

Enable geothermal energy to help to decarbonise the heating and cooling sector via district heating and cooling networks



Amidst the dual challenges of the ongoing climate and energy crises, Euroheat & Power welcomes the European Parliament's efforts to adopt its own initiative report on geothermal energy. There is a pressing need to accelerate the heat transition, as heating and cooling still accounts for 50% of the EU's energy demand, and still relies on fossil fuels for 70% of its supply.

District heating and cooling (DHC) is part of the ready-to-deploy solutions to phase out fossil fuels in heating and cooling. It currently **represents 12% of the heat market, providing heat to more than 68 million EU citizens**, while 140 million citizens live in cities already equipped with a DHC network. DHC fosters **robust and scalable decarbonisation for heating, harnessing local renewable heat, such as geothermal**, solar thermal, and sustainable bioenergy, and enables waste heat utilisation from industrial and urban sources.

Geothermal energy is reliable, providing a stable source of heating and cooling via district heating and cooling networks throughout the year. Its largely untapped potential holds promise for significantly reducing Europe's reliance on fossil fuels. Notable examples, listed at the end of the document, are already deployed all over Europe, from the Nordics to Central and Eastern Europe.

Euroheat & Power members are actively investing in geothermal, providing a firsthand perspective on how this process could be enhanced and supported. Drawing from this experience, we recommend considering the following:

1

Recognise district heating and cooling as a key solution to utilize and harness the potential of geothermal energy.

2

Enable the development of local heating and cooling plans supported by digital public registry that identify decarbonised heat sources.

3

Introduce insurance schemes to de-risk financial investments, while ensuring projects' economic viability and stability.

1. Acknowledge district heating and cooling as a key solution to harness geothermal at scale

District heating and cooling is a very versatile solution, which can harness geothermal energy at different temperatures, and it has already been developed in many EU countries: Iceland, Italy, France, Germany, Denmark, Slovakia, Hungary, and Poland. Deep geothermal wells, for instance, contribute water at a temperature suitable for direct injection into DHC networks. In cases of lower-temperature geothermal, the water can be lifted to the required level using a large-scale heat pump. Geothermal is also used with CHP plants to efficiently produce hot water and electricity. Via heat pumps heat can be extracted from **geothermal energy to produce chilled water for cooling purposes**, which could ensure that district heating and cooling networks utilize geothermal energy throughout the year. One DHC network can supply thousands of households. In urban and densely populated areas this is a way to decarbonise entire districts at once, by switching the heat production to renewable heat.

- ✓ The report should clearly **establish the role of district heating and cooling networks** in harnessing geothermal energy to transition to clean heat supplies for buildings.
- ✓ The report should call for **supporting the development of DHC networks** as a versatile infrastructure that can tap into clean heat sources that are locally available.

There is already existing DHC infrastructure where clean heat sources can substitute fossil fuels, and thus geothermal can play a role. For example, in Poland 16.5 million citizens are served by DHC, and it is still largely dependent on fossil fuels, while the country has a huge geothermal potential.

- ✓ The report should **underline the potential of using existing DHC infrastructure**, particularly in Central and Eastern European countries, to tap into geothermal energy.

While the draft report, calls on the Commission to develop a Geothermal strategy, EHP supports a broader, more comprehensive approach.

- ✓ **We suggest urging the Commission to revise the Heating and Cooling Strategy** implemented in 2016 – prior to the Paris Agreement, The European Green Deal, and the current energy crisis.

2. Enable local heating and cooling plans with a public registry of decarbonised heat sources

To get projects started, developers need to rely on data, in the case of geothermal, underground geological data need to be available.

- ✓ **A public registry of decarbonized heat sources (geothermal potential, data centres, industries...)** would greatly benefit project developers and municipalities seeking to decarbonise.

An example of such a registry or atlas is the Pan European Thermal Atlas ([PETA](#)) or the [European Waste Heat Map](#). Of course, a more granular level of details, only achievable when conducting such research at the local level, would enable better heating and cooling planning.

Such registries could also heavily support the recently adopted **local heating and cooling plans for municipalities with more than 45,000 inhabitants** introduced in the Energy Efficiency Directive. To ensure that the recommendation of the plan will be properly implemented.

- ✓ We suggest **incentives and funding for clean heating and cooling solutions should be conditioned to the results of the analysis laid out in these.**

This **would ensure that the recommendations of the local heating and cooling plan are adopted and that locally available heat sources, for example, geothermal energy are harnessed.**

- ✓ Resources should be dedicated to **improving the staffing and expertise of local public authorities** involved in the various stages of energy planning and implementation.
- ✓ In connection to the recently adopted 'acceleration areas' **the development of digital permitting tools is also key to streamlining the permitting process.**

These should provide a single online environment to help permitting authorities and developers synchronise their workflows, facilitate access to environmental data and provide transparency for all stakeholders, including authorities, project developers and community members.

3. De-risk and finance geothermal DHC projects

De-risking is a crucial process in the development and operation of geothermal district heating and cooling networks for several reasons. To attract financial investors, de-risking is fundamental to ensure projects' economic viability and stability by assessing and managing financial risks for investors and securing funding for all stages of the project.

Geothermal projects typically demand significant upfront capital, requiring advanced engineering and technical solutions. Moreover, they inherently carry the risk of underground heat availability.

- ✓ To mitigate these challenges, **we suggest proposing the establishment of insurance schemes to attract private investment.**
- ✓ Additionally, private-public partnerships can play a pivotal role in facilitating these projects, while Energy Service Companies (ESCOs) offer innovative models such as "heat as a service," enhancing their feasibility.

For example, the **French geothermal risk guarantee system or 'SAF'**, guarantees short-term risks linked to geothermal first well drilling, as well as the long-term risk of total or partial depletion of the resource during 15 years of operation.

EHP welcomes the rapporteur's efforts to introduce a new funding scheme for geothermal energy, however, **the heat transition requires a more holistic approach.** The current financing landscape for clean heating projects is fragmented across various programs targeting different sectors, making it challenging to secure funding. Due to the high investment costs for heat infrastructures (including geothermal), this can make it difficult to raise funds, despite the low running costs. Moreover, many national and EU support schemes do not take heating infrastructure into account.

- ✓ To tackle this issue **the report should call on the Commission to propose an EU Heat Fund, inspired by the Invest EU Program, to consolidate financing for clean heating projects.** This fund should have transparent eligibility criteria and support tools for investors and project developers, like those in the existing Innovation Fund.

For more information please do not hesitate to contact:

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Examples from EU Member States of the geothermal district heating and cooling networks

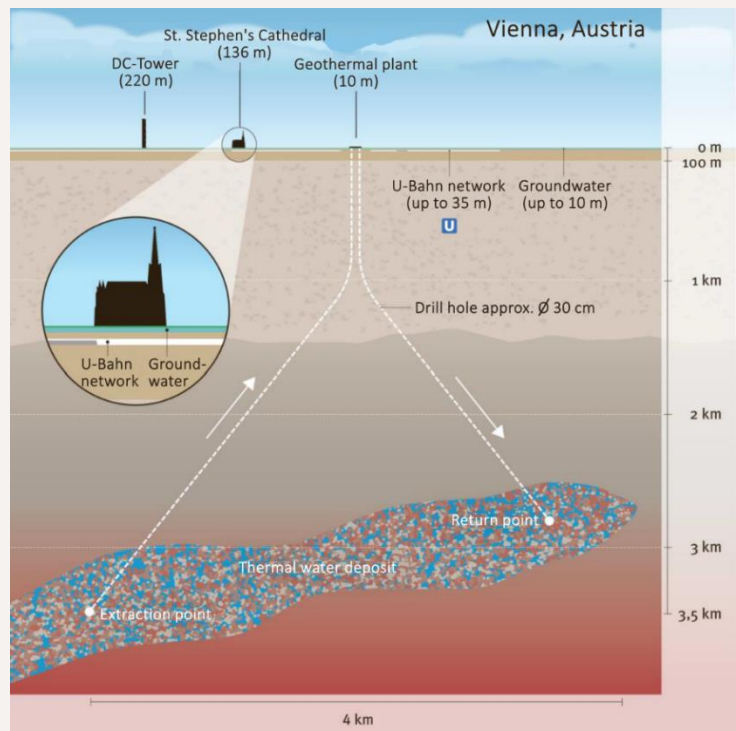


A new **geothermal development in Košice** (the second-largest city in Slovakia with 240,000 citizens) **would be capable of supplying 171,000 households** (393,300 citizens).¹

The currently largest geothermal DHC network of the EU in **Szeged, Hungary** **supplies 28,000 households and over 400 public buildings**.²

According to the Geothermal Roadmap of the Austrian Federal Ministry for Climate Protection, the secured potential in Austria is 700-1,000 MWth, but possibly significantly more. If harnessed, this could save 1.3 million tons of CO₂ annually, while deep geothermal alone would be responsible for a 20% GHG reduction. **According to a potential estimate, 25% of Austria's deep geothermal potential could already be utilized by 2030 – which could supply 500,000 residential units** - if the political framework conditions were improved.³

Vienna's 3 - 3.5 km deep geothermal well will be capable of providing 100 Celsius degrees water and will provide sustainable heating to 20,000 households by 2026 (see picture on the right), while in **Hamburg, Germany** medium-depth geothermal wells are set to heat 17,000 households in the coming 15 years.⁴



Euroheat & Power is the international network representing the district energy sector. We promote the rapid roll-out of sustainable heating and cooling in Europe and beyond, with the objective of full decarbonisation before 2050. As we work towards this common objective shared with the EU, we appreciate the efforts of the Commission to drive progress in the run-up to carbon neutrality in 2050.

¹ Source: Think Geoenergy: Kosice, Slovakia geothermal project classified as national priority project – available [here](#)

² Source: EU Cohesion Policy: Inauguration of the largest geothermal heating system in the EU, in Szeged, Hungary – available [here](#)

³ Source: Roadmap Geothermie Österreich – available [here](#)

⁴ Source: EHP database of members' DHC decarbonisation plans