



Orkuveita Reykjavíkur (OR)
Bæjarhálsi 1
110 Reykjavík

2021 Green Finance Allocation and Impact Report

In 2019, 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 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 SPO from CICERO Shades of Green.

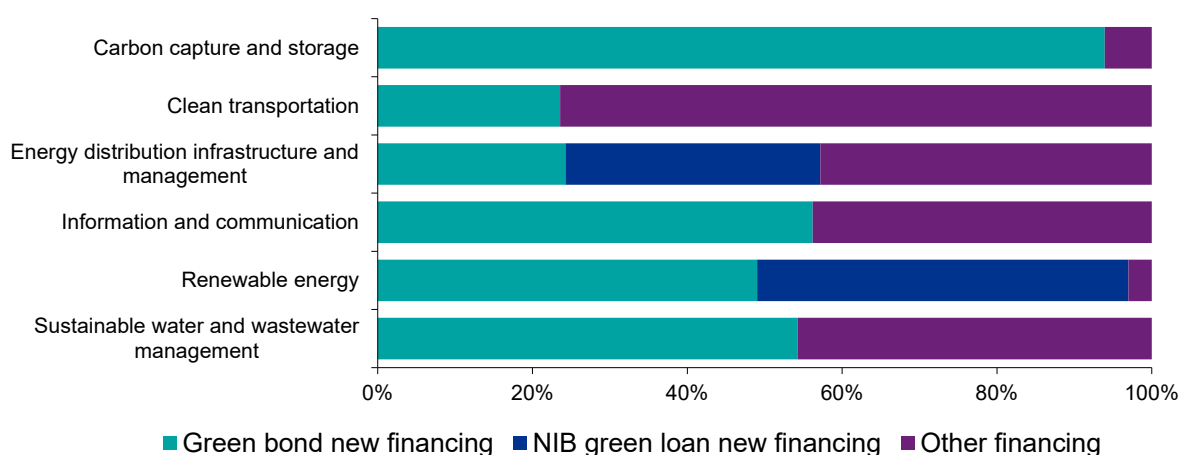
In the year 2021, OR issued approximately ISK 13.2 billion in green financing, of which ISK 10.3 billion was from the issuance of green bonds and ISK 2.9 from green loans. New financing represented ISK 8.5 billion while re-financing represented the remaining ISK 4.7 billion. Note that the table below represents the allocation of *new* financing.

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.

Project category	Total new financing ISK m	Green new financing ISK m	Green new financing percentage	Indicator	Total impact	Allocated impact
Carbon capture and storage	168.3	158.1	94%	Estimated sequestered CO ₂ emissions (in tonnes) per year.	13,300	8,963
				Estimated sequestered H ₂ S emissions (in tonnes) per year.	7,500	5,054
Clean transportation	241.2	56.8	24%	Low-emission car fleet (# vehicles purchased)	3	0.7
				Installation of public EV charging connections (# of connections)	376	89
Energy distribution infrastructure and management	6,637.0	3,795.0	57%	Renewable electricity distribution infrastructure (new km installed)	164.0	93.8
				Renewable heat distribution infrastructure (new km installed)	40.0	22.9
Information and communication	2,568.4	1,443.4	56%	Fibre optic installed or upgraded (km)	310.0	174.2
				Number of homes passed.	4,090	2,299
Renewable energy	1,488.8	1,443.8	97%	Renewable electricity production (GWh)	127.3	123.5
				Renewable heat production (GWh)	200.1	194.1



				Emissions avoided from renewable electricity production (tCO ₂ eq. Avoided)	20,817	10,206
Sustainable water and wastewater management	3,028.9	1,643.9	54%	Sewage infrastructure (new km installed)	6	3.3
				Cold water infrastructure (new km installed)	12	6.5
Total	14,132.6	8,541.0	60%	GHG emissions avoided/sequestered	34.117	19.169



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, Hellisheiði. Notable assets financed in 2021 include the Orka plant, the world's largest direct air capture and storage plant. Further projects include testing and monitoring of additional sites to implement the Carbfix method.

	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Carbon Capture and Storage	168.3	158.1	94%	Estimated sequestered CO ₂ emissions (in tonnes) per year.	13,300	8,963.0	tCO ₂ eq. sequestered
				Estimated sequestered H ₂ S emissions (in tonnes) per year.	7,500	5,054.3	tH ₂ Seq. sequestered

Clean Transportation

OR interacts with the Clean Transportation project categories in two ways. First, OR aims to develop car fleet to be fully non-emitting of GHG by 2030, and is thus working to replace its current vehicle fleet with zero emissions vehicles as well. Second, through its subsidiary ON Power, OR is playing an important role in Iceland’s energy transition to a low-carbon society by, for example, provide the installation of public charging stations. In 2021, three low-emission vehicles were purchased, making OR’s car fleet composed of now 40% of green vehicles. and 376 EV charging connections were installed across Iceland.

	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Clean Transportation	273.5	56.8	21%	Low-emission car fleet	3	0.7	Low-emission vehicles purchased
				Installation of public EV charging stations	376	89	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 2021 it installed 164 km of electricity distribution infrastructure (where the total network length is 5,100 km) and 40 km of heat distribution infrastructure (where the total network length is 3,250 km). Example of cost associated with this infrastructure is cables, pipes, and distribution stations.

	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
Energy distribution infrastructure and management	6,637.0	3,795.0	57%	Renewable electricity distribution infrastructure	164.0	93.8	km
				Renewable heat distribution infrastructure	40.0	22.9	km

Information and communication

OR’s subsidiary, Reykjavík Fibre Network (Ljósleiðarinn), manages fibre optic infrastructure in Iceland, and in 2021 installed 174 kilometres of efficient fibre optic cables, reaching 4,090 homes, respectively. Example projects include the purchase of fibre optic cables and the installation of them.



Information and communication	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
	2,568.4	1,443.4	56%	Fibre optic installed or upgraded	310.0	174.2	km
				Number of homes passed.	4,090	2,299	homes

Renewable Energy

OR's subsidiary, ON Power, manages its geothermal power plants and a small hydropower plant which supply a large portion of Reykjavik's electricity and district heating. It was estimated that in 2021, the amount of renewable electricity and heat that could be attributed to the new investments was 127.3 GWh of geothermal and 200.1 GWh of hydropower energy. Example assets and projects in this category include engine renovations, gas management system improvements, and efficiency improvements at the power plants.

Renewable energy	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
	1,488.8	1,443.8	97%	Renewable electricity production	127.3	123.5	GWh
				Renewable heat production	200.1	194.1	GWh
				Emissions avoided from renewable electricity production	20,800	10,197	tCO ₂ eq. Avoided

Sustainable water and wastewater management

OR's subsidiary, Veitur Utilities, manages the coldwater and sewage infrastructure in the Reykjavik capital area and in West Iceland. In 2021 it installed 12 km of water infrastructure and 6 km of sewage infrastructure. Example assets and projects include the purchase of water collection equipment and sewer pumping and treatment plants.

Sustainable water and wastewater management	Total financing m ISK	Green financing m ISK	Green financing percentage	Indicator	Total impact	Allocated impact	Unit
	3,028.9	1,643.9	54%	Sewage infrastructure	6.0	3.3	km
				Cold water infrastructure	12.0	6.5	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 2021, the amount invested in 2021 was constructed as a ratio of the end of year balance sheet value of the Carbfix subsidiary (where new investments represented 67% 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) Guarantee of Origin (GO) market, representing ~60-65% of OR's sold electricity.

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.



- 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 EU GO benchmark emission factor for the year 2021 for firm energy production (which is the relevant description for geothermal energy) is estimated to be 337.4 gCO₂e/kWh.

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 2021 is estimated to be 0 gCO₂e/kWh.

Using the above methodology, the comparative weighted average benchmark was estimated to be 205.7 gCO₂eq./kWh, is the average displaced electricity emission factor. Using OR's reported carbon footprint of 7.4 gCO₂eq./kWh³, comparing this value to the benchmark to calculate, the avoided impact is estimated to be 198.3 gCO₂eq. per kWh produced.

Since it is difficult to measure the additionality of impacts associated with the investments made in 2021, 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 3.6% 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.

8 March 2022

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

³ Reykjavik Energy. *Annual Report 2021*. 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 2021 Green Finance Allocation and Impact Report.

Responsibilities of The City of Reykjavik

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 2021 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 2021 Green Finance Allocation and Impact Report.

Reykjavík, 8 March 2022

On behalf of Grant Thornton endurskoðun ehf

A handwritten signature in blue ink, reading 'Davíð Arnar Einarsson', written over a horizontal line.

Davíð Arnar Einarsson

State Authorized Public Accountant