Icelandic GoOs
- Where do the electrons come from?

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1. ABOUT LANDSVIRKJUN
Landsvirkjun is one of the ten largest renewable energy companies in Europe

- Founded in 1965 and is state owned
- Produces 73% of all electricity in Iceland
- 100% renewable: Hydropower 96%, Geothermal power 4%

Strong international customer base

Markets
TSO
General public

Manufacturing
RioTinto Alcan
Alcoa

Century Aluminum
Elkem
Landsvirkjun is the largest power company and the aluminium industry is the largest customer.
Generation assets

Booked value is 3 billion USD

25 Dams
15 Power Stations
40 Generation units

Total installed power 1.860 MW
Generation capacity 13.200 GWhours
Power plants
Electrical power production from 1965
The electrons come from these power stations

Ljósafoströð 1937
Irafosströð 1953
Steingrímströð 1959
Búrfellsströð 1972
Sigöldustöð 1978
Hrauneyjafosströð 1981
Blöndustöð 1991
Sultartangastöð 1999
Vatnsfellsströð 2001
Fljótsdalsströð 2007
Laxá I 1939
Laxá II 1953
Laxá III 1973
Bjarnarflag 1969
Kröflustöð 1977
The smallest station: 3MW
Supplies a village of 2000 including swimming pools and geothermal baths
Our largest station: 690 MW
Supplies electricity to aluminum facilities that produces 480,000 tonn pr. annum.
The first commercial wind turbines began operation in February 2013
2. TRADING ICELANDIC GOOS
– WHAT WE HAVE LEARNED SO FAR
The go system offers great potential for support towards renewable generation.

1. Provides evidence that a specific amount of electricity has been generated and helps to avoid double counting
2. Provides a way for users to claim support for renewables through ownership of specific renewable generation
3. Provides a common platform of international standards
4. Provides transparency and product choice
5. Provides a vehicle for a scalable market based solution
6. Provides a way forward for further build up of renewable generation across Europe
Voluntary markets have not been efficient in promoting real support for renewables

1. Is the goO concept too complex and abstract for a necessary public acceptance?

2. Is low consumer involvement and end-user value unclear?

3. For how long will the market be oversupplied?

4. What are the effects of regulatory and political uncertainties on market efficiency?

5. When/how will voluntary market prices offer incentives for new generation projects
A number of challenges are facing the future of the system

1. Lack of market liquidity and transparency makes price discovery difficult – without price discovery market based solutions are less efficient

2. Conflicting marketing messages undermine public acceptance – is it really “green electricity” where do the electrons come from?

3. End users pay mostly for “administration expenses” when buying “green electricity”

4. Discrepancies in domain regulations create a non-level playing field
There are multiple ways to further strengthen the system going forward:

1. Stimulating local demand – onboarding national bodies

2. Closer ties to carbon markets and compliance mechanisms

3. Developing a consistent market message and further promote and educate about the benefits of the system
   - Reduces confusion of end consumers about GoOs
   - Increases credibility of the system
   - Demand likely to increase
Thank you