

The Iceland Geothermal Cluster Initiative




Why should Icelandic Municipalities participate
in Iceland Geothermal?

Eldborg - Svartsengi, 16. nóvember 2012

Friðfinnur Hermannsson

Gekon

Gekon

A group of four people standing outdoors in front of green foliage. From left to right: a man in a dark suit and light blue shirt; a man in a dark suit and light purple shirt with glasses; a woman in a grey ruffled top and black pants; and a woman in a bright yellow cardigan and black skirt.

**Hákon
Gunnarsson**

**Friðfinnur
Hermannsson**

**Póra M.
Þorgeirsdóttir**

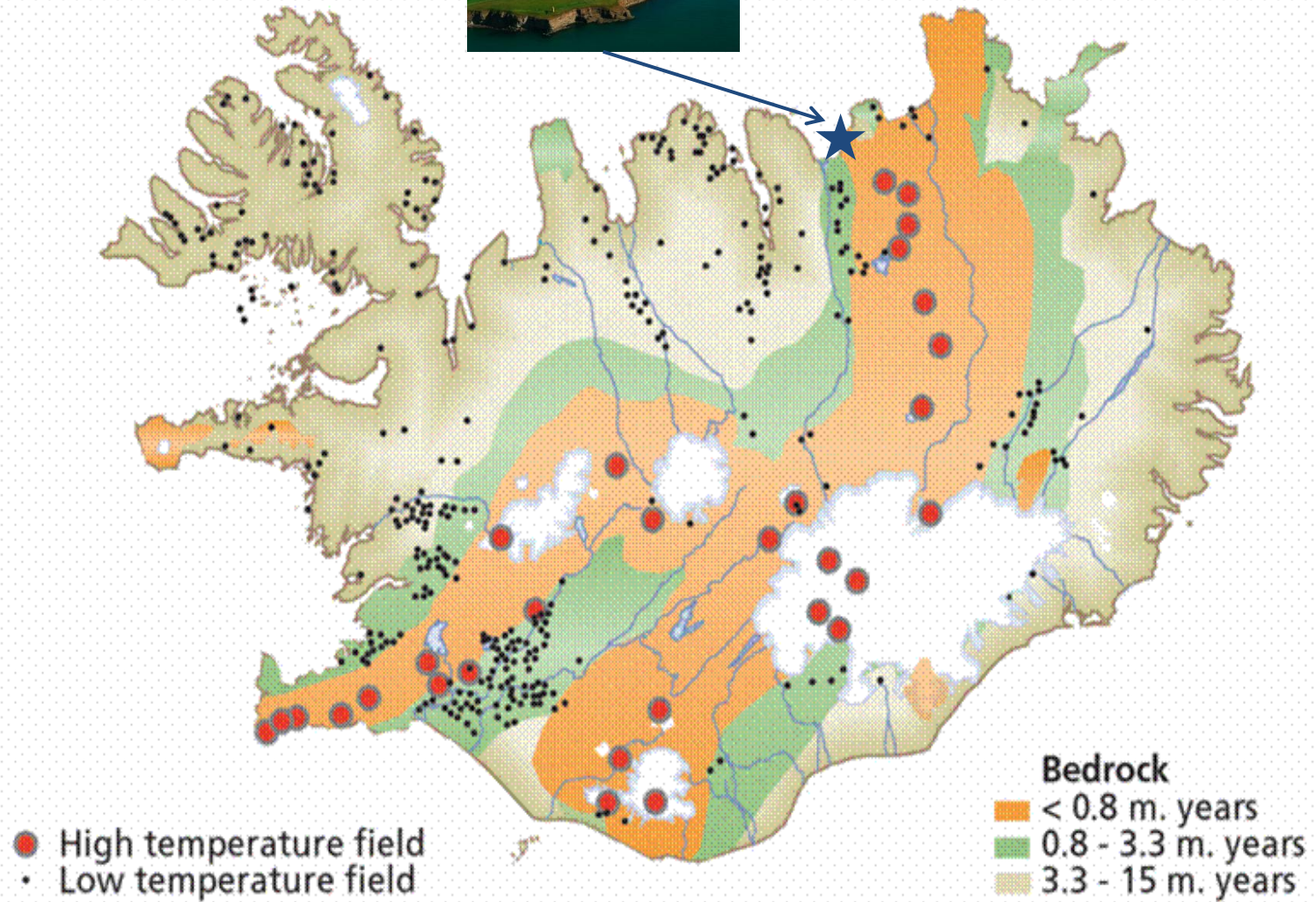
**Rósbjörg
Jónsdóttir**



Húsavík



Húsavík



What determines Competitiveness?

Macroeconomic competitiveness
MACRO

Microeconomic competitiveness
MICRO

Social Infrastructure & political institutions

Human development:
Basic education, health care, equal opportunity

Rule of Law:
Property rights & due process

Political institutions:
Stable and effective political and governmental processes and organizations

Macro economic Policy

Fiscal Policy:
Public spending aligned with revenues over time

Monetary Policy:
Low levels of inflation

Macroeconomic Policy:
Avoiding structural imbalances and cyclical overheating

Sophistication of company operation and strategy

internal skills, capabilities, and sophistication of management practices of companies

State of Clusters development

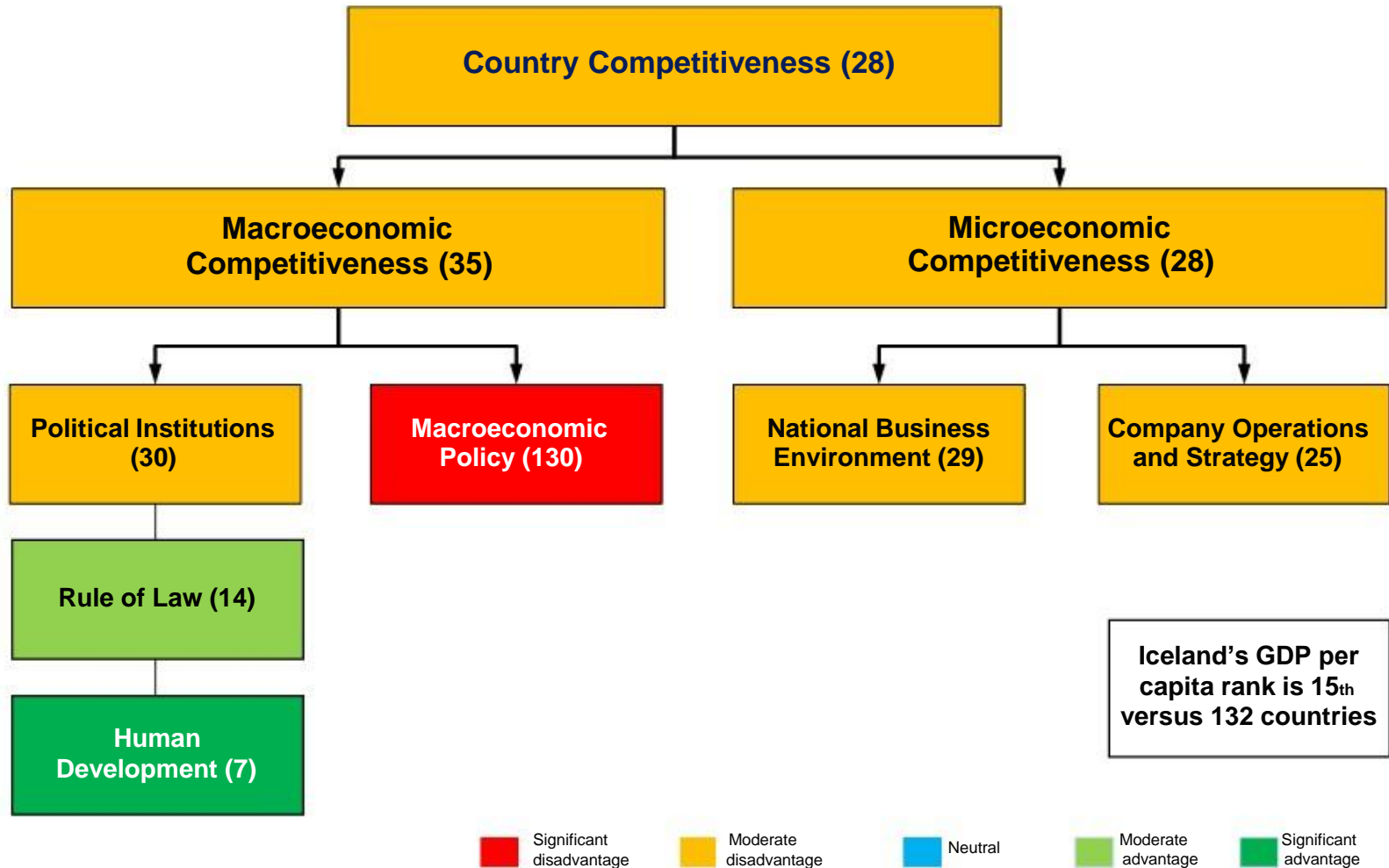
a critical mass of firms & institutions in each field to harness efficiencies and externalities across related entities

National business environment (NBE)

the external business environment conditions that enable company productivity and innovation

Benchmarking Competitiveness

Iceland's Competitiveness Profile, 2011



Note: Rank versus 132 countries; overall, Iceland ranks 15th in PPP adjusted GDP per capita and 28th in Global Competitiveness

Source: Institute for Strategy and Competitiveness, Harvard University (2011), based in part on survey data from the World Economic Forum.

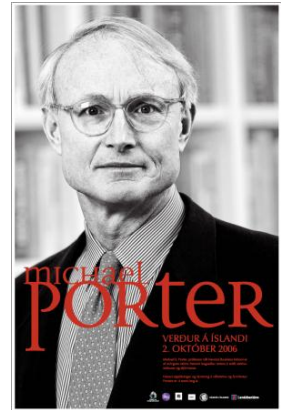
What is a cluster?

- *A geographically group of companies and associated institutions in a particular field, linked by commonalities and complementarities.*
- *In a cluster there is a system of interconnected firms and institution whose value as a whole is greater than the sum of its part.*

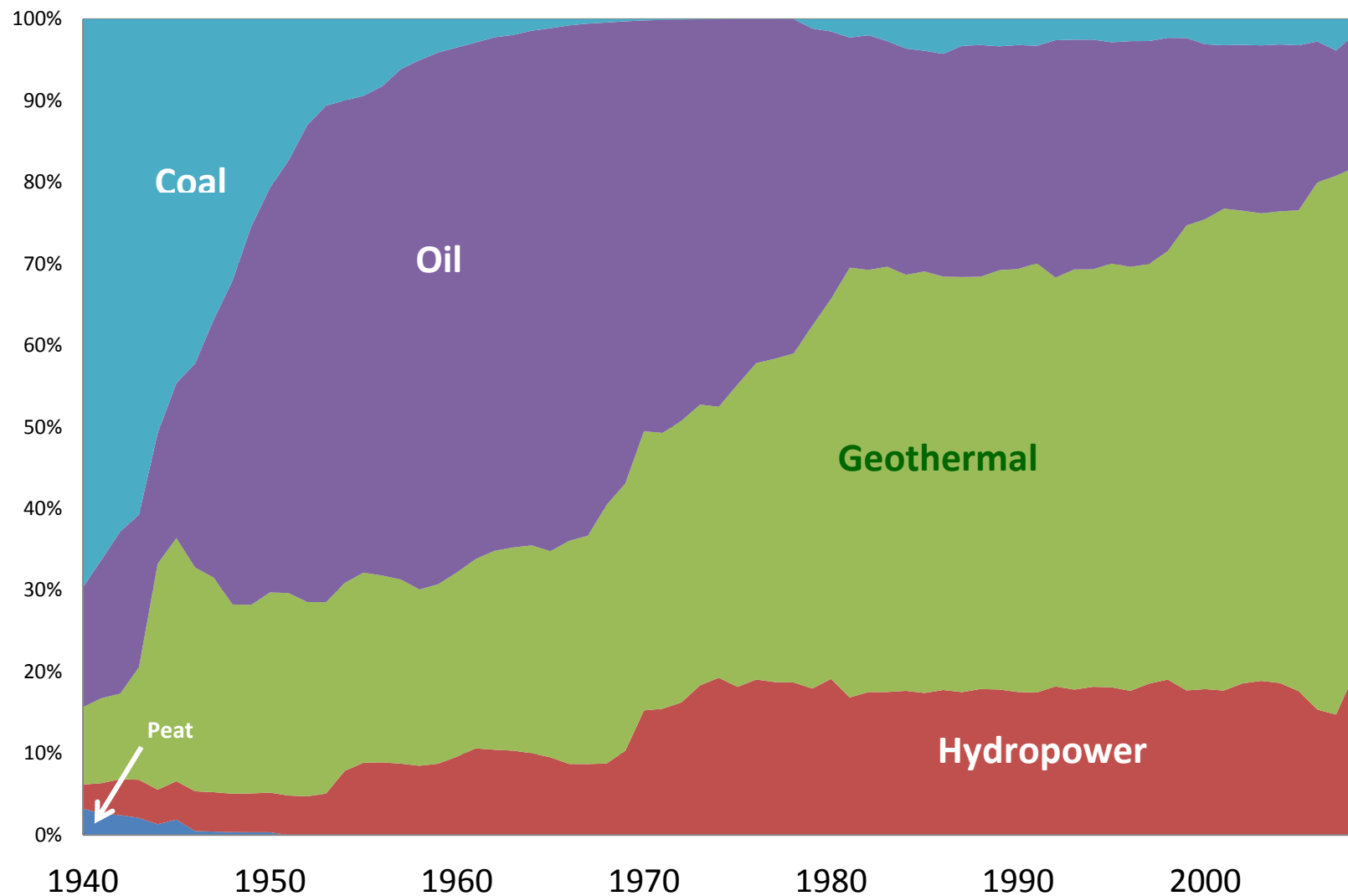
Prof. Porter in Iceland 2 Oct 2006

Drivers of Iceland's Competitiveness

- Overall **strong context** conditions provide opportunities.
- Wages are relatively high after recent growth ahead of competitiveness improvements, a sign of the **overheating economy**.
- Iceland's prosperity is ahead of its competitiveness, supported by a strong context and **clear cluster-focus**.
- Improving microeconomic fundamentals
 - Key **strengths** in infrastructure, basic skills, administrative capacity, and openness to competition.
 - Key **weaknesses** in the innovation environment, depth of clusters, and demand conditions.
- Iceland has developed a **focused portfolio of traded clusters**:
 - **Established: Energy-intensive metal production and Fishing products.**
 - Emerging: Life Science, Speciality food, Specialty apparel, Tourism. Geothermal.
- Icelandic companies are **internationalizing**.

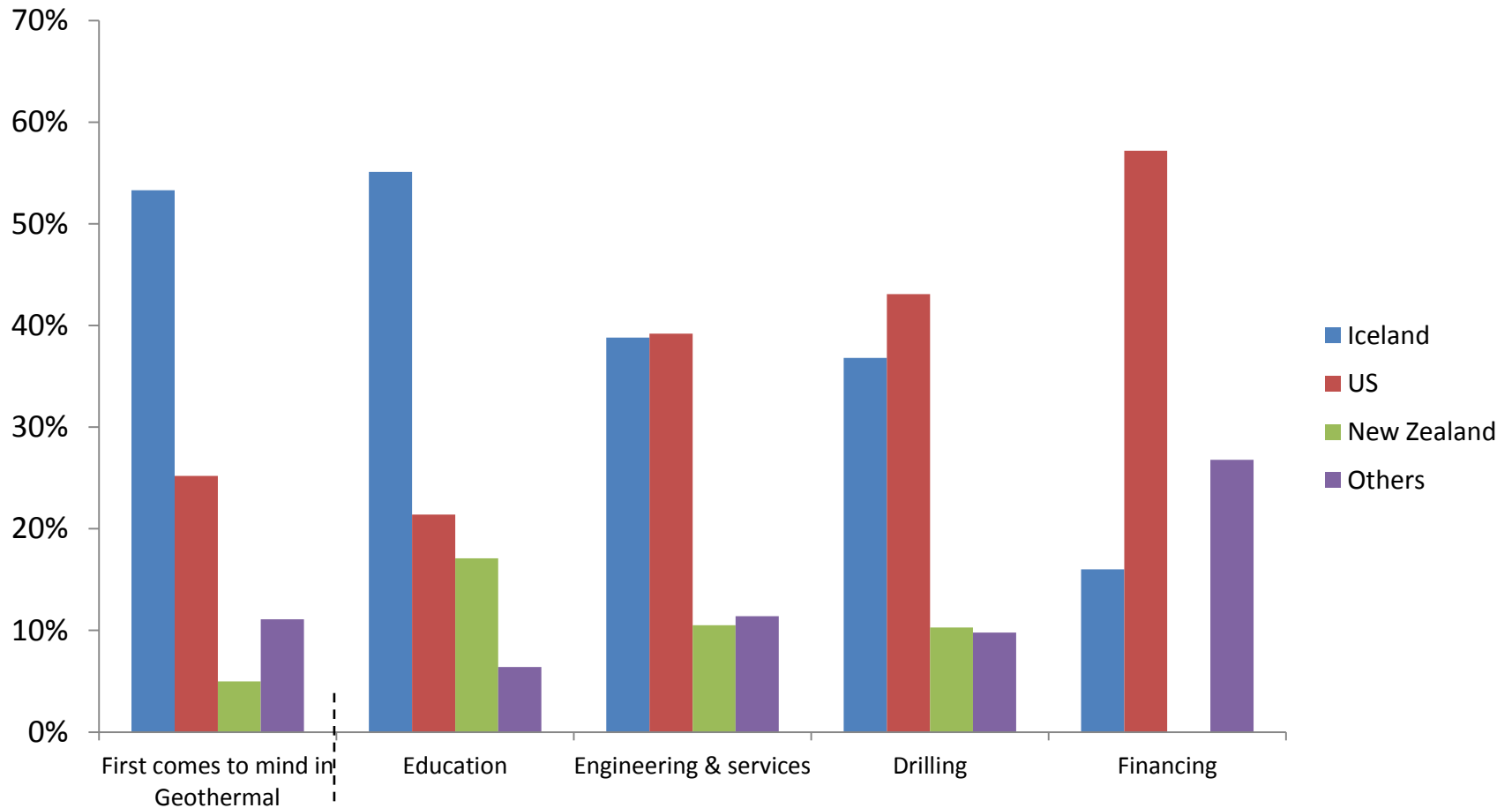


Net Primary Energy Use in Iceland, 1940-2009



International Perceptions About Icelandic Geothermal

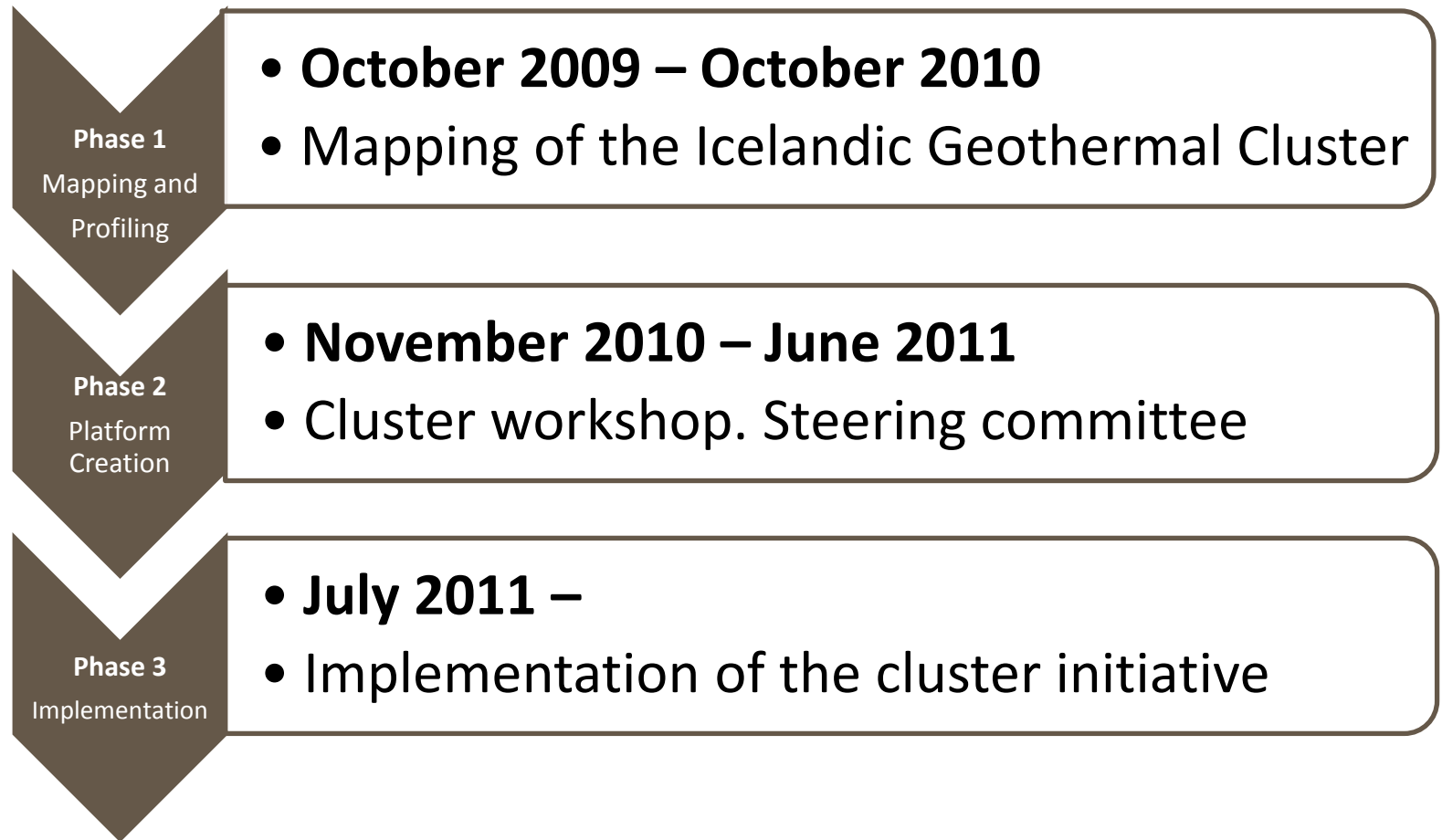
Percentage of respondents



Leading in...

Source: Íslandsbanki, 2010

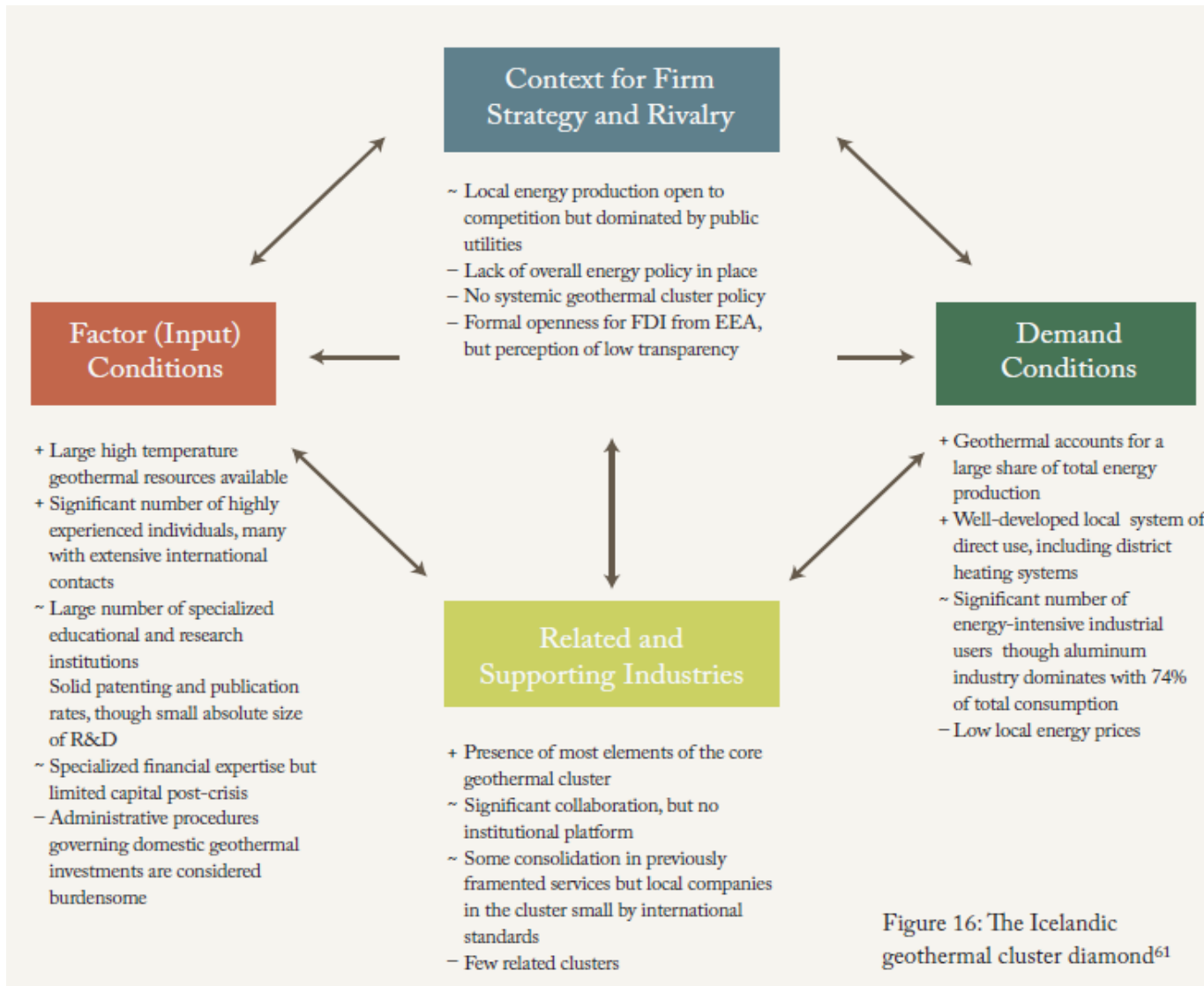
Mobilizing the Icelandic Geothermal Cluster



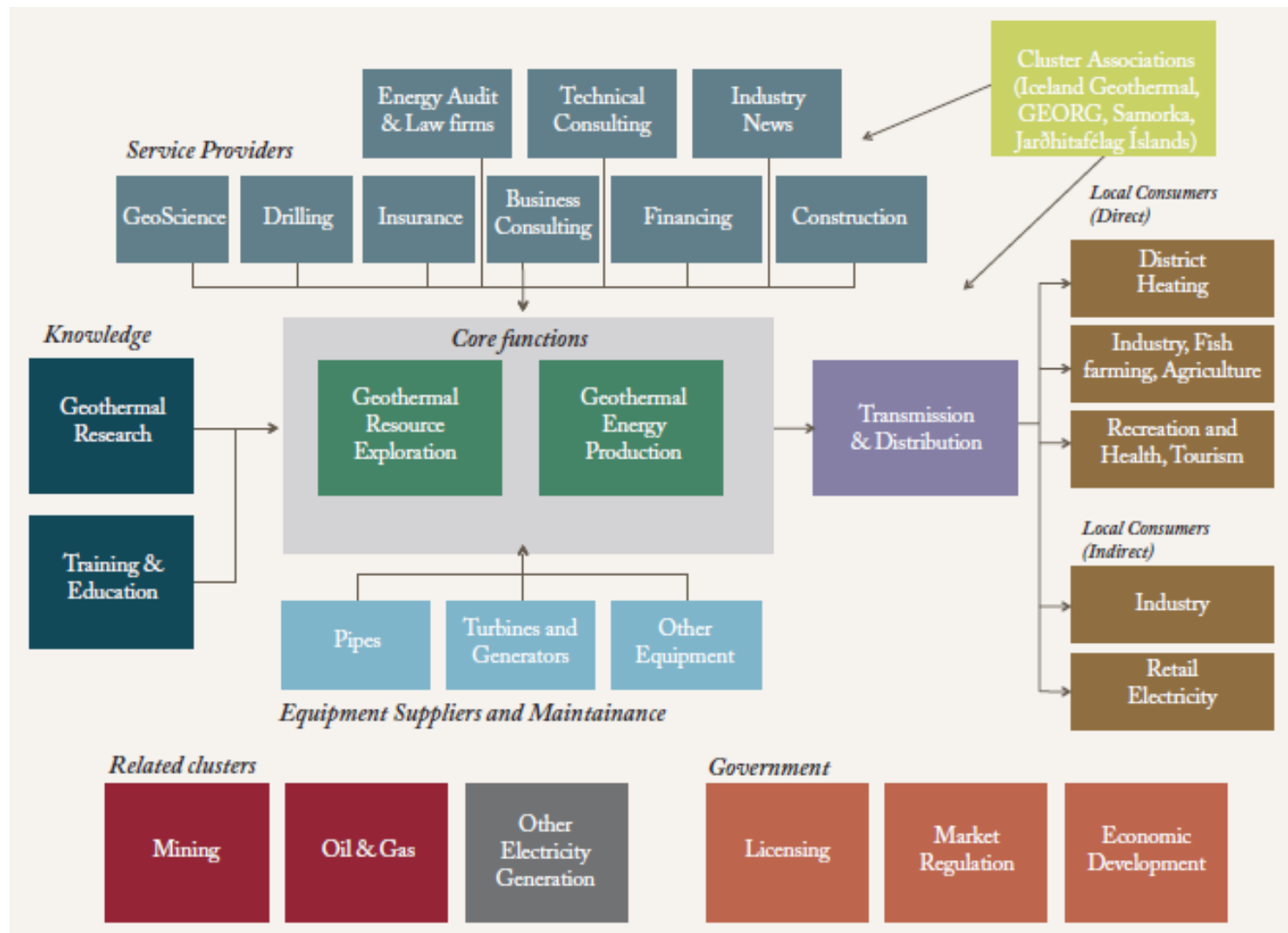
Iceland Geothermal 2010 – 1 Nov 2010



The Cluster Diamond



The Icelandic Geothermal Cluster



Service Providers



Knowledge



Core functions



Distribution



Direct utilisation



Indirect utilisation



Equipment suppliers



Government



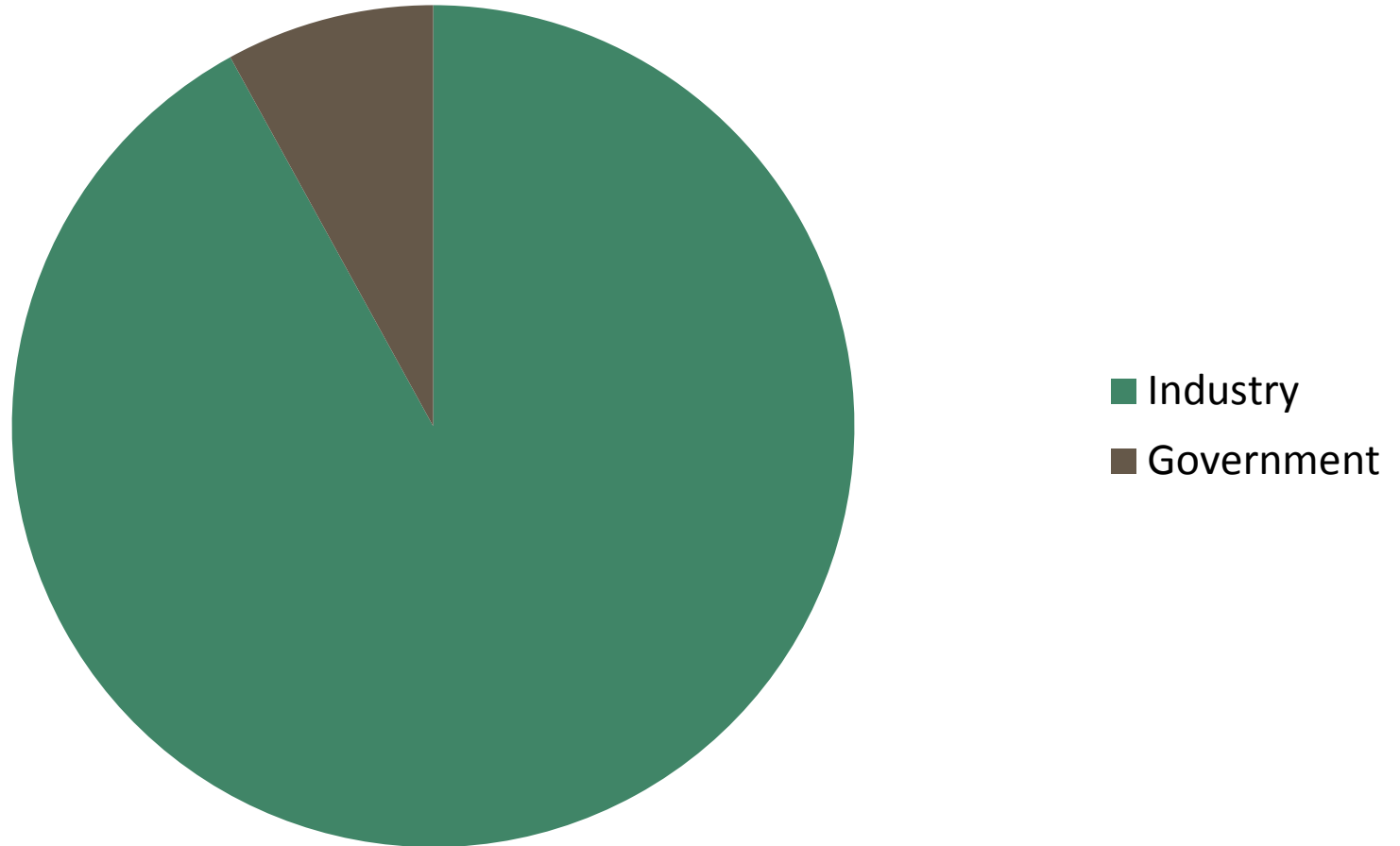
Associations



Support agencies



Financing of the cluster



Status Report April 2012

Number of members of the cluster cooperation in July 2011	20
Number of members of the cluster cooperation in April 2012	76
Number of professional groups around the cooperative projects	10
Number of registered participants in the ten professional groups in April 2012 192	192
Average number of registered participants in each professional group September 2011-April 2012 (weighted average)	16,5
Number of professional group meetings September 2011-April 2012	62
Average number of delegates in each professional group meeting September 2011-April 2012 (weighted average)	8
Number of special task forces within professional groups September 2011-April 2012	9
Number of steering committee meetings July 2011-April 2012	4
The number of intermediate meetings and company visits of the cluster manager is measured by the hundreds	

Project Management



Hildigunnur Thorsteinsson

US Department of Energy August 2012

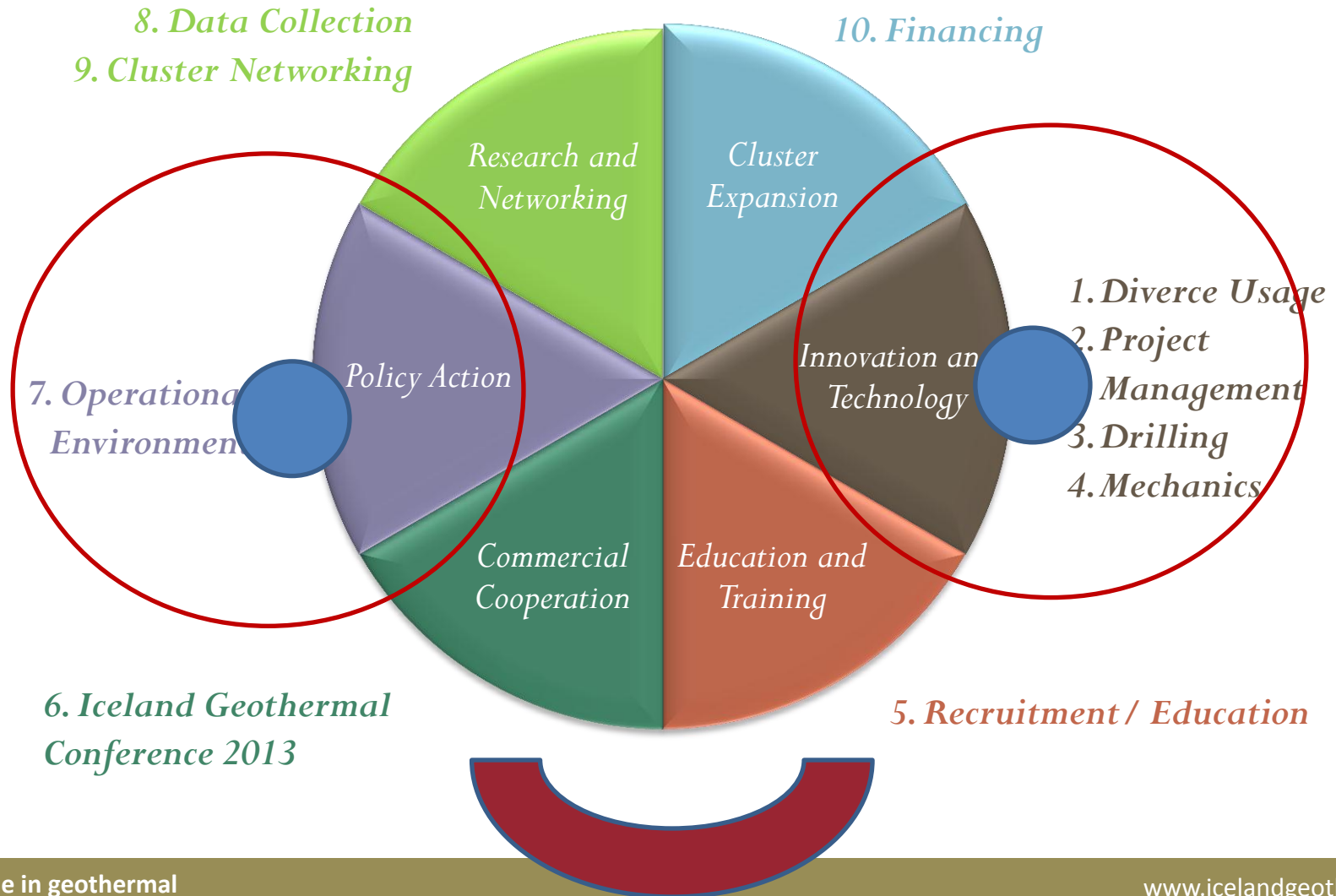


Field Trip in Thingeyjarsyslur August 2012



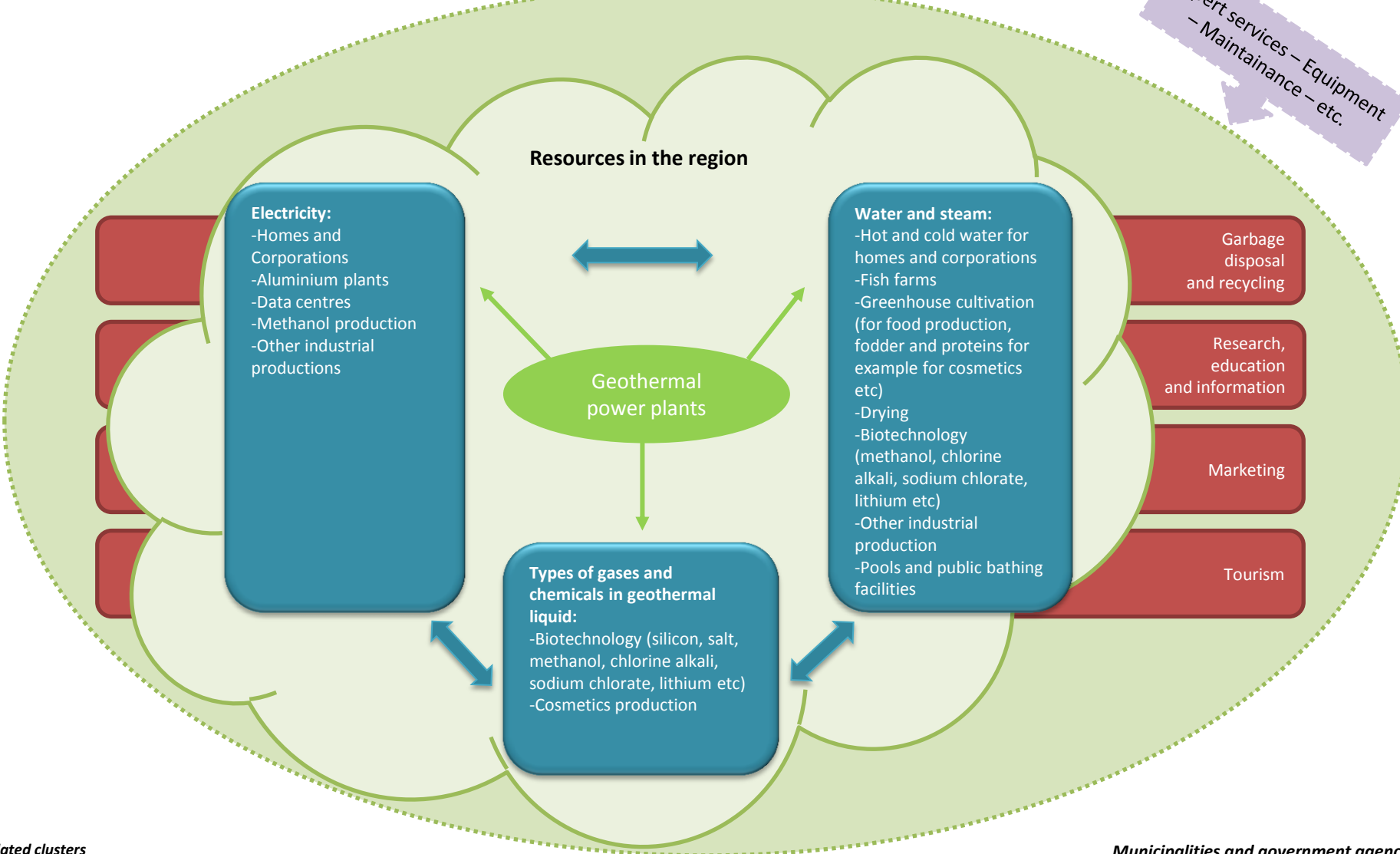
The Ten Projects

July 2011 – Dec 2012



The Sudurnes Resource Park

Expert services – Equipment
– Maintenance – etc.



Related clusters

Municipalities and government agencies

- Transportation
- Tourism
- Health service
- Iceland Geo-thermal & GEORG
- Fishing industry
- Biotechnology
- Legal and regulatory environment
- Planning, environment (impact) assessment
- Support services

ICELAND GEOTHERMAL CONFERENCE

MARCH 5 – 8, 2013

Harpa, Reykjavik



EXPLORATION REALIZATION UTILIZATION



**Early birds
December 7th on
www.igc2013.is**

DAY 1 WELCOME SPEECH IN GVENDARBRUNNAR - DR. BJARNI PÁLSSON, CONFERENCE CHAIR

DAY 2 OPENING SPEECH - THE MINISTER OF FOREIGN AFFAIRS - DR. ÖSSUR SKARPHÉDINSSON
Keynote - Mr. Bjarni Bjarnason - CEO of Reykjavik Energy
Keynote TBA

PROGRAM

ICELAND GEOTHERMAL CONFERENCE
MARCH 5 – 8, 2013

Phase A Exploration Phase B Realization Phase C Utilization

Session A1

Opportunity intro to development, identifying possibilities

- 1 ISL  Experience in Ethiopia - Reykjavik Geothermal
- 2 KEN  Mr. Edward Njoroge - KenGen
- 3 JPN  Dr. Kasumi Yasukawa - Japan
- 4 NZ  Dr. Mike Allen - Mighty River Power New Zealand

Chair ISL Dr. Hörður Arnarson, CEO Landsvirkjun, the National Power Company

Session B1





Finance Risk, insurance, mitigation

- 1 ISL  Mr. Árni Magnússon - Íslandsbanki
- 2 BEL  Mr. Guillemette Picard - European Investment Bank, EIB
- 3 GER  Mr. Stephan Jacob - Munich Re
- 4 USA  TBA

Chair ISL Mr. Stefán Pétursson, Arion Bank, CFO

Session C1

Project Management, project lifecycle, EPC vs EPCM

- 1 ISL  Mr. Sigurður S. Arnalds, Mannvit
- 2 ISL  Ms. Yrsa Sigurðardóttir - Verkis
- 3 ISL  Dr. Helgi Þór Ingason - Reykjavik University
- 4 USA  TBA





Chair ISL Mr. Gunnar Thoroddsen - Orka Energy

FIELD TRIPS **Field Trip A:** Reykjanes Resource Park **Field Trip B:** The Geothermal Area of Hellisheiði

DAY 3

Session A2





Geothermal assessment, modelling, codes

- 1 ISL  Dr. Ólafur Flóvenz - General Director, Iceland Geosurvey, ISOR
- 3 USA  Prof. Roland Horne - Intern. Geothermal Association IGA /Stanford University
- 3 ISL  Dr. Andri Arnaldsson - modeling
- 4 GER  Mr. Alexander Richter - CanGea - CODES

Chair ISL Dr. Grímur Björnsson, Reykjavik Geothermal

Session B2

The Role of Governments and Green funds in geothermal projects

- 1 GER  KfW - bank - TBA
- 2 AFR  African Minister - TBA
- 3 WB  Mr. S. Vijay Iyer - World Bank Group
- 4 BEL  Mr. Philippe Dumas - European Geothermal Energy Council

Chair ISL Benedikt Höskuldsson, Ministry of Foreign Affairs

Session C2

Direct usage

- 1 ISL  Mr. Runólfur Maack - Mannvit
- 2 ISL  Mr. Ásgeir Margeirsson, Alterra
- 3 CHI  Mr. Liu Shiliang - Sinopec Green Energy Geothermal Development Co. Ltd.
- 4 ISL  Mr. Sigurjón Arason, Matis

Chair ISL Mr. Júlíus Jónsson - HS Orka

Session A3

Drilling IDDP, deep drilling, EGS

- 1 ISL  Dr. Bjarni Pálsson, Natíonal Power Company - one well 430°C
- 2 ISL  Mr. Vilhjálmur Guðmundsson - Iceland Drilling Company - IDC
- 3 NZ  Mr. Hagen Hole - Geothermal Consultants Limited
- 4 ISL  Mr. Guðmundur Ómar Friðleifsson - HS Orka hf.

Chair ISL Mr. Ágúst Torfi Hauksson, CEO Iceland Drilling Company IDC

Session B3



Rules and regulation. Policies and incentives. Carbon credit

- 1 EUR  TBA
- 2 USA  TBA
- 3 PHI  Philippinen TVA
- 4 GER  Dr. Mariette Sanders - IGA, Incentives in geothermal worldwide

Chair ISL TBA

Session C3

Reliable heat and electricity, Case: Hellisheiði project

- 1 SVI  Mr. Claus Ballzus, Mannvit
- 2 ISL  Mr. Gunnar Gunnarsson, Reykjavik Energy, OR
- 3 ISL  Mr. Páll Erland, Reykjavik Energy, OR
- 4 ISL  Mr. Páll Valdimarsson, The geothermal districh heating sevice

Chair ISL Ms. Hólmfríður Sigurðardóttir, Reykjavik Energy, OR

Session A4

Case Histories & Sustainable resource management

- 1 TUR  TBA
- 2 ISL  Mr. Guðni Axelsson - Iceland Geosurvey, ISOR
- 3 IT  TBA
- 4 MEX  TBA

Chair ISL TBA

Session B4





Geothermal Programmes under EEA Grants and cooperation within Europe

- 1 ISL  Mr. Óttar Gíslason, FMO-Brussels
- 2 HUN  Ms. Eros Veronika, National Environmental Protection and Energy Center
- 3 ROM  Mr. Paul Serbanescue, Environmental Fund Administration
- 4 POR  Mr. Carlos Bicudo, SOGEO
- 5 NL  Mr. Paul Ramsak, Agentschap

Chair ISL Mr. Jónas Ketilsson - Orkustofnun

Session C4

Environmental

- 1 ISL  Ms. Auður Andrésdóttir - Mannvit
- 2 ISL  Mr. Ingvi Gunnarsson, Reykjavik Energy, OR
- 3 GER  Mr. Schlagermann - EnBW Energie Baden-Wuerttemberg AG
- 4 ISL  Mr. Ólafur Árnason - EFLA

Chair ISL TBA

Keynote Speaker - TBA

Ólafur Ragnar Grímsson president of ICELAND - Patron of IGC 2013

And the question is...

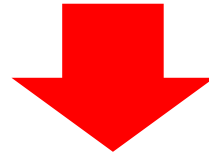
**Why should Icelandic Municipalities
participate in The Iceland Geothermal
Cluster Initiative?**

Platform for Policy Making

- Municipalities have mutual interests with:
 - Energy producers
 - Service providers / Private sector
 - Equipment suppliers
 - Academia
 - Transmission system
 - State government
 - Others energy municipalities

The Future of Geothermal

- Geothermal has significant **technical and economic advantages** relative to other renewable and even traditional sources of energy
- There is significant **up-front risk** in exploration and verification of the quality of the available resource
- The **geographical availability** of geothermal resources is more limited than wind or solar
- **Public policy support** for renewable energy sources has traditionally been biased in favor of wind and solar, despite their inferior economics



- Geothermal has **significant potential** but is currently a niche market compared to wind, solar, and traditional energy fields
 - Low temperature and high temperature geothermal are different businesses



[Business »](#)

[Countries »](#)

[Culture »](#)

[Economy »](#)

[General](#)

[Health](#)

[Lifestyle »](#)

Categorized | **Economy, Energy, Iceland, Icelandic PM's office**

Iceland key partner in extensive development project on geothermal energy

Posted on 09 November 2012. Tags: [geothermal energy](#), [Global Geothermal Development Plan](#), [Iceland geothermal](#), [ossur skarphedinsson](#)



Össur Skarphéðinsson, Minister for Foreign Affairs of Iceland, presented today the most extensive development project Iceland has participated in. It includes the development of a Global Geothermal Development Plan under the auspices of the World Bank, which could amount to 500 million USD. The facility will provide finance for geothermal feasibility assessments and test drilling. The collaboration between Iceland and the World Bank is the largest initiative so far for promoting the utilisation of geothermal energy in developing countries, and Iceland will effectively become the Bank's key partner in this field.

On this occasion, an agreement was signed between the Nordic Development Fund (NDF) and Iceland on the co-financing of the first phase of the project. The Icelandic government and the Fund will contribute 5 million EUR each to the project during a five year period.