

# Plugging Iceland's Renewable Energy into UK's Grid is a Win-Win Option

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# Sustainability and environmental awareness comprise a new megatrend that inevitably will impact the energy market



1970-2000

Globalisation

2000-2010

Telecommunication  
& IT

Post 2010

Green revolution &  
renewable energy

## Industry gains a strong foothold in Iceland

Energy intensive industry, aluminium and ferrosilicon

- › Century Aluminum
- › Elkem
- › Rio Tinto Alcan

## Growing industry in Iceland

Telecom industry and further development of other industry

- › Alcoa
- › Becromal
- › Rio Tinto Alcan enlargement
- › Data centers appear

## New emphasis in marketing in Iceland

Developing current customers and increasing diversity

- › Verne Holdings
- › High-tech industries
- › New energy sources developed
- › Sale of green certificates

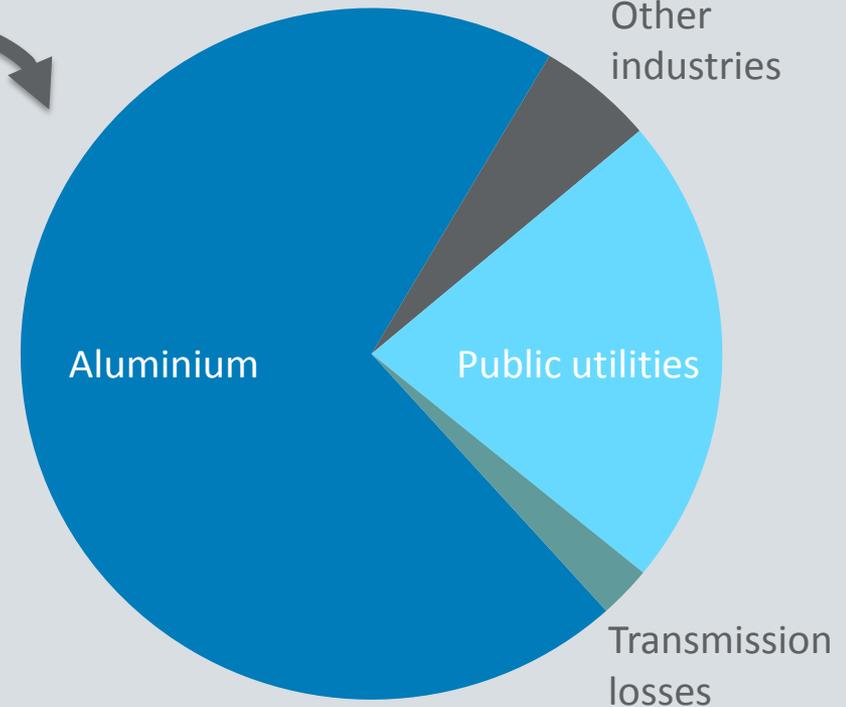
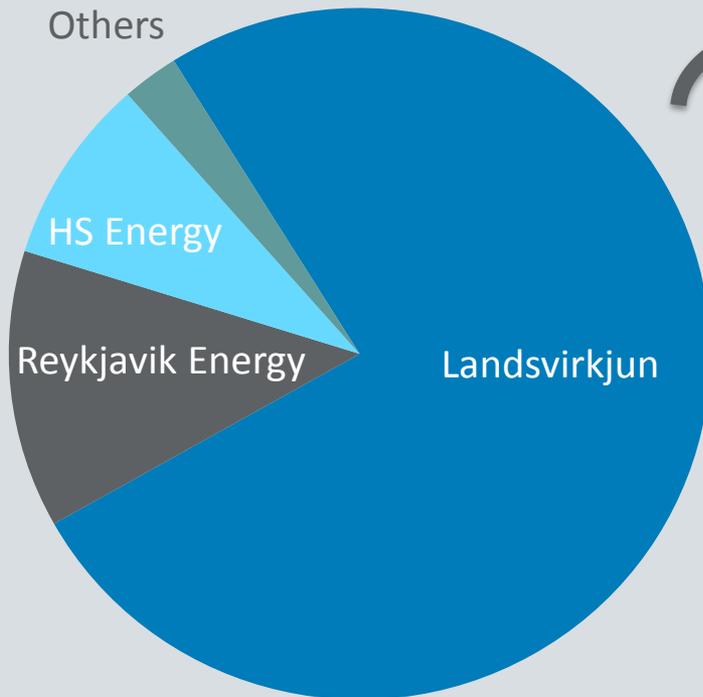
Landsvirkjun will continue to endeavour to meet the needs of its various customers

Landsvirkjun generates 13 TWh of renewable energy per year and is growing due to increased global industrial demand



Landsvirkjun generates 3/4 of the supply

Focus on customer diversification and growth



# Landsvirkjun's policy is based on the idea that the Icelandic energy market should reflect international development



GDP growth

Job creation

Increased knowledge

Export revenue

Landsvirkjun's role is to maximise return on the energy sources that have been entrusted to the company, with emphasis on sustainable utilisation, value creation and cost-efficiency

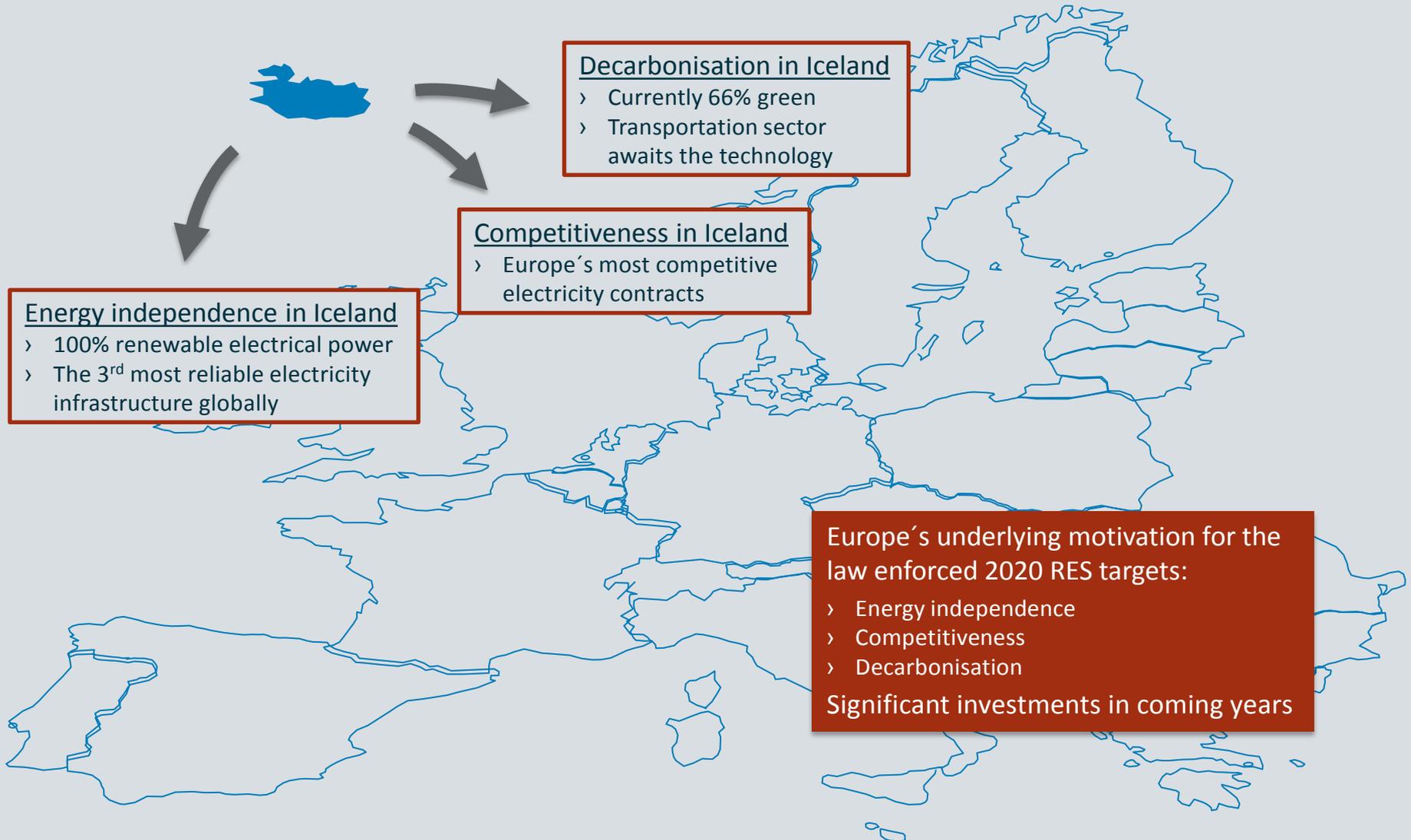
Not necessarily a physical link

Carry out effective electricity generation and development

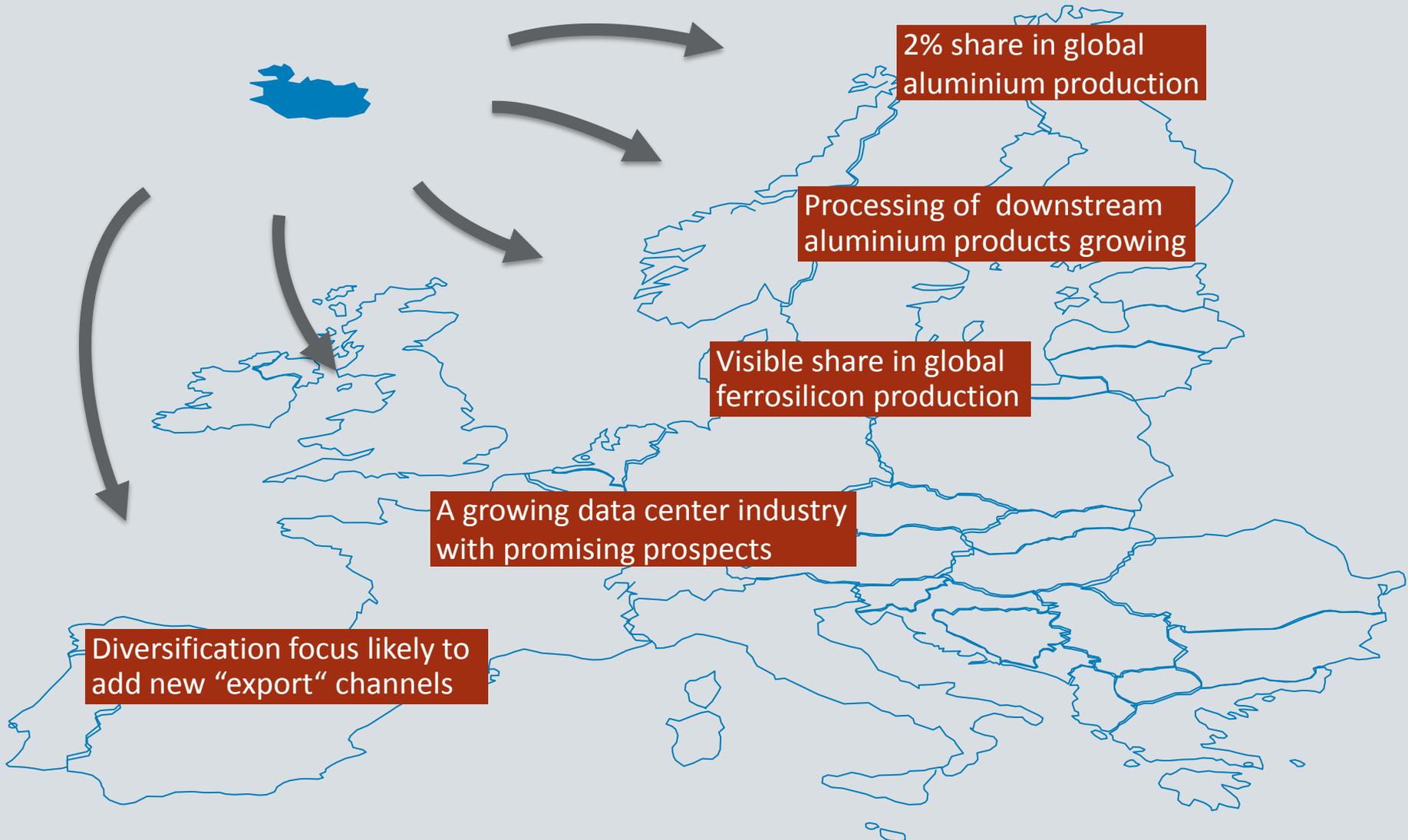
Build up a diverse customer group

Link up with the European energy market

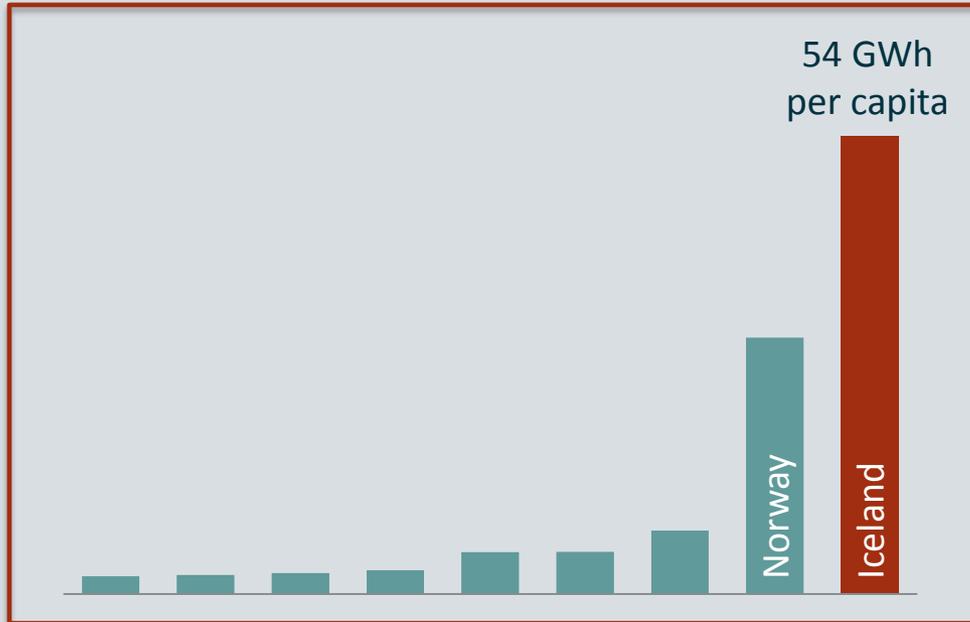
# Iceland has already secured the energy independence and competitiveness that Europe today strives to achieve



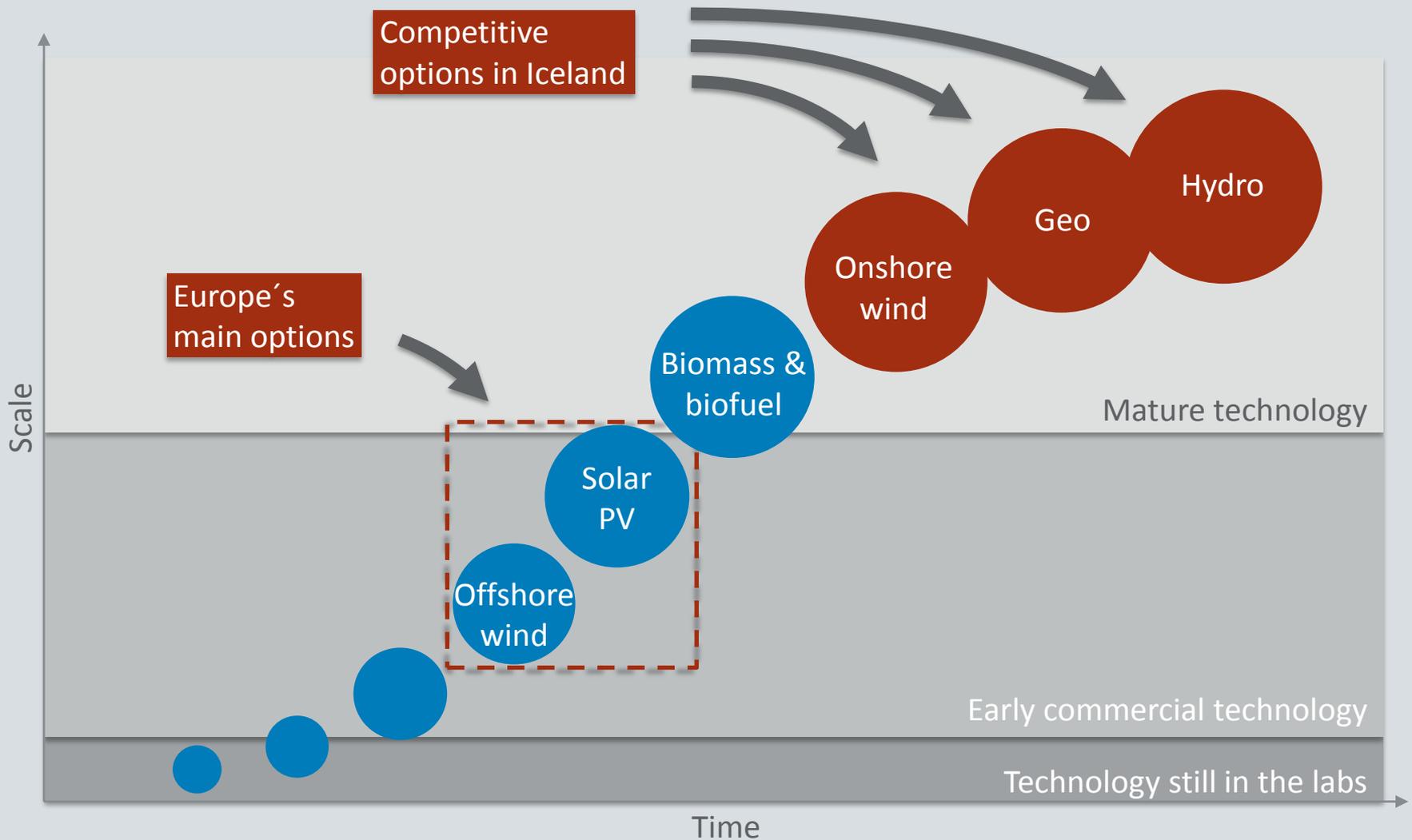
# Iceland “exports” its renewable energy through various commodities with aluminium being the most prominent one



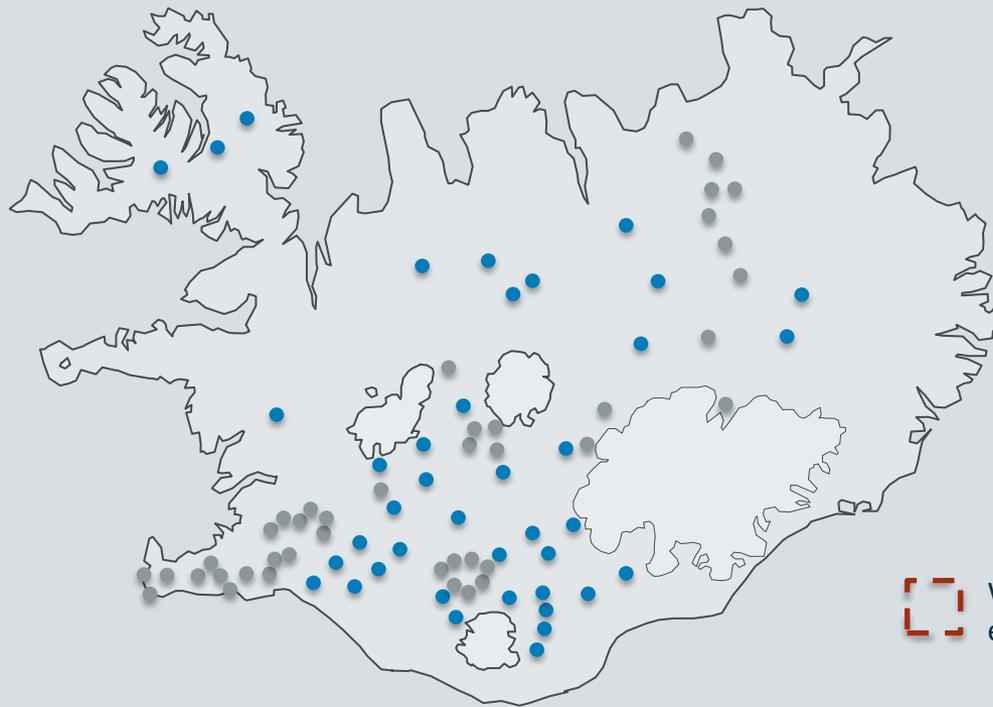
# Iceland generates renewable energy significantly beyond its basic needs making it an “exporter” of renewable energy



# Iceland has interesting opportunities to increase Europe's renewable generation through well developed technologies



# The reason for further increasing generation in Iceland is driven by enhancing local prosperity and not the need



- › Despite future options being more costly than earlier options they are still among Europe's most competitive
- › Iceland faces the possibility to significantly increase generation and preserve vast areas at the same time
- › Compensation for environmental impacts will play a bigger role in future decision making

 What Landsvirkjun believes to be technically, economically and environmentally acceptable

Two windmills erected in Autumn 2012 for R&D

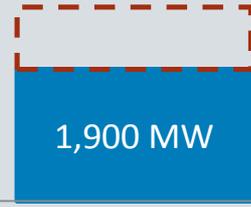
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Onshore wind



655 MW

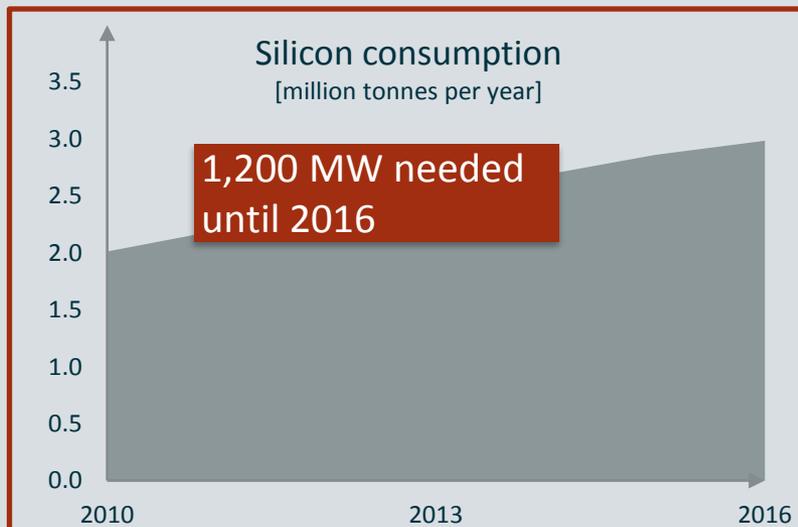
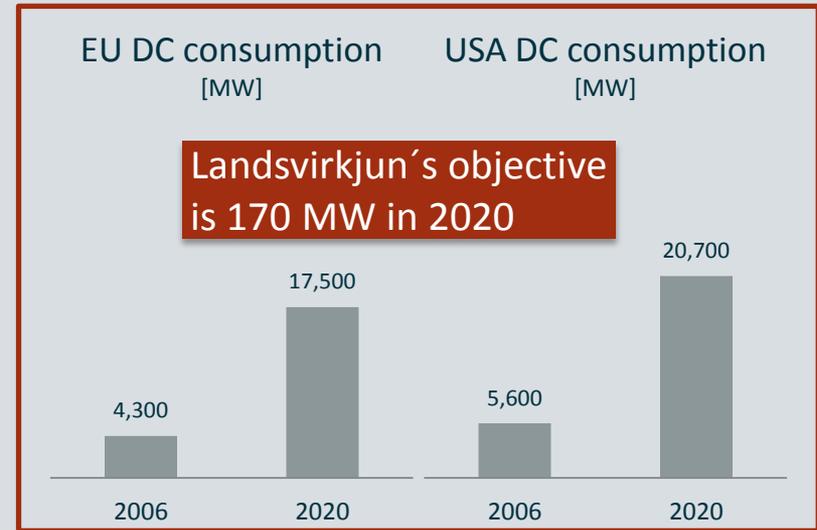
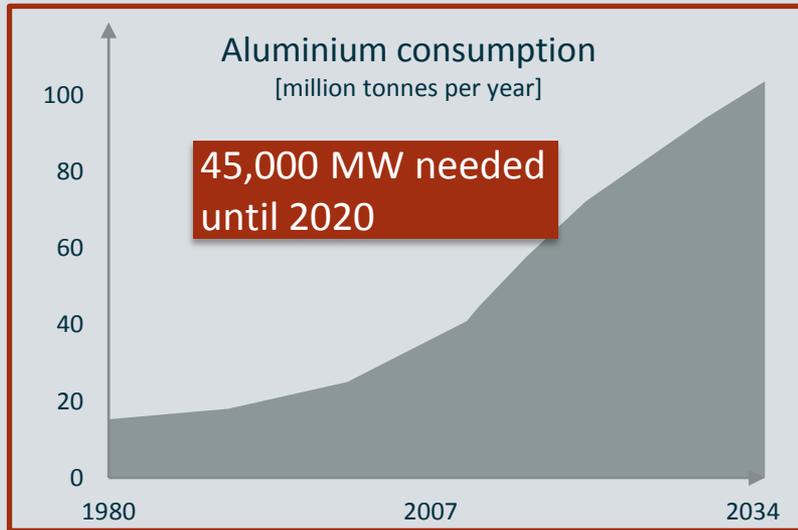
Geo



1,900 MW

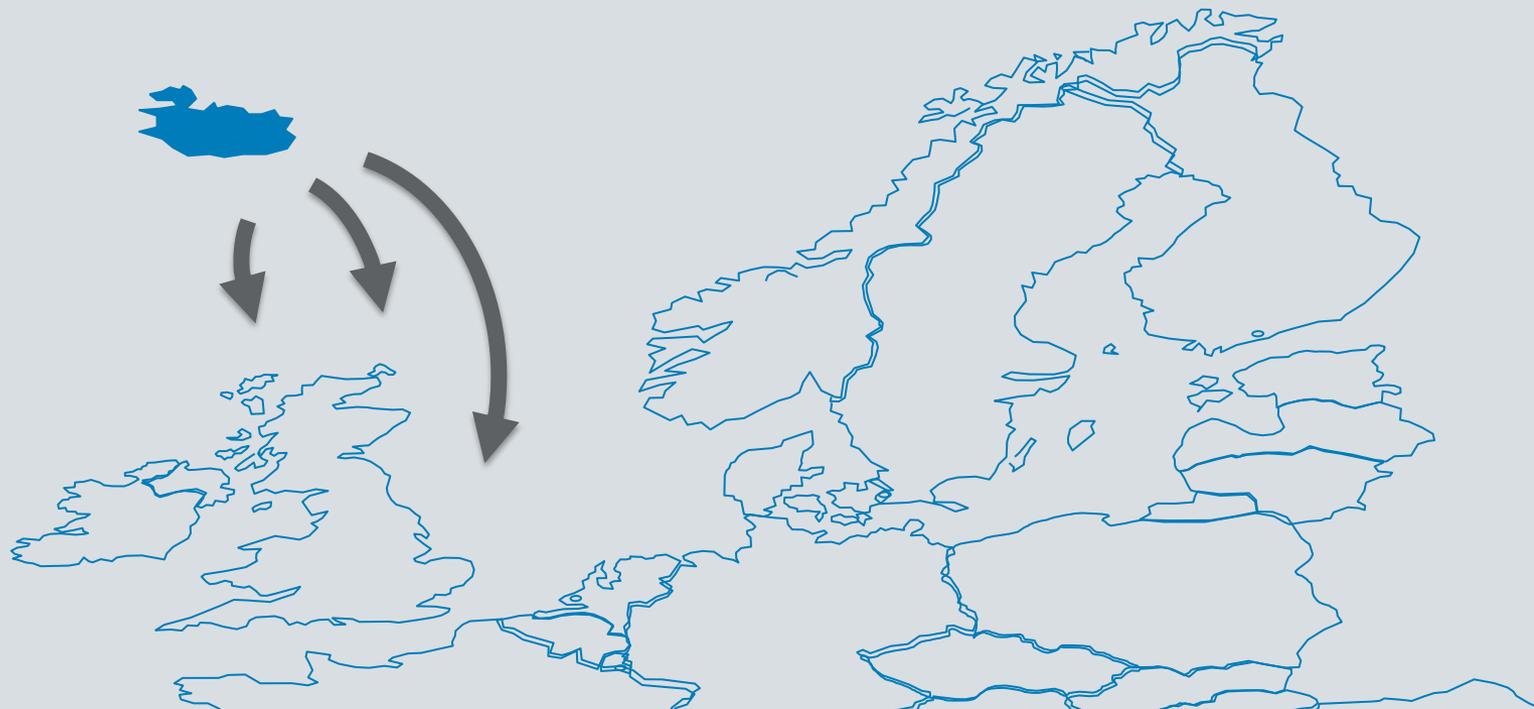
Hydro

# Iceland faces increased demand from industrial consumers awaiting the inevitable turnaround in the global economy



**A similar story for most industry sectors**

# Recent pre-feasibility studies suggest that an IC from Iceland to the UK is financially and technically feasible

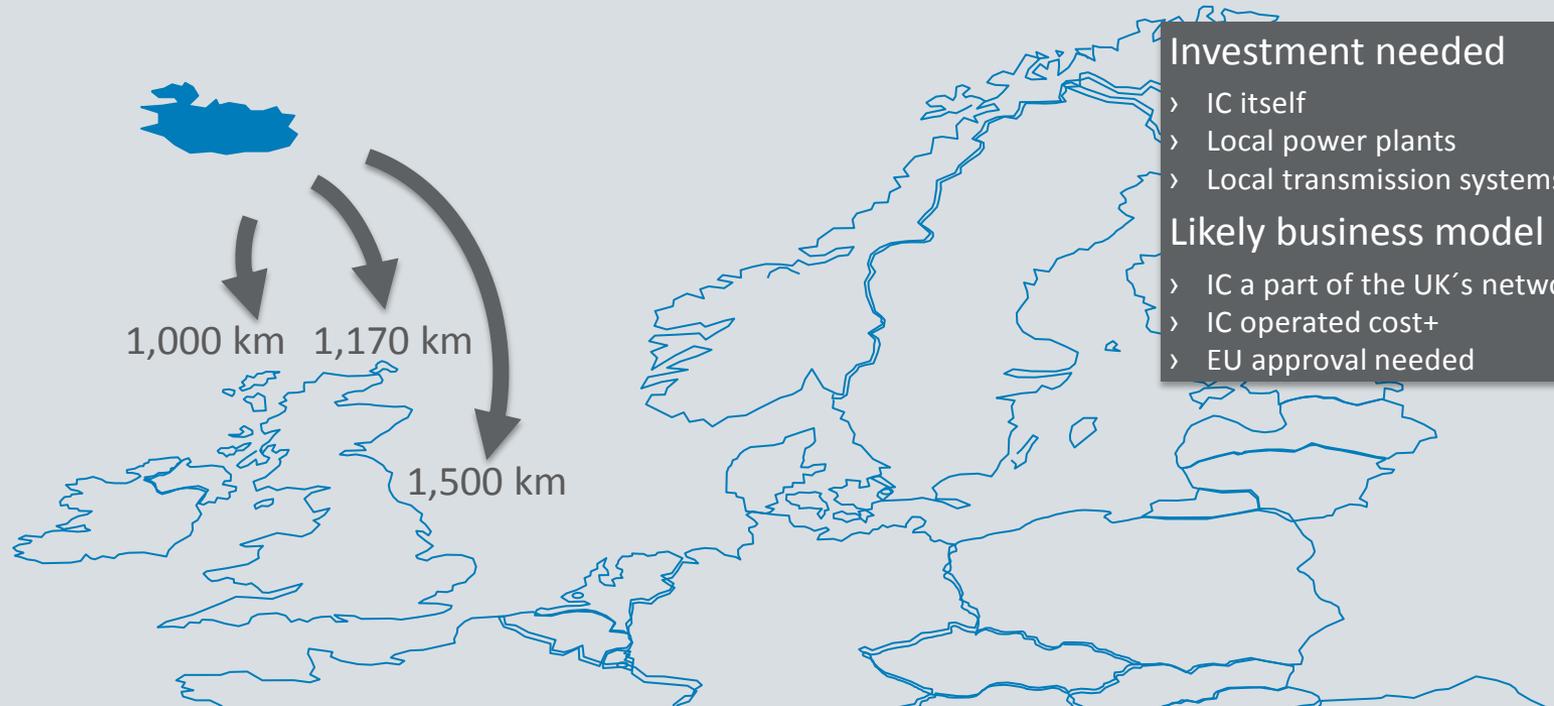


Rising energy prices in the UK have increased the relative price difference to the Icelandic market

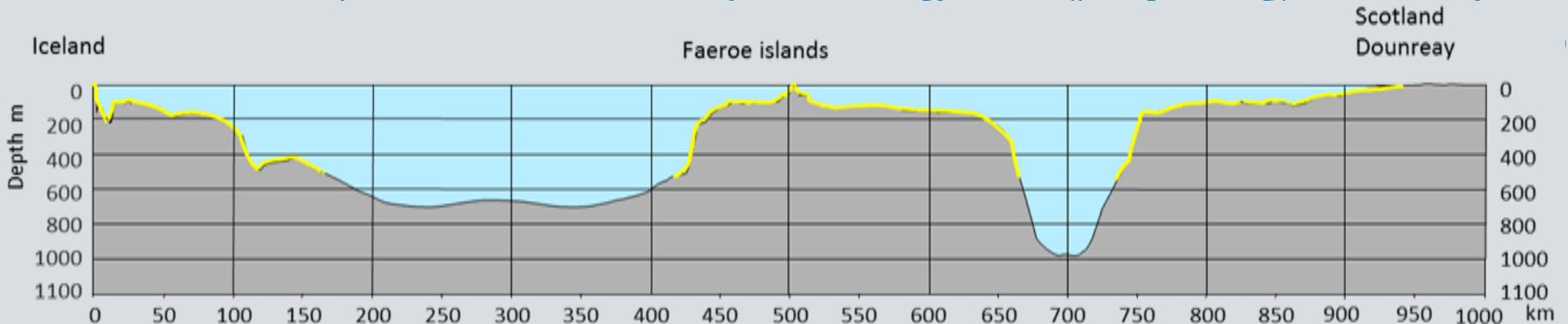
Sale of green certificates as a means to stimulate build-up in renewable power generation



# An IC connecting Iceland to the UK would be the longest of its kind and would traverse deep waters

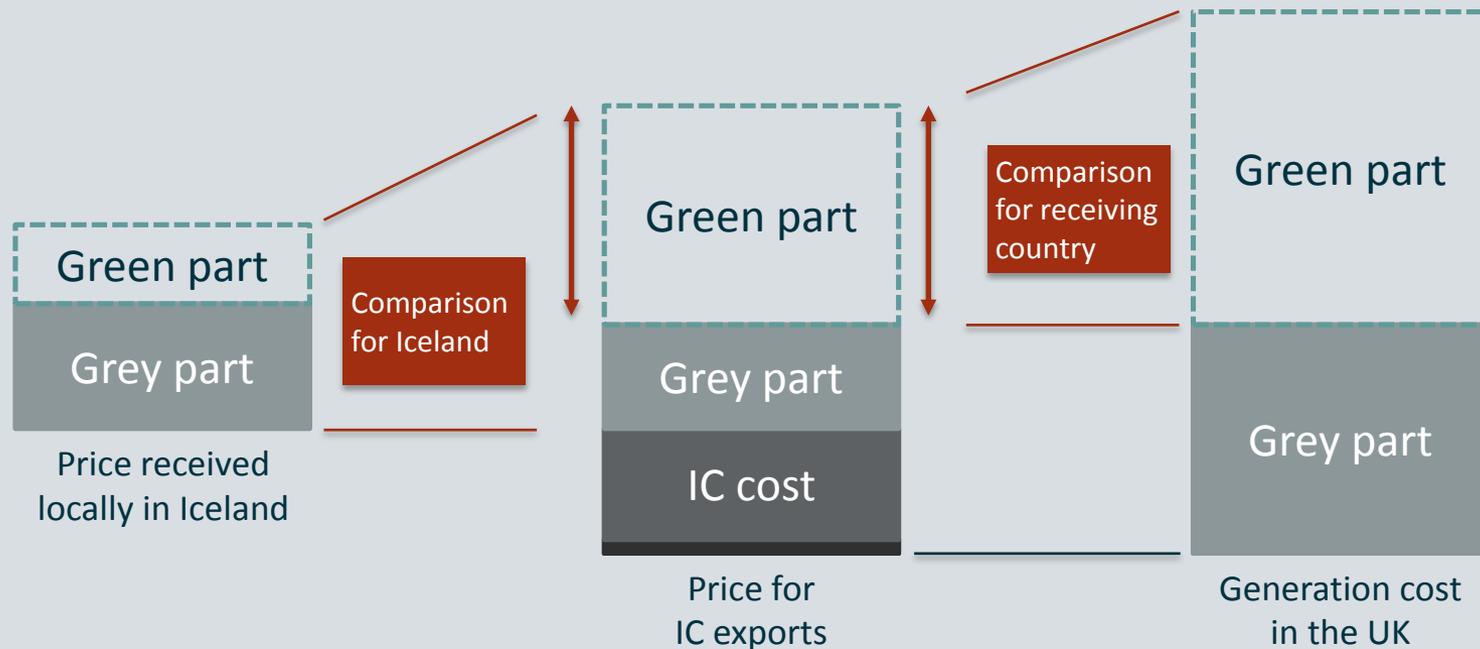


- Investment needed**
- > IC itself
  - > Local power plants
  - > Local transmission systems
- Likely business model**
- > IC a part of the UK's network
  - > IC operated cost+
  - > EU approval needed



# The feasibility for Iceland of exporting energy presumably depends heavily on the magnitude of green incentives

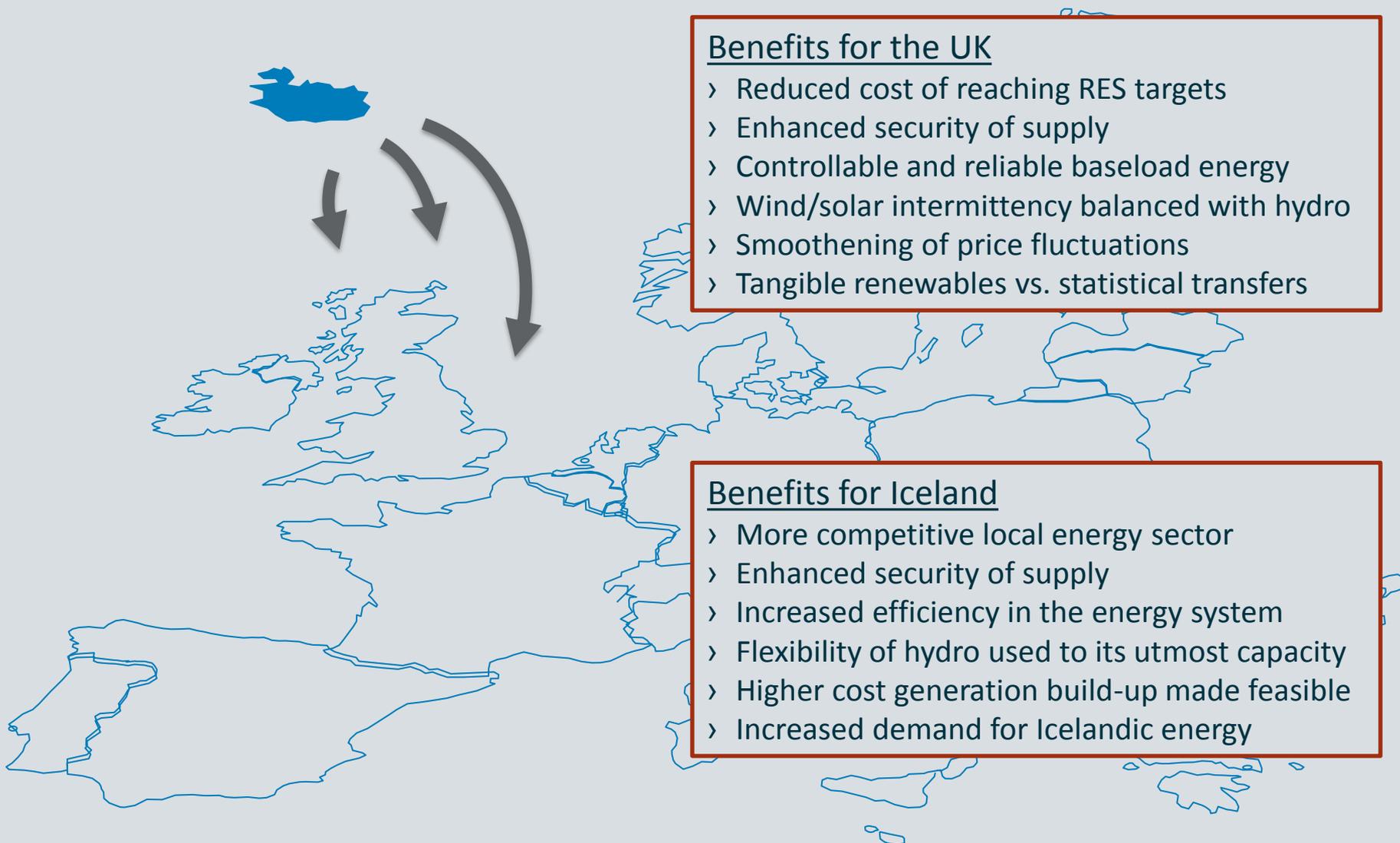
Is there a win-win solution?



Jobs? → **Magnitude of green incentives should consider various indirect country level impacts** ← Other?

↑ Environmental impacts?      ↑ Knowledge?      ↑ Power price to households?

# Linking the UK energy infrastructure to Iceland has lots of benefits for both the UK and Iceland



## Benefits for the UK

- › Reduced cost of reaching RES targets
- › Enhanced security of supply
- › Controllable and reliable baseload energy
- › Wind/solar intermittency balanced with hydro
- › Smoothing of price fluctuations
- › Tangible renewables vs. statistical transfers

## Benefits for Iceland

- › More competitive local energy sector
- › Enhanced security of supply
- › Increased efficiency in the energy system
- › Flexibility of hydro used to its utmost capacity
- › Higher cost generation build-up made feasible
- › Increased demand for Icelandic energy

Landsvirkjun wishes to involve more parties in evaluating a possible IC and proposes the following next steps to be taken



Ongoing  
feasibility study  
1-2 years

Laying of a subsea IC takes 4-5 years

(1) Analysing technical aspects...

- ...the seabed
- ...possible landing sites
- ...options for further energy generation and energy transmission

(2) Analysing sociological aspects in Iceland...

- ...possible impacts on energy generators, energy intensive industries and Icelandic households
- ...impacts that other ICs have had, f.ex. in Norway, Canada, Tasmania and Sardinia

(3) Analysing commercial and legal aspects in the UK and Iceland...

- ...mutually beneficial commercial solutions for both the UK and Iceland
- ...necessary adjustments to current law in order for a proper business model to be authorised

