Sustainability report 2022

HS ORKA

About the report

This is the second time that HS Orka issues a sustainability report in accordance with the *Global Reporting Initiative Standards* (GRI). The purpose of the report is to expound HS Orka's impact on the environment, society and economy in the past year. At the same time, the process of preparing the sustainability report is used to compare the company's position with the highest standards globally and to identify opportunities for improvement. This time, GRI's *Universal Standards 2021* are used, which replaced the 2016 standards at the beginning of 2023.

The Table of Contents of the report is interactive so different sections can be easily accessed. The structure is based on the ESG framework's classification of sustainability factors. The report opens with an introductory section and a new materiality analysis, which is followed by the ESG sections "Environment", "Society" and "Governance". At the end of the report, a GRI reference table shows how and where specific information is presented.

The contents of the report reflect HS Orka's knowledge of the company's ESG impacts during 2022. The information gathered for the report comes from the company's information system and it covers the calendar year 2022 unless stated otherwise. The publication of the report does not imply that the company has full knowledge of its social impact, nor that social responsibility has been fully implemented in HS Orka's operations. The company works according to the ideology of continuous improvement, and any suggestions on topics or information on what can be done better are appreciated via the e-mail address hsorka@hsorka.is.

Independent external assurance

HS Orka hired an external party (KPMG ehf.) for assurance of certain parts of the HS Orka sustainability report for 2022. At the back of the report is a statement where the assurer states the nature of the work provided.
For more information: External assurance – HS Orka sustainability report 2022

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HS ORKA

Sustainability report 2022

About HS Orka

HS Orka produces and sells renewable electricity throughout Iceland, hot and cold water to local communities as well as other products from geothermal plants for the benefit of customers, the community and the company. In total, HS Orka has over 45 years of experience in the production of renewable energy and is currently the third largest energy producer in Iceland.

Electricity

The company operates two geothermal plants, one in Svartsengi and the other at Reykjanestá. In addition, HS Orka operates a run-of-river power plant in Tungufljót in Biskupstungur, which was officially inaugurated in 2022 but has been in full operation since 2020. At the end of 2022, the installed power of the company's power plants was a total of 206 MW. Included in that number is the 30 MW expansion of Reykjanes Power Plant, where a new turbine began operating at the end of 2022. In addition to its own energy production, HS Orka has contracts for the sale of over 30 MW from other small-scale producers.

Energy production	2019	2020	2021	2022
Electric power (MWh)	1.349.656	1.370.207	1.253.287	1.324.933
Thermal (MWh)	1.613.599	1.464.019	1.528.451	1.585.704

Electric Power generation 2022	Installed capacity (MW)	Power Licences (MW)	Electric Power production (MWh)	% of total production
Svartsengi	66	75	585.108	44%
Reykjanes Power Plant	130*	130	650.225	49%
Brú (hydroelectric power)	9,9	9,9	89.600	7%

**Included in that number is the 30 MW expansion of Reykjanes Power Plant, where a new steam turbine began operating at the end of 2022.*

Hot and cold water

HS Orka supplies local municipalities with both hot and cold water. The company uses heat from the energy generation in Svartsengi to produce hot water, resulting in production that corresponds to about 759 GWh or about 14 million cubic metres of hot water. HS Orka also manages the operation of the local municipalities' main water source in Lágar, from where cold water for the public and companies in the region is drawn.

2022

Hot Water
13.995.057 m³

Cold Water
7.278.313 m³

The circular economy

In the vicinity of the company's geothermal plants in Suðurnes, HS Orka is working on the continued growth of the Resource Park (RP), where companies use resource streams that would otherwise not be utilized. Development projects related to multi-use, circularity and energy transition are being worked on at the RP level. Thermal energy from our power plant in Reykjanes is sold to customers in the RP to the equivalent of 618 GWh annually.

Climate issues and the energy transition

HS Orka's core operation is the production of renewable energy, which is a fundamental aspect of the energy transition. In addition to the energy production itself, the company offers charging stations for cars and rapid development in that field can be expected in the coming years, notably towards the electrification of larger transportation vehicles. At the level of the Resource Park projects related to the production of e-fuel are being developed. Such projects revolve around the utilization of carbon dioxide that would otherwise be released from the company's geothermal power plants. This issue is further discussed in the chapter "Circularity of streams in the Resource Park".

Emissions intensity 2022	**Declared goal**
34 gCO_2e/kWh	Below 26 gCO_2e/kWh by 2030

Total emissions 2022	**Declared goal**
98.829 tonnes of CO_2 equivalents	Carbon neutrality by 2040

2022 in numbers

Number of employees
85

Number of high-temperature drilling holes
54

Customers
27.620

Domestic suppliers
490

Foreign suppliers
46

Proportion of green energy vehicles
32% (+13%)

Number of charging stations
51 (+47%)

Sorted waste
91% (+0%)

Greenhouse gas emissions due to own use of fossil fuels
-13%

Renewable energy production

- ☑ Commissioning of a new 30 MW turbine in Reykjanes Power Plant – late December
- ☑ Work began on a 22 MW expansion at Svartsengi Power Plant
- ☑ Brúarvirkjun Power Plant formally inaugurated

Other ESG projects

- ☑ Selection of the UN Sustainable Development Goals
- ☑ Establishment of a special Sustainability division within HS Orka
- ☑ Publication of HS Orka's first sustainability report and implementation of GRI standards
- ☑ Issuance of a green financing framework
- ☑ Implementation of the TCFD climate risk assessment
- (☑) Life cycle assessments (LCAs) for the Svartsengi and Reykjanes Power Plants

CEO Statement

Tómas Már Sigurðsson

Despite complicated external conditions, 2022 can be considered a year of progress for HS Orka. We continued to invest in production infrastructure, improved technology and energy efficiency, and we took various steps forward in the areas of sustainability and social issues. Our staff are currently engaging in a wide range of interesting tasks and it is good to be able to shed light on our activities in this report. These are interesting times for the energy sector, and the biggest challenges are related to climate change and the energy transition that is underway.

Investments in production infrastructure

Construction on the expansion of Reykjanes Power Plant is in its final stages, and towards the end of the year 2022 it was possible to start commissioning a new 30 MW steam turbine. The project aims to improve the utilization of existing processing areas by leveraging previously underutilized streams. This is a significant investment that conforms to HS Orka's focus on energy efficiency and minimizing waste. At the same time, the increase in production allows us to continue to meet the high demand that exists for renewable energy. It gave us great pleasure that as soon as the new turbine was commissioned for Reykjanes Power Plant, work began on the next project, which is a 22 MW upgrade and expansion of the power plant in Svartsengi. This involves the renewal of older machines, which will lead to both improved efficiency and increased overall production. It was particularly appropriate that Albert Albertsson, the former deputy director of the company, administered the ceremonial initiation of this project, as he has had a part in all construction phases of the Svartsengi plant to date, as well as being the mastermind behind the entrepreneurial work that we are now developing further in our Resource Park.

New projects and further development

We now report on the selection of the United Nations Sustainable Development Goals (SDGs) for implementation in HS Orka's sustainability strategy. In my opinion, the chosen goals reflect the focus and core operations of the company well, while at the same time they motivate us to do even better. Last year we published a green funding framework, which is a way of creating more opportunities when it comes to future funding. HS Orka was the sponsor of the Reykjavík Global Forum – Women Leaders that took place in Harpa conference centre in November, and we also signed a cooperation agreement with UN Women in Iceland. Within the Resource Park, milestone agreements have been signed for the continued development of large projects in the field of food production and e-fuel. Emphasis is placed on attracting companies where by-products from production can be used by other producers and thus support HS Orka's vision of the full utilization of resource streams and the development of a circular economy. I expect that decisions will be made in the near future regarding projects in the field of e-fuel, and we see it as an important aspect in the development of infrastructure for the energy transition in Iceland. It is also clear that the discussion about the supply of hot water for the capital area will continue. We have been negotiating with the municipality of Hafnarfjörður on possibilities in the Krísuvík area, which may be imperative regarding the operational security of heating utilities in the capital area. We think it is sensible to do further research in the area and continue consultation with stakeholders regarding the best approach for such a project.

Conversation about solutions

It gives me pleasure to recall that in early autumn we finally managed to hold the dedication ceremony for Brú, our 9.9 megawatt run-of-river power plant in the upper part of Tungufljót river in Biskupstungur. We can be proud of this project, as the machine purrs amid the tranquillity of this beautiful place, in harmony with the environment and local communities. It is worth noting that in parallel with the construction of the power plant, 25 thousand birch saplings were planted in cooperation with the Iceland Forest Service, and wetlands were restored by filling in ditches in the land of Mosfell in Grímsnes. HS Orka is committed to further development when it comes to sustainable use of resources, and there are multifarious projects ahead that rely on cooperation with many parties. In Iceland, as well as elsewhere, it is imperative that different stakeholders can agree on ways to respond to the challenges we face due to climate change and the energy transition, in all facets of society. HS Orka has every intention of playing a leading role in this endeavour, which involves companies and communities achieving carbon neutrality within the foreseeable future while at the same time securing enough renewable energy for a more sustainable society in the future

Chairman’s address

Adrian Pike

In 2022 the European energy markets went through significant changes due to the rapidly increasing focus on sustainability (including the EU commitment to be carbon-neutral by 2050) and the Ukraine war, which has exposed Europe’s need for security of its energy supply.

European markets have witnessed continuous strengthening of regulations, initiatives and funding associated with the energy supply and carbon emissions in Europe. As an example, decarbonization and circularity across society and companies were boosted by the widening of the EU Emissions Trading System to new industries, and by removing carbon emission allowances from current industries (expected from 2030 onwards). At the investor level, there is continuous incentivization of investment in renewables and low-carbon solutions, via the inclusion of the EU Taxonomy in the EU Green Bonds standard and the creation of a wider range of sustainability-linked products and disclosures, for both companies and investment funds.

Whilst the energy market overall was still recovering from the impacts created by the pandemic-imposed lockdowns, a reduction of Russian gas flow created a rapid increase in wholesale gas prices, leading to significantly higher energy prices across Europe. As energy plays a vital part in all developed economies, the increases resulted in very high inflation and substantially contributed to a “cost of living” crisis.

Iceland, with HS Orka as a leading energy supplier in the market, has inherently a strong and sustainable energy generation capacity. Whilst the Icelandic electricity market is not directly connected with continental Europe, Iceland can still play a relevant role in the European energy transition and therefore benefit from inbound foreign investment. In addition to the increased immediate need for energy supply security, European countries and companies have also become more conscious of their dependence on countries further afield when it comes to the supply chains across industries. At the same time, innovation is making transport increasingly more sustainable and cost effective, making new forms of manufacturing possible further away from the demand centres and the traditional manufacturing hubs. As a result, HS Orka has an opportunity to play a significant role in supporting the European and Icelandic economies by enabling industries to relocate their manufacturing capacity to Iceland and the international market to achieve more secure, cost-effective and sustainable manufacturing processes.

For 2023 and beyond, HS Orka is very focused on expanding its generation capabilities to provide further visibility and price stability to its clients. The most prominent project is the generation capacity expansion in Svartsengi, which totals 22 MW through the 2 ½-year construction project that was kicked off in December 2022. This follows the successful construction of the REY 4, a 30 MW project where operations began at the end of December 2022. A further 10 MW of hydro generation was added to HS Orka’s generation capacity in 2020 at Brú and the plant was officially opened by the Minister of Finance in 2022.

HS Orka will also continue to promote its Resource Park concept, which enhances sustainability benefits by utilizing one party’s waste (for example, brine and carbon dioxide) as a resource for another party, thereby creating a “society without waste”. All these efforts will lead to HS Orka creating value for people, business and the planet.

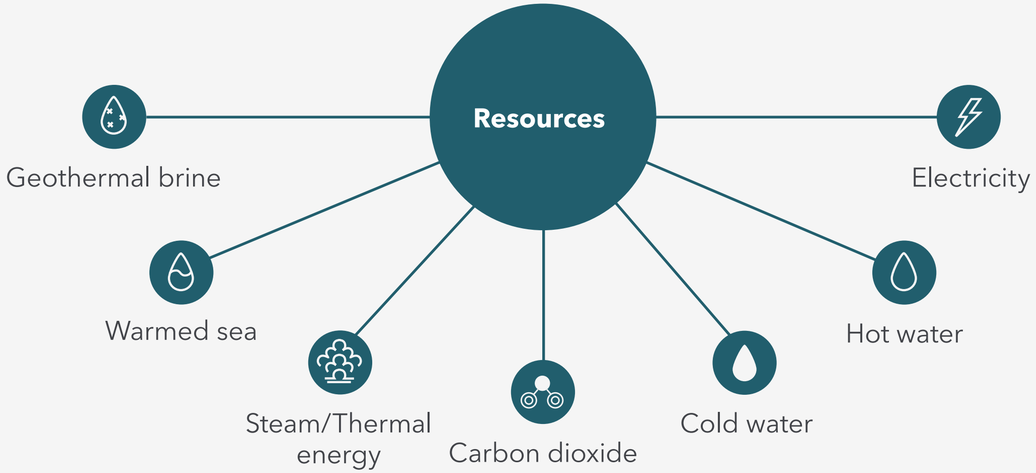
The Resource Park – “Society without waste”

GRI 3-3 Material topic

The Resource Park has been developed in the vicinity of HS Orka’s power plants in Svartsengi and Reykjanes. It is unique in a global context, and is a fundamental part of HS Orka’s strategy with regard to utilizing the resource streams that come from the company’s geothermal plants. The build-up and development of the Resource Park is in full swing, with the phrase “society without waste” as a guiding principle.

Multiple use of streams and a circular economy

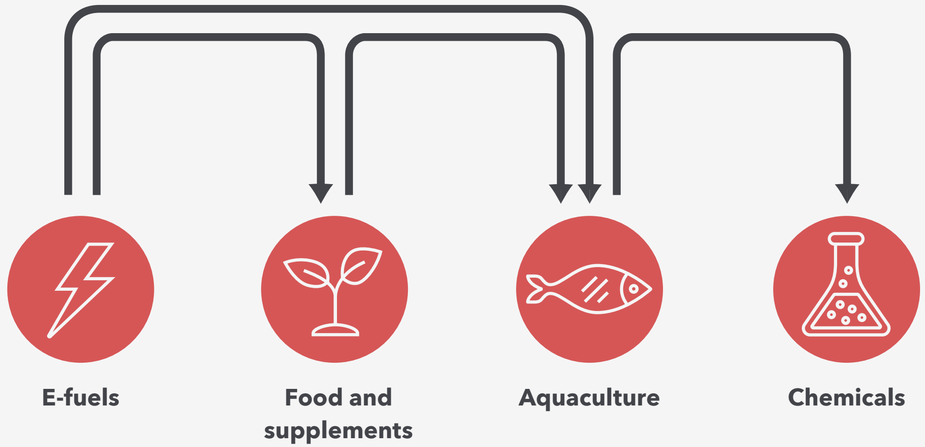
A company can be considered part of the Resource Park if it receives more than one resource stream from HS Orka or other entities within the park. There are currently more than 10 companies in the Resource Park, and the aim is that more will join the venture in the very near future.



HS Orka wants to promote responsible consumption and production by ensuring that the energy that is harvested is fully utilized with the greatest possible benefit for the company and society as a whole. In this way, the company supports Iceland’s energy policy, which includes the multiple use of resource streams to increase sustainability and minimize waste and environmental impact.

With HS Orka’s Resource Park, better overall utilization of the heat generated during energy production is achieved, and it thus plays a role in reducing HS Orka’s emissions intensity (carbon emissions/kWh). Certain operations, such as e-fuel production, can also reduce the direct emissions of greenhouse gases and play a meaningful role in the energy transition.

The administrators of the Resource Park have formulated a future vision which characterizes which industries are most suitable for the Park. These are industries that can be profitable in Iceland and reflect an emphasis on multi-use and circularity, as shown in the following figure:



Goals and projects

- Continued growth of the Resource Park by taking the next steps with preferred partners.
- The aim is to sign contracts with two new companies in 2023 – one of which is an e-fuel producer.
- Development of circularity projects between the companies of the Resource Park.

Other matters

- Infrastructure development in Reykjanes to support the implementation of the circular economy concept.

UN´s Sustainable Development Goals at HS Orka

HS Orka has now chosen six of the United Nations Sustainable Development Goals for implementation in its operations. The selection is the result of a work process in which the global goals were analysed and put into context with the company's operations and future strategy, together with important criteria in ESG matters. An in-house working group was appointed, and an external party consulted on the implementation. A workshop was held where employees reviewed more detailed objectives of the goals and possible success criteria. Furthermore, a summary of the approach of utility companies globally was prepared, and different implementation scenarios for HS Orka examined. The results were analysed and a proposal submitted to the company's process council for further discussion. The selected goals are now integrated into the sustainability report for the first time.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Ensure sustainable consumption and production patterns*

- HS Orka is a safe and healthy workplace where employees return home unharmed.
- Efforts are made to eliminate waste in the entire value chain, from inputs and new construction to daily operations and waste management.

13 CLIMATE ACTION

Take urgent action to combat climate change and its impacts*

- HS Orka's key climate goals are that emissions intensity will be below 26 g/kWh by 2030 and that the company achieves carbon neutrality by 2040.
- Possibilities are being explored in the areas of utilization (CCU) and storage (CCS), and increased emphasis is placed on activities related to the full value chain.

7 AFFORDABLE AND CLEAN ENERGY

Ensure access to affordable, reliable, sustainable, and modern energy for all*

- HS Orka meets the demand for renewable electricity and actively participates in the energy transition.
- Emphasis is placed on careful and informed use of resources, with sustainability as a guiding principle.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation*

- Through purposeful development and innovation, HS Orka aims to build a strong and resilient infrastructure for the future.
- Development of infrastructure related to both energy technology and the circular economy is underway.

5 GENDER EQUALITY

Achieve gender equality and empower all women and girls*

- HS Orka has a targeted equality policy, equal pay certification, and supports projects related to equality and diversity, i.e. as a sponsor of UN Women in Iceland.
- There is cause to continue strengthening the role of women in the energy sector, not least when it comes to production jobs and construction.

15 LIFE ON LAND

Protect, restore and promote sustainable use of terrestrial ecosystems*

- HS Orka conducts research to understand the company's impact on the ecosystem, and necessary countermeasures are taken when necessary.
- The company maintains active monitoring and measurement of environmental factors in the vicinity of its facilities and in the preparation of new projects.

*Goal input, cf. https://sdgs.un.org/

Materiality analysis 2022

GRI 3-1 GRI 3-2

To better understand the impact and importance of different ESG topics in HS Orka's operations, a materiality analysis was carried out for the second time in accordance with the GRI standards. The analysis includes an update of both the list of topics and the results of the analysis from 2021. The core of this sustainability report is a discussion of the topics that are considered the most material for HS Orka from a sustainability point of view.

1

- Mapping of ESG criteria
- Stakeholder analysis
  - Recorded communication
  - Public attitude survey

2

- Updated list of HS Orka's ESG topics

3

- Two internal groups
- Presentation of analysis
- Ordering of topics - survey

4

- Summary
- Review of outcomes
- Definition

Step One: Mapping and analysing

The first stage of the work included the analysis and mapping of the overall picture for HS Orka, together with a stakeholder analysis. An assessment was made of external and internal ESG criteria and put into the context of HS Orka's overall strategy, commitments, and performance measures. As HS Orka has now chosen six UN SDGs for implementation, they were utilized for the first time for this mapping. Registered issues and communications between employees and stakeholders were also reviewed. To support this work, the materiality analysis included special conversations with important stakeholders where HS Orka's ESG topics were reviewed and expectations and priorities recorded. An attitude survey was also conducted among the public through a third party.

Step two: Updated list of ESG topics

In step one, a list of possible ESG topics and priority factors was created and that list was compared to the ESG topics list from the last materiality analysis. This led to an update of the topics as well as a redefinition of some elements. For example, the topic "Anti-corruption" is now considered under "Governance" and "Handling of harmful substances" is now considered under "Responsible consumption and production". Building on the analytical work in step one, the topic definitions were strengthened by identifying sub-factors and performance measures for each topic in a separate appendix to the issue list.

Step three: Working groups and ranking of issues

The aforementioned work was presented to separate internal groups: firstly to the executive board and also to a group of key personnel who have expertise in ESG issues and/or are in regular contact with stakeholders. Both groups were introduced to the main rationale for updating the list of topics, and the sub-factors and performance measures of each topic were reviewed. All individuals in the groups were given the task of prioritizing ESG topics according to (I) HS Orka's potential impact on the topic (II) importance for the company's overall sustainability strategy. The priority rankings of the executive board and key employees were independent of each other.

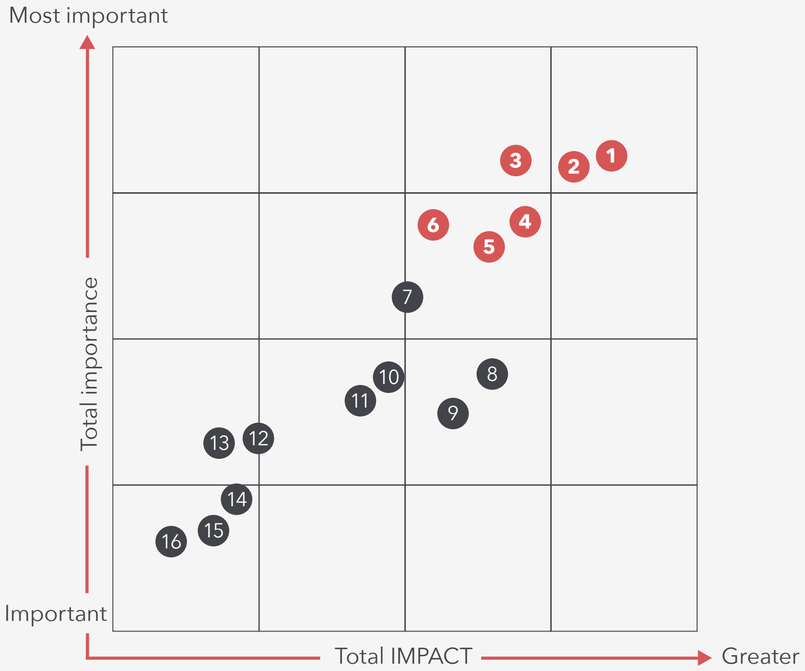
Step four: Summary of findings and determining material topics

When the results of both groups were considered, the ranking of the topics was seen to be broadly in line with the analysis from the previous year. Whereas the top three issues stood out somewhat from the others, the next four showed an increased focus on "Responsible consumption and production" and "Nature conservation, ecosystems and biodiversity". The results of stakeholder conversations were reviewed, which provided useful indications of focus on specific topics. Consequently, it was decided that in addition to the top three topics, both "Climate" and "The Resource Park and circularity" would continue to be defined as material topics, and it was furthermore decided that "Responsible consumption and production" would be added to the list of the most material ESG topics.

It is worth pointing out that although six topics are now defined as the most material, other topics on the list are still valid for the company. Furthermore, some topics are not specifically mentioned but are part of other topics. For example, risk management is an important ESG topic but rather than being singled out, it is part of other topics on the list. It should also be mentioned that both information provision and supplier issues are classified under the topic "Responsible consumption and production".

Discussion of material topics in the report

The six ESG topics defined as the most material for HS Orka are accounted for in full separately in this report, in accordance with the GRI standards for the management of material topics. Where appropriate, sections are marked with *GRI 3-3*, which indicates that the coverage falls under a material topic. Apart from the discussion of material topics, the report aims to cover other ESG issues in accordance with the requirements of GRI standards and in alignment with best practice.



	ESG issue	Coverage in the report (GRI 3-3)
1	**Sustainable use of natural resources**	Page 16-18
2	**Security of power supply and infrastructure**	Page 27-28
3	**Safety and work environment**	Page 29-31
4	**Climate**	Page 19-20, 38-39
5	**Circularity of streams in the Resource Park**	Page 9-10, 25
6	**Responsible consumption and production**	Page 18, 21-23, 25, 33
7	Nature conservation, ecosystems and biodiversity	
8	Air quality and pollution prevention	
9	Energy transition	
10	Community involvement	
11	Human resources and equality	
12	Data and cyber security	
13	Local planning	
14	Governance	
15	Favourable energy prices	
16	Human rights	

Stakeholders

GRI 2-29

It is in the nature of an infrastructure company like ours that the activities involve many areas of contact with different stakeholders. HS Orka sees it as an important task to collaborate with the community, and it is to everyone's advantage that this cooperation is based on 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.

Part of the material analysis above involves special consultations with important stakeholders on the company's ESG topics. In addition, the company's employees regularly engage in multi-faceted communication whereby comments and suggestions for improvements or possible advancements are received. All these interactions are important when it comes to capturing expectations and concerns early enough to improve the quality of decision making. Within the company, work is being done to further develop the processes related to communication with stakeholders and the community. Our goal is basically two-fold: to provide clear information about our activities and to understand the expectations and priorities of the company's 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

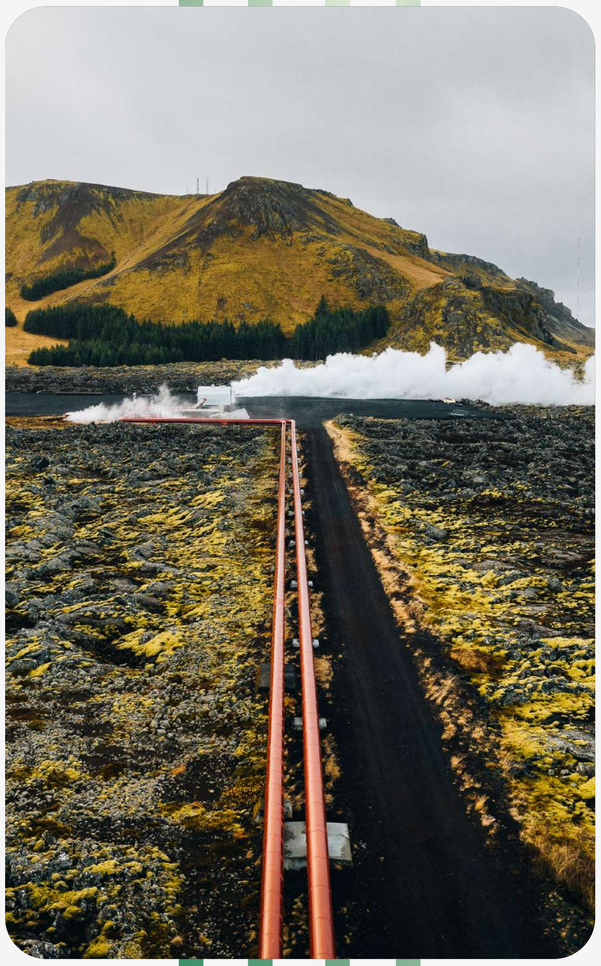
- **Authorities**
  - Department of Civil Protection and Emergency Management
- **Customers**
  - Local authorities
  - Utility firms
  - Companies in the Resource Park
  - Other companies
  - Individuals
- **Suppliers**
  - Resources
  - Contractors
  - Service providers
  - Others
- **Employees**
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

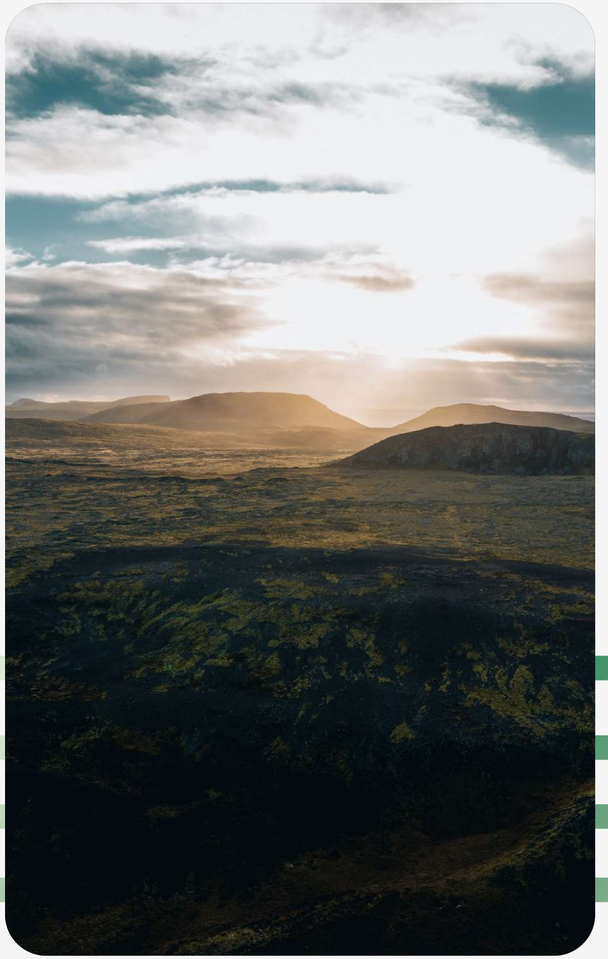
Governance and economy

- **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

HS ORKA

Environment



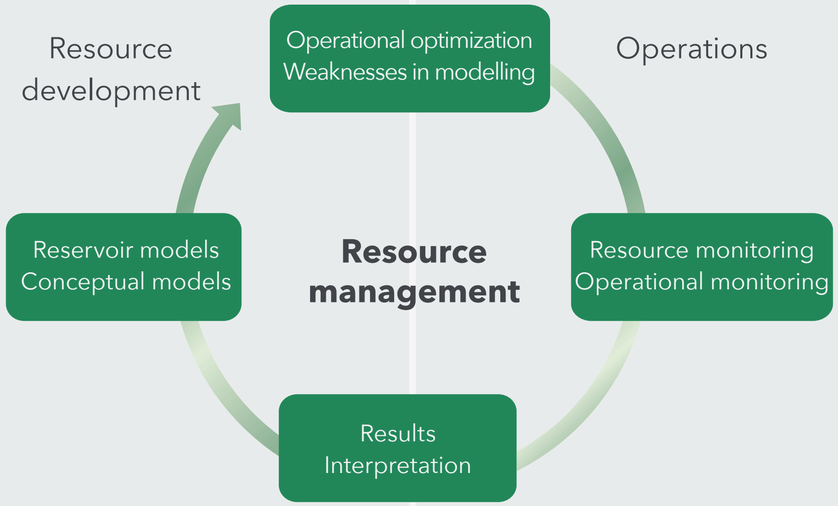


Sustainable use of natural resources

GRI 3-3 Material topic

Resource management

The use of resources in a sustainable manner, both geothermal and freshwater resources, is the basis of the company's long-term success. 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. Production decisions are based on the best available data at any given time and 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 act if unexpected changes or unwanted developments occur. The methodology can be described by the following image:



Considering the above, in-house expertise has been increased in recent years and most of the resource monitoring and development concerning the geothermal and freshwater resources is intertwined with daily operations. Thus, the number of employees within resource management has increased from three to seven over the past three years. Based on historical data, reservoir models are built and are then used to predict the development of resources based on given assumptions. These models are constantly evolving in light of new data. For instance, with geothermal resources the need for new boreholes, both for production and injection, needs to be constantly reassessed. Resource development and monitoring are also part of the company's obligations towards public regulators, and there is active dialogue with them about the development of the resources.

The freshwater monitoring programme considers important environmental factors in each area. The chemical composition of drinking water is closely monitored and several factors, such as temperature, pressure, conductivity and groundwater levels, are continuously monitored in chosen locations. The quantity of extracted fluid is registered, and monitoring results are used to assess any potential strain on the resource.

Emphasis on modelling the Reykjanes Plant´s geothermal resource

The power generation in MWh in 2022 was about the same as in 2021. Nevertheless some uncertainty remains with regards to the development of the Reykjanes Power Plant´s geothermal resource. The condition and utilisation of the resource has a material impact on HS Orka´s long-term performance and accordingly, in 2022, continued emphasis was on further development of both conceptual models and the newly developed reservoir models, in order to stabilise the production capacity and ensure the sustainable use of the resource.

Goals and projects

- Projects aimed at reinforcing the production in Reykjanes in the long term.
- To study the long-term capacity of the Svartsengi-Eldvörp system.
- To monitor the potential long-term effects of the 2020 – 2022 volcanic activity on freshwater and geothermal resources.

Expansion of the Reykjanes Power Plant (REY 4)

Construction on the expansion of the power plant in Reykjanes was almost complete by the end of 2022, and in December work began on commissioning the equipment. Despite the pandemic and other negative effects on global value chains, it was possible to keep construction within both the time plan and budget. At its peak, around 150 people worked on the project.

Improved utilization with new technology

The expansion of Reykjanes Power Plant with REY 4 includes a 30 MW increase in installed capacity. The basic idea of the investment was to achieve improved utilization of the thermal streams that are already present and remained unused after the first phase of the power plant construction. The key components are a new low-pressure turbine and related equipment, which makes it possible to produce from streams that could not previously be utilized due to technical challenges. The technology behind the REY 4 project is the result of research and development work, both internally at HS Orka and with partners.

Upgrade and expansion in Svartsengi

Construction on the upgrade and expansion of the geothermal power plant at Svartsengi began in December 2022. The power plant has had 74.4 MW of installed power since 2008. The production capacity is based on two conventional 30 MW steam turbines that were commissioned in 1999 and 2008. The remaining 14.4 megawatts have consisted of a 6 MW turbine from 1980 and another 8.4 MW turbine from 1989, or until the 6 MW turbine was damaged and taken out of service in 2021. It is time to renew these older turbines as their efficiency is no longer good compared to what we know today.

Improved efficiency and better development possibilities

After examining the alternatives, the decision was made to fully renew the older turbines. With new equipment, much better utilization of the same streams is obtained and the project is estimated to result in 22 MW, which corresponds to an increase of 8 MW in total production compared to the full capacity of the old turbines. The turbine that will be used in the project has a capacity beyond this production increase, which means that its installation provides opportunities for further steps regarding improved efficiency and production in Svartsengi in the future.

The construction work in Svartsengi involves a certain challenge since it involves construction within a power plant that is in full operation. This increases the complexity of the project somewhat, but on the other hand there is less environmental impact and ground disturbance than otherwise. The construction also has a positive effect on the water heating part of the power plant, and the reliability of hot water delivery will improve with the new construction.

The project can broadly be divided into two parts: on the one hand, the construction of a new power station and cooling tower to accommodate a new turbine and, on the other hand, various steps within the power plant to increase efficiency.

Redesign of a turbine

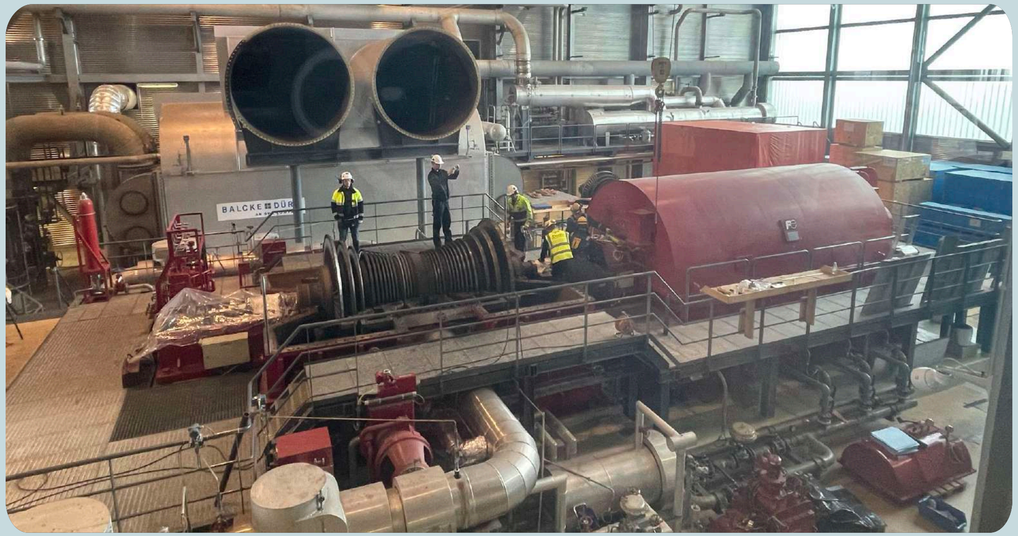
GRI 3-3 Material topic

Steinar Ísfeld Ómarsson, maintenance manager at HS Orka

In Svartsengi, a steam turbine that was previously designed and purchased for the Reykjanes Power Plant will be used. The turbine turned out to be unusable at the Reykjanes plant and has therefore remained in storage for the past decade. This is a machine that weighs between 60 and 80 tonnes. The upcoming construction work in Svartsengi created an opportunity to finally put the turbine into operation and thereby save both costs and time.

Although the turbine's generator was used in the REY 4 expansion in Reykjanes, the turbine and all its support systems remained unused. In a feasibility study for the expansion in Svartsengi (SVA 7), various possibilities were examined, including the option to buy all the equipment new. The conclusion, however, was that it would make the most sense to use this machine. First, we are utilizing a previous investment and saving significantly in costs. At the same time, the construction time is shortened, as today it can take up to 20 months for manufacturers just to get the raw materials needed for a turbine wheel. Another meaningful advantage is that in the future, spare parts can be shared between similar turbines in Reykjanes Power Plant and Svartsengi.

Part of the project is to modify the turbine in various ways so that it is best suited to the project. We buy new controls, steam control valves and more. The key issue is changing the turbine wheel itself. The machine is designed for 50 MW of installed power, but with modifications the production capacity will increase to 55 MW. The changes revolve around redesigning and rebuilding parts of the turbine wheel, and the work has already begun at HD ehf. in Mosfellsbær. In future, the spare turbine for REY 1 and REY 2 will also be modified in such a way that it can be used for REY 1, REY 2 and SVA 7. This is quite an extensive project and the modification of each wheel takes about nine months according to estimates. Nevertheless, this is a cost-effective solution, and it is very positive to be able to carry out the modifications domestically instead of having to send the turbine abroad.



Climate

GRI 3-3 Material topic

The global concentration of carbon dioxide in the atmosphere is now a quarter higher than in the early days of HS Orka and double what it was before the industrial revolution, when the burning of fossil fuels began in earnest. The consequences are disruptions of the carbon cycle. The international community is making efforts to respond to this worrying trend and set a goal to keep global warming within 2°C, but preferably within 1.5°C. .

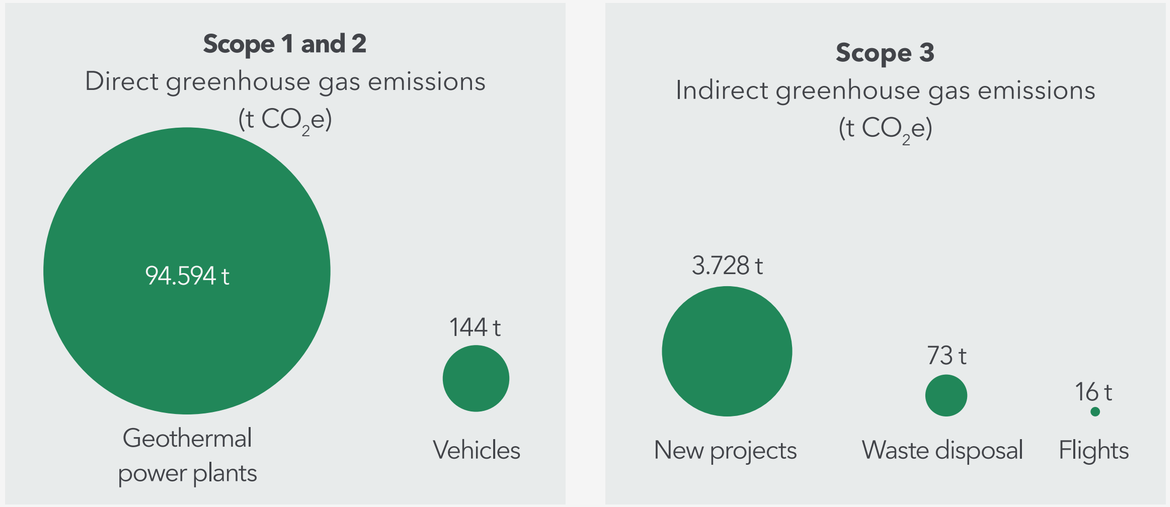
Emissions intensity

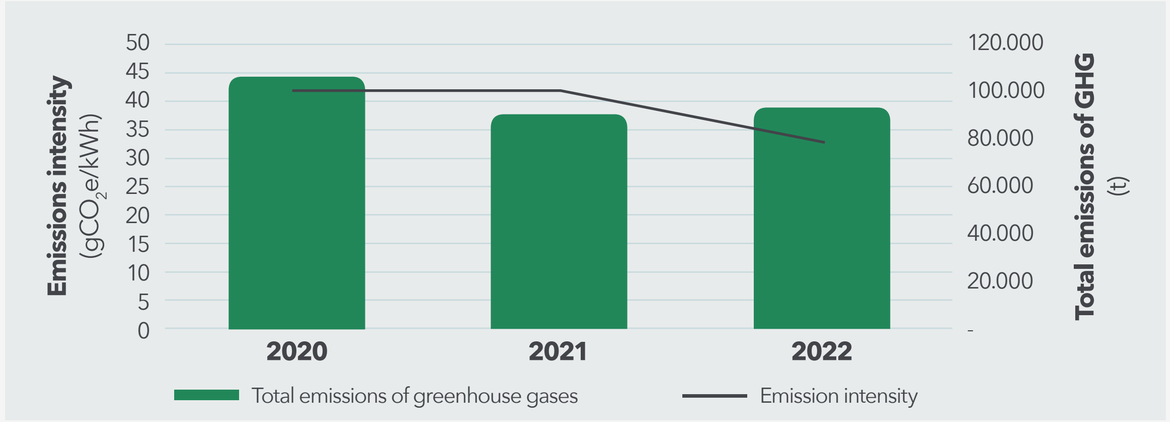
HS Orka has made a commitment to reduce the company's carbon footprint, i.e. the emissions intensity, by 40% (compared to 2014) by 2030, which is compatible with the goal of reducing emissions intensity to 26 g of CO_2 equivalents per kilowatt-hour of electricity produced and heat sold. This is compatible with the Taxonomy regulation of the European Union, which states that emissions must not exceed 100 gCO_2e/kWh for an investment in energy to be considered sustainable.

The company has already taken steps towards lowering the emissions intensity through more efficient use of resources, as evidenced by the expansion of Reykjanes Power Plant. Increased activity in the Resource Park will also play a major role in reducing HS Orka's emissions intensity by improving the utilization of the heat generated in the energy production. In 2022, HS Orka's emissions intensity was 34 gCO_2e/kWh.

Total emissions

The geothermal fluid from which the geothermal power plants produce energy contains the greenhouse gases carbon dioxide and methane. The chemical content of the geothermal fluid is measured regularly, and based on these measurements, HS Orka's emissions are estimated in CO_2 equivalents. Direct emissions from HS Orka's power plants in 2022 were 94.594 tonnes of CO_2-equivalents, of which methane was 243 t CO_2-equivalents. These emissions account for 97% of the company's total emissions, cf. the image below. It should be noted that natural emissions were not considered before the start of operations, so the extent of natural emissions is not known, i.e. what part of the emissions would occur naturally without the company's energy production.





Emissions due to waste treatment and disposal, along with those from the company's vehicles, are compiled and calculated by a service provider (Klappir ehf.). The emissions of greenhouse gases due to the use of fossil fuels totalled 144 tonnes and decreased by 13% year-on-year, mainly because the percentage of clean energy vehicles increased by 13% from the previous year. Emissions due to waste treatment turned out to be 73 tonnes and increased by 7%, which can be considered moderate considering the activities connected to the expansion of Reykjanes Power Plant and the corresponding increase in the amount of waste by 80% year-on-year. Emissions due to resources used in the expansion of Reykjanes Power Plant and oil use in earthworks due to new construction in Svartsengi amounted to 4.002 tonnes. HS Orka purchased carbon sequestration in accordance with the methods and rules of the Iceland Carbon Fund (is. Kolviður) for emissions from air transport, waste treatment and part of the company's vehicle use.

Energy transition

To achieve the goals of reducing greenhouse gas emissions, the international community needs to take multiple actions. The best solution is to phase out fossil fuels and increase the share of renewable energy sources, especially in energy production and transportation. HS Orka's core business is the production of renewable energy, which is a fundamental aspect of the required energy transition. In addition to energy production itself, the company now offers charging stations for cars, and rapid development in that field can be expected in the coming years, i.e. towards the electrification of small boats and larger vehicles. In addition, there are underutilized opportunities in e-fuel, and HS Orka is involved in the development of such projects at the Resource Park. Some of the projects revolve around the utilization of carbon dioxide that would otherwise be released from the company's geothermal power plants. This topic is discussed further in the chapter „Circularity of streams in the Resource Park".

Utilization of emissions: a viable option for HS Orka

HS Orka's emissions have the lowest content of hydrogen sulphide known in geothermal power plants of comparable size in Iceland. The cleaning of the emissions is therefore cost-effective, and the quantity is sufficient to make an investment in the utilization of the carbon feasible. The carbon could be used for the production of e-fuel in the vicinity of HS Orka's power plants (see the chapter "Circularity of streams in the Resource Park") and thus reduce additional carbon emissions from the combustion of fossil fuels.

HS Orka's actions and approach

HS Orka is working to integrate its commitment to carbon neutrality in 2040 with development projects aimed at utilizing the company's CO_2 emissions. The biggest projects in that field concern the production of e-fuel. Along with the development of those projects, HS Orka will continue to explore the feasibility of other methods, such as the disposal and storage of carbon dioxide in the ground, to ensure that the goal of carbon neutrality is achieved.

Declared goals

- Reduction of emissions to 26g CO_2e/kWh in 2030.
- Carbon neutrality by 2040.

Key projects

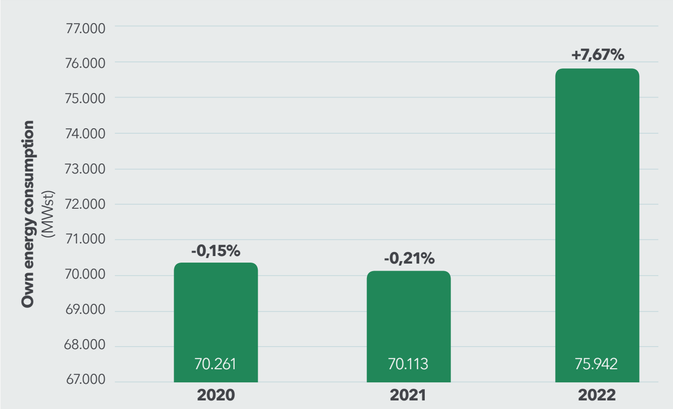
- To develop actions and projects related to the utilization of emissions and storage, in accordance with Iceland's Climate Action Plan and Iceland's goals in climate issues.
- Continued investments in improved efficiency in energy production and increased utilization of thermal streams, which lead to a reduction in emissions intensity from production.
- Increase the clarity of scope 1 and 3 emissions.
- Life cycle assessment for the geothermal power plant in Svartsengi.
- Continued development of the TCFD climate risk assessment in the company's risk model.

Own energy consumption

GRI 3-3 Material topic

HS Orka's energy consumption is in the form of fuel for cars and machines; electricity for driving cars, equipment and machinery; and hot water used for heating.

By far the largest part of the company's energy consumption consists of own consumption of electricity (electricity losses included) to run machinery, or 97.3%. Own consumption of electricity increased by almost 8% year-on-year and therefore the energy intensity, i.e. the company's own use of electricity, heat and fossil fuels, went up by 0.004 MWh per MWh produced. The use of fossil fuels decreased by 17% between years. Measurements of the use of electricity for electric cars and plug-in hybrids began in mid-2022 when the company added 16 new charging stations at Svartsengi, one of which is a rapid-charging station. At the end of the year, there were 51 charging stations on the company's premises.



Own energy usage (MWh)	2020	2021	2022
Non-renewable fuels (diesel and petrol)	596	667	551
Renewable fuel (electricity)			31
Electricity	68.181	67.962	73.876
Heat	1.484*	1.484*	1.484*
Total own energy usage	**70.261**	**70.113**	**75.942**
Annual decline/increase	**-0,15%**	**-0,21%**	**7,67%**
Energy intensity (MWh per MWh produced)	**0,046**	**0,053**	**0,057**

Air quality and pollution control

GRI 3-3 Material topic

Geothermal systems produce hydrogen sulphide (H_2S). HS Orka measures the emission of H_2S from the power plants at Svartsengi and Reykjanes; in 2022 these emissions amounted to 2.884 tonnes.

Monitoring and measurement

HS Orka operates a measuring instrument by the town of Grindavík where the concentration of hydrogen sulphide due to activities at Svartsengi is monitored. The 2022 average concentration of hydrogen sulphide at Svartsengi was 2.3 µg/m^3, whereas the exposure limit is 5 µg/m^3. The daily maximum of 24 hours running average never exceeded the defined exposure limit.

The local Public Health Authority monitors areas of activity and impact by the company's power stations in the Reykjanes area. There were no non-conformities from the operating licence during 2022. The same can be said about the Brúarvirkjun Power Plant, where the Public Health Authority in the South of Iceland supervises operating licences.

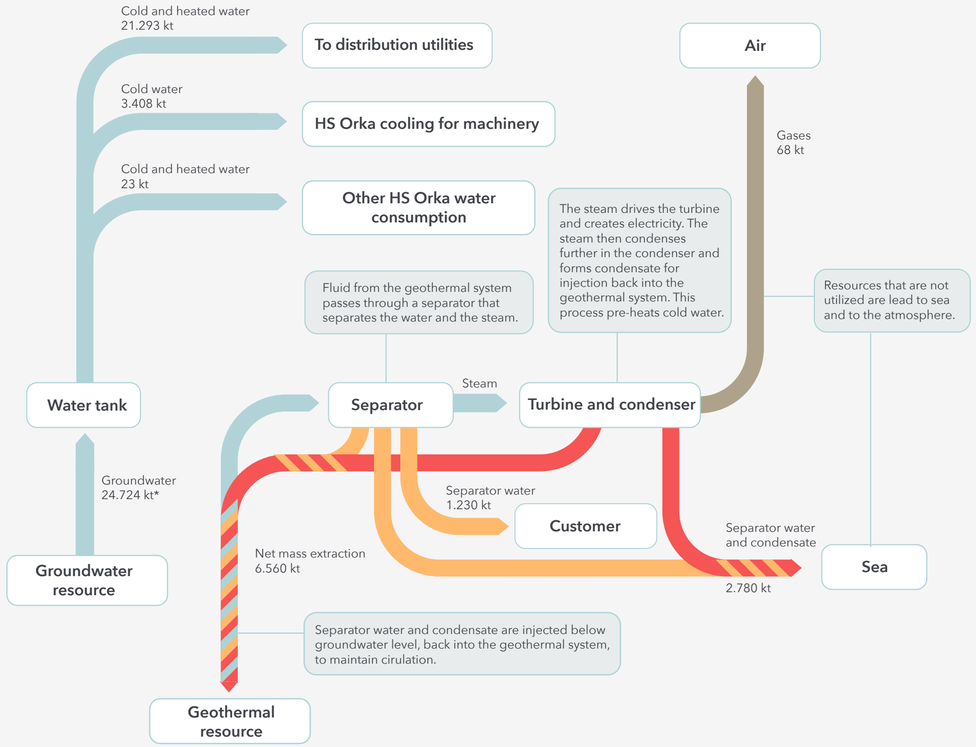
HS Orka's operating licences for the power plants in Svartsengi and Reykjanes, issued by the local Public Health Authority, contain requirements regarding the condition of water recources and water. The local Public Health Authority monitors water resources and drinking water in and around HS Orka's area of operations on the Reykjanes peninsula. The results show that HS Orka's operations have not led to an impact on the water resource. HS Orka also has a powerful internal monitoring system and monitors the physical and chemical composition, flow and groundwater levels.

Resource flows

GRI 3-3 Material topic

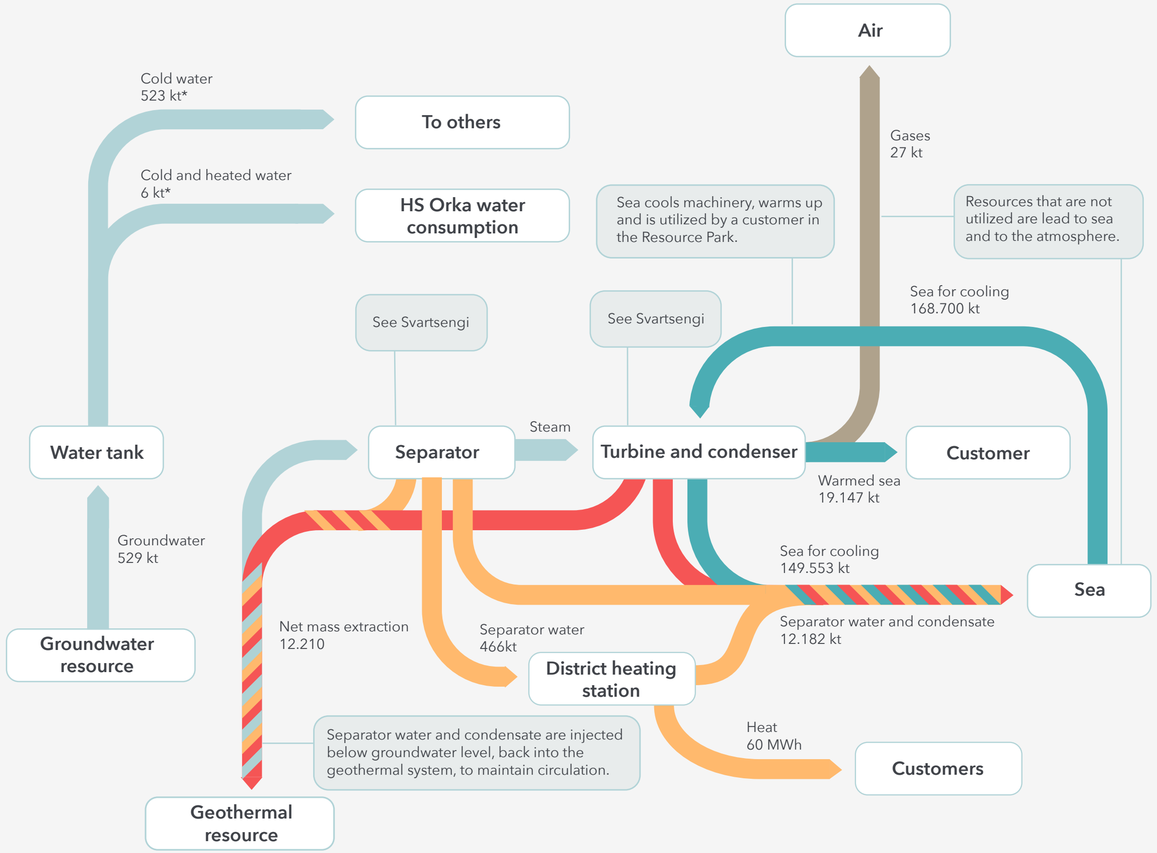
The processes presented in the illustrations below show all the resource steams that i) HS Orka uses in the Suðurnes area, ii) usage by companies in the Resource Park, and iii) those that HS Orka cannot fully utilize at present. The figures shown here and in the chapters on energy consumption, greenhouse gas emissions, recycling and disposal are based on the best available data.

Svartsengi



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

Reykjanesvirkjun



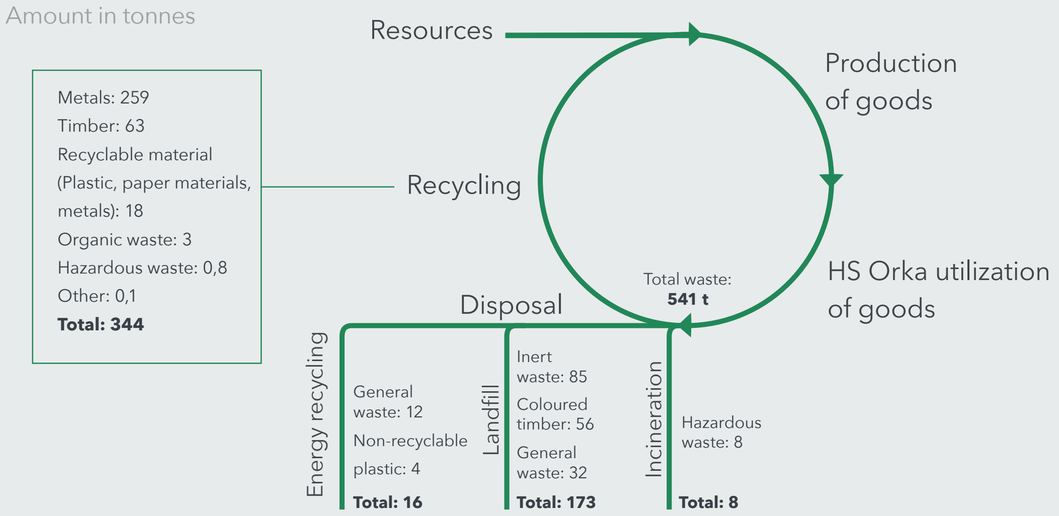
Resource streams to and from HS Orka's power plant in Reykjanes.

Recycling and disposal

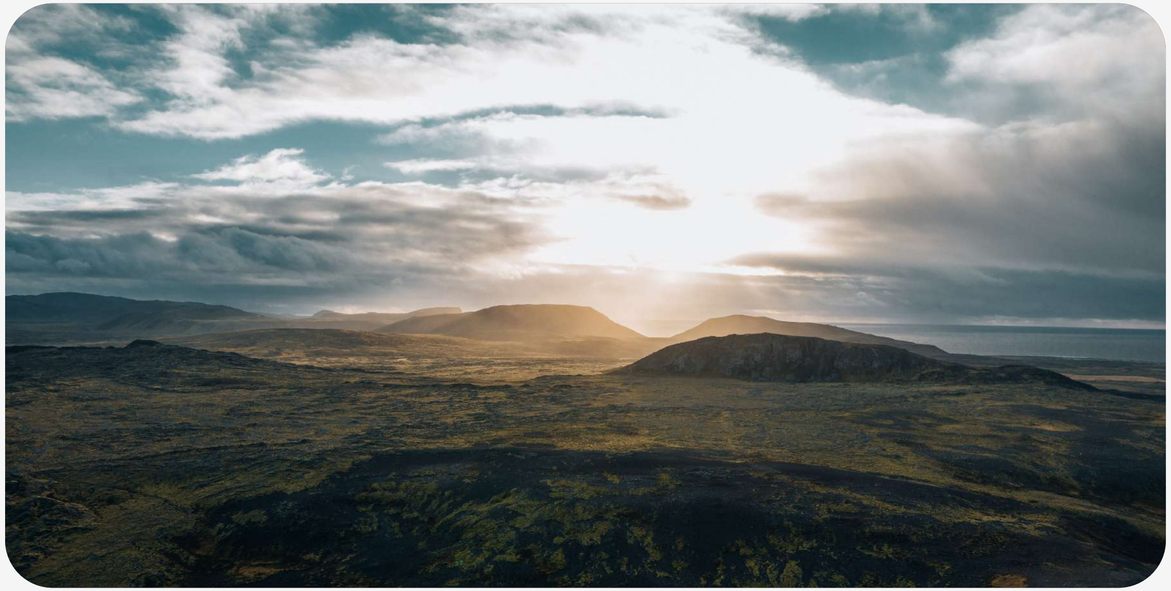
GRI 3-3 Material topic

Waste is an underutilized resource. HS Orka has been working for a long time to actualize the ideas of a circular economy, as evidenced by the Resource Park. The chapter „Resource streams“ sheds light on the various wastewater streams that come from the company’s power plants. The company also places great emphasis on sorting waste so that the highest percentage of waste finds its way back into the circular economy. The company aimed for 85% sorting of waste in 2022, and by the end of the year 91% of the total waste had been sorted.

HS Orka’s waste management service provider has an operating licence from the Environment Agency of Iceland. Data from the service provider is registered in web software that enables HS Orka to see an overview of waste collection, sorting and recycling. The figure below shows the amount of waste at HS Orka in 2022:



At the Reykjanes Power Plant, HS Orka has an operating licence from the local Public Health Authority for a landfill site. HS Orka has the authority to empty waste from earthworks into it that are generated due to construction work at the power plants. In 2022, 0,8 kilotonnes of minerals were disposed of at the landfill site. All HS Orka’s power stations have septic tanks that are emptied annually. A total of 5.5 kilotonnes of sludge was collected and disposed of in 2022.

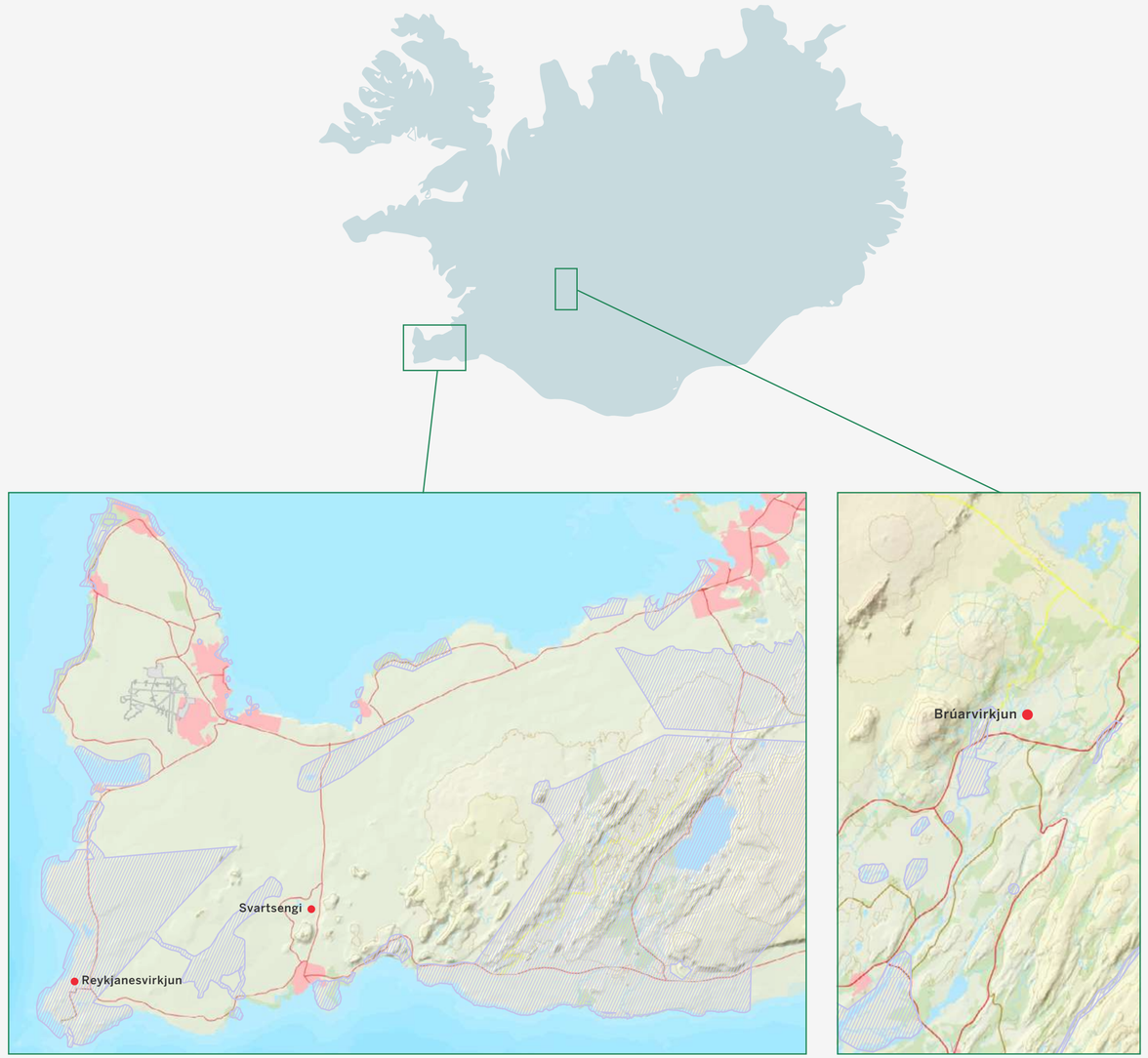


Nature conservation, ecosystems and biodiversity

The term biodiversity includes diversity within species, between species and between ecosystems. Ecosystem health increases in direct proportion to diversity, and healthy ecosystems provide organisms, including people, with vital services such as good air quality and access to both clean water and food. To underline the importance of this issue for the company, “Life on Land” is one of the UN Sustainable Development Goals that the company has chosen to implement in its operations.

To assess the need for mitigation measures, e.g. to counter adverse impacts or to invest in equipment to minimize adverse effects, the nature of the impacts must first be known. Many of the projects that fall under this topic therefore include research and measurements to increase knowledge. In collaboration with experts at research institutes, HS Orka monitors the physical and chemical properties that may have an impact on flora and fauna in the impact areas of the company’s power plants.

HS Orka operates in various protected areas: areas that are classified with district protection or are designated nature reserves. At the Brúarvirkjun Power Plant in the river Tungufljót there are, for instance, harlequin ducks that HS Orka monitors. This species is not considered endangered by the International Union for Conservation of Nature (IUCN), but it is fully protected in Iceland. Harlequin ducks are considered an important indicator of the health of the ecosystem where they live. The images on the right show where protected areas can be found in the vicinity of HS Orka’s power plants.



Circularity of streams in the Resource Park

GRI 3-3 Material topic

Various multi-use operations take place In the Resource Park, whereby streams from HS Orka's geothermal power plants are utilized by companies in the vicinity. Through multi-use, waste from energy production is minimized, but the aim of the Resources Park is to take further steps so that circularity is created between the companies that work there, i.e. that one company's waste becomes another's raw material. When more companies join the Park it can be assumed that opportunities for circularity within the Park will increase.

Development projects
So far, circularity of resources between producers in the Resource Park has not been established. Below are examples of ongoing actions and development projects that aim to create circularity within the Resource Park:

- Negotiations are ongoing with e-fuel producers who want to operate in a location near the power plants in Reykjanes. This is an industry that can play a key role in promoting circularity in the area.
    - A by-product from the production of e-fuel is oxygen, which is a necessary raw material for aquaculture. Aquaculture is already present in the Resource Park, and is growing in scope. This is an opportunity to bring oxygen from an e-fuel producer directly to aquaculture establishments in an economical way.
    - In the production of e-fuel, heat is released that can be used in current and future operations within the Resource Park.
    - An e-fuel producer that uses carbon dioxide from HS Orka's power plants for its production would install equipment for cleaning carbon dioxide so that it could be used in more sectors, e.g. food or algae processing. Thus it is possible that excess carbon dioxide would be cleaned and used in an industry other than e-fuel production.
- Negotiations with companies such as Sæbýli, which is planning to farm abalone. Such operations will include opportunities to share streams with other forms of aquaculture that are either already present or anticipated.
- A feasibility study of fertilizer processing in Iceland, in collaboration with Fóðurblandan and Kaupfélag Skagfirðinga, with the aim of analysing the feasibility of producing fertilizer in Iceland, i.a. from aquaculture waste.

Long-term thinking and infrastructure planning

Dagný Jónsdóttir, manager of Resource Park

The development of a circular economy in the Resource Park is an important element in strengthening its position and attracting businesses. Firstly, there are the environmental considerations, as part of Iceland's direct responsibility in climate matters is to reduce waste in all its forms. A circular economy promotes better use of resources by using streams and by-products from production that would otherwise go to waste. In this way, procurement can be simplified, imports reduced and transportation between regions minimized. Another advantage of creating a circular economy is that when companies supply each other with raw materials, they are more likely to be sustainable in the long run. HS Orka's strategy is to enter into long-term contracts with reliable companies that guarantee the company long-term income, and we believe that sustainability is a key issue in that regard.

Design and planning of infrastructure are ongoing in the Reykjanes area to better enable companies to operate in the region. The Resource Park has already had a positive economic and social impact on municipalities in Reykjanes, and the municipalities of Grindavíkurbær and Reykjanesbær have worked together on issues to support its development. The most recent example of this is the cooperation of these municipalities in the detailed land-use plan for energy production and industry in the Reykjanes area. About 50 hectares of industrial plots are ready for development, and their proximity to our power plant also allows companies to connect directly to the plant if they meet the relevant legal requirements.

Society

Security of power supply and infrastructure

GRI 3-3 Material topic

HS Orka offers basic necessities for households and other customers of the company. Furthermore, the condition of infrastructure and infrastructure security are of outmost importance for the company's operations and revenue generation. Essentially, HS Orka operates a generation system for electricity, as well as hot and cold water. In the overall production process, the water utility is very important as it is an integral part of the electricity production. For hot and cold water, the HS Orka infrastructure mainly consists of main transmission pipelines, pumping stations and storage tanks. For cold water, there is a special processing system that includes a well area and pumps. A large part of our equipment is composed of the production wells and the collecting system. In electricity production, the infrastructure consists of the machines and electrical equipment of the power plants and high-voltage equipment to feed into Landsnet's transmission system.

Economic importance and the security of supply

The security of supply from HS Orka depends on the one hand on the condition of HS Orka's assets and its operations and on the other hand on the distribution system that brings HS Orka's products to its customers. The infrastructure of this distribution system is for the most part the responsibility of third parties, but HS Orka is responsible for ensuring the condition of the production infrastructure and reliability of delivery. External conditions can also create certain challenges for the operations, such as natural hazards or changes in geothermal systems.

Risk management and contingency plans

For the second year in a row, there were earthquakes in the Reykjanes Peninsula, which ended in both cases with a rather small volcanic eruption east of Fagradalsfjall mountain. The sequence of events did not have a significant effect on HS Orka's operations, with the exception that during the earthquakes the main cold-water pipeline to the town of Grindavík broke and immediate repairs had to be undertaken. Subsequently, it was decided to proceed with the timely renewal of the main pipes for both hot and cold water between Svartsengi and Grindavík. HS Orka and HS Veitur jointly applied for a construction permit for the project, which meant that the case could be quickly approved by Grindavík's town council as the project is in accordance with the current detailed land-use plan. The project was put up for tender in 2022 and construction will begin in 2023.

HS Orka regularly reviews contingency plans that focus on different scenarios of earthquakes on the Reykjanes peninsula. The company works closely with the Department of Civil Protection and Emergency Management, which has led work on contingency plans for possible events with local authorities and other entities in the area. From HS Orka's point of view, there is a desire to continue this collaboration. In other respects, the company strives to develop its own contingency plans that address both people's safety and scenarios related to infrastructure and delivery reliability.

Projects and actions

Along with the newly completed work in Svartsengi, preparations are underway for the renovation of the heat supply in the area of the Reykjanes Power Plant. One of the projects in the field of maintenance and updating of equipment is the renewal of high-voltage equipment for the collection of drinking water from the water source at Lágar, while another is targeted preventive maintenance of turbines and generators within production units. At the same time, investments have been made in the renewal of auxiliary power generators in Svartsengi, which will be commissioned in the first half of 2023.

Goals and projects

- The uptime of the thermal power plants is to be at least 96%.
- Renewal of main pipes for hot and cold water between Svartsengi and Grindavík.
- Increased proportion of electrically powered equipment in production and construction work. For example, this year's drilling will be done with electric drills.
- In cooperation with third parties, work is ongoing to define interfaces between the infrastructure of HS Orka and that of third parties to clarify ownership and corresponding responsibility.

Other matters

- There is considerable heavy vehicle traffic on the road to Grindavík, which partly crosses the water protection area at Lágar. This is an issue that HS Orka wants to examine with other stakeholders. From the company's point of view, it would be preferable if fuel transportation did not involve driving through a water protection area. It is also foreseeable that heavy traffic will increase in connection with the development of the Resource Park in Reykjanes in the coming years, which calls for dialogues with stakeholders regarding the necessary services (e.g. snow removal) and road maintenance.
- A committee was appointed on behalf of the Association of Local Authorities in Suðurnes regarding backup groundwater sources and processing areas. HS Orka has agreed to lead this work.
- A preliminary inspection has begun on the laying of a CO_2 gas pipeline between Svartsengi and Reykjanes Power Plant, in connection with plans which involve the use of CO_2 in the production process of e-fuel.

Charging stations

InstaVolt rapid-charging stations

HS Orka recently started collaboration with the British company InstaVolt to build a network of rapid chargers in Iceland. The company is preparing the rollout of charging networks in several European countries and Iceland is the first destination outside of the UK. HS Orka will be InstaVolt's power supplier in Iceland and a sales and consulting partner in the development of the business. The first rapid chargers will be installed in the second quarter of 2023, with 20 stations built at a new hub at Aðaltorg in the vicinity of Keflavík Airport. The aim is to install up to 50 rapid chargers with InstaVolt around the country in 2023.

AC charging stations for homes and businesses

In late 2022, HS Orka started offering the sale and servicing of 22 kV charging stations for homes, companies and institutions. The most common home-charging stations are slow-charging stations, so-called AC stations that are also called alternating current stations. Surveys show that most car owners charge their cars at home, and HS Orka's service is designed as a convenient and simple solution to facilitate the energy transition process for customers. The AC stations are also ideal for companies and institutions, and HS Orka has made the first contracts with such parties.

Safety and the work environment

GRI 3-3 Material topic

For HS Orka, nothing is more important than its employees returning home safely from work. No work is so important or urgent that people's health and lives should be put at risk while working.

Training and the development of a safety culture

During the year, a training course was implemented for contractors who work for HS Orka. Before being allowed to work on behalf of the company, contractor personnel are given access to a learning network where they must complete interactive training in the main aspects of safety, health and environment in HS Orka's operations. During the training, emphasis is placed on everyone being permitted to stop work and call for help if it is not possible to ensure maximum safety while executing a task. The new training method is part of ensuring that employees of HS Orka's contractors receive the same training and education as other staff.

At the end of 2022, a safety culture survey was conducted among all employees. It is the third time that such a survey has been conducted. The survey was carried out by an external party and the questions were based on international questionnaires. The results show that safety awareness is very high in most respects, and indicate that employees try to watch out for each other's safety. The results demonstrate a positive trend in comparison with the last survey that was carried out in 2019.

Goals and achievements 2022

The table shows an overview of HS Orka's main performance indicators in HSE matters, as well as goals and results for the year 2022. All HSE goals for the year were achieved. The definition of the goals had been changed from the previous year to place more emphasis on leading indicators.

	HSE (KPIs) 2022	Goals	Actual 2022
Leading	Closed HSE actions	660 yearly/55 monthly	1.688
	HSE incident reports	660 yearly/55 monthly	1.766
	Take five	960 yearly/80 monthly	1.318
	Management Gemba Walks	312 yearly/26 monthly	423
	Lost time incidents	0	0
Lagging	Environmental incidents	0	0
	Medical treatment cases	≤4 yearly	2
	First aid incidents	≤4 yearly	1

In 2022, a total of over 1,766 notifications were received concerning safety, health and the environment. Of these, there were two incidents that required treatment at the emergency room, one first-aid accident and five near misses. There were no reported or known work-related cases where the long-term health of employees was harmed. The total number of hours worked by employees and contractors in HS Orka's work areas was 444,562, 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

Risks related to the safety of the work environment are assessed and the necessary critical controls are defined in accordance with the assessment of the scale of the risk. Risk is assessed for all regular work and reviewed regularly with the involvement of staff and management. Contractors working on larger projects for the company submit a risk assessment before their work can begin. A risk assessment is part of a work permit issued for temporary and ad hoc work carried out by contractors. "Take five" is a short and simple risk assessment that anyone can do for simple tasks that have not been systematically risk assessed.

Deviations and progress

With clear processes and recording of deviations, an effort is made to learn from incidents so that repetition can be prevented. All staff can and are encouraged to report deviations, dangerous situations, near-miss accidents and other accidents they experience or witness; this is done through a platform that is accessible to all staff. Importantly, reporting an incident is not used against the reporter or the person to whom the report is directed. Case management emphasizes the positive aspects of reporting incidents. 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 platform. All reports are registered with the responsible person in-house, 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.

Occupational health and safety

HS Orka has for decades had an agreement with Vinnuvernd, a firm that specializes in occupational health and safety. Through Vinnuvernd, employees have access to a company doctor and a health centre as well as the services of psychologists. Every year, employees are offered thorough health checks, which in recent years have also been part of an investigation into the effects of hydrogen sulphide. A workplace survey for employees is performed every other year, through which the well-being of employees is evaluated.

Goals and projects

- We are working on updating and expanding the company's learning network with the aim of further improving training and thus the safety awareness of staff.
- The risk factors that could possibly cause the most serious accidents – and even fatalities if correct protection is not applied – have been identified. Special emphasis will be placed on the training of personnel in the application of these so-called "critical controls".
- Goals for the year 2023 will be designed in a slightly changed format from 2022 and monthly goals will be reviewed, as it is expected that the scope will vary greatly between months. This expectation is based on the fact that one major investment project is in the final stages while another is in the initial stages.

	HSE (KPIs) 2023	Goals
Leading	HSE incident reports	450
	Closed HSE actions	450
	Take five	840
	Management Gemba Walks	216
Lagging	Lost time incidents	0
	Environmental incidents	0
	Medical treatment cases	≤4 yearly
	First aid incidents	≤4 yearly

Other matters

- HS Orka believes in the importance of promoting an improved safety culture in society as a whole. Therefore, the company participates in cooperation platforms and exerts its influence whenever possible. This includes, among other things, presenting our efforts in safety issues and occupational health and safety to other companies and organizations.

A study of the effects of hydrogen sulphide

GRI 3-3 Material topic

Together with Reykjavik Energy (OR), over the past 10 years HS Orka has participated in a study by Akkilles, a specialist health company, where the possible effects of hydrogen sulphide on the health of exposed personnel have been investigated. The results of the

study are now available, and they illustrate that no changes in health were found that could be related to low-dose H_2S pollution in the workplaces of the companies that participated in the study.

A total of 398 examinations were carried out on 104 individuals over the 10-year period. The organ systems were covered extensively with a clinical examination, spirometry, blood tests, vision and hearing tests, as well as examination of other factors. The study participants were also examined by a cardiologist every five years. The researchers state that the number of individuals in the study is not high enough to draw any strong scientific conclusions from it, but the results are nevertheless clear in light of the examinations performed over this period. The employees of HS Orka have received a briefing on the results of the study and plans will be made on how to proceed with further research, on the basis of this study.

Human resources and equality

The total number of employees at the end of the year was 85 (2021: 77); thereof, the percentage of women was 18% and is unchanged between years. The company hired 14 new employees during 2022, and employee turnover was 7% (2021: 13%)

New hires	Female	Male
Number	1	13
Percentage	7%	93%

Age distribution	Under 30	30-50 years	Over 50
Number	3	9	2
Percentage	21%	64%	14%

Again, the pandemic left its mark on training, but special emphasis was placed on safety training in the production part of the operations. There was also continued focus on employee training regarding cyber security, as discussed in the „Cyber Security Issues“ section below. The average number of training hours per employee in 2022 was 10 hours. Everyone who starts work at HS Orka receives novice training related to safety, environmental issues and information technology as well as other aspects related to the operations. Content is being developed for a new e-learning staff portal that has already been used for safety courses for contractors working for the company. Employees who are considering retirement have been offered a course to prepare for changing circumstances.

Every year, managers assess the need in their fields for continued education and training. All employees are invited to a performance interview at least once a year with their immediate superior. The conversation includes a review of performance, career development, continuing education and training. In these interviews, employees are encouraged to seek continuing education and training in their field. Participation in performance interviews in 2022 was 63% (2021: 70%).

Diversity and distribution of staff

Work is carried out in accordance with the operation plan for gender equality, which is reviewed annually. Among other things, it sets out the goal of seeking to balance the proportion of women and men, while also encouraging diversity. These goals are reflected in the selection of the UN Sustainable Development Goals for implementation in the company's strategy, where goal no. 5, *Achieve gender equality*, is one of HS Orka's six chosen UN Sustainable Development Goals.

The table below shows the distribution of permanent staff at the end of 2022 by gender, age and area of responsibility. The proportion of women on the Executive Board of HS Orka is 43%. The company's Board of Directors has an equal gender ratio.

2022	Skilled workers and specialized positions	Specialists/ Project managers	Managers	Total
Female	**1**	**12**	**3**	**16**
%	4%	29%	16%	19%
Male	**24**	**28,6**	**16**	**68,6**
%	96%	71%	84%	81%
Total	**25**	**41**	**19**	**85**
Under 30	**2**	**2**	**0**	**4**
%	8%	5%	0%	5%
30-50 years	**11**	**29**	**11**	**51**
%	44%	71%	58%	60%
Over 50	**12**	**9,6**	**8**	**29,6**
%	48%	24%	42%	35%
Total	**25**	**40,6**	**19**	**84,6**

HS Orka has had a certified equal pay management system in accordance with the Icelandic equal pay standard ÍST 85:2012 from 2018 and a maintenance certification from December 2022. Women's total salaries, according to accrual analysis, were 4.2% higher than men's total salaries; this difference is considered insignificant.

Cyber security

In recent years, a lot of emphasis has been placed on strengthening HS Orka's cyber security, and the year 2022 was no exception. 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. Below is an overview of key topics and actions of 2022:

- To promote the security awareness of staff regarding cyber threats
- To improve and strengthen monitoring systems
- To clarify and tighten safety rules
- To conduct cyber security rehearsals and assessments
- Inspection of the SIEM system
- A monthly vulnerability scan
- Internal review of legislation on the Cyber and Data Security of Critical Infrastructure.

Staff training

Efforts have been made to increase staff security awareness through education and training related to cyber security. 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 new employee orientation and all employees receive training in cyber security issues at least twice a year, i.a. through the AwareGo education portal. Four times a year, phishing drills are executed on HS Orka's employees. The results of cyber security drills and training are presented at staff meetings and the results and participation are reviewed, further education is offered if needed, and the importance of cyber security is repeatedly emphasized.

The supply chain

GRI 3-3 Material topic

Except for investments in infrastructure and equipment, HS Orka's energy production requires relatively little input compared to energy production that is based on the combustion of carbon such as gas, oil or coal. Therefore, the composition of HS Orka's supply chain is sensitive to the status of maintenance projects and new projects at any given time.

The year 2022 was a big construction year, just like the previous year, and the next two years will be similar in that regard due to the construction project that has now commenced in Svartsengi. Under these conditions, a large part of the supply chain consists of construction, consulting and contracting. Foreign input is for the most part composed of equipment that weighs heavily in the total purchases, even though it only includes relatively few suppliers.

Purchases from domestic suppliers accounted for almost 90% of the company's total purchases in 2022. This includes purchases of physical products, services and external work. The number of domestic suppliers was 490, of which 200 are contractors. Purchases from foreign suppliers amounted to ISK 1,025 million in 2022 and the number of foreign suppliers was 46.

Environmental and social impact of suppliers

Environmental, safety and occupational health issues are considered in the procurement of contractors. However, ESG criteria have not been defined beyond referring to the importance of these factors. Service providers that are not part of tendered works have so far not been evaluated separately for environmental, safety, and occupational health and safety considerations.

In general, HS Orka's suppliers must fulfil the same requirements and obligations as HS Orka's employees. Agreements with contractors include chain liability requirements which stipulate that subcontractors and temporary agency workers retain rights and terms in accordance with laws and regulations. In cases where equipment is part of construction contracts in Iceland, HS Orka's representatives go to production sites abroad and assess safety issues and the working environment.

Reinforcement of ESG criteria and supplier evaluation

HS Orka's goal is to further clarify ESG criteria for its suppliers. While in 2022, conversations took place with companies that provide advice and implementation of supplier assessments, the goal for 2023 is to take further steps when it comes to defining ESG requirements and criteria for HS Orka's value chain. Part of that work is to carry out supplier assessments for 10 of the company's key suppliers through a third party. Furthermore, the aim is to define and implement sustainability guidelines for construction contractors.

As stated in the chapter „Climate", the aim is also to increase the resolution of climate impacts in the value chain (scope 3). This is one of the aspects of the work ahead regarding the definition of criteria and the provision of information from suppliers on environmental matters.

HS Orka and the community

HS Orka is a member of various organizations and participates in projects in different spheres of the community. The company's participation can range from supporting constructive projects in the local community to being a sponsor of non-profit organizations, to active participation in organizations that work on issues directly related to HS Orka's operations. The company is a member of the following associations:

Stjórnvísi (Administrative Indicator)
The Festa Centre for Corporate Social Responsibility
Samorka (The Federation of Energy and Utility Companies in Iceland)
The Iceland Chamber of Commerce
The Confederation of Icelandic Employers
Dokkan (a professional knowledge and contacts network)
Orkuklasinn (Iceland Renewable Energy Cluster)
Reykjanes GeoPark
The Confederation of Employers in Reykjanes
Grænvangur (Green by Iceland)
The Geothermal Association of Iceland
The Association of Human Resources in Iceland
Íslensk NýOrka (Icelandic New Energy)

Economic Impact

Economic Impact	2022 ISK Millions	2021 ISK Millions
To Suppliers		
Operation costs	1.337	1.345
Support for social projects	25	18
To Employees		
Salaries w/o pension obligations	1.755	1.566
To Investments	5.795	3.794
To Owners and Lenders		
Share capital reduction	1.429	3.655
Capital costs	585	428
(Drawdown of capex facility) less installments	-2.931	-4.489
To the Government		
Income tax	19	564
Total Economic Impact	**7.989**	**6.904**
Percentage of revenue	**74,2%**	**74,2%**
Operating Revenue	10.765	9.310

Governance

Values and policy

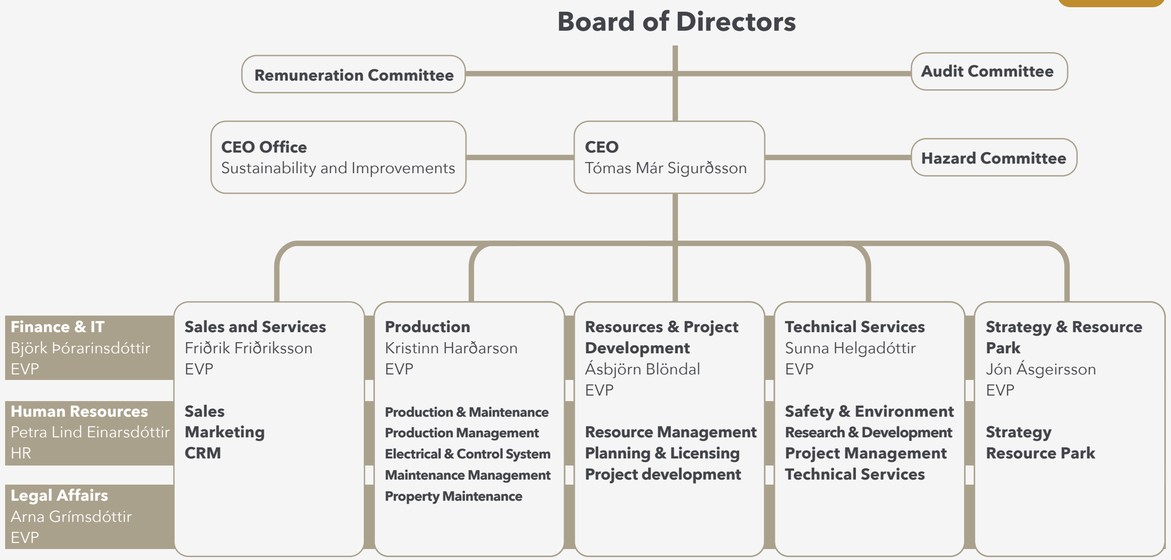
HS Orka's values are vision, ambition, and honesty.

- **Vision:** We have the initiative and innovation to be a leader in our field. Customers and other stakeholders want to work with us because of our ambition in the development of resource utilization.
- **Ambition:** We are driven by success in all our work. This is how we attract our customers and talented staff. Our performance is reflected in efficient and sustainable operations and reliable service.
- **Honesty:** We treat our colleagues and customers with respect and honesty. We treat all resources with respect and strive to safeguard them. We respect all laws and regulations that apply to our operations.

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 are elected at the company's general meeting for a one-year term. Two sub-committees of the Board of Directors were active in 2022, the Audit Committee and the Remuneration Committee.

The company's CEO oversees the company's daily operations and represents the company. The company's Executive Board consists of the managers of the Legal division, Finance and IT division, the Project development and resources division, the Sales division, the Strategy and Resource Park division, the Production division, and the Technology division. Seven members sit on the Executive Board, which is responsible for strategic planning and decisions in accordance with the purpose, vision and values of the company that are approved by the Board of Directors.



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 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 the company's key staff regarding ESG issues. In addition to this, a special Sustainability Division has been established which reports directly to the CEO's office. This division is responsible for progress and information provision in the field of sustainability as well as environmental, social and quality matters across other divisions within the company. Direct communication with stakeholders takes place through the Executive Board and relevant employees.

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 safety, health and occupational health and safety*. HS Orka also has equal pay certification according to the standard ÍST 85:2012. HS Orka's electrical safety system is examined annually by The Housing and Construction Authority.

The management system describes how the company operates according to implemented processes, with efficient collaboration and waste minimization as a guiding light. Process owners present the main processes to the process council annually and, among other things, report on improvement projects in context with other processes and company policies. Process owners are responsible for the design, safety, and improvement of processes, while managers are responsible for day-to-day execution.

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ISO 9001 Quality Management Systems CERTIFIED

ISO 14001 Environmental Management CERTIFIED

ISO 45001 Occupational Health and Safety Management CERTIFIED

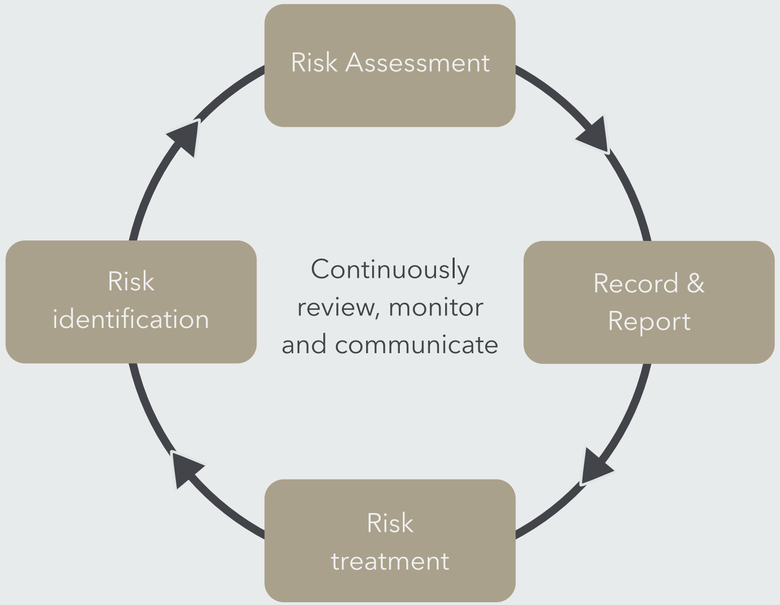
ÍST 85:2012 Equal Wage Management System CERTIFIED

Deviations

The company's deviation process describes how deviations in the operations are handled, root analysis is carried out and improvement actions are implemented. Within the company, a system has been developed to keep track of all recorded deviations. Larger deviations are dealt with at process council meetings, where decisions are made on appropriate progress measures to prevent negative effects within different ESG issue categories. At the same time, emphasis is placed on employee training to prevent any deviations that can be avoided. In addition to employee training, a contractor training pathway has been added, 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 company's main 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".



TCFD climate risk assessment

GRI 3-3 Material topic

In addition to measures to curb emissions of greenhouse gases, there is a growing emphasis on the need for companies to adapt to the changes that will take place. This involves work to map risk factors and to identify the need for action, as the impact of climate change on companies is different depending on geographical factors and the nature of operations. In 2022, HS Orka took the step of implementing risk assessment and scenario analysis due to climate change into 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 requires entities to define and assess the scope of key risk factors and opportunities, as well as performing a scenario analysis.

Responsibility and management of climate risk

The owner of the "Protect the environment" core process is in charge of assessing climate-related risks and opportunities. Twice a year, the risks that – if they materialized – would have the most serious impact on the company are presented to the Board. The Environmental Manager is the owner of the "Protect the environment" core process and is part of the Society and governance division, the manager of which reports to the CEO.

Risk management

A working group was assembled in the beginning of 2022 and consisted of employees from the Strategy and Resource Park division, the Technical division, Finance, Resources and Development, the environmental manager, the project manager for social responsibility, a lawyer, the quality manager, a project manager from Resource management, the manager for Society and Governance, and an engineer. The working group received a presentation from an expert on climate and the possible effects of climate change in Iceland and also had the task of assessing the risk of climate change on HS Orka's operations. The likelihood of a risk or opportunity materializing was rated from 1 (very unlikely) to 5 (almost certain). Impact on the company was rated from 1 (insignificant impact) to 5 (catastrophic impact). Impact was also assessed according to whether it would have a direct impact on the company's operations, or an indirect impact if the effect occurs in the value chain, such as an effect on suppliers, customers, the working environment or other stakeholders. Multiplying the probability estimate on the one hand with the impact estimate on the other hand gave an estimate of the overall magnitude of the impact, where 1-5 represents a small impact, 5-16 a medium impact, and 20-40 a large impact. In the analysis of climate risks and opportunities, issues were also divided into three time frames: short-term (0-5 years), medium-term (5-15 years) and long-term (15-50 years). Results were entered into the company's risk assessment database in the same way as the company's other risks and are subject to the same rules.

Scenarios

Climate-related risks and opportunities applicable to the company were assessed based on two future climate scenarios. They were on the one hand the scenario (RCP 2.6) which assumes that the goals of the Paris Agreement will be achieved and global warming will remain within 1.5°C, and on the other hand the scenario (RCP 4.5) that the goals will not be achieved and warming will be between 2-3°C at the end of the century (2081-2100). The Scientific Committee's report on climate change from 2018 was used.[1]

Types of risk

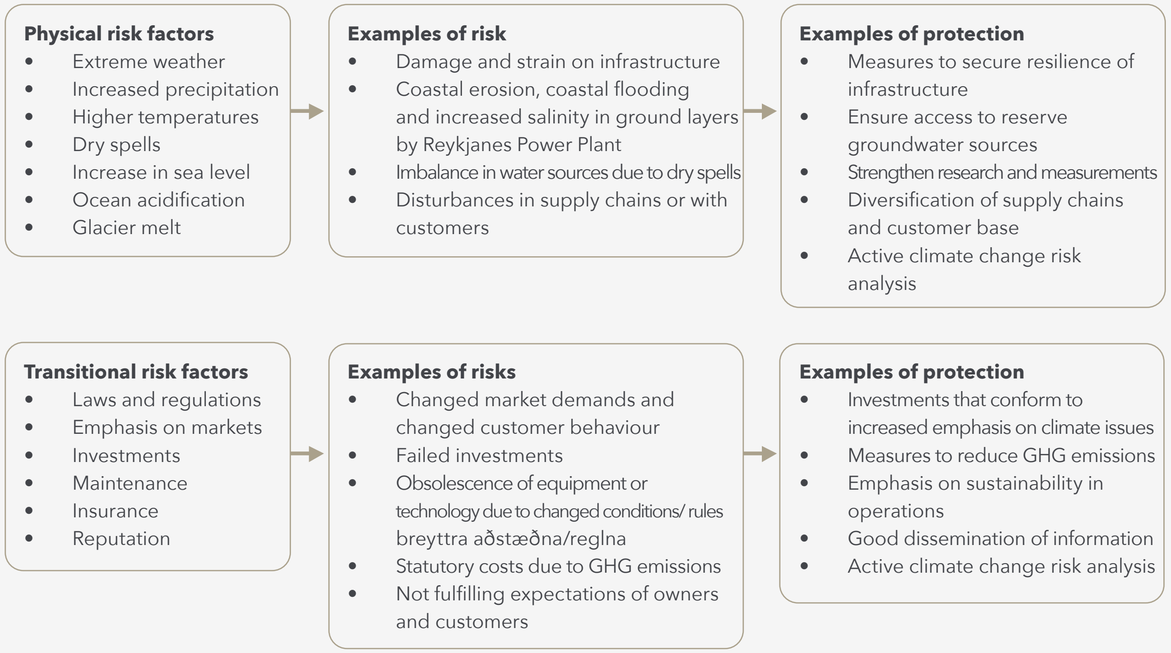
Risk factors are defined according to whether they are physical risks or transitional risks. Below are some examples of the company's risk factors due to transitional factors in the operating environment:

- The costs for each tonne of greenhouse gas emissions become legally obligatory, similar to the ETS system.
- Increased cost of raw materials.
- Obsolescence of equipment and failed investments.
- Changed provisions or terms in insurance contracts.
- Criticism of the geothermal sector due to greenhouse gas emissions and/or other environmental impacts.
- Costs of investments in technology and infrastructure in order to reduce greenhouse gas emissions.

[1] Halldór Björnsson, Bjarni D. Sigurdsson, Brynhildur Davídsdóttir, Jón Ólafsson, Ólafur S. Ástþórssson, Snjólaug Ólafsdóttir, Trausti Baldursson, Trausti Jónsson. 2018. Climate change and its effects in Iceland - Report of the scientific committee on climate change 2018 (only available in Icelandic). Icelandic Meteorological Office

Examples of physical risk factors:

- Bad weather could cause coastal erosion and flooding at Reykjanes Power Plant, with seawater and salt flowing onto land as well as sand, stones and other objects, and thereby causing material damage to property. Ice could build up on power lines and cause power outages.
- A prolonged dry spell could create an imbalance between the inflow and use of water from water sources and lead to reduced customer access to water.
- Increased levels of carbon dioxide in the atmosphere leads to ocean acidification. Biodiversity in Arfadalsvík, where separator water and condensate from Svartsengi is conveyed via underground pipes, could become more sensitive to such external influences, and the company might have to look for ways to reduce the impact of the outflow or move pipes.



Metrics and targets

HS Orka has committed to reducing its emissions intensity by 40% by 2030 compared to 2014 when it was 43 gCO_{2equiv}/kWh. Furthermore, the company has committed to become carbon-neutral by 2040. More information on the present values of emission standards can be found in the „Climate issues" chapter of this sustainability report.

The metric for emission intensity is the emission of greenhouse gases – carbon dioxide and methane – per kilowatt-hour of electricity produced and used, combined with sold hot water, sold separator water, sold separated water, and sold heat to customers. The company has also set targets for waste management; for these, the metrics include the percentage of sorted waste, the quantity of unsorted waste and the number of containers that were wrongly sorted.

GRI Index 2022

HS Orka's disclosure in this report is valid for the period from January 1st, 2022 to December 31st, 2022 and is in accordance with GRI Standards with reference to *GRI 1: Foundation 2021*.

GRI	Indicator description	Reporting	Disclosure	Page	UN Sustainable Development Goals	Nasdaq's ESG indicators
2-1	Organizational Profile	Yes	Organization 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	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	This sustainability report is for the year 2022. The last sustainability report was for 2021. Inquiries regarding the report should be sent to hsorka@hsorka.is.			
2-4	Restatements of information	Yes	The methodology for estimating greenhouse gas emissions from Reykjanes Power Plant's wells was updated in 2022. Information on total emissions has been recalculated accordingly. Information in the chapter on "Climate" reflects this change. To assess emissions intensity, HS Orka uses the emission of carbon dioxide equivalents per kilowatt-hour of electricity produced and kilowatt-hours of hot water sold. In 2022, kilowatt-hours of heat sold to companies in the Resource Park were added to the denominator.	**19**		
2-5	External assurance	Yes	HS Orka hired an external party (KPMG ehf.) for external assurance of the company's sustainability report for the year 2022. The limited assurance applies to information that is disclosed in the report, but not information from previous years. For more information, refer to the assurance document following the GRI Index in this report: Assurance of HS Orka's sustainability report 2022	**47**		**G10**
2-6	Activities, value chain and other business relationships	Yes	About HS Orka The supply chain	**5, 33**		
2-7	Employees	Yes	Human resources and equality	**31**		**S4, S5**

2-8	Workers who are not employees	Yes	98% of employees are permanent employees. 99% of employees are 100% employed. There are no cases of non-intermediary contracts with non-employees.			
2-9	Governance structure and composition	Yes	Governance www.hsorka.is 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 independent and independent of the company and its management. No Board member has, either 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 Board members are dependent on the company's shareholders; the reason for this is that the company is owned by only two shareholders. When evaluating its size and composition, the Board takes into account the company's operations, policies and practices and the knowledge, experience, and expertise of each Board member. The Board considers that its size and composition are in line with the Board`s aim: to perform its duties in an efficient manner with integrity in the best interest of the Company. The gender ratio in the Board in 2022 was equal. Shareholders nominate Board members; no other stakeholders or minority groups are represented on the Board. The Board has good knowledge of economic, environmental and social aspects, and one Board member was in the working group that published "Guidelines for Good Governance", 6th edition. Information about the Board members is accessible on HS Orka's website. The Executive Board reports to the CEO and supports the CEO in day-to-day operations. Managing directors have diverse backgrounds, are specialized in different fields, and three out of seven managing directors are women. None of the managing directors or the CEO own shares in the company, nor do they have any other vested interests than working for the company.	**36**	**5**	**G2**
2-10	Nomination and selection of the highest governance body	Yes	Each shareholder nominates two directors. The Board appoints two Board members 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**	**G2**
2-11	Chair of the highest governance body	Yes	The Chair 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. The Board and Executive Board regularly discuss ESG issues, and i.a. ESG performance measures that are presented to the Board on a regular basis are reviewed. There is no active special subcommittee of the Board in the field of sustainability. The company publishes a sustainability report that is approved by the Board before publication.	**36**		**E8, E9**
2-13	Delegation of responsibility for managing impacts	Yes	See under GRI 2-12.			**E8, E9**
2-14	Role of the highest governance body in sustainability reporting	Yes	The sustainability report is submitted to the Board for approval before its publication, including the material analysis of ESG issues. The company's annual financial statement, including non-financial information, is submitted to shareholders for approval at the company's annual general meeting. In other respects, reference is made to GRI 2-12.			
2-15	Conflicts of interests	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 their respective affiliations for 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 calls if necessary. Meetings of the Executive Management Board are held weekly, and the Executive Board starts each working day with a short information session. It is not noted how often or for what reasons urgent issues are submitted to the Board and/or Executive Board.			
2-17	Collective knowledge of the highest governance body	Yes	Information about the Board is available on the website: www.hsorka.is See also under 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. ESG issues are among the discussed topics. The Board responds to the issues raised in the self-assessment 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 is submitted for approval at the company's annual general meeting. It 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 Executive Board are fixed and includes provisions for the authorization of wage premiums if certain conditions are met. Severance payments greater than 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 paid out on the wrong grounds, the employee must pay the company back to the extent of the mispayment. Special 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, personnel 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.			**G3**
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 first time and no comparison with previous years is available.			**S1**
2-22	Statement on sustainable development strategy	Yes	CEO Statement Address of the COB A special policy for sustainable development in particular does not exist, but the company's official policies, including its Environmental, Safety and Health policy, are accessible on the website: www.hsorka.is	**7, 8**		
2-23	Policy commitments	Yes	The Process Council, which consists of the Executive Board and most other process owners, approves policies. 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 website, but it is accessible to employees on the internal network. HS Orka's Code of conduct guides all 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 are used as a guide in all employee communications and actions. Whereas the company has not adopted a separate human rights policy, human rights are a guiding principle in other company policies. The main policies are available on the website www.hsorka.is			**G5, G6**
2-24	Embedding policy commitments	Yes	Governance	**36**		
2-25	Processes to remediate negative impacts	Yes	Governance	**36**		

2-26	Mechanisms for seeking advice and raising concerns	Yes	The company has an in-house procedure for how comments should be processed within the company so that they reach the right people for resolution. The legal department, together with relevant personnel, always 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 calling the company's general phone number. Moreover, e-mail addresses of all employees are available on the website: www.hsorka.is.			
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	**34**		
2-29	Approach to stakeholder engagement	Yes	Material analysis 2022 Stakeholders	**12, 14**		
2-30	Collective bargaining agreements	Yes	All of HS Orka employees are paid according to collective agreements.			**G4**
3-1	Process to determine material topics	Yes	Materiality analysis 2022	**12**		
3-2	List of material topics	Yes	Materiality analysis 2022	**12**		
3-3	Management of material topics	Yes	Materiality analysis 2022 Discussion that falls under GRI 3-3 on the management of material topics is marked specifically in various parts of the report.	**12**		**E7, S6, S8, S9, S10, G5, G6**
201-1	Direct economic value generated and distributed	Yes	Economic Impact	**34**	**9**	
201-2	Financial implications and other risks and opportunities due to climate change	Yes	TCFD Climate risk assessment	**38**	**13**	
201-4	Financial assistance received from government	Yes	HS Orka did not receive financial support or subsidies from the government or other public sources.			
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 HS Orka's largest infrastructure investment of the year was the construction of the expansion of the power plant in Reykjanes, amounting to just over ISK 4.4 billion in 2022.	**27, 34**	**9**	
204-1	Proportion of spending on local suppliers	Yes	The supply chain	**33**		
205-3	Operations assessed for risks related to corruption	Yes	No cases.			
206-1	Legal actions for anti-competitive behaviour, anti-trust and monopoly practices	Yes	No pending or closed cases in 2022 related to anti-competitive behaviour, anti-trust and monopoly practices in which HS Orka was a party.			
207-1	Approach to tax	Yes	HS Orka's tax approach consists of paying the correct taxes on time, without uncertainty and doubt as far as possible. A special policy regarding the company's tax matters beyond this has not been created.			
207-2	Tax governance, control and risk management	Yes	Supervision and responsibility for control and risk management for tax matters lies with the Executive Vice President of Finances and Information Technology. 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 only paid taxes in Iceland in 2022.			
301-1	Materials used by weight or volume	Yes	Resource streams	**22**	**12**	
302-1	Energy consumption within the organization	Yes	Own energy consumption	**21**	**7, 12, 13**	**E3, E5**
302-3	Energy intensity	Yes	Own energy consumption	**21**	**7, 12, 13**	**E4**
302-4	Reduction of energy consumption	Yes	Own energy consumption	**21**	**7, 12, 13**	
303-1	Interactions with water as a shared resource	Partial	Resource streams Resource management	**22, 16**	**12**	
303-3	Water withdrawal	Yes	Resource streams	**22**		
303-4	Water discharge	Yes	Resource streams	**22**		
303-5	Water consumption	Yes	Resource streams	**22**		
304-1	Operational sites owned, leased, managed in or adjacent to protected areas and areas of high biodiversity	Yes	Nature conservation, ecosystems, and biodiversity	**24**	**15**	
304-2	Significant impacts of activities, products and services on biodiversity	Yes	Nature conservation, ecosystems, and biodiversity	**24**	**15**	
304-3	Habitats protected or restored	Yes	Nature conservation, ecosystems, and biodiversity CEO Statement	**24, 7**	**15**	
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Yes	Nature conservation, ecosystems, and biodiversity	**24**	**15**	
305-1	Direct (Scope 1) GHG emissions	Yes	Climate	**19**	**12, 13, 15**	**E1**
305-2	Energy indirect (Scope 2) GHG emissions	Yes	Climate	**19**	**12, 13, 15**	**E1**
305-3	Other indirect (Scope 3) GHG emissions	Yes	Climate	**19**	**12, 13, 15**	**E1**
305-4	GHG emissions intensity	Yes	Climate	**19**	**13, 15**	**E2**
305-5	Reduction of GHG emissions	Yes	Climate	**19**	**13, 15**	
305-7	Nitrogen oxides (NOx), sulphur oxides (SOx), and other significant air emissions	Partial	Air quality and pollution prevention	**21**	**12, 15**	

306-1	Waste generation and significant waste-related impacts	Yes	Recycling and disposal Circularity of streams in the Resource Park	**23, 25**	**12**	
306-2	Management of significant waste-related impacts	Yes	Recycling and disposal	**23**	**12**	
306-3	Waste generated	Yes	Recycling and disposal	**23**	**12, 15**	
306-3 (2016)	Significant spills	Yes	No significant spills occurred in 2022.		**12**	
306-4	Waste diverted from disposal	Yes	Recycling and disposal	**23**	**12**	
308-1	New suppliers that were screened using environmental criteria	Partial	The supply chain	**33**		
308-2	Negative environmental impacts in the supply chain and action taken	Partial	The supply chain	**33**		
401-1	New employee hires and employee turnover	Yes	Human resources and equality	**31**	**5**	**S3**
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 degree of employment.	**31**		
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 in 2022 was seven (three women and four men), which is the same number as in 2021. The women were all on maternity leave at the end of the year and some will be on maternity leave in 2023 as well. All those who completed their maternity leave returned to work after their maternity leave.		**5**	
402-1	Minimum notice periods regarding operational changes	Yes	In HS Orka's personnel policy, it is a general rule that employees retire in the month of which they turn 70 years old. 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 a safety policy that is part of the company's management 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.	**29**		
403-2	Hazard identification, risk assessment, and incident investigation	Yes	Safety and work environment	**29**		
403-3	Occupational health services	Yes	Safety and work environment	**29**		
403-4	Worker 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 meets four times a year.	**29**		

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.	**29**		
403-6	Promotion of worker health	Yes	HS Orka's employees are offered various benefits. Every year, all employees are invited to a thorough health check-up and are invited to an endurance test every five years. In 2022, staff participation in the health check-up was 69%. The company pays into union health funds or uses other options according to specific rules on these aspects. Employees can apply for various grants, e.g. fitness grants, physiotherapy grants, etc. HS Orka offers fitness facilities at the workplace as well as various health-related events.			
403-8	Workers covered by an occupational health and safety management system	Yes	Safety and work environment	**29**		
403-9	Work-related injuries	Yes	Safety and work environment	**29**		
403-10	Work-related ill health	Yes	Safety and work environment	**29**		
404-1	Average hours of training per year per employee	Partial	Human resources and equality Figures are not broken down by gender and occupation.	**31**	**5**	
404-2	Programmes for upgrading employee skills and transition assistance programmes	Yes	Human resources and equality	**31**		
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.	**31**	**5**	
405-1	Diversity of governance bodies and employees	Yes	Human resources and equality	**31**	**5**	**S4, G1**
405-2	Ratio of basic salary and remuneration of women cf. men	Yes	Human resources and equality	**31**	**5**	**S2**
414-1	New suppliers that were screened using social criteria	Partial	The supply chain	**33**	**5**	
415-1	Political contributions	Partial	Contributions totalled ISK 750 thousand in 2022. Included in that amount is i.a. an advertisement in the journal of a political party.			
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.			

External assurance – HS Orka sustainability report 2022

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Independent Limited Assurance Report to HS Orka hf. on the sustainability report for year end 2022

We were engaged by HS Orka hf. (here after HS Orka or the company) to conduct an independent limited assurance on specific parts of HS Orka sustainability report for the calendar year 2022. The scope of our limited assurance was as following:

- If greenhouse gas emission from geothermal plants as shown on page 19 in the report is calculated accordance to Greenhouse Gas Protocol. Focus was on if emission reported was prepared and calculated in accordance to Greenhouse Gas Protocol.
- If materiality assessment and disclosures was in accordance with GRI 3. Focus was only on if the materiality assessment was made in accordance with the guidelines of GRI 3 and if information disclosed was in accordance with GRI 3-1, 3-2 and 3-3c.
- If discussion on climate risk on page 38-39 was in accordance with TCFD recommendation. Focus was on if information in the report on climate risks and opportunities, along with scenario analysis according to TCFD recommendations was analysed.

Our conclusion does not include other information in the sustainability report, it's GRI table or data from previous years.

Limited assurance conclusion

Based on our work performed and evidence obtained, nothing has come to our attention that causes us to believe that above mentioned parts of HS Orka' sustainability report for the year 2022, is not in all material respect, in line with relevant data reviewed.

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.

HS Orka management responsibilities

The management at HS Orka are responsible for preparing, the sustainability report that is free from material misstatement. This responsibility includes designing, implementing and maintaining internal control relevant to the preparation of a sustainability report that is free from material misstatement, whether due to fraud or error. Further the management of HS Orka is responsible for that their employees that prepare and set up the sustainability report are properly trained and that information systems are up to date.

Our Responsibilities

Our responsibility is to examine the above-mentioned part of HS Orka sustainability report and to report thereon in the form of an independent limited assurance conclusion based on the evidence obtained. 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 Board11. That standard requires that we plan and perform our procedures to obtain a meaningful level of assurance about whether the above mentioned parts of the sustainability report is in all material respect free form material misstatement. The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

The firm applies International Standard on Quality Management 1, which 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 have complied with the independence and other ethical requirements of the International Ethics Standards Board for Accountants' *International Code of Ethics for Professional Accountants (including International Independence Standards) (IESBA Code),* which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

Procedures

Limited assurance of above-mentioned parts of HS sustainability report consists of obtaining information, particularly from employees responsible for the information provided in the sustainability report, analyse, evaluate and confirm as appropriate. These procedures include i.e.:

- Inquiries to management and other relevant employees to obtain understanding on HS Orka process in preparing and reviewing of the above-mentioned parts of the sustainability report.
- Sampling test to ascertain the information provided in the above-mentioned parts of the sustainability report are in line with relevant data and guidelines.
- Considered the presentation and disclosure of the Sustainability Information in accordance with GRI 3 and TCFD recommendation.
- Performed analytical procedures to compare calculated emission from geothermal plants with reported information on the emission and inquiries of management to obtain explanations where needed.

Reykjavík, 27 February 2023

KPMG ehf.

Helga Harðardóttir, certified public accountant