



Netherlands Enterprise Agency

ERANET **Geothermal Energy** opportunities for collaboration

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Netherlands Enterprise Agency

Workshop on Geothermal Research /
Knowledge Exchange
The Hague (NL)
28 may 2015



European

Network

Collaboration



Geothermal Energy



**Lead partner is
Orkustofnun**
(National Energy
Authority of Iceland)

11 partner countries
up to now

NL Enterprise Agency
leading **Knowledge
Exchange** activities

**Looking for
knowledge exchange
+ collaboration
possibilities**

Collaboration between European (member) states



Ministries and National Agencies
programme owners & managers



Paul Verhoeef
Head of Unit - New and
Renewable Energy
Sources, DG RTD at
European Commission

Three important EU pillars to strengthen the geothermal sector in Europe



“The Geothermal ERA NET is one of the few European initiative we have to strengthen the geothermal sector”

Geothermal ERA NET

VISION

- *Minimize the fragmentation of geothermal research in Europe*
- *Build on European know-how and know-who to utilize geothermal energy*
- *Contribute to a framework to realise large opportunities in the utilization of geothermal energy through joint activities*

Geothermal ERA NET
Coordination Office
Orkustofnun, Iceland

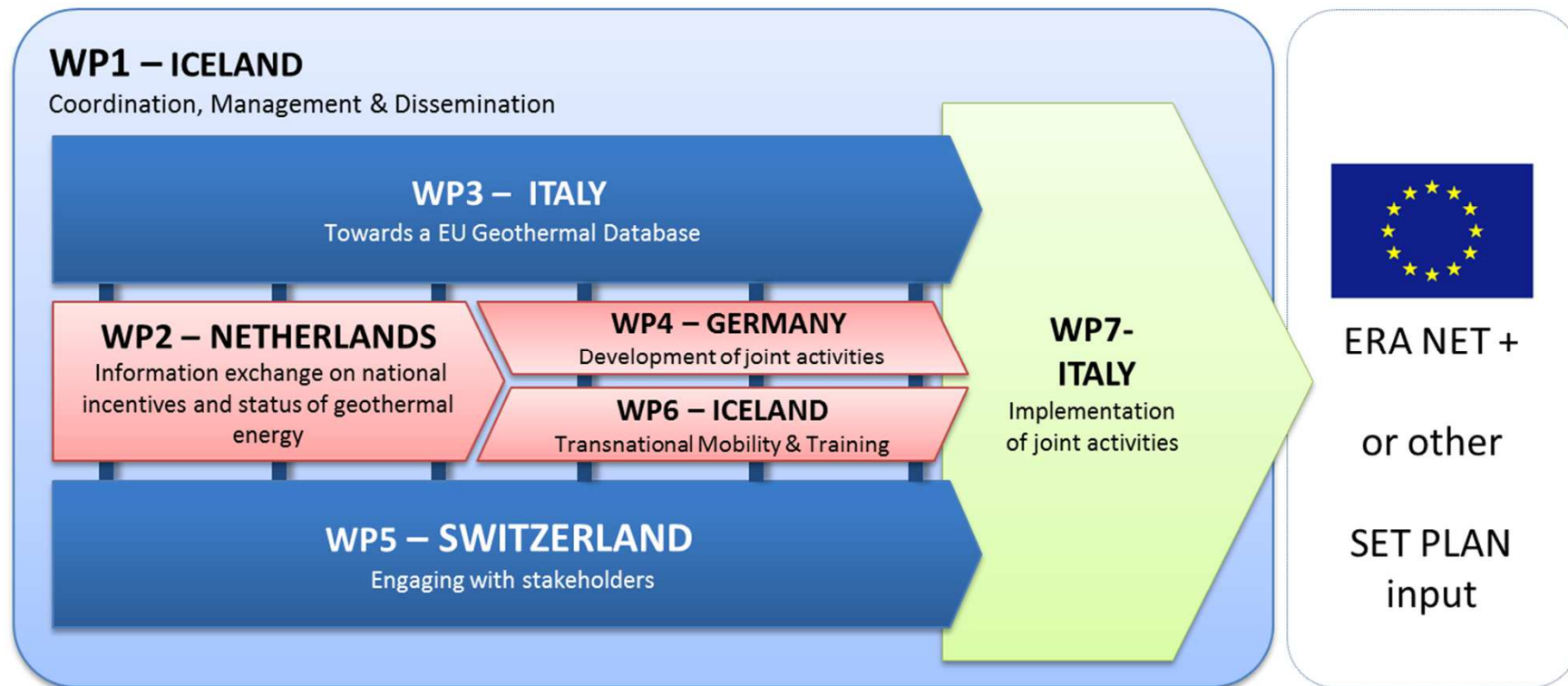
Industry

Public authority

Research



Organisational structure / work packages





Task 2.1 Initial Information Exchange



Geothermal energy status and policy review

Geothermal ERA NET Participating countries PART A Analysis



WP2 D 2.1
NL Agency: Breembroek, Dijkshoorn, Ramsak
December 2013

D2.1
December 2013
>ready



Inventory of RD&D project highlights

D2.2
October 2013
>ready



WP2 D 2.2
NL Agency: Breembroek, Ramsak
October 2013



Technical/non-tech. barriers & opportunities

7 B&O clusters

A1 Regulations	
A2 Economics & risk-mitigation	a investment
	b operational support
	c risk mitigation
A3 New/innovative concepts and applications	
A4 Operational issues	
A5 Sub-surface knowledge/data	
A6 Structuring the geothermal sector	
A7 Public and education	a public acceptance
	b visibility & dissemination
	c education and training



Technical and non-technical barriers & opportunities

report
> ready
sep'14



WP2 D 2.3
RVO: Breebroek, Ramsak
CNR: Manzella, Trumphy
September 2014



Future RD&D needs for geothermal development (task 2.2b PTJ/RvO)

Shortlist of RD&D needs for geothermal development

From first idea to field tests and demos; from subsurface to utilisation issues; supply and demand side; long and short term.

Country:

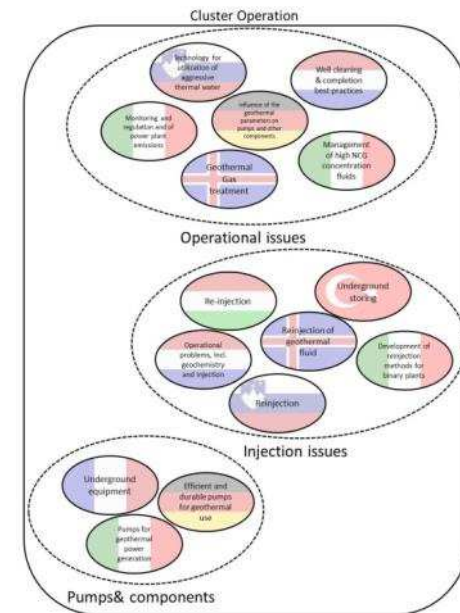
Title	Short description	Keywords ¹	RSD or DEM ²	U ³	I ⁴	S ⁵

¹ Describe the RD&D needs with one or more keywords. Suggestion: Geology, Analysis/monitoring techniques, Drilling, Operation, Electricity, Direct use, ORC, new applications, EGS, well stimulation, induced seismicity, High enthalpy, new concepts... (your own characterizations)
² Distinguish between paper/lab-scale work (RSD); field tests and demonstration (DEM) and other (O) (please specify)
³ Urgency U: Distinguish between urgent (++) and mid/long term issue (+)
⁴ Importance I: Distinguish between High importance (++), important (+) and less important (-). This column may be left blank. Default is + (important).
⁵ Sector S - which sector(s) consider this an RD&D need. Distinguish between Users/Developers/Investors of geothermal projects (U); Geothermal Industry (I); Research community (R); Government/Neutrality (N); other.

10-bullet lists (per country)



clustering workshop



report



RD&D needs

RD&D clusters

B1 Reservoirs	A reservoirs (general)
	B reservoir modelling
	C reservoir exploration
B2 Operation	A operational issues
	B injection issues
	C pumps & components
B3 PR & data	A dissemination
	B acceptance
	C reporting code/statistics
B4 New concepts	A innovative concepts
	B heat
	C power cycle
B5 Anthropogenic influence	A reservoir creation
	B seismicity
B6 Drilling	



RD&D needs

report
> ready
sep'14



WP2 D 2.4
PTJ: Schreiber, Richter
RVO: Ramsak, Breembroek
September 2014



Propose (joint) actions to bridge gaps, overcome barriers and promote the use of geothermal energy in Europe (task 2.2c)

- > ready nov '14
- > basis for wp4:
development of joint activities
- > All reports available on:
www.geothermaleranet.eu



Actions to bridge gaps,
overcome barriers
and promote the use of
geothermal energy in Europe



WP2 D 2.5
RVO: Breembroek, Ramsak
October 2014



Common Challenges in Geothermal EraNet countries

Barriers & Opportunities clusters

	A1 Regulations	...
	A2 Economics & risk-mitigation	...
	A3 New/innovative concepts and applications	↔
	A4 Operational issues	↔
	A5 Sub-surface knowledge/data	↔
	A6 Structuring the geothermal sector	...
	A7 Public and education	↔

RD&D needs clusters

B4 New concepts	
B2 Operation	
B1 Reservoirs	
B3 PR & data	
B5 Anthropogenic influence	
B6 Drilling	

9 clusters

- 1.Regulations (A1)
- 2.Economics & Risk-mitigation (A2)
- 3.New/innovative concepts & applications (A3/B4)
- 4.Operation (A4/B2)
- 5.Subsurface/reservoir knowledge (A5/B1)
- 6.Structuring the geothermal sector (A6)
- 7.Public & Education (A7/B3)
- 8.Anthropogenic Influence (B5)
- 9.Drilling (B6)

All clusters are relevant for the progression of geothermal energy in Europe



How to collaborate?

JA1 Information exchange (groups)

regular meetings, workshops, visits, idea factories, etc.:

JA2 Joint work
Joint assignment: detailed study on specific issue

JA3 Joint call
Jointly developing new insights, new systems

- Appropriate (and feasible) JA-type should be chosen for a specific challenge
- JA's can evolve from JA1 > JA2 > JA3
- Effectiveness/Impact more important than amount of €'s



How to start/organise joint activities ?

- Bottom-up
- Bi- or multilateral
- Based on countries preferences (within the clusters)

At least two countries to take the initiative

The Geothermal Era Network as a continuing vehicle to launch JA's !



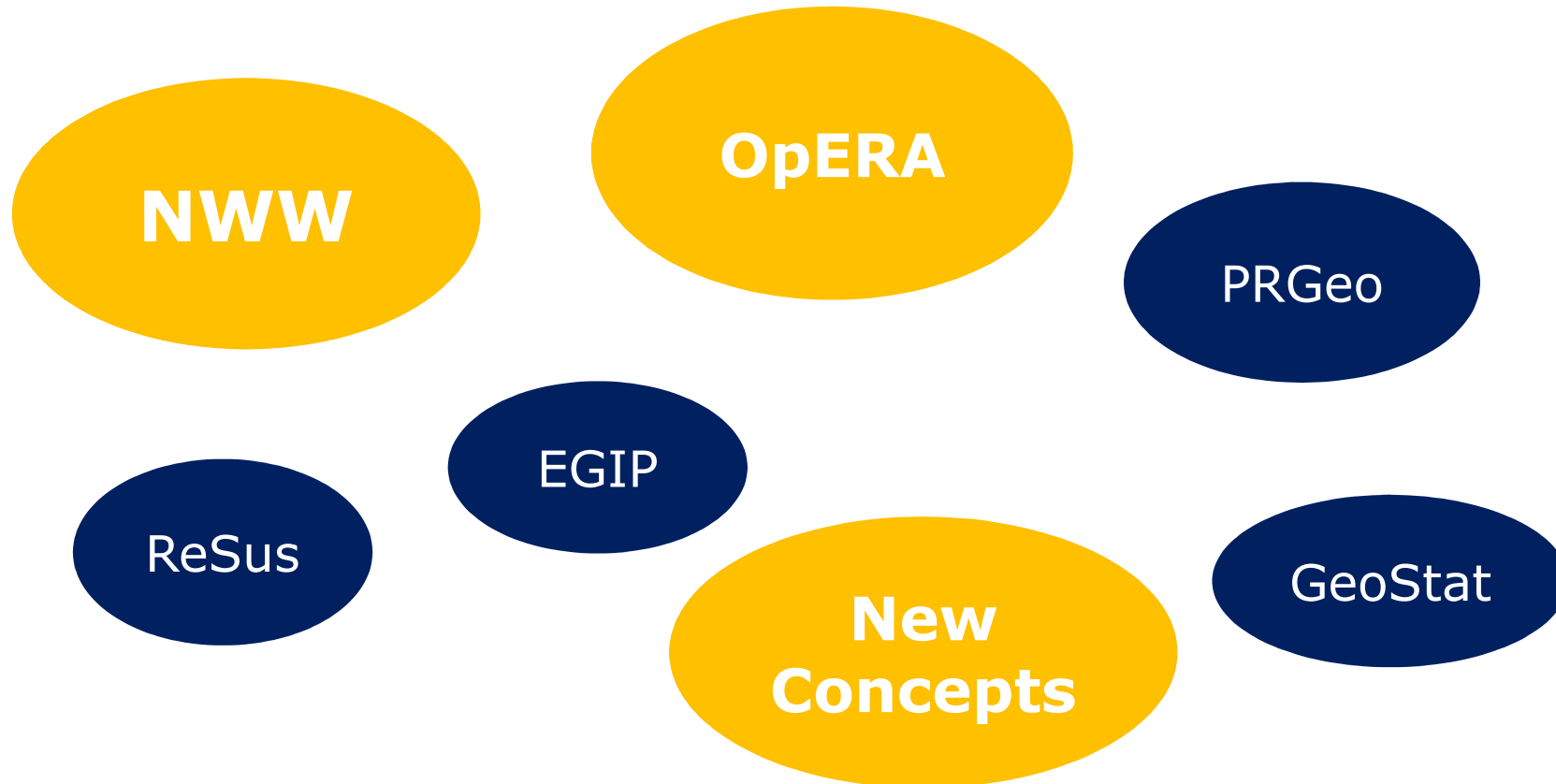
Example Joint Activity: **OpERA**

- **Operational issues** in geothermal energy
- Workshop – **september 2015**
 - Scaling
 - Corrosion
 - Gas content
 - Reinjection
- Follow-up
 - Expert group > solved/unsolved issues/best practices (JA1)
 - Joint studies (JA2/JA3)
 - ...





7 Joint Activities





Let's work together !





Contact Geothermal Energy coordinator WP2 Information Exchange

NL Enterprise Agency Geothermal ERA-NET

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www.rvo.nl/topsector-energie

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