



Landsvirkjun

# About Landsvirkjun

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Visit from Poland October 5, 2017



## About Iceland

Electricity and heat is 100% renewable

Electricity generation:

- 72% Hydro
- 28% Geothermal
- < 0.1% Wind

Space heating:

- 90% Geothermal
- 10% Renewable electricity





## Legal environment

Electricity Act No. 65/2003 (Implements the Directive for the internal market in electricity)

Master Plan for energy resources in Iceland

Environmental impact assessment, regional development, permits, etc.







Landsvirkjun was  
founded in 1965

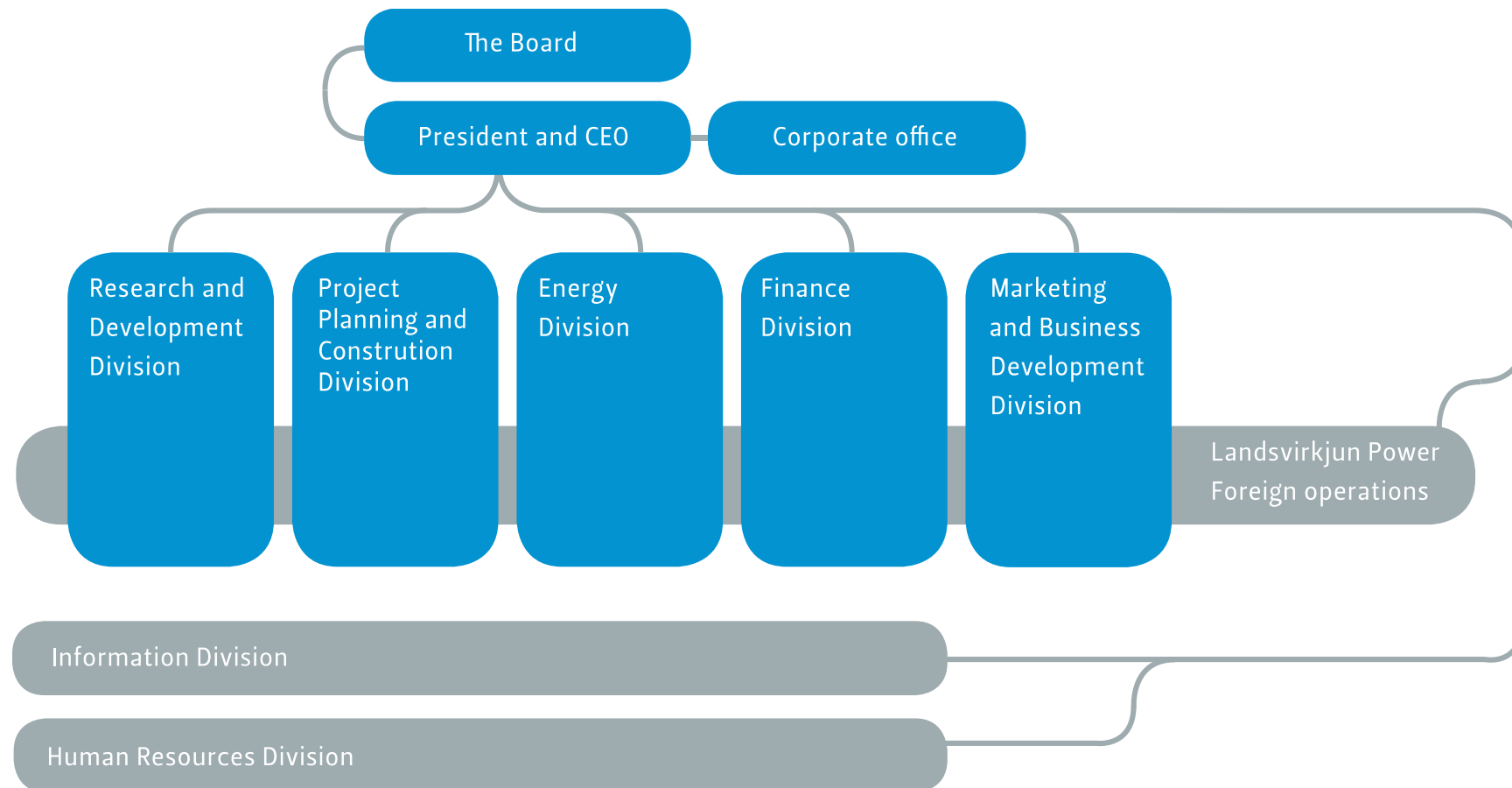
Landsvirkjun is 100%  
state owned and  
generates 73% of  
Iceland's electricity.

14 hydropower stations,  
2 geothermal stations  
and 2 windmills.

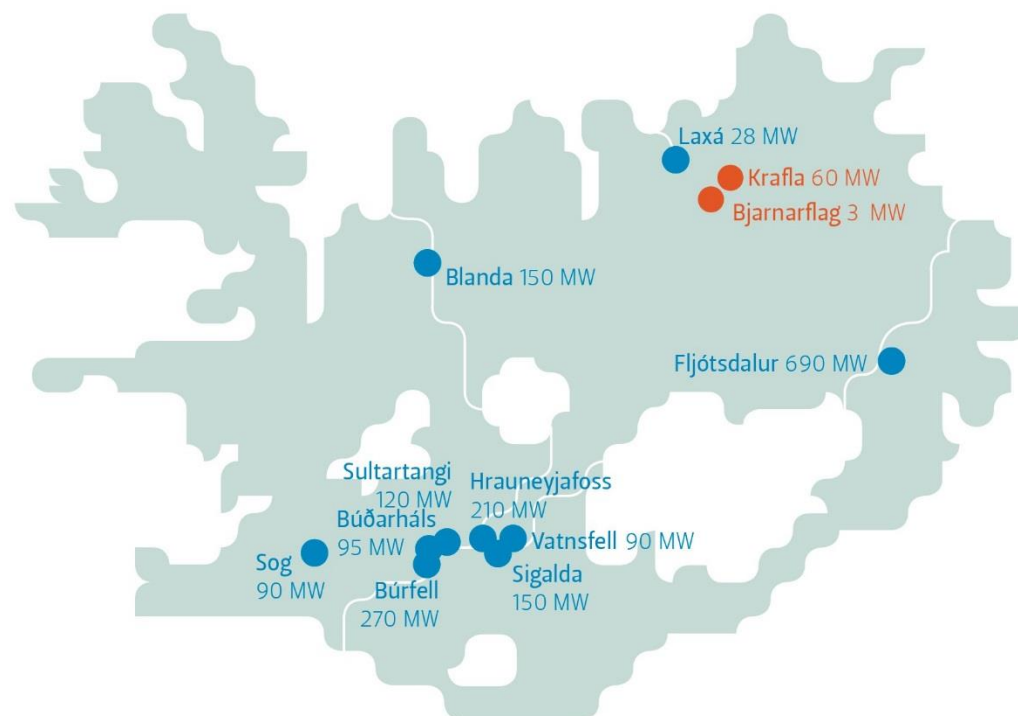
Installed capacity is 2 GW  
and our generation was  
13.4 TWh in 2016



# Company structure



# Key figures



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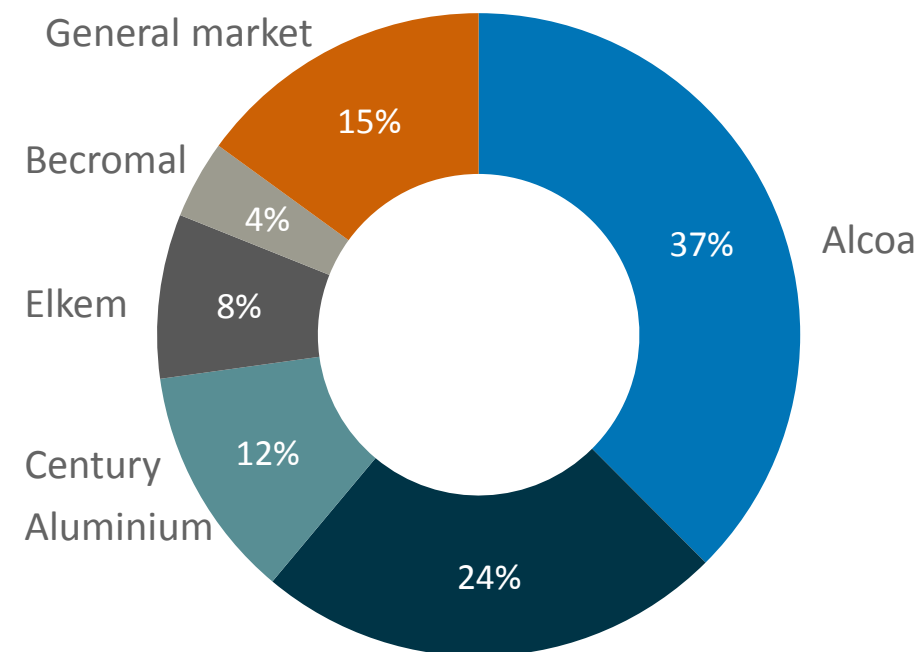
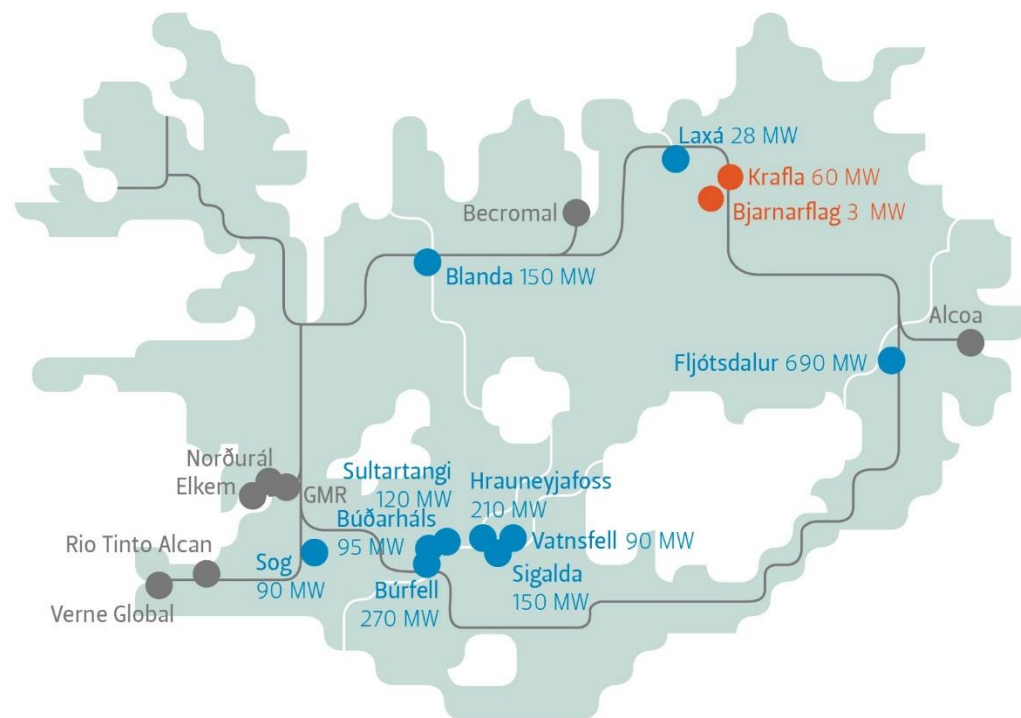
## Key figures 2016

Hydropower stations	14 (96,3% of generation)
Geothermal stations	2 (3.7% of generation)
Wind turbines	2 (experimental)
Capacity	1,957 MW
Output	13,411 GWh

Revenues	USD 420 m
EBITDA	USD 302 m
Profit	USD 118 m
Total Assets	USD 4,333 m
Liabilities	USD 2,364 m
Equity Ratio	45,4%

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# Customers



Energy-intensive industry 85% of sales



# Power Stations



**Ljósafofsstöð 1937**



**Írafossstöð 1953**



**Steingrímsstöð 1959**



**Búrfellsstöð 1969**



**Sigöldustöð 1977**



**Hrauneyjafossstöð 1981**



**Laxá I-III 1939/53/73**



**Bjarnarflag 1969  
Kröflustöð 1977**



**Blöndustöð 1991**



**Sultartangastöð 1999**



**Vatnsfellsstöð 2001**



**Fljótsdalsstöð 2007**



**Búðarhálsstöð 2014**



**Peystareykir 2017**



**Burfell 2 2017**



# Environmental Policy

**Landsvirkjun is at the forefront of environmental issues and supports sustainable development within society. The Company is committed to acquiring knowledge on the environmental impact of its operations and to reducing any impact.**



- Use natural resources more efficiently
- Carbon neutral operations
- Operate in harmony with nature and the appearance of land
- Stakeholder engagement
- Operations without environmental incident

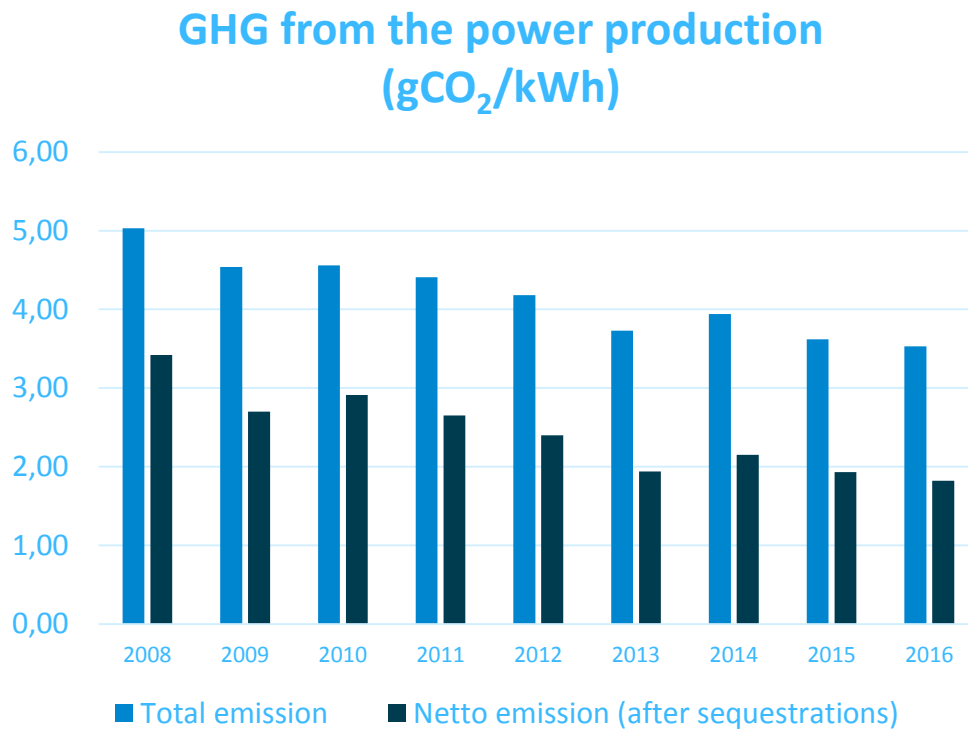
## Climate Change Impacts

- Iceland will become warmer and wetter
- Glaciers are expected to disappear in the next 200 years
- Generation capacity has already increased 8% due to warming
- Energy inflow to current hydro system is expected to increase further by 15% to 2050
- Optimization and design take future climate conditions into account
- Landsvirkjun has adopted an action plan to reduce emissions and to become a carbon neutral company.





# Landsvirkjun to become carbon neutral in 2030



## 1) Reducing the use of fossil fuels in Company owned vehicles

- Ecofriendly vehicles purchased when possible
- Contractors and partners encouraged to use ecofriendly transport

## 2) Compensating for the inevitable release of carbon via re-vegetation

- Agreements with The Icelandic Forest Service and The Soil Conservation Service
- Reclamation of wetland
- Agreement with an Icelandic fund

## 3) Actively participating in the Energy Exchange Plan for Iceland

- Co-owner of a company involved in projects promoting use of ecofriendly fuel in transport
- Board member of Green Energy – a platform for dialogue between industry and authorities
- Initiating and funding conferences and educational material for the public
- Employees encouraged to use and to be ambassadors for ecofriendly transport

# Recent Power Projects





**Landsvirkjun**

National Power Company of Iceland

## Kárahnjúkar 2007 690 MW

### Main data

Installed capacity	690 MW
Energy production	4.8 TWh/a
Gross head	600 m
Tunnels	73 km

### Kárahnjúkar dam

Height	200 m
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Supplies energy for an aluminum smelter that produces 340.000 tons per year.







**Landsvirkjun**  
National Power Company of Iceland

## Búðarháls 2014 95 MW

Generation:	585 GWh
Head:	40 m
Discharge:	280 m <sup>3</sup> /s
Tunnels:	4 km
Dam height:	25 m







**Landsvirkjun**

National Power Company of Iceland

## Wind 2013 2 MW

Two wind turbines in operation for research purposes.

Initial results indicate very high capacity factor (45%) and significant role in combination with hydropower







**Landsvirkjun**  
National Power Company of Iceland

## **Theistareykir Geothermal Project: 90 MW**

Under Construction.

2x 45 MW phases, 720 GWh/a

Estimated start-up:  
Phase 1: Autumn, 2017.

EIA valid for up to a 200 MW  
power station.

Close cooperation with local  
stakeholders







**Landsvirkjun**

National Power Company of Iceland

## Búrfell Extension HEP

Rated power	100 MW
Units	one unit
Energy production	300 GWh/a
Design discharge	92 m <sup>3</sup> /s
Bjarnalón reservoir	1 km <sup>2</sup>
Net head	119,2 m
Commissioning	May 2018



# **Future Power Project - Development**



# Master Plan for Nature Protection and Energy Utilisation

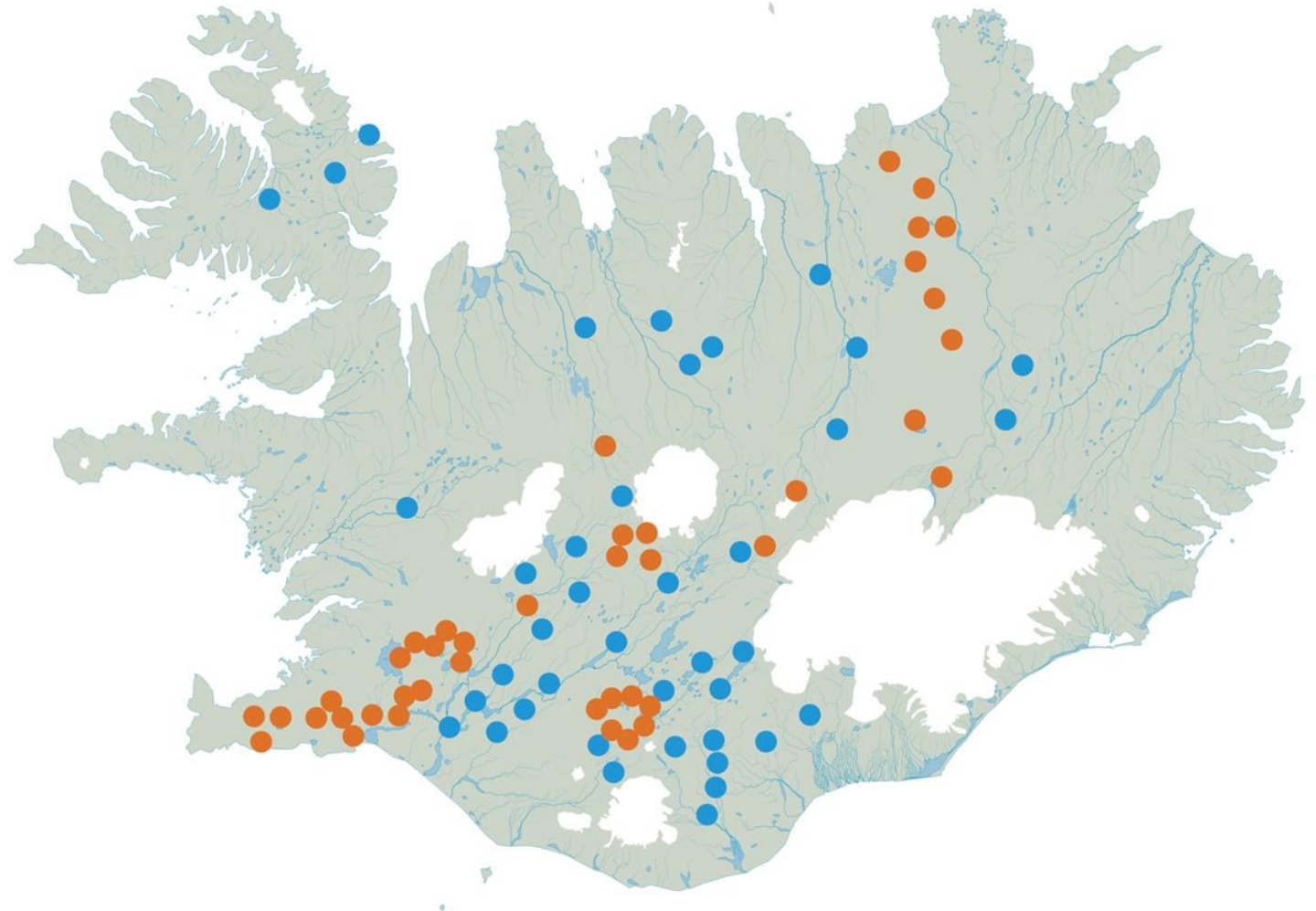
- The Parliament passed a law in 2011 on the master plan for nature protection and energy utilisation
  - Phase 1: 1999 - 2003
  - Phase 2: 2004 – 2010
  - An steering committee manages the masterplan, appoints expert committees to provide advise in their respective fields of expertise
  - Projects are to be classified into three categories: “protection”, “on hold” or “energy utilization”
  - First Parliamentary resolution, based on work in Phase 2, was passed in January 2013
  - Phase 3: 2013 – 2017
    - Report with proposal handed in 2016
    - The Minister for the Environment and Natural Resources put forward a proposition for a Parliamentary resolution on February 28 2017
  - The steering committee for Phase 4 has been appointed
- Our main concerns
  - Ranking of power projects only based on nature protection and tourism
  - So far the social and economical aspects have not been taken into account in the ranking process, although the law explicitly states so

# Hydro and geothermal project under consideration in the Master Plan

- 9 TWh recommended for harnessing
- 13 TWh on hold
- 14 TWh recommended for conservation



Hydro and geothermal options examined in the Master Plan's 2<sup>nd</sup> phase





# Contact information



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**Landsvirkjun**

The National Power Company of Iceland.