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Geothermal Energy and Society

Experience, studies and opinions

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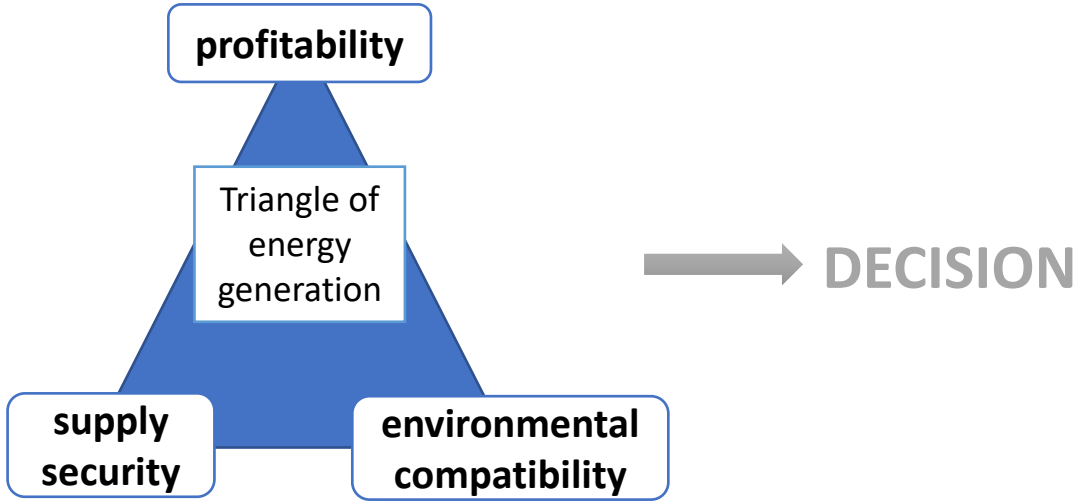
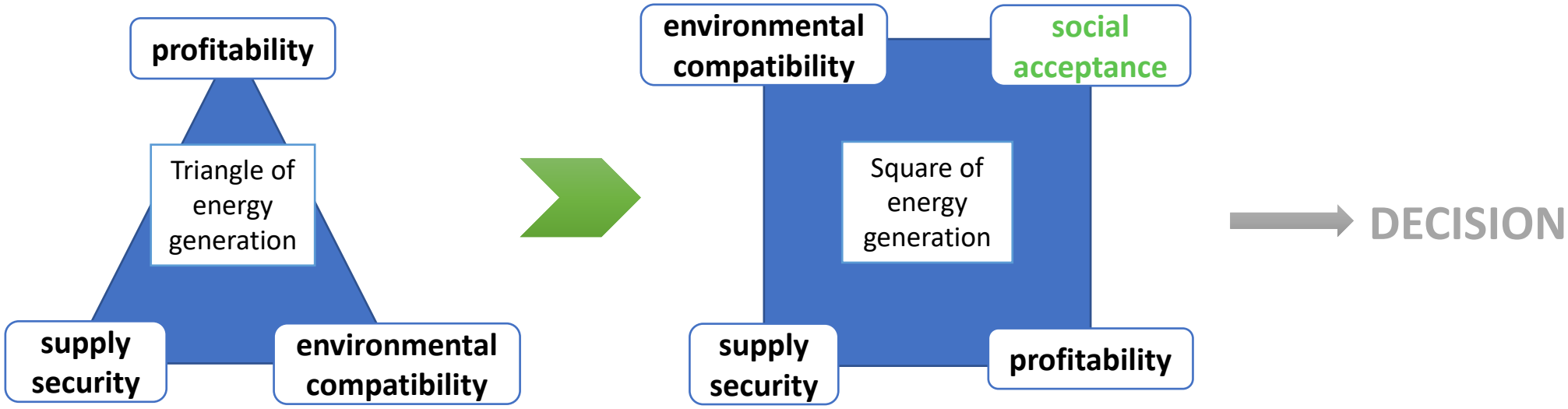
A change of perspective



A change of perspective



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

Social factors

- Ethical, moral, and social norms impact energy decision-making across all levels.

- Social factors frequently encompass political elements, such as the governmental structure and power dynamics, the actions of politicians, and the self-serving or partisan actions of individuals and groups.

- Socio-technical systems: systems in which technical components are framed within a social context that they help shape while being shaped themselves (Walker and Cass, 2011).

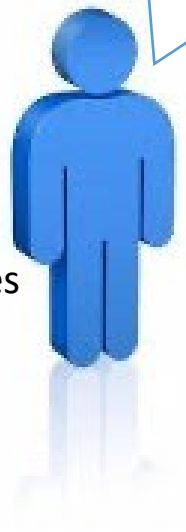
Governance vs regulation

An attempt to shelter the institutional crisis (of legitimacy, credibility and above all trust of citizens) was the introduction of the concept of **governance** (a negotiation process that guarantees a form of social regulation) as an alternative to top-down political regulation (i.e. to the hierarchical control of central institutions), to the strictly intended market regulation (based on the principle of utility exchange) and to community regulation (based on the principle of reciprocity).

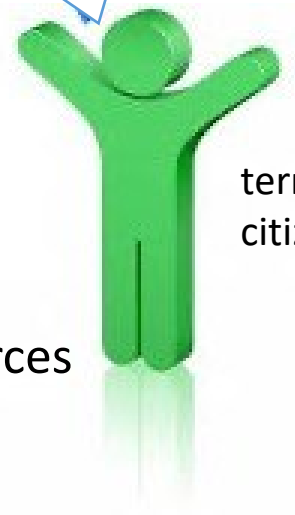
A difference in perspective

- economic benefits
- socially responsible: by fighting **global-scale** issues – e.g. through GHG emission reduction and climate change mitigation

policy makers
energy companies



- direct economic benefit
- avoid (perceived) negative impacts at the **local scale**



territories and citizens

Decisions regarding the use of energy resources are made at various levels: individual, community, national, and international.

Public participation in EU

EU legislation establishes a legal obligation of public participation before a deep geothermal project is granted a development consent: **the public must be allowed to be informed and express their opinion**.

This legal inquiry is flexible, and Member States determine how they wish to inform the public.

Quality of public participation

GEOENVI
European Union's Horizon 2020 G.A. 818242

Results of the public inquiry may not accurately reflect the public's position on a project, as individuals can remain silent or choose alternative ways to express opposition, such as litigation.

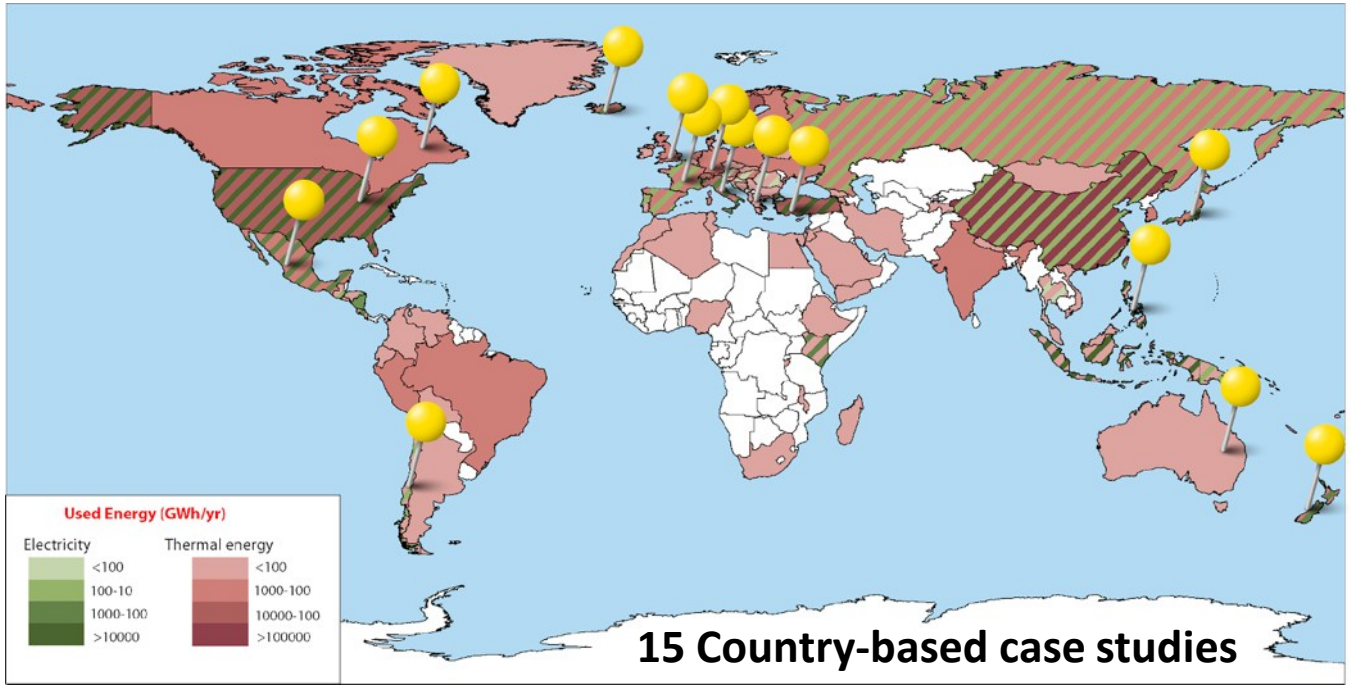
GEOENVI analysis:

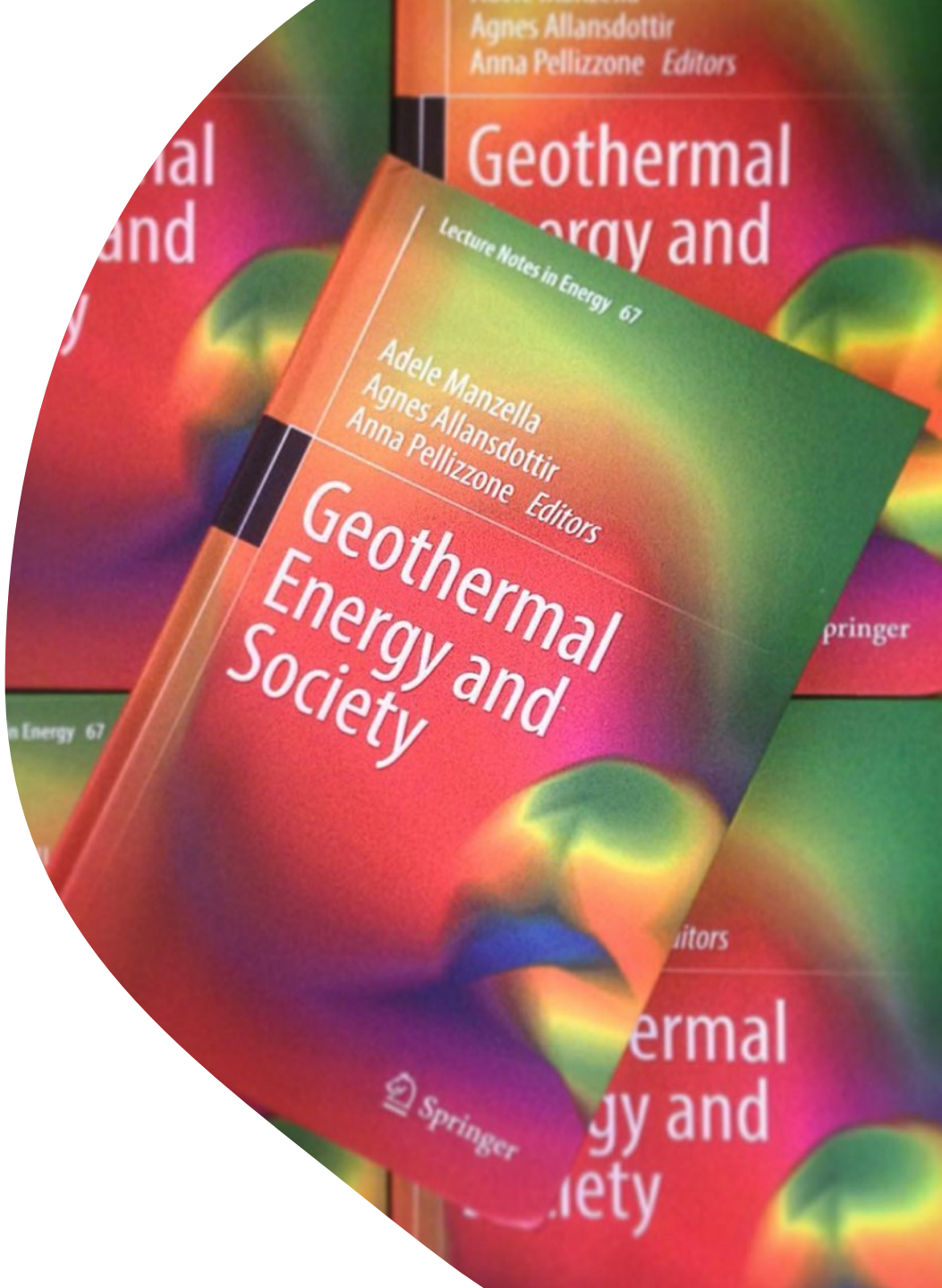
- There is often low participation among the population.
- Challenge in communication
- Difficulty in considering the opinions expressed, sometimes "unconstructive," on a highly engineered object (impression that there are not many practical options to discuss)

  ⇒ Public inquiries can sometimes show a lack of consent or serve as a lively platform for protests, which is a common aspect of democracy. Each project has its own unique characteristics (unique socio-technical object).

Geothermal Energy and Society A Book

- First edition (2019)
- Second edition (in press)





Factors influencing the debate and the desirability of geothermal developments

- Value-related:
  - Place attachment (territorial peculiarities and social appropriation – see Larderello)
  - Spiritual aspects of geothermal energy (indigeneous populations)
- Trust (unfortunate experiences, environmental concerns, spillover effect, information)
- Procedural justice (including citizen engagement)
- Costs and benefits distribution
- Use of the energy produced (electricity, a commodity, vs heating&cooling)

Why - Motivations for engagement

Fostering acceptance

Improving research and innovation

Democracy

Social justice

Agenda setting

Building trust

Who

Who to engage

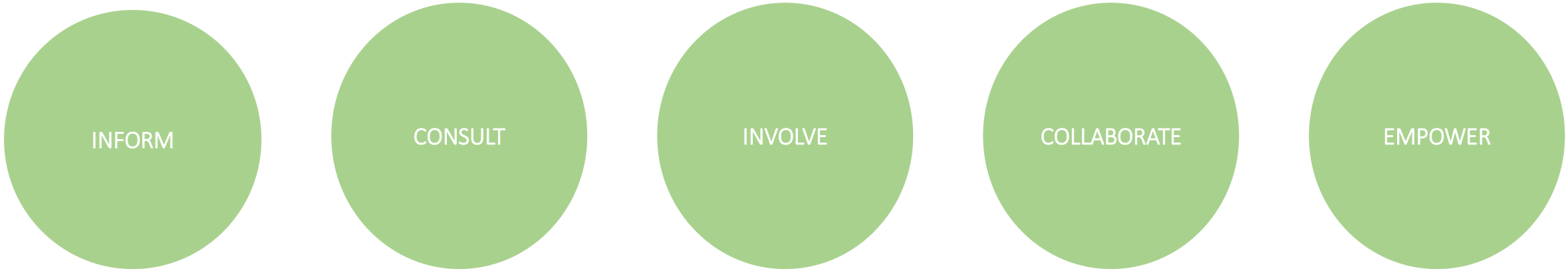
- Citizens
- Stakeholders (quadruple helix)
- Underrepresented groups (e.g., indigenous people)
- Researchers
- Students
- …

Who initiates the process

- Developers
- Researchers
- Communities
- Public authorities
- …

How – From information to empowerment (different levels of participation)

From Simon Burall, presentation as Advisor of the H2020 TRANSFORM Project



How to engage

- Social-scientific research (quantitative research, qualitative research, media analysis, etc.)
- Public Consultation
- Public Deliberation
- Energy cooperatives/communities
- Institutionalised engagement (required by law)

When and Where

WHEN

- Research stage
- Agenda setting (public deliberation for policy making)
- Implementation stage
- Evaluation/monitoring stage (?)

WHERE

- Local
- National
- EU-level

Recommendations for public participation

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Enhance the process: focusing on fostering quality dialogue

- Encouraging public involvement, such as integrating geothermal project development into primary and secondary school curricula (Hungary, Flanders) and organising site visits, while exceeding legal minimum standards through stakeholder committees and pre-project consultations, all governed by a transparent and standardised protocol
- Enhancing two-way communication and shared understanding
- Exploring protocols, such as the Geothermal Sustainability Assessment Protocol (GSAP), to evaluate environmental, social, technical, and financial aspects.
- Accepting the project's scrutiny and considering opinions

Adapt the process to the local context

- Engage in project-based, dynamic communication and participation processes, blending formal and informal methods with the local community.

Recommendation for improving data sharing

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1. **Establish a European standard for information sharing** that specifies the minimum data types and amounts, while promoting further advancements**.**
2. **Select and gather pertinent information** to compare geothermal utilisation with other energy sources, ensuring that comparable data are collected and that FAIR (Findable, Accessible, Interoperable, and Reusable) principles in data management are followed.
3. **Tailor communication for the audience**: use mediation, clear terminology, and effective dissemination strategies suited to the target group.
4. **Improve data accessibility and awareness of accessible information**
5. **Share reliable information and data**

Sum up and next steps

- Increasing number of experiences
- Increasing number of activities to share experiences and reflection
- All actions are important
- Cross-cutting background, disciplines, scopes
- Need to organize the field
- Increase awareness
- Encourage public engagement with funds and recognitions

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