

Sustainability Report 2023





About the report

New steps due to the implementation of the EU Corporate Sustainability Reporting Directive (CSRD)

It is expected that a new European directive for sustainability reporting, the *Corporate Sustainability Reporting Directive (CSRD)*, will be implemented by law in Iceland, in 2024. The directive is intended to synchronize and strengthen non-financial disclosures, and it presents two important changes. Firstly, the directive is accompanied by new sustainability standards, the *European Sustainability Reporting Standards (ESRS)* and secondly, it specifies stricter requirements for External Assurance of published sustainability information.

For the past two years, HS Orka has followed the *Global Reporting Initiative (GRI)* standards in its sustainability reports. The GRI standards are comprehensive and the new ESRS standards are largely based on them. Still, the ESRS standards are accompanied by new requirements, and considerable work lies ahead for Icelandic companies in adapting to the new regulatory environment. For this reason, the decision was made that HS Orka immediately take certain steps in its 2023 sustainability reporting, which will be useful for further implementation of CSRD's requirements. These steps are mainly:

- For climate information, the *(Draft) ESRS E1 Climate standard* is used in its entirety.
- Also, a part of the *(Draft) ESRS S1 Own Workforce* standard is used for information on Safety and Occupational Health issues.
- An agreement was made with an external party (KPMG ehf.) for a much more extensive assurance work than before on the content of the sustainability report, with the aim of preparing for the procedures that will be a requirement in the coming years.

This year's report

The sustainability report is based on *GRI standards, Universal Standards 2021*, for the report as a whole and for the provision of information on important issues based on a materiality analysis. It is indicated by use of markings in the respective sections, when the reporting is based entirely on

ESRS standards instead of GRI standards (Climate and related matter) and when ESRS is relied on in addition to GRI standards (Safety and working environment). A separate ESRS reference table is added to the GRI reference table attached to the report.

Relevant section markings are included, as appropriate, to indicate whether or not the subject matter of the report falls within the scope of the external assurance. The external assurance on the content of the report is of two types, and sections are marked accordingly:

A - confirmation with reasonable assurance

B - confirmation with limited assurance

The purpose of the report is to expound on HS Orka's social impact in the past year. At the same time, the process of preparing the sustainability report is used to compare the company's position with best standards and to identify opportunities for improvement, especially with regard to the implementation of the CSRD directive and ESRS standards. The content of the report reflects HS Orka's knowledge of the company's sustainability issues during 2023. The information gathered for the report covers the calendar year 2023 unless stated otherwise. Figures and metrics are from the company's information systems and are valid for HS Orka hf. and not for subsidiaries or affiliates unless otherwise stated. Questions or comments are appreciated via the email address hsorka@hsorka.is.

Independent external assurance

HS Orka hired an external party (KPMG ehf.) for external assurance of the contents of HS Orka's sustainability report for the year 2023. The report includes a signed confirmation document that explains the nature of the Independent external assurance and to which information, stated in the report, the Independent external assurance covers.

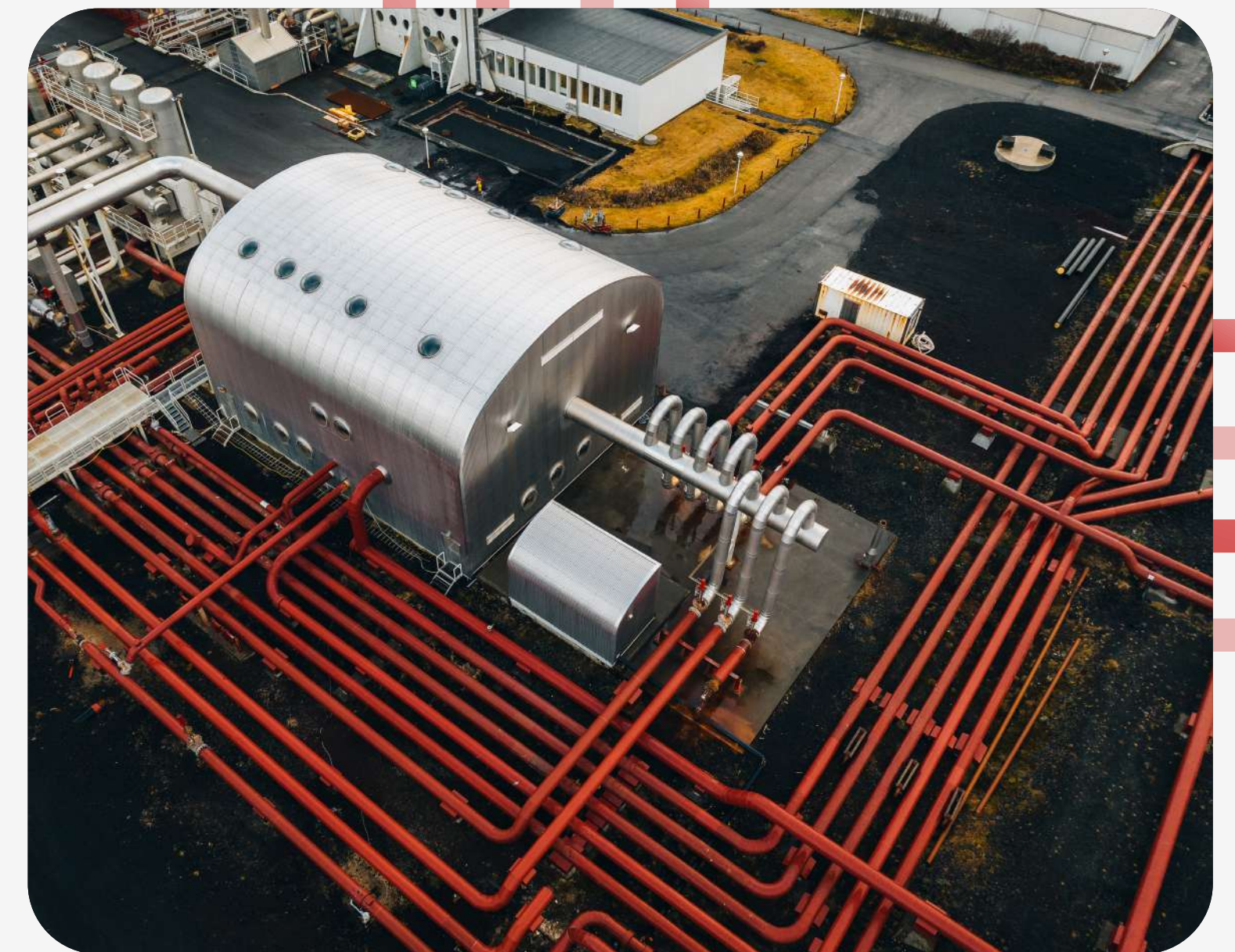
For details, see the section: [Independent external assurance \(KPMG ehf.\)](#)

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About HS Orka

External assurance **A** **B**

HS Orka produces and sells renewable electricity throughout Iceland, hot and cold water to residents and companies in communities on the Reykjanes Peninsula, as well as various other products from its geothermal plants for the benefit of customers, the company itself, and the community as a whole. In total, HS Orka has almost half a century of experience in the production of renewable energy and is at present the third largest energy company in Iceland.

Ownership

- 50% by Jarðvarmi, a dedicated investment vehicle owned by fourteen Icelandic pension funds.
- 50% by funds managed by Ancala Partners LLP.

Electricity

The company owns and operates two geothermal plants in Reykjanes Peninsula, one in Svartsengi and the other at Reykjanestá. HS Orka also operates two hydroelectric power plants, Fjarðarárvirkjanir, in East Iceland, which were purchased in 2023, as well as Brúarvirkjun Power Plant in Biskupstungur, in South Iceland. In addition to its own energy production, HS Orka has sales contracts with smaller energy producers throughout the country.

Total electricity production	2019	2020	2021	2022	2023
Electric power (MWh)	1.349.656	1.370.207	1.253.287	1.324.933	1.356.189

Electrical power generation	Percentage of total electricity production
Svartsengi	40%
Reykjanesvirkjun	49%
Brúarvirkjun	6%
Fjarðarárvirkjanir*	4%

Part of HS Orka Group, not HS Orka hf., at the end of 2023

Gross installed capacity of power plants	MW
Svartsengi	66
Reykjanesvirkjun	130
Brúarvirkjun	9,9
Fjarðarárvirkjanir*	9,8

Hot and cold water

HS Orka supplies local municipalities with both hot and cold water. The company uses the heat from the energy production in Svartsengi to produce hot water, and the hot water production corresponds to 793 GWh or about 14.6 million cubic meters of hot water in 2023. HS Orka also manages the operation of the local municipalities' main water source in Lágur.



Hot water
14.626.000 m³



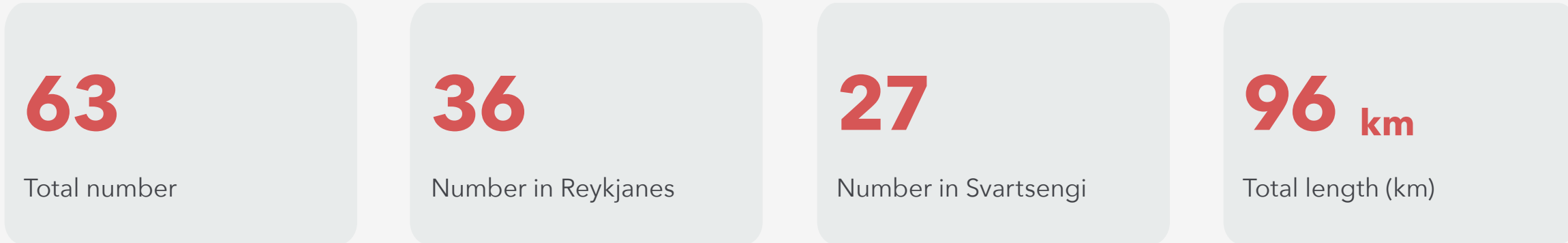
Cold water
7.578.000 m³

The circular economy

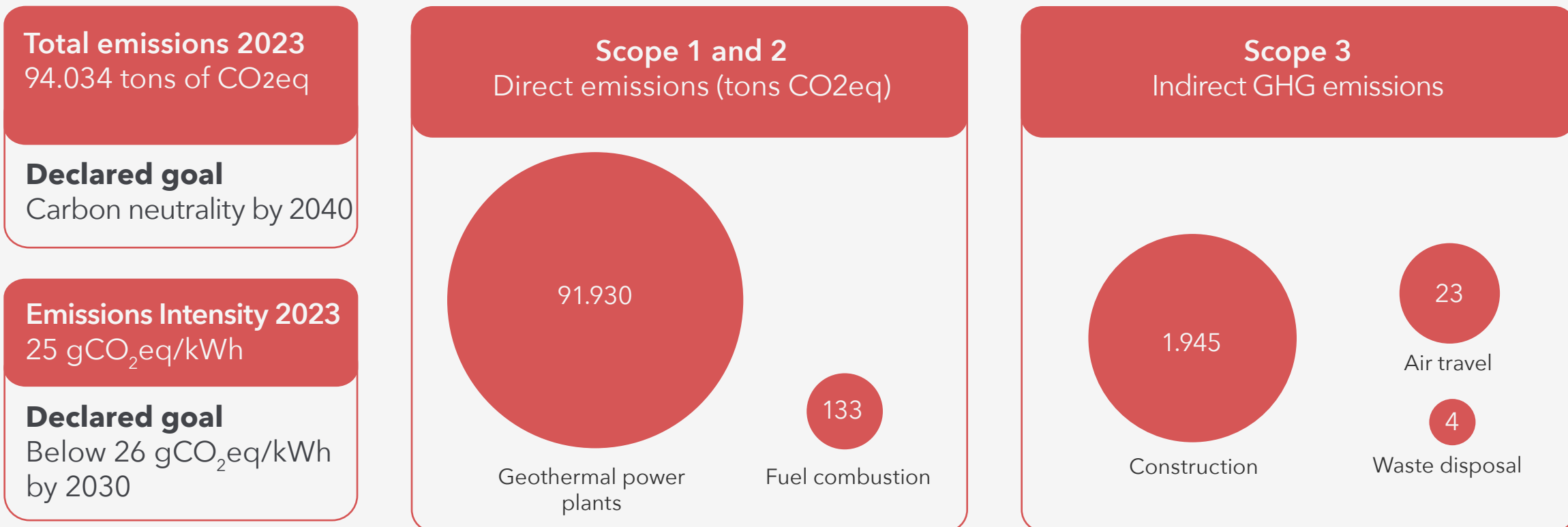
In the vicinity of the company's geothermal plants on the Reykjanes Peninsula, HS Orka is working on the continued growth of the Resource Park (RP), where companies use resource streams that would otherwise have gone to waste. Development projects related to multi-use, circulation and the energy transition are being worked on at the RP level. Thermal energy from our power plants in Svartsengi and Reykjanes is sold to customers in the RP to the equivalent of 1,556 GWh.

Numbers and metrics 2023

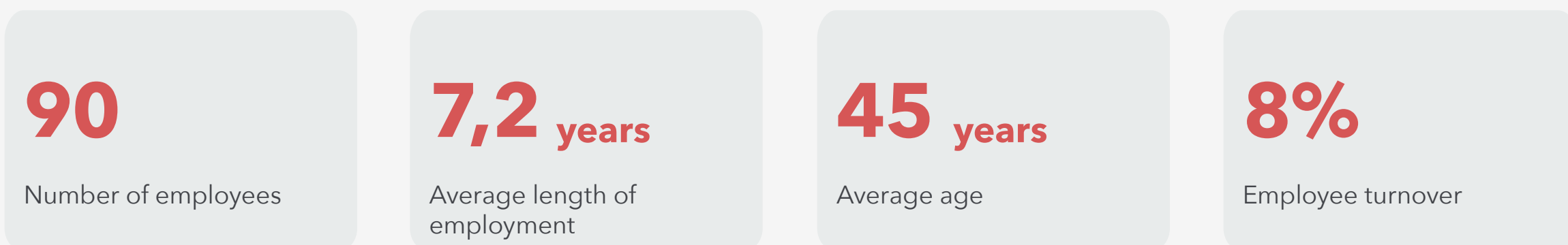
High temperature wells



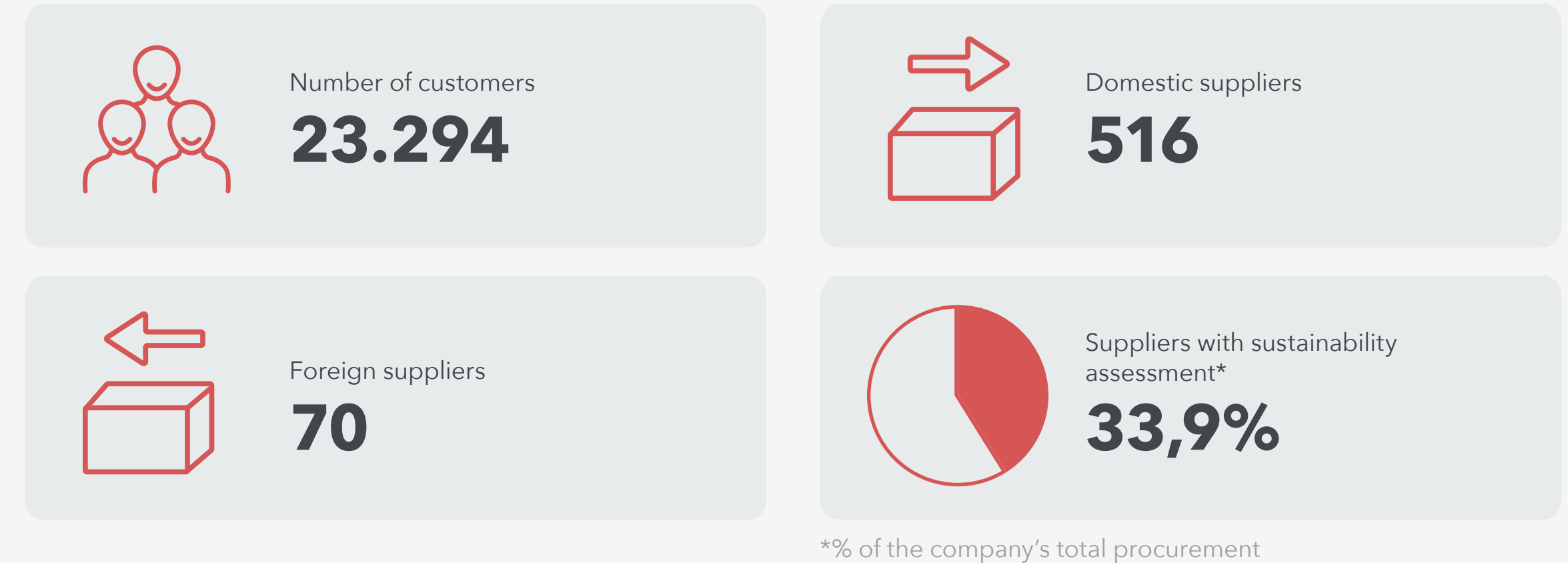
Climate issues



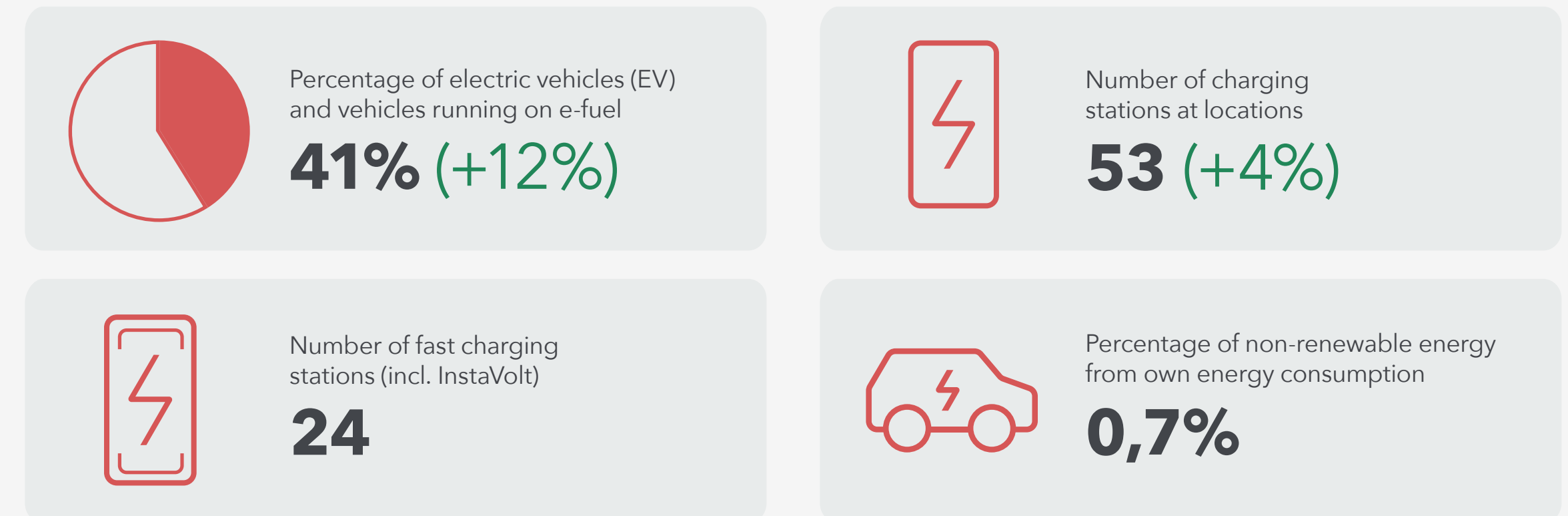
Human resources



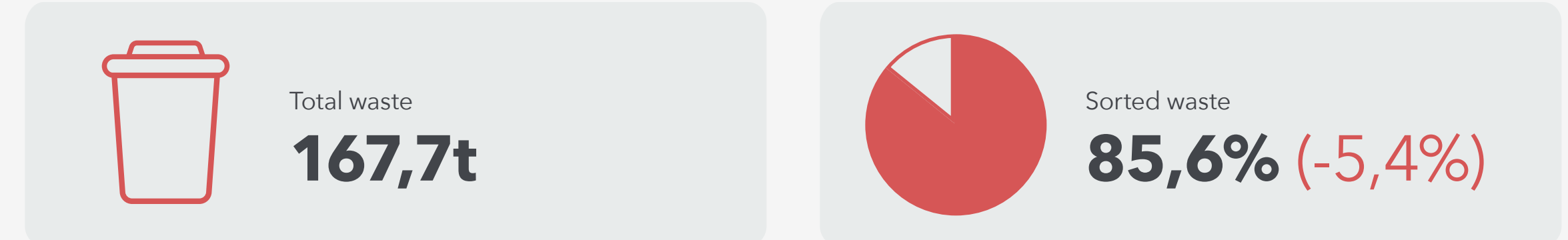
The supply chain



Energy transition



Waste management





Projects and milestones 2023



HS Orka's values

- HS Orka's values: Responsibility - Progressive - Agility - Teamwork



Preventive and mitigation measures for seismic activity

- Multifarious actions, projects and cooperation for the protection of infrastructure in Svartsengi and other areas of the Reykjanes Peninsula. See an overview in the [Preventive measures and contingency plans](#) section.



HS Orka's policies

- HS Orka's new Sustainability Policy and new Climate Policy
- Occupational Health and Safety Policy
- Updated Human Resources Policy and Equality Policy



Human resources

- Detailed health checks for employees - 81% participation during the year.
- Implementation of monthly human resource pulse surveys on the employees' well-being and job satisfaction.



Governance

- HS Orka's selection of six UN Sustainable Development Goals presented for the first time.
- Detailed sustainability assessment conducted for ten key suppliers.
- Analysis of HS Orka's position regarding EU Taxonomy.
- TCFD Climate risk assessment made for the second year.
- Development of an ESG database that increases automation and data reliability.



Production of renewable energy

- Construction of the expansion of the power plant and renovation of the heating utility in Svartsengi.
- Fjarðarvirkjanir were added to our portfolio.
- The first year of operations for Reykjanesvirkjun's REY4.
- New drilling projects implemented in Reykjanes.
- An assessment of the preparation stage of Hvalárvirkjun, based on the Hydropower Sustainability Standard.



Environment

- Emission intensity, in 2023, below the 2030 target, but there is uncertainty about the impact of seismic activity on emissions.
- New target for 90% of waste to be sorted by 2028.
- New target for carbon neutrality on construction sites by 2035.



Safety

- "My Golden Rules" defined - guidelines for vital protection in the company's working areas.



Community

- HS Orka's Community Fund was established and a total of 21 projects received funding in two allocations over the year.
- Framework for HS Orka's new Research Fund defined.

From the CEO

Tómas Már Sigurðsson



Due to the enormous challenges HS Orka faced in 2023 the year will go down in the company's history books as a very special one. Most prominent was the unprecedented seismic activity on the Reykjanes Peninsula and volcanic eruptions which threatened the infrastructure in Svartsengi. I am profoundly impressed and proud of the response of HS Orka's outstanding team of employees in these challenging circumstances.

Important infrastructure in Svartsengi

Towards the end of October, a period of significant seismic activity began in the immediate vicinity of Svartsengi Power Plant. The plant's operations passed the stress test and production in Svartsengi remained uninterrupted during the unfolding developments. This is a result that can be attributed to our fantastic team where top specialists occupy every position. The seismic activity casts a spotlight on the importance of the power plant, as can be seen by the historic projects led by the Icelandic government aimed at protecting Svartsengi. The construction of embankments around Svartsengi has enhanced the reliability of the power plant significantly and made the delivery of its products more secure. If a natural hazard is imminent, the embankments are intended to safeguard services for a community of about 32 thousand residents, companies, and institutions on the Reykjanes Peninsula, as well as the production of electricity into Iceland's central transmission grid.

Investments in increased production and energy efficiency

Following the start-up of the 30MW expansion of the Reykjanes Power Plant (Reykjanesvirkjun) in late 2022, the renovation and expansion of the Svartsengi power plant commenced in the middle of 2023. Additionally, Fjarðará Hydro Plants in East Iceland were added to our

portfolio, with installed power capacity of just under 10MW. Early November we initiated new research drilling in the vicinity of Reykjanesvirkjun and more such projects are scheduled. Increased vigor has also been put into new energy options. The Hvalá hydropower project in the Westfjords and the utilization of geothermal energy in the Krýsuvík area of Hafnarfjörður municipality are high on the list, along with further development of compelling wind power projects in different parts of the country. The seismic activity on the Reykjanes Peninsula underscores the need of furthering energy options across the country and in geologically inactive regions. Increased production capacity, not least in hydropower, will make us better equipped to meet fluctuations in the market, all to our customers' benefit, especially households and small businesses.

Understanding the resource

A group of world-class geoscientists in HS Orka's resources department is doing exciting work on increasing our understanding of the resources we have been entrusted with. Our capabilities in this field have been scaled up systematically and it is quite unique that a small energy company features such a team of experts. Throughout the turmoil of the last few months, the team has been able to share important data from our systems to the scientific community, contributing to an increased understanding of the geothermal and volcanic systems in the Reykjanes Peninsula. Moreover, in cooperation with other power companies and academics in the field of geothermal energy, the resources department is examining how to better measure the natural carbon dioxide emissions from geothermal areas. That knowledge is necessary to better assess the scope of emissions from geothermal power plants, and its proportion in Iceland's total annual emissions.

Focus on hot-water supply

In light of the seismic activity, HS Orka has been working closely with HS Veitur and the government on building backup plans for the hot water supply for the surrounding communities. The communities depend on Svartsengi for their supply of hot water and there are no backup heating resources immediately available in the country. Contingency plans have been established, aimed at bridging the gap until Svartsengi could be brought back into operation, should the plant become temporarily impacted. This is a complex project which is still being mapped out. One part of it is protecting further the hot-water pipeline leading to

the municipality of Reykjanesbær. Hot-water supply is the focal point in other regions as well. The search for hot water for the capital area continues as a shortage of hot water is imminent and it is imperative to meet the foreseeable increase in demand and ensure operational security. Our negotiations with Hafnarfjörður municipality regarding the utilization of the Krýsuvík area for that purpose have been moving along well, and we are planning further research in the area.

The circular economy and energy transition in the transport sector

In the spirit of the circular economy, we keep searching for ways to make better use of carbon dioxide and other resource streams that are inherent in our geothermal production. We are optimistic that a company which produces e-fuel will be established in the Resource Park. An environmental impact assessment of such a project was recently completed. E-fuel can be used in transport in Iceland in the future, and waste from the production would also be used as valuable raw material for other projects within the Resource Park, e.g. food production. We also expanded in the charging station market and significantly increased the number of our customers in charging solutions. In addition, we have established a solid partnership with the British fast charging company InstaVolt, which this summer commissioned Iceland's largest electric vehicle fast charging hub.

Energy utilisation for the energy transition

Towards the end of the year, the Icelandic parliament postponed the processing of a bill for a provisional legislation, which was intended to legalize the prioritization of energy sales in favor of households and small businesses. While HS Orka wholeheartedly agrees on the need to ensure the public's energy security, the company considered the implementation of the bill to be flawed. We emphasize that in further legislation, examples from other power markets external to Iceland should be considered, and that we should aim for a future where efficiency and transparency in a single active power market is guaranteed. We are in the midst of an energy transition, and while there is a long way to go, a dynamic market will facilitate the achievement of Iceland's climate goals.

At the same time, it is imperative to simplify the permitting system for energy projects. Complex and burdensome administration has halted the progress of projects that have been granted the "utilization" status in the meticulous process of the Icelandic Master Plan. This is one of the

reasons why energy shortage is looming with the result that energy transition goals will not be achieved on time. It is also necessary to improve the national power transmission grid to ensure energy delivery security. To that end we anticipate that the doubling of the Suðurnes power will be implemented in the very near future.

Motivation to do better

Sustainability is about running our operations in a way that is in harmony with the environment and the society. This is a comprehensive and demanding task which relates to all aspects of a power company such as HS Orka. We anticipate increased external requirements in this field, notably with the introduction of new European regulations in Iceland on corporate sustainability reporting (CSRD). But new demands regarding climate issues, and increased focus on sustainability globally, bring exciting opportunities and incentives to do even better. We at HS Orka look forward to continuing this journey.



From the chairman

Adrian Pike



Lately, our thoughts have been with our friends and colleagues from Grindavík, where seismic developments have created an unprecedented and difficult situation, which we all hope will soon begin to calm. In 2023, HS Orka's staff worked hard as a team, in cooperation with other stakeholders and government agencies, in strengthening the resilience of the Svartsengi power plant. During the seismic activity the safety of employees and our customers was a top priority. We cannot control the seismic rumblings of mother nature but great measures have been taken to protect the infrastructure from potential risks. In many

aspects, the infrastructure in Svartsengi is now more secure than ever. It is indeed remarkable that the production at the plant was for the most part unaffected by the seismic forces. I am very impressed by the collective efforts made by our highly qualified staff to maintain business as usual throughout these trying times.

Strengthening our hydro power portfolio

Meanwhile, the Reykjanes power plant has also operated as normal during this time of geological uncertainty and in 2023 the new REY4 30MW capacity addition finished its first year of operations. Intensive efforts have been put into mapping of the resource basin at Reykjanes and we are excited to see what results and opportunities new boreholes will provide the system.

With the purchase of Fjarðarvirkjanir in East Iceland in late summer, HS Orka added a second hydroelectric power plant to its portfolio of assets. Along with Brúarvirkjun, HS Orka now has close to 20MW of installed hydroelectric production capacity and will continue to look for opportunities to make additions in that field. At the same time progress is made with long term development projects such as the Hvalá hydropower project in the Westfjords.

A key operator in the energy transition

An important transformation is underway in western energy markets, guided by a changing regulatory landscape and an ever-clearer commitment to sustainability. Efforts and regulatory developments aimed at achieving net-zero goals will be an on-going topic for energy markets in 2024 and the focus on decarbonization will continue to intensify. Countries are stepping up efforts in building renewable energy capacity, and given the geopolitical landscape there is an urgent need to enhance energy security, in addition to the strong impetus with regards to the climate.

HS Orka has a clear potential to be a leader in implementing new and more sustainable business solutions. We can capitalize on the renewable nature of the electrical generation and continue to invest in projects that involve better utilization of resources and raw materials. HS Orka has continued to develop its Resource Park platform and I look forward to seeing further additions to the list of innovative businesses partnering with us.

Foreseeing a sustainable future

Despite Iceland's relatively strong position in terms of renewable energy, further efforts and investments will be needed in the coming years to implement the changes necessary for a full and dynamic energy transition. The electrification of transportation will gather momentum, necessitating an evolution in the energy infrastructure to all means of transportation, from roads to shipping and to aviation. Due to Iceland's geographical location, in addition to its strong position in renewable energy, the economy is well placed to play a meaningful role in the transformation of global logistics.

Transitioning away from fossil fuels is a major task and it requires large and complicated investments over a long period. With its current production portfolio HS Orka is well positioned to be a key participant in this transition and we look forward to do our part in creating a sustainable society for the future.



Svartsengi - measures due to seismic activity

GRI 3-3

Material Topic

External assurance A B

Unprecedented earthquakes and volcanic activity on the Reykjanes Peninsula at the end of the year made the social importance of the power plant in Svartsengi very clear, not least the heating utility. The power plant produces hot water for all municipalities and commercial activities on the Reykjanes Peninsula, a region of southwest Iceland. this area encompasses the homes of over 32,000 inhabitants and the location of several companies, institutions and economically important activities, including Iceland’s international airport in Keflavík. Our multifaceted response to an imminent natural hazard made it possible to maintain uninterrupted production at the power plant in Svartsengi, throughout the year.

HS Orka’s Power Plant in Svartsengi

66 MW
installed capacity

573 GWst
Electricity

190 MWth
Hot water

27
No. of wells

29 km
Total length of wells

The heating utility part of Svartsengi has a production capacity of 190 MW. For comparison, the installed capacity of the power plant is 66MW. It would therefore be a complicated issue, were the power plant’s production to stop, to ensure the delivery of a comparable amount of hot water for the communities on the Reykjanes Peninsula. It is possible to provide cold water and electricity by other means, but no alternative means are available for hot water production.

On the basis of the report of a working group on the protection of important infrastructure in Iceland, Althingi (the Icelandic Parliament) approved a bill on the protection of important infrastructure in the Reykjanes Peninsula, on the 13th of November 2023. The law eliminated uncertainty about how defenses should be carried out and who was responsible for the planning and implementation of projects. When the law was enacted, the Civil Defense took over the organization of defenses at Svartsengi and immediately began construction on embankments to protect Svartsengi. In the section *Preventive measures and Contingency Plans*, HS Orka’s actions and investments during the last few months to increase the resiliency of the operations, are explicated in detail. These are both actions within the company and external activities in cooperation with the Department of Civil Protection and Emergency Management and other stakeholders.



HS Orka's Hydropower Plants

GRI 3-3

Material Topic

In late summer 2023, the Fjarðarárvirkjanir power plants in Seyðisfjörður were added to HS Orka's portfolio. HS Orka already owned Brúarvirkjun in South Iceland, so now the company has two hydropower plants, with almost 20MW of installed power. In addition, HS Orka mediates the sale of 25MW of electricity through contracts with most of the small, privately owned power plants in Iceland.

Fjarðarárvirkjanir*

Start-up: Bjólfsvirkjun 2009 and Gúlfsvirkjun 2010

Installed capacity: 9.8MW

Annual Production: 60GWh



Bjólfsvirkjun in Seyðisfjörður is the downstream part of Fjarðarárvirkjanir.

*Part of HS Orka Group, not HS Orka hf., at the end of 2023.



Gúlfsvirkjun in Seyðisfjörður is the upstream part of Fjarðarárvirkjanir.

Fjarðarárvirkjanir in Seyðisfjörður in East Iceland consist of two power stations in Fjarðará river: Bjólfsvirkjun and Gúlfsvirkjun.

Mediation reservoirs are located in Lake Heiðarvatn and Þverárlón in Fjarðarheiði heathland. Electrical energy transmission from the two plants enables HS Orka to meet peak loads of general users during the winter.

HS Orka is very familiar to the operation of Fjarðarárvirkjanir, as the company has bought all the energy and managed the production of the power plants since their commissioning.

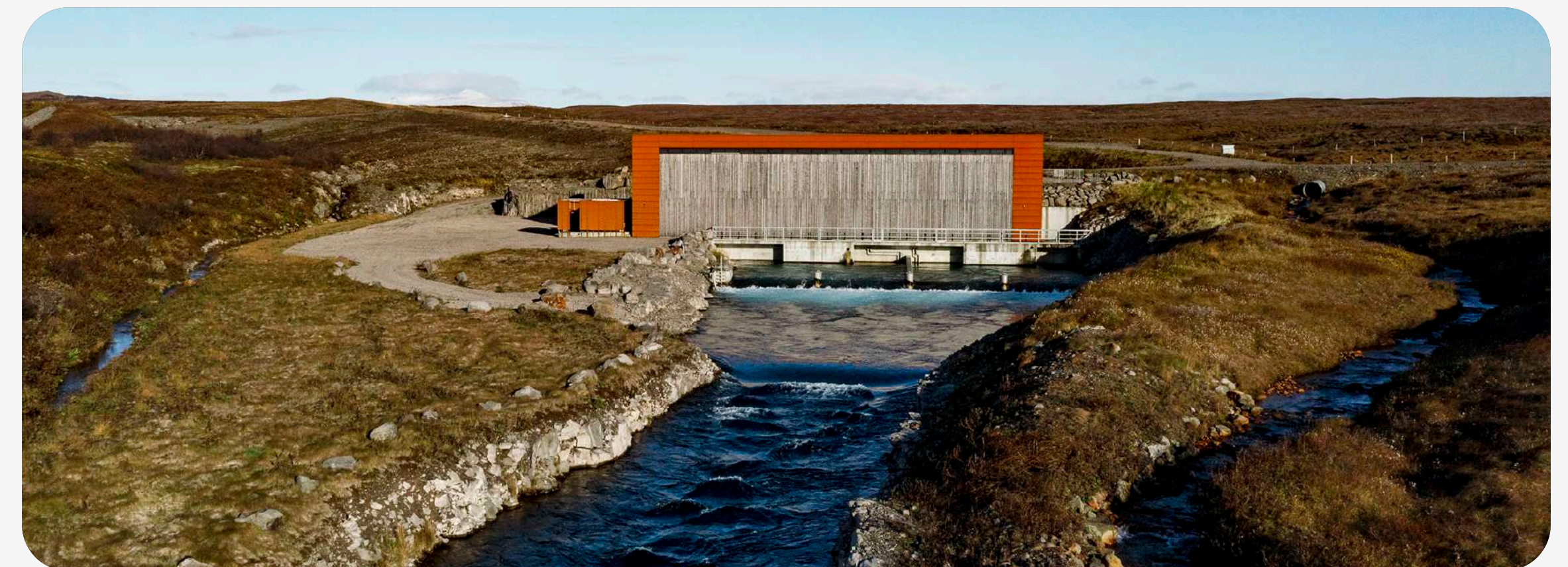
Brúarvirkjun Power Plant

Commissioning: 2020

Installed capacity: 9.9MW

Annual Production: 85GWh

Brúarvirkjun er rennslisvirkjun í efri hluta Tungufljóts í Biskupstungum í Bláskógabyggð, í þeim hluta árinna sem rennur milli jarðanna Haukadals II og Brúar, ofan við þjóðveginn að Gullfossi. Umfang virkjunarinnar er tiltölulega lítið og staðsetningin heppileg með tilliti til sjónrænna áhrifa. Með tilkomu Brúarvirkjunar jókst afhendingaröryggi raforku í Bláskógabyggð sem og í nágrennabyggðum.



Brúarvirkjun í Biskupstungum



HS Orka and the UN Sustainable Development Goals

Related projects 2023

5 GENDER EQUALITY

Updated human resources policy - taking into account UN Women's Empowerment Principles

Equal Opportunity Policy and Anti-bullying, Harassment, and Violence Policy updated

The Equality Scale Award for the gender ratio in senior management

Cooperation agreement with UN Women

Implementation of a new human resources and remuneration system that facilitates an overview of gender metrics

7 SUSTAINABLE ENERGY

Renovation and expansion projects (SVA7) in Svartsengi

10MW increase in production capacity with the purchase of Fjarðarvirkjanir

Evaluation of the preparation stage of Hvalárvirkjun with reference to the HSS standard

Resource management enhanced by the development of conceptual and reservoir models

A drilling project in Reykjanes started and research drilling in Krýsuvík prepared

9 INNOVATION AND INFRASTRUCTURE

The first year of Reykjanesvirkjun's REY4 power plant where new technology was implemented to increase energy efficiency

Preliminary design of the CO2 pipelines from Svartsengi for e-fuel production

Development of collaborative and innovative projects within the Resource Park

Collaboration with InstaVolt, which commissioned last summer the largest fast charging park in Iceland

Renovation of cold water pipes to Grindavík in cooperation with HS Veitur

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Investment in 4-gas monitors and other safety equipment, including implementation of Tetra radios for emergency communications

Implementation of "My Golden Rules" which are simple protective measures in life-threatening situations

Third-party sustainability assessment of 10 key suppliers

The target of 85% sorting of waste was achieved and a new target of 90% sorting was set for 2028

Development and structure of a new database for sustainability information

13 CLIMATE ACTION

HS Orka's new Climate Policy approved, and targets updated

Life cycle assessments for the power plants in Svartsengi and Reykjanes completed

Studies on CO₂ emissions from geothermal areas

Energy transition in HS Orka's car fleet and targets for carbon neutrality at construction sites in 2035

Preparation of collaborative projects that focus on the utilization of CO₂ emissions for the production of e-fuel

15 LIFE ON LAND

Biodiversity is covered in HS Orka's new Sustainability Policy

New HS Orka's Research Fund defined for study and research projects

Ecosystem studies in the areas affected by HS Orka, including Arfadalsvík

Ecosystem studies related to wind energy: Mapping the migrations of eagles

HS Orka was among the sponsors of the biennial Conference on Biology in Iceland 2023



The Resource Park

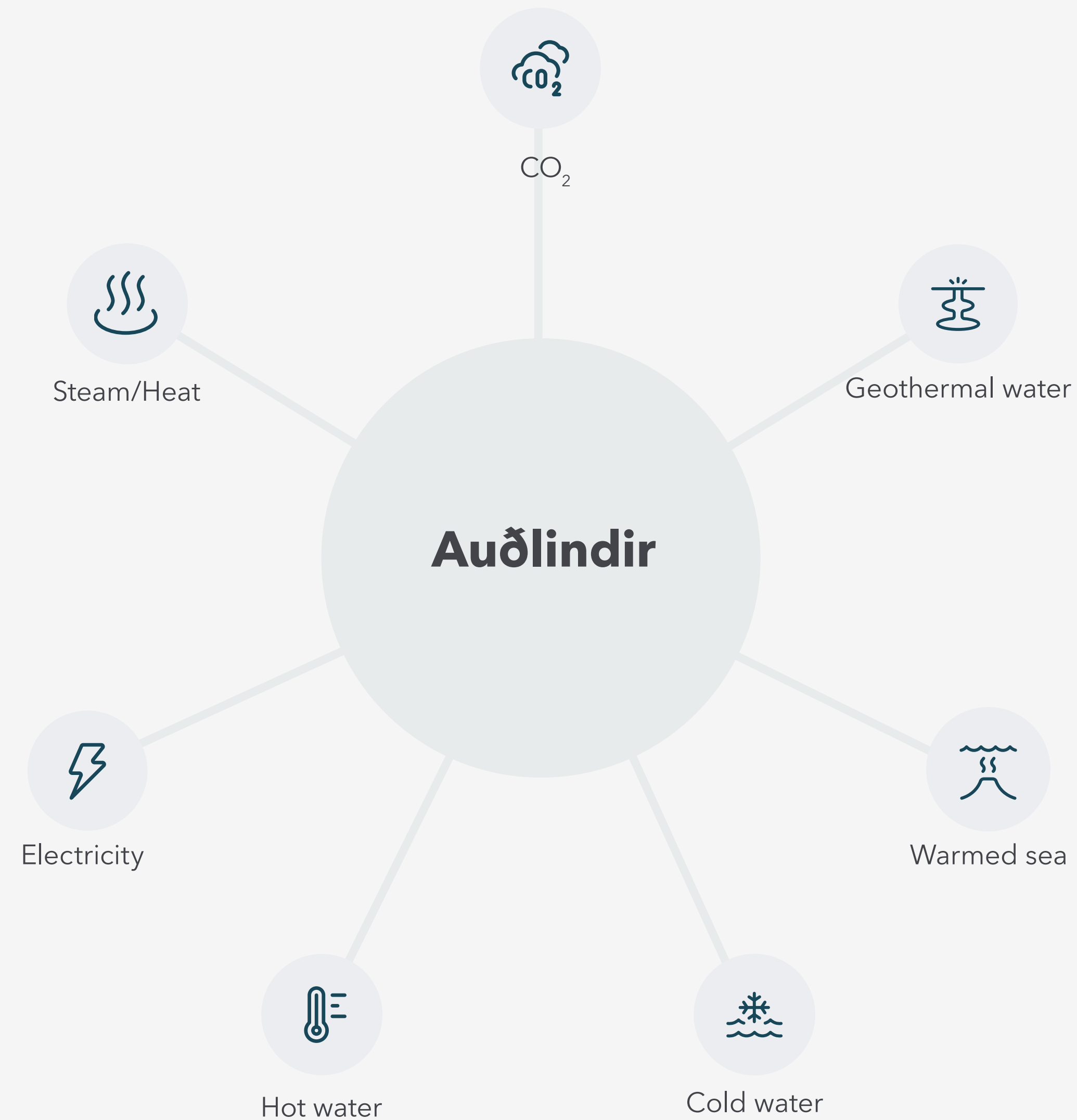
GRI 3-3

Material Topic

External assurance A B

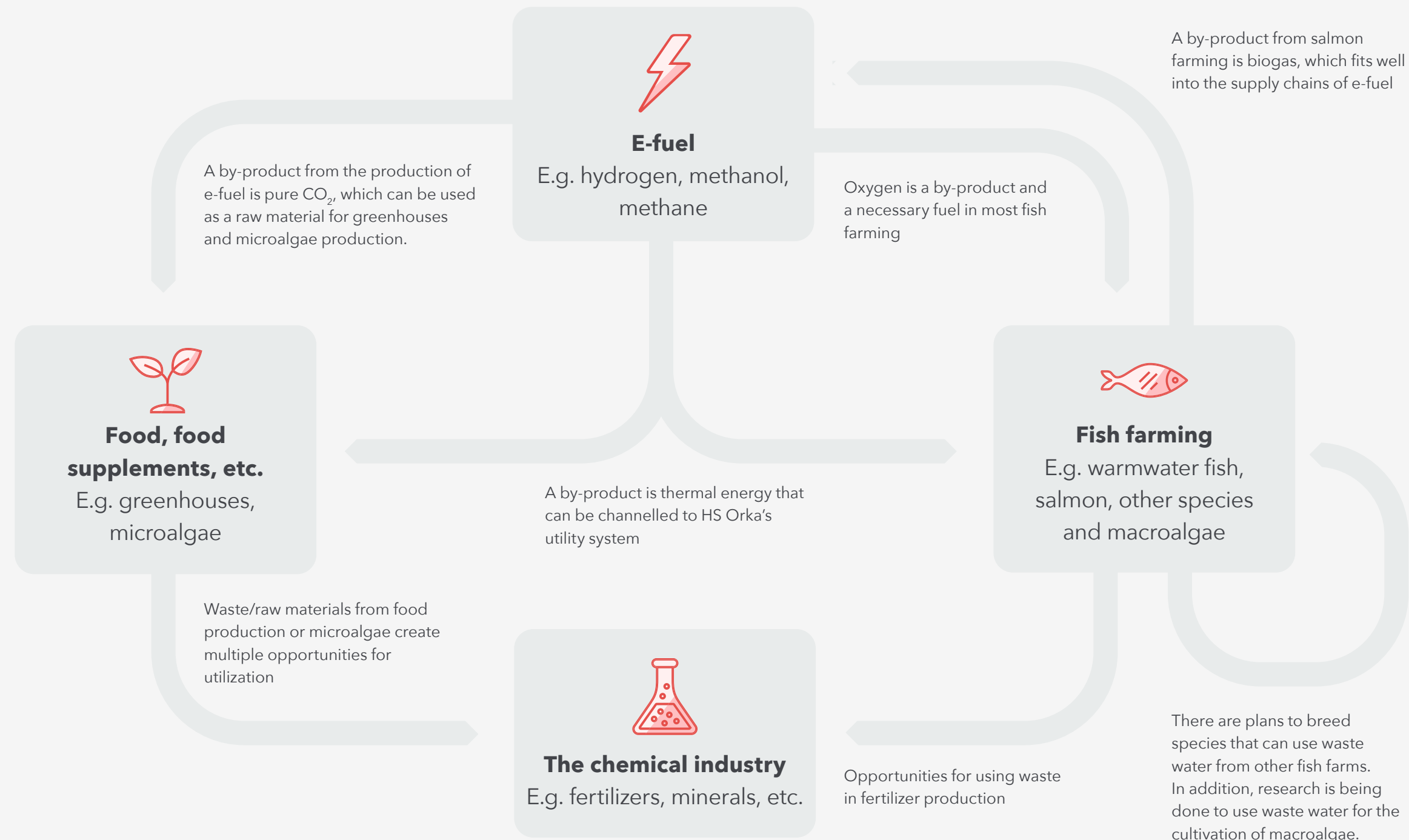
The Resource Park has been in development in the vicinity of HS Orka’s geothermal plants and it is currently a leading cluster of companies where the multi-use of resource streams simultaneously contributes to efficiency and increased sustainability in operations. A company can be considered part of the Resource Park if it receives more than one resource stream from HS Orka or other entities within the park.

HS Orka strives to promote responsible consumption and production by ensuring that the energy unleashed in energy production is fully utilized with the greatest benefit for the company and society as a whole. At the level of the Resource Park, real progress has been made towards sustainability, and now projects are being developed that are directly related to climate issues and the energy transition, food and chemical industry, fertilizer production, cosmetics production and tourism.



Opportunities for a circular economy

The new projects of the Natural Resource Park reflect future industries and promote opportunities in multiple use and circularity



waste and by-products of producers can be used by other companies within the park. An example of this is the production of e-fuel which would create exciting opportunities for circularity. The development project of HS Orka and Swiss Green Gas International Ltd (SGGI) on the production of e-fuel in Reykjanes is highlighted in the section [Climate Action](#) in the environment part of this report.

Eco-Industrial Parks

The government is currently working on the definition of requirements for eco-industrial parks in Iceland. The Resource Park is already a multi-use and circular park and should have all the means to meet the requirements of eco-industrial parks, at least regarding directly related companies that use other companies' by-products within their production. It is important that the anticipated definition of eco-industrial parks will not hinder the development of eco-industrial parks that have already been established in Iceland.

Goals and projects

- Preparations in connection with projects such as the Samherji land-based aquaculture at Reykjanes and SGGI's e-fuel project.
- Support the development of circular opportunities within the Resource Park.
- Lead a dialogue within the Resource Park about closer cooperation and the possible definition of sustainability criteria for directly related companies within the park.
- A development project to capture more waste heat.
- Cooperation with eco-industrial park Sjávarklasinn and other parties in Reykjanes regarding opportunities for innovation and improved energy efficiency.

Multiple use of streams and circular economy

Through multi-use, waste disposal from the energy production is minimized. The goal of the Resource Park is to take more steps in this direction, so that circulation is formed between the companies that operate there, and so that one company's waste becomes another one's raw material. As more companies join the cluster, it is expected that opportunities for circulation will increase. Emphasis is placed on industries where the



Materiality analysis 2023

GRI 3-1 GRI 3-2 External assurance **A** **B**

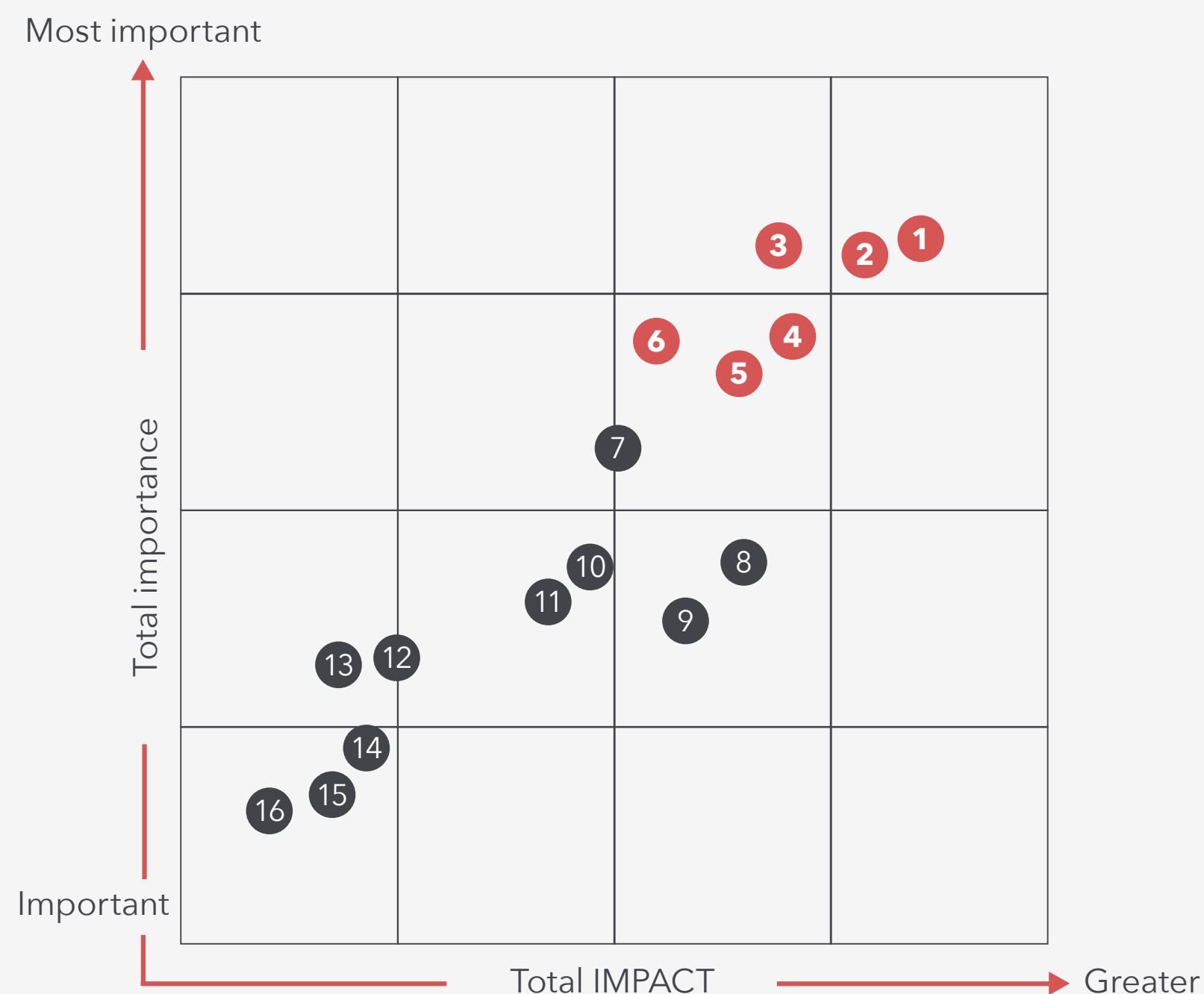
The core of this report consists in providing information on the topics that are considered most important for HS Orka from a sustainability point of view. In 2022, a full materiality analysis of sustainability issues was carried out, and that work, and the results of the analysis were presented in our last sustainability report. While a comprehensive materiality analysis is not carried out every year, the results are reviewed each year with regard to whether there are reasons for changes.

Updated ranking of material topics

In light of the earthquakes in Reykjanes Peninsula and the challenges associated with them, the materiality analysis was updated in 2023, and the issue of Security of power supply and related infrastructure was moved to the top of the list of material topics. Otherwise, the ranking of material topics is the same as in the previous analysis. A proposal for this change was submitted to the company’s process council for discussion and approval, in December 2023. The council is made up of the executive board and key personnel.

Discussion of material topics in the report

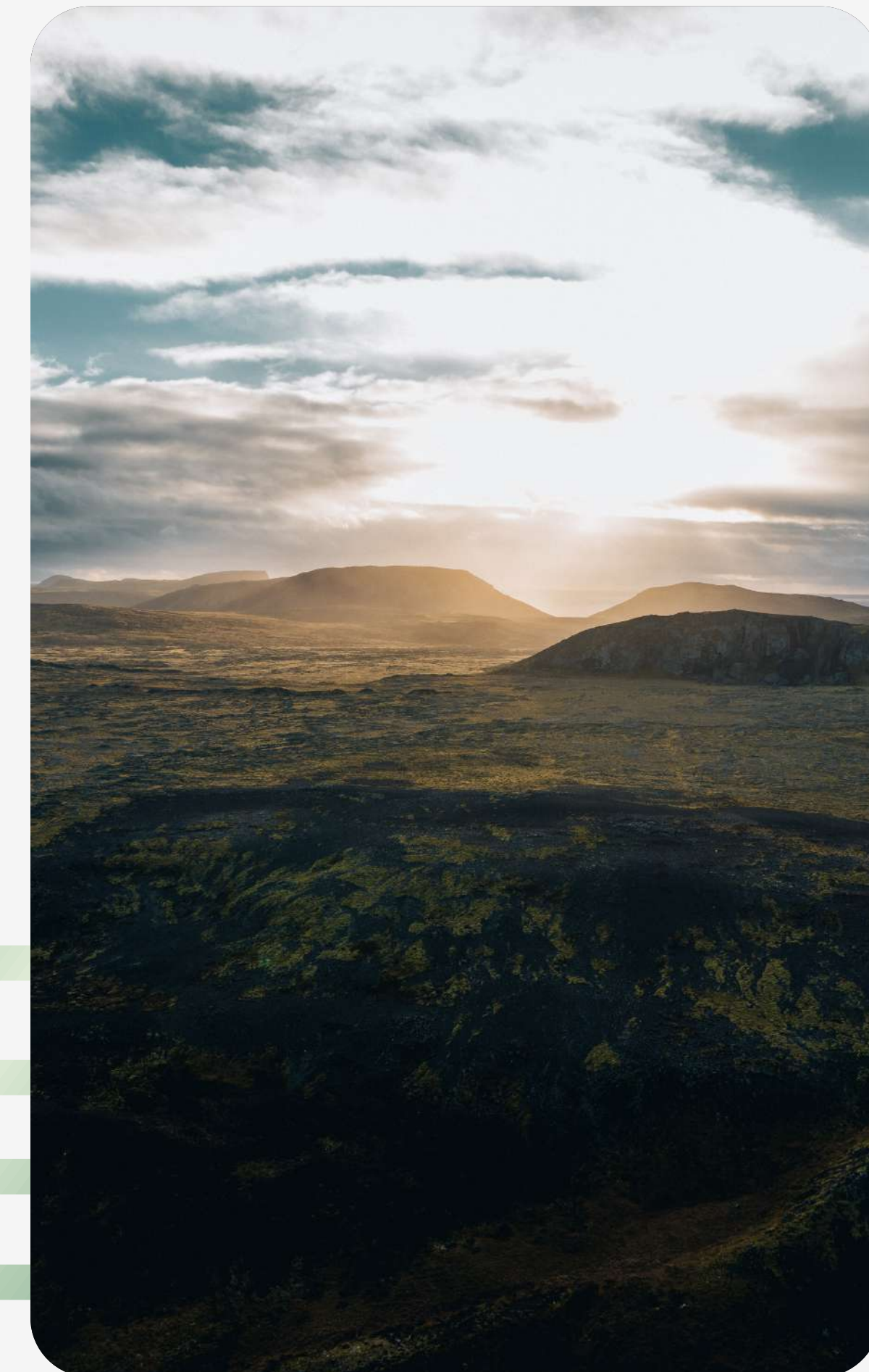
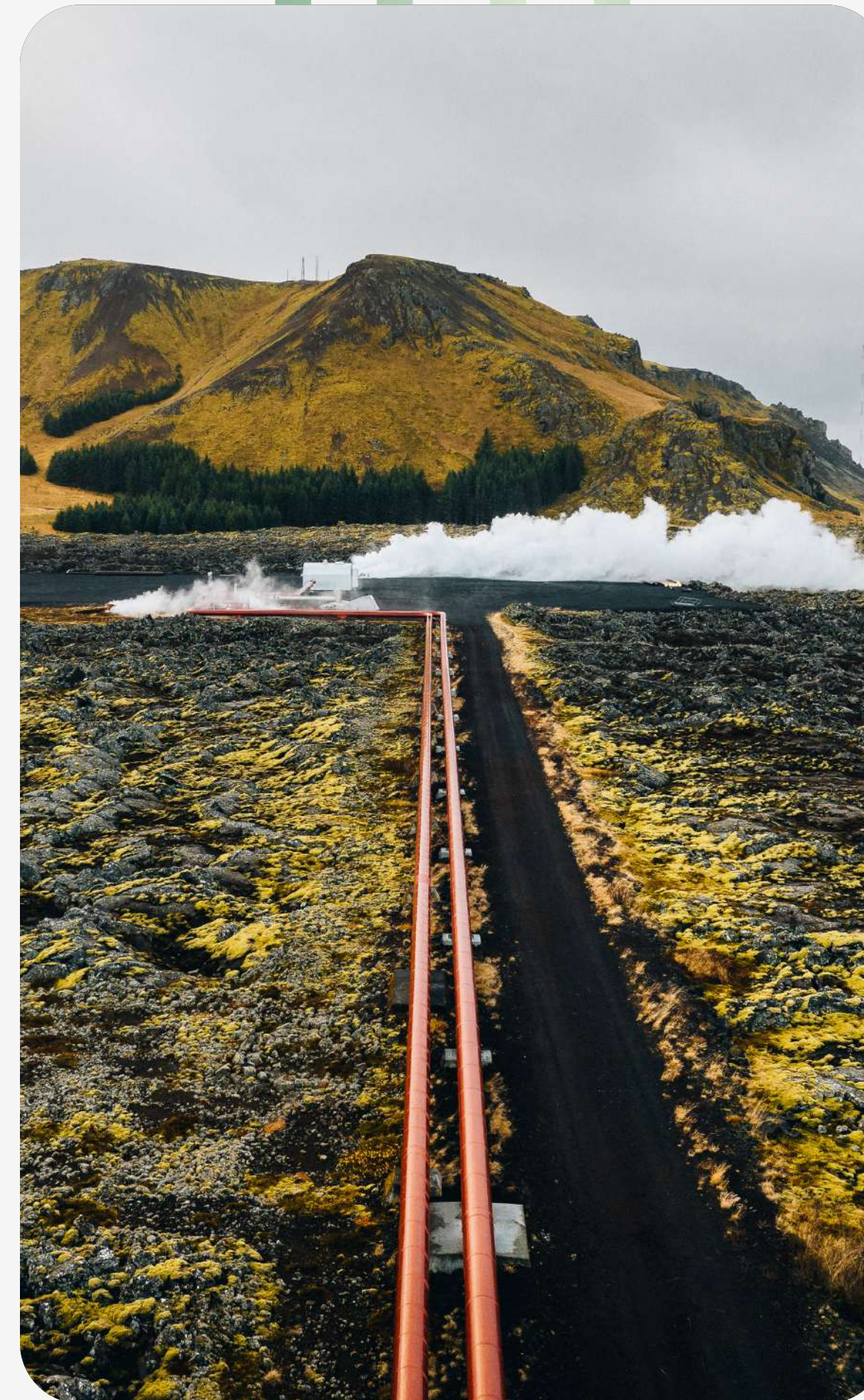
The six sustainability issues defined as the most important for HS Orka are covered in this report in accordance with the GRI standards for the management of material topics. The issue of [Security of power supply and related infrastructure](#) is given a particularly detailed consideration this year, including a comprehensive overview in the section [Preventive Measures and Contingency Plans](#) due to seismic activity and volcanic eruptions. Apart from information regarding material topics, the report covers other sustainability issues in accordance with the GRI/ESRS standards’ requirements and to follow best reporting practices.



	Material topics 2023	Umfjöllun í skýrslunni (GRI 3-3)
1	Security of power supply and related infrastructure	Bls. 11, 36-38
2	Sustainable use of natural resources	Bls. 12, 18-20
3	Safety and work environment	Bls. 40-43
4	Climate issues	Bls. 22-28, 51-52
5	Circularity of streams in the Resource Park	Bls. 14-15
6	Responsible consumption and production	Bls. 14-15, 29-32, 45-46

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- 32 **Waste management**
- 33 **Nature conservation and monitoring**

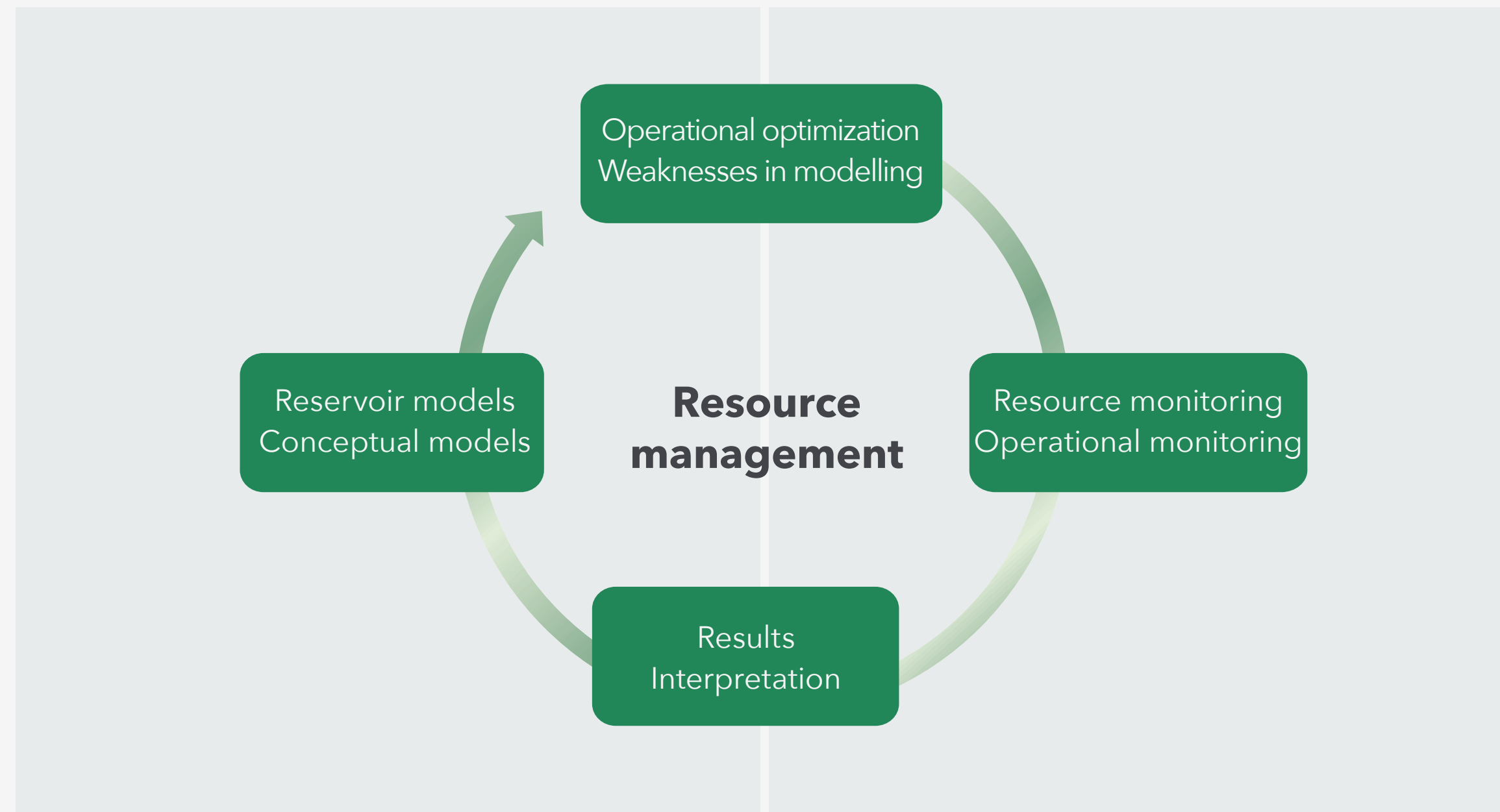


Resource management

GRI 3-3 Material Topic

External assurance A B

The foundation of the company’s long-term success lies in the responsible use of both geothermal and freshwater resources. HS Orka’s research and monitoring of resources are a fundamental part of the company’s operations, and improvements are constantly being made in that area. Decisions regarding the production are based on the best available data at any given time, and they are made in accordance with the company’s goals for the sustainable use of resources. Research and increased knowledge reduce operational risks and enable the company to respond effectively if unexpected changes or unwanted development of resources occur. The methodology is illustrated in the following image:



In view of the above, the in-house expertise has been increased in recent years, with resource development and monitoring of geothermal and freshwater resources being intertwined with daily operations. As a result, the resource monitoring has increased, and with it, the flow of information that is useful in daily operations has improved. The resource development and resource monitoring is also a part of the company’s obligations towards public authorities.

Development of methodology and monitoring

Reservoir models are designed based on historical data and used to predict the development of resources based on given assumptions. These models are constantly evolving with regard to new measurements. As for geothermal resources, the need for new boreholes, both for production and reinjection, needs to be constantly reassessed. A new drilling project commenced in Reykjanes, in November.

In 2023, the borehole measurements in the HS Orka power plant area were re-evaluated and enhanced. The long-term monitoring sampling will be done in all boreholes every year, starting in 2024; these will provide a better overview of changes in the chemistry of the systems. TFT measurements of enthalpy and flow were also carried out in selected production wells in Reykjanes. TFT are flow measurements with chemical tracers and they have enabled the company to better understand the system in terms of production and thus support the efficiency of the boreholes.

Monitoring in the times of volcanic activity

Following the volcanic activity and earthquakes in Reykjanes, in late 2023, HS Orka’s monitoring of the resource has been greatly increased. Pressure in the system is monitored more closely, as changes were detected in boreholes before the volcanic outburst in the Sundhnúkar crater line in December 2023. As a result, an automatic warning system was installed that signals if the pressure in a borehole increases beyond normal values. The aim of the actions taken is to get an early warning in the event of an eruption in the area.

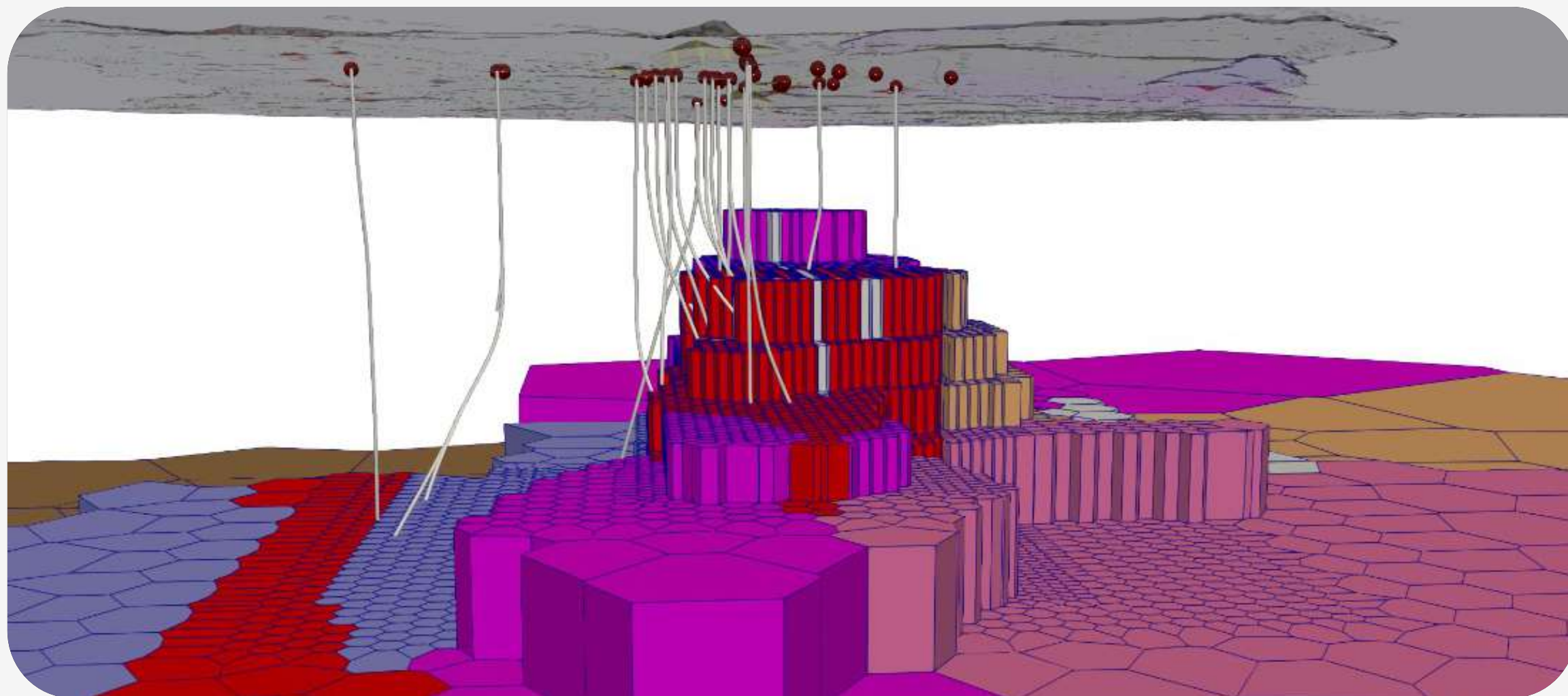
A database was further developed, where information regarding the resource and its operation can be accessed. The database shows an almost real-time status of the geothermal system and facilitates its monitoring and control. It is important to continue the development of the database as it is a valuable tool for the production and operation of the company’s power plants and can provide a deeper understanding of the geothermal system in times of volcanic activity.

At the same time, the groundwater monitoring plan in freshwater wells has been closely followed. The chemical composition of drinking water is closely monitored and several physical factors, such as temperature, pressure, conductivity, and ground water levels are continuously monitored in chosen locations.

Modelling and artificial intelligence

Emphasis has been placed on the development of conceptual and reservoir models for the resource, with the aim of increasing stability in production capacity and ensuring sustainable utilization. As a result, increased reinjection in Reykjanes showed good results with an increase in pressure in the system.

Production models were also linked to the reservoir models to get a better overall picture of the plants' production capacity. Temporal fluctuations in production from individual wells were studied and artificial intelligence is now used to learn from the fluctuations and make a more detailed production forecast than before. By using artificial intelligence, the production forecast is automatically updated two hours in advance, based on real-time data. The models allow us to better understand and monitor the geothermal systems.



The image shows the calculation grid of the reservoir model for the geothermal system in Reykjanes (colored columns), the location of wellheads (red dots) together with their output trajectories (grey lines). Each color in the calculation grid represents a different rock type, each of which is given specific physical properties. In each section of the calculation grid, balance equations for energy and mass conservation in water and rock are solved and the change in the physical state of the system is found.

Goals and projects

- Projects aimed at reinforcing the production in Reykjanes in the long term. In 2023, efforts have succeeded in enhancing the pressure within the Reykjanes through reinjection. Work will continue to keep the system stable through monitoring and projects aimed at optimizing the system.
- Studying the long-term capacity of the Svartsengis-Eldvörp system. Progress has been made in the development of models for the geothermal resource in HS Orka's production areas, and we intend to apply production, reservoir and conceptual models to further investigate the potential output capacity of the systems.
- Monitoring the potential long-term effects of volcanic activity in the years 2020-2023 on fresh water and geothermal resources.
- A drilling project at Reykjanes began in November 2023. In the first part of the drilling work, an exploratory well is drilled at the edge of the production area with the aim of expanding the production area if there turns out to be geothermal energy there, otherwise using the well for reinjection and thus supporting pressure in the existing system.
- Continued use of artificial intelligence to learn about the geothermal system and optimize resource utilization. The measurement data of the geothermal system shows certain fluctuations and changes that artificial intelligence can learn from in order to predict future trends.

Drilling at Reykjanesvirkjun

In 2023, HS Orka resumed drilling after several years. An agreement was made with Jarðboranir hf., and a drill named Þór, which is entirely electricity-driven, has been used for the project. The plan is to drill two new wells closer to Reykjanesvirkjun, on the edge of the existing production site. The drilling of the first well, RN-38, has already begun and the aim is to explore the vicinity of the lava shield Háleyjarbunga, which is southeast of Reykjanesvirkjun. When that project is finished, drilling on RN-39 will take place, the purpose of which is to explore the southwestern part of the geothermal system.

Should geothermal fluid be found there in feasible quantities, it will be possible to diversify Reykjanesvirkjun's geothermal processing. If it is not found, it will be assessed if there is a pressure connection with the existing production wells. If such a pressure connection is found, the new wells will be used for reinjection (see definition, below).

The purpose of reinjection

Reinjection is when a liquid is put back into the geothermal system. In most cases, the liquid is water that has come up from production wells. The purpose of reinjection is manifold, among other things to maintain pressure in the system, in which case it may be desirable to diffuse reinjection wells around the edges of the geothermal area to reduce the probability of cooling in the processing area. In this way, the processing capacity of the geothermal system can be increased in the long term.

Another purpose of reinjection is to reduce the environmental impact of geothermal production by bringing the geothermal fluid back into the geothermal system instead of releasing it on the surface or channeling it to the sea.



Sustainability assessment for Hvalárvirkjun

GRI 3-3 **Material topic** External assurance **A B**

Among HS Orka’s development projects is Hvalárvirkjun, a hydroelectric power plant in Ófeigsfjörður in the Westfjords, with an estimated installed capacity of 55MW. The project is led by the company VesturVerk, in which HS Orka is the majority shareholder. Although the project’s preparation work was slowed down for a while, the intended power plant’s water basin has been monitored on a regular basis.

Hydropower Sustainability Standard (HSS)

As part of the reassessment of the status of the project, a company was hired in 2023 to perform a HSS pre-assessment of the preparation stage of Hvalárvirkjun.

 Environmental and social assessment and management	 Labour and working conditions	 Water quality and sediments	 Community impacts and infrastructure safety
 Resettlement	 Biodiversity and invasive species	 Indigenous people	 Cultural heritage
 Governance and procurement	 Communication and consultation	 hydrological resource	 Climate change mitigation and resilience

The Hydropower Sustainability Standard is a global certification scheme which is used to coordinate and ensure a comprehensive system for assessing the sustainability of hydropower plants. The standard is intended to create incentives for progress in sustainability, and power plants are evaluated based on twelve environmental, social and governance (ESG) topics. For the projects to be graded and certified based on the HSS criteria, they must be evaluated by independent Accredited Assessors. Individual companies can apply for certification for the stages of preparation, development, and operations.

Mapping of the status of the preparation categories

An assessor from the consulting company Sweco was in Iceland in September to learn about the project and have a dialogue with various stakeholders. It was not a full HSS assessment of the project but an advisory analysis of the project’s status, performed with reference to the standard’s quality criteria. The audit provided a valuable overview of the preparatory aspects that are important to ensure that all work has been done in a way that meets the main requirements of HSS. Moreover, the report contains suggestions on priorities and opportunities to go beyond the minimum HSS requirements, with the aim of further improving the project’s sustainability aspects and meeting the highest international quality standards. Examples of such factors include:

- Clarifying environmental and sustainability requirements for suppliers and contractors.
- Ensuring that requirements are met regarding hydrographic measurements in the area, both flow measurements and material sampling.
- That further research is carried out on possible mitigating measures or design applications that include, among other things, the flow in waterfalls in the power station area during the summer.
- Advice related to various factors, including road issues, registration of archaeological artefacts, communication with stakeholders and connections to power transmission systems.

Climate

GRI 3-3 **Material topic** External assurance **A** **B**

ESRS E1-1, E1-2, E1-3, E1-4, E1-6

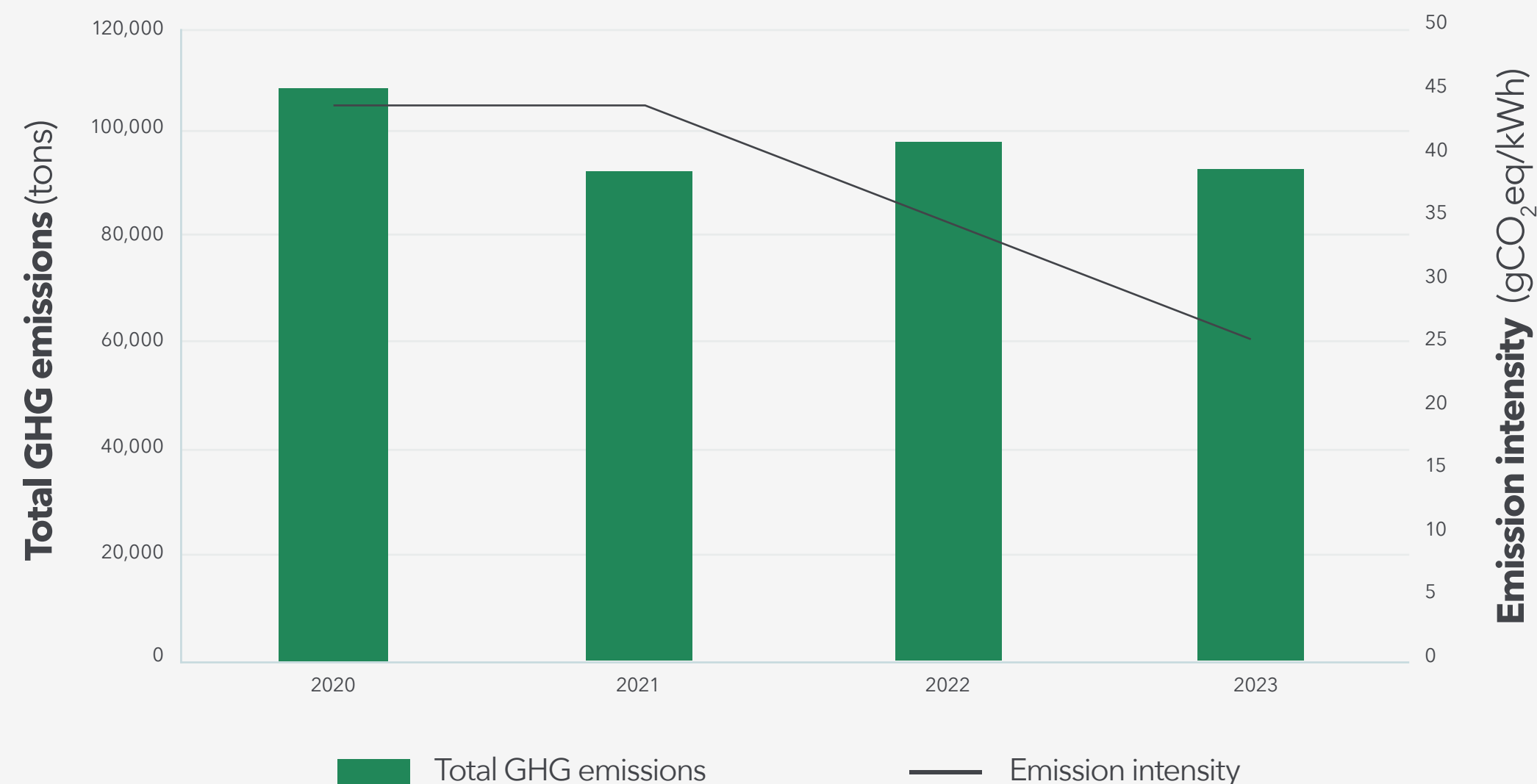
The core activity of HS Orka is to use renewable resources for the production of heat and electricity. When geothermal heat is harnessed, carbon dioxide is released. The main challenge for HS Orka, with regard to climate change, is to achieve carbon neutrality by 2040. In the near term the company is looking at projects aimed at reducing emissions intensity in accordance with set goals. HS Orka’s new Climate Policy was approved in 2023, and its purpose is to frame the company’s priorities, goals and actions in climate matters.



The potential impact of volcanic activity on gas emissions in Svartsengi

The last quarter of 2023 was characterized by earthquakes and volcanic activity. It is believed that a magma chamber is positioned under Svartsengi, which is causing inflation in the area leading to uncertainty regarding the possible effect the earthquakes have on the amount of magma gas released from the geothermal system. Following the earthquake in November 2023, an increase in surface steam was detected at the surface around the power plants in Svartsengi. Furthermore, a sudden release of sulfur dioxide was detected at one of the company’s production wells in Svartsengi, and the area had to be evacuated for safety reasons.

Prolonged activity in the area has caused considerable formation of faults in HS Orka’s production area. Said faults could possibly enhance the access of volcanic gases to the surface, potentially increasing the natural emission of carbon dioxide in the Svartsengi area. Unsafe conditions in the area, due to new faults, prevented the initiation of measurements in the area by the end of 2023. Therefore, numerical data on greenhouse gas emissions for 2023 in this report is published with the caveat that it was not possible to take samples late in the year in Svartsengi. If there have been changes in emissions due to seismic activity in November and December, they are not reflected in the figures.



Overview of climate goals

1. Net-zero emissions by 2040

HS Orka has set a goal of net-zero emissions by the year 2040 in accordance with Iceland’s climate commitments. HS Orka’s goals are based on direct emissions from power plants and their operation, i.e. the emission that falls under scope 1 and 2.

2. Emissions intensity

HS Orka has set a target for the company’s emissions intensity to be a maximum of 26 gCO₂eq/kWh in 2030. The target represents a 40% reduction of the emissions intensity compared to 2014. The target is based on scopes 1 and 2, as well as defined items within scope 3.

3. Energy transition

- By 2030, all vehicles owned by the company will be electric or powered by e-fuel (scope 1).
- By 2035, only renewable energy will be used in HS Orka’s construction projects (scope 3).

Overview of HS Orka’s metrics and targets	2020	2021	2022	2023	Future goals		
					2030	2035	2040
Total emissions (tCO ₂ eq)	108.099	92.741	98.227	94.034			0
Emissions intensity (gCO ₂ eq/kWh electricity produced and kWh heat sold)	43	43	34	25	26		
Electric and e-fuel vehicles (%)	19	17	29	41	100		
Renewable energy in construction projects (%)						100	

Net-Zero emissions

In 2018, the energy and utilities sector in Iceland set a target for carbon neutrality by 2040, with a statement presented to the Icelandic government. HS Orka was among the companies in that group. Three years later, targets were enacted for Iceland to achieve net-zero emissions no later than 2040.

Carbon dioxide emissions from HS Orka’s geothermal power plants in Svartsengi and at Reykjanestá are by far the largest factor in the company’s climate accounting. The company’s climate-related actions take this into account and are also related to HS Orka’s focus on the circular economy (see chapter on the Resource Park), i.e. to put underutilized resources into use. On the journey towards those aims, projects related to e-fuel production can play a major role. At the same time, possibilities related to reinjection or storage of carbon dioxide in the ground are also reviewed.

Emissions intensity


Essentially, there are two driving forces behind the company’s emissions intensity. Emissions intensity is measured in grams of carbon dioxide equivalents per kilowatthour (kWh) of electricity produced and heat sold. The company can therefore reduce the emissions intensity through measures aimed at reducing the emissions of greenhouse gases. The intensity can also be reduced through increased electricity and heat sales.

Energy transition

A key prerequisite for meeting the goals of the Paris Agreement is a reduction in the use of fossil fuels. HS Orka’s operations are primarily powered by renewable electricity, but the company is still dependent on fossil fuels to run part of the company’s vehicles, heavy equipment and the backup power system. Furthermore, the indirect use of fossil fuels occurs in the company’s value chain, air travel and new construction projects. HS Orka has set a goal that by 2030 all vehicles owned by the company will run on electricity or e-fuel, and in 2023 strategy was adopted for energy transition in construction projects, by 2035.


Emission figures 2023

Scope 1
Direct emissions from operations



GHG Emissions (tCO ₂ eq)	2020	2021	2022	2023
Reykjanesvirkjun	40.406	26.517	26.234	24.552
Svartsengi	67.514	65.025	67.822	67.378
Vehicles and machinery	176	158	144	133
Total	108.096	91.700	94.200	92.063

Scope 2
Indirect emissions from purchased energy



HS Orka produces its own electricity and heat. See scope 1.

Scope 3
All other emissions associated with a company's activities



	2020	2021	2022	2023
Fuel in construction projects	Not collected	Not collected	7	281
Material for construction projects	Not collected	1.030	3.996	1.664
Waste disposal	3	4	8	4
Air travel	0	7	16	23
Total	3	1.041	4.027	1.972

	2020	2021	2022	2023
Total GHG Emissions (tCO₂eq)	108.099	92.741	98.227	94.034

Total emissions and emissions intensity

The total emissions in 2023 was 94.034 tons, of which the direct emission of greenhouse gases from power plants was 98% or 91.930 tons, which is a decrease from 2022. The decrease is due to changes in production, between years. Together with the increased sale of heat to companies in the Resource Park, it led to a significant reduction of HS Orka's emissions intensity in 2023, from 34 gCO₂eq/kWh to 25 gCO₂eq/kWh.

Currently, work is ongoing regarding the review of measurement methods for greenhouse gas emissions from the company's production wells. Up until the year 2022, calculations of gas emissions from wells did not take into account the fact that the ratio of liquid to steam differs between production wells. Work is now being undertaken to review gas emissions data, dating back to 2015, with the intention of having the methodology reflect the nature of the company's production wells in Svartsengi and Reykjanesvirkjun.

Scope 3

The company has been working on improving the understanding of its scope 3 GHG emissions. Up until 2021, the company accounted for emissions from waste disposal and air travel. In 2021, concrete used for the expansion of Reykjanesvirkjun was added, and a year later, emissions from concrete use were included in scope 3 reporting, along with steel, aluminum, and fuel consumption of heavy machinery. In 2023, scope 3 covers waste disposal, air travel, fuel, concrete and the most substantial steel and piping material that contractors have used in the expansion of Svartsengi, the installation of the Grindavík pipeline and the drilling of a new well at Reykjanesvirkjun.

The development of HS Orka's ESG database resulted in a reassessment of GHG emissions from waste disposal. Apart from inert minerals that are landfilled, all waste from the company finds its way into some form of recycling or reuse, e.g. for energy production. For recycled and reused waste streams, HS Orka's climate accounting covers the transport of material to recyclers, while emissions due to recycling or reuse are reported by the recipient of the material. This is in line with the scope 3 criteria of the GHG Protocol. The company has re-evaluated the emissions of greenhouse gases due to waste treatment based on the changed criteria.

Climate action

Case: Project on the production of e-fuel in Reykjanes

It is clear that HS Orka’s goal of carbon neutrality in 2040 will only be achieved through projects in the field of utilization (CCU), storage (CCS) or reinjection. As stated in HS Orka’s Climate Policy, the company aims for the largest part of the company’s carbon dioxide emissions to go to projects in the field of utilization, thereby promoting development that benefit the energy transition and a reduction in greenhouse gas emissions.

E-fuel as a part of the energy transition

E-fuels will play an important role in reducing greenhouse gas emissions. The energy transition is expected to be achieved in steps, as a certain part of transport and industry is complicated to electrify. Therefore, options like hydrogen and methane must also be considered, but if these materials are used, it makes all the difference that renewable energy is used for their production. When it comes to the utilization of carbon dioxide, the reduction in total fuel emissions should be at least 70% according to pan-European standards (cf. the RNFBO European regulation).

Cooperation on the production of electric fuel

HS Orka has for some time been in cooperation with foreign parties who have developed plans for the production of e-fuel in the Resource Park, next to Reykjanesvirkjun. The project of Swiss Green Gas International (SGGI) has gone through an environmental impact assessment and work is being done on the ongoing design of the project. A potential e-fuel producer such as SGGI would use electricity, carbon dioxide and water for production; the carbon dioxide would come from HS Orka’s power plant in Svartsengi. The activity would create by-products such as purified carbon dioxide, oxygen and heat, which could be used at the Resource Park site. While SGGI intends to export the factory’s product to Switzerland in liquid form, the company also has plans to market part of the gas for transportation in Iceland.

The project’s estimated impact on total emissions and emissions intensity

The below table shows an example of the possible impact of a project such as SGGI’s e-fuel production on total emissions and emissions intensity:

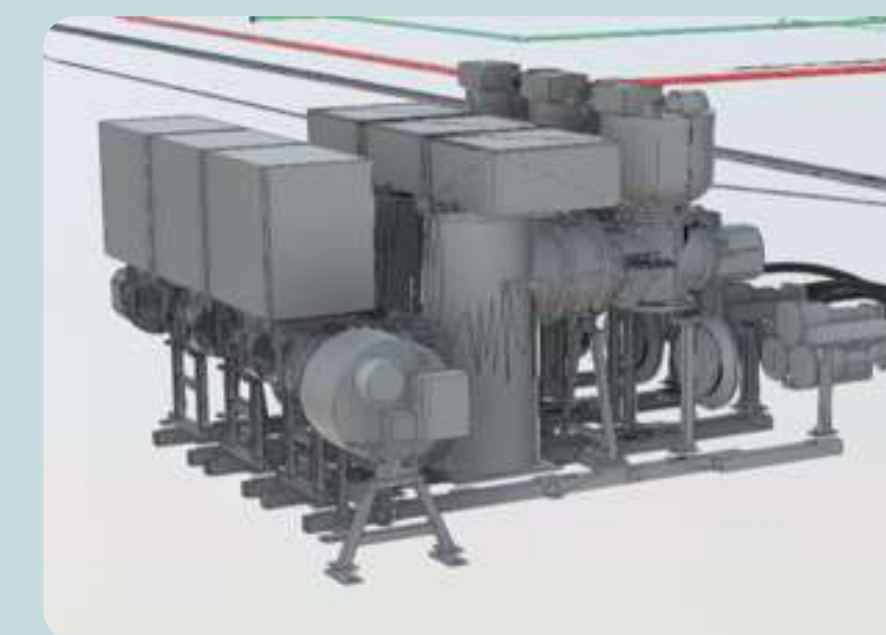
Potential impact on emissions metrics	2021	2022	2023	Estimated	
				SGGI (use)	2027
HS Orka’s total emissions (tons)	92.741	98.227	94.034	-42.000	52.034
HS Orka’s Emissions Intensity (gCO ₂ e/kWh)	43	34	25	-11	14

Criteria:

- SGGI plans to use a minimum of 42 thousand tons of CO2 from 2027.
- The example is simplified and does not take into account other possible changes in emissions; it is based on 2023 figures for HS Orka’s total emissions and emissions intensity.
- Plans assume that carbon dioxide from geothermal power plants will be deductible in emissions accounting when it is used for e-fuel production and that there is no added CO2 cost for the e-fuel producer.

Climate-friendly procurement

Following a tender, an investment was made in a substation for the expansion of power plant 6, in Svartsengi. The insulating gas that has generally been used in such equipment, sulfur hexafluoride (SF6), contains 25.200 times more global warming potential (GWP) than carbon dioxide. For this reason, an analysis of other options was made and the best choice available was found to be using switches with an insulating gas mixture that has a GWP of only 2% of the GWP of sulfur hexafluoride.



Natural emissions from geothermal areas

On February 10, 2023, the EU adopted a delegated regulation stating that carbon dioxide from geothermal power plants is not deductible in their emission accounting, if it is used in the production of renewable e-fuel, unless it can be demonstrated that the carbon dioxide was previously released through a natural process. This regulation, along with several other regulations, creates legal uncertainty about how to handle carbon dioxide which can be utilized. This applies for both the emission accounting of companies and the Icelandic government.

Carbon dioxide from geothermal power plants has a natural origin in magma, but it is problematic for geothermal companies to demonstrate whether and how much of the emission is caused by the utilization of the energy and what would have been released naturally without utilization. There are several ways for carbon dioxide to reach the surface in geothermal areas, such as through the soil, hot springs (steam vents), with geothermal water, and up through faults. The time axis of emissions is also influential, as studies that have been carried out indicate that emissions may increase in the beginning, but in the long run, production does not affect the total emissions.

While the first boreholes in Reykjanes were drilled in the 1960s, Reykjanesvirkjun was commissioned in 2006. Between 2004 and 2006, a study was conducted on the release of carbon dioxide in the area before production began. Based on the results of that study, it is assumed that the total emissions increased when production began, but it is uncertain by how much. The study indicates there is a possibility that part of the gas travels horizontally from the system with groundwater or geothermal water. It is difficult to estimate the amount of carbon dioxide that travels with the groundwater, as it is complicated to quantify the groundwater. Therefore, it is noted that the emission values in the study represent the minimum values and due to uncertainty factors, it is difficult to estimate what the emission from the geothermal area was, before utilization.

Drilling began in Svartsengi, in 1971, and the first phase of the power plant was commissioned in 1979. No studies were conducted on natural emissions in that area, before construction began. Therefore, it is difficult for HS Orka to ascertain the quantity of natural emissions from the geothermal area before the company started its utilization. In addition to this, there is uncertainty regarding the possible changes in emissions that magma intrusions, earthquakes, and volcanic

eruptions near Svartsengi between 2020 and 2023 have caused in the area. The Icelandic Meteorological Agency conducted a study in November and December 2023 which involved measurements that showed an increased amount of magmatic gas in the geothermal system, so it can be assumed that there have been changes in the system, but further research is needed.

A study conducted in Krýsuvík in 2014 (published in 2020) also demonstrated that natural emissions can change significantly between days depending on external conditions such as weather, air pressure, wind, and possible ground movements.

The studies carried out before Reykjanesvirkjun was commissioned, were considered acceptable at the time. With changing times regarding carbon dioxide emissions and the possible financial implications it may bring, for both HS Orka and the Icelandic government through obligations towards the EU, it is necessary to undertake much more detailed and accurate research to better distinguish between what is natural emissions and what is justifiable to count as man-made emissions. Designing a methodology and carrying out research will take time, but, as mentioned above, it is important that the legal uncertainty does not prevent viable measures to be taken to reduce emissions from geothermal power plants.

HS Orka has set clear targets for a reduction in the amount of carbon dioxide that passes through the company's processing channels. These objectives are independent of whether the origin is considered natural or not. To achieve these targets, HS Orka aims to utilize as much of the emissions as possible, but what is not used would be injected back into the geothermal area. The current uncertainty concerns whether HS Orka and the Icelandic government can count the carbon dioxide that will be used for the production of sustainable e-fuel, or directly reinjected, as a deduction in their emissions accounting.



TCFD climate risk assessment 2023

GRI 3-3 **Material topic** External assurance **A** **B**

ESRS 2 SBM-3, ESRS 2 IRO-1

In 2022, HS Orka implemented a risk assessment and scenario analysis due to climate change in the company’s risk model. The work was carried out in accordance with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), which involves, among other things, to define and assess the scope of the main risk factors and opportunities, based on different climate scenarios. The focus of a TCFD climate risk assessment is mainly on the financial effects of climate change so that appropriate mitigation and adaptation measures can be taken. The climate risk assessment is updated annually and reviewed by key people within the company and submitted to HS Orka’s process council for information and discussion.

Increased number of scenarios - RCP 1.9 and 8.5 added

In the 2022 risk assessment, the impact of two different climate scenarios was evaluated. The scenarios were based on the Icelandic Government’s Scientific Committee’s report from 2018 on Climate Change and its consequences for Iceland. In 2023, two scenarios were added to HS Orka’s TCFD assessment. The addition takes into consideration new European Sustainability Reporting Standards (ESRS) for the disclosure of sustainability information. The new scenarios are Representative Concentration Pathways RCP1.9 and RCP8.5 from the United Nations Intergovernmental Panel on Climate Change (IPCC).

RCP 1.9	RCP 2.6	RCP 4.5	RCP 8.5
Focuses on limiting global warming to below 1.5°C. Drastic measures are taken to curb the emission of greenhouse gases. The global peak of greenhouse gas emissions will occur before 2026. Carbon neutrality will be achieved around 2060 and thereafter be negative.	Focuses on limiting global warming to below 2°C. Radical measures are taken to curb the emission of greenhouse gases. Carbon neutrality will be achieved around 2070.	Aims at limiting global warming to below 3.0°C. Emissions will not change until the middle of the 21st century. Carbon neutrality will be reached by 2100.	Global warming will exceed 4°C. This is the warmest scenario. Little or no action is taken to curb greenhouse gas emissions.

In 2023, the fourth assessment report from the Icelandic Government’s Scientific Committee on Climate Change was issued and the company updated the risks and opportunities with respect to it. The fourth report does not specifically assess the impact as regards RCP1.9, and therefore the United Nations’ Sixth Assessment Report was also taken into consideration.

In the analysis of climate risks and opportunities, the company’s operations in its current form were considered; the operation of Reykjanesvirkjun, Svartsengi, the water springs in Lágár and by Sýrfell mountain, Brúarvirkjun and Fjarðarvirkjanir. Risks and opportunities were divided into three time frames, short-term (0-5 years), medium (5-15 years) and long-term (15-50+ years). Each time frame reflects the time when a risk is most likely to materialize or an opportunity to arise. The financial impact on the company was assessed as direct if there was an impact on the daily operations, or indirect if the impact was somewhere in the value chain, on suppliers, customers, the work environment and other stakeholders.

The technical approach of the risk assessment was illustrated in last year’s report. Furthermore, the risks that may have major financial consequences in one of the first three scenarios, RCP1.9, RCP2.6 and RCP4.5, have been entered into the company’s risk assessment base, using the same method as for other company risks.

Types of climate risks

Physical risks and opportunities related to them were assessed with reference to acute events related to climate change, such as heat waves, droughts, cold spells, extreme rainfall, floods, landslides, and extreme winds. A comparable assessment was made for more gradual environmental changes, such as melting glaciers, ocean acidification, rising sea levels and increased temperatures. Transition risks and opportunities were assessed in relation to potential regulatory and legislative changes, investment projects and market fluctuations.

Physical risk factors	Description of risk	Financial Implications	Examples of controls
<ul style="list-style-type: none"> • Extreme weather conditions • Increased temperatures • Increased precipitation • Drought • Cold spells • Melting glaciers and rising sea levels 	<ul style="list-style-type: none"> • Imbalance between renewal and consumption of water from water sources • Floods and coastal erosion at Reykjanesvirkjun • Strain and damage to infrastructure • Rising sea level and increased risk of saline in the water source by Reykjanesvirkjun • Disruptions in the value chain that lead to increased costs 	<ul style="list-style-type: none"> • Decline in sales revenue • Increased operating costs • Increased investment costs 	<ul style="list-style-type: none"> • Ensure access to a backup water source • Actions to improve infrastructure resilience • Promote monitoring and research • Risk diversification in supply chains and customer base • Dynamic climate risk assessment
Transition Risks	Description of risk	Financial Implications	Examples of controls
<ul style="list-style-type: none"> • Changes in the legal and regulatory environment • Changed market focus • Increased disclosure requirements • Investment projects • Insurance 	<ul style="list-style-type: none"> • Statutory costs for greenhouse gas emissions • Changing demands in the market and among stakeholders affect operations and costs • Investments do not have the expected results • Obsolescence of equipment or technology due to changes in the legal framework and/or requirements 	<ul style="list-style-type: none"> • Increased investment costs • Increased operating costs 	<ul style="list-style-type: none"> • Actions to reduce GHG emissions and focus on sustainability in operations • Investments that align with the focus on climate issues • Good information provision and active dialogue with stakeholders • Effective climate risk assessment

Positive results but impact increases greatly in RCP8.5

The results of the TCFD climate risk assessment essentially demonstrate a good climate resilience of the operation with respect to the scenarios in the analysis. Geothermal power plants do not depend on the weather for the production of energy, and stress factors regarding equipment are not considered significant in the scenario analysis based on the risk model’s definitions of the extent of risk. It is also worth mentioning that HS Orka’s hydroelectric power plants, Brúarvirkjun and Fjarðarvirkjanir, do not depend on glacial water, and therefore no negative impact on production is expected due to the potential mass loss of glaciers that the Icelandic government’s Scientific Committee’s interpretations assume for the second half of this century in Iceland, based on RCP4.5 and RCP8.5.

Despite the results of the risk assessment, that the climate resilience of the operations is largely good with regard to climate change, the assessment decisively shows an increased impact and an increase in the risk assessment under the most severe climate scenario (RCP8.5) compared to the other three.

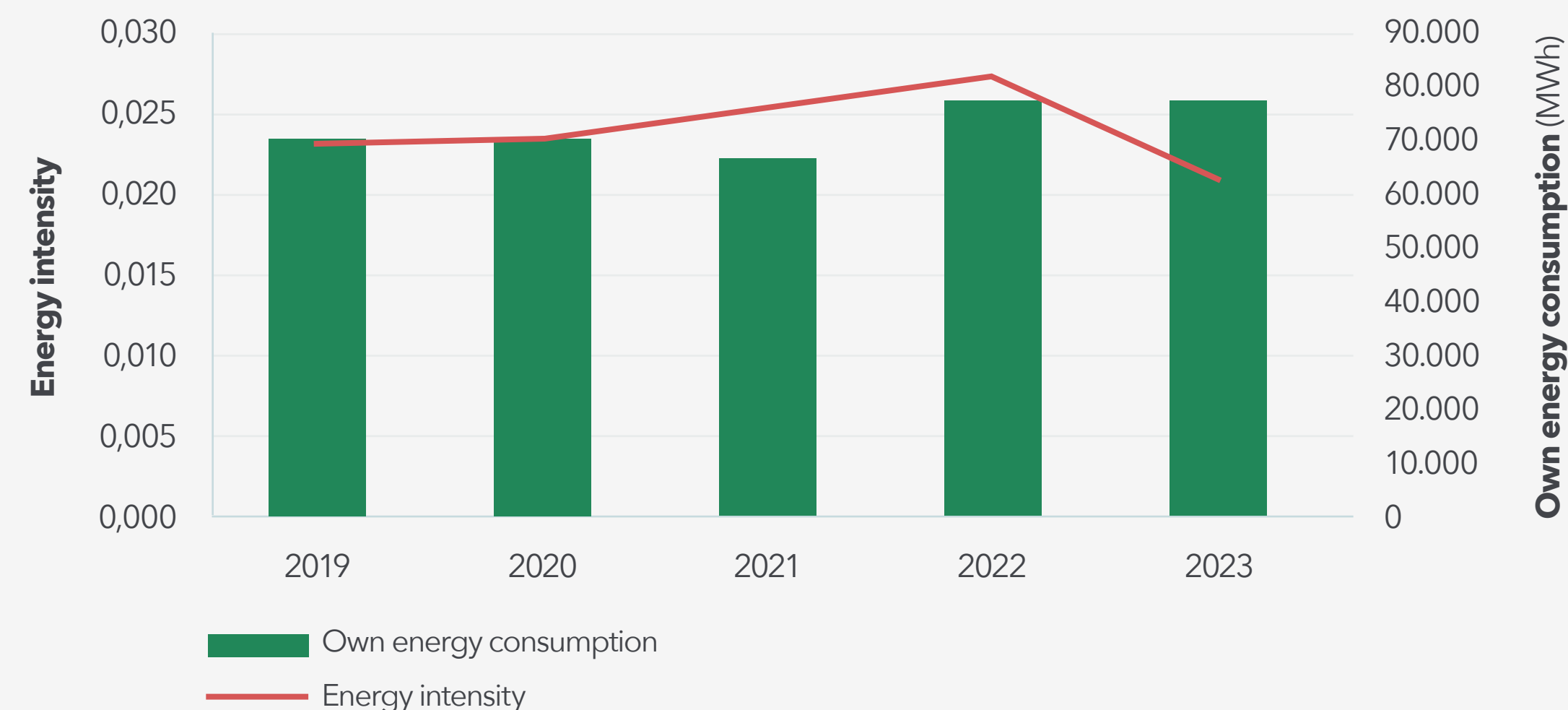
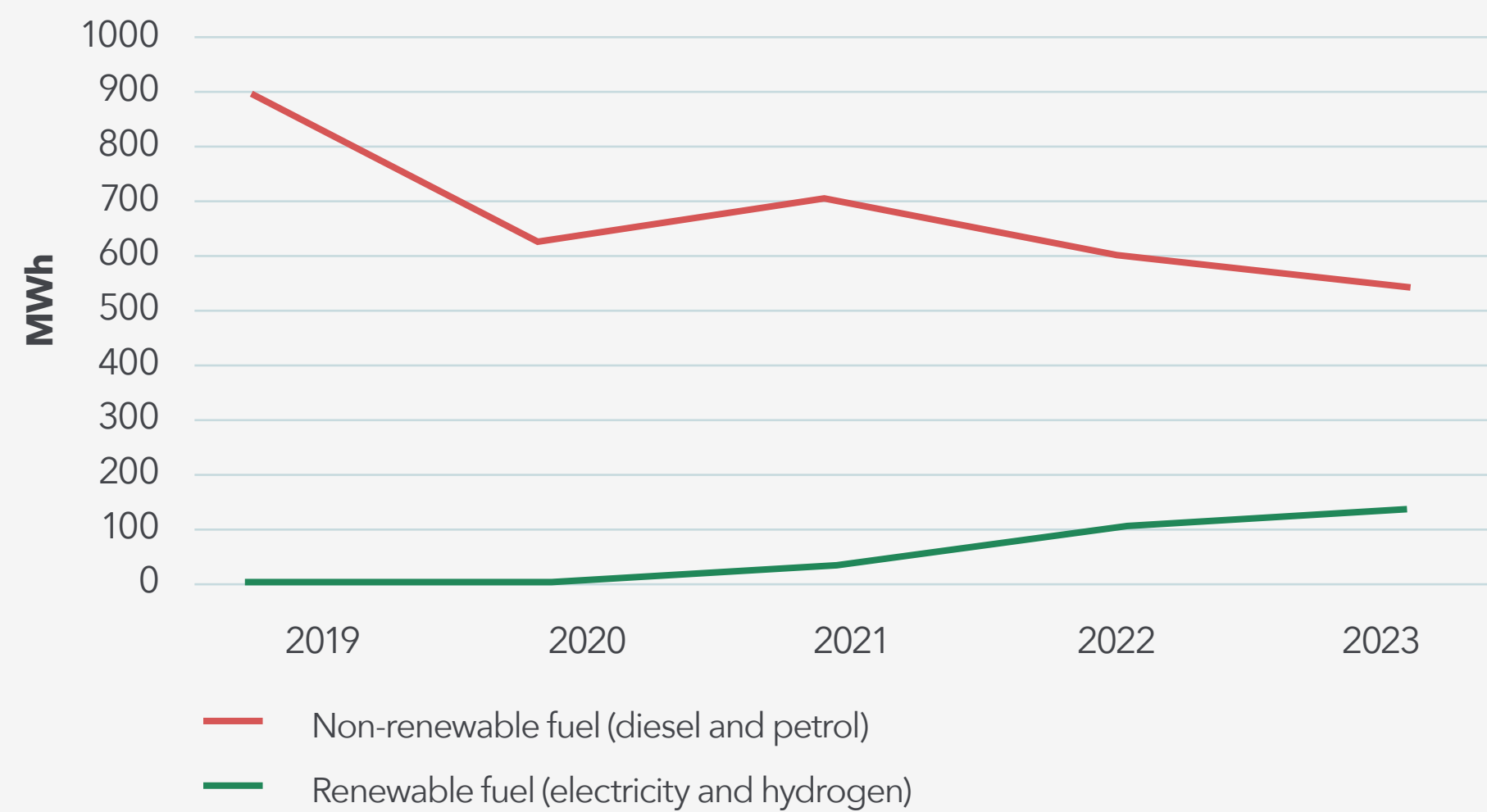
At the same time, it is clear that measures to ensure a climate adaptation, such as the development of infrastructure for e-fuel production or investments in reinjection, can entail significant costs. HS Orka’s freshwater wells at Sýrfell and in Lágur may be affected by climate change, and this risk increases in proportion to global warming. A higher sea level may affect the salinity of HS Orka’s water source at Sýrfell, which is about two kilometers from the sea, and the porous strata in Reykjanes means that sea water already finds its way inland. Increased frequency of periods without precipitation may have a negative effect on the groundwater level. HS Orka’s water sources are highly dependent on rainfall over a longer period of time. Also, extreme rainfall can possibly lead to pollution in HS Orka’s water sources. The water source in Lágur is shallower and is more vulnerable to such exposure than the water source at Sýrfell.

Own energy consumption

GRI 3-3 Material Topic External assurance A B

The company's energy intensity is the ratio of its own consumption of produced electricity and sold heat. This definition involves a changed methodology from previous years, where the energy intensity was the ratio of own consumption of electricity produced. The change is made to ensure consistency with the methodology for calculating the emissions intensity. Energy that is sold according to estimations (not measured) is not verifiable and, thus, not counted as a percentage of the energy sold, and therefore the energy intensity is possibly slightly overestimated.

Historical figures (see table on p. 30) have been recalculated based on the changed methodology. Despite the increase in total energy consumption between years, energy intensity has decreased, and the share of renewable energy has increased.



The decreasing use of fossil fuels is largely explained by the fact that the company is replacing petrol and diesel vehicles with electric vehicles. An increase of 1.3% in 2023 can be attributed to the expansion of the power plant in Reykjanes, which was completed at the end of 2022, and seawater pumps are the largest part of own energy consumption there. In Svartsengi, however, own consumption decreased, which explains the relatively small overall increase between years.

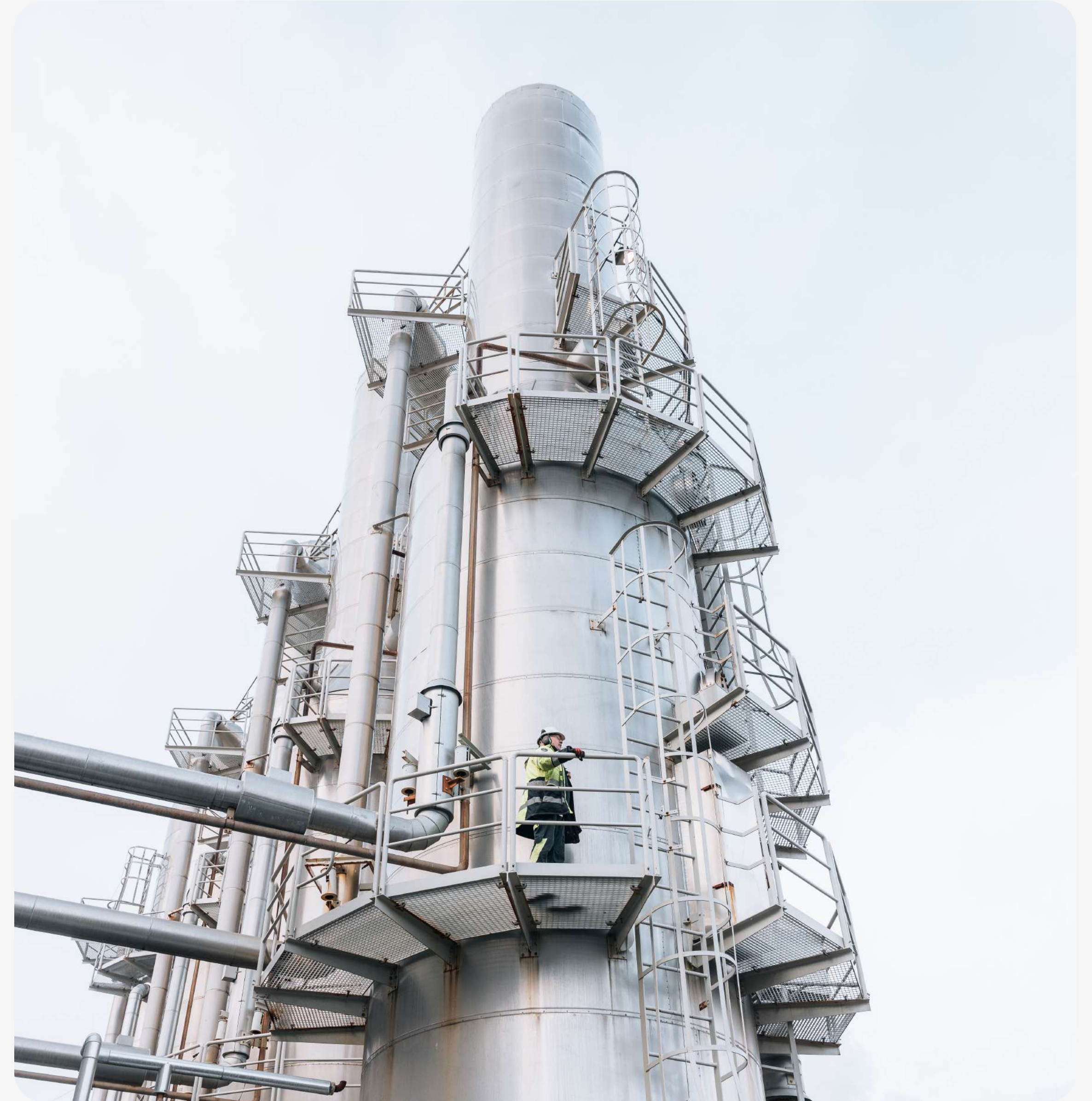
Goals and projects

- All vehicles owned by the company will be electric or powered by e-fuel by 2030.
- By developing a database for sustainability information, the company lays the foundation for mapping opportunities for reducing own energy consumption.

Own energy consumption (MWh)	2019	2020	2021	2022	2023
Fuel					
Non-renewable fuels (diesel and petrol, in MWh)	899	637	711	591	497
Renewable fuel (hydrogen, in MWh)			21	65	43
Renewable fuel (electricity, in MWh)				31	78
Electricity and heat					
Electricity (renewable, in MWh)*	68.045	68.176	69.464	73.876	74.821
Heat (renewable, in MWh)**	1.484	1.484	1.484	1.484	1.484
Use of renewable energy					
Total renewable energy consumption (MWh)	69.529	69.660	70.969	75.456	76.426
Proportion of renewable energy (%)	98,7%	99,1%	99,0%	99,1%	99,4%
Use of non-renewable energy					
Total non-renewable energy consumption (MWh)	899	637	711	591	497
Proportion of renewable energy (%)	1,3%	0,9%	1,0%	0,8%	0,6%
Total					
Total own energy consumption (MWh)	70.428	70.297	71.680	76.047	76.926
Year-on-year decline/increase (%)		-0,2%	2,0%	6,1%	1,2%
Energy intensity					
Energy intensity (MWh of own energy consumption per MWh of electricity produced and MWh of heat sold)	0,023	0,024	0,025	0,026	0,021
Energy intensity (MWh of own energy consumption/total income in ISK)					0,0000058

* Also includes power losses

**Estimated

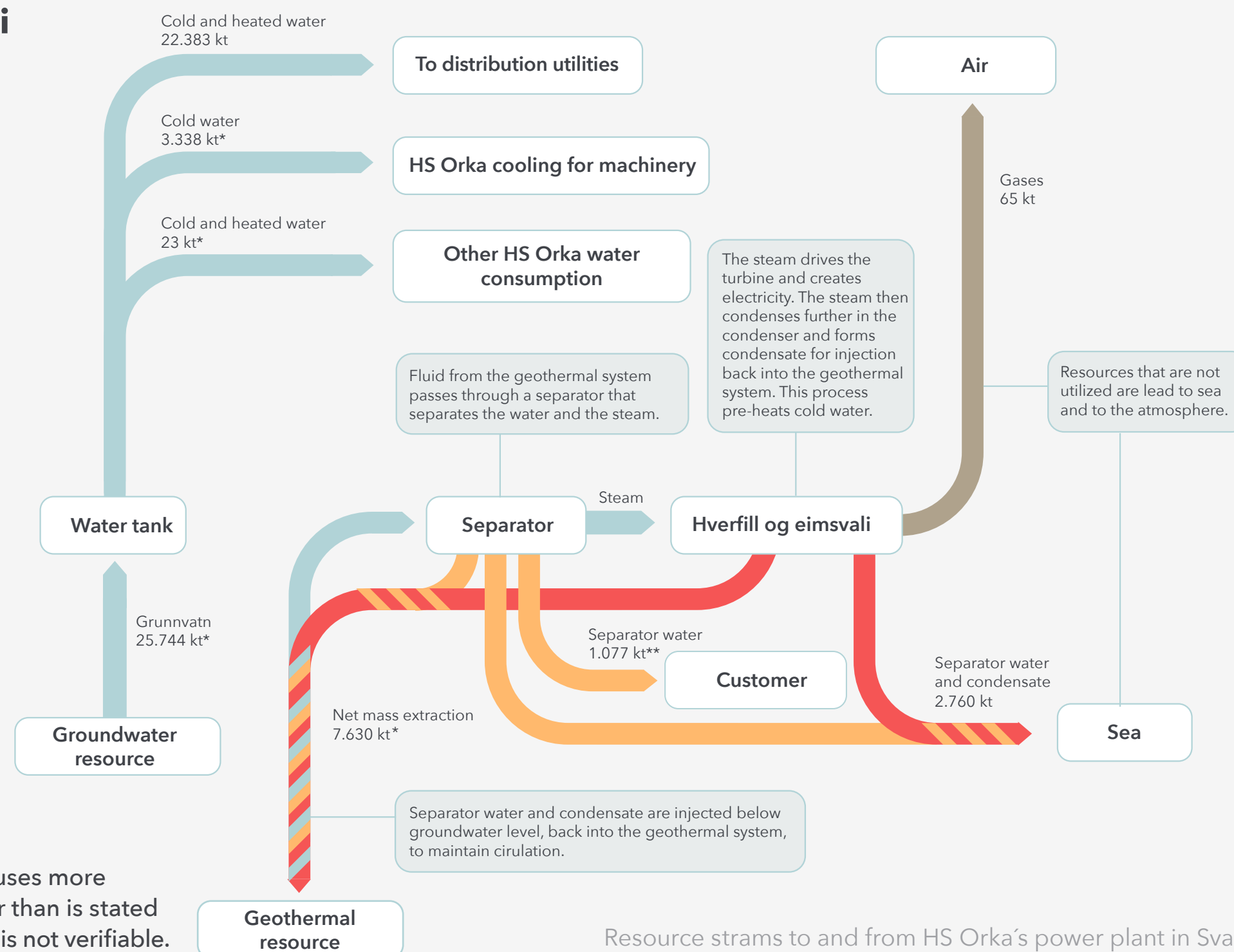


Resource streams

GRI 3-3 Material topic External assurance **A** **B**

The graphic below shows how groundwater and geothermal resources in Svartsengi and Reykjanesvirkjun that are used by HS Orka, companies in the Resource Park, and the distribution utility in the Reykjanes Peninsula. The data is partly derived from measurements in HS Orka's database. Where direct measurements are not readily available, numerical data is estimated from other measurements.

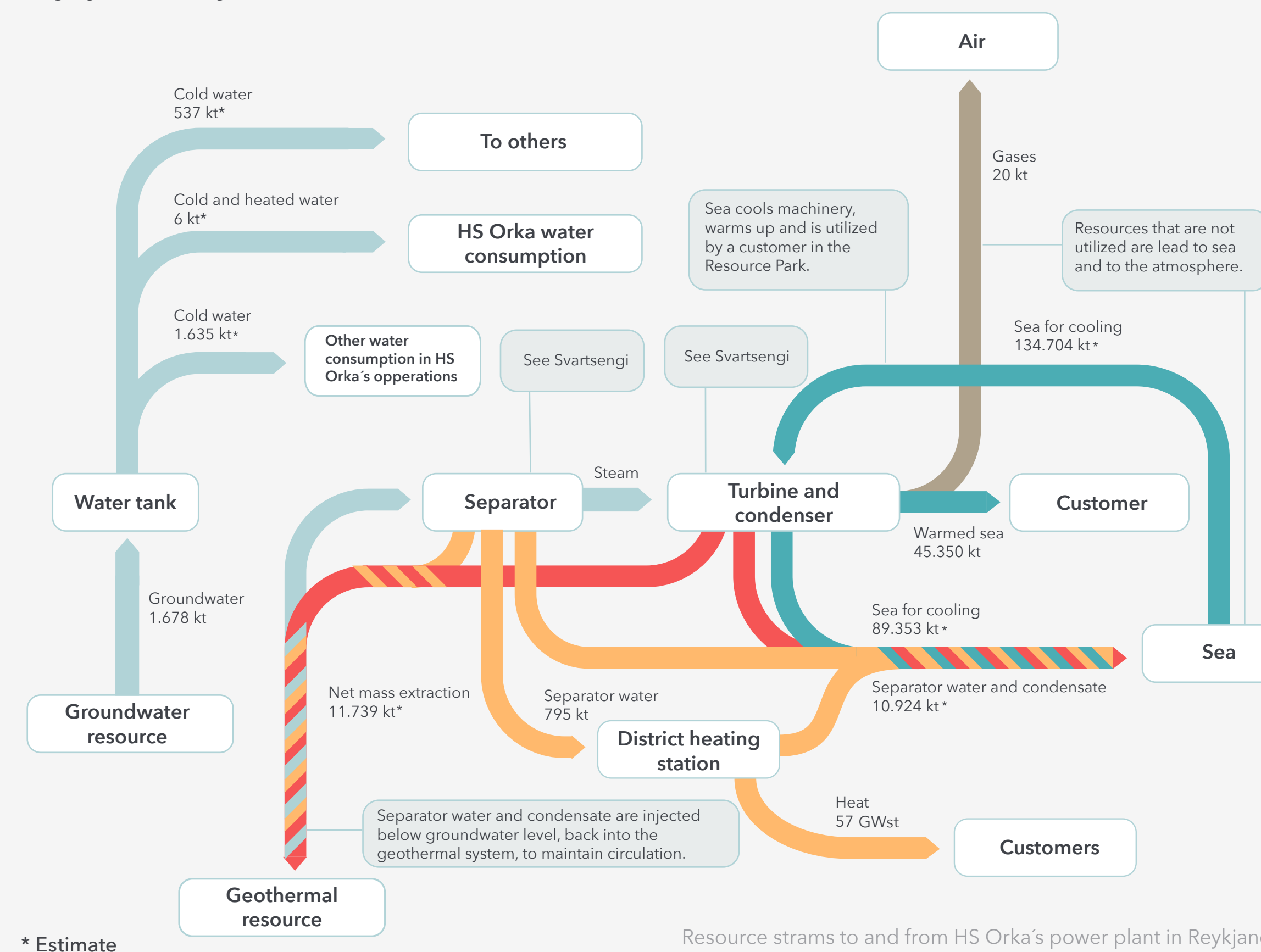
Svartsengi



* Estimate
 ** A customer uses more separator water than is stated here. That data is not verifiable.

Resource streams to and from HS Orka's power plant in Svartsengi.

Reykjanesvirkjun



* Estimate

Resource streams to and from HS Orka's power plant in Reykjanes.

Waste management

GRI 3-3 Material topic External assurance A B

Declared goals

HS Orka strives to return as much waste back into the circular economy as possible, and has set a target that by 2028, 90% of the waste from the operation will be sorted.

	2019	2020	2021	2022	2023	2028
Sorted waste (%)	80,5	85,1	86,6	88,2	85,6	90

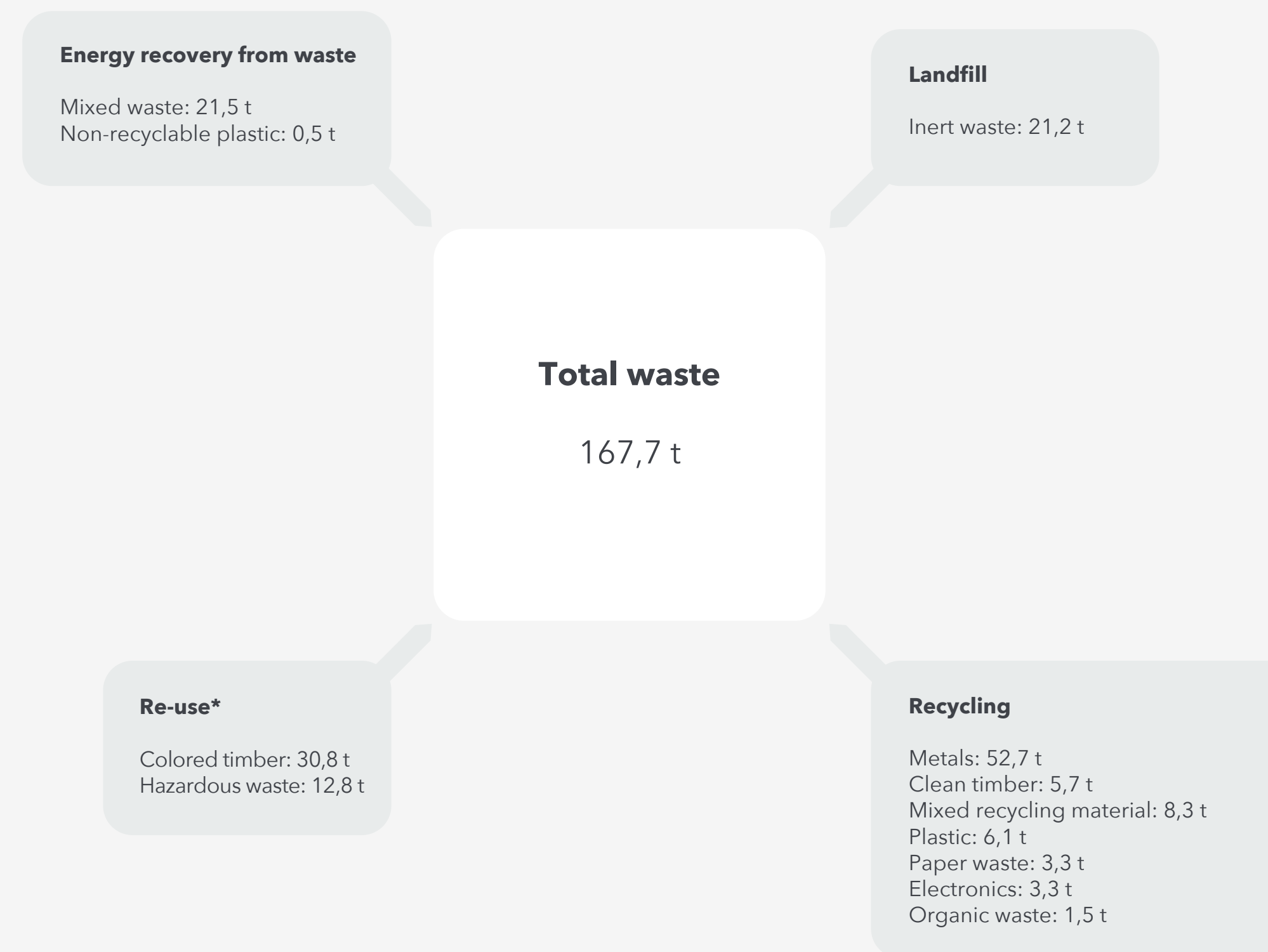
Increased automation in waste management registration

Data on waste handling from the service provider now stream into HS Orka’s new ESG database, where the company keeps track of information on the percentage of sorting and the amount of waste generated. The development of the database in 2023 provides an improved overview of waste management and it explains the lower historical values for sorting rates than previously published. The above figures are therefore revised from the previous year.

Changes in the legal environment and construction work in Svartsengi

In 2023, the amendment of Act no. 55/2003 on Waste Management was entered into force. In recent years, HS Orka has, in accordance with the services offered by the service provider, collected plastic, corrugated cardboard, cardboard, paper and small metal parts together in a container. The implementation of the legal amendment included the separation of these waste categories into individual waste containers. The amendment and a new workshop in Reykjanesvirkjun led to an increase in the number of waste containers and improved access to them.

During the previous year, HS Orka started an extensive project on the expansion and renovation of the power plant in Svartsengi. The project is actively monitored in terms of waste metrics. The seismic activity in November led to HS Orka’s employees having to move their workstations from Svartsengi, which made it more difficult to maintain an overview of waste management. Despite that, the company achieved the year’s goal of 85% waste sorting.



* HS Orka’s hazardous waste is incinerated, and bottom ash is generated. The service provider uses part of the heat generated during waste incineration for heating, and the bottom ash is used as a cover in landfills. Treated timber is also used as a cover in landfills.

Nature conservation and monitoring

External assurance **A** **B**

Communities depend on healthy ecosystems for essentials such as drinking water and air quality. At the same time, climate change and other human actions are undermining the health of the ecosystems that we rely on. This issue is discussed in HS Orka's new sustainability policy.

During the year, the framework for HS Orka's new research fund was defined. Through the fund, HS Orka will provide grants for study and research projects that have reference to the company's operations and its sustainability goals. The goal of the fund is to support scientific research, increase knowledge and promote progress and innovation. For example, during the last two years, the company has provided grants for research into the migration patterns of eagles. This is a project that fits perfectly within the research fund's allocation criteria.



Tungufljót

The dam of Brúarvirkjun's limits the flow of Tungufljót river.

Tunguflót is monitored in terms of the ecosystem.



Reykjaneskista

A mixture of condensate, geothermal water and sea passes through Reykjanesvirkjun's channel to the sea in Reykjaneskista.

The area is monitored in terms of chemical stress and the ecosystem.



Arfadalsvík

Condensate and geothermal water that cannot be utilized in Svartsengi is conducted by pipelines to Arfadalsvík.

The area is monitored in terms of chemical stress and the ecosystem.



Svartsengi

Condensate and geothermal water are irrigated to the surface.

The area is monitored in terms of chemical stress.



Freshwater wells

HS Orka operates water wells in Lágur and at Sýrfell

The area is monitored in terms of drinking water quality.



Grindavík

Among the gases coming from geothermal power plants is hydrogen sulfide.

Air quality is monitored at the company's power plants and in Grindavík.

Environmental monitoring in Arfadalsvík bay

HS Orka operates in various protected areas, including Arfadalsvík bay, west of Grindavík, which is listed in the nature conservation register. HS Orka runs a pipeline that conducts geothermal water and condensate water, which is not used in Svartsengi, to the sea in Arfadalsvík. The company monitors the impact of this on the bay. The pipeline has been in operation since 2016, and an assessment of the baseline condition in the bay was carried out the year before.

The results of monitoring in 2023 show that the number of species has not decreased since the initial assessment of the baseline. Findings indicate that the percentage of algal species has changed, and the concentrations of nickel, copper and cadmium have increased in some sections. There is a large variation in environmental factors, such as salinity, sea temperature, acidity, weather conditions and the ratio of nutrients in Arfadalsvík, which may explain these changes.



The monitoring service provider's report on the results of the sampling states that they were unable to link the changes to the activities of HS Orka, especially the increase in the concentration of heavy metals, as the stations closest to the outlet showed insignificant or no elevated values.

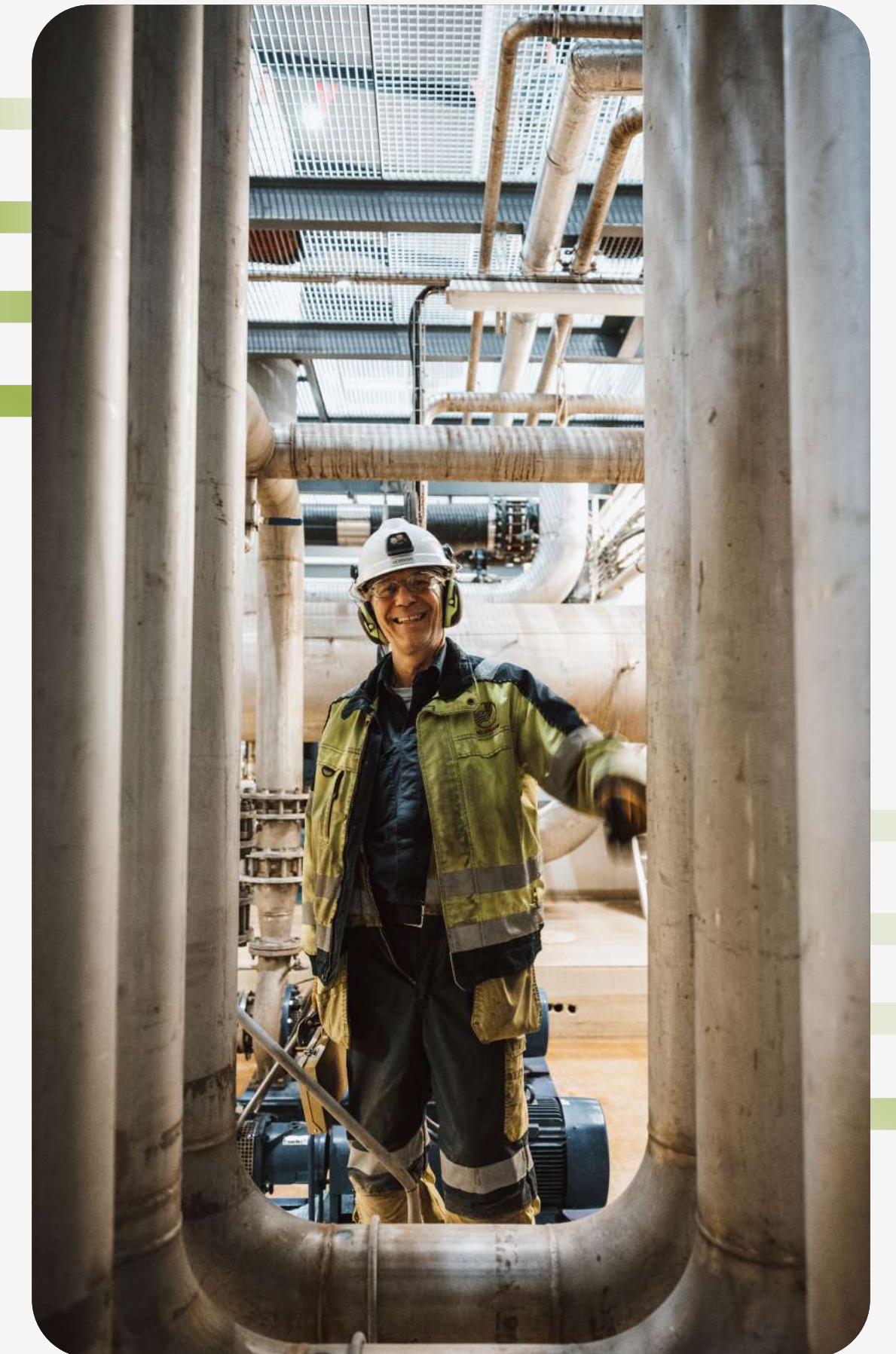
Air quality and pollution prevention

Hydrogen sulfide is emitted from geothermal systems and HS Orka monitors these emissions. In 2023, the emissions were 814 tons in Reykjanesvirkjun and 1.142 tons in Svartsengi. HS Orka monitors the concentration of hydrogen sulfide by the town of Grindavík due to its operations in Svartsengi, in accordance with regulation no. 514/2010 on the concentration of hydrogen sulfide in the atmosphere.

The monitoring of drinking water quality in the company's water sources at Sýrfell and in Lágur is carried out by the operating permit issuer, the Suðurnes Health Authority and HS Orka. The quality of the drinking water met the requirements, during the year. The Suðurnes Health Authority also issues operation permits for Svartsengi and Reykjanesvirkjun and inspects the premises of these power plants. The Suðurland Health Authority issues the operating permit for Brúarvirkjun and the East-Iceland Health Authority issues the operating permit for Fjarðarvirkjanir. There were no deviations from HS Orka's operating permits, in 2023.

Society

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Preventive measures and contingency plans

GRI 3-3

Material topic

External assurance

A

B

The seismicity and eruptions in the Reykjanes Peninsula have marked the local community since the volcanic eruption began in Mt. Fagradalsfjall, on March 31, 2021. Whereas in the earlier stages, HS Orka's operations were not significantly affected by the natural disasters, a change occurred at the end of October 2023 when unprecedented seismic activity led to the evacuation of Grindavík municipality, on November 10th. The headquarters and power plant of HS Orka in Svartsengi were evacuated and the power plant was remotely controlled from Reykjanes Power Plant. This made it possible to keep all the production of the company uninterrupted. Volcanic upheavals followed the seismicity and on December 18th Sundhnjúkar craters erupted, not far from Svartsengi.

HS Orka's mitigation and contingency plans are aimed at securing the operation of the company's power plants, as they represent key infrastructure. Before the natural disasters occurred, in November, preparations had already been made by HS Orka to improve its readiness to natural hazards. When a Level of Uncertainty was declared by the Department of Civil Protection and Emergency Management (DCPEM), at the end of October, defenses and plans were activated, in cooperation with response parties, making it possible for the operation of the geothermal power plants in Svartsengi and Reykjanes to remain uninterrupted. HS Orka's preparatory work and mitigation measures to protect power plants, pipes and equipment have increased the likelihood that this infrastructure will withstand a potential lava flow.

The main challenge in infrastructure protection is to ensure uninterrupted production of hot water for the communities on the Reykjanes Peninsula, in the event that the operation of the power plant in Svartsengi is halted. It is possible to ensure cold water and electricity by other means, but no quick alternative measures are available for hot water production. The cooperation between emergency response parties and stakeholders due to the seismic activity in Reykjanes has been

successful, but HS Orka also prepares its own scenarios and response plans in order to ensure the safety of people, protect infrastructure and maintain the safety of the delivery of the company's production.

Preventive actions by HS Orka

- Operating systems and control equipment were changed so that it would be possible to remotely control Svartsengi from Reykjanesvirkjun. The control equipment in Svartsengi is complex and it was not designed for the possibility of unmanned operations. This preparation was a prerequisite for the possibility to transfer the management of the power plant on the same day that Svartsengi had to be evacuated; therefore, the company could remotely control the production from Reykjanesvirkjun.
- Contingency plans and evacuation plans were updated, escape routes defined, and evacuation rehearsed.
- The number of multi-gas meters and escaping gas masks was increased in order to protect people against sudden gas contamination. Local gas detectors updated.
- New backup power stations became ready in Svartsengi, in the spring of 2023.
- At the end of October, our own defenses at Svartsengi were further prepared:
 - Material to protect pipes and boreholes from possible lava flows was made available.
 - Contingency plans for well shutdowns were introduced.
 - Embankments to protect hot water production were planned.
- The current new construction works, at the power plant in Svartsengi (SVA7), are preventive measures as the power plant is expanded and equipment is renewed - all measures are aimed at increasing the delivery reliability of electricity supply and making hot water production more reliable.

Preventive measures in collaboration with DCPEM and other parties

- In light of seismic activity in the first half of 2021, HS Orka urged the government and other parties to initiate joint preparations for the protection of socially important infrastructure in Svartsengi to ensure uninterrupted energy production during volcanic activity. In 2021, a working group on the protection of important infrastructure in the Reykjanes Peninsula was

officially established with representatives from Verkís Consulting Engineers, the University of Iceland, the Icelandic Meteorological Office, and the engineering firm Efla.

- In 2022, a report was presented, with recommendations for lava flow defense measures based on selected scenarios for the possible location of an eruption and its duration.
- Work began on updating Civil Protection's contingency plans.
- Design of embankments to divert lava from the volcanic eruption in Fagradalsfjall.
- During the year, the main pipes for hot and cold water between Svartsengi and Grindavík were renovated and laid underground. Some of the older pipes were damaged during earthworks, in 2022. The project was a joint effort of HS Orka and HS Veitur.
- Freshwater wells:
 - Lava flow models confirm that it is unlikely that the water catchment area in Lágur is jeopardized at the same time as the infrastructure in Svartsengi.
 - Contingency plans for water collection are ready in the event that Svartsengi's operations are brought to a halt.
 - Reserve freshwater sources have been mapped.
 - HS Veitur drilled a hole in an older water source at Garður in consultation with HS Orka.
 - Other possible water sources are being studied in connection with HS Orka's operations.
 - There is a need to update contingency plans for heavy transport via the Grindavíkurvegur road, near the water protection area in Lágur.

Actions of the government following the natural disaster in November

- On the basis of the report of a working group on the protection of important infrastructure in Iceland, the Icelandic Parliament approved a bill on the protection of important infrastructure in the Reykjanes Peninsula, on November 13th 2023. The law eliminated uncertainty concerning the buildup of defenses and who was responsible for the planning and implementation of projects. When the law was enacted, the DCPEM took over the organization of the protection work at Svartsengi.
- HS Orka's continued with an active dialogue with the DCPEM regarding protective arrangements.
- Embankments were created around Svartsengi, and construction continued in November and December.
- The Suðurnes Power Line's high-voltage mast at the barrier was raised to a higher level,

in collaboration with Landsnet, HS Orka and HS Veitur. Recent back-up power stations in Svartsengi ensured uninterrupted production. Two additional masts are to be raised.

- Protection of the hot water pipeline to Reykjanesbær (Njarðvíkuræð):
 - The idea of covering pipes with soil material was abandoned, as it was not considered a good, permanent solution.
 - The option to lay a new pipe underground – a bypass pipeline – was considered.
 - Design completed and construction started.

Special focus on mitigation and contingency plans for the hot water supply from Svartsengi

- In case the operation of the power plant in Svartsengi was somehow impeded, one of the major challenges would be to ensure hot-water supply for the communities in Suðurnes, as there are generally no backup heating resources available. In cooperation with HS Veitur and the government, HS Orka has worked on contingency plans aimed at bridging the gap until it would be possible to bring Svartsengi back into operation. This is a complex issue that is still being mapped out. One part of the plan involves protecting the so-called Njarðvíkuræð pipeline.
- Electric heating is a complex and extensive project. The distribution system would have to be strengthened so that electric heaters could be used in all houses.
- A preliminary analysis has been carried out on the feasibility of an emergency boiler installation for the heating of houses. A solution like that is costly and requires the burning of fossil fuels. It may take a few months to get it up and running.
- As a temporary solution, gas burners are a possible option, but few would know how to handle them safely indoors and strong ventilation would be necessary.
- A preliminary survey of the possibilities of low-temperature processing was carried out and this work will continue.
- A cooperation group was formed, at the end of the year, made up of representatives of the Ministry of Finance, the Department of Civil Protection and Emergency Management, the National Police Commissioner, and HS Orka, to look for permanent solutions and implement them.

In the notes to the 2023 Financial Statement, there is commentary on the eruption on the 8th of February 2024 that severed the hot water pipeline from Svartsengi. It took a big effort over a period of four days to reestablish hot water flow through the part of the pipeline which needed complete repair.

Security of power supply and related infrastructure

GRI 3-3

Material topic

External assurance **A** **B**

HS Orka is a public service company. The core operation of the company is twofold: on the one hand the production of hot and cold water for the local community, and on the other the production of electricity for distribution nationwide. Unprecedented seismic activity in Reykjanes at the end of the year shed a clear light on the importance of the company’s infrastructure and production for the surrounding communities as well as nationwide. This infrastructure provides hot and cold water to a community of up to 32 thousand inhabitants: homes, companies, schools, health institutions, ports and the international airport in Keflavík. The company produces electricity that goes into the national transmission company Landsnet’s main transmission grid for use throughout the country. The electricity production in Svartsengi is therefore part of the nation’s energy security.

The infrastructure

The company operates a core system for electricity, hot water, and freshwater. The freshwater supply is an integral part of the electricity production. Its core system consists of supply vessels, pumping stations and storage tanks. A dedicated freshwater processing system also includes well sites and pumping stations. Similarly, geothermal wells and their collection systems are considered important infrastructure. In electricity production, the infrastructure consists of the machinery and electrical equipment of the power plants and high-voltage equipment to feed into Landsnet’s transmission grid.

Delivery reliability

The energy delivery reliability from HS Orka depends on one hand on the condition of HS Orka’s assets and their operations, and on the other hand, the distribution system that brings HS Orka’s products to its customers. The infrastructure of the transmission and distribution networks are largely the responsibility of third parties. It is in the hands of HS Orka to ensure the condition of the production infrastructure and delivery reliability from the power plants. External conditions, such as natural hazards or changes in geothermal systems, can present challenges for the operation. HS Orka’s responsibility is to provide qualified personnel to run the power plants, maintain assets and machinery, seek all means to ensure protection against external threats and draw attention to how the electricity transmission and distribution systems can be improved.

Energy transition in energy shortage

According to Landsnet’s energy forecast (August, 2023) on the development of the demand and supply of electricity, 2023-2060, energy shortage is foreseeable through most of the forecasted period. The next steps taken in the energy transition will call for increased access to electricity and in general the demand for renewable energy will increase considerably in the foreseeable future, both domestically and worldwide.

Goals and projects

- In addition to an increase of 22MW, the investment in the expansion and renovation of the power plant in Svartsengi (SVA7) includes increased delivery reliability of electricity and hot water from the power plant.
- Completion of the first face of the bypass for part of the Njarvíkuræð pipeline (hot water).
- Mapping out of new possible areas for the processing of drinking water, other than Lágur will be continued. The next projects include the drilling of exploratory wells. The project is being executed in collaboration with the Association of Municipalities on the Reykjanes Peninsula. The processing of fresh water from new areas could call for a change in municipal planning.
- Negotiations are ongoing with the municipality of Hafnarfjörður, the landowner in Krýsuvík, regarding research into and the utilization of resources in the Krýsuvík area. At the same time, we are working on an agreement with Veitur ohf., on a cooperation on the production of hot water from a power plant in Krýsuvík. Preparations have begun for the construction of a rig site as well as a service road for the drilling of the first exploratory well.
- Work will continue on preparation and research for Hvalárvirkjun power plant in the Westfjords in Iceland. A sustainability assessment of the project's preparatory stage, based on the Hydropower Sustainability Standard (HSS), is being prepared.
- Wind power options will be reviewed. Investments have been made in measuring devices which measure wind force and other variants without having to construct measuring masts.
- A preliminary inspection has begun on the laying of a CO₂ gas pipeline between Svartsengi and Reykjanesvirkjun for the planned use of CO₂ in the production process of an e-fuel producer in the Resource Park.



Safety and work environment

GRI 3-3

Material topic

External assurance **A** **B**

ESRS S1 14

The purpose of HS Orka’s occupational safety and health program is to ensure that everyone who works for the company, both contractors and employees, returns home safely from work. The core of the program is employee training, risk assessment of tasks, and incident registration (HSE incident reports). The number of HSE incident reports is a sign of an active safety system that catches incidents so that it is possible to learn from them and initiate improvements.

Occupational health and safety policy

In the year 2023, previous policies were reviewed, and a new occupational health and safety policy was put into effect. The main improvement in the new policy is that it better describes how we must all work together to have a good safety culture and strive for the objective that no one gets hurt while working for HS Orka.

Training

The company’s employees and contractors get access to HS Orka’s learning network at the onset of work and must complete interactive training in the main aspects of safety, health and environmental issues before starting work in the company’s operations sites. The interactive training is part of ensuring that everyone who works for HS Orka receives adequate training and education. The training network includes other shorter courses. The course selection was expanded in 2023. Skills in occupational health and safety issues are enhanced and maintained through regular and focused training. Special emphasis is placed on training staff in the use of “life-saving controls” (see *My Golden Rules below*).

2023 Goals and achievements

The below table gives an overview of HS Orka’s key performance indicators (KPIs) in HSE matters, as well as goals and results for the year 2023. In short, all HSE targets for the year were achieved except for the goal of the number of HSE audits. The reason for this is that the construction of the new power plant in Svartsengi (SVA7) started later than planned, and work was postponed due to seismic activity.

	HSE (KPIs) 2023	Targets	Actual 2023
Leading	HSE incident reports	450 over the year	818
	Closed HSE actions	450 over the year	738
	Take five	840 over the year	894
	Management Gemba Walks	216 over the year	204
Lagging	Lost time incidents	0	0
	Environmental incidents	0	0
	Medical treatment cases	≤4 yearly	2
	First aid incidents	≤4 yearly	1

In 2023, a total of 738 notifications were received concerning safety, health, and the environment. Out of these, there were two occurrences that required treatment at the emergency room, one first aid incident and two near misses. We are not aware of any work-related cases where the health of employees suffered permanent damage and no reports of such issues have been received. The total number of hours worked by employees and contractors in HS Orka’s work areas was 203.107, with the lost time incident frequency rate (LTIFR) of 0 per 200.000 working hours. The recording of contractor hours is not complete and some of the smaller tasks done by contractors are missing from the total.

Risk assessment and critical controls

A summary of risks, critical controls, and risk levels from the job safety analysis for each risk category is recorded in the company's risk register. The figure below shows a risk matrix that clarifies the level of risk after the application of controls, i.e. residual risk. Contractors who carry out larger tasks for the company submit a risk assessment before the work starts. The risk assessment is part of the work permit for the contractor's temporary and occasional tasks. "Take five" is a short and simple risk assessment that anyone can do for simple tasks that have not been systematically risk assessed.

		Residual Impact				
		Negligible	Low	Medium	High	Severe
Residual Probability	Almost certain		1			
	Very likely	1				
	Likely					
	Unlikely		2	1	2	3
	Very unlikely	2		4	6	7

My Golden Rules

For those situations where risk assessments have revealed the possibility of the most serious consequences, fatalities, or severe permanent negative effects on the quality of life, critical safeguards called "My Golden Rules" have been defined. These rules are simple and should be easy for everyone to understand and enforce. The rules were implemented in 2023 and apply to all work carried out under the auspice of HS Orka. The Golden Rules are presented and visible to everyone entering the work areas.

**GULLNU REGLURNAR MÍNAR
FALL ÚR HÆÐ >2m**

Ég nota fallvarnabelti ef öðrum vörnum verður ekki komið við

Ég nota alltaf fallvarnabelti í spjótlyftum og mannkörfum og stand á botni körfu

Ég skoða búnað fyrir notkun og tengi mig við traustan festipunkt

Ég tryggji að verkfæri, búnaður eða efni geti ekki fallið á aðra

Ég tryggji að vinnufélagi fylgist með mér þegar ég vinn í fallvarnabelti

HS ORKA

**GULLNU REGLURNAR MÍNAR
KRANAR OG HÍFINGAR**

Ég skoða krana og hífubúnað fyrir notkun og tek skemmdan eða bilaðan búnað úr notkun

Ég nota eingöngu viðurkenndan hífubúnað

Ég fer ekki nær hangandi byrði en 1,5 x hæð byrðar

Ég nota línur ef ég þarf að stýra byrði

Ég tryggji að óviðkomandi gangi ekki inn á hættusvæði hífingar

HS ORKA

**GULLNU REGLURNAR MÍNAR
LOKUÐ RÝMI**

Ég fæ "Heimild til inngöngu í lokað rými" áður en ég fer inn og tryggji að öll atriði á gátlista séu uppfyllt

Ég tryggji að hættuleg orka sé beisluoð (Læsa – Merkja – Prófa)

Ég staðfesti að andrúmsloft hafi verið mælt

Ég er með fjölgasmæli á mér O₂, H₂S, SO₂

Ég tryggji að vinnufélagi sé fyrir utan rými allan tímann sem ég er inni og björgunaráætlun sé til staðar

HS ORKA

**GULLNU REGLURNAR MÍNAR
LÆSA – MERKJA – PRÓFA**

Ég greini orkugjafa

Ég beisla orkugjafa

Ég læsi á beislunarstöðum

Ég upplýsi samstarfsfélaga með því að merkja útlæsingar

Ég staðfesti með prófunum að beislun sé virk

Ég tryggji að öruggt sé að gangsetja við verklok

HS ORKA

Goals and projects 2024

- We will continue to focus on continuous review and progress as regards the risk caused by seismic activity.
- Special emphasis will be placed on training and active participation of the workforce in the job safety analysis. Work will also continue to promote critical controls and training people in the effective application of these.
- Targets for 2024 are listed below:

	HSE (KPIs) 2023	Targets
Leading	HSE incident reports	600 over the year
	Closed HSE actions	600 over the year
	Take five	960 over the year
	Management Gemba Walks	240 over the year
Lagging	Lost time incidents	0
	Environmental incidents	0
	Medical treatment cases	≤4 yearly
	First aid incidents	≤4 yearly

Other matters

- Seismic activity had a major impact on all of HS Orka’s operations, during the year, and a special emphasis has been placed on strengthening cooperation and collaboration related to civil defense, both locally and nationally. As an example of this cooperation, the safety manager and safety representative were invited to participate in a Nordic educational conference in Sweden, last summer, along with representatives of the Department of Civil Protection and Emergency Management, representatives of two ministries, and representatives from three other important infrastructure companies. Various issues related to the common interests of the Nordic countries in the field of business cooperation and civil protection were discussed, at this conference.

Always on the lookout

Viðar Arason, safety representative at HS Orka

What is your role in HS Orka’s emergency management?

“You could say that I’m ‘always on the lookout,’ and that’s how it’s been recently with all the seismic activity. As a part of HS Orka’s emergency management team, I collect information from response parties and civil defense on the state of affairs, and I assess it. In my work, I also make good use of my network and knowledge from previous jobs, as I formerly worked as a sergeant and paramedic at the Healthcare Institution of South Iceland. I have been part of various crisis operations in Iceland and have participated in challenging projects as operations controller. The work is diverse, ranging from being the company’s eyes on the ground when something happens to participating in cooperation activities with external parties on security issues and emergency management.”



The emergency plan is an important tool

“HS Orka is defined by the Department of Civil Protection as a socially important infrastructure company. This means that the company is required to have a contingency plan to mitigate the impact and minimize the likelihood that operations will be interrupted in times of danger and emergency. The plan is intended to describe responsibility and division of labor, response to defined emergencies, communication channels and the relationship of the emergency management with

the company’s staff and external contacts, for instance public defense and other important stakeholders. The emergency plan also applies to daily operations, such as for responding to sudden blows and accidents that affect employees, as well as contractors or visitors. Moreover, the plan is meant to ensure that there are no operational shutdowns due to serious incidents, including a natural disaster.”

Different parts work together

“You can look at the importance of infrastructure from different angles. For example, a hospital is an important infrastructure and therefore it is necessary to ensure that electricity is available for the service. Suppliers who import medical supplies cannot fulfill their role if they do not have access to fuel, and so on. Critical infrastructure must be defined by importance. As the situation is now regarding Svartsengi, the events of late 2023 shed a clear light on the importance of ensuring the security of service reliability, not least the supply of hot water.”

Many steer the boat

“It’s not only the Department of Civil Protection that is in charge of ‘steering the boat’ when disasters take place. It is up to different organizations to make continuous progress to strengthen resilience, which refers to how quickly and successfully operations or the community recovers from a shock and regains previous strength. It is important that certain aspects of operations and society have a high resilience to shocks, which ensures uninterrupted operations when significant events happen.”

The priority is to prevent harm to people

“Risk assessments and contingency plans that anticipate worst-case scenarios can lay the foundation for a targeted response when shocks occur. The priority objective of emergency management is always to prevent loss of life and injury to employees, contractors, and visitors. HS Orka’s emergency management must ensure a coherent and coordinated response to incidents that threaten the safety of people in the company’s operations area, as well as ensuring the uninterrupted operation of the overall activities.”



Human resources and equality

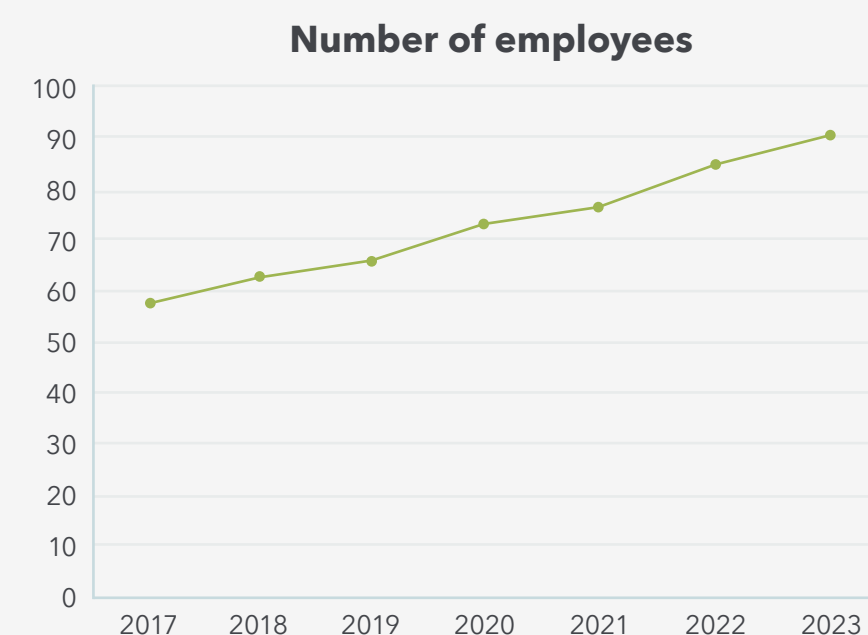
External assurance **A** **B**

The total number of employees at the end of the year was 90 (2022: 85), and the percentage of women was 21% (2022: 18%) which is an increase between years. The company hired eight new employees during the year, and employee turnover was 8%, which is lower than in recent years (2022: 14%, 2021: 13%).

2017	2018	2019	2020	2021	2022	2023
59	63	66	72	77	85	90

New hires	Female	Male	Total
Number	4	4	8
Rate	50%	50%	100%

Age distribution	Under 30	30-50 years	Over 50
Number	1	5	2
Rate	13%	63%	25%



Those who start working for HS Orka receive induction training related to safety, environment, and information technology as well as other aspects related to the operations. Part of that training takes place on a learning network for employees. The average number of training hours per employee, in 2023, was eight hours. At the end of the year, work began on a detailed needs analysis of the skill elements of different roles, and the decision was made to start with the production division. In this division there are diverse jobs which require different types of skills. This work will be continued in other divisions in 2024.

Annually, management assesses the need for continuing education and training within each division. As a part of the training program, employees are invited to a performance interview at least once a year with their next superior. Performance interviews are scheduled for the last quarter of each year, but due to high work load because of seismic activity, it was only possible to conduct a small part of the interviews before the end of the year. The interviews have therefore been rescheduled for early 2024. Participation in performance interviews in 2023 was for this reason only around 30% (63% in 2022).

New human resource metrics

Job satisfaction is one of the most important factors in any business, and HS Orka has a dynamic team with diverse knowledge and skills. A detailed workplace analysis has been carried out every other year, and in May 2023, monthly human resources metrics were adopted, which take the pulse of the employees' well-being and other factors related to, for instance, job satisfaction, work conditions and well-being in the workplace. The average job satisfaction score, since the measurements began, is 7.9 out of 10, which was 0.2 above the measurement average.



Regular health checks

For several years, HS Orka has had a health check agreement with Vinnuvernd, a firm that specializes in occupational health and safety. Vinnuvernd offers employees access to the company doctor and a health service center as well as the services of psychologists. Every year, employees are offered detailed health check-ups, and this year a special screening list was sent out to screen for anxiety, depression, and stress, as well as a separate screening list for burnout. In 2023, staff participation in the health check-ups was 81% (compared to 69% in 2022).

Diversity and distribution of staff

Work is carried out in accordance with the gender equality plan, which is reviewed annually. Among other things, it sets out the objective of striving to equalize the gender ratio within the company, in addition to celebrating diversity. These objectives are for example reflected in the selection of the UN Sustainable Development Goals (SDGs) for implementation in the company's strategy, where goal no. 5, Achieve gender equality, is one of HS Orka's chosen SDGs. HS Orka's human resources policy was reviewed, during the year, along with processes

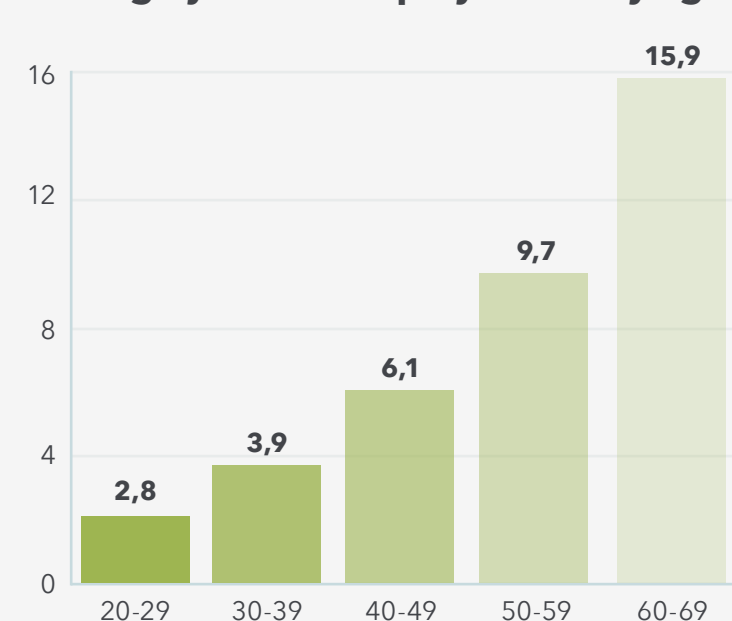
related to bullying, sexual and gender-based harassment and violence. The below table shows the distribution of permanent staff at the end of 2023 by gender, age, and area of responsibility. Women make up 43% of HS Orka’s executive board, which is the same percentage as in 2022. The gender ratio of managers is affected by the fact that five of the managers are in the production division, where almost exclusively men work today. There are 14 people in the company’s process council, six of whom are women. The company’s Board of Directors has two women and two men.

2023	Skilled workers and specialized positions	Experts	Managers	Total
Female	1	14	4	19
% of the total	1%	16%	4%	21%
Male	27	29	15	71
% of the total	30%	32%	17%	79%
Total	28	43	19	90

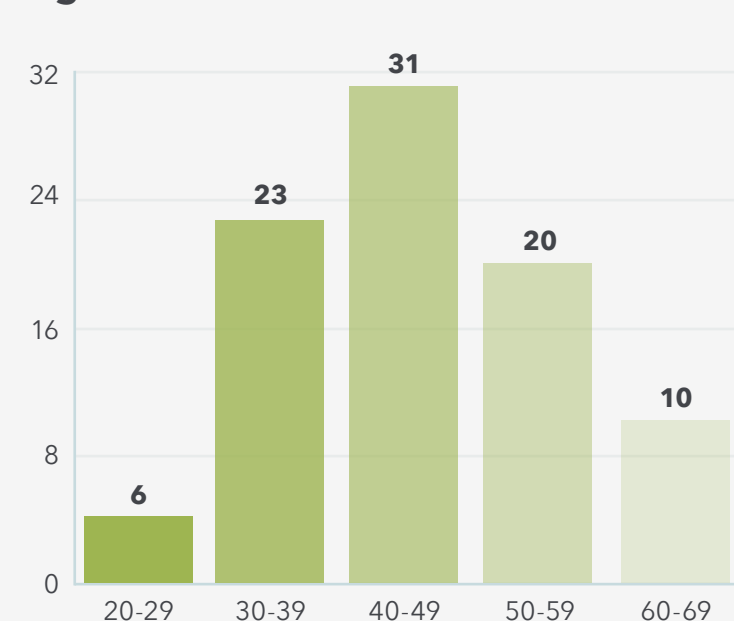
Age distribution:

Under 30% of the total	4	2	0	6
30 - 50 years	4%	2%	0%	7%
% of the total	12	30	12	54
Over 50	13%	33%	13%	60%
% of the total	11	11	7	29
Total	12%	12%	8%	32%
	28	43	19	90

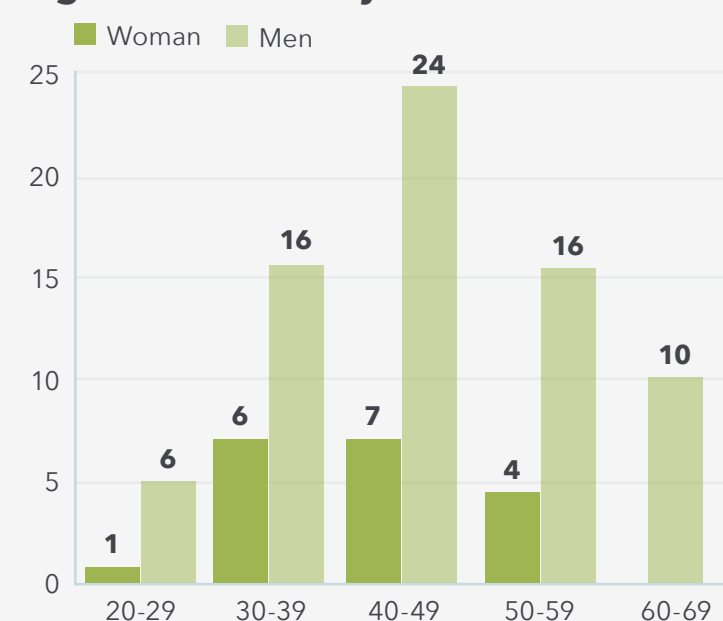
Average years of employment - by age



Age distribution



Age distribution by sex



The supply chain

GRI 3-3 Material topic External assurance A B

In order for HS Orka to succeed when it comes to sustainability, it is important that the performance of suppliers in the value chain is in line with the company’s priorities. The composition of HS Orka’s supply chain reflects the status of projects, both maintenance projects and new projects at any given time.

	2022	2023
Total trade with suppliers*	6.549 mISK	6.158 mISK
Trade with domestic suppliers	5.523 mISK	4.180 mISK
Trade with suppliers abroad	1.025 mISK	1.978 mISK
Number of domestic suppliers	491	516
Number of suppliers abroad	47	70

*Total purchases of goods and services

	2023
Suppliers with a sustainability assessment	33,9%

(% of the company’s total purchases)

In general, HS Orka’s suppliers must meet the same requirements and ensure the same rights that apply to HS Orka’s employees. HS Orka’s project and framework agreements, that have been signed with contractors and domestic suppliers, reflect this, and contain chain liability clauses that are intended to ensure that the provisions of labor legislation are enforced and that the whole workforce has rights in accordance with national laws and regulations. In the follow-up and resolution of cases, clear and mutual communication and the provision of information play a key role, and priorities are supported through education, training, and feedback. In one instance during the year, a company was prohibited from participating in a tender due to poor environmental and safety performance.

- In 2023, HS Orka carried out a detailed sustainability assessment of the company’s 10 key suppliers. The assessment is part of an increased emphasis on the value chain.
- HS Orka’s new sustainability policy contains a comprehensive overview of HS Orka’s focus on sustainability issues. The aim is to publish HS Orka’s new supplier policy in 2024, which will reflect these priorities.
- In HS Orka’s new climate policy, a target is set to that no later than in 2035, only renewable energy sources will be used in HS Orka’s construction areas.
- Efforts have been made to clarify and enhance data collection from suppliers. Part of that project is dealing with Scope 3 in the company’s emissions accounting. That part of emissions is within the scope of HS Orka’s goal of reducing emissions intensity.

Goals and projects

- Completing work on HS Orka’s procurement policy and building on the work that has taken place on other policies and supplier evaluations.
- Implementation of new sustainability guidelines for contractors.
- Implementation of new codes of conduct for contractors.
- Carrying out a sustainability assessment with a third party on at least 10 additional suppliers in 2024.
- Designing and formalizing HS Orka’s procedure for supplier evaluation and follow-up.
- Ongoing work to clarify and enhance data collection from suppliers.

Sustainability assessment of suppliers

In the autumn of 2023, a sustainability assessment was carried out on HS Orka’s 10 key suppliers. The assessment was carried out by the Icelandic analysis and evaluation company Reitun, and is based on information from meetings with managers and information collection. Each company was given a review and score for performance in 29 sub-categories related to environmental, social and governance aspects.

Environmental

Environmental Management
Climate-related Monitoring
GHG Emissions
Energy Consumption
Goods and Services

Social

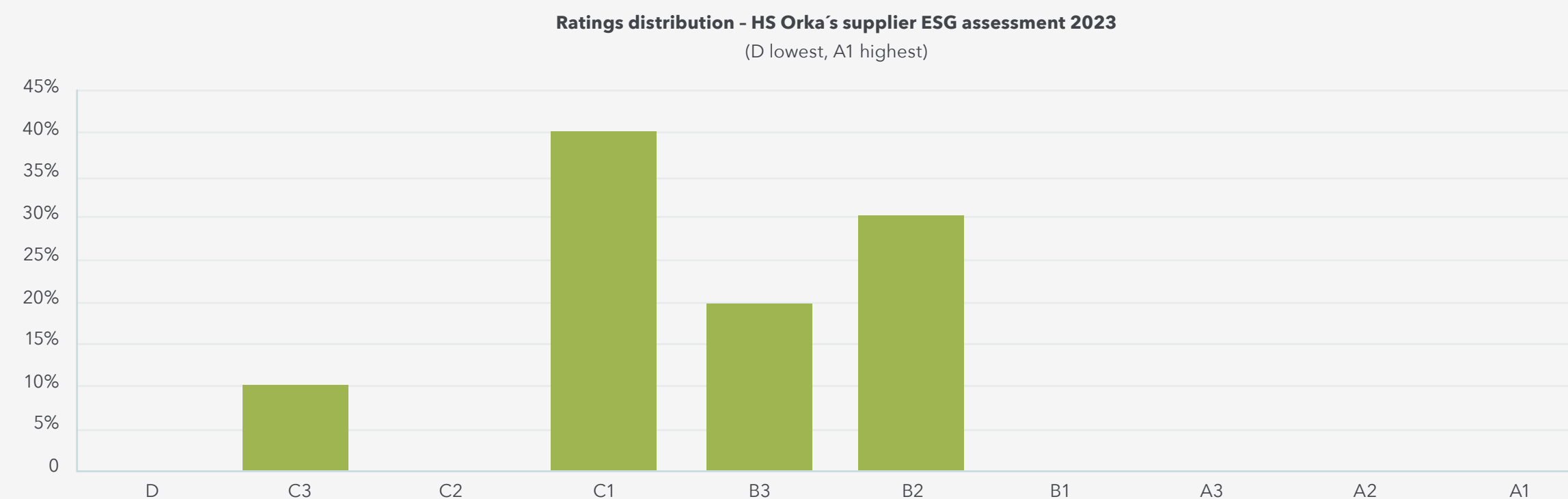
Discrimination
Health and Safety
Human Rights
Community Outreach
Customer Satisfaction

Governance

General Governance
Business Ethics
Information Security
Supply Chain
Sustainability Reporting

(The three sustainability categories and examples of subcategories that were evaluated in the sustainability assessment.)

The results of the sustainability assessment provided HS Orka with a useful overview of performance. The figure below shows the relative distribution of ratings for the suppliers that were evaluated. The assessment provided information on challenges and opportunities that will be useful in further collaboration and follow-up.



(Relative distribution of scores in Reitun’s sustainability assessment of HS Orka’s 10 key suppliers in 2023.)

Cyber security

External assurance **A** **B**

HS Orka is classified as critical infrastructure and must therefore comply with Act no. 78/2019 on the Cyber and Data Security of Critical Infrastructure.

New security solutions

In 2023, HS Orka adopted and implemented the service Skjöldur from IT company Advania, a service that uses Microsoft’s security solutions. The service team working for Skjöldur is constantly on watch regarding HS Orka’s systems and provides security monitoring and response to incidents. Monthly reports and regular information meetings are held where incidents are reviewed, and advice is given on preventive measures to strengthen defenses.

Exercises and education

Part of HS Orka’s emergency management took part in a cyber security exercise coordinated by Samorka (The Federation of Energy and Utility Companies in Iceland), in the fall of 2023. It was a tabletop exercise organized by KraftCert, a computer emergency response team, which turned out to be useful and instructive. Employees receive regular tips from HS Orka’s IT department, where they are informed about the cyber threats that are most prominent at any given time. Cyber security education is part of the induction training and at least twice a year employees receive training in cyber security issues. Several times a year, phishing attack simulation training is conducted on HS Orka’s employees to test their knowledge and conduct. The results of cyber security drills and training are presented at staff meetings and the importance of cyber security is emphasized.

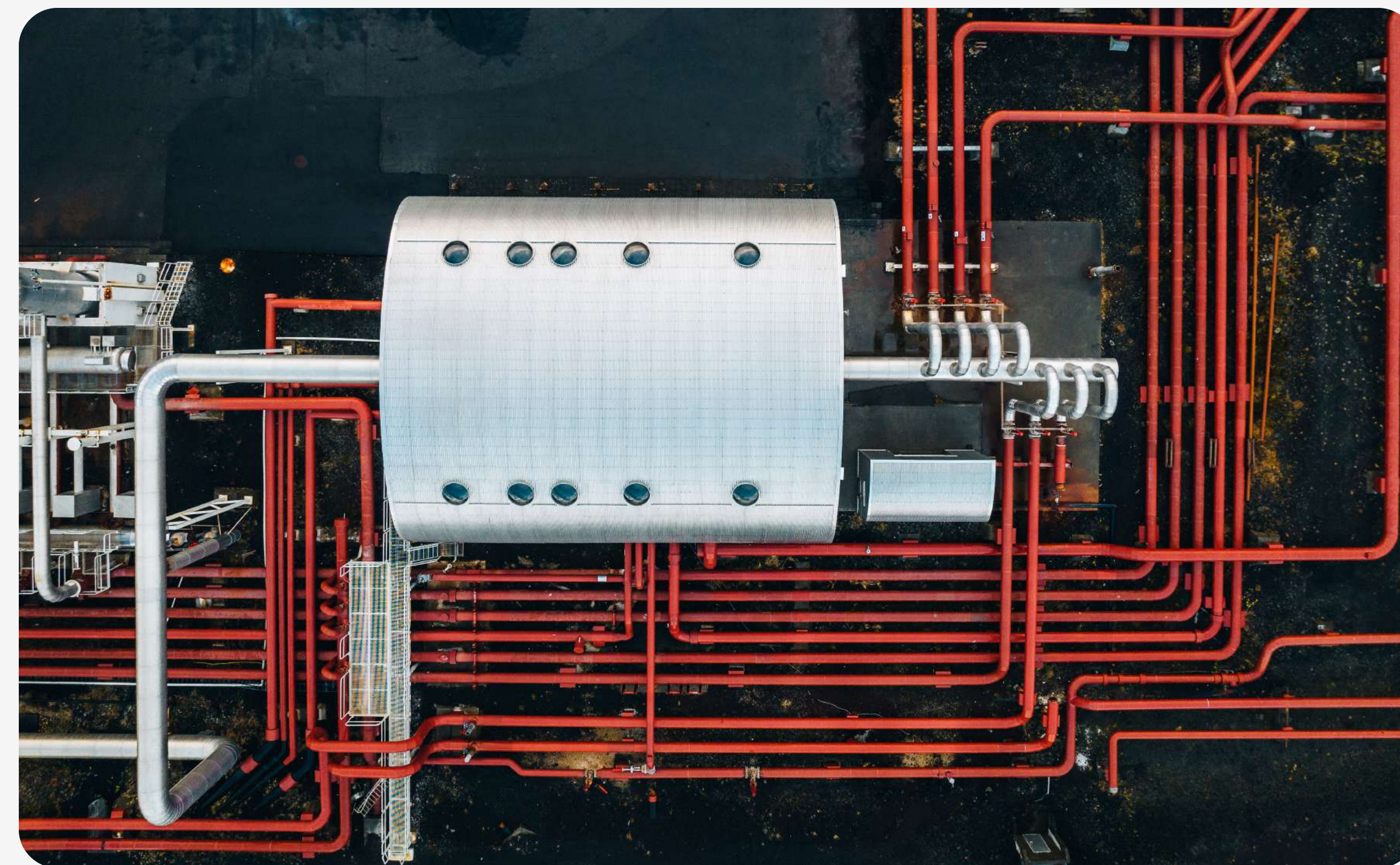
Constant monitoring

HS Orka performs active vulnerability testing of internal systems in cooperation with service providers. Incidents become suggestions, deviations or projects at HS Orka’s IT department, and work is done to reduce the number of weaknesses that arise. In 2023, a penetration test

was performed on HS Orka’s internal and external systems. This testing is carried out by an external party and in effect it involves hacking into HS Orka’s computer system.

Realistic security and contingency planning

HS Orka conducted a physical security test in Svartsengi where a security expert was hired to “break into” HS Orka’s premises and see how far he could get. For data security, a physical security audit is about finding out where the weaknesses are in the company’s access controls. In 2023, work also began on updating the IT department’s contingency plan, and that project is still ongoing.



HS Orka and the community

External assurance **A** **B**

HS Orka's Community Fund

HS Orka's Community Foundation was established in 2023, with the objective to support socially beneficial projects managed by individuals or groups. Grants are allocated twice a year. The focus is on clearly defined projects that have a positive impact on Icelandic society, quality of life and the everyday lives of people. Long-term sponsorship contracts or advertising agreements do not fall under the fund's criteria. While grant applications are accepted from all parts of the country, special emphasis is placed on supporting projects in the vicinity of the company's power plants. When choosing projects the UN's sustainable development goals that HS Orka has implemented are considered, among other things. HS Orka's Community council reviews applications and announces the allocation of grants.

First allocation 2023

Project	Recipient
Fab Lab Suðurnesja	Fjölbrautaskóli Suðurnesja
Hákarlar í skólastofunni	Hákarlar við Ísland
Sviðslistasýning - Annie Jr.	Ungleikhús Reykjanesbæjar
Kajakar fyrir námsbraut	Stóru-Vogaskóli
Uppbygging Krossneslaugar	Ungmennafélagið Leifur heppni
Fjölskylduviðburðir	Kraftur stuðningsfélag
Fyrsta almenningrafveitan á Íslandi	Byggðasafn Hafnarfjarðar
Verkefnið „Get together“	GETA hjálparsamtök
Menntunarsjóður	Mæðrastyrksnefnd Reykjavíkur
Demantshringur og þróun sýningarstarfs	Sveinssafn í Krýsuvík

Second allocation 2023

Project	Recipient
Það er alltaf gaman í stærðfræði	Heiðarskóli Reykjanesbæjar
Sagnastund á Garðskaga	Hilmar Bragi Bárðarson
Bambahús - Grænánaverkefni	Reykholtsskóli
Styrkveitingar Minningarsjóðs Ölla	Minningarsjóður Ölla
Fróðleiksfúsi á spjaldtölvur	Þekkingarsetur Suðurnesja
Hornsteinn samfélags	Verzlunarfjelag Árneshrepps
Virkniverkefni fyrir flóttafólk og hælisleitendur	Knattspyrnudeild Keflavíkur
Hreinsunarverkefni	Blái herinn
Fræðslukvöld PCOS og breytingaskeiðið	PCOS samtök Íslands
Fjörugur föstudagur - forvarnir á opnu húsi	Félag slökkviliðsmanna í Grindavík
Afreksíþróttir öldunga	Elsa Pálsdóttir

Membership of organizations

HS Orka is a member of numerous social organizations and participates in projects in various fields of the community. The company's participation can be of different kinds, ranging from supporting positive projects in the local community and sponsorship of non-profit organizations, to active participation in organizations that work on issues directly related to HS Orka's activities. Among the associations that the company is a member of, are:

- Green by Iceland
- Mannauður, The Association of Human Resources Managers
- Icelandic New Energy (Islensk Nýorka)
- Samorka (The Federation of Energy and Utility Companies in Iceland)

- Dokkan (a professional knowledge and contacts network of experts, academics, and professionals)
- Orkuklasinn (Iceland Renewable Energy Cluster)
- Reykjanes GeoPark
- The Confederation of Employers in Reykjanes
- The Project Management Association of Iceland

- Stjórnvísí (Excellence Iceland)
- Festa, Icelandic Centre for Corporate Social Responsibility
- The Iceland Chamber of Commerce
- Confederation of Icelandic Employers
- The Geothermal Association of Iceland

Stakeholders

It is in the nature of an infrastructure company like HS Orka that the activities involve various areas of contact with numerous stakeholders. HS Orka sees it as an important task to collaborate with the community, and it is to everyone’s advantage that the cooperation is based on high quality communication and information. The purpose of the sustainability report is to provide feedback on the issues that are important to both the company and stakeholders.

Environment

- Authorities**
 - Iceland
 - Icelandic laws and regulations
 - International organizations
 - Institutions of the European Union
 - Regulators and referees
 - The Environment Agency of Iceland
 - Licensors
 - Health authority (operating permits)
 - National Energy Authority (power plant and energy licence)
 - The Planning Agency (assessment obligation)
- Local communities**
 - Local authorities
 - All of Iceland
- Educational and research institutions**
 - Universities
 - Natural science centres
 - Private parties
- General public**
 - Neighbouring communities
 - All of Iceland
- Non-governmental organizations**
 - Green associations
- Certifications and competent authorities**
 - Parties in Iceland

Society

- Authorities**
 - Department of Civil Protection and Emergency Management
- Customers**
 - Local authorities
 - Utility firms
 - Companies in the Resource Park
 - Other companies
 - Individuals
- Suppliers**
 - Resources
 - Contractors
 - Service providers
 - Others
- Employees**
 - Employees
 - Contractors
- Non-governmental organizations**
 - Professional and other organizations
 - Charities
 - Other NGOs
- International organizations**
 - The United Nations (Sustainable Development Goals)

Governance and economy

- Authorities**
 - Iceland
 - Foreign/Global
- Owners**
 - Jarðvarmi (50%)
 - Icelandic pension funds
 - Ancala (50%)
 - Foreign pension funds
 - Other investors
- Investors and financiers**
 - Financial institutions
 - National and foreign investors
- International organizations**
 - Assessors and credit rating companies
 - Global Reporting Initiative
 - Task Force on Climate-Related FD
- Certifications and assurance providers**
 - Parties in Iceland
 - Parties abroad

Economic Impact

External assurance A B

Numbers in ISK millions

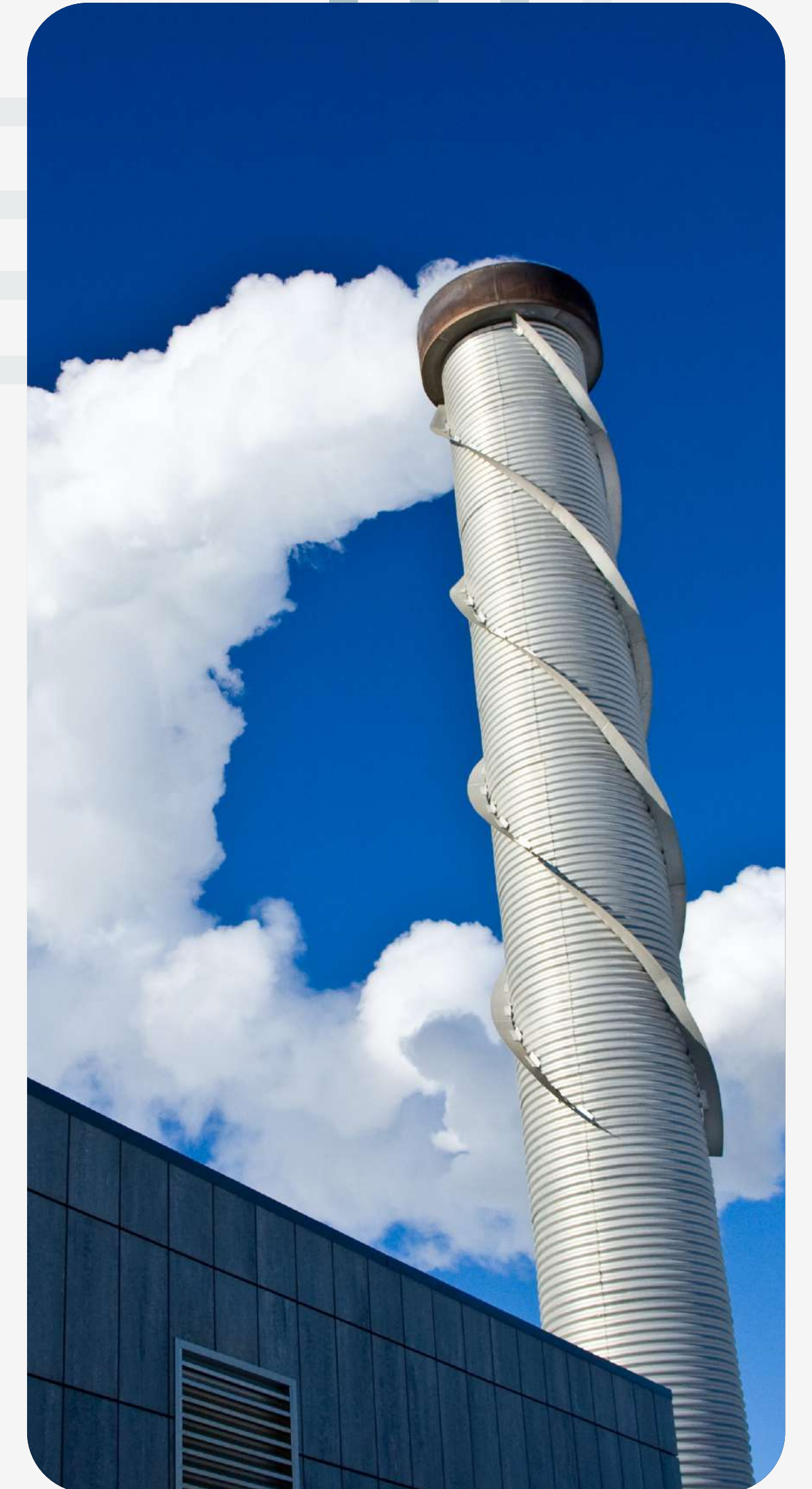
Economic impact

	2023	2022
Operation costs	1.703	1.337
Support of social infrastructure	31	25
Wages	2.329	1.947
Investments	4.915	5.853
Owners and lenders		
Dividend	0	0
Share capital deduction	4.017	1.429
New capital	-5.599	0
Shareholders loan	0	-5.485
Capital costs	1.634	585
Drawdown of capex facility less installments of new loans	-4.297	-2.964
Government		
Income tax	279	19
Total economic impact	4.981	2.722

Governance

50 EU Taxonomy

53 Governance

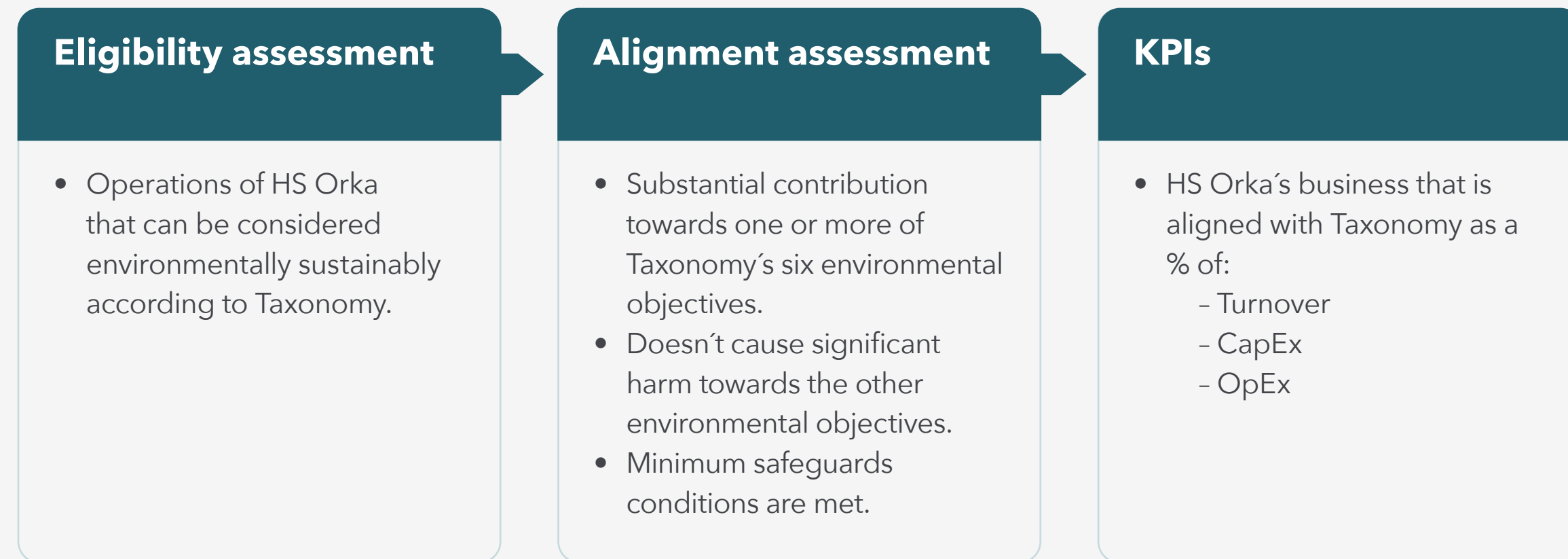


EU Taxonomy

GRI 3-3 **Material topic**

E1-1, ESRS 2 IRO-1, E1-3

EU Taxonomy brings with it increased and coordinated requirements for companies regarding transparency and disclosure on the sustainability of their operations. HS Orka falls under the EU Taxonomy regulation, which was enacted in Iceland on June 1, 2023. During the year, data collection and preparatory work for the implementation and disclosure of information by the company was performed. The work done can be divided into three parts:



Eligibility assessment

In 2023, a basic assessment of the eligibility of HS Orka’s operations to be considered an environmentally sustainable economic activity was performed, according to the criteria of the EU taxonomy. The results of that assessment are as follows:

HS Orka’s main activity categories that are eligible according to the EU taxonomy:	Location of operations
Cogeneration of heat/cool and power from geothermal energy (4.18)	Svartsengi and Reykjanesvirkjun
Electricity generation from hydropower (4.5)	Brúarvirkjun og Fjarðarvirkjanir
Construction, extension and operation of water collection, treatment and supply systems (5.1)	In Lágur by Svartsengi and by Sýrfell at Reykjanesvirkjun

Alignment assessment

In order for economic activities to qualify as aligned with EU taxonomy, they need to comply with the following requirements: (i) They provide a substantial contribution to at least one of the six of the taxonomy’s environmental objectives; (ii) “No significant harm” is caused to any of the other environmental objectives; and (iii) Compliance with minimum social and governance safeguards.

Substantial contribution

During the year, an analysis of HS Orka’s operations was carried out, in light of the technical screening criteria of EU Taxonomy. Among other things, analysis was carried out by third parties, such as for life cycle assessments for the power plants in Svartsengi and Reykjanesvirkjun, together with a sustainability assessment of key suppliers.

The work on alignment has not been completed, but the results so far indicate that the majority of HS Orka’s activities include a significant contribution to the environmental objective of “climate change mitigation.” This means that the technical screening criteria for significant contribution to climate change mitigation look well aligned for HS Orka’s energy production,

but the operation of the company’s geothermal power plants falls under the category “Cogeneration of heat/cool and power from geothermal energy.” For example, the results of life cycle assessments for Svartsengi and Reykjanesvirkjun show that the emissions are well below the technical threshold of 100 g CO2e/kWh, for each power plant separately.

Do no significant harm

The results of the assessment work, so far, indicate that HS Orka’s activities, which include a substantial contribution to the environmental goal of “climate change mitigation,” do not cause significant harm to the other environmental objectives. However, more detailed work has yet to be taken, regarding the inspection and documentation of certain aspects, for example the effects of water management and the EU Water Framework Directive on HS Orka’s operations.

Minimum safeguards

In 2023, HS Orka conducted an analysis of the company’s compliance with the EU Taxonomy’s standards on minimum social and governance safeguards. The analysis in essence encompassed how the company’s operations comply with internationally recognized requirements for responsible business conduct and human rights. It became apparent that there was a need to further examine the minimum safeguard measures in some areas, and subsequently an update of various support policies was undertaken, among other things with regard to human rights provisions. Good governance and work processes should reflect and ensure the priorities stated in the support policies, and further work is ahead to guarantee that they do. Among the measures needed are clearer processes for grievance mechanisms, from both internal and external parties.

Key performance indicators (KPIs)

One of the objectives of the EU Taxonomy regulation is to increase transparency in the market and prevent greenwashing. Taxonomy, therefore, makes extensive demands on companies for transparency and uniform disclosure of information to investors. This is done with standardized key performance indicators (KPIs) that must be part of companies’ sustainability disclosure in their annual accounts.

1. The proportion of turnover derived from products or services that are taxonomy-aligned.
2. The proportion of the capital expenditure (CapEx) of an activity that is either already taxonomy-aligned or is part of a credible plan to extend or reach taxonomy alignment.
3. The proportion of the operating expenditure (OpEx) associated with taxonomy-aligned activities or to the CapEx plan.

During the year 2024, HS Orka’s procedures will be further developed in terms of providing information on KPIs in the field of sustainability. Among other things, the accounting and information system will be adjusted to ensure that it is synchronized with the information that must be available according to the EU Taxonomy regulation.

KPI: The proportion of turnover derived from products or services that are taxonomy-aligned

Assuming that the majority of HS Orka’s activities are both eligible and aligned, as the first results indicate, it can be expected that the proportion of HS Orka’s coordinated activities will be high. Provided that the conditions of not causing significant harm are successfully confirmed, and that the minimum safeguard measures are met, the table below shows the approximate alignment of HS Orka’s main activities with the Taxonomy with regard to the division of revenue.

Taxonomy-aligned operations	Nr.	% of total revenue
Electricity production with renewable energy sources	4.18, 4.5	71,0%
Hot water sales	4.18	7,6%
Cold water sales	5.1	0,9%
Needs further review		
Other income	In review	20,5%
		100,0%

Governance

External assurance **A** **B**

The board of directors of HS Orka hf. stresses the importance of maintaining good management practices in accordance with Guidelines for Corporate Governance, version 6. The company’s corporate governance statement accompanies the annual accounts, which are available on our home page.

Values and policy

HS Orka’s values are responsibility, agility, progressive and teamwork. More information about HS Orka’s values, objectives and policies is to be found on [our home page](#).



Organizational structure

The company’s highest authority is in the hands of the shareholders, while the company’s Board of Directors manages the company between the annual shareholders’ meetings. The Board has four members who are nominated by each shareholder individually and elected at the company’s general meeting for a one-year term. During 2023, two sub-committees of the Board of Directors were active, the Audit Committee and the Remuneration Committee.

The company’s CEO oversees the company’s daily operations and represents the company. The company’s senior management consists of the managers of the Legal division, Finance and IT division, the Sales and services division, the Production division, the Resources and Project Development division, the Technical Services division and the division of Strategy and Improvement. The executive board is composed of seven members, who are responsible for

strategic planning and making decisions in accordance with the purpose, vision and values of the company approved by the Board of Directors.



Hs Orka’s organization chart (in Icelandic)

Management of ESG issues

The results of the [new materiality analysis](#) clearly show how HS Orka’s main projects in the field of sustainability reflect the company’s core operations and key long-term challenges. In other words, sustainability is an integral part of HS Orka’s operations and future vision.

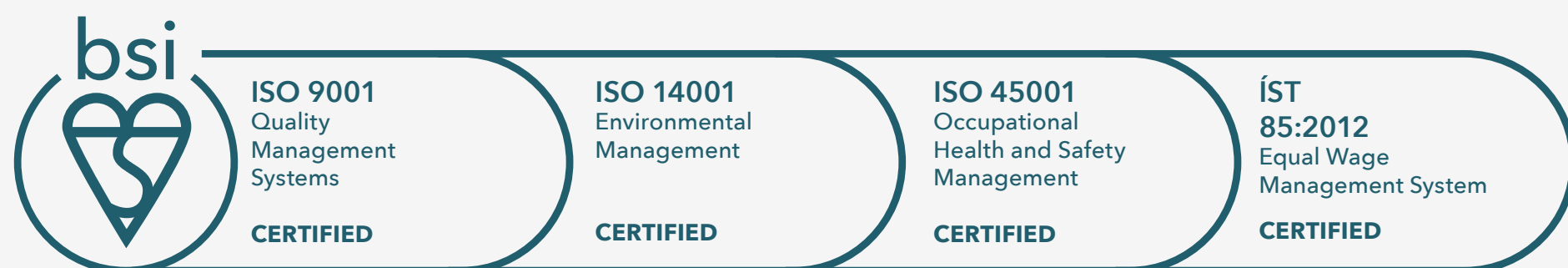
The company’s management system (Gangverkið) ensures that important ESG issues are dealt with in an orderly and regular manner at the level of the process council, which consists of the executive board and key personnel in terms of sustainability issues. In 2022, a special sustainability department was established, that reports directly to the CEO’s office. The department’s tasks are related to progress and information provision in the field of

sustainability, across other divisions of the company. Direct communication with stakeholders takes place through the Executive Board and relevant personnel. Since the company's activities have many connections with sustainability, as the materiality analysis makes clear, the Board regularly reviews issues that refer to the company's emphasis in sustainability matters. In addition, the board receives a quarterly overview of specific ESG goals and improvement projects from the sustainability department. The company's main policies are presented to the board once a year.

Management system

HS Orka's management system ("Gangverkið") is certified according to international management standards, ISO 9001 quality management, ISO 14001 environmental management, and ISO 45001, for an occupational health and safety management system. HS Orka also has an equal pay certification according to ÍST 85:2012.

The management system describes how the company operates according to implemented processes with efficient collaboration and waste minimization as a guiding light. Annually, the process owners present each key process to the process council. They also present improvement projects, registered risks, deviations and internal audits, and the context with other processes and the company's policies. Whereas managers are responsible for day-to-day execution, process owners are responsible for the design, safety, and improvement of processes.



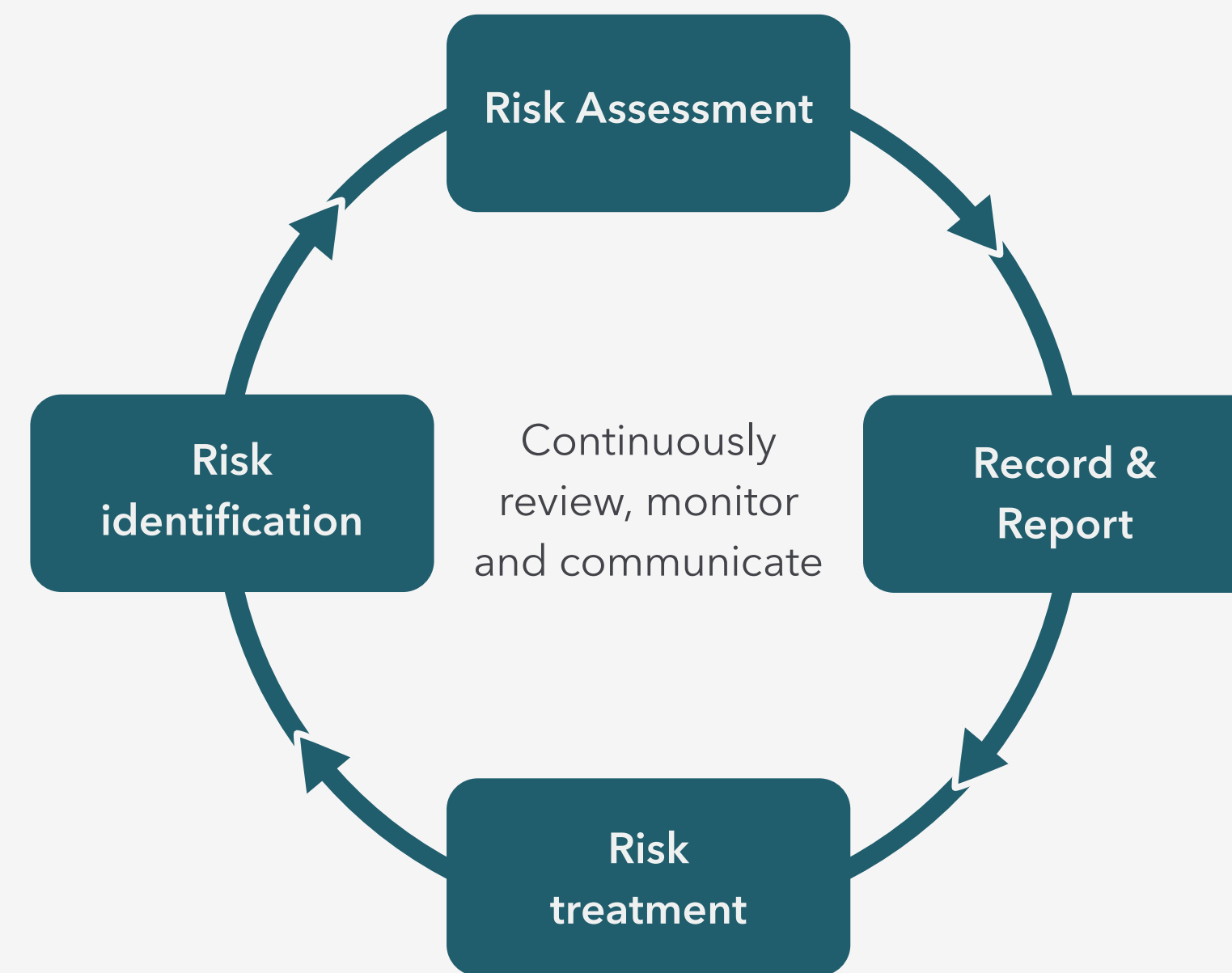
Deviations

The company's deviation process describes how deviations in the operations are handled, root analysis is carried out and improvement projects are implemented. Within the company, a system has been developed to keep track of all recorded deviations within key processes. Larger deviations are dealt with at process council meetings, where decisions are made

on appropriate progress measures to prevent negative impact within different ESG issue categories. At the same time, emphasis is placed on employee training to prevent deviations. In addition to employee training, a training pathway for contractors working for HS Orka has been implemented, as discussed in the [Safety and work environment](#) section.

Risk management

HS Orka follows a risk management process based on ISO 31000 to identify and manage the company's key risks. HS Orka's management system increases transparency and supports risk management for each of the key processes. Risk factors that have been identified are recorded in a risk register and given a score before and after controls have been implemented. The owners of the main processes present the risk analysis to the process board, which reviews the assessment before it goes to the Board of Directors. More details on the climate risk assessment and TCFD scenario analysis are to be found in the section [TCFD Climate risk assessment](#).



GRI Reference Table 2023

HS Orka's information reporting in this report is for the period from January 1, 2023, to December 31, 2023 and is in accordance with GRI Standards with reference to *GRI 1: Foundation 2021*. The exception to this is that the standard [Draft] ESRS E1 Climate is used for disclosure of climate-related issues and a separate ESRS reconciliation table is to be found following the GRI reference table.

GRI	Indicator description	GRI Issue Reporting	Disclosure	Page	UN SDGs
2-1	Organizational Profile	Yes	Company Name: HS Orka hf. Ownership and legal form: Limited Liability Company Location of headquarters: Orkubraut 3, 241 Grindavík Location of operations: Iceland Information on website: www.hsorka.is		
2-2	Entities included in the organization's sustainability reporting	Yes	Unless otherwise stated, HS Orka's sustainability report deals only with HS Orka hf. Companies that belong to the consolidated accounts are HS Orka Holding hf., HSO 1 ehf., HSO 2 ehf. and HS Orka hf. Whereas HS Orka Holding hf., HSO 1 ehf. and HSO 2 ehf., are all holding companies with limited activities, HS Orka hf. is the only company covered by the sustainability report. The company does not consist of many entities.		
2-3	Reporting period, frequency and contact point	Yes	The sustainability report is for the year 2023. The report is published together with the company's annual accounts. Inquiries regarding the report can be sent to hsorka@hsorka.is .		
2-4	Restatements of information	Yes	Waste management Own energy consumption Economic impact	32, 29, 49	
2-5	External assurance	Yes	About the report External Assurance Report (KPMG ehf.) HS Orka hired an external party (KPMG ehf.) for limited assurance of the company's sustainability report for the year 2023. The limited assurance applies to information that is disclosed in the report, but not information from previous years.	2, 69	

2-6	Activities, value chain and other business relationships	Yes	About HS Orka The supply chain	5, 45	
2-7	Employees	Yes	Human resources and equality	44	5
2-8	Workers who are not employees	Yes	99% of the workforce are permanent employees. 100% of employees are in a full 100% position. There are no cases of non-intermediary contracts with non-employees.		
2-9	Governance structure and composition	Yes	Governance www.hsorka.is See also under GRI 2-12. The company's board of directors manages its operations within the limits set by law, the company's Articles of Association and the Shareholders' Agreement. The board operates in accordance with the company's Articles of Association and the board's Rules of Procedure. All the company's directors are self-governing and independent of the company and its management. No Director has, directly or indirectly, ownership in the company, has worked for the company or has other interests with the company's main business partners and competitors. All directors are dependent on the company's shareholders; the reason being that the company is owned by only two shareholders. The evaluation of the board's size and composition takes into account the company's operations, policies and practices and the knowledge, experience and expertise of each Director. The board considers its size and composition to be in line with the board's objectives: to perform its duties in an efficient manner with integrity in the best interest of the Company. The gender ratio in the board in 2023 was equal. Shareholders nominate directors, no other stakeholders or minority groups are represented on the board. The board has good knowledge of economic, environmental, and social aspects. Information about the directors is accessible on HS Orka's website. Senior management reports to the CEO and supports the CEO in day-to-day operations. The managers have diverse backgrounds; they are specialized in different fields, and three out of seven senior management members are women. None of the managing directors or the CEO own shares in the company, nor do they have any other interest than working for the company.	53	5
2-10	Nomination and selection of the highest governance body	Yes	Each shareholder nominates two directors. The board appoints two of their directors as members of the audit committee and the remuneration committee. In addition, the board appoints one independent member of the Audit Committee. The board hires the CEO and the CEO hires the division managers. - See also under GRI 2-9		5
2-11	Chair of the Highest governance body	Yes	The chairman of the board is not the CEO of the company.		
2-12	Role of the highest governance body in overseeing the management of impacts	Yes	Governance The board of directors emphasizes maintaining good management practices. Once a year, the company's main policies are presented to the board and the board quarterly reviews ESG goals and priorities. There is no active special board subcommittee in the field of sustainability. The company's various sustainability-related issues and their handling are reviewed monthly (and depending on the circumstances) at the level of senior management and process council. The company publishes a sustainability report that is approved by the board.	53	
2-13	Delegation of responsibility for managing impacts	Yes	Governance See under GRI 2-12.	53	
2-14	Role of the highest governance body in sustainability reporting	Yes	Governance The sustainability report, including a materiality analysis of sustainability issues, is submitted to the board for approval before its publication. In other respects, reference is made to GRI 2-12.	53	
2-15	Conflicts of interest	Yes	An assessment of the board's conflict of interests takes place at the beginning of each operating year before the general meeting, after the shareholders have nominated board members. Annually, information is requested from the board, the CEO and managing directors on related parties due to the audit of the company's annual accounts in accordance with Article 63 of the Act on annual accounts. The assessment of conflict of interests is not accessible to stakeholders.		

2-16	Communication of critical concerns	Yes	Information on important issues is brought to the board of directors at the company's board meetings, which are usually held monthly. In addition, the board is informed between board meetings by e-mail or telephone if necessary. Senior management meetings are held weekly, and the senior management starts each working day with a short information session. The company does not keep track of how often or for what reason urgent issues are submitted to the board and/or senior management.		
2-17	Collective knowledge of the highest governance body	Yes	The board emphasizes that knowledge of sustainability issues is developed and embraced by the company's employees. Urgent sustainability issues are presented to the board as the occasion arises. Information about the board is to be found on our home page: www.hsorka.is See also GRI 2-9 and 2-14.		
2-18	Evaluation of the performance of the highest governance body	Yes	The board of directors, the audit committee and the remuneration committee carry out an annual self-evaluation of their work and the work of the CEO of the company. The self-evaluation includes, among other things, sustainability issues. The board responds to the issues raised in the self-evaluation by preparing a case for resolution on the board's action list.		
2-19	Remuneration policies	Yes	The company has a remuneration policy that is reviewed annually and submitted for approval at the company's annual general meeting. The policy stipulates that the salaries of the board and sub-committees are fixed and that severance payments are not permitted. It specifies that the salaries of the CEO and senior management are fixed and includes provisions for the authorization of wage premiums if certain conditions are met. Severance payments in excess of what is stated in the employment contract or in excess of statutory rights or criteria are not permitted. If a performance or incentive payment has been allocated on the wrong grounds, the employee must pay the company back to the extent of the misstatement. Retirement benefits are not expected. When evaluating performance and/or incentive payments to the company's senior management, the company's goals and achievements are reviewed in relation to safety and environmental issues, HR issues and the company's performance. When determining performance payments, the company's interests are taken into account, as well as normal and healthy business practices. Remuneration to managers should be consistent with the purpose and long-term interests of the company.		
2-20	Process to determine remuneration	Yes	The remuneration committee is a sub-committee of the company's board of directors and is appointed by and acts on behalf of the board. The remuneration committee operates in accordance with its rules of procedure and has two representatives nominated by each shareholder. The remuneration committee assists the board in ensuring that remuneration supports the company's objectives and meets relevant legal requirements. The remuneration committee lays down guidelines regarding the hiring of managers, i.e. ensures their engagement and motivation in accordance with the company's policy. No external advice has been sought when determining salaries, other than the fact that Intellecta's salary survey has been taken into account in relation to salary development.		
2-21	Annual total compensation ratio	Yes	The multiple of the CEO's total salary and the median total salary of full-time employees is 4.0. The multiple is now calculated for the second time and is unchanged from the previous year.		
2-22	Statement on sustainable development strategy	Yes	CEO Statement Address of the COB HS Orka's Sustainability Policy	8, 10	
2-23	Support policies	Yes	EU Taxonomy Governance www.hsorka.is Policies are approved by the process council, which consists of senior management and most other process owners. New and changed policies are presented to employees at monthly staff meetings, and when people start working for HS Orka, they receive an introduction to the company's policies. The company's code of conduct is not published on the external network, but it is accessible to employees on the internal website. HS Orka's code of conduct guides all of our work, with the interests of the company, customers, and other stakeholders in the forefront. The code is based on honesty, equality and respect, and these values shall be used as a guiding light for all employees. Whereas the company has not adopted a separate human rights policy, human rights are a guiding principle in various of the company's support policies. The main policies are available on the company's home page.	51, 53	
2-24	Embedding policy commitments	Yes	Governance	53	
2-25	Processes to remediate negative impacts	Yes	Governance See GRI 403-2 and 2-26.	53	

2-26	Mechanisms for seeking advice and raising concerns	Yes	The company has an in-house procedure for how concerns should be processed within the company so that they reach the right people for resolution. The legal department, together with relevant personnel, processes comments related to the company's business conduct. Comments about the company's business practices can be submitted to the company's general email address hsorka@hsorka.is , or by contacting the company's general phone number. Moreover, e-mail addresses of all employees are available on the website: www.hsorka.is . At the end of the year, work was done on the implementation of a message window on our home page and for an internal process for processing anonymous tips and grievances.		
2-27	Compliance with laws and regulations	Yes	No cases of non-compliance with laws and regulations.		
2-28	Membership association	Yes	HS Orka and the community	48	
2-29	Approach to stakeholder engagement	Yes	Materiality analysis 2023 Materiality analysis 2022 Stakeholders	16, 49	
2-30	Collective bargaining agreements	Yes	All of HS Orka employees are paid according to collective agreements.		
3-1	Process to determine material topics	Yes	Materiality analysis 2022		
3-2	List of material topics	Yes	Materiality analysis 2023 Materiality analysis 2022		
3-3	Management of material topics	Yes	Materiality analysis 2023 Discussion that falls under GRI 3-3 on the management of important issues is marked separately in the report.	16	
201-1	Direct economic value generated and distributed	Yes	Main operational costs and the economic impact	49	9
201-2	Financial implications and other risks and opportunities due to climate change	Yes	TCFD Climate-related risk assessment Climate	27, 22	13
202-2	Proportion of senior management hired from the local community	Yes	All managers are Icelandic and are therefore considered to be from HS Orka's local community.		
203-1	Infrastructure investments and services supported	Yes	Security of power supply and related infrastructure Economic Impact	38, 49	9
204-1	Proportion of spending on local suppliers	Yes	The supply chain	45	
205-3	Operations assessed for risks related to corruption	Yes	No cases.		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Yes	No pending or closed case in 2023 related to anti-competitive behavior, anti-trust and monopoly practices in which HS Orka was a party		
207-1	Approach tax	Yes	HS Orka's fiscal approach consists of paying the correct taxes on time, without uncertainty and doubt to the extent possible. A special policy regarding the company's tax matters beyond this has not been approved.		
207-2	Tax governance, control, and risk management	Yes	Supervision and responsibility for control and risk management for tax matters lies with the financial manager. The Audit Committee and the board of directors are regularly informed about the state of affairs. If there is any doubt or uncertainty about the interpretation of tax laws, an external expert opinion on tax issues is obtained.		
207-3	Stakeholder engagement and management of concerns related to tax	Yes	The company strives to ensure that all communications with tax authorities are timely. Emphasis is placed on transparency and compliance with laws and regulations.		
207-4	Country-by-country reporting	Yes	The company pays taxes where income is generated. HS Orka paid only taxes in Iceland in 2023.		
301-1	Materials used by weight or volume	Yes	Resource Streams	31	12

302-4	Reduction of energy consumption	Yes	Own energy consumption	29	7, 12, 13
303-1	Interactions with water as a shared resource	Partial	Resource streams Resource management	31, 18	12
303-3	Water withdrawal	Yes	About HS Orka Resource streams	5, 31	
303-4	Water discharge	Yes	Resource streams HS Orka's power plants are far from water discharge systems, so the company operates septic tanks. They are emptied annually, and in 2023, 24 tons of sewage was collected from them and disposed of in a sewage treatment plant.	31	
303-5	Water consumption	Yes	Resource streams	31	
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity	Yes	Nature conservation and monitoring	33	15
304-2	Significant impacts of activities, products and services on biodiversity	Yes	Nature conservation and monitoring	33	15
304-3	Habitats protected or restored	Yes	Nature conservation and monitoring	33	15
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Yes	Sustainability report 2022 - Nature conservation, ecosystem and biodiversity		15
305-7	Nitrogen oxides (Nox), sulfur oxides (Sox), and other significant air emissions	Partial	Nature conservation and monitoring	33	12, 15
306-1	Waste generation and significant waste-related impacts	Yes	Waste management Resource streams	32, 31	12
306-2	Management of significant waste-related impacts	Yes	Waste management Of the waste generated in the operation, sorted and unsorted, with the exception of that which was dumped in HS Orka's landscaping area, 87% found its way into recycling and reuse.	32	12
306-3	Waste generated	Yes	Waste management HS Orka's runs a landfill site by Reykjanesvirkjun. 4,272 tons from Svartsengi and 3,063 tons from Reykjanesvirkjun were transported there.	32	12, 15
306-3 (2016)	Significant spills	Yes	No significant spills occurred in 2023		12
306-4	Waste diverted from disposal	Yes	Waste management	32	12
308-1	New suppliers that were screened using environmental criteria	Partial	The supply chain	45	
308-2	Negative environmental impacts in the supply chain and action taken	Partial	The supply chain HS Orka's sustainability policy	45	12, 13
401-1	New employee hires and employee turnover)	Yes	Human resources and equality	44	5
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Yes	Human resources and equality There is no difference in benefits depending on the employment rate.	44	

401-3	Parental leave	Yes	The right to maternity and parental leave is bound by law. The total number of employees who took maternity leave during the year was 9 (3 women and 6 men), which is an increase of two between years. All those who completed their maternity leave returned to work after their maternity leave.		5
402-1	Minimum notice periods regarding operational changes	Yes	The general minimum notice period for permanent employees is three months.		
403-1	Occupational health and safety management system	Yes	Safety and work environment At HS Orka, safety and occupational health supervision is based on an occupational health and safety policy that is part of the company's operating system. HS Orka's safety management system covers all the company's personnel, contractors, service providers and visitors who come to the company's work areas. The safety management system is certified according to ISO 45001 and it also takes into account and ensures that the company complies with legal requirements such as occupational health and safety legislation and related regulations.	40	12
403-2	Hazard identification, risk assessment, and incident investigation	Yes	Safety and work environment With clear processes and recording of deviations, an effort is made to learn from incidents so that repetition can be prevented. All employees can and are encouraged to report deviations, dangerous situations, near miss accidents and other accidents they experience or witness. This is done through a service desk that is accessible to all staff. We emphasize anti-retaliation and that reporting an incident is not used against the reporter or the person to whom the report is directed. The handling of cases is based on positive reporting of incidents, and this is reflected in the company's proactive objectives for the number of reports submitted and actions closed as a result. Contractors and service providers can report incidents by e-mail to tilkynning@hsorka.is , and the reports are handled in the same way as staff reports received through the service desk. All reports are registered with a responsible person within the company and incidents are classified in the same way as in a risk assessment. In some cases, improvement projects can be undertaken directly, but more complex and serious incidents require a root cause analysis and more detailed investigations, which then lead to improvement projects.	40	12
403-3	Occupational health services	Yes	Safety and work environment	40	12
403-4	Employee participation, consultation and communication on occupational health and safety	Yes	Safety and work environment HS Orka's safety and environment committee consists of two safety representatives and two safety guards as well as the safety manager and the environmental manager. The committee is a forum for communication and consultation on issues concerning safety and environmental matters in the work environment. The safety and environment committee's meetings take place at least four times a year.	40	12
403-5	Worker training on occupational health and safety	Yes	Safety and work environment Everyone who works in HS Orka's work area, whether they are employees of the company or contractors, receives training in safety, health and environmental issues before they can start their work. At the same time, skills are maintained on a regular basis through various courses, meetings and training.	40	12
403-6	Promotion of worker health	Yes	Human resources and equality The company pays into sickness benefit funds or operates according to specific rules on these aspects. Employees can apply for various grants, e.g. health club membership, massage, etc. HS Orka offers fitness facilities at the company's head office as well as host various health-related events.	44	
403-8	Workers covered by an occupational health and safety management system	Yes	Safety and work environment	40	12
403-9	Work-related injuries	Yes	Safety and work environment	40	12
403-10	Work-related ill health	Yes	Safety and work environment	40	12
404-1	Average hours of training per year per employee	Partial	Human resources and equality Tölur eru ekki sundurgreindar eftir kynjum og starfsviðum.	44	5
404-2	Programs for upgrading employee skills and transition assistance programs	Yes	Human resources and equality	44	
404-3	Percentage of employees receiving regular performance and career development reviews	Partial	Human resources and equality Figures are not broken down by gender and occupation.	44	5

405-1	Diversity of governance bodies and employees	Yes	<u>Human resources and equality</u>	44	5
405-2	Ratio of basic salary and remuneration of women to men	Yes	<u>Human resources and equality</u> HS Orka has had a certified equal pay management system in accordance with the Icelandic equal pay standard ÍST 85:2012 from 2018. A maintenance certification that was planned for December 2023 was postponed to January 2024. Women's gross wages according to accrual analysis, were 3.8% higher than men's gross wages; this difference is considered insignificant.	44	5
414-1	New suppliers that were screened using social criteria	Partial	<u>The supply chain</u>	45	5
415-1	Political contributions	Partial	Contributions totaled 600 thousand ISK in 2023.		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Yes	No cases.		
419-1	Non-compliance with laws and regulations in the social and economic area	Yes	No cases.		

ESRS Reference table 2023

Nr.	Reporting	Disclosure of information	Page
[Draft] ESRS E1 Climate change			
ESRS 2 - General disclosures			
11	In part	Consideration is for the sections of ESRS 2 that are referenced in ESRS E1.	
ESRS 2 GOV-3 - Integration of sustainability-related performance in incentive schemes			
12	Yes	No incentive schemes exist that are connected with climate targets.	
E1-1 Transition plan for climate change mitigation			
13	Yes	Climate HS Orka's Climate Policy	22
14	Yes	Climate	22
15a	Yes	Climate	22
15b	Yes	Climate	22
15c	In part	Climate	22
15d	Yes	Climate The company's reserve power generators use fossil fuel and are tested monthly for one hour each time. The generators have a lifespan of at least 20 years and since they are recent they can be considered as technology that represents locked-in GHG emissions. However, emissions from the burning of fossil fuels represent less than 0,2% of total emissions in 2023 and the share of fossil fuels in the company's own energy consumption is 0,7%.	22

15e	Yes	EU Taxonomy	51
15f	Yes	The company is not excluded.	
15g	Yes	Climate Governance HS Orka's Climate Policy	22, 53
15h	Yes	Climate	22
16	Yes	Climate The company has defined targets and actions for climate issues.	22
ESRS 2 SBM-3 Material impacts, risks and opportunities and their interaction with strategy and business model(s)			
17.	Yes	TCFD climate risk assessment 2023	27
17a.	Yes	TCFD climate risk assessment 2023	27
17b.	Yes	TCFD climate risk assessment 2023	27
17c.	Yes	TCFD climate risk assessment 2023	27
ESRS 2 IRO-1 Description of the processes to identify and assess material climate-related impacts, risks and opportunities			
18.	Yes	TCFD climate risk assessment 2023	27
18a.	Yes	TCFD climate risk assessment 2023	27
18b.	In part	TCFD climate risk assessment 2023 An evaluation of time period for each risk was not included in the analysis. Also, there is not an assessment of how the timing or duration of risks affects the durability or lifespan of assets.	27
18c.	In part	See number 18b. TCFD climate risk assessment 2023	27
19.	In part	TCFD climate risk assessment 2023	27
E1-2 Policies related to climate change mitigation and adaptation			
20.	Yes	HS Orka's Sustainability Policy HS Orka's Climate Policy	

21.	Yes	Climate TCFD climate risk assessment 2023 Own energy consumption	22, 27, 29
22.	Yes	Climate HS Orka's Sustainability Policy HS Orka's Climate Policy	22
23.	Yes	See 23a.-23d.	
23a.	Yes	Climate	22
23b.	Yes	Climate TCFD climate risk assessment 2023	22, 27
23c.	Yes	Own energy consumption	29
23d.	Yes	Climate Security of power supply and related infrastructure From the CEO	22, 38, 8
E1-3 Actions and resources in relation to climate change policies			
24.	Yes	Climate	22
25.	Yes	Climate	22
26.	In part	Climate EU Taxonomy Financial information or estimates have not been included in reporting on climate action.	22, 51
27a.	In part	Climate On energy consumption The company has thus far not used IUCN's standards for nature based solutions as a reference in its reporting on climate mitigation.	22, 29
27b.	Yes	Climate	22
27c.	In part	EU Taxonomy	51
E1-4 Targets related to climate change mitigation and adaptation			
28.	Yes	Climate	22
29.	Yes	Climate Materiality analysis 2023	22, 16
30.	Yes	Climate Materiality analysis 2023	22, 16

31.	Yes	Climate	22
32.	Yes	Climate	22
32a.	Yes	Climate	22
32b.	Yes	Climate	22
32c.	Yes	Climate	22
32d.	Yes	Climate	22
32e.	Yes	Climate Climate targets are set in connection with national targets, which are set to accord to the Paris Agreement.	22
32f.	Yes	Climate	22
E1-5 Energy consumption and mix			
33.	Yes	Own energy consumption	29
34.	Yes	Own energy consumption	29
35.	Yes	See 35a. and 35b.	
35a.	Yes	Own energy consumption	29
35b.	Yes	Own energy consumption	29
36.	Yes	Own energy consumption	29
37.	Yes	Own energy consumption	29
38.	Yes	Own energy consumption	29

39.	Yes	Own energy consumption HS Orka's core operations involve the production of renewable energy and therefore the business can be said to be in a sector with high climate impact.	29
40.	No	In HS Orka's annual accounts there is not a description of how total income is part of climate metrics such as energy intensity.	
E1-6 Gross Scopes 1, 2, 3 and Total GHG emissions			
41.	Yes	See 41a. to 41d.	
41a.	Yes	Climate The global warming potential of methane (GWP-100) is set at 27, in line with table 7.15 in the 6th IPCC report. When estimating emissions from fuel use, The Icelandic Environmental Agency's emission factors were used (publication nr. 5 from 2022).	22
41b.	Yes	Climate	22
41c.	Yes	Climate	22
41d.	Yes	Climate Emission data is for the operations of HS Orka hf.	22
42.	Yes	Climate	22
43.	Yes	TCFD climate risk assessment 2023	27
44.	No	The company only reports emissions from the activities of the Company, HS Orka hf.	
44.	Yes	Climate The emissions from the Reykjanes Power Plant for 2022 are restated in this report and is 7% higher than what was reported in the last sustainability report. This restatement did not have a meaningful effect on the company's overall emissions intensity for 2022 which was 34 gCO ₂ eq/kWst. The global warming potential of methane has been reset at 27 instead of 21 before, in line with the 6th IPCC report from 2022. Historical data has been updated accordingly. The emissions of methane represent a small part of HS Orka's emissions and this change does not change the reported numbers for emissions intensity for previous years.	22
45.	Yes	Climate	22
45a.	Yes	Climate HS Orka owns and operates switches that use sulfur hexafluoride (SF ₆). No emissions of SF ₆ occurred during the year. In Svartsengi power plant gas and water samples are collected from the production wells. These samples are sent to service provider for chemical analysis. From the result of this analysis the gas concentration in the production wells is calculated using the WATCH geochemical program. The emission is then calculated from this gas concentration, the yearly production from the wells and the differing enthalpy of the wells. In Reykjanes power plant gas samples are collected quarterly at the turbine inlets and sent to a service provider for a chemical analysis. Emission calculations are based on the annual average concentration of the gases and the total amount of steam flow through the turbines.	22
45b.	Yes	The operations of HS Orka does not fall under a system that trades emissions licences.	
46.	Yes	Climate HS Orka itself produces the energy and heat it uses so emissions in scope 2 are counted as scope 1.	22
46a.	Yes	Climate All own consumption of electricity comes from HS Orka's own power plants, and is therefore location based.	22
46b.	Yes	See 46a.	
47.	No	The company only reports emissions from operations that are part of HS Orka hf. (The Company).	
47a.	No	See 47.	

47b	No	See 47.	
48.	In part	<p>Climate When calculating emissions of GHG from fossil fuels, emission factors from The Environmental Agency were used, 5. publication from 2022. Environmental product declarations (EPD) as well as emission factors from OneClickLCA 2023 were used for the procurement of goods. For calculating waste handling, the emission factors of DEFRA for waste, 2023, and the factors from The Environmental Agency for organic waste, 5. publication 2022, were used. Calculations for emissions from air travel was based on ICAO Carbon Emissions Calculator, 12. Version, 2023.</p> <p>The share of emission calculations that are based on original data from suppliers and other partners is not assessed.</p>	22
49.	Yes	<p>Climate HS Orka produces its own electricity and heat so the emissions in scope 2 are counted with scope 1.</p>	22
49a.	Yes	See 49.	
49b.	Yes	See 49.	
50.	Yes	Emissions intensity in tCO ₂ eq/ISK was 0,000007.	
51.	Yes	See 50.	
52.	No	In HS Orka's annual account there is not an explanation of how total income numbers is used for climate metrics.	
E1-7 GHG removals and GHG mitigation projects financed through carbon credits			
53a.	Yes	The capture of carbon emissions has until not been part of the company's climate policy.	
53b.	Yes	HS Orka has not financed any climate actions by selling emissions licences.	
54.-56, 58.	Yes	See 53a. and b.	
57.	Yes	<p>HS Orka's Climate Policy Carbon offsets are not currently part of HS Orka's climate policy, although it may be necessary for some part of the activities at a future date.</p>	
E1-8 Internal carbon pricing			
59. og 60.	Yes	<p>HS Orka's Climate Policy HS Orka has up until now not used internal carbon pricing but in a new climate policy the use of such a tool is included.</p>	
E1-9 Potential financial effects from material physical and transition risks and potential climate-related opportunities			
61a.	In part	TCFD climate risk assessment 2023	27
61b.	In part	TCFD climate risk assessment 2023	27
61c.	In part	TCFD climate risk assessment 2023	27

62.	In part	TCFD climate risk assessment 2023	27
63.-67.	No	TCFD climate risk assessment 2023 A discussion of potential effects are included but no assessments of the cost or scope of effects, or the percentage of assets at risk, are included.	27
[Draft] ESRs S1 Own Workforce			
ESRS S1 14 - Health and safety indicators			
82	Yes	Safety and work environment	40
83	Yes	Safety and work environment	40
84	Yes	Safety and work environment The numbers for lost days of work for contractors have not been included. But there have not been lost time incidents for the last 2 years.	40
85	Yes	Safety and work environment	40

Independent external assurance (KPMG ehf.)



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Independent Practitioners' Reasonable and Limited Assurance Report

To the Directors of HS Orka hf.

Report on certain information included in HS Orka hf.'s Sustainability Report for the year ended December 31, 2023

Reasonable assurance opinion and limited assurance conclusion

We have performed an assurance engagement on the following information in HS Orka hf.'s ("the entity") Sustainability Report for the year ended December 31, 2023:

The criteria for the information subject to assurance in the table below are the appropriate GRI standards and/or ESRS standards and/or article 66. d. of the financial statement act no. 3/2006.

Information subject to assurance	Level of assurance
Sustainability report 2023 <ul style="list-style-type: none"> • Materiality Analysis, p. 16 Environment <ul style="list-style-type: none"> • Climate, p. 22 - 28 Social <ul style="list-style-type: none"> • Safety and the work environment, p. 40 -41 	Reasonable assurance
Sustainability report 2023 <ul style="list-style-type: none"> • About HS Orka, p. 5 • Svartsengi – measures due to seismic activity, p. 11 • The Resource Park, p. 14 – 15 Environment <ul style="list-style-type: none"> • Resource management, p. 18 – 20 • Sustainability assessment for Hvalárvirkjun, p. 21 • Own energy consumption, p. 29 – 30 	Limited assurance

<ul style="list-style-type: none"> • Resource streams, p. 31 • Waste management, p. 32 • Nature conservation and monitoring, p. 33 – 34 <p>Social</p> <ul style="list-style-type: none"> • Preventive measures and contingency plan, p. 36 – 37 • Security of power supply and infrastructure, p. 38 • Human resources and equality, p. 44 – 45 • The supply chain, p. 45 – 46 • Cyber security, p. 47 • HS Orka and the community, p. 48 • Economic impact, p. 49 <p>Governance</p> <ul style="list-style-type: none"> • Governance, p. 53 – 54 • GRI Index, p. 55 – 61 	
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For the purposes of the remainder of our assurance report:

- “Information subject to Reasonable Assurance” refers to the information identified above that was subject to reasonable assurance;
- “Information subject to Limited Assurance” refers to the information identified above that was subject to limited assurance;
- “Assured Sustainability Information” refers to all information subject to assurance (both reasonable assurance and limited assurance); and
- “Applicable Criteria” refers to the criteria relevant to the information subject to assurance as identified above.

Reasonable assurance opinion

In our opinion, *HS Orka hf.*'s information subject to Reasonable Assurance for the year ended December 31, 2023 is prepared, in all material respects, in accordance with the Applicable Criteria.

Limited assurance conclusion

Based on the procedures performed and evidence obtained, nothing has come to our attention to cause us to believe that *HS Orka hf.*'s Information subject to Limited Assurance for the year ended December 31, 2023 is not prepared, in all material respects, in accordance with the Applicable Criteria.

Other information

Our opinion/conclusion on the Assured Sustainability Information does not extend to other information that accompanies the Assured Sustainability Information and our assurance report (hereafter referred to as "other information"). We have read the other information, but we have not performed any procedures with respect to the other information.

Basis for opinion and conclusion

We conducted our engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised), *Assurance Engagements Other Than Audits or Reviews of Historical Financial Information*, issued by the International Auditing and Assurance Standards Board (IAASB). Our responsibilities under those standards are further described in the "Our responsibilities" section of our report.

We have complied with the independence and other ethical requirements of the International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants (IESBA).

Our firm applies International Standard on Quality Management (ISQM) 1, *Quality Management for Firms that Perform Audits or Reviews of Financial Statements, or Other Assurance or Related Services Engagements*, issued by the IAASB. This standard requires the firm to design, implement and operate a system of quality management, including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our reasonable assurance opinion and limited assurance conclusion.

Responsibilities for the Assured Sustainability Information

The management of the entity are responsible for:

- designing, implementing and maintaining internal control relevant to the preparation of the Assured Sustainability Information that is free from material misstatement, whether due to fraud or error;
- selecting or developing suitable criteria for preparing the Assured Sustainability Information and appropriately referring to or describing the criteria; and

- preparing the Assured Sustainability Information in accordance with the Applicable Criteria.

Those charged with governance are responsible for overseeing the reporting process for the entity's Assured Sustainability Information.

Inherent limitations in preparing the Sustainability Information

Sustainability information is subject to inherent uncertainty because of incomplete scientific and economic knowledge about the likelihood, and effect of possible future physical and transitional climate-related impacts.

Our responsibilities

We are responsible for:

- planning and performing the engagement to obtain assurance about whether the Assured Sustainability Information is free from material misstatement, whether due to fraud or error;
- forming an independent reasonable assurance opinion and limited assurance conclusion, based on the procedures we have performed and the evidence we have obtained; and
- reporting our reasonable assurance opinion and limited assurance conclusion to the Directors of HS Orka hf.

Summary of the work we performed as the basis for our conclusion

We exercised professional judgment and maintained professional scepticism throughout the engagement. We designed and performed our procedures to obtain evidence that is sufficient and appropriate to provide a basis for our reasonable assurance opinion and limited assurance conclusion.

Reasonable assurance opinion

The nature, timing, and extent of the procedures selected depended on our judgment, including an assessment of the risks of material misstatement of the Information subject to Reasonable Assurance, whether due to fraud or error. We identified and assessed the risks of material misstatement through understanding the Information subject to Reasonable Assurance and the engagement circumstances. We also obtained an understanding of the internal control relevant to the Information subject to Reasonable Assurance in order to design procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of internal controls. In carrying out our engagement, we:

- assessed the suitability of the criteria used by the entity in preparing the Reasonable Assurance Information;
- evaluated the appropriateness of reporting policies, quantification methods and models used in the preparation of the Information subject to Reasonable Assurance and the reasonableness of estimates made by the entity; and
- evaluated the overall presentation of the Information subject to Reasonable Assurance.

Limited assurance conclusion

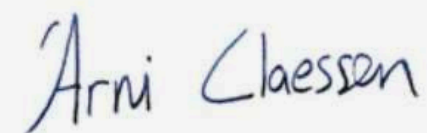
Our procedures selected depended on our understanding of the Information subject to Limited Assurance and other engagement circumstances, and our consideration of areas where material misstatements are likely to arise. In carrying out our engagement, we:

- assessed the suitability of the criteria used by the entity in preparing the Information subject to Limited Assurance;
- interviewed senior management and relevant staff at corporate concerning policies for occupational health and safety, and the implementation of these across the business;
- through inquiries, obtained an understanding of HS Orka hf.'s control environment, processes and information systems relevant to the preparation of the Information subject to Limited Assurance, but did not evaluate the design of particular control activities, obtain evidence about their implementation or test their operating effectiveness;
- made inquiries of relevant staff at corporate and selected locations responsible for the preparation of the Information subject to Limited Assurance;
- applied analytical procedures, as appropriate;
- recalculated the Information subject to Limited Assurance based on the criteria; and
- evaluated the overall presentation of the Information subject to Limited Assurance to determine whether it is consistent with the criteria and in line with our overall knowledge of, and experience with, the entity's occupational health and safety.

The procedures performed when obtaining limited assurance vary in nature and timing from, and are less in extent than for, reasonable assurance. Consequently, the level of assurance obtained over the Information subject to Limited Assurance is substantially lower than the assurance that would have been obtained had the information been subject to reasonable assurance.

Reykjavík, 26th of February 2024

KPMG ehf.



Árni Claessen, auditor