Master Thesis

Evaluation and visualization of geothermal cooling capacity across Europe

Motivation

With the energy transition geothermal sector is growing steadily. Geothermal energy was long considered as the baseload energy in a decarbonized heating and electricity sector. It is estimated that it could supply 25 % of residential heating demand in Germany. But geothermal energy can also be harnessed for further purposes, such as desalination or cooling. With climate change, cooling demand in previously moderate climates is rising. Aband Adsorption technologies allow us to supply industrial and commercial facilities with the necessary cooling. However, currently we don't have a reliable estimate for geothermal potential for cooling.

The COOLING DOWN Project seeks to propose a vision for a renewable cooling sector in Europe in the coming decades, and issue policy recommendations and proposals to achieve it. To develop this vision, extensive research is carried out about the potential of renewable cooling technologies and the projected trends for cooling.

Beyond the technological, economic, and social trends to be assessed through research, expert consultations and modelling, the COOLING DOWN project will also be seeking to address the contribution of renewable cooling technologies to climate change adaptation with a specific focus on the mitigation of the urban heat island effect.

Tasks

- Development of a GIS-based map for Europe with the local geothermal potential for cooling
 - Literature review of the key geologic parameters for the geothermal regions
 - Identification of suitable areas for geothermal utilization
 - Conversion of the geologic parameters into cooling capacity
 - Map visualization of the cooling capacity by sectors
 - Brief assessment of economic efficiency

Requirements

- o Interest in interdisciplinary work in energy sector, geosciences and engineering
- Strong problem-solving skills and the ability to work independently in a structured manner
- GIS experience highly desirable
- o Basic knowledge of geology and the energy system is desirable

Application

If you are interested in working on this topic, please send your application documents, including your CV and transcript of records to Nora Medgyesi (nora.medgyesi@tum.de). Please include your motivation, as well as relevant prior knowledge and qualifications. Feel free to contact me in case of any questions! I look forward to receiving your application!

Contact

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