

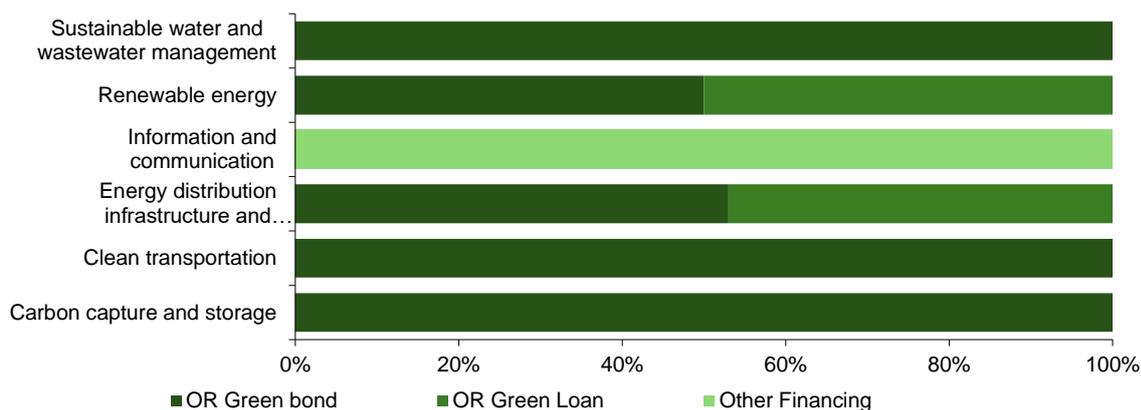
2023 Green Finance Allocation and Impact Report

In 2019, Orkuveitan (OR) published a Green Bond Framework, under which the company issued green bonds in 2019 and 2020. In 2021 OR updated its Framework to a Green Financing Framework to allow for the use of additional types of financing such as green loans. Furthermore, its update reflects a 'balance sheet' approach as OR's operation is largely directly or indirectly related to green activities – see further in the updated [Framework](#) and the accompanying [Second Party Opinion \(SPO\)](#) from CICERO Shades of Green. In the years 2022 and 2023, OR issued Allocation and Impact Reports for 2021 and 2022 respectively, where ISK 13.2 and 10.7 billion of green financing was issued.

This report discloses the 2023 allocation and impact of OR's green financing, where approximately ISK 19.7 billion in green financing, of which ISK 12.9 billion was from the issuance of green bonds for OR and ISK 6.8 billion from green loans. All financing with allocated impacts was new financing. OR also refinanced ISK 3.9 billion through the issuance of green bonds, which, however, does not result in any impacts.

OR's financing has been deployed across its subsidiaries which the defined Project Categories cover, i.e.: carbon capture and storage, clean transportation, energy distribution infrastructure and management, information and communication, renewable energy, and sustainable water and wastewater management. Impacts from the funded assets and projects can be found in the below table. The chart below shows the funding of these project categories through the various finding instruments.

Project category	Indicator	Allocated impact	Impact units
Carbon capture and storage	Estimated sequestered CO2 emissions.	2,482.5	tCO2eq. sequestered
	Estimated sequestered H2S emissions	1,218.5	tH2Seq. sequestered
Clean transportation	Electrification of OR car fleet	6	low-emission vehicles purchased
	Installation of public EV charging stations	87	number of EV charging stations installed
Energy distribution infrastructure and management	Electricity distribution infrastructure	80	km
	Heat distribution infrastructure	55	km
Information and communication	Fibre optic installed or upgraded	0	km
	Number of homes passed.	0	homes
Renewable energy	Renewable electricity production	383	GWh
	Renewable heat production	624	GWh
	Emissions avoided from renewable electricity production	48,332	tCO2eq. avoided
Sustainable water and wastewater management	Sewage infrastructure	10.5	km
	Cold water infrastructure	12.7	km



Financed project categories and asset and/or project examples

Carbon Capture and Storage

Carbfix is a global leader in the field of carbon capture and storage and sequesters carbon produced at OR's largest geothermal plant, operated by ON Power, Hellisheiði. Total gas sequestered in 2023 was 11,900 tonnes CO₂ and 5,800 tonnes H₂S, with 2,483 tonnes CO₂ and 1,219 tonnes H₂S being attributed to new financing (see methodology below).

Notable assets financed in 2023 by ON Power include the construction of Silverstone capture plant, which will fully scale up the Carbfix technology at Hellisheiði powerplant, allowing for an estimated 95% capture rate of CO₂. Assets financed by Carbfix in this category include an electric drill which will be used to drill injection wells.

Case Study: Silverstone capture plant



Project description: Silverstone is a Carbfix carbon capture and storage station which will lead to around 95% capture rate of CO₂ at Hellisheiði geothermal power plant

Project location: Nesjavellir geothermal power plant

Estimated benefits: 30,000 tonnes of CO₂ captured annually and mineralized

Percent Green finance: 100%

Project status: Under construction

	Year	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Carbon Capture and Storage	2022	405.9	405.9	100%	Estimated sequestered CO ₂ emissions (in tonnes) per year.	3,920	3,920	tCO ₂ eq. sequestered
					Estimated sequestered H ₂ S emissions (in tonnes) per year.	2,009	2,009	tH ₂ Seq. Sequestered
	2023	918.5	918.5	100%	Estimated sequestered CO ₂ emissions (in tonnes) per year.	2,483	2,483	tCO ₂ eq. sequestered
					Estimated sequestered H ₂ S emissions (in tonnes) per year.	1,219	1,219	tH ₂ Seq. Sequestered

Clean Transportation

OR interacts with the Clean Transportation project categories in two ways. First, OR is working to replace its current vehicle fleet with zero emissions vehicles with the goal of the car fleet to be fully non-emitting of GHG by 2030. Second, through its subsidiary ON Power, OR plays an important role in Iceland's energy transition to a low-carbon society by, for example, providing the installation of public charging stations. In 2023, 6 low-emission vehicles were purchased, making OR's car fleet composed of now 46% of green vehicles, a 4% increase from 2022, and 87 EV charging connections were installed across Iceland.

Case Study: Carbfix capture station at Nesjavellir power plant



Project description: A new fast-charging station set up at Víðigerði in late 2023.

Project location: Víðigerði, north Iceland

Estimated benefits: Two new EV fast-charging points
Percent Green finance: 100%

Project status: Operational

	Year	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
	Clean Transportation	2022	271.0	271.0	100%	Electrification of OR car fleet	6	6
Installation of public EV charging stations						74	74	number of EV charging stations installed
2023		301.9	301.9	100%	Electrification of OR car fleet	6	6	low-emission vehicles purchased
					Installation of public EV charging stations	87	87	number of EV charging stations installed

Energy distribution infrastructure and management

OR's subsidiary, Veitur Utilities, manages the electricity and heat distribution infrastructure in the Reykjavik capital area and in parts of West and South Iceland. In 2023, it installed 80 km of electricity distribution infrastructure (where the total network length is 5,300 km) and 55 km of heat distribution infrastructure (where the total network length is 3,350 km). Example of cost associated with this infrastructure is cables, pipes, and distribution stations.

	Year	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Energy distribution infrastructure and management	2022	7,161.2	2,386.7	33%	Electricity distribution infrastructure	91	30	km
					heat distribution infrastructure	45	15	km
	2023	9,528.9	9,528.9	100%	Electricity distribution infrastructure	80	80	km
					heat distribution infrastructure	55	55	km

Information and communication

OR's subsidiary, Reykjavík Fibre Network (Ljósleiðarinn), manage fibre optic infrastructure in Iceland, and in 2023 installed 260 kilometres of efficient fibre optic cables, reaching 6209 homes, respectively. This was however not financed through green bonds or loans.

	Year	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Information and communication	2022	4,726.2	2,170.1	46%	Fibre optic installed or upgraded	460	211	km
					Number of homes passed.	5,177	2,377	homes
	2023	3,555.5	0	0%	Fibre optic installed or upgraded	260	0	km
					Number of homes passed.	6209	0	homes

Renewable Energy

OR's subsidiary, ON Power, manages its geothermal power plants and a small hydropower plant which supply a large portion of Reykjavík's electricity and district heating. It was estimated that in 2023, the amount of renewable electricity and heat that could be attributed to the new investments was 382.8 of electricity and 623.5 of thermal energy production (in GWh). Example assets and projects in this category include engine renovations, gas management system improvements, and efficiency improvements at the power plants. The case study to the right discusses the new geothermal production well at Nesjavellir,

Case study: Borehole NJ-33



Project description: NJ-33, became operational in 2023 which will help ON Power to ensure consistent energy delivery.

Project location: Nesjavellir

Percent Green finance: 100%

Project status: Operational

invested in to ensure continued energy security in the Capital Area.

	Year	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Renewable energy	2022	3,525.9	2,536.9	72%	Renewable electricity production	532.1	376	GWh
					Renewable heat production	200.1	144	GWh
					Emissions avoided from renewable electricity production	88,918	63,978	tCO ₂ eq. Avoided
	2023	4698.0	4698.0	100%	Renewable electricity production	382.8	382.8	GWh
					Renewable heat production	623.5	623.5	GWh
					Emissions avoided from renewable electricity production	48,332	48,332	tCO ₂ eq. Avoided

Sustainable water and wastewater management

OR's subsidiary, Veitur Utilities, manages the cold water and sewage infrastructure in the Reykjavik capital area and in West Iceland. In 2023, Veitur installed 11 km of sewage infrastructure and 13 km of water infrastructure. Example assets and projects include the purchase of smart meters, water collection equipment and sewer pumping and treatment plants.

	Year	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Sustainable water and wastewater management	2022	4,281.7	2,854.6	67%	Sewage infrastructure	8	5.33	km
					Cold water infrastructure	13	8.67	km
	2023	4,239.9	4,239.9	100%	Sewage infrastructure	11	11	km
					Cold water infrastructure	13	13	km

Methodology

The impacts which are detailed in this report, are impacts representing the positive impacts enabled by OR's green financing. Methodologies used for avoided emissions and other impact calculations are based on relevant international guidelines and standards.

For the **carbon capture and storage** project category, the total CO₂ and H₂S sequestered is measured according to monitoring systems both during the capture and storage phase. During the capture phase, the CO₂ and H₂S is a percent of capture of the non-condensable gasses emitted at the Hellisheidi power station. Capture data is collected from monitors in this stage. The rate of sequestration is then measured and sequestration rates at this site been academically published.¹ To allocate the additionality impacts from investment in the year 2023, the amount invested in 2023 was constructed as a ratio of the end of year balance sheet value of the Carbfix subsidiary (where new investments represented 21% of the total balance sheet).

For the **clean transportation** project category, the number of eco-friendly vehicles purchased and charging stations installed are sourced from internal asset system data.

For the **energy distribution infrastructure and management** project category, the length of infrastructure installed is sourced from Veitur Utilities' GIS based infrastructure management system, where all infrastructure laid during the year is updated into this system.

For the **information and communication** project category, the length of infrastructure installed is sourced from the Fibre Network's GIS based infrastructure management system, where all infrastructure laid during the year is updated into this system.

For the **renewable energy** project category, the amount of renewable electricity and heat produced is measured per production facility, where meters measure this production.

OR supplies renewable electricity to users in Iceland. For the avoided emissions calculations, this is relevant because the electricity users in Iceland have been divided into two types as shown below. Both will contribute to the EU's 2030 emission reduction targets defined in the Paris Agreement but will have a different role in the EU's 2030 climate & energy framework. Methodologies used for avoided emission calculations are based on relevant international guidelines and standards.

Type 1: Industry operating within the European Union (EU) Emission Trading System (ETS), representing ~60-65% of OR's sold electricity.

- The benchmark emission factor for this group was calculated using a methodology from the International Financial Institutions (IFI)² using the combined margin method and the Harmonized IFI Default Grid Factors 2021 v3.1.
- The IFI benchmark emission factor for the year 2023 for firm energy production (which is the relevant description for geothermal energy) is estimated to be 214 gCO_{2e}/kWh, based on the combined margin grid emissions in EU 27.

¹ Matter, J. M., Stute, M., Snæbjörnsdóttir, S. Ó., Oelkers, E. H., Gislason, S. R., Aradóttir, E. S., ... & Broecker, W. S. (2016). Rapid carbon mineralization for permanent disposal of anthropogenic carbon dioxide emissions. *Science*, 352(6291), 1312-1314.

² International Finance Institution (2022). *Methodological Approach for the Common Default Grid Emission Factor Dataset*. IFI TWG - AHG-001. Version 2021 3.2

Type 2: Other Industries and households in Iceland, representing ~35-40% of OR's sold electricity.

- The benchmark emission factor for Type 2 users was calculated using the same methodology as used for Type 1 users.
- The Icelandic benchmark emission factor for the year 2023 is estimated to be 0 gCO₂e/kWh.

Using the above methodology, the comparative weighted average benchmark according to approximate sales to ETS industries was estimated to be 133.8 CO₂eq./kWh, which is the average displaced electricity emission factor. Using OR's reported carbon footprint of 7.5 gCO₂eq//kWh³, comparing this value to the benchmark to calculate, the avoided impact was estimated to be 126.3 gCO₂eq. per kWh produced.

Since it is difficult to measure the additionality of impacts associated with the investments made in 2023, to allocate the impacts from investment in that year, the amount invested was constructed as a ratio of the end of year balance sheet value of the ON Power subsidiary (where new investments represented 10.9% of the total balance sheet).

For the **Sustainable water and wastewater management** project category, the length of infrastructure installed is sourced from Veitur Utilities' GIS based infrastructure management system, where all infrastructure laid during the year is updated into this system.

*KPMG ehf. was appointed as an external advisor to help prepare this report. It provided advice on setup, methodology, and calculations of environmental/climate change impact. **All new financing and re-financing assessed was aligned with the Eligible Project Categorization in the Framework with exclusion criteria considered. All data was provided by OR.** KPMG's engagement was not bound by any assurance standards, nor did it provide an opinion. The ultimate responsibility for this report and the accuracy of the information lies with OR.*

³ Reykjavik Energy. *Annual Report 2023*. Reykjavik Energy. Reykjavik.



Grant Thornton

An instinct for growth™

Independent Auditor's Assurance Report

To the Board of Directors of Orkuveita Reykjavíkur and Green Bond holders

Assurance scope

The scope of our work was limited to verifying that the proceeds of the Green Financing obtained were used for funding selected eligible projects as reported in the 2023 Green Finance Allocation and Impact Report.

Responsibilities of Orkuveita Reykjavíkur

The net proceeds from Green Financing is managed by the Financial Department of Orkuveita Reykjavíkur. It is the responsibility of Orkuveita Reykjavíkur to allocate the proceed to the eligible projects selected by a Selection Committee and approved by the Board of Directors of Orkuveita Reykjavíkur. The Financial Department of Orkuveita Reykjavíkur is also responsible for preparation of a Green Finance Allocation and Impact Report which is free from material misstatements, whether due to fraud or error, in accordance with the Green Financing Framework from 2021.

Responsibility of the auditor

Our responsibility is to express an assurance conclusion for the subject matter at hand and which is included in the Green Finance Allocation and Impact Report, based on the procedures we have performed and the evidence we have obtained.

We conducted our assurance engagement in accordance with *ISAE 3000 Assurance Engagements Other than Audits or Reviews of Historical Financial information* issued by the IASB.

Our independence and quality control

We have complied with independence and other ethical requirements of the Code of Ethics for professional Accountants issued by the International Ethics Standards Boards for Accountants which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

We apply *ISQC 1 International Standard on Quality Control* and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Work performed

During our assurance engagement we reconciled the list of funded projects to the selected eligible projects. We performed assurance procedures on accounting transactions and capital movements in the Green Account. We have also reviewed the 2023 Green Finance Allocation and Impact Report and performed assurance procedures on the completeness and accuracy of reported information as described in the Green Financing Framework.



Conclusion

Based on the assurance procedures we have performed and the evidence we have obtained, we conclude, in all material aspects, that the proceeds of Green Financing obtained has been used to fund the selected eligible projects as reported in the 2023 Green Finance Allocation and Impact Report.

Reykjavík, 6 March 2024

On behalf of Grant Thornton endurskoðun ehf

Davíð Arnar Einarsson
State Authorized Public Accountant

Endurskoðandi
Davið Arnar Einarsson



Undirritað af:
Davið Arnar Einarsson
1601784269
Dags: 06.03.2024
Tími: 11:30:03
Astæða: Samþykkt
Signet ID: ffe62240-76ef-
4387-bf48-3a764d6adc50