

Welcome to Landsvirkjun



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Landsvirkjun

Landsvirkjun is the nationally owned power company of Iceland.

Founded in 1965 and produces 70% of the country's electricity from green renewable sources; hydro, geothermal and wind.

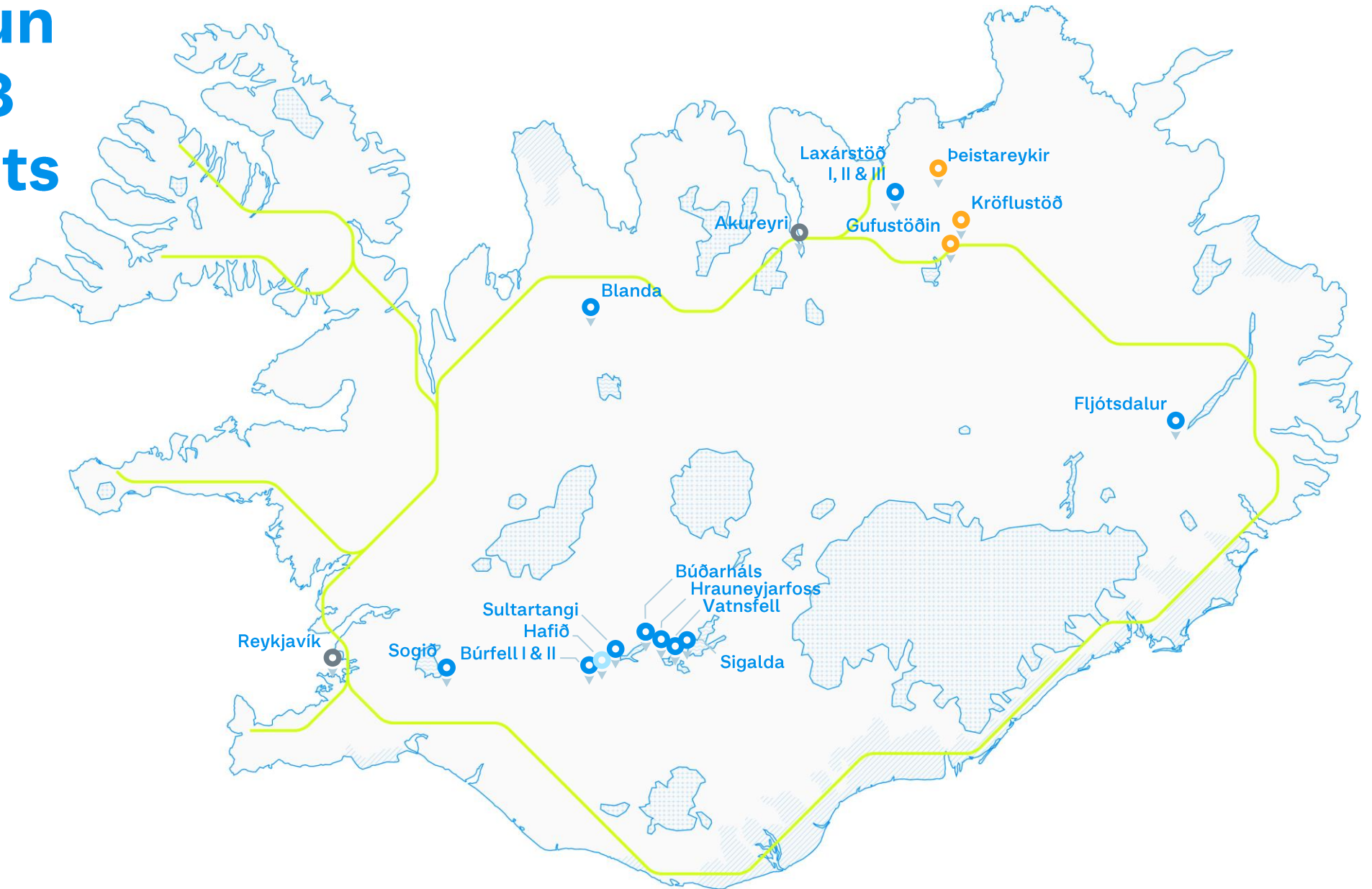
Around 300 employees around the country and decades of experience in maintaining and operating power plants with the intention to maximize their output while keeping balance between the social, environmental and economic aspects.

Installed capacity of 2.2 GW .



Landsvirkjun operates 18 power plants

- Hydro
- Geothermal
- Wind
- Office





Sog powerstation

- › 3 hydro powerstations constructed by the community of Reykjavík and the Icelandic government in the 1950's to ensure enough electricity for Reykjavík and the South and West of Iceland.
- › Írafoss, one of the first plants in Iceland built underground.
- › The plants were renewed a lot in the years of 1996-2000.
- › Ljósifoss still has the same turbines and generators





Steingrímsstöð – 1959

Installed capacity	26 MW
2x Kaplan turbines	2X 13 MW
Generation capacity	122 GWh
Head	20,5m
Maximum flow	150 m ³ /s



Ljósafossstöð – 1937

Installed capacity	14 MW
3 Francis turbines	2X4 – 1X6 MW
Generation capacity	105 GWh
Head	17m
Refurbished U3	1944

Írafossstöð – 1953

Installed capacity	48 MW
3 Francis turbines	3X16 MW
Generation capacity	236 GWh
Head	38m
Refurbished U3	1963

History

Steingrímsstöð

1957: Construction began

1959: 17. June an accident strikes the construction when a dam brakes, flooding the underground tunnel from Thingvallavatn and the station house.

1959: 2 units in operation by 1960

Kaplan turbines used.



History Ljósafoos

1917: Reykjavík community ensured water rights at Sog area

1934: Construction began

1937: 2 units in operation

First plant in Iceland that produced electricity not only for the locals

WW2 and LJO - unit 3

Largest power plant in Iceland until 1953 when Árafoss power plant was brought online



History Írafoss

1950: Construction began

The first underground powerstation in Iceland

1953: 2 units in operation

1963: 3rd unit added

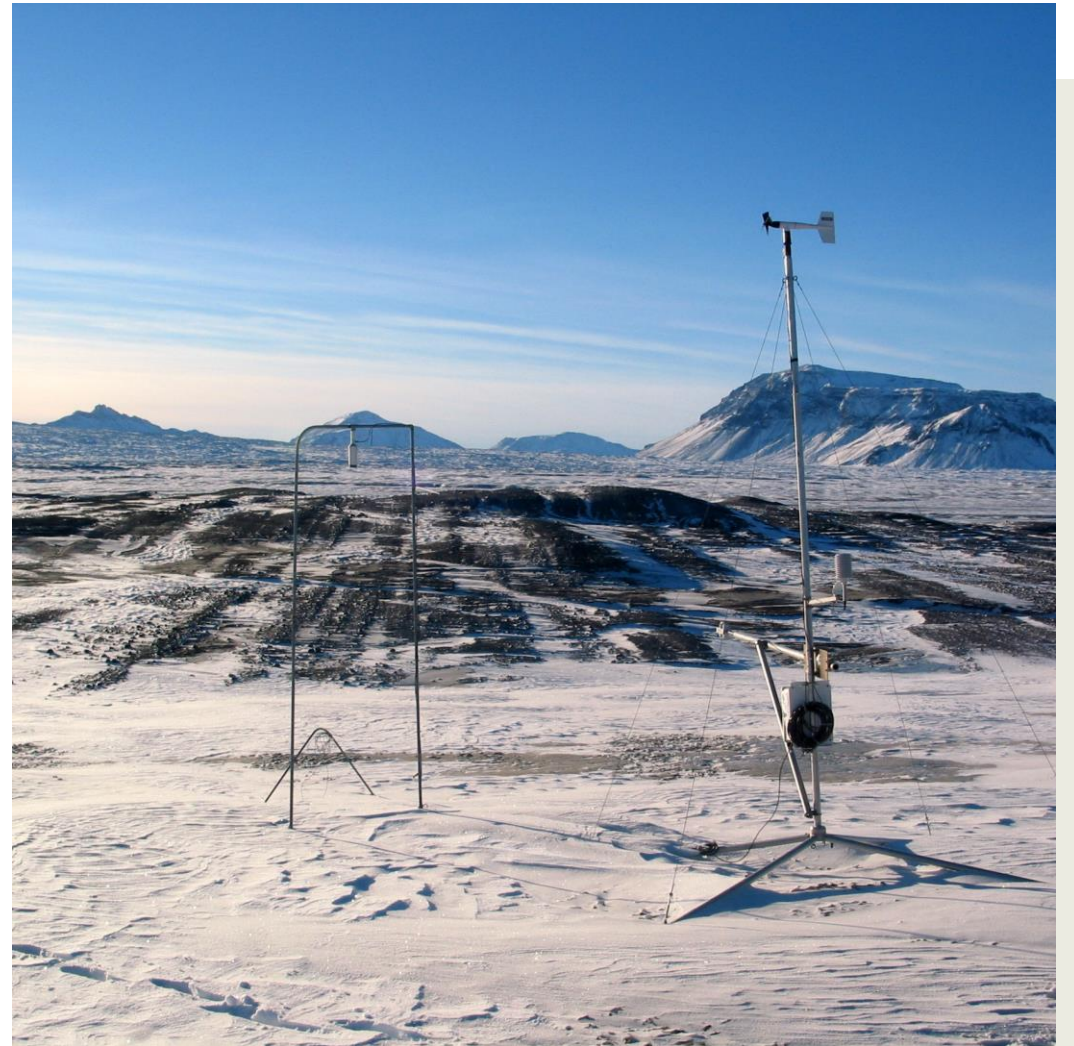


Research

Landsvirkjun conducts a lot of research into environmental factors around all its operation

Research into weather, water management and aquatic life as well as geological surveys and land management plans.

Many research projects are done in partnership with Icelandic environmental agencies and universities in Iceland and abroad.





Our energy generation is 100% from renewable sources.

Our CO₂ footprint is 1,2g / kWh



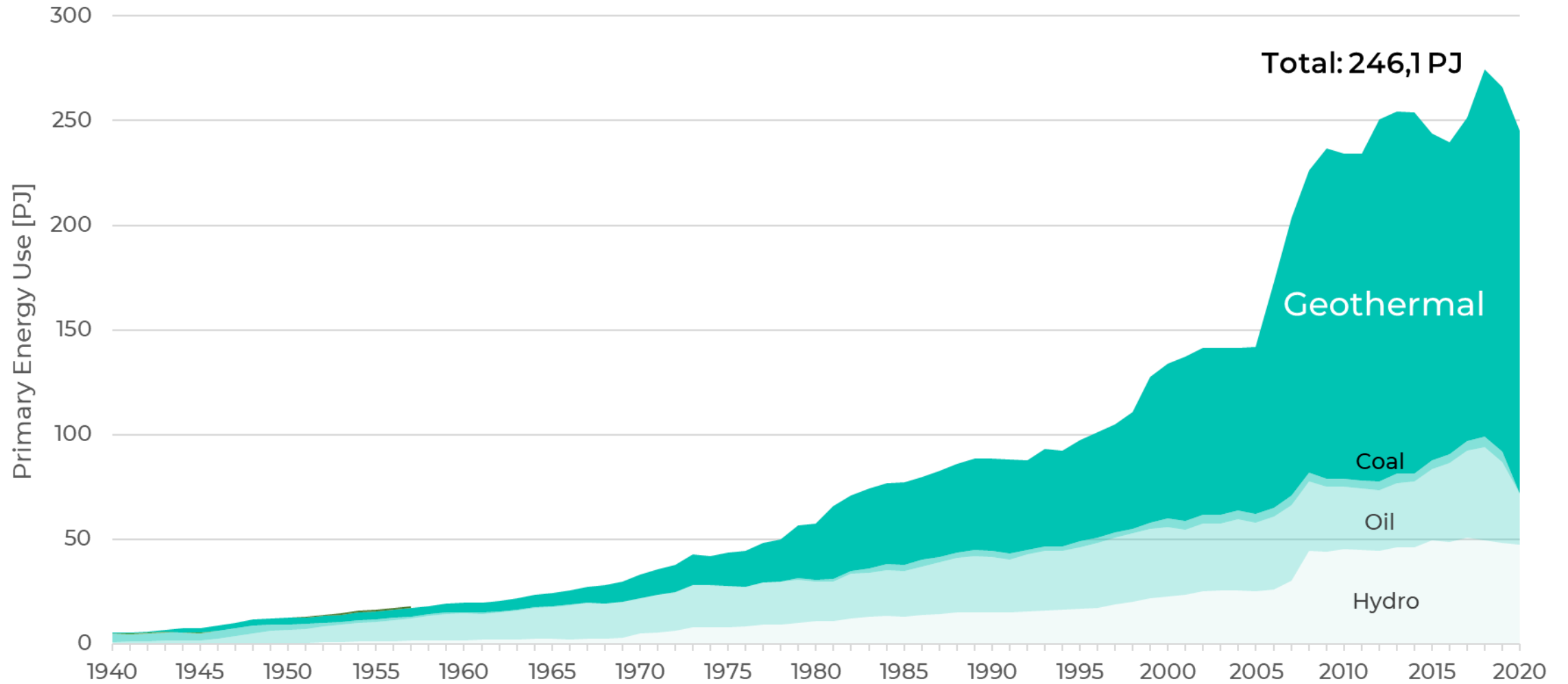
Geothermal energy in Iceland

There are seven geothermal power plants in Iceland

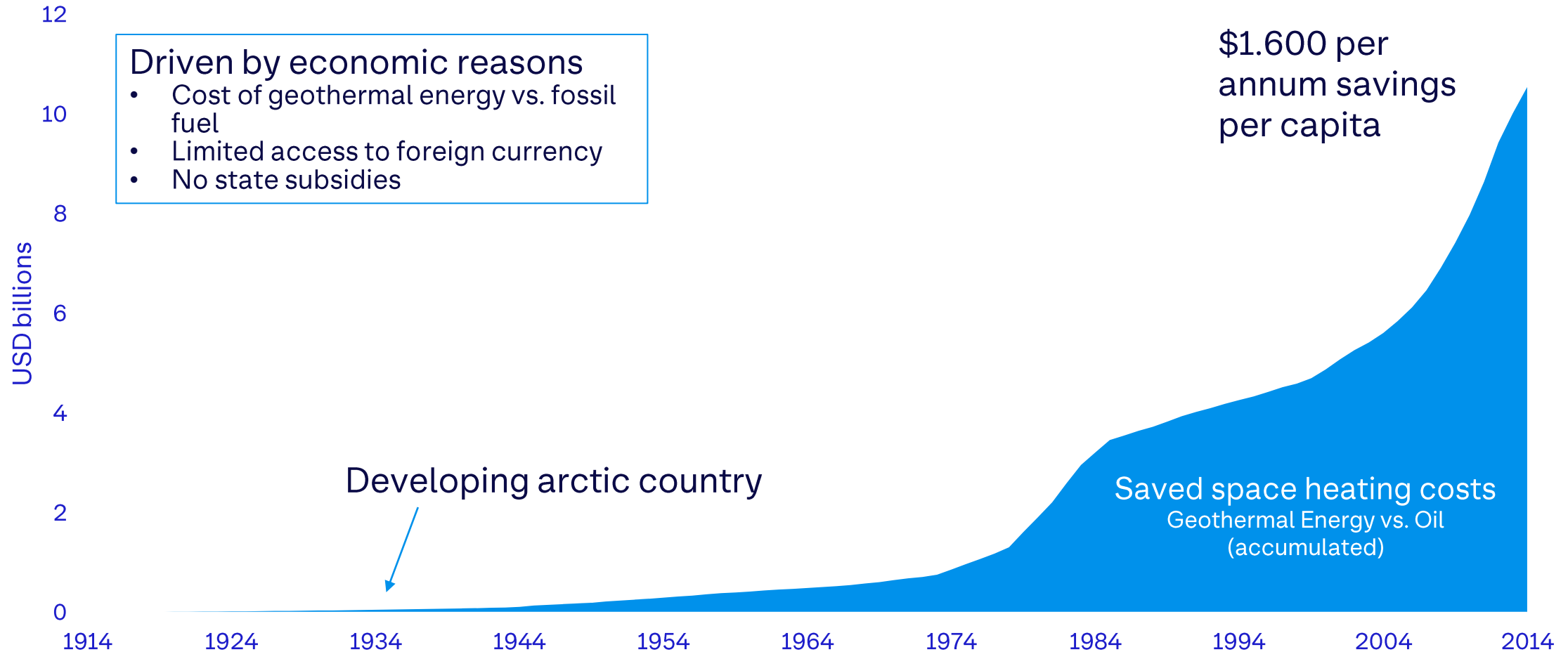
Geothermal power supplies:

90% of space heating and 27% of electricity for the country

Primary Energy Use in Iceland 1940 - 2020



Geothermal energy has been a crucial factor in modernizing Iceland



Our geothermal operation

Landsvirkjun operates three geothermal power plants. We have the oldest one in Iceland and the newest one.

Gufustöðin in Bjarnarflag, 5MW, since 1969.

Krafla, 60 MW, since 1977

Theistareykir, 90 MW, since 2017

We have a team of 35 people, from technicians in operations to resource and development specialists and project managers.



Theistareykir



The first geothermal Power plant Landvirkjun builds.

With two 45 MW turbines from Fuji, 738 GWh/year.
First unit started in 2017 and the second one in 2018.
Expansion possibilities up to 180 MW.

International Project Management Association
PE Award 2019, Large-Sized projects.



Quality of life in Iceland induced by geothermal energy

- › Very affordable district heating
- › Swimming pools, hot tubs, spas
- › Pavement snow-melting
- › Greenhouses
- › Indoor football halls

Life in Iceland would be very different without geothermal energy

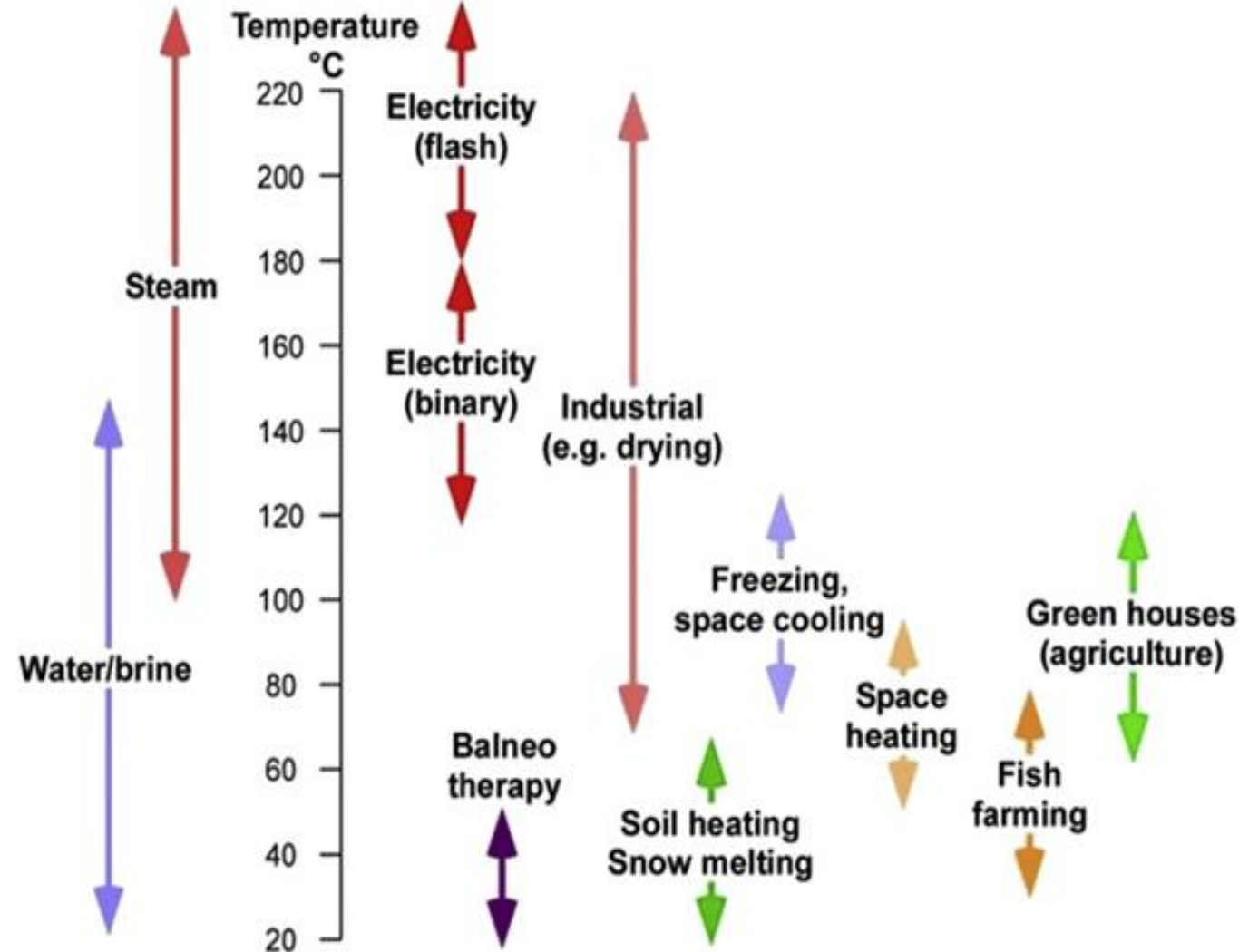


The background features a repeating pattern of light blue wavy lines and arrows pointing upwards, set against a dark blue background. The wavy lines resemble stylized water or energy flows, and the arrows are positioned at various points along these lines.

Cascaded use of geothermal, endless possibilities

Cascade use of geothermal energy

- › Electricity production requires higher temperature
- › Endless possibilities for further utilization of lower temperature
- › Geothermal gas, e.g. CO₂, can be turned from waste to value



Renewable fuel production

- › Hydrogen
- › Methane
- › Methanol

Turning waste to value by CO₂ utilization



Geothermal tourism

- › Bathing
- › Luxury spa hotel
- › Tours of geothermal area
- › Geothermal and volcanology exhibitions



Food production

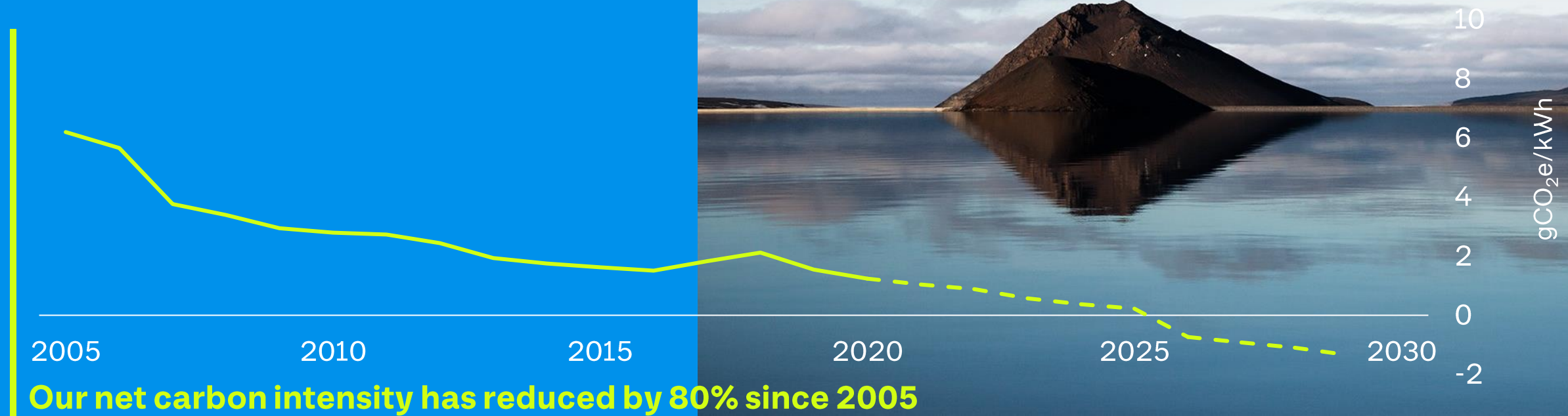
- › Green houses
- › Algae farming
- › Fish farming



Our vision for the future:
***A sustainable world powered by
renewable energy***

Our Climate Action Plan

Net zero emissions in 2025



Our net carbon intensity has reduced by 80% since 2005


A Leader in Climate Change Action

Net zero emissions in 2025

- 50% reductions in direct emissions
- 60% reductions in geothermal emissions

Our efforts directly support Iceland's 2030 reduction targets





**Examples of how we will make an
impact towards the climate goals and
the energy transition**



**Planned CO₂ capture and sequestration at
Beistareykir geothermal power plant**

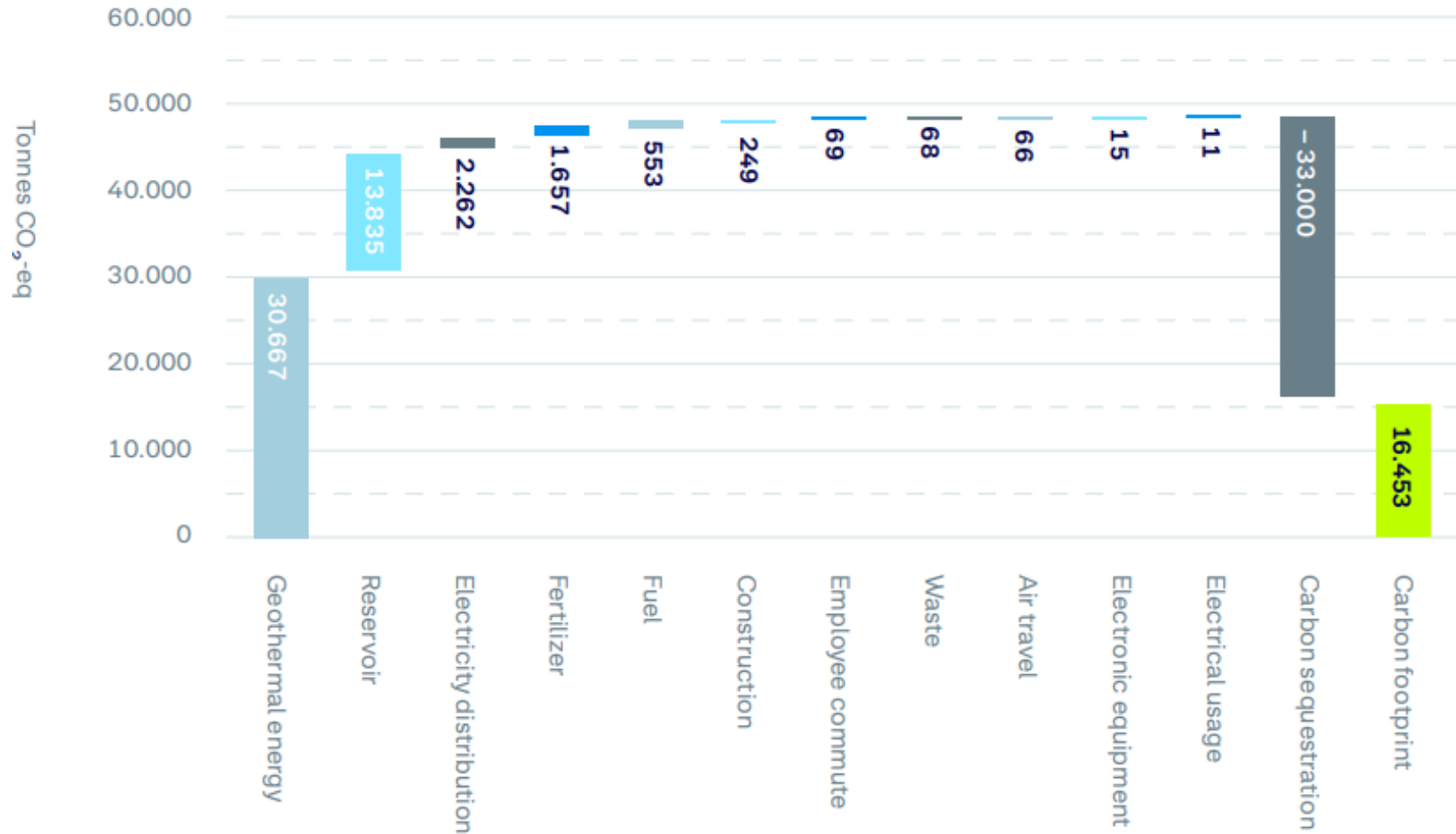
CO₂ neutral Landsvirkjun in 2025

Over 60% of Landsvirkjun's GHG emissions come from geothermal energy.

Lowering emissions from geothermal is essential for Landsvirkjun's goal of CO₂ neutrality in 2025.

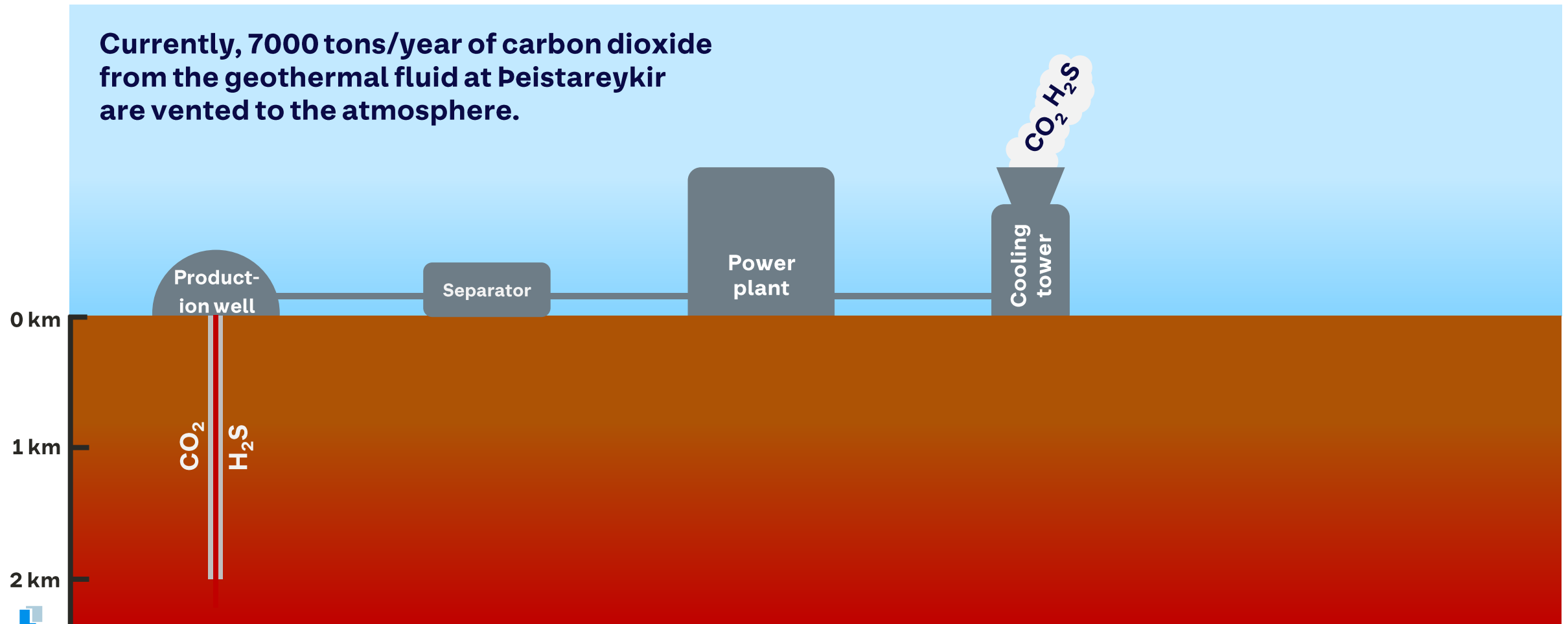
Landsvirkjun is planning CO₂ capture and sequestration from Peistareykir geothermal power plant (90 MW) by 2025.

↓ Carbon footprint



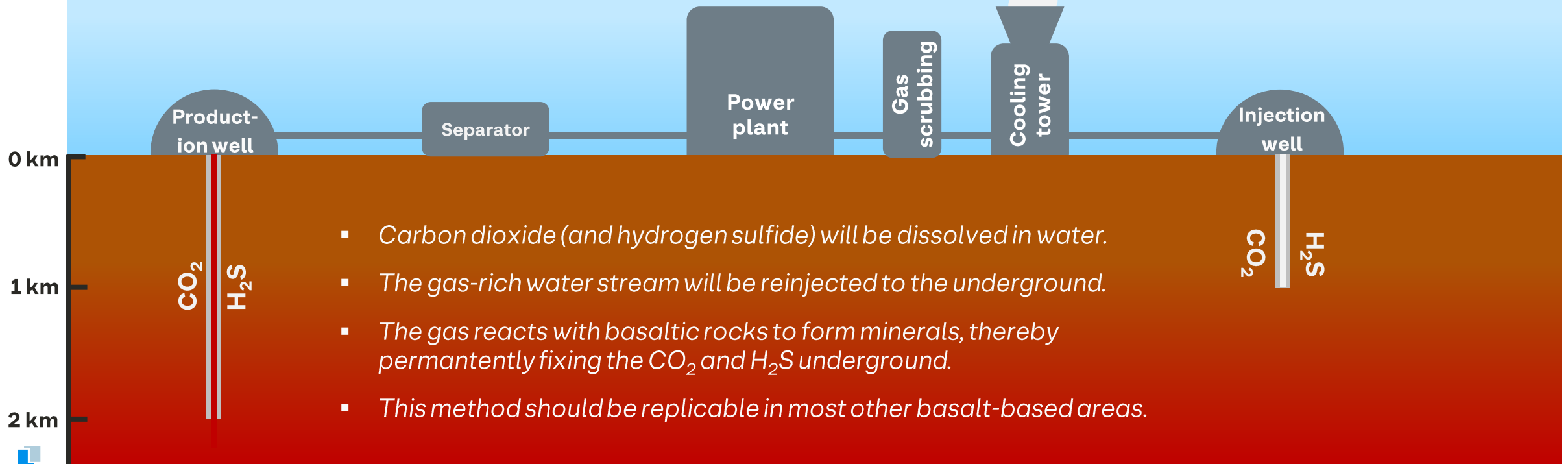
Carbon capture and sequestration at Peistareykir geothermal power plant

Currently, 7000 tons/year of carbon dioxide from the geothermal fluid at Peistareykir are vented to the atmosphere.



Carbon capture and sequestration at Peistareykir geothermal power plant

By 2025, over 90% of the CO₂ and H₂S emissions at Peistareykir will be captured and injected back to the underground for permanent sequestration.





Planned hydrogen production at Ljósifoss hydropower plant

Ljósifoss hydropower plant



Planned
hydrogen
production
site, up to
10 MW

Commissioned in 1937
Installed capacity: 16 MW
Has a visitor center and exhibition





Iceland and hydrogen

Iceland aims for carbon neutrality by 2040 and a fossil fuel free economy by 2050.

A hydrogen and e-fuels roadmap is currently in preparation by the Icelandic ministry of industry.

Hydrogen and its derivatives (e-fuels) will be needed for a full energy transition in mobility.

- › Heavy duty trucks & coaches
- › Ships, boats & fish farming
- › Aviation

Landsvirkjun is partnering up with other companies in these value chains, to provide hydrogen to the first large domestic energy transition projects in these fields.

Iceland's 2020 Climate Action Plan



