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# Social aspects in geothermal energy development: a European perspective

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Renewable energies are often associated with sustainability or environmental friendliness.

They may, however, have environmental impacts and risks and the potential to cause **social resistance**.

Four categories have the potential to cause social resistance:

- Environmental issues
- “Missing-involvement” issues
- Financial issues
- NIMBY (Not In My BackYard) issues

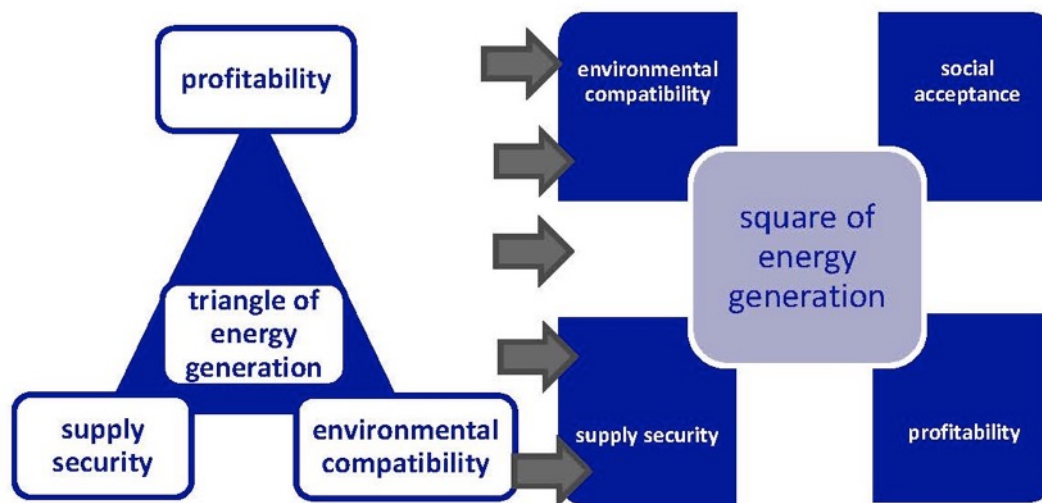
*Social acceptance of renewable energy innovation (from Wüstenhagen, Wolsink and Bürer 2007)*





Consolidate forms of dialogue, that facilitate taking into account the views of local communities and the general public, optimize regulation to embed this aspect in an efficient way

It does not regard only social acceptance, it is about co-creating the future together with citizens and society as a whole



*Square/ Triangle of energy generation (from Hauff, et al. 2011)*





## Is it left to the developer?

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The integration of the public and thus social acceptance can be reached through three steps (Hauff, et al. 2011):

- ***Communication and information:***

Affected citizens have to be informed openly and in advance about costs, risks and benefits of a technology.

- ***Integration and involvement***

Additionally one could think about models of direct financial participation in a project or other local benefits like heat supply in case of geothermal power plants.

- ***Balance of interests and conflict resolution***

If conflicts occur, the project developer should try to find a dialogue without predefined results.



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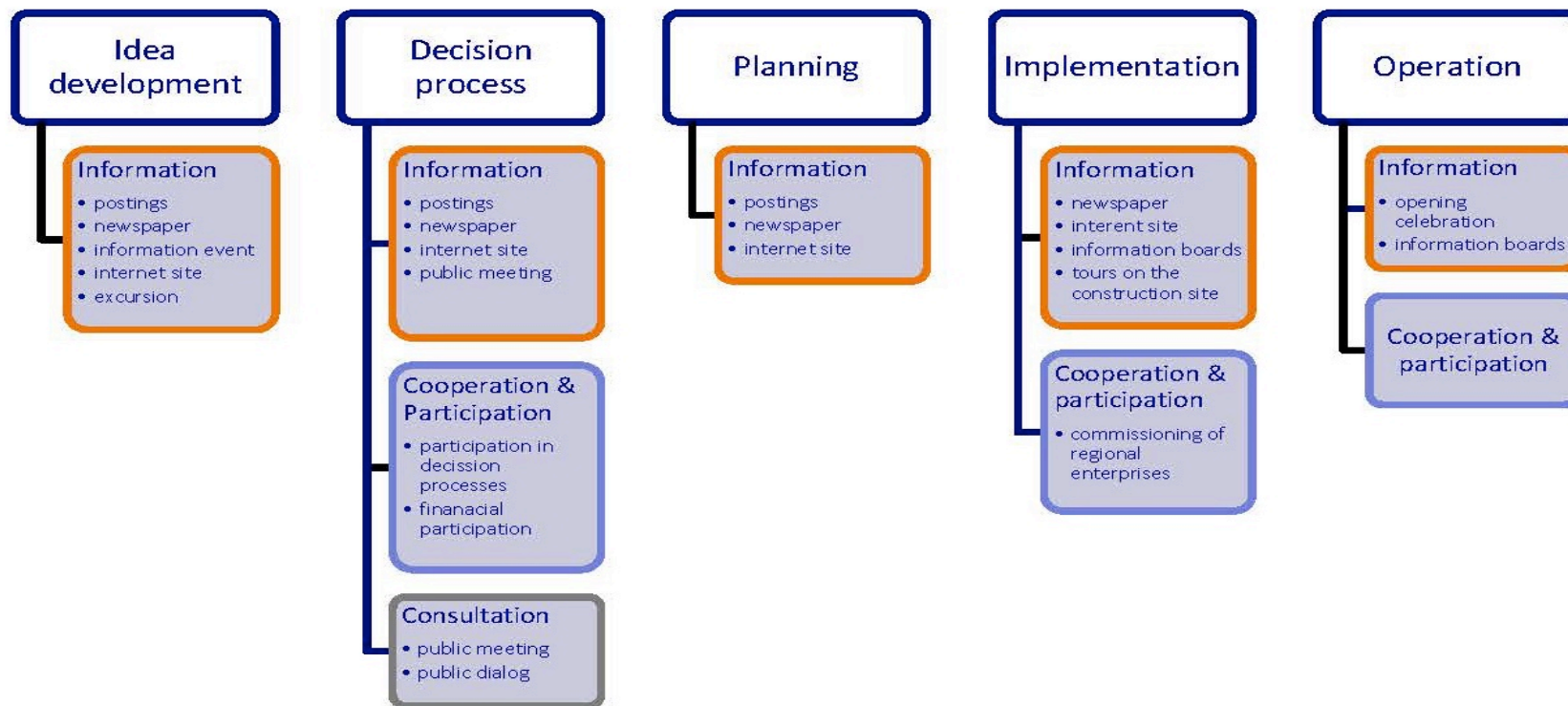


## Is it left to the developer?

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### *Implementation of renewable energies (from Arndt, et al. 2013)*



Since the beginning the project should be extensively communicated within the public and up to the completion of the power plant, with a ceremonial opening and the visit to the power plant.



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### DEFICIT MODEL

Oppositions arise from a lack of knowledge → the solution was planning one way/top down communication from experts to non-experts (**Public communication**)

### RESEARCH OF ATTITUDES AND SET OF BELIEFS

Understanding the views of the public (**Public Consultations**)

### PUBLIC ENGAGEMENT

Dialogue model → communication is considered a multidirectional exchange of knowledge. Citizens play an active role and science and innovation are co-produced (**Public participation**)





**Responsible Research and Innovation (RRI)** is becoming a keyword in European funding, including those for renewable energies, including geothermal. RRI is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation.

RRI is key action of the 'Science with and for Society' objective, and also a 'cross-cutting issue' in Horizon 2020, and many calls on energy refer to it. This is creating the opportunity to deepen studies of social communication and engagement for geothermal development.





Social geothermal energy

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## About CROWD THERMAL project, concept, consortium and contact

**CROWD THERMAL aims to empower the European public** to directly participate in the development of geothermal projects with the help of **alternative financing schemes** (crowdfunding) and **social engagement tools**.

In order to reach this goal, the project will first increase the transparency of geothermal projects and technologies by creating one to one links between geothermal actors and the public so that a **Social Licence to Operate** (SLO) could be obtained. This will be done by assessing the nature of public concerns for the different types of geothermal technologies, considering deep and shallow geothermal installations separately, as well as various hybrid and emerging technology solutions.

CROWD THERMAL will create a social acceptance model for geothermal energy that will be used as baseline in subsequent actions for **inspiring public support for geothermal energy**. Parallel and synergetic with this, the project will work out details of **alternative financing and risk mitigation options** covering the different types of geothermal resources and various socio-geographical settings. The models will be developed and validated with the help of three Case Studies in **Iceland, Hungary and Spain** and with the help of a Trans-European survey conducted by EFG Third Parties.

Based on these feedbacks, a **developers' toolbox** will be created with the aim of promoting new geothermal projects in Europe supported by new forms of financing and investment risk mitigation schemes that will be designed to work hand in hand with current engineering and microeconomic best practices and conventional financial instruments.



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# A comparison of national experiences

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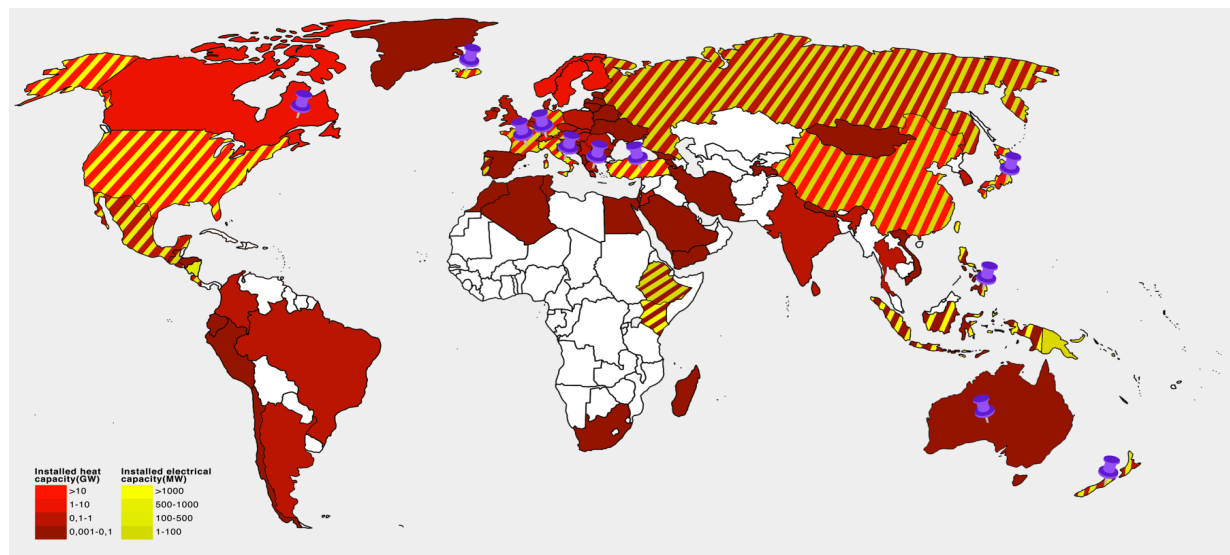


Figure 2. Global distribution of geothermal applications (heat producing countries in red, electricity producing countries in yellow. Stripes indicate production of both heat and electricity). Countries described in our case studies are highlighted by purple pins. Data Source: Lund and Boyd 2015, Bertani 2016

## Preface

### Basics and Generals

#### Chapters 1-4

- Geothermal Energy
- Policy & Regulations
- Business Strategies
- Social Perspectives

### Chapter 5 Toward Public Engagement

### Country Case Studies

#### Chapters 6-16

- Australia
- Canada
- France
- Greece
- Iceland
- Italy
- Japan
- New Zealand
- Philippines
- Switzerland
- Turkey

### Conclusions

“Geothermal energy and society”, a book from Springer



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## Various methodologies:

- Interviews (Australia, Switzerland)
- Surveys (Canada, Japan, Italy, Philippines)
- Social media analyses (Switzerland)
- Focus groups (France, Greece)
- Workshop (Australia, France, Greece, New Zealand)
- Media analyses (Australia, Switzerland)
- True public/local communities consultations introduced – and applied - by law (New Zealand, Philippines)





- Are perplexities about geothermal technologies or about geothermal governance?
- Hard energy path/soft energy path raise different issue
- Lack of information
- Environmental concerns
- Unfortunate experiences
- How would energy be used? (what is the final goal?)





## Why engaging the public with geothermal energy

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- Increasing trust among scientist, policy makers and citizens
- Increasing public scientific literacy
- Concrete inputs for scientists, innovators and policy makers
- Funding new business opportunities
- Improve the innovation policies thanks to a better understanding of public and stakeholders views
- Inclusion of public needs in the innovation process, aligning innovation to societal needs
- Consumers are becoming *prosumers*



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# Thank you for your attention!



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