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Landsvirkjun is a certified health and safety company
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Schedule:

Ragnheiður Elín Árnadóttir
Minister of Industry and Commerce

Opportunity in a Changing Climate
Hörður Arnarson CEO
Ragna Árnadóttir Deputy CEO
Björgvin Skúli Sigurðsson EVP of the Marketing and Business Development Division

Open discussion, chaired by Gísli Marteinn Baldursson
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What does the future hold for Icelandic Energy?

The changing landscape of the worldwide energy environment is creating opportunities.

Iceland is in a unique position.

A dynamic client base.

Profit from energy generation and a positive effect on quality of life.
The Changing Landscape of Energy
An evolving energy market

Innovation is vital

Financial investment is essential

An increasingly competitive environment

An infrastructure necessity has become a product
Increased demand has dramatically altered the landscape of the energy sector.

Energy security under threat

Energy prices escalating

Pollution an increasingly difficult challenge
Increased demand has dramatically altered the landscape of the energy sector.

- Energy security under threat
- Energy prices escalating
- Pollution an increasingly difficult challenge
Iceland is faced with unique opportunities, built upon a solid foundation

Icelanders produce more electricity per capita than any other European country

Flexible, renewable electricity generation
Iceland & Landsvirkjun
Decades spent on developing the energy system has left Iceland in a favourable position

An efficient and secure electricity system

Progress in the development of energy intensive industries

Renewable energy
Dynamic client base

5% of electricity is utilised domestically but Icelandic homes are predominantly heated by utilising geothermal energy.
Legal environment

Act on energy matters since 2003

Distinction between generation and transmission

Competition in energy generation

Framework on the protection and energy utilisation of land regions

Assessment on environmental impact, regional development, permits, etc.
Landsvirkjun’s policy

Landsvirkjun has outlined five main pillars that need to be fostered and upheld, in order to fulfil the Company’s role.

- Efficient electricity production and development
- A dynamic client base
- Connecting with the European energy market
- Economic growth
- Export revenue

To encourage unity and support from stakeholders via open and clear communication

Landsvirkjun’s role is to maximise the potential yield and value of the natural resources it has been entrusted with in a sustainable, responsible and efficient manner.

To inspire and promote expertise and talent
Iceland’s Valuable Energy Resources
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Four characteristics of electric energy

- **Unreliable energy**
- **Steerable energy**
- **Primary energy**
Four characteristics of electric energy

- Renewable energy
- Steerable energy
- Primary energy
- Unreliable energy
New opportunities in energy sales

Iceland has one of the most powerful electricity systems worldwide; after decades of development We can now seek out business opportunities in new markets
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Landsvirkjun’s marketing strategy has created results

An altered environment for negotiations

Many smaller contracting parties

Since 2010, Landsvirkjun has:

- 4 electricity contracts; a total of 200 MW
- 4 term sheets; a total of 200 MW
- Taken part in long-standing negotiations with 8 parties with regard to approx 500 MW
- Energy intensive corporations who have negotiated with Landsvirkjun have not built new factories outside Iceland since 2010
Sub-Sea Cable
Landsvirkjun is assessing the option of a sub-sea cable to secure options for Iceland

**International negotiations**
- Project assessment
- Rules and regulations
- Legal environment

**Business contracts**
- Energy producers
- Energy buyers
- Sub-sea cable

*Decision process*
- 2014/2015: Decision of government on continuation?
- 2016/2017: Decision with regard to the construction of a sub-sea cable?
A sub-sea cable is in keeping with Landsvirkjun’s policy

Energy prices
Excess energy sales
Utilising the steerable nature of hydropower
Risk distribution
Energy security

Topics in need of discussion:
› Employment opportunity development?
› Domestic energy prices?
› Risk?
› Environmental aspects?
Where would the energy for a sub-sea cable come from? (scenario)*

A sub-sea cable would have little effect on the potential for industrial expansion.

* 900 MW sub-sea cable with 65% utilisation

---

Landsvirkjun believes that a consensus could be reached with regard to the harnessing of 30-40 TW/hr of hydropower and geothermal energy.

- **New industry**: 1.5 TW/hr
- **Sub-sea cable**: 10-20 TW/hr
- **Existing industry**: 13.6 TW/hr
- **General utilisation**: 3.5 TW/hr (2012), 4.9 TW/hr (2030)
- **Conventional energy options**: 1,5 TW/hr
- **Excess energy due to isolation of the Icelandic electricity system**: 2,0 TW/hr
- **Smaller hydropower stations, low temperature geothermal energy and wind power**: too expensive for industry

---

Excess energy due to isolation of the Icelandic electricity system (average water year): 1.5 TW/hr
The effects of a sub-sea cable on household energy prices

The effects of higher electricity prices in Iceland would be similar to that of the higher price of fish.

Electricity prices would only increase once the sub-sea cable begins operations.

Price differences between markets would be on-going as a result of transmission costs and limited transmission capability.
Discussions will reveal if the UK Government is ready to negotiate with Icelandic energy companies and on what terms.

The Department of Energy & Climate Change in the UK guarantees electricity prices for 15-35 years to energy producers.

Energy prices in the UK today

Hinkley Point C. Average electricity prices for Landsvirkjun in 2012

Energy prices in the UK today

80
215
160
175
190
190
150
150
43

$/MW/hr
Landsvirkjun will not construct, own or operate the potential sub-sea cable. Discussion and consensus a necessity.

Assess the feasibility of the project

Further assessment of the macroeconomic impact of a sub-sea cable

Assessment of the environmental impact

Mapping of specific risks associated with the project

Decision on the construction of a sub-sea cable?

Decision process (2-3 yrs)

Construction period (5-6 yrs)

Operational period (+25 yrs)
The decision to consider a sub-sea cable is proving valuable for Iceland.

- Improved negotiation position of Icelandic energy companies
- Strengthen Iceland’s access to markets with guarantees of origin and higher prices
- Strengthens Iceland’s international status

Positive impact at the preliminary assessment stage
The Norwegian experience

Tremendous hydropower reserves

Ensures the Norwegian economy electricity at a competitive rate

Have constructed four sub-sea cables and are preparing more

“Renewable energy could become as valuable to Norway in the future as oil and gas”

(Christian Rynning-Tønnesen, CEO of Statkraft)

Source: Statkraft and others
Effects on Quality of Life
Profits from energy production could have a tremendous effect on the quality of life in Iceland.
The future of Icelandic energy

- Landsvirkjun is built upon a solid foundation
- Changing landscape of foreign energy markets
- Iceland’s energy has become more valuable
- Landsvirkjun’s policy is built upon the consideration of new opportunities, the law and regulations
- Icelandic industry will continue to enjoy advantageous electricity prices
- Energy intensive industries and a sub-sea cable make an effective partnership
- Profits from energy production can have a tremendous effect on the quality of life in Iceland
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