did not conclude specific administrative proceedings.

## Major tasks resulting from market analyses in 2023

Decision regarding Míla's cost analysis of wholesale access to Míla's copper local loops and distribution frames

With the ECOI's decision no. 3/2023, dated 3 May last, the ECOI approved Míla's cost analysis for access to Míla's copper local loops and distribution frames, which stated involved an increase of 27%, and also the cancellation of initial fees for local loops.At that point, prices had not increased since 1 June 2019.

## Decision regarding Míla's reference offer for hosting

With the ECOI's decision no. 4/2023, dated 8 June last year, the Electronic Communications Office approved Míla's alterations of the company's reference offer for hosting. This reference offer replaced an older reference offer regarding the same issue of 3 June 2014.

# Cyber and data security

Cyber and data security are becoming an increasingly important part of the issues concerning response and security for society as a whole, and the ECOI plays a key role in this regard. The Office operates the CERT-IS cybersecurity team, monitors the organisation of security measures and the function of critical infrastructure, and is a member of the Cyber Security Council. The Council is a government consultation forum and its purpose is to follow up on the introduction of the government's policy on cyber and data security. The institution also cooperates with various parties that work on cybersecurity issues.

## Activities of the CERT-IS cyber emergency response team

The activities of CERT-IS are based on the Electronic Communications Act and laws relating to the security of networks and information systems supporting critical infrastructure, and are basically divided into to subcategories. On one hand, CERT-IS provides coordination and incident management with regard to the network security of providers of essential services, and on the other hand it maintains a proper situational awareness of cyber security issues for the Icelandic network domain.

In addition to these two main objectives, the team works in close international cooperation with cyber security teams, and as such is Iceland's point of contact in terms of technological coordination and incident management involving the principal neighbouring states and other friendly states.

CERT-IS is an organisational unit within the Electronic Communications Office of Iceland, although due to certain legal obligations it shall have a degree of independence when it comes to accounting, computer systems and work facilities. In light of that fact, CERT-IS has issued an independent annual statement for the year 2023 which can be accessed for further information about its activities on the ***TEAM'S WEBSITE***.

## Activities of Digital Security

The Division employs 10 experts who have various backgrounds and a vast amount of experience in the field of information security and cybersecurity legislation.

This Division's activities involve monitoring minimum requirements regarding cybersecurity and risk control framework on the basis of the Electronic Communications Act and the NIS Act, and it has a very important role when it comes to cybersecurity of important telecommunications infrastructure and basic digital infrastructure.

In addition, the Division has the role of a consulting coordination authority towards other monitoring authorities on the basis of the NIS Act, for the purpose of promoting the coordinated implementation thereof. This entails maintaining a specific policy regarding how to construct and implement monitoring of the security of network and information systems supporting critical infrastructure.

Monitoring generally involves audits and inspections of the functionality of the organisation of security issues with individual parties, and pre-inspections and investigation of individual incidents and risk factors. The Division also carries out general and specific risk assessments.

As regards monitoring on the basis of the NIS Act, the Division works in accordance with the Electronic Communications Office of Iceland's policy of October 2021. Thus the Division also carried out a self-assessment of the security organisation of digital infrastructure operators in 2021, which has been the basis for the Division's subsequent risk-based monitoring.

The Division then began carrying out a self-assessment immediately after the new Electronic Communications Act came into force on 1 September 2022. The findings of the self-assessments of the eight largest telecommunications companies were available around the middle of the year 2023. The findings of self-assessment audits form the grounds for the prioritisation of audits by the Division.

Improvements are constantly carried out regarding audit forms for self-assessment which is sent out to regulated entities. In 2023 work began on the digitization of the self-assessment process, and the first version of that solution is scheduled to be taken into use in 2024.

During 2023, the Division embarked on defined and in-depth audits of the organisational structure of cybersecurity issues of three parties, and completed two audits that began in 2022. These assessments apply to organisational measures and also technical measures in the field of cybersecurity. A penetration test was also carried out for one party. The Division performed 16 pre-inspections of security incidents during the year and made one administrative decision regarding a security incident.

In 2023, the preparation of the NIS2 legislation had great significance in various ways for the division, as this legislation enters into effect in Europe in October of 2024. These preparations involved organisational work, compiling of educational material and co-operation between different key institutions and ministries that play a role in this matter.

In the 2023, the Electronic Communications Office was given access to the EU-member states consultation forum in the area of cybersecurity (the NIS Cooperation Group). A digital security

representative has attended meetings with that body in order to increase knowledge within the institution, to strengthen its network of connections and international cooperation in the area of cybersecurity.The aforesaid Cooperation Group is a key element within the European Union with regard to requirements that shall be made regarding the cybersecurity of important infrastructure, the performance of monitoring and co-ordination within Europe.The Group was established with the so-called NIS-1 Directive in the area of cyber and information security and its role was expanded greatly with the Union's NIS-2 Directive. In 2023, the Electronic Communications Office was given access to the EU-member states consultation forum in the area of cybersecurity (the NIS Cooperation Group). A digital security representative has attended meetings with that body in order to increase knowledge within the institution, to strengthen its network of connections and international cooperation in the area of cybersecurity.The aforesaid Cooperation Group is a key element within the European Union with regard to requirements that shall be made regarding the cybersecurity of important infrastructure, the performance of monitoring and co-ordination within Europe. The Group was established with the so-called NIS-1 Directive in the area of cyber and information security and its role was expanded greatly with the Union's NIS-2 Directive.

Digital security provides monitoring on the basis of Act no. 55/2019 on Electronic Identification and Trust Services for Electronic Transactions. Many of the tasks that are based on this Act involve awarding providers of trust services a fully validated position in that field. The Office decided to award Advania Iceland a fully validated position as a provider of trust services in the field of electronic timestamps, and authorisation to provide validated services of that kind. In addition to awarding parties a fully validated position, the Office has an obligation to investigate incidents that occur and to maintain a trusted list in this country.

Representatives of the Division participate in European cooperation in this field, and are members of FESA, i.e. the Forum of European Supervisory Authoritios for Trust Service Providers. The group meets twice a year, and also works in close cooperation with the European Union Agency for Cybersecurity. A great deal of preparatory work went on within the group in relation to the introduction of a new regulation in the field of electronic identification and trust services that was formulated within the legislative bodies of the European Union. This regulation will have somewhat far-reaching effects in this country, and therefore knowledge acquisition and preparation is important.

The Division organised and hosted the cybersecurity conference "Who raises the cybersecurity level of Iceland? Is that my task?" which took place at the Hilton Nordica on 18 October.

In addition, Unnur Kristín Sveinbjarnardóttir gave a presentation on NIS2 during a luncheon meeting hosted by Ský with the title "The future of information security". She also took part in the round-table discussion on “The Promise of Direct Online Channels: Transforming Public-Citizen Interaction" hosted by Clateway Media last December.

Finally, it is worth mentioning that the Division also acts for the Electronic Communications Office of Iceland on the basis of Article 13 of Act no. 54/2021 on Icelandic domain names, which was passed in Parliament on 27 May 2021.  In 2023, the Office carried out an audit based on that Act, regarding requirements for domain names registration offices.

# Consumer affairs

One of the principal tasks of the Electronic Communications Office of Iceland is to protect the interests of consumers in the telecommunications market, and to safeguard protection for them in their dealings with telecommunication companies. The Office publishes information for consumers, participates in measures to protect personal data and privacy and works on safeguarding the maintenance and security of public telecommunications networks.

The Electronic Communications Office's website includes a section specifically intended for consumers. There, consumers can submit messages, complaints and inquiries to the Office if they are of the opinion that a telecommunication company is in violation of the obligations required by law or of general authorisations and operation licences. Dozens of such messages are received each year, although only some of them enter the formal complaints process. This does not include incidents where assistance and advice is given over the phone, nor the responses to inquiries of various kinds.

In 2023 the Electronic Communications Office of Iceland had about 34 complaints to address, and as in previous years the majority of them, about 21, concerned unsolicited communications. Unsolicited communications are addressed in Article 94 of

the Electronic Communications Act, and the provision specifies a high degree of legal protection for the end users of telecommunication services with regard to the marketing activities of the relevant parties. Among other common causes for complaint are disputes about the amount on bills for telecommunication services and number and/or service portability without the consent of the rights holder.

## Rights holder changes without the consent of the rights holder

Rights holder changes are subject to rules no. 1112/2022 on number and service transfers. The provisions of Articles 10 and 11 of said Rules address rights holders changes and service agreements with rights holders, and in the telecommunications market it is generally accepted that a clear distinction shall be made between the payer and the rights holder of a number. According to Article 10 of the Rules, telecommunications companies may not register another end user as the rights holder of a number, except with the electronic or written approval of the rights holder who renounces the number.

The Electronic Communications Office made one decision during the year regarding rights holder changes which the telecommunications company Nova hf. had effected without approval. Based on the data and information which Nova provided to the Electronic Communications Office in the resolution of this case, the Office found that it was clear that Nova's procedure with regard to the payers and/or rights holder changes was not consistent with Article 10 of the rules on number and service transfers, regarding the obligation of telecommunications companies to obtain clear and verifiable approval from rights holders for rights holder changes.

As the Office had previously received for resolution comparable issues concerning the telecommunications company's unsatisfactory handling of rights holder changes, it considered that inevitably an administrative fine must be imposed on the company. However, in light of the admission of wrongdoing, Nova's willingness to cooperate in the case, the company's plan to improve procedures for rights holder changes and the payment of compensation to the party involved in the case, the Electronic Communications Office concluded that it was appropriate to lower the amount of the fine that was to be levied, by half the amount.

In addition, the Office made an agreement with Nova concomitantly with the decision. By said agreement, if any comparable cases arise during the time of validity of the agreement, Nova commits to take action to resolve them in a manner beneficial for consumers.

## Price comparison of telecommunications services

The objective with the Electronic Communications Act is to increase protection and options for consumers, and to promote active competition.

One of the provisions included in the Electronic Communications Act for this objective is Article 70 of the Act, which gives the Electronic Communications Office the authority to make comparisons of top prices for telecommunications services provided to consumers, or to assign to an independent party the task of carrying out such a comparison.

Consequently, the Electronic Communications Office arranged for the financial technology company Aurbjörg to issue such a

price comparison in cooperation with the telecommunications companies. Until now, Aurbjörg has carried out comparisons of the prices for telecommunications services at its own initiative. The website Aurbjörg is run by the company Two Birds ehf. for the purpose of increasing financial literacy, improve transparency and assist consumers with their decisions.

Through the efforts of the Electronic Communications Office, the telecommunications companies now provide information about their prices via an automatic web interface which Aurbjörg maintains for that purpose. Access for telecommunications companies to this web interface is open to such parties that wish to make use of Aurbjörg's systems and take part in this price comparison.

After both Aurbjörg and the Electronic Communications Office had made substantial efforts towards making this a reality, the price comparison site became available in early October of 2023. There, consumers can find and compare prices for services in the market. Correct information about prices improves price awareness and enables consumers to make a better selection when looking for service providers.This promotes active price competition. The Electronic Communications Office encourages users of telecommunications services to examine and avail themselves of this added service offered to consumers.

## Universal service

Universal service in telecommunications is specific aspects of telecommunications service that shall be available to everyone in the country at affordable prices, irrespective of where in the country they live. Among the service components that are considered part of universal service is net access service and telephone service that is suitable for use at the quality specified, including the underlying connection.

Types of services within universal service are not bound to specific technologies, which is explained by the fact that the quality and security of mobile net services has increased greatly in this country in recent years. Therefore it is no longer assumed that

telephone and net access service within universal service will be bound to a fixed network. Under certain circumstances, it may even be cheaper and more efficient to use mobile network technology. If a consumer at a certain location has access to mobile network services that meet certain quality requirements, the consumer does not have the additional right to also get access to mobile network service as part of universal service.

Today, it is generally assumed that addresses that have access to 3G mobile network services or younger generation high-speed mobile networks have universal telecommunications service. Even though 3G, 4G or 5G mobile network service reaches nearly all domiciles and workplaces with round-the-year operations in the country, there are certain addresses that must rely on telecommunication connection via mobile network connections. Due to geographical conditions and long installation routes, it has not been possible to supply fibre-optic connections and/or high-quality mobile network connections in certain locations.

Telecommunication connections of this kind were previously guaranteed with the public switched telephone network (PSTN) which has been operated by the wholesale department of Síminn hf. but that technology has become obsolete and in recent years its telephone exchanges have been gradually closed down. In 2020, the Electronic Communications Office nominated Neyðarlínan ohf. with Decision no. 9/2020 as a universal service provider for telephone and internet service in certain cases. This was intended as a countermeasure against some homes or

workplaces not having access to usable telecommunication service due to the disbanding of the PSTN system. Neyðarlínan has since then worked in good cooperation with the telecommunications companies to establish telecommunication connections as part of universal service.

As Neyðarlínan is neither a service provider for the connections which the company installs, nor does it charge a fee for them, no market advantage is created that can counterbalance the company's losses. In the assessment of the Electronic Communications Office, that cost constituted an unfair burden for Neyðarlínan. The actual cost which Neyðarlínan incurs due to the universal service obligation can be a maximum of ISK 1,000,000 for a single telecommunications connection. If the implementation would exceed that amount, the universal service provider would have to seek approval in advance from the Office to receive compensation for that cost. Among other actions, the Electronic Communications Office will then seek the opinion of the Telecommunication Fund regarding the implementation and the estimated cost thereof. In the assessment of whether to grant a higher universal service contribution, the ECOI takes full consideration of the views of the Telecommunication Fund.

In 2023, the Electronic Communications Office issued one decision concerning approval for excess maximum cost for a single telecommunication connection. In Decision no. 10/2023 it is stated that after the Electronic Communications Office's inspection there was no or limited high-speed mobile network connection in the area and therefore it was considered that the user did not have the option of satisfactory mobile network service. Therefore, it was the assessment of the Office that universal service would not be guaranteed in any other more efficient manner than through the installation of fibre-optics. The cost of establishing a telecommunication connection to the user's home was about ISK 2.2 million.

The Electronic Communications Office approved the application from Neyðarlínan regarding universal service contribution, but only partially.This was due to the high cost involved with a single telecommunication connection, and the Office considered it proper that the user would contribute towards the expense, like other users in rural areas that have enjoyed government subsidies through the project Ísland ljóstengt, or potentially as universal service users. The user did not object to contributing towards the expense, but needed to pay the contribution to Neyðarlínan before the disbursement of the universal service contribution.

# Administrative decisions of the ECOI in 2023

The ECOI passed eleven formal administrative decisions in 2023. The Rulings Committee for Electronic Communications and Postal Affairs ruled on one case where the ECOI's decisions had been appealed to the Committee.

The ECOI has maintained statistics on the outcome of administrative rulings since 2007, when the current setup of the Office was adopted. This table shows the decisions s made up to and including 2023:

| Year | ECOI's decisions | Appealed decisions | Appeal proportion | Total rulings | Rescinded decisions | Upheld decisions | Upheld - proportion / appealed |
|---|---|---|---|---|---|---|---|
| **2007** | 27 | 9 | 33% | 9 | 1 | 8 | **89%** |
| **2008** | 33 | 7 | 21% | 7 | 1 | 6 | **86%** |
| **2009** | 23 | 5 | 22% | 5 | 0 | 5 | **100%** |
| **2010** | 41 | 10 | 24% | 10 | 3 | 7 | **70%** |
| **2011** | 35 | 5 | 14% | 5 | 2 | 3 | **60%** |
| **2012** | 40 | 7 | 18% | 7 | 1 | 6 | **86%** |
| **2013** | 33 | 4 | 12% | 4 | 0 | 4 | **100%** |
| **2014** | 42 | 5 | 12% | 5 | 2 | 3 | **60%** |
| **2015** | 37 | 10 | 27% | 10 | 2 | 8 | **80%** |
| **2016** | 24 | 4 | 17% | 4 | 0 | 4 | **100%** |
| **2017** | 32 | 13 | 41% | 13 | 1 | 12 | **92%** |
| **2018** | 28 | 4 | 14% | 4 | 1 | 3 | **75%** |
| **2019** | 31 | 7 | 23% | 7 | 3 | 4 | **57%** |
| **2020** | 18 | 4 | 22% | 4 | 0 | 4 | **100%** |
| **2021** | 20 | 1 | 5% | 1 | 0 | 1 | **100%** |
| **2022** | 15 | 4 | 27% | 4 | 0 | 4 | **100%** |
| **2023** | 11 | 1 | 9% | 1 | | 1 | **100%** |
| **Total** | **490** | **100** | **20%** | **100** | **17** | **83** | **83%** |
| **Of total** | **100%** | | | | **3,5%** | | |
| | | | | | **Average percentage upheld*** | | **83%** |

*Using weighted mean

A summary of the decisions issued by the Electronic Communications Office of Iceland and the Post and Telecom Administration can be found on the ***OFFICE'S WEBSITE***.

# Registered telecommunications providers at the end of 2023

| Name | Issued/registered | Type of operation |
|---|---|---|
| 1819 – Nýr valkostur ehf. | 20.6.2014 | Directory enquiries services |
| Advania Ísland ehf. | 17.4.2002 | Data transmission services |
| Alza ehf. | 1.9.2017 | Data transmission services via wireless and fixed-line networks |
| Alþingi (the Icelandic Parliament) | 23.3.2015 | Transmission of radio and/or television signals |
| Astrocast SA | 29.9.2020 | Data transmission service via wireless networks |
| Austurljós ehf. | 5.3.2015 | Data transmission networks and services |
| Ábótinn ehf. | 28.3.2003 | Data transmission networks and services |
| Árvakur hf. | 26.1.2015 | Directory enquiries services |
| Ásaljós | 18.8.2015 | Operation of fixed-line telecommunications network |
| BERJAYA HOTELS ICELAND hf. | 23.06.2021 | Transmission of radio and/or television signals |
| Bláskógaljós | 20.12.2019 | Operation of fixed-line telecommunications network |
| Bloomberg Finance L.P. | 19.7.2007 | Line rental services and general telecommunications network |
| Boðleið Þjónusta ehf. | 1.12.2015 | Voice telephony services, mobile telephone services and operation of a fixed-line telecommunications network |
| BT Solutions Limited, Iceland branch | 28.7.2014 | Data transmission services |
| Century Link Iceland ehf. | 1.12.2015 | Operation of fixed-line electronic communications network and data transmission services |
| Cisco International Limited | 6.7.2022 | SMS and VoIP cloud services |
| Colt Technology Services AB | 29.9.2015 | Data transmission services |
| Cronus ehf. | 1.10.2019 | Transmission of radio and/or television signals |

| Name | Issued/registered | Type of operation |
|---|---|---|
| Cubic Telecom Limited | 9.8.2018 | Operation of fixed-line and wireless electronic communications networks, data transmission via wireless electronic communications networks |
| Darknet ehf. | 09.11.2023 | Voice telephony services |
| Dalaveitur ehf. | 14.2.2017 | Operation of fixed-line telecommunications network |
| DCN Hub ehf. | 10.12.2012 | Mobile and data transmission services |
| DIDWW Ireland Limited | 26.2.2019 | Data transmission and voice telephony services |
| Digriklettur ehf. | 1.4.2019 | Operation of fixed-line telecommunications network |
| DVD-Margmiðlun ehf. | 6.2.2004 | Operation of radio broadcasting broadband system |
| EchoStar Mobile Limited | 1.7.2020 | Mobile network satellite service |
| County of Eyja- og Miklaholtshreppur | 29.9.2015 | Operation of fixed-line telecommunications network |
| Factor ehf. | 30.5.2013 | Data transmission network and data transmission services |
| Farice ehf. | 2.9.2003 | Submarine cable |
| Ferðaþjónustan Húsafelli ehf. | 23.4.2018 | Data transmission services via fixed-line networks, operation of fixed-line telecommunication network |
| Fjarskiptafélag Reykhólshrepps | 9.8.2018 | Operation of fixed-line telecommunications network |
| Fjarskiptafélag Skagabyggðar | 8.6.2016 | Data transmission network |
| Fjarskiptafélag Skeiða- og G ehf. | 8.3.2013 | Data transmission network |
| Fjarskiptafélag Svalbarðshrepps ehf. | 14.2.2017 | Operation of fixed-line telecommunications network |
| Fjölnet ehf. | 26.10.2001 | Voice telephony, data transmission services and telecommunication network |

| Name | Issued/registered | Type of operation |
|---|---|---|
| Flóaljós | 17.1.2020 | Operation of fixed-line telecommunications network |
| FOSSA Systems S.L. | 21.4.2022 | Data transmission services |
| Gagnaveita Helgafellssveit ehf. | 18.8.2015 | Operation of fixed-line telecommunications network |
| Gagnaveita Hornafjarðar ehf. | 13.2.2013 | Electronic communications network |
| Gagnaveita Suðurlands ehf. | 9.12.2013 | Data transmission services |
| Gagnaveitan ehf. | 8.6.2011 | Electronic communications services |
| Garmin (Europe) Limited | 5.7.2022 | Data transmission services, satellite services |
| GlobalCall ehf. | 4.9.2008 | Voice telephony services |
| Globalstar Europe Satellite Services Ltd. | 21.2.2010 | Satellite services |
| Halló ehf. | 23.5.2014 | Directory enquiries services |
| Hátíðni ehf. | 17.8.2020 | Voice telephony services, operation of wireless telecommunication network, data transmission service via fixed-line networks and wireless networks and transmission of radio and/or television signals |
| Hitaveita Drangsness | 28.3.2019 | Operation of fixed-line telecommunications network |
| Hitaveita Egilsstaða/Fella ehf. | 11.9.2018 | Operation of fixed-line and wireless telecommunications network, data transmission service via wireless and fixed-line networks and transmission of radio and/or television signals |
| Hitaveita Tálknafjarðarhrepps | 24.6.2015 | Data transmission services via fixed-line network |
| Hljóðsmárinn ehf. | 24.10.2017 | Transmission of radio and/or television signals |
| Hópkaup ehf. | 28.4.2015 | Directory enquiries services |
| Hótel Laki ehf. | 10.4.2017 | Operation of fixed-line telecommunications network |

| Name | Issued/registered | Type of operation |
|---|---|---|
| Hrafnshóll ehf. | 30.1.2019 | Operation of fixed-line telecommunications network |
| Hringdu ehf. | 9.11.2010 | Voice telephony and data transmission services |
| Hringiðan ehf./Vortex Inc. | 3.12.1998 | Voice telephony, data transmission services and telecommunication network |
| Hrunaljós | 17.1.2020 | Operation of fixed-line telecommunications network |
| Húnanet ehf. | 23.10.2017 | Operation of fixed-line telecommunications network |
| Municipality of Hvalfjarðarsveit | 31.3.2014 | Electronic communications network |
| I CALL ehf. | 5.12.2022 | Voice telephony and mobile phone service, data transmission service. |
| Icelandair ehf. | 14.2.2014 | Electronic communications network |
| in2com limited trading as in2tel | 01.11.2023 | Voice telephony services |
| Internet á Íslandi hf. | 3.2.1998 | Electronic communications network, voice telephony and data transmission services |
| Isavia ohf. | 30.12.2010 | Voice transmission service for aircraft and operation of fixed-line electronic communications network |
| Isavia ANS ehf. | 21.2.2020 | Operation of fixed-line telecommunications network |
| Já hf. | 21.11.2007 | Publication of telephone and address directories, directory enquiries services |
| Kukl ehf. | 20.3.2009 | Voice telephony, data transmission services and telecommunication network |
| Icelandic Coast Guard | 1.1.2011 | Management and leasing of NATO fibre-optic cable |
| Leaf Space Iceland ehf. | 16.2.2022 | Data transmission service via satellite |
| Leiðarljós ehf. | 14.2.2017 | Operation of fixed-line telecommunications network |
| Lindin, kristið útvarp | 26.1.2015 | Transmission of radio and/or television signals |

| Name | Issued/registered | Type of operation |
|---|---|---|
| LíF í Mýrdal ehf. | 15.9.2014 | Operation of fixed-line telecommunications network |
| Ljós og gagnaleiðari ehf. | 10.8.2009 | Data transmission network |
| Ljósfesti ehf. | 19.12.2016 | Operation of fixed-line telecommunications network |
| Ljósleiðarinn (formerly Gagnaveita Reykjavíkur ehf.) | 23.3.2007 | Data transmission networks and services |
| Optical fibre in the municipality of Árneshreppur | 14.11.2023 | Operation of fixed electronic communications network |
| Optical fibre for Borgarbyggð | 18.10.2019 | Operation of fixed-line telecommunications network |
| Ljóspunktur ehf. | 24.10.2017 | Operation of fixed-line telecommunications network |
| Loopup Spain SL | 5.10.2021 | Data transmission services |
| Lýsir ehf. | 20.12.2019 | Operation of wireless electronic communications network |
| Magnavík ehf. | 1.4.2004 | Data transmission services |
| Martölvan ehf. | 26.11.2007 | Voice telephony, data transmission services and network |
| Míla ehf. | 4.4.2007 | Electronic communications network |
| Netpandan ehf. | 5.9.2022 | Data transmission services via fixed-line network |
| Netvöktun ehf. | 9.8.2018 | Voice telephony services, operation of a fixed-line and wireless electronic communication network, data transmission services via fixed-line and wireless networks |
| Neyðarlínan ohf. | 6.10.1999 | Voice telephony/emergency service response line |
| Nordic Networks ehf. | 24.11.2016 | Submarine cable and data transmission services |
| Nova hf. | 12.7.2006 | Voice telephony and data transmission services |
| OnAir S.A.R.L. | 29.4.2008 | Mobile communication services on aircraft (MCA) |

| Name | Issued/registered | Type of operation |
|---|---|---|
| OneWeb communications s.a.r.l. | 20.5.2021 | Data transmission service via satellite |
| Opin kerfi ehf. | 25.2.2011 | Data transmission services |
| Origo hf. | 12.12.2011 | Data transmission services |
| Orkufjarskipti hf. | 26.10.2001 | Electronic communications network |
| Premis ehf. | 24.10.2017 | Voice telephony and mobile telephony services, operation of wireless and fixed-line tele-communications network and data transmission services via fixed-line and wireless networks |
| Protegion ehf. | 5.3.2018 | Operation of fixed-line telecommunications network |
| Rafal | 2.5.2022 | Data transmission service via wireless networks |
| Rafey ehf. | 18.8.2015 | Operation of fixed-line telecommunications network |
| Rangárljós | 29.8.2016 | Operation of fixed-line telecommunications network |
| Refinitiv Norge A/S | 1.9.2017 | Data transmission services via fixed-line network |
| Ríkisútvarpið ohf. | 29.7.1997 | Electronic communications services Radio and television |
| S126 ehf. | 21.02.2024 | Data transmission services via fixed-line network |
| Sensa ehf. | 19.12.2016 | Data transmission services via fixed-line network |
| Síminn hf. | 30.7.1998 | Voice telephony, GSM, data transmission network etc. |
| Snerpa ehf. | 17.8.2000 | Electronic communications network, voice telephony and data transmission services |
| Splitti ehf. | 8.7.2019 | Voice telephony and mobile services, data transmission via fixed-line and wire-less electronic communications networks and directory enquiries services |
| Starlink Internet Services Limited | 17.12.2020 | Data transmission service via satellite |
| Studio Norn ehf. | 14.10.2020 | Transmission of radio and/or television signals |

| Name | Issued/registered | Type of operation |
|---|---|---|
| Sumarsól ehf. | 1.12.2015 | Directory enquiries services |
| Svartsteinn ehf. | 24.1.2022 | Data transmission service via fixed-line network and mobile network |
| Swarm Technologies Inc. | 17.8.2020 | Satellite service for IoT and M2M devices |
| Sýn hf. | 27.3.2007 | Voice telephony services, mobile telephony services, data transmission services and electronic communications network |
| Tech Support á Íslandi ehf. | 3.3.2017 | Voice telephony, data transmission services via fixed-line and wireless networks |
| TELE Greenland A/S | 24.6.2008 | Submarine cable |
| Tengir hf. | 20.9.2002 | Optical fibre network |
| Tismi BV | 5.3.2015 | Voice and mobile telephony |
| TP Global Operations Limited | 28.03.2022 | Data transmission service via wireless networks |
| TRS ehf. | 29.3.2004 | Data transmission services |
| TSC ehf. | 18.1.2002 | Voice telephony, data transmission services and telecommunication network |
| Twilio Ireland Limited | 12.7.2019 | Voice telephony and mobile services, data transmission via fixed and wireless electronic communications networks and operation of fixed-line and wireless electronic communications networks |
| Tölvun ehf. | 25.4.2003 | Data transmission networks and services |
| Tölvuþjónustan ehf. | 10.12.2020 | Data transmission services via fixed-line network |
| Vengo ehf. | 18.10.2019 | Data transmission services via fixed-line network |
| Verne Global hf. | 29.9.2020 | Data transmission services via fixed-line network |
| Vesturbyggð | 07.11.2023 | Operation of fixed electronic communications network |

| Name | Issued/registered | Type of operation |
|---|---|---|
| Vonage B.V. | 8.9.2022 | Voice telephony services |
| Yellow Mobile B.V | 18.7.2017 | Voice telephony and mobile telephone service, operation of fixed-line and wireless telecommunication network and data transmission service via fixed-line networks and wireless networks |
| Zendensk International Limited | 9.8.2018 | SMS and VoIP cloud services |
| Þekking – Tristan hf. | 16.1.2004 | Data transmission networks and services |
| Þorvaldur Stefánsson | 14.10.2014 | Maritime data transmission |
| Örugg afritun ehf. | 18.10.2019 | Data transmission services via fixed-line network |
| Öryggisfjarskipti ehf. | 6.10.2008 | Telecommunications services and network/TETRA |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