Landsvirkjun

Annual Report 2022

The Foundations of a Greener Society

Annual Report 2022
Summary of Activities

About the Annual Report 2022
The Annual Report 2022 is published in accordance with the international standard Global Reporting Initiative (GRI-Core option). The report also serves as a sustainability report because sustainability is a core principle in our operations. Our climate accounts are included in the Annual Report.

The overview page can be accessed here:
landsvirkjun.com/annualreports/2022

The following documents are part of the Annual Report:
- Annual Report
- Climate Accounts (numerical information)
- Financial Statement
- GRI-reference table

Our strategy supports our vision and mission and underpins each chapter of this report. Our role is to maximise the potential yield and value of the natural resources we have been entrusted with in a sustainable, responsible, and efficient manner.
Our vision is a sustainable world powered by renewable energy.

Our Annual Report is based on our five strategy targets:
- Operating exemplary resource utilisation & energy production
- Leading the way in climate and environmental affairs
- Pursuing a diverse business & exceptional customer service
- Providing a progressive & sought-after workplace
- Exceeding expectations in open Communication & cooperation

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Key figures

Energy production
14.8 TWh ↑4%

Earnings before unrealised financial items
316 m. USD ↑72%

Avoided emissions from energy production
2.66 m. tonnes CO_2-eq ↓16%

Carbon footprint per energy unit
1.1 CO_2-eq/kWh ↓2%

Operating revenue
608.6 m. USD ↑25.5%

Carbon intensity
3.5 CO_2-eq/kWh ↓2%

Total assets
3,873 m. USD ↓12.9%

Carbon footprint
16,955 CO_2-eq ↑2%

Net debt
843.5 m. USD ↓43.8%

Net assets
2,296.8 m. USD ↓3%

Economic contribution
494.2 m. USD ↑7.8%

Full-time equivalent positions
285 ↑7.5%

H-value*
0.64 ↑94%

Gender ratio-managers
39 % Women **61 % Men**
0 % Other gender

Gender ratio- executive level
44 % Women **56 % Men**
0 % Other gender

*The H value is the number of accidents leading to absence, divided by the total hours worked, times 200,000 hours.

Landsvirkjun in a nutshell

Landsvirkjun generates electricity using renewable energy sources, including hydropower, geothermal energy, and wind power. We produce most of Iceland's electricity, which amounts to more than 70% of all electricity generated in the country, delivered to industries, the service sector, and homes. Approximately 85% is sold to energy-intensive industries and 15% on the wholesale market.

We operate fifteen hydropower stations, three geothermal power stations and two wind turbines for research purposes in five operating areas. Our headquarters are in Reykjavík.

In 2022, a record 14,755 GWh of electricity was produced.

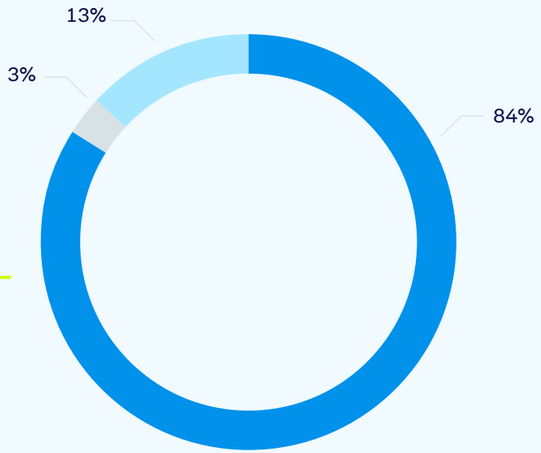
Landsvirkjun is a public partnership owned by the Icelandic government and the company Eignarhlutir, owned by the state treasury. A deal was reached between the Ministry of Finance and Economic Affairs and Landsvirkjun regarding the government's purchase of Landsvirkjun's 64.73% stake in Landsnet at the end of the year.

Multiple socioeconomic benefits are derived from Landsvirkjun´ s renewable energy production in Iceland. They include employment and income generation in diverse industries, fees and taxes paid to the state and municipalities, dividends to our owners, and consumer purchases.

Our vision is a sustainable world powered by renewable energy. Our role is to maximise the potential yield and value of the natural resources we have been entrusted with in a sustainable, responsible, and efficient manner.

Our customers

Landsvirkjun's customers are mostly international energy- intensive companies and domestic electricity wholesalers.



The Fruits of Labours Past
Chairman’s statement

Jónas Þór Guðmundsson

The energy of today must evolve to become the energy of the future. Long-term planning and taking appropriate measures are essential to shaping a green energy future. Energy foresight has become fundamental to the future interests of any nation. Landsvirkjun has always endeavoured to demonstrate forethought whilst maximising the value of renewable energy sources. The Landsvirkjun team has consistently shown foresight throughout the Company’s history, and we owe them a debt of gratitude.

We are now reaping the rewards. Landsvirkjun’s performance has never been better, benefitting its owner, the Icelandic people. The financial position of the Company is stronger than ever. This can be attributed to power project investments of the past – when our present was their future - and responsible financial management, which has, among other things, resulted in unprecedented debt reduction in the last decade or so. The Company has renegotiated contracts with many of its largest customers as the contractual situation has strengthened, ensuring that the prices they pay are comparable to those in countries with which we typically compare ourselves.

A turning point occurred in 2022 when Landsvirkjun sold its 64.73% holding in its subsidiary Landsnet, which handles electricity transmission according to Icelandic law. The Icelandic government purchased the shares for USD 305 million under the purchase agreement. The Parliament had previously proposed that the transmission company be owned by the Icelandic state and/or municipalities. As of the 30th of December 2022, Landsnet is no longer part of the Landsvirkjun group.

While Landsvirkjun’s success should be celebrated, we must remember that the project is not over - and may never be!

CEO’s statement
Energy and Power for the Future

Hörður Arnarson

The year 2022 was a memorable year in Landsvirkjun’s operations. We applaud our team for their professionalism and selflessness as low reservoir inflows and frequent storms created challenging conditions. Despite these issues, our operating results were better than ever which can mostly be attributed to recent renegotiations with our largest customers, which is also the result of our team´ s hard work.

However, uncertainty is looming - not in terms of Landsvirkjun´ s performance, but regarding the nation’s energy issues. Landsvirkjun’s energy system is almost fully loaded, both in terms of power and energy. Green electricity is in high demand, both from existing customers and interesting new customers. We are only able to meet this demand to a limited extent and have been forced to decline various new and promising projects in need of power contracts. Sadly, the energy – and the power – simply do not exist.

Our team is already hard at work in obtaining the required permits for the further development of energy production, which we have been preparing for decades. Our goal is to provide enough electricity for the energy transition and to improve society’s quality of life in the future, especially given the government’s ambitious climate goals.

Our Annual Report describes Landsvirkjun’s activities in 2022. The report is submitted as a progress report on our goals under the United Nations Global Compact treaty (UNGC). We thereby confirm our willingness to work on the United Nations Sustainable Development Goals in accordance with the organisation’s ten principles. We declare our continued support for the UN Global Compact.

Landsvirkjun´s strategy and corporate governance

Our strategy
The role of green energy in climate action is crucial. We have been entrusted with the nation's renewable energy sources and intend to fulfil that responsibility. Taking care of nature is intrinsic to our role and reflects our commitment to climate action. Value creation and the pursuit of sustainability are the two guiding principles in everything we do.

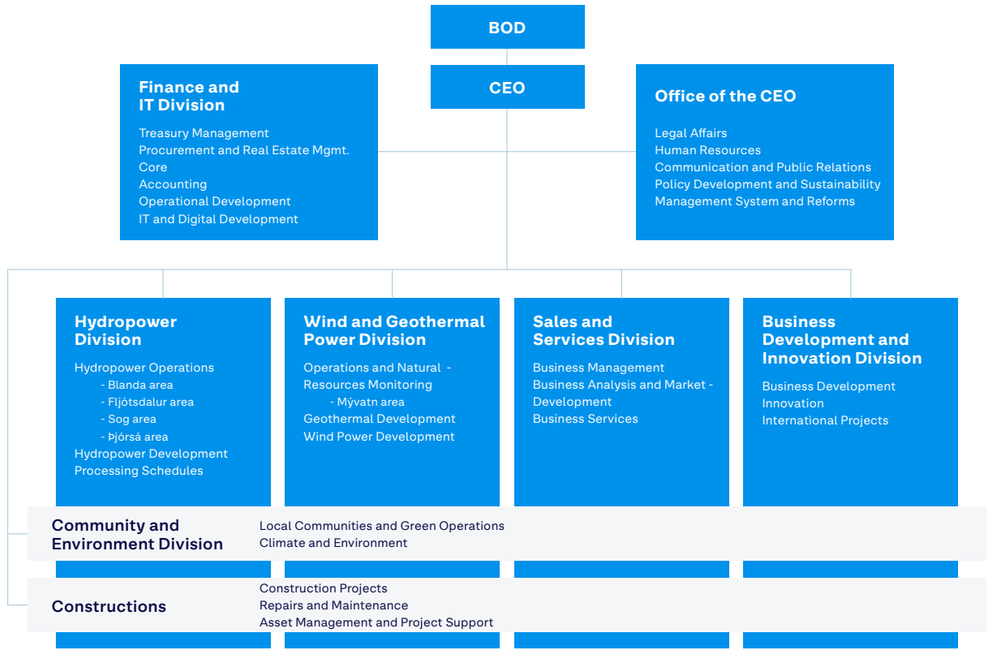
Our vision is a sustainable world powered by renewable energy.

Our role is to maximise the potential yield and value of the natural resources we have been entrusted with in a sustainable, responsible, and efficient manner.

Our strategy supports our vision and our mission underpins each chapter of this report.

Our values are progressiveness, prudence, and reliability.

↓ Organisational Chart



↓ Strategy targets

Operating exemplary resource utilisation & energy production
Landsvirkjun utilises hydropower, geothermal energy, and wind energy, focusing on sustainability, efficiency, and safety.
We show foresight and develop opportunities for increased energy production to fulfil the needs of the future.

Leading the way in climate and environmental affairs
Landsvirkjun respects the environment and plays a vital role in Iceland's transition to clean energy, contributing to global carbon neutrality.

Pursuing a diverse business & exceptional customer service
Landsvirkjun works closely with its customers to increase value creation. We work to create a greener future by using innovative measures and identifying new business opportunities.

Providing a progressive & sought-after workplace
We promote team unity, job satisfaction, and positive workplace culture by supporting employee health, well-being, and equal rights.

Exceeding expectations in open Communication & cooperation
We foster effective and active communication with all our stakeholders and work closely with local communities.
We are a good neighbour.

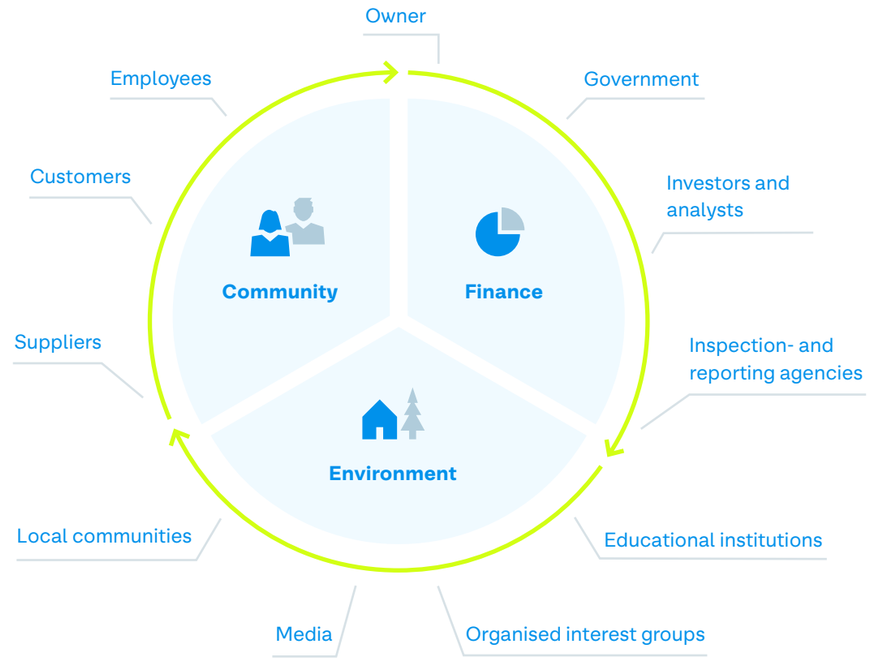
Sustainability Principles
We have followed our Corporate Social Responsibility Policy since 2012 and have published sustainability reports in accordance with the GRI standards since 2019. These reports reflect a comprehensive approach to growing sustainability in our operations. We have supported the *UN Global Compact* since 2013 and track our progress in environmental issues, employee rights, human rights, and corruption prevention. We also support the *UN´s Sustainable Development Goals* focusing specifically on Goals 13, 7 and 5.

Over the course of 2018 to 2020, we conducted a materiality assessment. The process entails consulting with all major stakeholders and analysing their expectations (or interests) regarding focus, strategy development, and information disclosure in terms of sustainability.

The Company defined nine sustainability priorities based on the results of the analysis:

Finance and governance	Environment	Community
A Code of Ethics & responsible practices	Climate change action	Safety and well-being of employees and professional development
Value creation and dividends	Producing electricity in harmony with nature	Equality
Energy generation innovations	Maximising natural resources and minimising waste	Cooperation with local communities

↓ **Groups of stakeholders**



Governance

Management systems and certification

Landsvirkjun's management system supports the Company's obligations towards its customers, employees, and other stakeholders. Additionally, the Company's management system supports its plans for further development based on sustainability values.

Quality management, environmental management, security, health and safety, equal pay and IT security are all part of Landsvirkjun's Management System, which is certified by international standards. The Company also has equal pay certification in accordance with the equal pay standard. Landsvirkjun's internal electrical management system *(RÖSK)* conforms with the Iceland Construction Authority's electricity safety requirements.

Certifications

Landsvirkjun's electricity generation is certified by the German Certification Body TÜV in accordance with the TÜV SÜD Standards CMS 83: Generation EE, as 100% renewable energy. This reflects the Company's commitment to developing renewable energy sources and is confirmation that Landsvirkjun fulfils the most stringent production requirements.

Landsvirkjun's Board of Directors approved standardised instructions for its internal policy in 2020. According to the instructions, the Company must set internal policies for the following:

- Dividends
- Risk management
- Capital structure
- Procurement
- Human resources and equality issues
- Data protection
- Social responsibility
- Competition
- Communication with local communities
- Remuneration policy
- Environmental issues
- Information security
- Information and publication issues
- Health and safety and occupational safety

Anti-corruption and ethical standards

Our ethical standards are outlined in our quality management system, integrated with the appropriate procedures, and made available to employees in general information provided by the Company. The documents include the Employee Code of Conduct, Supplier Code of Conduct, and the Reprehensible Conduct Response Plan. Our Code of Conduct and Supplier Code of Conduct can be accessed on Landsvirkjun's website.

Reprehensible behaviour within the Company must be reported by employees using a specific response plan. The aim is to prevent and disclose offences and other possible misconduct immediately. Among the topics covered by the plan are anti-corruption and anti-bribery. No corruption-related incidents were reported to Landsvirkjun in 2022, and no corruption-related incidents were investigated.

Human rights and personal data protection

The Landsvirkjun Board of Directors approved regulations on the corporate supply chain in 2016, intended to safeguard the rights of our workforce, including contractors, subcontractors, and temporary work agency employees. Among other things, it covers wages, employment terms, and health- and accident insurance. As such, it was not deemed necessary to create a separate human rights regulation in addition to the existing regulations that were already in place to protect the rights of all parties involved in our operations. These include *Landsvirkjun's Code of Ethics, Supplier Code of Ethics*, and the *Reprehensible Conduct Response Plan* discussed above.

Our Personal Data Policy, in effect since the 22nd of October 2021, ensures the confidentiality, security, and reliability of personal information. There is a particular focus on personal data within the Company, such as information about employees and applicants.

We received no complaints about customer or employee privacy violations this year. We provide training to our employees regarding Landsvirkjun's Code of Conduct, the law protecting whistle-blowers, the Company's response plan and preventing reprehensible behaviour.

Active competition

In 2017, we implemented the Competition Policy, as part of our management system. The Policy outlines our plans for promoting competition in the markets in which we operate and how we should be guided by the provisions of the Policy in our work. It also helps us resolve any disputes professionally. Our employees are provided with online education and the Policy is updated regularly.

The Icelandic Competition Authority received no complaints in 2022. A complaint made by ÍOM/ON regarding Landsvirkjun's participation in Landsnet's losses tender is currently being processed by the supervisory authority.

Value chain

Our business activities extend far and wide, and we work hard to ensure that every step in the value chain adheres to our standards. Our suppliers and business partners must comply with our occupational health and safety standards, environmental protection, and corporate social responsibility standards.

European Economic Area (EEA) tendering rules apply to us. Our Code of Conduct for Suppliers and Service Providers is based on our *Employee Code of Conduct* and the *UN Global Compact*. Suppliers must adhere to these rules.

Chain of responsibility provisions are included in all procurement contracts. They ensure compliance with labour laws and collective pay agreements for everyone working indirectly for Landsvirkjun, including subcontractors, contractors, and temporary work agency employees.

In December 2021, Landsvirkjun's Board approved the Company's revised Procurement Policy. It outlines the principles for responsible procurement in our supply chain, including coordination, transparency, traceability, and efficiency.

We place a high priority on the following:

- Ensuring compliance with the appropriate Company laws and regulations.
- Managing procurement and contracts in accordance with other company policies and objectives, especially those related to:
  - The environment, climate change and green procurement
  - Occupational health and safety issues
  - Community issues
- Maintaining healthy business ethics, enforcing supply chain codes of conduct in cooperation with suppliers, and ensuring chain responsibility in purchasing agreements.

The Procurement Policy and its execution are closely monitored by management through regular status meetings, where objectives and criteria are discussed. An evaluation of suppliers is part of the annual review on the management system, carried out by management.

Our foreign suppliers are primarily located in Europe or North America, with substantial human rights and environmental laws. As a result, no specific assessment of the Company's suppliers regarding human rights or environmental issues was deemed necessary.

Our website contains information about tenders, tender results, and supplier and service provider codes of conduct. 2022 saw no significant changes to the Company's supply chain.

The EU Taxonomy

The EU taxonomy was introduced in 2019 and plays an important role in achieving Europe´ s *Green Deal* objectives. The classification system determines which activities are environmentally sustainable and incentivises direct investments and cash flow into environmentally sustainable economic activities and deters greenwashing. The regulation covers large companies and entities related to the public interest which fall under Article 66 d of the Act on Annual Accounts No. 3/2006, which includes Landsvirkjun.

Landsvirkjun has begun preparations for implementing the EU Taxonomy Regulation. The taxonomy eligibility of activities is one of the screening criteria set out in the taxonomy. All our energy, derived from hydropower, geothermal energy and wind energy is eligible. The system requires the analysis and declaration of the income, investments, and operating costs of its taxonomy-eligible activities. The percentage of income from these eligible activities can be seen below.

↓ Eligibility of assets (m. USD)

	NACE	Category	Income
Geothermal production	D35.11	Own activities	49.5
Hydropower production	D35.11	Own activities	532.3
Wind energy production	D35.11	Own activities	0.2
A – Total income from eligible activities			582
B – Total income from ineligible activities			1
Total A & B			**583.1**
Percentage of eligible income			**99.8%**

Risk assessment in an ever-changing environment
Managing risk is an inextricable part of Landsvirkjun's operations and progress.

We have established a formal risk management process to identify key risk factors. Our managers and employees identify and evaluate our financial and non-financial risks.

As part of this process, the Company's principal risk factors are mapped, and appropriate steps are taken to minimise their likelihood and their impact on our image, finances, health and safety, and the environment. A special information system defining risk factors and countermeasures is used to manage Landsvirkjun's risk management.

Landsvirkjun's Board of Directors sets a comprehensive risk management strategy based on the following criteria:

- Risk has been identified, and its origin is known
- Risk assessment is based on validated and recognised measures
- Risk assessment is monitored actively
- Risk is managed responsibly and efficiently
- Detailed information is provided to the risk assessment team and management regularly

We take climate change very seriously and are aware of its impact on our operations and the measures we can implement. An integral part of our risk analysis is analysing how climate change will affect our operations. As part of our monitoring activities, we analyse meteorological changes, market changes, monitor changes to the legal and regulatory environment, assess technological developments and participate in the general discussion on climate change. It gives us the predictability we need for continued safe operations in a rapidly changing world.

A sustainable world powered by renewable energy

Energy transition and effort sharing emissions
Our vision is a sustainable world powered by renewable energy. A vision like this encompasses the very heart of the journey that many nations across the globe are currently undertaking to transition from fossil fuels to green, renewable energy sources.

Iceland's government is actively participating in the project and has set one of the most ambitious targets to date regarding climate change: Iceland will become carbon-neutral and free of oil and gasoline by 2040. Reducing effort sharing emissions (directly under the jurisdiction of the state), by about 1.3 million tonnes by 2030 will also be necessary to fulfil the Paris Agreement of 2015.

We play an essential role in the energy transition in Iceland. We produce over 70% of all electricity in Iceland, derived from renewable sources: hydropower, geothermal and wind.

Energy independence and security
The recent energy crisis in Europe has undoubtedly shed light on the importance of energy independence and security. Iceland has abundant renewable energy resources but still depends on imported fossil fuels. A transition to renewable energy based solely on domestic energy sources is both urgent and necessary.

Security of supply
The security of supply for households and smaller businesses has become increasingly important in recent years alongside increased energy demand. We have frequently pointed out that the security of supply for households and smaller businesses is not guaranteed, and improvements are necessary. Energy companies in Iceland do not have a legal role in ensuring the security of supply.

In early 2022, we began examining possible ways to secure and supply electricity. A well-implemented security of supply system requires, among other things, setting standards for the security of supply, defining roles and responsibilities and the necessary measures when the supply is insufficient. We have highlighted the necessity of a mechanism to ensure secure access to electricity.

Prioritising energy sales
Landsvirkjun has recently seen a rapid growth in the demand for electricity from companies interested in developing energy-intensive production or service facilities in Iceland. The types of businesses interested in power contracts are incredibly diverse, including the hydrogen or electric fuel production sector, data centres, land-based fish farming, and other food production. Iceland's electricity market currently faces a very limited supply in the short to medium term, and the system is now essentially entirely sold out. As a result, we are developing new opportunities for increasing renewable energy production on land, such as hydropower, geothermal, and wind resources.

The system´ s current state will limit the power and energy we can provide to new energy-intensive users and is well below demand. Consequently, we will be unable to meet the electricity demands of several exciting projects currently in development.

We have divided Iceland's energy needs into five categories based on their priority:

1. Increased public use and domestic energy transition
2. Digital progress, innovation, and multiple uses of resources
3. Existing power users' growth and development
4. Major new users in the metal or commodity industries
5. Using electronic fuel or a submarine cable to export energy

We have announced the unavailability of power for category 4 and 5 projects in the next few years. We will focus on meeting the increasing demand for electricity for general consumption and the domestic energy transition. We also support the digital journey and innovation and are committed to facilitating existing power users' growth and development. However, for the first time in our history, we cannot respond to soaring demand due to insufficient energy.

Potential power projects
So, what can be done to meet the high energy demand? We have submitted thirty power project options to the Icelandic Master Plan for Nature Protection and Energy utilisation committee. The concept of sustainable development inspires our approach to evaluating these options.

A lengthy process begins when a specific site is identified as an ideal location for power generation, which involves extensive feasibility and environmental studies and a thorough planning and permitting process that allows institutions, stakeholders, and the public to provide input at various stages of the project.
The following power projects have reached the most advanced stage →

Hvammur
Has made the most progress as we have researched and prepared for it for several years.

Master plan category: Utilisation category
Installed capacity: 95 MW
Annual energy production capability: 720 GWh per year

A Power station permit was received from the National Energy Authority in 2022. A Construction permit request was submitted to the Skeiða and Gnúpverjahreppur and Rangarþing ytra Municipalities. The tender design is in its final stages.
The Landsvirkjun Board agreed to release construction tenders this year.

The Búrfell Wind Farm
Redesigned due to feedback on a previous version.
Now less visible from tourist routes and nearby attractions.

Master plan category: Utilisation category
Installed capacity: Up to 120 MW
Annual energy production capability: 440 GWh

Þeistareykir Geothermal Power Station expansion
Project design currently underway

Master plan category: Utilisation category
Installed capacity: 45 MW
Annual energy production capability: 370 GWh.

So-called peak pressure power stations with an installed power of 5-15 MW and an energy production capability of 40-120 GWh per year, are also being examined.

New power projects in the **Blanda area** have a capacity of 30 MW and an annual energy production capacity of 190 GWh.
Although the projects fall under the Master Plan's utilisation category, Landsnets limited transmission capacity prevents us from pursuing them.

Landsvirkjun is also analysing various ways to increase installed power in existing hydropower stations to enhance the system's flexibility. This includes the expansion of the Sigalda Hydropower Station, a project designed to increase installed power and improve the use of water resources in the Þjórsá area (based on the initial design, a fourth 50 MW unit could be added). While the Company's system would be more flexible with this investment, the increased energy production capacity and expansion would be limited to 6-10 GWh per year.

Operating performance 2022
Income statement

Historically high energy prices for energy-intensive users and record sales

Despite low inflow to the reservoirs and frequent storms last winter, Landsvirkjun's operating results for the year were better than ever. This can mainly be attributed to increased electricity prices for energy-intensive users following recent renegotiations. Our prices are comparable to those in countries with which we compare ourselves. We are committed to maximising the value of the renewable energy sources entrusted to us and returning dividends to our shareholders.

A deal was reached at the end of 2022 between the Ministry of Finance and the Economic Affairs and Landsvirkjun to sell Landsvirkjun's 64.73% stake in Landsnet to the government for USD 305 million. Landsnet left the Landsvirkjun Group on the 30th of December 2022. The sale price was paid with credit agreements. Orkufjarskipti is subsequently no longer a subsidiary, but an associated company. A USD 136.8 million loss is stated because of discontinued operations which can be attributed to reclassification and income tax due to taxable capital gains on shares.

Financial summary 2022

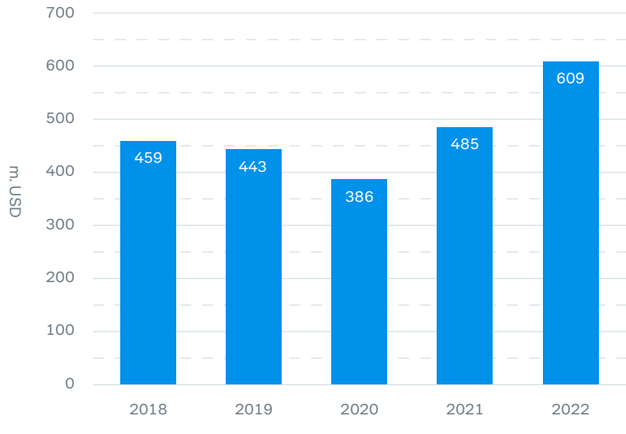
Landsvirkjun's successful operations resulted in a surge in electricity demand. The energy system is now fully loaded, and we can only meet new demand to a limited extent. We are working hard to acquire the necessary permits for the further development of hydropower, wind power, and geothermal energy, focusing on Hvammur Hydropower Station, Búrfell Wind Farm, and the expansion of the Þeistareykir Geothermal Station. We are also exploring options to increase installed power in the Þjórsá area to increase system flexibility. However, energy production would only be moderately increased with these investments.

Operational Outlook

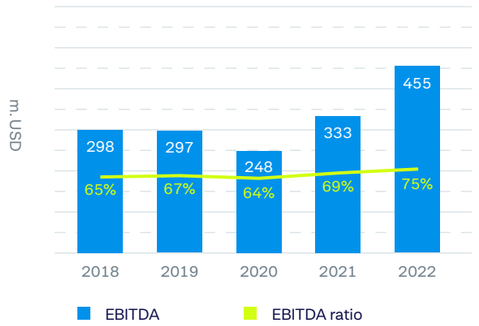
Recent renegotiations and subsequent Increases in electricity prices for energy-intensive users have significantly contributed to Landsvirkjun's exceptional performance.

The group's earnings before interest, taxes, depreciation, and amortisation, EBITDA, was historically high during the year and amounted to USD 455 million which is a 36% increase compared to the previous year. Clearly defined operational targets and restraint in operations were key to this success.

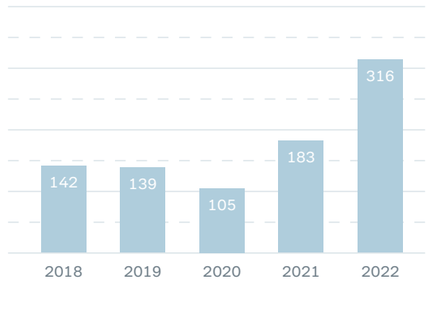
↓ Development of operating revenue



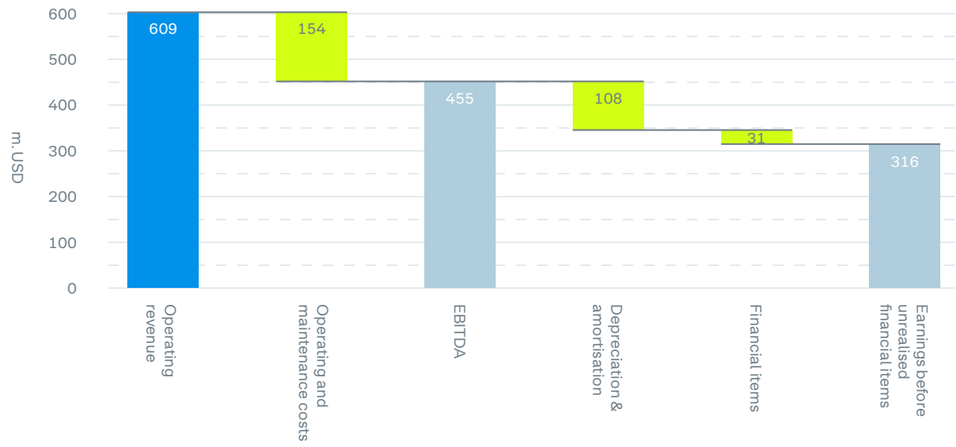
↓ EBITDA & EBITDA ratio



↓ Earnings before unrealised financial items



In Landsvirkjun's core operations, profits before unrealised financial items increased by USD 133M year on year, which is a record high. The increase in Landsvirkjun's operating revenue directly impacts its cash flow.



Balance sheet & key figures

Balance sheet

Landsvirkjun's total assets amounted to USD 3,7873 million at year-end 2022, and cash amounted to USD 156 million.

The sale of Landsnet reduced Landsvirkjun's total assets by USD 573 million from the previous year. Cash amounted to USD 156 million at year-end 2022. Landsvirkjun's debt level has reached a historic low, and reducing debt is no longer a priority.

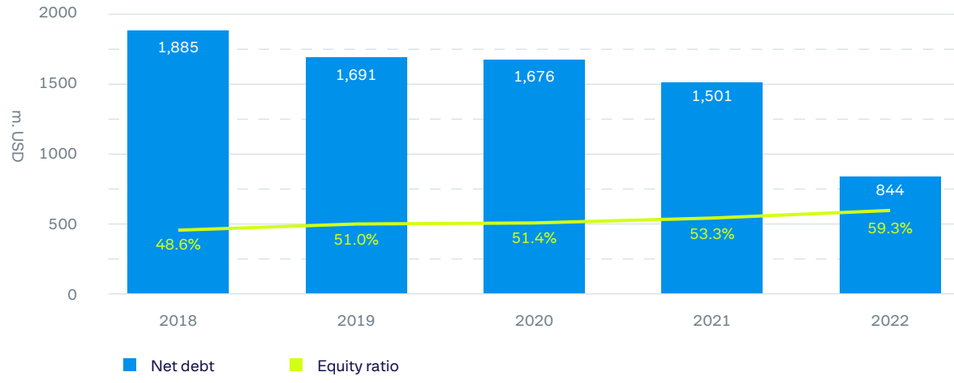
The Company's debt, measured against operating profit before depreciation and amortisation (net debt/EBITDA), shows the interest-bearing debt the company needs to repay. This ratio decreased from 3.5x at year-end 2021 to 1.9x at year-end 2022.

↓ Assets

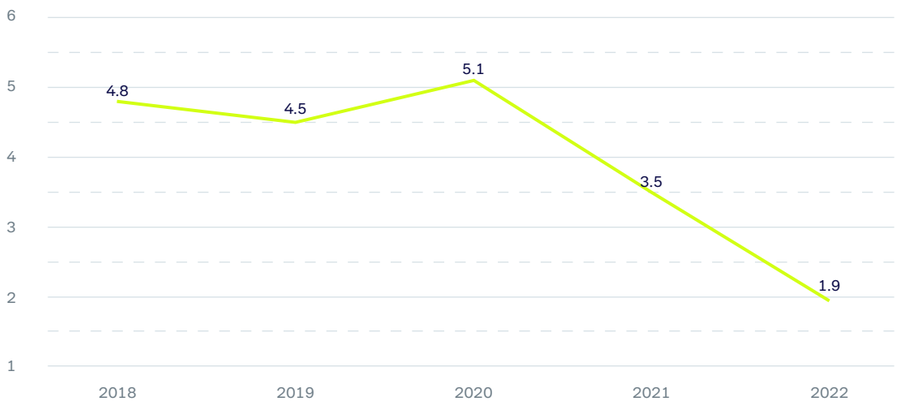
↓ Debt & net assets

Net debt (net debt is interest-bearing debt less cash) was reduced by USD 657M from year-end 2021 and were USD 844 million at year-end 2022.

↓ Net debt & equity ratio



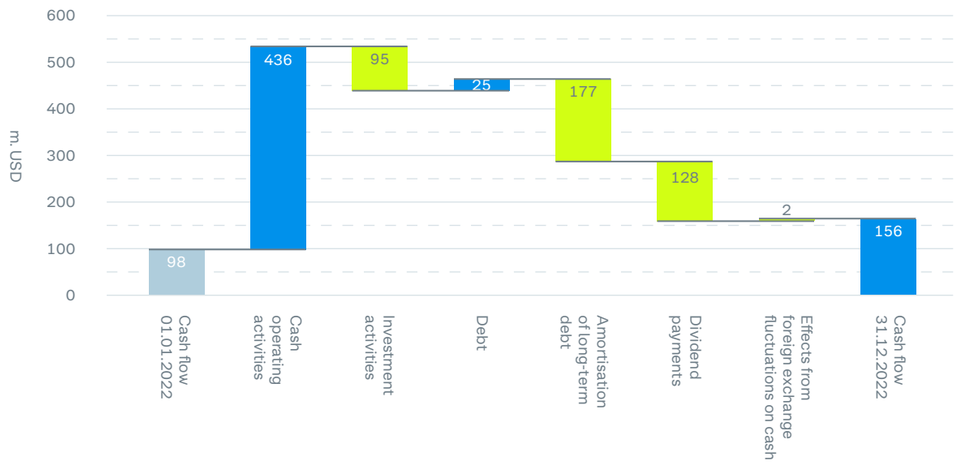
↓ Net debt / EBITDA



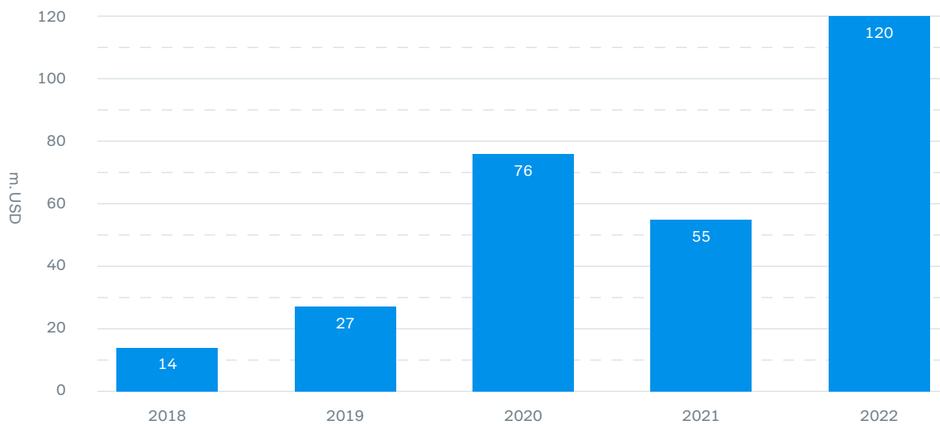
Statement of cash flows
Strong operating results support capital formation, which has been extensive. In 2022, cash from operations reached historic levels, increasing by 35% year-on-year to USD 436 million.

Landsvirkjun's financial strength is now comparable to that of the Nordic companies it compares itself with. The conditions described above create opportunities for the state to receive additional dividend payments in the future. However, these dividend payment increases will be subject to fluctuations in the international markets, deep economic recessions, or large-scale construction projects in the future. This year, Landsvirkjun paid the state a dividend of ISK 17 billion, the highest dividend payment in the Company's history.

Cash flow



Dividend payments



Secure and diverse access to capital
Landsvirkjun places great emphasis on ensuring secure and diverse access to capital. In 2018, Landsvirkjun issued the first green bonds in Iceland and one of the first green bonds on the US Private Placement (USPP) market. All new financing since then has been green or sustainability-related, and we plan to continue this journey. At the end of 2022, 37% of Landsvirkjun's total funding was sustainability related.

Landsvirkjun is committed to being a leader in climate and environmental issues. Our focus on green and sustainability-related financing aligns with our strategy and vision for a sustainable world powered by renewable energy. The same is true of our finances, and we strive to be a role model in sustainability in the financial markets.

Encouraging sustainability

Green financing is a traditional form of financing used to finance assets or projects which positively impact the environment and climate issues. The green bond market provides investors with a green investment channel. As part of our commitment to renewable energy production in Iceland, we use green financing to finance or refinance assets that contribute to the sustainable, responsible, and efficient use of natural resources.

Sustainability-related financing encourages companies to achieve ambitious defined goals in the field of sustainability by providing incentives to help them reach those goals. Landsvirkjun's sustainability-related loans are linked to targets and indicators in equality, climate and security issues and reflect our commitment to the United Nations' Sustainable Development Goals. Sustainability-related goals have a financial incentive because loan interest rates rise if they aren't achieved.

Landsvirkjun's green and sustainability-related financing consists of the following:

- Five green bonds in the amount of USD 350 million.
- Sustainability-linked bonds with interest rates linked to Landsvirkjun's carbon neutrality goal in 2025 and carbon sequestration. Amount: USD 80 million.
- Sustainability-linked revolving credit facility with interest terms linked to Landsvirkjun's success meeting specific sustainability standards. The criteria are related to six objectives in equality, climate change action and security and reflect Landsvirkjun's focus on the United Nations' Sustainable Development Goals and sustainability in general. Amount: USD 150 million.

Continued focus on debt reduction

Over the past few years, Landsvirkjun has systematically reduced its debt. Our debt level is historically low, and our financial strength has increased significantly over the past few years. We have also worked to remove state guarantees from outstanding debts since we pay a fee to the Icelandic government for debts covered by state guarantees.

Landsvirkjun paid off 50 million dollars in bonds guaranteed by the government due in February 2026 last November as part of our efforts to achieve this goal. State-guaranteed debts accounted for 16% of Landsvirkjun's debts at the end of 2022, down from 19% at the end of 2021.

Landsvirkjun has credit ratings issued by *Moody's and S&P Global Ratings*.

S&P Global Ratings BBB+

Moody's BAA1

Landsvirkjun's operations generate value creation.
Our renewable energy production creates value and employment opportunities nationwide.

Economic benefits include procurement from domestic suppliers and services, taxes and dividends paid to the state, property taxes, electricity sales to industry and export income from their activities.

The economic impact from the parent company (USD m)

Revenue 2022

Operating income	608.3

Economic contribution

Suppliers	Operating costs minus energy transportation	99.4
Employees	Wages & wage related expenses	46.1
Investments	Total investments	14.2
Owners and creditors	Dividends	120
	Net capital costs	31,.8
	Repayments of long-term loans minus new loans	149.5
Public bodies	Income tax	33.3
Total economic contribution		**494.2**

Environmental issues and local community involvement are increasingly important in selecting contractors, products, and services. Trade with domestic suppliers and contractors made up over 80% of the Company's total purchases in 2022.

Most of Landsvirkjun's purchases relate to regular maintenance and renovations at our power stations and community infrastructure investments.

Our commitment to promoting a sustainable environment includes supporting and participating in research, innovation, and community projects promoting energy solutions, climate action, and social benefits.

Leading the way in climate and environmental affairs

We respect nature and play a vital role in Iceland´ s energy transition, contributing to a carbon-neutral world.

Our vision is a sustainable world powered by renewable energy. Our electricity is derived from renewable energy sources such as hydropower, geothermal energy, and wind power. We know there is no such thing as energy production without disturbing the environment, but we harness readily replenishable resources and work hard to minimise any impact.

We are proud of our contribution to the fight against climate change, and our carbon footprint is one of the lowest in the world, or 3.5 g CO_2eq/kWh. Our green energy decreases the carbon footprint of our customers' products and services. If traditional energy sources were used instead, global greenhouse gas emissions would increase by 2.7 million tonnes of CO_2-eq.[1]

Our green electricity and the resulting avoided emissions are our most significant contribution to climate issues, but we won´ t stop there because we can do better. By 2025, we intend to sequester all greenhouse gases from our operations to become carbon neutral. We plan to eliminate the use of fossil fuels from our operations by 2030.

1 A detailed description of avoided emissions and the methodology behind the calculations are provided in the Green Finance Report, which pertains to green financing.

Climate and Environmental Policy
A core element of Landsvirkjun's climate- and environmental action is the Company's Climate and Environment Policy, revised in 2021.

Landsvirkjun is at the forefront of environmental issues and supports sustainable development in the community.

We respect the landscape and natural environment and consistently strive to optimise natural resources to prevent waste. We are committed to minimising and recognising any adverse environmental impacts from our operations and preventing environmental incidents.

Landsvirkjun intends to achieve carbon neutrality and actively participates in the global response to the climate crisis. We systematically work towards reducing our carbon emissions, increasing sequestration, and responding to climate change challenges and opportunities.

↓ Targets and associated performance indicators

Targets		Indicators
	We maximise the utilisation of harnessed resources	Deviation of energy production from contract capacity
Nature and resource utilisation	We prevent all incidents that negatively impact the environment	Number of environmental incidents
	No active waste from general operations sent to landfill by 2024	Quantity of active waste (t/yri)
Climate	We commit to becoming carbon neutral in 2025	Carbon footprint (tonnes CO_2-eq/year)
	We commit to keeping our carbon intensity below 4 g CO_2 equivalent per kWh	Carbon intensity (gCO_2 equivalent per kWh)
	We will stop purchasing fossil fuels by 2030	Quantity of fuel purchased (L/yr.)

Energy production from renewable energy sources 2022

Hydropower 13,494 GWh

The total energy generation of our hydropower stations was approx. 13,494 GWh in 2022, compared with 13,074 GWh in the previous year, or 91% of Landvirkjun's total production in 2022.

We operate fifteen hydropower stations all over Iceland, divided into four areas of operation.

There are seven power stations in the Þjórsá area, with nineteen generating units and several waterway structures. The area spans from the Hofsjökull Glacier and down to the Búrfell Hydropower Station.

There are three power stations in the Sog area with eight generating units and several waterway structures by the Þingvallavatn Lake and Úlfljótsvatn Lake.

The Laxá power stations belong to the Blanda operational area. There are four stations in the area, with seven turbines. The waterway at the Blanda Hydropower Station spans a length of 25 km.

The fourth operational area is the Fljótsdalur Hydropower station, the largest hydropower station in the country, with six generating units and extensive waterway structures, including tunnels measuring 70 km in length.

Geothermal energy 1,255 GWh

The total energy generation of our geothermal steam power stations in 2022 was 1,255 GWh compared with 1,052 GWh in 2021, or 9% of Landvirkjun´ s total energy production.

We operate three geothermal steam power stations at Krafla, Þeistareykir and Bjarnarflag, with five generating units.

We are committed to utilising geothermal energy in a sustainable and responsible manner. An integral part of this approach is maintaining the balance between utilisation and the natural renewal of the geothermal reservoir. Separated hot water, unused for electricity production, is reinjected into the geothermal reservoir.

Wind Power 5.7 GWh

We operate two wind turbines for research purposes in an area called Hafið just north of the Búrfell Hydropower Station. Each turbine has an installed capacity of 0.9 MW. They produced 5.7 GWh of electricity in 2022 compared with 6.1 GWh in 2021.

Avoided emissions

The pivotal role that renewable energy plays in tackling climate change makes our contribution diverse. Low carbon footprint electricity is highly sought after by customers who seek to minimise the carbon footprint of their production. Energy from renewable sources only reduces the carbon footprint if it is used to produce goods and services that would otherwise require electricity with a high carbon footprint. This is called avoided emissions.

Avoided emissions, or the emissions that our activities prevent, are part of our climate contribution. We assess the climate impact or avoided emissions of our eligible green assets annually in accordance with the Company's green financing framework. [2] In 2022, avoided emissions were estimated at 2.7 million tonnes of CO_2-eq and decreased by 16% year-on-year, despite increased energy production. The decrease can be attributed to decreasing benchmark factors.

Avoided emissions are assessed conservatively and included in our green financing disclosure. A more detailed discussion on avoided emissions and calculation methods can be found in the *Green Finance Impact Report*.

2 Green Finance Framework. Landsvirkjun, 2020

CDP DISCLOSURE INSIGHT ACTION A LIST 2022 CLIMATE

Landsvirkjun is a leader in climate action

Highest rating from the CDP

Landsvirkjun has been recognised for leadership in corporate transparency and performance on climate change by global environmental non-profit CDP, securing a place on its annual 'A List'.

The CDP promotes consistent and professional reporting on environmental issues, as well as providing feedback and encouraging continuous improvement. Comprehensive information is provided on the climate management of companies. Among the factors that influence CDP's rating are governance, business models and custody of funds, management of climate-related risks, and achievements of climate-related targets.

In 2022, about nineteen thousand companies submitted information on climate issues to the association. Landsvirkjun is one of a group of 283 to receive the highest rating and make the 'A' list. Landsvirkjun was first assessed by the CDP in 2016. Their requirements have increased steadily over the years, and receiving the highest rating has become more difficult.

Climate leader

Landsvirkjun ranks 81st on the Financial Times' list of European companies with the greatest reduction in emissions per unit of production between 2015 and 2020. We have reduced emissions by 20.5%. Landsvirkjun is the only Icelandic business out of the 400 companies on the Europe Climate Leaders list.

The list includes direct emissions and emissions from energy use. In addition, emissions of profits are considered, as are reductions in total emissions and the Company's rating by CDP. The Financial Times list also excludes companies that cause significant environmental damage, despite meeting the requirements for reducing emissions.

Climate Accounts

Our Climate Accounts provide quantitative information regarding the Company's carbon footprint, greenhouse gas emissions, and carbon sequestration for 2022, as well as information regarding its climate targets. We are committed to fair and transparent disclosure.

Based on the *Greenhouse Gas Protocol's (GHGP)* methodology, the Company's Climate Accounts were inspected and verified by Bureau Veritas, one of the world's leading certification bodies, according to ISO-14064-3.

↓ Greenhouse gas emissions (tonnes CO_2-eq)

	2018	2019	2020	2021	2022	Change since 2021
Scope 1	48,872	41,550	38,422	40,252	42,122	4.6%
Scope 2	11	8.9	11	8.3	8.2	-0.6%
Scope 3	10,466	6,355	5,273	4,299	3,430	-20%
Outside scope	6,403	7,628	6,484	6,495	6,547	0.8%
Total emissions	**65,753**	**55,542**	**50,190**	**51,055**	**52,107**	**2.1%**
Carbon sequestration	**-31,285**	**-31,900**	**-33,000**	**-34,400**	**-35,152**	**2.2%**
Carbon footprint	**34,468**	**23,642**	**17,190**	**16,655**	**16,955**	**1.8%**

↓ Emissions per energy unit (CO_2-ieq/kWh)

	2018	2019	2020	2021	2022	Change since 2021
Geothermal (Scope 1)	36	30	32	31	27	-11%
Hydropower (Scope 1)	0.56	0.67	0.59	0.57	0.55	-3%
Total emissions from production (Scope 1)	3.4	2.9	2.8	2.8	2.8	0.5%
Other emissions	1.2	1.1	0.9	0.8	0.71	-12%
Total emissions per energy unit	**4.6**	**4.0**	**3.7**	**3.6**	**3.5**	**-2%**
Carbon footprint per energy unit	**2.4**	**1.7**	**1.3**	**1.2**	**1.1**	**-2%**

← **Landsvirkjun´s Climate Accounts for 2022 can be accessed here.**

↓ Key figures

Carbon footprint

16,955 tonnes CO_2-eq ↑2%

Total emissions

52,107 tonnes CO_2-eq ↑2%

Sequestration

35,152 tonnes CO_2-eq ↑2%

Energy production

14,755 Gwh ↑4%

Carbon footprint per energy unit

1.1 g CO_2-eq/kWh ↓2%

Carbon intensity

3.5 g CO_2-eq/kWh ↓2%

Total emissions from production per energy unit

2.8 g CO_2-eq/kWh ↑1%

Avoided emissions from production

2,664,328 tonnes CO_2-eq ↓16%

Carbon neutral by 2025

We're making a good thing even better by becoming carbon neutral by 2025.

To achieve this milestone, we follow a Climate Action Plan that maps the Company's carbon footprint. It has ambitious targets and explicit measures. The Climate Action Plan was approved in 2019 and is valid until 2030.

We want to be effective and efficient and have prioritised our actions:

Prevent new emissions **Priority**

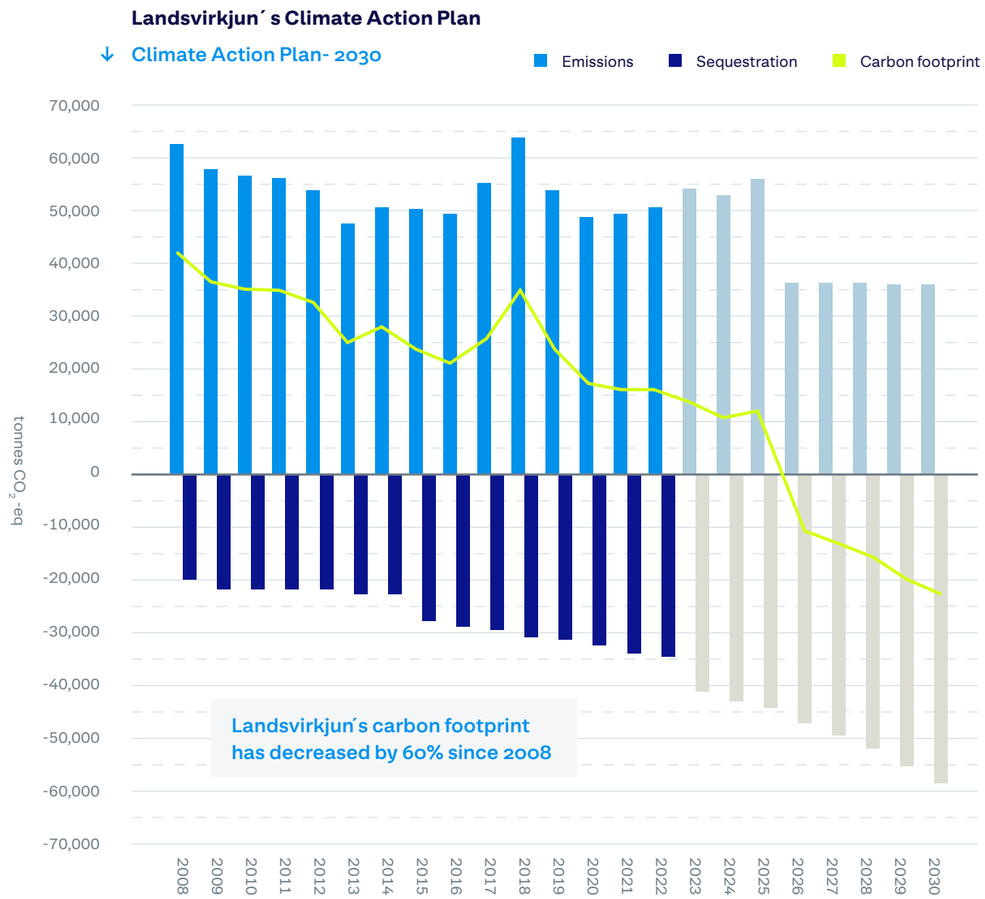
Reduce current emissions **Priority**

Implement mitigation measures

Best practices, scientific knowledge, and decades of environmental experience guide our climate plan. Monitoring emissions throughout the year is crucial because it ensures we constantly monitor our progress and results. Emission measurements are only useful if they lead to better decisions.

Internal carbon prices

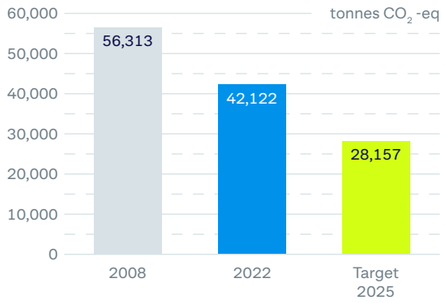
Internal carbon prices incentivise financial and operational decisions based on low-carbon solutions. We also use internal carbon prices to encourage our contractors to minimise their emissions during construction projects. This means that emissions - or rather future emissions costs - are calculated as part of major financial decisions, ranging from purchasing supplies to selecting new power projects. Landsvirkjun's internal carbon price for 2022 was USD 79/ tonnes CO_2-eq. A specific carbon price was used for the first time this year in a tender for groundwork where contractor fuel consumption emissions was part of the selection criteria.



Climate Action Plan reduction targets

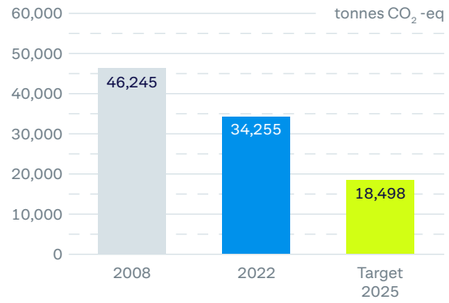
50% decrease in direct emissions by 2025, compared to 2008. →

Direct emissions from our operations have decreased by 25% since 2008.



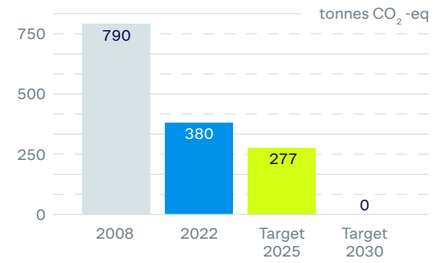
60% reduction in geothermal power production emissions by 2025, compared with 2008 →

Geothermal power production emissions have decreased by 26% when compared with 2008.



Our most significant source of emissions is geothermal energy. Geothermal areas emit greenhouse gases naturally, but we still provide information on all emissions from our energy production. We have already introduced measures to minimise emissions while optimising energy products. A significant step towards achieving this goal is integrating the utilisation of hydropower and geothermal energy.

Stop purchasing fossil fuels by 2030



Emissions from fossil fuel consumption have decreased by approx.52% since 2008.

We have supported the energy transition plan since 2030 when the target to stop buying fossil fuels was approved. The energy transition plan was revised in 2021, and new goals were approved. The goals pave the way to fossil fuel-free operations.

Energy Transition Plan Targets until 2025

In 2025, we expect to have reduced fossil fuel consumption by 65% compared to 2008.

Vehicles

- By 2022: Only used cars purchased when green-energy vehicles are unavailable
- By 2023: Only used pick-up trucks purchased when green-energy pick-ups are unavailable
- Before year-end 2023: Fast charging stations available in every energy production area
- After 2024: All rental cars are 100% green-energy vehicles
- Before year-end 2025: Green Steps target achieved (75% of all passenger cars green-energy vehicles)

Equipment

Green energy is always the first choice when replacing equipment

Power stations

An analysis detailing the options for energy transition at the Sauðafellslón station and smaller research, and reserve power stations will be available in 2025

The Koldís Project

Koldís, our biggest climate action project to date, is designed to capture and reinject carbon dioxide and hydrogen sulphide from the Þeistareykir Geothermal Station back into the ground by 2025. The project will also reduce carbon dioxide emissions from the Krafla Power Station through enhanced well management.

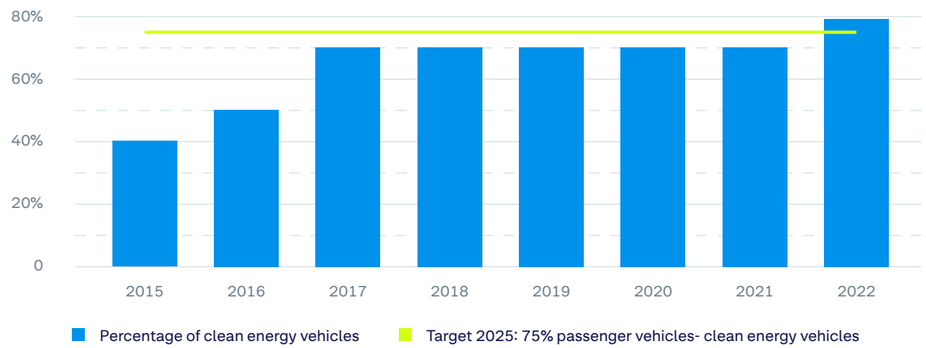
In geothermal systems, various gases are dissolved in geothermal fluid, especially carbon dioxide (CO_2) and hydrogen sulphide (H_2S). When geothermal steam passes through the turbine of a geothermal power station, the steam condenses into water which is reinjected into to the geothermal system. Gases are released into the atmosphere from cooling towers. The plan is to capture both carbon dioxide (CO_2) and hydrogen sulphide (H2S) from the station, dissolving them in water and reinjecting it back into their natural environment. This closes the geothermal energy production cycle.

Reducing emissions from our geothermal production directly impacts Iceland's climate commitments. Reaching our goal of a 60% reduction in emissions would represent a reduction of 31,600 tons of CO_2 equivalent since 2005. This represents 3.5% of Iceland's commitments, which stipulate a 29% reduction in emissions (target reference year: 2005). This is equivalent to 1.9% of the national target of a 55% reduction compared to the same year, which was set out in the current government´ s charter.

Bureau Veritas has reviewed and verified our target reference year data as well as emissions for 2022.

This year, we exceeded our Green Steps target of 75% of all passenger cars becoming green-energy vehicles by 2025, reaching 79%.

Clean energy vehicles



Green operations

We are committed to green operations and increasing environmental awareness among our employees. We have implemented *Green Steps* at all Landsvirkjun sites, and the areas that completed the steps first in 2019 and 2020 have now passed their re-evaluation with flying colours. Maintaining best practice in green operations is important, as well as other environmental management. We are currently working to maintain and develop our green steps.

Lónið is awarded the Nordic Swan Ecolabel and Eiríksbúð in the application process

Lónið, our cafeteria at our headquarters on Háaleitisbraut 68, was awarded the *Nordic Swan* in the summer of 2022. The Lónið team has worked systematically for years to reduce the environmental impact of the cafeteria's operations. Various actions have been taken to reduce the carbon footprint of meals, reduce food waste, and eliminate disposable tableware and packaging. Lónin has also benefited from the certification process, as the requirements for are detailed and cover a wide range of activities.

These include the following:

- Increased procurement of organic products for daily use
- Only environmentally certified materials used for general cleaning
- Food waste is measured regularly and opportunities for improvement identified
- Washing arrangements for textiles improved

All our cafeterias throughout the country serve healthy food while minimising the environmental impact of their services. The Swan certification signifies our commitment to environmental awareness and climate policy in our canteens.

We also decided to go through the Swan Certification process with our new office extension in Eiríksbúð in the Þjórsá area. New construction must meet strict requirements aimed at minimising any impact on the climate and environment.

↑ Lónið, our cafeteria at our headquarters on Háaleitisbraut 68, was awarded the Nordic Swan Ecolabel in 2022.

Recycling and disposal
The total amount of waste generated by Company operations was 299 tonnes in 2022, an increase of 20% between years. The percentage of sorted waste rose from 86% in 2021 to 89% in 2022. The amount of general unsorted waste was 33 tonnes, a decrease of 5% between years. The amount of inert waste increased by 78 tonnes between years. The amount of bulky and inert waste, metals, and wood changes between years, mostly due to renovation and maintenance projects in progress at any given time. Emissions due to waste treatment remained the same between years.

An analysis was conducted to categorise waste from the Company, determine how it is processed, and identify opportunities for improvements. Waste from the Company's operations is sorted and sent for recycling or disposal at approved waste management sites. Hazardous materials must be returned to appropriate collection points as required by the law and regulations. Landsvirkjun only uses waste management companies with licenses from the *Public Health Authority and the Environment Agency of Iceland*. Our facilities sort waste in accordance with the options offered by waste management companies and the respective local authorities. Local communities have benefited from Landsvirkjun's work with waste management companies in areas where waste sorting is restricted, e.g., smaller municipalities.

Water consumption
Water use and monitoring water source conditions
Landsvirkjun's offices in Reykjavik and Akureyri are supplied with potable water by local municipalities. Cold groundwater is extracted from water supply areas, owned, or operated by the Company to supply power stations. Landsvirkjun's power station licences specify water supply area conditions and the quality of potable water. The local public health authority issues these licences and monitors any potential effects from utilisation. Monitoring shows that Landsvirkjun's operations have had no effect on water areas. All effluent (sewage) from Company operations goes through the local municipality's sewage system, or through a two-tier cleaning process, operated by Landsvirkjun and monitored by the local municipality's public health authority.

↓ Quantity of waste (in tonnes)

	2018	2019	2020	2021	2022	Change from 2021
General waste, unsorted	40	43	30	35	33	-5.2%
Recyclable (paper)	18	22	23	17	19	8.7%
Recyclable (plastics)	1.0	2.4	1.2	1,6	1.0	-36%
Bulky waste	27	7.1	13	14	22	55%
Organic waste	19	28	32	27	34	26%
Metals and scrap	45	109	57	94	46	-51.3%
Inert waste (glass, soil, and rocks)	10	0.46	14	0.41	78	18935%
Electronic devices	0	6.2	4.7	3.8	8.1	111%
Electronic devices (batteries)	0	0.021	0.13	0.037	0.027	-27%
Hazardous waste	7.0	7	28	12	19	55%
Wood (painted)	31	27	18	30	33	8.3%
Wood (unpainted)	3.0	18	13	13	6.4	-51%
Total	**201**	**270**	**234**	**249**	**299**	**20%**

↓ Emissions from waste (tCO_2e)

	2018	2019	2020	2021	2022	Change from 2021
General waste, unsorted	35	38	26	31	29	-5.2%
Recyclable (paper)	0.38	0.48	0.48	0.37	0.40	8.7%
Recyclable (plastics)	0.021	0.050	0.026	0.034	0.022	-36%
Bulky waste	13	3.3	6.2	6.6	10	55%
Organic waste	3.3	4.8	5.4	4.7	5.9	26%
Metals and scrap	1.0	2.3	1.2	2.0	1.0	-51%
Inert waste (glass, soil, rocks)	0.012	0.00056	0.018	0.001	0.096	18935%
Electronic devices	0	0.13	0.10	0.082	0.17	111%
Electronic devices (batteries)	0	0.00044	0.0028	0.00079	0.00057	-27%
Hazardous waste	0.15	0.23	0.59	0,.26	0.40	55%
Wood (painted)	26	23	15	25	23	-6.6%
Wood (unpainted)	0.064	0.38	0.27	0.28	0.14	-51%
Total	**78**	**72**	**56**	**70**	**71**	**1.1%**

↓ Percentage categorised

2018	2019	2020	2021	2022
82%	84%	87%	86%	89%

Nature and utilisation

Energy production´s impact on the environment and ecosystems

Nature and ecosystems can be affected by the utilisation of renewable resources, which is why we study and monitor the environment before, during and after construction and in our operations. The scientific knowledge we acquire helps us assess how and if our actions affect the environment and any need for mitigation measures.

We have learned much about the delicate interplay between utilisation and nature throughout the Company's fifty-six-year history and the long history of energy use in Iceland and elsewhere. Our mission is to protect and restore natural environments, and we continue to seek new ways to improve our knowledge.

We conduct extensive environmental monitoring and detailed research within areas affected by our operations in cooperation with universities, various research institutes and independent specialists. Monitoring assists us in assessing how and if our operations impact the environment and what action is necessary.

We monitor ecosystems in areas affected by our power stations and conduct any necessary research. We monitor river and reservoir biota and life on land. These include ichthyology, microscopic aquatic organism research, vegetation, birdlife, and reindeer research.
We also study how reservoirs and water channels affect aeolian deposition and bank erosion. Consequently, we can assess and monitor the ecosystem and our impact on it.
We also undertake the various mitigation measures required of us, such as restoring the natural quality of the environment disturbed by our activities and supporting existing ecosystems. Monitoring and mitigation measures are implemented in collaboration with universities, research institutes, and consultancy firms specialising in these fields.

Our focus is on strengthening research and the local community. We support the work of angling/hunting associations in Landsvirkjun's operational areas by participating in research in their territories. Our projects support knowledge acquisition and basic research relevant to various fields.

Conservation areas
Landsvirkjun operates in the vicinity of several conservation areas. The areas are in various conservation categories, ranging from municipal district protection to national parks. They are protected for multiple reasons, such as their unique landscape, geological formations, ecosystems, or cultural and archaeological heritage. We have acquired extensive knowledge of these areas and work closely with the authorities and stakeholders to meet the various protection requirements.

Species on red lists
Landsvirkjun monitors and studies animals and plants on the Red List of the *Iceland Institute of Natural History* to assess any adverse effects of construction projects in accordance with the *International Union for Conservation of Nature's (IUCN)* standard. Species that fall under the criteria of endangered species are specifically monitored.

The spread of the fern adders-tongue (Ophioglossum azoricum), which only grows in geothermal areas, is monitored in the Mývatn area, which is affected by the Company's operations. The spread of the Nootka lupine (Lupinus nootkatensis), a non-native and invasive plant, is being controlled in adders-tongue habitat in collaboration with the *Icelandic Environment Agency*.

Protected and reclaimed habitat
Inevitably, our operations can disrupt animal and plant habitats. The formation of reservoirs can cause sedimentation, aeolian deposition, and bank erosion. We have implemented various mitigation measures to reduce the impact on ecosystems and to restore and protect habitats.

Aeolian deposition defences
The impact of aeolian deposition on vegetation is particularly noticeable along the coastlines of the Hálslón and Blöndulón Reservoirs. As a prevention measure, we strengthen vegetation with fertilisers, fence off overgrown areas, use sand traps, and remove sand accumulated in specific areas. Aeolian deposition distribution varies between years. The levels at Hálslón have been under control, but the total surface area of aeolian deposition in Blöndulón has increased recently. This year, the fences around Blöndulón were repaired to prevent sheep from entering the area. By taking these measures, the woolly willow (Salix lanata), shown in studies to be an effective aeolian deposit binder, will thrive. Additionally, fertiliser has been spread within the fences, and seeds have been sown to promote vegetation that reduces sand accumulation.

Riverbank erosion control and repairs
Rock protection for the banks of the Lagarfljót River was completed in 2022 because of erosion in the area. The area is on the natural heritage register, and the *Environment Agency's* opinion was sought before construction began. An application was also submitted to the Múlaþing Municipality for a construction permit, and landowners were consulted about the project. The construction area is 1,300 meters long, and every effort has been made to integrate the rock protection wall with the natural bank of the river. Landsvirkjun has previously worked on bank defences in this area, including a 300-m-long defence built on two islets in 2015.

Vegetation reclamation
Since 1967, Landsvirkjun has collaborated extensively with public bodies and organisations on land reclamation, reforestation, and wetland reclamation. The aim is to restore vegetation and land quality, support sensitive animal and plant habitats, and prevent natural soil- and sand erosion. Land reclamation has been most extensive around Blanda Power Station and Fljótsdalur Power Station. Significant reforestation has been carried out in the Þjórsá and Sog area and the area surrounding the Blanda Power Station. These measures are part of Landsvirkjun's sequestration and climate action targets.

Environmental incidents
Our activities have the potential to cause incidents that negatively impact the environment. Environmental incidents are documented, their causes are analysed, and improvements are monitored. Two environmental incidents caused unwanted risks this year but did not warrant further action. There were six medium-risk incidents (unlikely to cause serious damage or harm), which did not require risk reduction measures, and seven minor acceptable-risk incidents.

At the end of March, a small mudslide fell on the road behind the substation at Búrfell station. The road was closed until the danger had passed, and the mud was cleaned up and dumped in an area where soil is stored for later use.

At the beginning of May, the water flow through bottom outlet gate 1 was supposed to increase by 5%, but instead, the flow in bottom gate 2 was opened to Increase flow by 25%. Flow increased rapidly within a few minutes, and the alarm system failed.

The causes were assessed, procedures reviewed, and the relevant work procedures updated.

Operating exemplary resource utilisation and energy production

The sustainable, efficient, and safe use of hydropower, geothermal energy and wind energy is a priority. We show foresight and develop opportunities for increased energy production to meet future energy needs.

Our vision is a sustainable world powered by renewable energy, only realised through efficient and sustainable energy generation, benefitting current and future generations. Since we produce more than 70% of the country's electricity, our responsibility is great. We have been entrusted with some of Iceland's most valuable natural resources, and the systems we build to harness them must be operated responsibly, focusing on efficiency and safety. Landsvirkjun can simulate its energy system's operation using a computer model and plan electricity production using plans for electricity sales and water management for its power stations.

We continuously work hard to improve our power stations and use resources as efficiently as possible. Progress is our driving force, and we constantly seek ways to sharpen our knowledge and improve. The future is green, and our energy production options focus on hydropower and geothermal power while we also strive to become a leader in wind energy.

Our power stations
Landsvirkjun operates fifteen hydropower stations, three geothermal power stations and two wind turbines for research purposes, distributed in five operating areas nationwide. We believe in an integrated approach where prudence, reliability, and operations in harmony with the environment and society are fundamental to our operations.

Blanda Station 1991
Hydropower
165 MW
990 GWh/ year

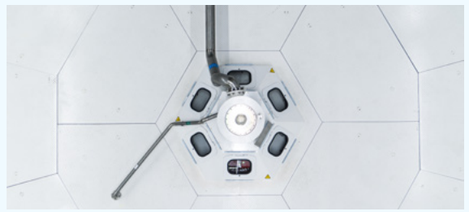
Designed entirely by Icelanders, Blanda Hydropower Station harnesses the power of the glacial River Blanda and is our only power station in the North-West.

Búðarháls Station 2014
Hydropower
95 MW
585 GWh/ year

The Búðarháls Hydropower Station is one of seven hydropower stations in the Þjórsá area. The station is located on the Tungnaá River and takes advantage of the drop between the tailwater of the Hrauneyjafoss Power Station and the Sultartangi Reservoir.

Búrfell Station 1969
Hydropower
270 MW
2,300 GWh/ year

The Búrfell Hydropower Station came online in 1969 and took almost ten years to complete. It was the largest power station in the country until the inauguration of Kárahnjúkar Hydropower Station in 2007.



Búrfell Station II 2018
Hydropower
100 MW
700 GWh/ year

The new power station was built underground in Samsstaðaklif Hill and houses one 100 MW Francis turbine. The 370 m long headrace canal is connected to the existing intake reservoir Bjarnalón and the 2,200 m long tailrace canal discharges the harnessed water into the Fossá River, approx. 1 km downstream from the original Búrfell Station.

Fljótsdalur Station **2007**

Hydropower

690 MW

4,800 GWh/ year

The Fljótsdalur Hydropower Station is the largest power station in the country.

Bjarnarflag Station **1969**

Geothermal

5 MW

42 GWh/ year

Bjarnarflag in Mývatnsveit is the oldest steam power station in the country, commissioned in 1969 and refurbished in 2019.

Hafið **2013**

Wind

1.8 MW

6.7 GWh/ year

We have built two wind turbines in the Hafið area for research, commissioned in February 2013.

Hrauneyjafoss Station **1981**

Hydropower

210 MW

1,300 GWh/ year

The Hrauneyjafoss Station came online in 1981 and is Iceland’s third-largest power station, producing 210 MW.

Írafoss Station **1953**

Hydropower

48 MW

236 GWh/ year

Írafoss Station harnesses two waterfalls in the lower part of the Sog River, Írafoss and Kistufoss. Two 15.5 MW generating units were installed in 1953, and a 16.7 MW turbine was added in 1963.

Krafla Station **1977**

Geothermal

60 MW

500 GWh/ year

Krafla came under the ownership of Landsvirkjun in 1985. Pilot boreholes were drilled in 1974, and regular operations began in February 1978.

Laxá Station I **1939**

Hydropower

5 MW

3 GWh/ year

The Laxá I Station is the oldest power station in the Laxá River. The station operates two turbine units, which came online in 1939 and 1944.

Laxá Station II **1953**

Hydropower

9 MW

78 GWh/ year

Laxárstöð II is the second oldest station in Laxá. Like all the other Laxá stations, it uses the river's natural flow to produce electricity.

Laxá Station III **1973**

Hydropower

13.5 MW

92 GWh/ year

The Laxá III Station is the most recent power station in the river Laxá.
The underground turbine house was initially designed for two 25 MW turbines.
The station was inaugurated in 1973.

Ljósafoss Station **1937**

Hydropower

16 MW

105 GWh/ year

The oldest power station in the Sog River is located near Ljósafoss.
The electricity supply in the capital area quadrupled when the station came online.

Sigalda Station **1978**

Hydropower

150 MW

920 GWh/ year

The station came online in early 1978. Construction was a race against time due to enormous demand for more energy in Iceland following energy-intensive industrial growth.

Steingríms Station **1959**

Hydropower

27 MW

122 GWh/ year

The Steingrímsstöd Station is the third station built in the Sog River area. The station harnesses the head where the Upper Sog drains from Lake Þingvallavatn into Lake Úlfljótsvatn. The outflow from Lake Þingvallavatn is approximately 100 m3/s.

Sultartangi Station **1999**

Hydropower

125 MW

1,020 GWh/ year

The Sultartangi Station, located 15 km northeast of the Búrfell Station, was built at the end of the last century and came online in 1999.

Vatnsfell Station **2001**

Hydropower

90 MW

490 GWh/ year

Vatnsfell Station utilises the head in the diversion canal between the Þórislón Reservoir and Sigalda Station's reservoir Krókslón. Unlike the other stations, it only produces electricity during winter.

Þeistareykir Station **2017**

Geothermal

90 MW

738 GWh/ year

Þeistareykir was the first geothermal power station Landsvirkjun constructed from scratch. The privately owned company Þeistareykir was established and Landsvirkjun acquired the company in 2010.

Sustainable utilisation

Our goal is to utilise the natural resources we are entrusted with in a sustainable, responsible, and efficient manner. We want to improve utilisation and reduce waste. We want to maximise the utilisation of already harnessed resources.

Research and monitoring
We conduct extensive research and monitoring of the resources we use for energy production. We measure glacial ablation, river flow and temperature, the chemical composition and flow of groundwater, sedimentation load, water levels and reservoir volume, and study meteorological conditions and land changes. We monitor the overall condition of geothermal areas with a special geothermal model for each operating area.

We also measure and monitor the geothermal reservoir, groundwater flow, the chemical content of groundwater, and gas release into the atmosphere. By combining these factors, we can see into the future and make the best possible use of resources.

The water year 2021–2022
The water year is defined from the 1st of October 2021 to the 30th of September 2022. All reservoirs were almost full at the beginning of the water year, except for Þórisvatn, which needed 300 Gl to fill. The drawdown began in early October, but the autumn months of October and November were cold, especially November, and precipitation in the highlands was mostly snow.

December was unusually dry, and the inflow was low. This situation prevailed in January and February, and snowfall accumulated, especially in the south and north of the country. Groundwater levels in the Þjórsá area fell to a historic low during these winter months, which affected the Tungnaá River's flow and the inflow into Þórisvatn. March was rather cold initially, but warm southerly winds began to reach the country towards the end of the month, and snowmelt from the highlands increased flow.

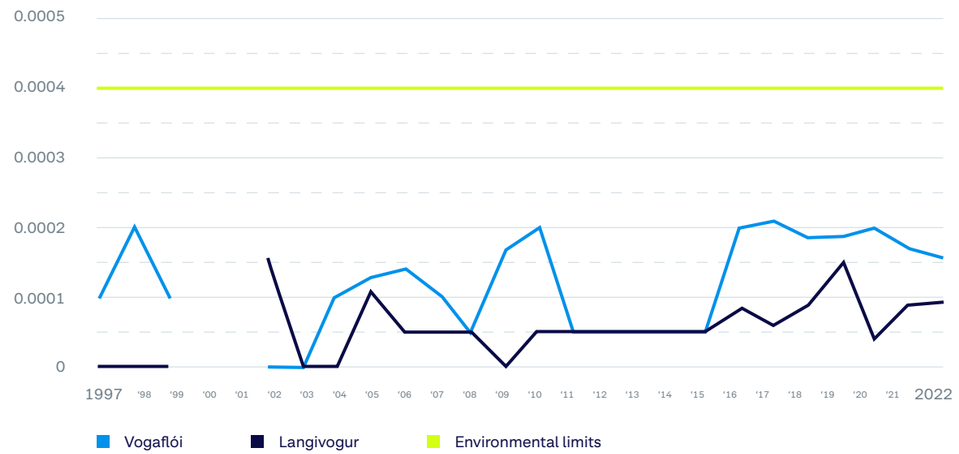
Spring thaws began in April and May, continued into June, and decreased toward the end of June in East Iceland. Glacier ablation was above average from July to September in the South and the North. In the east, snowmelt was below average, and cold conditions and snowfall in July reduced the inflow to Fljótsdalur station in August. Hágöngulón Reservoir was full by the end of July, and Blöndulón and Hálslón Reservoirs were full by September. Towards the end of September, Þórisvatn Reservoir's water level was around 577.5 m a.s.l. and needed about 100 Gl to fill.

Geothermal energy
Landsvirkjun operates three geothermal stations in the Mývatn area, at Krafla, Bjarnarflag and Þeistareykir. Geothermal fluid is extracted from high-temperature geothermal areas at a depth of 2000 metres during the utilisation process. The fluid contains steam which contains various gases and geothermal water. The steam is separated from the geothermal fluid and utilised for energy production. In 2022, about 9950 thousand tonnes of steam was extracted to produce 1255 GWh of electricity. Energy production and research extracted 19,548 thousand tonnes from the geothermal system, of which 8884 thousand tonnes were reinjected into the geothermal reservoir. Separated and condensed water released at the surface was 5037 thousand tonnes.

Groundwater studies are conducted in aquifers, chasms, and springs to assess the potential effects of surface discharge on surface levels in Mývatn. A regular monitoring program has been carried out at Mývatn since 1997, but no significant impact has been observed. Concentrations of arsenic, heavy metals, and other substances are always below environmental limits.

Preparations have begun for pumping separated water from the Krafla Station below the groundwater table, to reduce the effects on surface levels at Dallæk.

↓ **Arsenic concentrations in groundwater samples at selected measuring points 1997- 2022**



Hydrogen sulphide emissions
The gas emissions from geothermal production are estimated by measuring the concentration of gas in steam and water from wells. The concentration of hydrogen sulphide (H_2S) in the vicinity of our power stations is also monitored.
Four meters are used for monitoring air quality in built-up areas, while two meters are used at our geothermal stations to measure the concentration of hydrogen sulphide.

No confirmed measurements are currently available, but the results will be made accessible on our website as soon as possible. Real time results are available on the web and the results can be accessed here.

Power station operations
Operations were successful in 2022, despite the continuing effects of the covid-19 pandemic, which affected operations in the first part of the year.

Our power stations' monitoring, maintenance and supervision were mostly routine throughout the year. There were 56 unforeseen interruptions in 2022 compared with 62 in 2021. We aim to ensure that generating units in the power stations are available 99% of the year, not accounting for routine maintenance periods. This goal was achieved this year, as units were available at 99.8%.

We operate in accordance with an integrated, certified Quality Management and Environmental Safety Management System, including ISO 9001, ISO 14001, OHSAS 45001, and the Internal Electrical Safety Operation System (RÖSK), which fulfils the criteria set out by the Iceland Construction Authority on electrical safety issues. Landsvirkjun has been certified as a producer of green electricity by the German company *TÜV SÜD* which specialises in the certification of green electricity. Landsvirkjun´ s information security management system is also certified according to ISO 27001.

Refurbishment projects
We carried out 126 renovation projects in our power stations in 2022. The most extensive project in the South of Iceland was the refurbishment of turbine two at Búrfell Station 1: The turbine runner and guide vanes were replaced, and the cooling system. The electrical part of the governor and electrical and mechanical protection was also renewed. The refurbishment of the generating units at Búrfell I is now complete.

Extensive maintenance projects were also carried out at Sultartangi Hydropower Station: The busbars from generator breakers to the transformers were fire insulated on both units, and the oil level indicators for the bushings of the high voltage generator cables was renewed. The computerised governor in turbine two was updated, and the control system for the intake in turbine unit two was renewed. For preparation of uprating both units both turbine and generator shafts were slightly modified. At Fljótsdalur Hydropower Station the working seal for turbine inlet valve unit 4 was replaced without disturbing operation of the two other units on the same penstock.

Pursuing a diverse business and exceptional customer service

Our team works closely with our customers to maximise value creation. Through innovation, we strive to create a greener future.

Our role is to maximise the potential yield and value of the natural resources we have been entrusted with in a sustainable, responsible, and efficient manner. We generate electricity efficiently from an economic, social, and environmental perspective.

Our priorities are engaging in diverse business activities, green innovation, and risk diversification. Keeping customer's satisfied is crucial to our success. We build business relationships based on trust and meeting our customer´ s expectations and needs. We provide exceptional service and competitive pricing and cooperate closely with our customers to identify new opportunities for value creation. Our success is Iceland´ s success because our operations and activities bring dividends and positively impact society.

A challenging water year and a sold-out system
Last winter was the most challenging winter ever experienced in our operations. Reservoir water levels at the beginning of 2022 were so low that curtailments became necessary, limiting the energy supply to those customers bound by power contract curtailment clauses. We repurchased electricity from energy-intensive users when contractually possible and rejected all new bitcoin mining customer requests. The reservoir inflow picked up again in April, a few weeks earlier than average. Curtailments and energy repurchase plans were subsequently abandoned.

The demand for electricity in Iceland is high in an almost entirely sold-out electricity system. Energy-intensive industries performed well this year, with product prices reaching a historical high. Iceland's energy-intensive users have been highly competitive this year compared to other major European users. We also saw increased demand in the wholesale market.

Iceland will need more energy for its energy transition towards a greener future. The demand will continue to rise as the market for energy-intensive customers and new customers grows. The Icelandic energy market has undergone a significant change in a short period. Demand is now greater than supply, and we have been forced to prioritise our sales for the foreseeable future.

Increased value of Guarantees of Origin
A Guarantee of Origin (GO) is a market-based instrument that increases demand for renewable energy. A GO is issued when a power station produces 1 MWh of renewable energy in Europe. GOs are internationally recognised proof that the energy purchased is green, making renewable electricity more attractive to increasingly environmentally conscious customers.

Corporate commitments to climate change action have also increased demand for GOs, narrowing the supply and raising prices. In 2022, the average cost of a GO was 1 EUR/MWh, an increase of 65% since 2021.

We produced 14.6 TWh of renewable energy in 2022 and issued 14.6 million GOs with an estimated value of ISK 1.7 billion.

We only deliver 100% renewable energy and can issue GOs for all our electricity production. We are proud to say that the quality of our GO system has been certified by the German Certification Body *TÜV SÜD* since 2013.

High product prices and the energy crisis in Europe.
The Russian invasion of Ukraine had a disruptive effect on global markets, especially in Europe. Electricity and commodity markets soared at the beginning of the year due to increased demand and surged even further after the invasion. Russian natural gas sales to the European market decreased sharply, impacting electricity prices and inflation. While many European governments took measures to support households and businesses, high energy prices forced many industrial companies to reduce production as the year progressed.

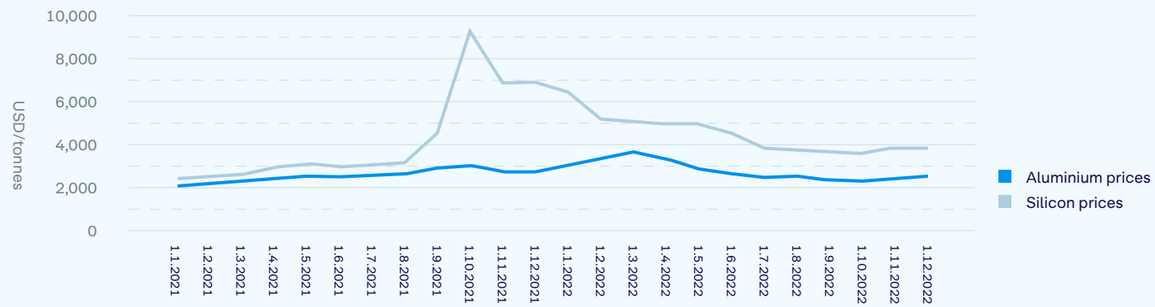
The estimated reduction in smelter production in Europe due to high electricity costs is millions of tonnes or over 20% of production on the continent. Comparatively, Iceland produced 900 thousand tonnes of aluminium.

The Nordic electricity market Nord Pool averaged 135 euros/MWh, or 116% higher than the average price in 2021 and have never been higher. The prices of aluminium and silicon reached record highs in March and April but fell in the year's second half due to worsening economic conditions. Silicon prices ranged from 3,500-6,800 USD/tonnes, and aluminium prices ranged from 2,100-4,000 USD/tonnes during the year.

Price developments in the Nord Pool electricity market and aluminium and silicon metal markets →

↓ NordPool prices

↓ Aluminium & silicon prices



Historically high energy prices for energy-intensive users and record energy sales
Landsvirkjun's average price to energy-intensive users without transmission was the highest in its history, or USD 42.9 per megawatt hour. Recent renegotiations mean that the prices we charge our customers are now comparable to those in the countries we compare ourselves with. These developments strengthen our role to maximise the value of the renewable energy sources entrusted to us and return dividends to our shareholders, the Icelandic people.

- Landsvirkjun and Norðurál signed an addendum to the companies' power contract from 1997 to reduce risks connected to large market price fluctuations. The contract will mostly be connected to the Nordic electricity market Nord Pool and will to some extent, have fixed prices. An aluminium price link will be added to the fixed price later in the contract period.

- A new power contract was signed with Reykjavík DC, providing them with up to 12 MW of energy. Borealis Data Center now owns Reykjavík DC. Designed to meet the requirements for high security, the data centre is a high-tech facility.

- In December, Landsvirkjun and Landeldi signed an agreement for the sale and purchase of up to 20 MW of electricity for their new salmon farm in Þorlákshöfn. One of Landsvirkjun's main priorities in the coming years will be sales based on innovation that requires energy and enhancing business diversity, i.e., in the food industry.

Renewable energy, competitive long-term contracts and Iceland's climate have contributed to Iceland's booming data centre industry. We have four data centres in its customer group. We support data centres in the digital journey but do not support Bitcoin.

Landsvirkjun's energy sales increased from the previous year and were among the highest ever, despite necessary curtailments at the beginning of the year. Energy sales in 2022 were 14.6 terawatt-hours, of which energy sales to energy-intensive customers were about 86% or 12.6 terawatt-hours. The most significant proportion of sales went to the aluminium industry.

An evolving wholesale market

The wholesale electricity price for primary energy was, on average, ISK 6.2/kWh during the year, an increase of 17% between years. Low reservoir levels early in the year forced Landsvirkjun to change sales conditions with electricity sales companies during the curtailment period. Primary energy prices rose when the water level was low. However, customers had already purchased some energy before the curtailments were introduced, so this increase had less impact than previous ones.

Inflation in 2022 was 9.6%. Landsvirkjun sold primary energy for 2023-2027 with altered conditions during the year. Wholesale customers submitted purchase offers for energy in the basic energy sales process, and the price was determined at the intersection of the sales and purchase offers. The new arrangement provides information on demand and is essential for developing market arrangements, energy security and prices.

Business development and innovation
Business development opportunities are abundant in green energy-related industry. A combination of renewable energy and other resources can be used to produce food in a progressive manner, such as greenhouses, algae farms, or land-based fish farms. The same green energy allows us to stop purchasing gasoline and oil each year worth billions, turning our attention to the production of hydrogen and other environmentally friendly fuels. The data centre industry is constantly evolving as data becomes more and more crucial to businesses and people's daily lives. This important industry is powered by renewable energy in Iceland. Various industries thrive here due to the solid infrastructure and favourable climate.

Our unique position as a leading producer and user of green energy provides opportunities to strengthen the economy while contributing even more to tackling climate change. This leads to new, well-paid jobs, increased value, and greater energy independence.

Land-based fish farming

Landsvirkjun welcomed its first food production customer during the year when a power contract of up to 20 MW was signed with Landeldi to supply electricity to their new salmon farm in Þorlákshöfn. The sale reflects Landsvirkjun's new priorities in the coming years, which is sales based on innovation that requires energy and enhancing business diversity, i.e., in the food industry.

The salmon farm has been on the drawing board for some time. Landeldi is an Icelandic company that focuses on fully farmed salmon on land.

Land-based salmon farming is a growing industry in Iceland, and Landsvirkjun supports its development through the sale of renewable energy. The combination of Icelandic fresh water and geothermal seawater at ideal temperatures lays the foundation for this promising industry, which may become the nation's new export pillar.

The PPA is for up to 20 MW of energy, but delivery will be increased incrementally with the growing rate of production in coming years. The energy will be delivered from the current energy production system and planned increases in energy generation in South Iceland will further support delivery. Landeldi plans to offer its products internationally and will buy GOs (Guarantees of Origin) from Landsvirkjun, as it sees the benefit in informing consumers of the green and renewable origin of the energy used in the production.

Eco-industrial park

Landsvirkjun has recently been involved in the development of eco-industrial parks in Iceland. Eco- industrial parks are areas that promote development between industrial parks and society for the benefit of everyone involved with people, the environment and prosperity as guiding principles (Green industrial parks - Tækifæri fyrir Ísland, 2021). In principle, waste from one industry becomes input for another. This promotes a circular economy in the region.

Landsvirkjun signed a letter of intent with Norðurþing to explore the feasibility of an eco-industrial park in Bakka in October 2020. The project was expanded in early 2021 when Íslandstofa and the Ministry of Industry and Innovation joined the project

The project was carried out in two parts:

- Analysis of opportunities for eco-industrial parks in Iceland: Result announced in September 2021
- Feasibility of an industrial park in Bakka (April-September 2022)

In the second part, Landsvirkjun, Norðurþing and the interdisciplinary design studio m/studio and the real estate development company Innov were part of a work group. The aim of the project was to identify opportunities and develop a vision for setting up a green industrial park in Bakka. Moreover, the product of this project will be helpful to stakeholders in determining the next steps.

There are numerous opportunities for value creation in the Bakka industrial area. A memorandum of understanding was signed with PCC SE in Bakka in March regarding the possible capture and utilisation of PCC's emissions to produce green methanol. Future visions for the area focus on the production of electric fuel and food (e.g., land farming, algae production, greenhouses). A project manager will start working in the area at the beginning of 2023. He will be the point of contact for all industrial park stakeholders and will lead the development of the area in line with Norðurþing´ s vision and the will of the community. The project manager will be hosted by Eimur.

Landsvirkjun has been working extensively on the possible development of the old silicon industry plot at Bjarnarflag during the past year. Our goal is to support geothermal energy innovation and the multiple use of geothermal energy. Several start-ups are already cooperating with Landsvirkjun in the region including MýSköpun, which cultivates microalgae from Mývatn, and MýSilica, which produces skin products from geothermal water from geothermal energy production at Gufustöðin. Start-ups have made great progress with their projects, and there is a lot of interest in facilities and access to resources in the area.

Electric fuel

Iceland needs to find diverse ways to rid the country of fossil fuels if it wants to meet its climate goals. There is no doubt that direct electrification is the most cost-efficient option for energy transition wherever possible, but in some sectors other means must be explored. Green electric fuel, i.e., fuel produced primarily by renewable electricity, could play a major role.

Iceland's economy is changing significantly due to the energy transition. The third energy transition in Iceland requires a strong infrastructure, and broad consensus among key stakeholders. We have created formal partnerships, with Icelandair and Eimskip, to evaluate the first steps of the energy transition. A significant milestone in Icelandic aviation was reached during the year when Landsvirkjun, along with others, sponsored the purchase of Iceland's first electric aircraft, a milestone which signifies a new future for Iceland´ s aviation industry.

Meanwhile, Landsvirkjun has thoroughly analysed Iceland's prerequisites for electric fuel projects. Several of the world's leading electric fuel consultants were brought in to evaluate Icelandic conditions for electric fuel projects. Two development projects, a hydrogen project, and a methane project, were officially started by Landsvirkjun based on the consultants' recommendations. They will contribute to the fight against climate change, which can bring Iceland much closer to its goal of becoming fossil fuel-free by 2040.

We would be taking a step away from our core role as a traditional electricity producer if these projects come to fruition and we become involved in their ownership. Hydrogen production is complex and must be carefully planned to be both reliable and safe. The same applies to the production of methanol, which uses hydrogen and captured carbon. This is why we would be best served by partnering with an experienced company in hydrogen and methanol production. Negotiations between Landsvirkjun and such parties have been ongoing for some time, and there is considerable interest in partnering with Landsvirkjun on electric fuel projects.

Hydrogen

Iceland has produced hydrogen on a small scale for several years, and the use of hydrogen is still minimal. Landsvirkjun's hydrogen project aims to take real steps towards hydrogenation in Iceland by producing hydrogen for use in energy conversion in heavy transport on land. The use of hydrogen for a variety of exciting opportunities is gaining popularity. These include innovative projects in the field of food production, energy transition in domestic flights and public transport, and the hydrogenation of backup power for data centres.

Hydrogen will likely be produced in two places in the country, in the South-West and the North-East. Consequently, one of Iceland's main land transportation routes between Reykjavík and Akureyri could be hydrogenated. Icelandic companies will be assured that hydrogen will be produced cost-effectively and reliably, so they can operate their energy exchange projects with that certainty in mind. By paving the way for energy exchange in land transport, the project will assist Iceland in reaching its climate goals.

Companies in Iceland will now have the opportunity to replace fossil fuels currently used in transport, e.g., heavy transport on land. With a large truck emitting as much carbon dioxide as dozens of private cars, hydrogen can replace fossil fuels as a carbon-free energy source.

Methanol

Methanol may be suitable for energy conversion at sea, where electricity or hydrogen are insufficient for longer distances. It is produced from hydrogen and captured CO_2. Methanol engines exist, and several international shipping companies have ordered methanol ships. Ammonia is another fuel often mentioned for energy conversion at sea, but more technological development is needed before it can be used. The Icelandic shipping industry has shown particular interest as green methanol has the potential to play a key role in decarbonising shipping vessels by providing an alternative energy carrier to fossil fuels.

Landsvirkjun is collaborating with PCC SE to investigate the feasibility of methanol production in Iceland. Methanol can be produced using CO_2 captured from PCC's Bakki silicon metal plant and electricity from Landsvirkjun.

International projects

Landsvirkjun's international projects progressed well during the year. Our power station in Akhalkalaki, Georgia, was commissioned at the end of October. As Georgia's largest hydropower project that year, the project attracted considerable attention. Future development projects in Georgia, Greenland, Canada, and Australia offer exciting prospects and are proceeding smoothly.

A letter of intent (LOI) has been signed between a Danish party and Landsvirkjun regarding a possible collaboration on a large project. That work is in full swing and will continue until at least 2023.

Additionally, Growler and NNC held a meeting in Iceland to discuss continued cooperation, and all participants were enthusiastic about its continuation.

A progressive and sought-after workplace

Our top priority is protecting our team's well-being, knowledge, and equality. Our culture emphasises teamwork, fun, and job satisfaction.

We're dedicated to making Landsvirkjun a great place to work. We strive to attract more employees to our organisation - not only because our activities are essential to combating climate change, facilitating energy transition, and developing a sustainable future for Iceland - but also because working for us is rewarding. Our work is based on knowledge, and we encourage initiative and innovation in all aspects of our work. We're committed to equality and celebrating diversity. We have exceptional facilities, and our employees work in an environment that promotes health, safety, and wellness.

Ultimately, workplaces are about the people who work there to achieve a common goal. We can achieve better results by working as a team and having a shared vision. Communication in the workplace should be based on mutual respect and empathy. Employees should feel valued and able to learn and develop professionally.

The Board of Directors
Landsvirkjun's board is appointed annually by the Minister of Finance, in accordance with the Act on Landsvirkjun, No. 42/1983, and has overall administrative control over the company's operations and finances.

The Board was elected at the Company's general meeting on the 29th of April 2022. In the first board meeting following the general meeting, Jónas Þór Guðmundsson was re-elected chairman and Jón Björn Hákonarson was elected vice chairman. Soffía Björk Guðmundsdóttir has replaced Hákonar Hákonarson on the Board.

Women comprised 40% of the board at the end of the year. In 2022, six board members and deputy board members were over fifty years old, and four were between thirty-one and fifty.

Jónas Þór Guðmundsson
Chairman of the Board

Jón Björn Hákonarson
Vice Chairman of the Board

Álfheiður Ingadóttir
Board Member

Gunnar Tryggvason
Board Member

Soffía Björk Guðmundsdóttir
Board Member

Reserve members
Jens Garðar Helgason
Ragnar Óskarsson
Guðveig Eyglóardóttir
Jón Bragi Gunnlaugsson
Albertína Friðbjörg Elíasdóttir

The Executive Board of Directors
The Board appoints the CEO, and the Board and the CEO are responsible for managing the company. The Deputy CEO oversees the Company's common issues and strategic planning and ensures quality governance. The Executive Board currently consists of the CEO and nine Executive Directors- four women and five men.

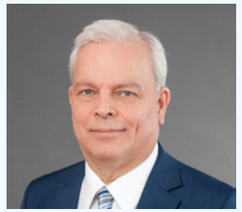
Four executive board members are over 50, and five are between 31 and 50.

Hörður Arnarson
CEO

In accordance with the Board of Directors' policies and instructions, the CEO oversees Landsvirkjun's daily operations. The CEO handles recruiting, ensures the Company's accounting methods are in accordance with law and normal practice and ensures assets are handled safely and securely. Landsvirkjun's CEO is responsible for matters within his defined realm of responsibility.

Kristín Linda Árnadóttir
CEO's Office, Deputy CEO

The CEO's office is responsible for strategic planning and compiling key metrics. As well as maintaining the company's management systems and risk management, the department coordinates changes throughout the company and creates channels for improvement. The department is responsible for managing the company's communication and information sharing, as well as human resources, compensation, and workplace development. It provides legal support to other divisions and works on the development of high-quality governance and management practices.



Einar Mathiesen
Wind and Geothermal Division,
Executive Vice President

The Division is responsible for efficiently operating geothermal power stations and wind farms, and maximising energy production. As part of its responsibilities, the division maintains, renovates, and renews power stations to ensure they perform their specified role efficiently, comply with environmental and safety requirements, and meet the ISO 55000 standard for asset management. Additionally, the Division is responsible for developing new geothermal and wind energy options and innovation that improves resource utilisation as well as resource monitoring and research.

Tinna Traustadóttir
Sales and Services Division,
Executive Vice President

The Division manages contracts with existing customers and ensures excellent service. The Division maximises Landsvirkjun's long-term revenues, interacts with customers, manages business portals, and settles electricity sales.
It is also responsible for developing pricing policies in wholesale and energy-intensive user markets, handling demand forecasts and analysing Landsvirkjun's business environment and competitive position in domestic and foreign markets.

Ríkarður Ríkarðsson
Business Development and Innovation Division,
Executive Vice President

The role of the Division is to develop new business opportunities and manage Landsvirkjun's participation in energy-related innovation. The Division is responsible for planning and supervising innovation projects and collaborates with municipalities, other companies, clusters, and other parties to pursue innovation. The Division also seeks funding for energy-related business development and innovation in the international research and development arena.

Jóna Bjarnadóttir
Community and Environment Division,
Executive Vice President

The division also supports other divisions within the company, working towards carbon neutrality, green operations, active community engagement, and socially responsible practices.

Ásbjörg Kristinsdóttir
Project Planning and Construction Division,
Executive Vice President

The Division oversees the construction of power stations that have reached the construction stage and renovation projects at the Company's power stations. The Division is also responsible for tender documents, work preparation, cost and cash flow plans, tenders and contracts for planned projects and the acquisition of necessary permits. Construction and expenses are handled by the Division and the progress of projects during construction.

Gunnar Guðni Tómasson
Hydropower Division,
Executive Vice President

The division ensures that hydropower stations operate efficiently, maximising energy production. The Division is responsible for maintaining and refurbishing hydropower stations to ensure they comply with environmental and safety requirements. The Division is responsible for developing hydropower energy options, water monitoring, research related to new energy options, and supervising dams and other structures. The Division is responsible for managing electricity generation and delivery by existing agreements.

Rafnar Lárusson
Finance and IT Division,
Executive Vice President

The Division is responsible for the budget process and its monitoring. Services include providing an overview of Company operations, overseeing resource acquisition and capital management, and providing comprehensive advice on purchasing and financing. The Division is responsible for ensuring that IT and digital solutions reflect the needs of Company operations at any given time. The Division also offers general internal services.

Our team
Our team is our most vital asset. Promoting diversity and retaining skills and knowledge lead to a positive, safe, and progressive work environment.

Landsvirkjun adheres to collective agreements and respects all the rights and obligations therein. Landsvirkjun complies with the law on mandatory pension insurance and pension fund activities.

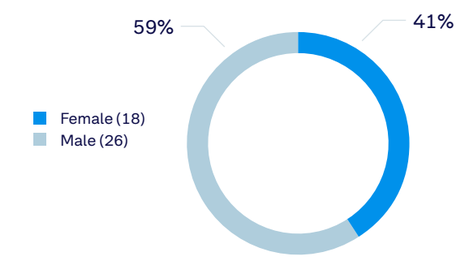
The number of full-time equivalent positions at the end of 2022 was 285. Men held 203 positions and women 82. The full-time equivalent of temporary positions was 17. Of these, women held 8 positions and men 9. The number of permanent employees (100% employment rate) was 275; 201 men and 74 women. The number of permanent part-time staff was 19: 5 men and 14 women.

We welcomed 44 new colleagues this year. Employee turnover was 7%.

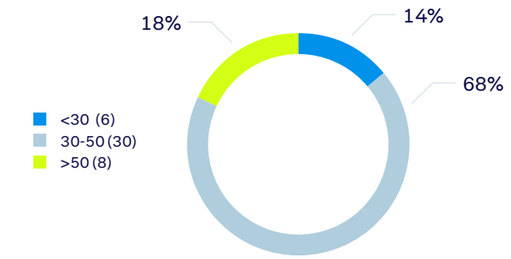
↓ Permanent employees at year-end 2022 (full time equivalent)

	Skilled workers	Experts & Project Managers	Specialised office workers	Management	Other positions
Female	1.7 (2%)	45.7 (33%)	9 (100%)	16 (39%)	9.3 (64%)
Male	80 (98%)	92.5 (67%)	0 (0%)	25 (61%)	5.75 (38%)
<30	3 (4%)	6 (4%)	0 (0%)	1 (2%)	1 (7%)
30-50	40.7 (50%)	74.9 (54%)	1 (11%)	26 (63%)	3 (20%)
>50	38 (47%)	57.3 (41%)	8 (89%)	14 (34%)	11 (73%)
H68	3 (4%)	103.2 (75%)	7 (78%)	35 (85%)	2 (13%)
Stations	78.7 (96%)	35 (25%)	2 (22%)	6 (15%)	13 (87%)
Total	**81.7**	**138.2**	**9**	**41**	**15**

↓ New recruitment - Gender balance



↓ New recruitment - Age distribution



Mental and physical health

Our employees' mental and physical health is essential to us. We believe that prevention is the key to good health and well-being as well as offering professional care during ill health. Additionally, we conduct regular workplace analyses to improve factors such as the working environment, the culture, and employee well-being.

Employees receive a health assessment every year considering mental, social, and physical aspects. We also conduct psychosocial risk assessments in parallel with job risk assessments to address factors related to mental, personal, and professional well-being at work. We work closely with the professionals who provide employee health-related services because we believe a professional approach is crucial.

Health-related preventive benefits offered by the Company include fitness, transportation, and psychosocial grants. Most workspaces have fitness facilities, and healthy food is always available in our cafeterias. Both online and in-class education are available, with topics ranging from social and mental health to workplace well-being.

Safety in the workplace

We conduct regular safety training in all areas of our operations, including training in first aid, fire protection, hoisting, fall protection, etc. There have been numerous examples of how training has prevented accidents and helped people react appropriately in difficult situations.

Accident insurance protects employees during and after working hours and includes disability and accidental death cover. Contractor accident insurance is outlined explicitly in contractor agreements. Two occupational accidents, which led to absence from work, were reported this year. The H value for 2022 was 0.64. The H value is the number of accidents leading to absence, divided by the total hours worked, times 200,000 hours. No work-related illnesses were reported during the year.

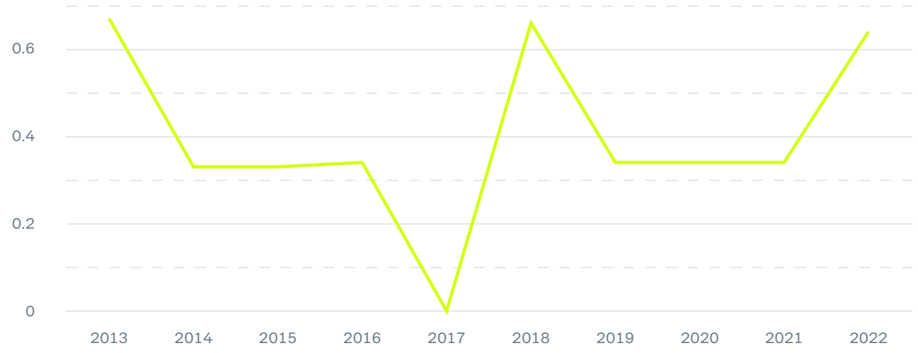
There were no accidents that caused irreversible damage.
Five accidents were recorded during employees´ commute and two during their free time.
Eight accidents were recorded for permanent employees at work:

- Falls: 2 (1 on level ground)
- Blows: 3
- Cuts: 1
- Trapped: 1
- Stress sprains: 1

There were no accidents recorded for summer employees. Two accidents were registered with contractors on behalf of Landsvirkjun.

↓ H-value- Landsvirkjun employees

The H value is the number of accidents leading to absence, divided by the total hours worked, times 200,000 hours.



We have a certified occupational, Health and Safety system, ISO 45001:2018 and work in accordance with an occupational health and safety policy. The policy is being revised, and new performance indicators are being added. Risk assessment, suggestion processing and incident root analyses are essential to prevent incidents and accidents. We are currently updating risk assessments for all operational areas.

A skilled workforce now and in the future

All new employees receive the necessary training and education. A training portal and appropriate guidance on tasks and roles are used for training. Our electronic training portal offers a wide range of optional and mandatory courses designed to increase the knowledge and skills of all our employees in their respective fields. Learning materials also support employee health, safety, and workplace skills.

Various other courses and education are available to employees, and we collaborate with many external providers, such as Iðuna, the *University of Iceland*, the *Technical College* and *Endurmenntun*. Educational development involves conducting regular needs analyses among staff, preparing educational materials, and developing educational programs.

The Turning Point course is offered to those preparing for retirement. The course focuses on well-being, nutrition, finances, and mindset to highlight the opportunities and challenges that this major turning point brings.

Rights and benefits

We offer numerous benefits, including health-related benefits such as annual check-ups, fitness grants, transportation grants, and psychosocial grants. We also pay for eye examinations (according to the ophthalmologists' price list and their contract with the Social Insurance Administration) and uterine and breast cancer screening.

Maternity and parental leave are legal rights in Iceland, and Landsvirkjun employees can apply for leave based on those rights. In 2022, four women took maternity leave, and 13 men took paternity leave. Two employees were on maternity and paternity leave at year-end.

Equal opportunities

We follow an equality action plan. One of its goals is to increase the percentage of women managers at the company to over 40 %. Despite the achievement of this goal within the executive board, 39% of women held other management positions at the end of 2022. Landsvirkjun's Board of Directors is elected in accordance with the Act on Public Limited Companies No. 2/1995, with subsequent amendments on gender ratios. At the end of the year, 40% of the Board was female.

Equal pay system

Landsvirkjun has a certified equal pay system, confirmed by the *British Standard Institution´s* renewal of our certification until 2025. Landsvirkjun was awarded the *PWC Gold Standard* for the ninth time in 2022. Men's basic salaries were 2% higher than women's, and men's total wages were 2,5% higher than women's, placing them within the PWC threshold.

Equality is intrinsic to our corporate culture, and our equal pay system is comprehensive. Procedures are ever evolving and continuously strengthened. This year we introduced a seniority system based on years of service. The equal pay system promotes the same terms for the same or equally valuable jobs. The Company has diverse roles and work environments, and our employees have various qualifications, experience, and educational backgrounds. Landsvirkjun's equal pay system reflects this diversity and prevents discrimination in employee benefits.

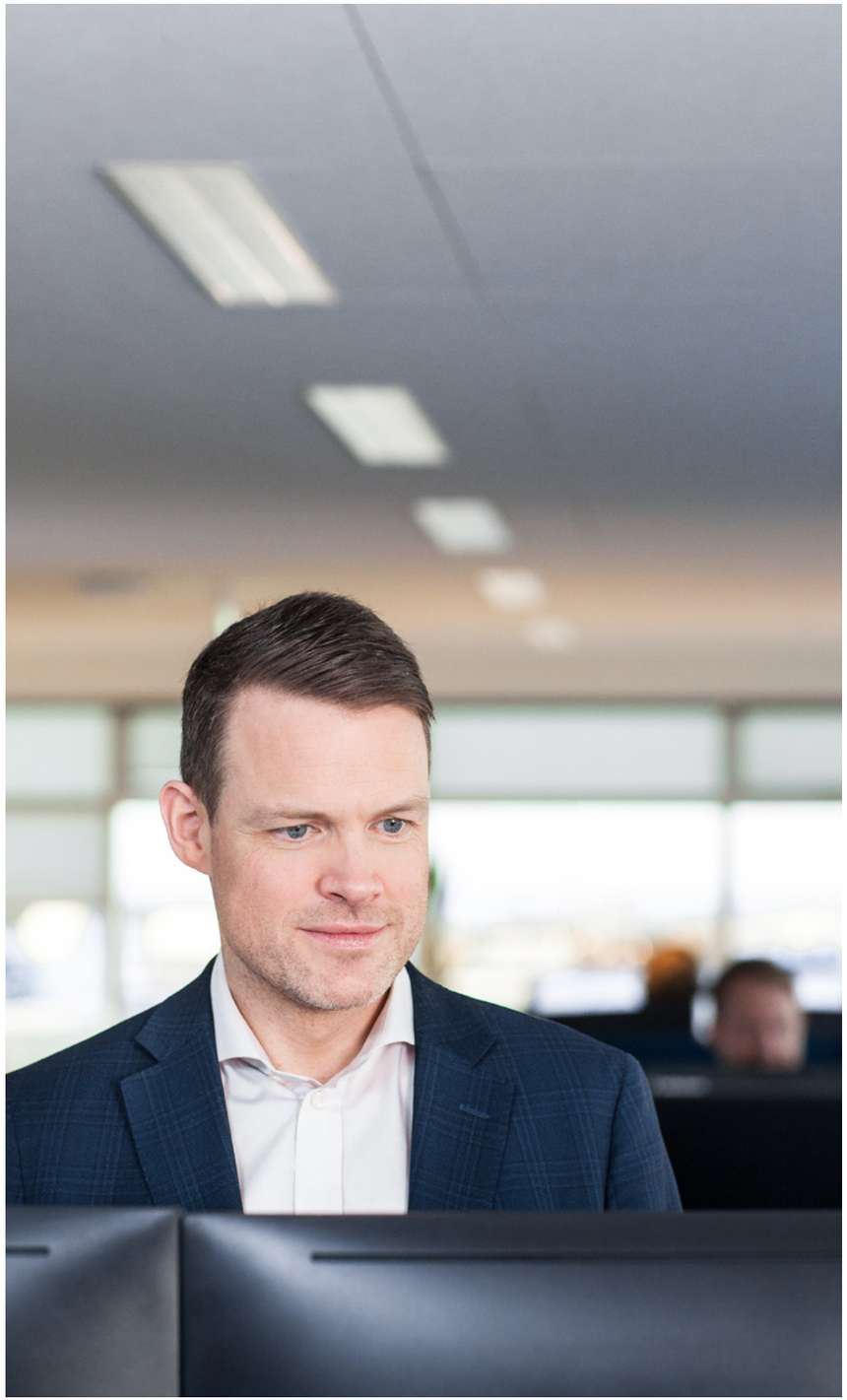
Every employee is interviewed by a deputy manager twice a year. These conversations are part of regular performance feedback and career development discussions; each has a different approach. This aims to create a common platform for discussing essential aspects of our work, so we can identify our challenges and successes individually and as an organisation.

Exceeding expectations in open communication and cooperation

We work closely with local communities and foster open and active communication with our stakeholders. We are a good neighbour.

Maintaining clear and consistent communication channels with our stakeholders is vital to us. We are a state-owned energy company, and open and effective communication is essential in building trust between the Icelandic people and us. We share information about our operations and impact on society and the environment, as well as providing general energy-related knowledge and reliable information in an accessible manner. Our efforts to accomplish this include open meetings and direct discussions, sharing news about our activities, publishing content, and welcoming guests to our power stations.

This is how we engage in informed social debate. Additionally, we are active in the local communities around our power stations. We want to be good neighbours. Communication with local communities near our power stations matters to us and we work closely with them to develop creative collaboration and energy-related innovation opportunities.



A new Communication Engagement Policy
Landsvirkjun´ s Board approved the new Communication Engagement Policy in February 2022. The Policy aims to promote the positive social impacts and benefits of Company operations alongside the responsible utilisation of natural resources.

The Policy states that Landsvirkjun is a good neighbour that actively participates in society and supports issues and projects that positively impact society. We focus on effective communication and cooperation with local communities because harnessing natural resources is interwoven with community trust. We want to be a leading force within society, promoting energy-related innovation with sustainability as our guiding principle.

Supporting energy-related innovation
We want to be a driving force in supporting and pioneering energy-related innovation in Iceland. We sponsor numerous innovation accelerators and incubators.

The year was spent analysing how Landsvirkjun has supported energy-related innovation in recent years and comparing its performance with other energy companies.
We aim to develop a pathway that integrates our strategic projects and goals, supporting innovation and maximising the use of geothermal energy.

We sponsored Snjallræði, an incubator that supports projects related to the UN´ s Sustainable Development Goals.

We participated in Innovation Week this year, where the “Energy & Food – The Future Is Coming” conference was held. Different experts on the future of food spoke about the importance of supporting innovation and development in food production within the circular economy and what Iceland can contribute. Speakers included the Minister of the Environment, Energy and Climate, professors, entrepreneurs, and investors.

Our contribution to research and social issues
In 2022, several construction projects required consultation with multiple stakeholders, including the *Icelandic National Planning Agency*, *the Environment Agency of Iceland*, *the National Energy Authority*, *the Public Roads Administration*, *the Cultural Heritage Agency of Iceland*, and *local public health authorities*. We also consulted with landowners, municipalities, and other stakeholders.

Monitoring nature and ecosystems, and various other measures related to licence conditions, require consultation and dialogue with multiple parties, including *the Soil Conservation Service*, *the Iceland Forest Service*, *the Icelandic Forestry Association*, *the Icelandic Institute of Natural History*, *the Marine and Freshwater Institution*, *the University of Iceland Science Institute*, *Icelandic Meteorological Office*, *the Environment Agency of Iceland*, *the Northeast Iceland Nature Research Centre* and *the East Iceland Nature Research Centre*.

Landsvirkjun and the Fljótsdalshérað (now Múlaþing) Municipality agreed to Landsvirkjun’s contribution to the construction of a Cultural Centre in the old slaughterhouse in Egilsstaðir. Múlaþing renovated the building, which officially opened in September of this year. Landsvirkjun was allocated an area in the building currently being used for an exhibition created by students at *the Iceland University of Arts* called Earth Connection. Graphic design students in collaboration with Landsvirkjun, *Gagarín* and the *Cultural Centre* designed the exhibition.

Our visitor centres
Landsvirkjun has two visitor centres, one in Krafla and one in Ljosafoss. Over 11,000 people visited our visitor centre at Krafla, open between June and August, and 9,700 people visited the Powering the Future exhibition at Ljósafoss, which is open year around.

We also offer guided tours at the Fljótsdalur Power Station and participate in running the Commonwealth Farm in Þjórsárdalur, which is open during the summer.

Comments on changes to the law and the regulatory environment
Changes in the law- and regulatory environment can significantly impact Landsvirkjun’s interests and future. We monitor all potential changes in our operating environment and submit comments and feedback within set time limits. Landsvirkjun ensures that any communication of this kind is clear and concise. In 2022, we submitted 27 comments. Landsvirkjun’s comments are public documents made available on the relevant websites.

Meetings and information sharing

Welcoming the Future

A key topic of discussion at our 2022 Annual Meeting, Welcoming the Future, was how Landsvirkjun plans to work towards its vision of a sustainable world powered by renewable energy. A discussion was also held on the increasing energy needs associated with climate change, the energy transition, and the opportunities and challenges they present for society in the coming years.

Kristín Linda Árnadóttir, the Deputy CEO, opened the meeting and chaired it. She stated that new green energy will be needed if energy transition promises are to be kept and that the current deadlock must end to make decisions about the future.

Bjarni Benediktsson, the Minister of Finance and Economy said Landsvirkjun's vastly improved performance over the years was reason for celebration, as was the work behind it and that staff should be commended for recent successful negotiations.

↑ Bjarni Benediktsson, the Minister of Finance and Economy celebrated Landsvirkjun's vastly improved performance in his speech.

Jónas Þór Guðmundsson, Chairman of the Board, stated that achieving the government´ s goal of a complete energy transition by 2040 will be challenging. More energy is needed, and the construction of power stations from preparation to commissioning would take at least a decade. He reiterated the need for action.

Hörður Arnarson, CEO gave a speech entitled "The Future is Now – Our Opportunities and Responsibilities". He outlined Landsvirkjun's future vision, role, and strategy and how the Company intended to handle the energy transition in the coming years. He stated, "We are ready for the task ahead."

Rafnar Lárusson, Finance and IT Division, Executive Vice President, gave an account of the Company's vastly improved financial position over the years. His speech was entitled "Increased Dividends for the Benefit of the Nation - a Turning Point in Finances".

Tinna Traustadóttir, Sales and Services Division, Executive Vice President, gave a speech entitled "Hoisting our sails - cooperation and support with customers", where she discussed the role of customers throughout Landsvirkjun´ s history. "In fact, it is one unbroken entity, because success goes hand in hand with the success of our customers," she said, among other things.

Ásbjörg Kristinsdóttir, Project Planning and Construction Division, Executive Vice President, gave a review of what lies ahead in energy production. The topic of her speech was "The many aspects of construction - the next steps in energy generation". "Our future construction projects are built on a solid foundation of experience and skills gained from previous projects," said Ásbjörg.

Jóna Bjarnadóttir, Community and Environment Division, Executive Vice President gave a speech entitled "For us and future generations - Landsvirkjun and the climate." She said, among other things "Green energy is the basis for the quality of life we have today, and it will enable us Icelanders to achieve the government's ambitious climate goals."

Ríkarður Ríkarðsson, Business Development and Innovation Division, Executive Vice President gave a speech entitled "The light bulb moment - innovation and a green future". He outlined the main available solutions needed to solve the climate problem: greatly increased renewable energy production, innovation in production and capture of carbon dioxide from the atmosphere. "Landsvirkjun is active in all three areas," he said.

A New World View and a New Set of Priorities

Landsvirkjun's autumn meeting was entitled *A New World View and a New Set of Priorities*. Landsvirkjun experts discussed the state of energy in Iceland and abroad, the demand for energy in the foreseeable future, and how to meet the government's policy and international obligations.

Hörður Arnarson, CEO spoke of Landsvirkjun´ s prioritisation of energy sales in the coming years because demand outweighs supply. Landsvirkjun has, for the first time in its history, been forced to decline various new and promising projects because, the energy simply doesn´ t exist.

Guðlaugur Þór Þórðarson, Minister of the Environment, Energy and Climate stated that producing new green energy is a necessity ""There, we depend, not least, on Landsvirkjun," said the Minister, who also outlined various projects being worked on by his ministry, various institutions, municipalities, and companies.

Tinna Traustadóttir, Sales and Services Division, Executive Vice President, traced the situation in continental Europe where energy costs have multiplied. She described how different the situation is in Iceland and how the competitiveness of companies here has never been better.

Jóna Bjarnadóttir, Community and Environment Division, Executive Vice President, recalled how the world had united to reduce greenhouse gas emissions. Those obligations would be tied to so-called effort sharing emissions, under the direct responsibility of the state.

Ríkarður Ríkarðsson, Business Development and Innovation Division, Executive Vice President, discussed the need for electric fuel so that the energy transition could continue. We would have to eliminate the importation of one million tonnes of gasoline and oil per year. Approximately double the amount of green energy would need to be produced to reach this goal.

Ásbjörg Kristinsdóttir, Project Planning and Construction Division, Executive Vice President, spoke about the time-consuming process of preparing power stations. She outlined the power project options that were most advanced such as the Búrfell Wind Farm and Hvammur Power Project, as well as the Blanda Wind Farm and expansion and renovation of power stations.

Open electricity market meetings

We held two open meetings during the year to discuss the status of domestic and foreign electricity markets.

The first meeting, *A Carbon Neutral World in 2050*, was live-streamed and discussed the International Energy Agency's Net Zero by 2050 Report. The report provides a guide to achieving carbon neutrality within the next three decades by transforming the world's energy systems.

The title of the second meeting was *Resource Utilisation in Difficult Conditions* and discussed the electricity system in Iceland and winter curtailments. Issues discussed included Landsvirkjun's contract structure, where the efficient use of resources is a priority, the effectiveness of Landsvirkjun's electricity system and the challenging circumstances in hydropower reservoirs in the first half of the year.

Landsvirkjun´ s Climate Accounts 2022

We streamed an open meeting where our experts reviewed Landsvirkjun's climate journey and presented the results of the 2022 Climate Accounts. *Bureau Veritas*, which confirms Landsvirkjun's climate accounts, spoke about the importance of independent confirmation.

Construction- carbon footprint

Landsvirkjun, the Icelandic Road Administration, and Isavia held an open meeting on greenhouse gas emissions from construction, discussing how to minimise them and where action is needed. Their experts discussed focus areas and measures for minimising emissions when building infrastructure. Afterwards, members from the value chain of the civil engineering sector in Iceland spoke in a panel about how these issues are viewed and how the industry can address them.

Orkuskipti.is

We launched the site orkuskipti.is this year in cooperation with SI - the Federation of Icelandic Industries, Samorka and the engineering firm EFLA. The website provides accessible information on energy use, the energy transition, and the economic benefits of the transition. Efla's new analysis of the economic impact of the energy transition in the coming decades was also presented. An increase of 16 terawatt hours of energy production per year is required to complete a full energy transition.

Energy transition in aviation

Landsvirkjun, Icelandair, Isavia and the Icelandic Travel Industry Association (SAF) held an open meeting on the 12th of October 12 about the energy transition in aviation. The meeting reviewed the situation from the perspective of aircraft manufacturers, airlines, airport operators and energy producers.

Information on the Hvammur Power Project

Landsvirkjun representatives gave presentations on the Hvammur Power Project to the Rangárþing ytra and Skeiða- and Gnúpverjahreppur Municipalities in April. Both meetings had a good turnout, and a lively discussion ensued after the presentations.

Electric fuel – the key to the energy transition

Our experts discussed electric fuels and the Company's energy transition plans in an open streaming session held in May. Hydrogen and electric fuels will be crucial to Iceland's energy transition.

Resource utilisation under challenging conditions

This spring, our experts streamed an open meeting to discuss the current state of the Icelandic electricity market and energy sector challenges in the winter of 2021-22.

Website and social media
The web and social media are essential for sharing information with the public. In 2022, Landsvirkjun increased *Facebook*, *Instagram*, *Twitter*, *LinkedIn*, *YouTube* and *TikTok* followers by 261% from the previous year, reaching around 13,500 followers by the end of the year.

Seven short social media videos were produced this year, as the news was published on Landsvirkjun.is and landsvirkjun.com.

Sustainability initiatives
Our two sustainability projects in the East and Northeast also involve active communication. We work closely with our stakeholders to monitor how Landsvirkjun's activities affect society, the environment, and the economy in these regions.

Annual meetings for the projects were held at Hotel Valaskjálf in Egilsstaðir in April under the title *Housing in the East* and at Breiðumýri í Reykjadal in October, where the main topic was climate issues at the local level. The meeting was entitled *Reducing Greenhouse Gas Emissions - Changing Land Use and the Energy Transition*.

Energy related collaboration projects with local communities
Landsvirkjun´ s collaboration projects with municipalities and other stakeholders in the countryside continued their success during the year. There has been good communication between the staff of the projects, including a meeting with Landsvirkjun in Vestfjörður this spring in a workshop. Much effort was put into grant applications this year, which proved successfull.

Blámi
Blámi worked on numerous energy transition at sea projects during the year. In the spring, a new research and development manager was hired, and two summer employees were also hired. Six approved applications were led or presented by Blami to the *Energy Fund*, receiving a total of 150 million. Statistical information on general grants and applications from West Iceland clearly demonstrates that Blámi is a significant supporter of the region's industry. Their largest projects this year include a *Carbon-free Ísafjarðardjúp* and projects related to energy consumption and energy transition in West Iceland´ s ports and fishing and aquaculture companies.

Orkídea
Orkídea continued to support Southern entrepreneurs in the field of energy-related opportunities, especially in high-tech food production, biotechnology, and related sectors. Much work went into cooperation on the development of green industrial parks. Declarations of intent were signed with Rangárþing and dynamic horticulture companies in Bláskógabyggð, regarding a study on the feasibility of establishing a green industrial park or resource park in the areas.

Orkídea employees attended many events and conferences related to their field, but also managed several events. The most notable one was a conference on food innovation and opportunities held in Selfoss, as well as smaller events where they appeared and presented. During Innovation Week, they served lunch cooked on a hydrogen grill in cooperation with Blámi and Eimurr, which was well received by those present. Orkídea also participated in *Horizon Europe and Life* applications during the year.

Eimur
Eimur's work continues to have a positive impact on the innovation and circular community in the Northeast. This group participated in the *Crowdthermal* international research project, which aims to increase opportunities for residents of certain territories to participate directly in projects related to geothermal energy. The result was a pilot project that revolves around a community greenhouse in Húsavík.

Eimur continued to provide help entrepreneurs in the Northeast through Norðanátt and held various events. These include the ideas competition Norðansprotann, the business accelerator *Vaxtarrími* and the investor festival in Siglufjörður. Eimur also took part in grant applications, mostly related to the *Life project* and *Lóun*.

Cooperation and collaboration

We work closely with a variety of associations and organisations both at home and abroad. A platform is created through such cooperation to share knowledge, learn from others, and combine actions related to energy, the environment, society, and climate issues.

A few of the projects we are involved in or belong to are:

International
International Hydropower Association
UN Global Compact
Nordisk hydrologisk forening Centre for Energy Advancement through Technological Innovation
WindEurope

Domestic
Festa – miðstöð um samfélagsábyrgð
Græn byggð
Grænvangur
Græna Orkan
Háskólinn í Reykjavík – Rannsóknasetur um sjálfbæra þróun
Jarðgangafélag Íslands
Jöklarannsóknafélag Íslands
LÍSA samtök um landupplýsingar á Íslandi
Orkuklasinn
Samorka/Samtök atvinnulífsins
Stjórnvísi
Viðskiptaráð Íslands
Íslenski ferðaklasinn
Jarðhitafélag Íslands

Grants

Our Landsvirkjun *Energy Research Fund* supports environmental and energy research every year. This year, 35 grants were awarded for energy projects and research on nature and the environment: including research into the using-friendly energy sources in transport and industry. 49 applications were received this time, requesting a total of ISK 156 million for projects in 2022. ISK 59 million was awarded to successful candidates.

The fund has awarded 334 grants for research projects over the past 15 years, or a total of ISK 848 million. The projects are divided evenly between energy and power generation issues and nature and environment issues.

We also cooperate in various community projects such as the Community Fund, which supports diverse projects that have a positive social impact, the *Many hands lighten the load* project partnership and summer jobs for young adults at our power stations.

In 2022, Landsvirkjun's Community Fund allocated about ISK 12 million to 36 projects. The grants ranged from ISK 100,000 to ISK 1 million, and project topics included humanitarian projects, cultural and history-related projects, support for NGOs, and public health and social issues. Landsvirkjun also contributed a total of ISK 2.1 million to other worthy causes.

Newspaper articles
Landsvirkjun representatives wrote numerous newspaper articles in 2022 to support an open and informed dialogue on energy issues.
This is a selection of highlights from several articles:

Increased dividends for the nation
Vísir.is, 14th of April, Rafnar Lárusson, Executive Vice President of Finance and IT

> **“While we are very satisfied with our performance over the past year, we won´ t look over our shoulders for too long because green valleys lie ahead. Unique opportunities await us. Iceland has set very ambitious goals in energy and climate matters. The Company intends to do everything possible to achieve those goals while contributing to the Icelandic economy. Let’s keep walking down this green path.”**

For us and future generations
Vísir.is, 17th of April, Jóna Bjarnadóttir, Executive Vice President of Community and Environment

> **“Green energy creates opportunities for the future. We will continue focusing on the impact on nature and its benefits to society. Our green energy is the basis for the quality of life we enjoy today and for generations to come. Our ability to combat climate change relies heavily on it.”**

Actions speak louder than words
Vísir.is, 29th of April, Egill Tómasson, Innovation Manager

> **“Addressing climate change is one of humanity’s most pressing tasks. According to Iceland’s Energy Policy, the country will be free of fossil fuels by 2050. The current government’s new charter is even more ambitious, moving the goal by a decade to 2040. Actions speak louder than words, and the moment for real action has arrived.”**

Resource utilisation in difficult conditions
Vísir.is, 4th of May, Kolbrún Birna Bjarnadóttir, Jónas Hlynur Hallgrímsson and Magnússon Sigurðsson (experts)

> **“Landsvirkjun’s role is to maximise the value of the renewable energy sources it has been entrusted with in a sustainable and efficient manner. Most of Landsvirkjun’s energy production is from hydropower or 92%. Electricity supply is therefore always dependent on the water budget.”**

Decades of foresight in resource utilisation
Viðskiptablaðið, 4th of May, Ásbjörg Kristinsdóttir, Executive Vice President of Project Planning and Construction

> **“We can be grateful for having foresight decades ago when designing power stations, which is paying off today. In those days, we tried to anticipate future needs, which is what we must do now with future power projects.”**

Prioritising energy sales
Fréttablaðið, 1st of June, Hörður Arnarson, CEO

> **“The demand for electricity in Iceland exceeds the supply. The value of our green energy is growing, and the demand for it will increase even more. Our supply is limited, and building new power stations takes time and careful planning. Given these circumstances, Landsvirkjun must prioritise its energy sales over the next few years.”**

The energy system needs flexibility
Kjarninn, 22nd of June, Gunnar Guðni Tómasson, Executive Vice President of Hydropower

> **“Power systems need to produce enough energy to meet society’s needs, but they also need to be flexible enough to meet changing electricity demands throughout the day, week, and season. Flexibility must also be sufficient to handle routine maintenance and unexpected system failures so that all customers can access energy whenever they need it.”**

Let’s focus on what needs to be done
Vísir.is, 12th of October 2022, Kristín Linda Árnadóttir, Deputy CEO and Jóna Bjarnadóttir, Executive Vice President of Community and Environment

> **“Despite positive results within the emissions trading system and in reducing net emissions from land use and forestry, we should not celebrate too soon. Wetland restoration is a worthy climate action project that promotes biodiversity, but it isn’t enough. It doesn´ t replace the need to reduce emissions from road transport, fishing vessels, energy production, industry, or agriculture. That alone is an independent and extremely challenging project.”**

How will we achieve the energy transition?
Vísir.is, 13th of October, Kristín Linda Árnadóttir, Deputy CEO and Jóna Bjarnadóttir, Executive Vice President of Community and Environment

> **"We need more green energy to embrace a green future. Preparing green energy production takes time. Landsvirkjun had the foresight to prepare the Hvammur Hydropower Project in Þjórsá, the expansion of the Þeistareykir Geothermal Power Station, and we have finally received the green light from Alþingi to build two wind farms in Búrfell in the Þjórsá region and in Blanda in the North. All of these projects are handled by Landsvirkjun with the utmost respect for the environment and the country's nature."**

Reducing effort sharing emissions is a priority
Vísir.is, 20th of October, Jóna Bjarnadóttir, Executive Vice President of Community and Environment

> **„Við hjá Landsvirkjun vinnum markvisst að því að styðja við skuldbindingar Íslands. Það gerum við með samdrætti í losun frá okkar eigin starfsemi, með stuðningi við þróun lausna til orkuskipta og með öflun grænnar orku til orkuskipta innanlands."**

We need wind energy for the energy transition
Morgunblaðið, 3rd of November, Einar Mathiesen, Executive Vice President of Wind and Geothermal

> **„Ef við ætlum að ná markmiðum stjórnvalda um orkuskipti fyrir árið 2030 er okkur ekki til setunnar boðið. Í orkugeiranum verður að hugsa til langs tíma, enda er undirbúningur og bygging virkjana tímafrekt verkefni sem talið er í árum. Ef allt gengur að óskum verður í fyrsta lagi mögulegt að tengja Búrfellslund við raforkukerfið í árslok 2025."**

The time for action is here
Vísir.is, 16th of November, Haraldur Hallgrímsson, Director of Business Development

> **"We Icelanders have made significant progress in our energy transition compared to other nations. This should not become an excuse for inaction but rather an inspiration to carry on. Several green power generation options are on the horizon, as are numerous projects that contribute to electrifying the remaining parts of the energy system that rely on gasoline and oil. Tasks must be chosen and carried out. Now, not later."**
>
> **"We dream of becoming the first nation to be independent of fossil fuel. Let the work speak for itself."**

Primary energy and the 15%
Fréttablaðið, 2nd of December, Jóhanna Hlín Auðunsdóttir, Director of Climate & Green Solutions

> **"It sounds like we're right at the finish line when we say that only 15% of Icelanders' primary energy consumption is from fossil fuels. We have already achieved the 85% mark, so surely the final sprint is in hand? Actually, that 15% is more difficult to achieve than we think and could prove a harder task."**

The growing value of green resources
Vísir.is, 7th of December, Valur Ægisson, Director of Key Account Management, and Halldór Kári Sigurðarson, Key Account Manager

> **"The value of guarantees of origin has increased fiftyfold since the system was established 14 years ago. Green energy is in demand by consumers. This means more demand for guarantees of origin, creating revenue for energy companies that produce energy from renewable sources. Increased revenue encourages those companies to thrive while encouraging others to adopt greener practices. Landsvirkjun's mission is to maximise the yield of the resources that the nation has entrusted to it. That's why we sell guarantees of origin, like other European companies that process green energy. The result is a greener world for all of us."**

A leader in climate matters globally
Viðskiptablaðið, 15th of December, Jóna Bjarnadóttir, Executive Vice President of Community and Environment

> **"The environmental organisation CDP awarded Landsvirkjun its highest possible rating this week for its performance in climate matters and transparency in disclosure. This means that we are one of a small group of companies considered to be at the forefront of climate issues globally. Almost 19,000 companies submitted information on climate issues to CDP in 2022, and of these, only 283 companies, or 1.5%, received an A, the highest grade. Being awarded this outstanding rating is a testament to the company's excellent track record of focusing on climate and environmental issues in its operations over the years."**

Guarantees of origin reduce energy costs
Vísir.is, 19th of December. Tinna Traustadóttir, Executive Vice President of Sales and Customer Service and Valur Ægisson, Director of Key Account Management

> **"The increasing value of the guarantees of origin, particularly over the past few quarters, has prompted Landsvirkjun to consider this when analysing power station options. The minimum price that energy companies now require in new power contracts or when renewing contracts is based on the cost price of electricity from newly constructed power stations. Consequently, special income from guarantees of origin from new power stations directly reduces the inevitable increase in electricity prices."**

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