

Project Lab Renewable and Sustainable Energy Systems - Summer 2025

# Enhancing Social Acceptance of Next-Generation Geothermal Technologies in Germany: from Skepticism to Support

Geothermal energy plays a crucial role in the energy transition, particularly in Germany's heating sector. However, the development of conventional geothermal fields often faces challenges, such as low flow rates in exploration wells, which can stall progress and even lead to project termination.

A breakthrough solution lies in next-generation geothermal technologies, which leverage multistage stimulation technique (in simple words – „hydraulic fracturing“). Originally developed in the oil and gas sector, this technology has recently been adapted for geothermal applications in the USA. It has the potential to transform the geothermal sector, making it viable in a wide range of geological settings beyond traditional hydrothermal areas. This innovation could significantly expand the use of geothermal energy in Germany for district heating and industrial applications, reducing reliance on fossil fuels.

## The Challenge: Social Acceptance

Despite its technological potential, one of the major barriers to implementing it is public perception and social acceptance. While this technology is already being successfully deployed in the USA, Europe is lagging behind. Public opposition can lead to years of delay up until project cancellation.

Although fracking for geothermal purposes is not prohibited in Germany—unlike fracking for shale oil and gas—the public attitude remains largely negative. Concerns about environmental risks, damages to private property, and misinformation contribute to widespread skepticism. Addressing these concerns is crucial for ensuring public support and enabling further development of this promising energy source.

## Project Objectives

In this project, we aim to:

- Understand public attitudes toward both conventional and next-generation geothermal technologies.
- Identify key concerns and fears related to geothermal fracking.
- Develop effective communication strategies to improve awareness and acceptance.

You will play a crucial role in creating informative and engaging content to explain next-generation geothermal technologies in simple, relatable terms. The goal is to bridge the knowledge gap, clarify the benefits and risks, and promote informed discussions.

## Research Questions

1. What is the current level of acceptance for traditional hydrothermal geothermal and new geothermal technologies in selected locations?
2. What strategies can be employed to improve public perception and acceptance of next-generation geothermal technologies?
3. How can creative content (videos, infographics, social media campaigns) effectively communicate the benefits and risks of this technology?

## Your Role & Expectations

We are looking for a multidisciplinary team with the following skills and interests:

- Excellent communication skills (science communication)
- Background or interest in Social Sciences (e.g., psychology, sociology, political science)
- Creative and visual content creation skills (e.g., video production, graphic design, social media)
- Innovative and strategic thinking to engage diverse audiences (age groups, rural vs. urban)
- Analytical thinking, to simplify and explain complex scientific processes without losing information content and draw parallels to better known phenomena
- Strong organizational and project management abilities

## Project Tasks & Milestones

### Phase 1: Research & Planning

- Develop a project plan and research strategy
- Conduct a literature review on social acceptance of geothermal energy and fracking

### Phase 2: Data Collection & Analysis

- Conduct surveys and interviews to assess public attitudes toward geothermal and fracking
- Analyze common concerns and misconceptions

### Phase 3: Content Development & Outreach

- Create informative and engaging content to explain the technology in simple terms:
  - Illustration / Animation
  - Short videos / Video series for YouTube/TikTok
  - Social media posts (Instagram, LinkedIn, etc.)
  - Webpage content
  - Infographics and fact sheets
  - Explanatory display items
- Develop communication strategies to improve public perception

### Phase 4: Report, Presentation & Recommendations

- Summarize findings and propose actionable solutions in a report
- Present the final results and share communication materials

We believe that scientific knowledge, when communicated in an engaging and accessible way, is key to increasing public acceptance of innovative geothermal technologies. This project will not only help shape the future of geothermal energy in Germany but also provide you with valuable experience in science communication, public engagement, and interdisciplinary research.

Are you ready to make an impact in the energy transition?

## Contacts:

Anastasia Sidorova ([anastasia.sidorova@tum.de](mailto:anastasia.sidorova@tum.de)), Nora Medgyesi ([nora.medgyesi@tum.de](mailto:nora.medgyesi@tum.de))