Financing instruments for geothermal district heating and cooling

Energy/Climate Policy

Giulia CONFORTO[[1]](#footnote-1)(1), Marcus HUMMEL(1)

(1)e-think energy research,

Motivation und zentrale Fragestellung [93/100 words]

The availability of geothermal energy across Europe makes it a strategic source for the decarbonization of the heating and cooling sector, especially through district heating and cooling (DHC) networks. However, despite low and predictable operating costs, geothermal remains a marginal resource, accounting for barely 2% of DHC. This is mostly due to the fact that geothermal projects are capital-intensive and bare higher risks in their exploratory and construction phase. Therefore, owering the financing barrier could greatly support the market uptake of this technology. This work presents the preliminary results of a status quo review of financing instruments used in Europe to endow geothermal district heating and cooling projects. The study is carried out in the framework of the EU Horizon project SAPHEA.

Methodische Vorgangsweise [170/ 200 words]

The study starts with a literature review of the financing instruments used to date in geothermal district heating and cooling projects. This phase includes published research papers, policy papers, market reports, and other documents such as European project deliverables and presentations. The outcome of the literature review is complemented by desk research of existing projects, possibly with expert interviews (e.g. with members of EGEC, the European Geothermal Energy Council). Known financing instruments include own funds, loans, green bonds, shared ownership, crowdfunding.

The peculiar risk curve of geothermal projects, with high risk in the planning, exploration and drilling phase, quickly dropping as the investment increases, makes the business model, and especially the risk ownership also plays a major role in the financing of geothermal projects. Thus, both the risk ownership, risk mitigation and business model are also determinant. Known de-risking instruments include securities, guarantees, insurances, and local municipal investments. Business models range from completely public to completely private, including public-private (semi-ownership), and more innovative formats such as heat purchase contracting, bottom-up heat purchase contracting, energy community, and distribution system oprator.

This study is carried out in the framework of the EU Horizon project SAPHEA - Developing a single access point for the market uptake of geothermal energy use in multivalent heating and cooling networks across Europe.

Ergebnisse und Schlussfolgerungen

The expected preliminary results of this study will include an EU-wide overview of financial instruments and funding options for geothermal district heating and cooling projects, with a short description of each option and a few examples of projects where that option was successfully used. Also, a brief review of the main business models adopted in different regions for geothermal district heating and cooling projects will be provided. The results shown in this presentation will set an intermediate step in the study, which aims, in its final results, at providing a European complete mapping, detailed in two reports, respectively on business models and financing options.

Literatur

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1. Adresse: e-think energy research, Argentinierstrasse 18/10, A-1040 Vienna, Austria

   Tel: +43(0)670 703 35 70

   EMail: conforto@e-think.ac.at

   Web: http://e-think.ac.at/ [↑](#footnote-ref-1)