

Harmonising the management of potential adverse effects from seismicity in deep geothermal projects

POLICY BRIEF

The GEOENVI project identified the need for a harmonised regulatory framework to prevent and manage any potential environmental effects of deep geothermal projects deployment in Europe.

The **perception of seismicity** connected to geothermal development must be managed. The most optimal solution is a European code of best practices to monitor, control, share data and exchange best practices on seismicity to address any potential environmental effect and a more efficient communication.

CURRENT CHALLENGES

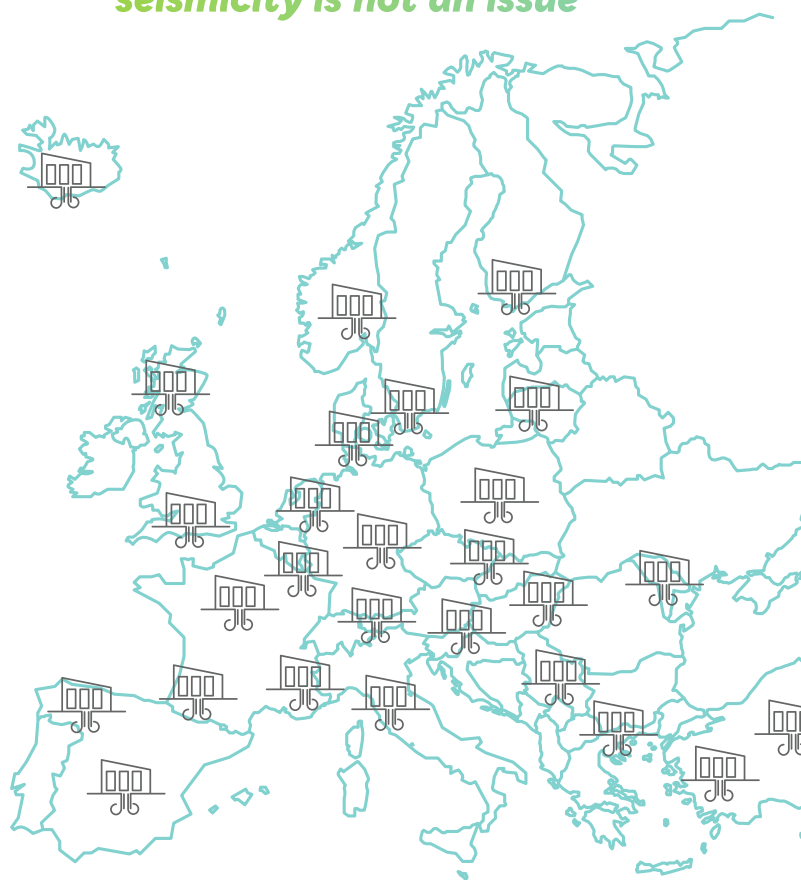
Modification of natural seismic activity during a deep geothermal project's initial development and operation could be a concern for regulatory authorities and communities.

The **evidence of geothermal plants** in operation indicates that this is not an issue. However, there have been a **few exceptions**. As these isolated incidents could generate **public misconceptions**, it is essential to ensure robust response mechanisms.

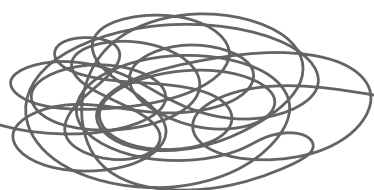
Managing this effect can be challenging due to the high levels of uncertainty and low levels of predictability in seismic activities. The lack of a uniform regulatory reference leads to a **plethora of differing national and regional standards** for seismicity monitoring, contingency planning, 'traffic-light' protocols, rules on liability and general protection of territories and infrastructures. The varied approach across countries and industrial sectors, leads to differing responses and requires harmonisation.

The lack of harmonised regulations leads to differing responses

The evidence of geothermal plants in Europe indicated that seismicity is not an issue



The answer is the European code of best practices for seismicity



RECOMMENDATIONS FOR POLICY MAKERS



Providing a comprehensive description of the status of seismicity in the developed geothermal areas. Creating a list of all geothermal plants, the duration of their operation, and a history of noted seismic events in the area will help clarify the level of the effects. The operational parameters increasing the seismicity and ways to handle it in geothermal should be described. Such a document will provide correct information and great transparency for the public and administrations.



Establishing a European code of best practices for seismicity monitoring and control. This would entail actions to predict, assess, monitor, and handle the seismicity and include prescriptions for high quality exploration. At the same time, the rules must remain flexible and account for different geological and technical conditions. The process to establish this Code must be transparent and participatory, including mining authorities, experts in seismicity and civil engineering, industry, and civil society.



Harmonizing guidelines and application of the European code to all reference sectors, e.g. geothermal, oil & gas, waste disposal, and mining industry.



Ensuring access to data on seismicity, including monitoring and operational data of reference, with diversified level of access for administrative, scientific and public recipients.

KEY TAKEAWAYS

EU and national regulators must initiate the process for harmonised rules on seismicity based on established best practices, especially in terms of communication, monitoring and control.

An **EU framework is required** to ensure a fully functioning internal market for energy and

removing any negative perceptions around geothermal, which is an abundant source of renewable heating, cooling, baseload electricity and sustainably sourced lithium.

Ensuring **public access to data will lead to greater transparency and increased public acceptance.**



Detailed overview of the recommendations for the European code and countries comparison can be accessed [here](#).

Contact: Adele Manzella, CNR
manzella@igg.cnr.it



National Research Council of Italy

Coordinated by: EGEC
com@egec.org



<https://www.geoenvi.eu>

G E O E N V I

This policy brief is part of a [series conducted in the framework of the GEOENVI project](#). Its aim is to respond to the need for harmonisation of environmental regulations and to address concerns about potential environmental effects of geothermal projects in Europe. GEOENVI strives to facilitate the incorporation of geothermal strategy in Europe's energy transition, while respecting sustainability and creating a robust strategy to answer environmental concerns. The project developed a unique Life Cycle Assessment methodology for evaluating geothermal projects.



GEOENVI has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 818242