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EU Action Plan on Geothermal Energy: A singular opportunity to advance geothermal innovation for a range of applications

To the President of the European Commission, Ms Ursula von der Leyen
To the Executive Vice-President for Clean, Just and Competitive Transition, Ms Teresa Ribera
To the Commissioner for Energy and Housing, Mr Dan Jørgensen

In light of the European Commission's commitment to put forth the first-ever EU Action Plan on Geothermal Energy, as also urged by the European Parliament and the Council, **the undersigned organisations call on the Commission to present a robust, comprehensive strategy and action plan that recognises and advances the full spectrum of geothermal energy technologies and their end uses**, including next-generation geothermal technologies that can unlock clean firm electricity and industrial heat.

As a low-carbon, local, renewable, and firm energy source, geothermal energy can make an important contribution to the EU's climate, economic, and security objectives. While geothermal energy will be instrumental in decarbonising heating and cooling, it can also add considerable value in electricity production, electrical grids support by providing baseload power, and industrial decarbonisation. Focusing exclusively on heating and cooling applications would narrow the scope to just a slice of the geothermal sector and ignore the potential of geothermal electricity production with multiple cascading heat streams. It is therefore crucial that the EU does not forgo this unique opportunity to reap benefits across sectors by focusing too narrowly on one.

Within the umbrella of geothermal, innovative next-generation pathways warrant particular attention as they could revolutionise the EU's energy system. By tapping geothermal energy at higher temperatures at greater depths, they provide an opportunity to produce electricity 24/7 essentially anywhere in Europe, as well as feed the cascading uses: industrial processes, district heating, cooling, and agriculture. These next-generation systems build directly on the drilling, reservoir management, and heat-use expertise the EU already leads in. Researchers and industry pioneers have made exciting technological advancements in recent years that have moved the limits of possibility, reducing cost and increasing energy density, enabled in part by the EU's Horizon programme.

Now, the budding geothermal community is working to convert technical innovation into commercial competitiveness – the next hurdle is proving a business model that can sustain growth without long-term public support. More must be done to manage the multifaceted risk, fill the gaps in the EU's manufacturing and service capabilities, and establish a thriving EU geothermal sector that will be able to contribute to the Union's multiple objectives.

As cleantech innovators, industry associations, public authorities, civil society organisations, and research institutions, we call on the European Commission to:

- Afford geothermal energy adequate consideration by **crafting a comprehensive Action Plan that considers and progresses the full breadth of the geothermal energy sector and possible applications**, including enhanced and advanced geothermal systems, and these systems in superhot geothermal environments that ultimately enable lower cost electricity production. High-temperature next-generation systems open the door to firm power, industrial heat, and cascaded heating from a single resource, which gives Europe the scale and flexibility it needs for long-term energy security. Clean energy technologies like solar energy, wind energy, or batteries have already benefited from dedicated sectoral strategies – it is high time

geothermal energy is appropriately considered as an indispensable element of the EU's energy security and industrial competitiveness strategy as well.

- Seize the opportunity of the EU Action Plan to **grasp leadership in next-generation geothermal technologies**, including by **supporting research, field testing, and commercialisation** across EU Member States. Establishing numerical targets on temperature, depth, or the exploration of enhanced or advanced geothermal techniques as an incentive, as well as an accountability mechanism, could help. Flagship EU next-generation projects can have a noticeable impact in proving scalability and bankability – and must be selected in service of establishing a viable industry.
- **Strengthen the geothermal value chain in the EU, spanning the manufacturing and service capabilities, as well as the labour force**. As it stands, there are notable gaps in the European geothermal value chain, making the Union less autonomous and able to tap into geothermal opportunity effectively. Expanding the supply chain for high-temperature tools, materials, and drilling services would strengthen the broader geothermal industry, benefiting conventional heating projects as well. Filling these gaps would maximise the value creation in Europe and provide appealing employment opportunities for the local population.
- **Set up workable mechanisms for sharing project risks among public and private stakeholders**. Initiatives that have the potential to generate benefits for the society at large warrant a more even and equitable sharing of inherent risks as well. This could be done through a dedicated EU risk-sharing facility with grant-and-loan blending for early projects, an insurance scheme, or a guarantee scheme for drilling and well performance risk, implemented by the European Investment Bank. Public-private risk-sharing should explicitly include exploration and drilling for deep, next-generation, and higher-temperature systems. These mechanisms should be designed to crowd in private investment, reduce the cost of capital, and enable commercial financing of next-generation geothermal projects by the early 2030s. A better overview of EU and Member State-level support mechanisms, including how they interact with each other, would also be beneficial.
- **Assemble an EU-level alliance of stakeholders to help implement the Action Plan**. A broad stakeholder alliance, spanning the industry, public authorities, academia, and civil society, would be an effective way to ensure policy is grounded in real-world experience, project learnings flow freely, and key stakeholders act as implementation partners to the Commission and Member States.

The moment to champion geothermal innovation is now. In a world where different regions are racing to secure technological primacy, there is no time to waste. The EU is well placed to become a leader in next-generation geothermal – now it must show a visionary outlook and put in place thoughtfully designed measures to translate this tacit opportunity into tangible benefits for EU industries and citizens.

We thank you in advance for considering these crucial issues.

AxioGeni, Baker Hughes, Baseload Capital, Canopus Drilling, Clean Air Task Force, Eaposys SA, Energy Cities, Energy Institute Hrvoje Požar, Enna Geo, European Federation of Geologists, European Geothermal Energy Council, Future Cleantech Architects, GA Drilling, Geothermal Ukraine, Hephae Energy, OMV Aktiengesellschaft, PW Energy, SwissDGS GmbH, Telura, Turboden, Underground Ventures, Vallourec, and Zenon Energy Research


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