Third party access for district heating: first steps to unbundling the heating sector?

Lukas Kranzl, Energy Economics Group, TU-Wien; 0043 1 58801 370351; lukas.kranzl@tuwien.ac.at
Veit Bürger, Öko-Institut e.V.; 0049 761 45295259; v.buerger@oeko.de
Jan Steinbach, Fraunhofer Institute for Systems and Innovation Research ISI; 0049 721 6803434; jan.steinbach@isi.fraunhofer.de
Andreas Müller, Energy Economics Group, TU-Wien; 0043 1 58801 370362; mueller@eeg.tuwien.ac.at

Overview

The European Commission aims at gradually increasing the share of renewable energies in district heating and cooling networks (DHC). For that reason Article 24 of the proposed revised Directive on the promotion of the use of energy from renewable sources provides that Member States adopt measures to ensure non-discriminatory access to DHC systems for heat or cold produced from renewable energy sources and for waste heat or cold (European Commission, 2016). This non-discriminatory access shall enable direct supply of heating or cooling from such sources to customers by suppliers other than the operator of the DHC system.

In our contribution we explore technical, regulatory and economic challenges and implications that arise from the practical implementation of this provision. Moreover, we analyse, whether third party access (TPA) of independent renewable heat/cold producers alone is sufficient to stimulate the uptake of renewables in DHC systems or if additional regulations such as preferential third-party DHC grid access including a purchase obligation for renewables were required.

Methods

The methodical approach consists of the following steps:

(1) As a first step, we summarise literature on TPA for DHC and link it to lessons learned of other markets with crucial infrastructure, i.e. electricity and natural gas.

(2) Secondly, we systematically analyse different dimensions of TPA regarding opening of different elements of the market, degree of regulation, unbundling etc. In particular, we discuss how they are mutually depending on each other and we define a set of consistent variants of TPA in district heating.

(3) For these variants, we analyse technical, economic, regulatory and competition related aspects and discuss conclusions regarding possible implementation options of the currently proposed revised Art 24 of the renewable energy directive.

The whole method and in particular step three will be focused on the following aspects:

- Technical adaptations and to ensure the technical performance of the grid;
- Regulatory aspects regarding how to take into account grid losses of grid costs;
- Economic aspects regarding the comparison of levelized costs of heat;
- Economic aspects regarding the risk of stranded investments;
- Competition issues and models taking into account the interlinkages between district heating, electricity and gas markets and the structure of the housing sector.

Results

The literature, which is still quite limited – in comparison to the literature analysing third party access in other energy infrastructure – partly argues that regulated TPA may have small positive effects on competition while at the same time also raising concerns regarding the technical viability and overall cost effectiveness (Söderholm and

Wårell, 2011; Korhonen, 2014). In the results section of our paper, we will add aspects, which are – from our point of view – not yet fully covered in the literature:

Third party DHC access (TPA) might gradually transform the topology of a DH system that is rather centralised today to a decentralised system with a variety of different heating/cooling sources with different characteristics being connected to the grid. This change in the topology might require technical adaptations to ensure the technical performance of the grid. In addition system specific technical requirements for grid access and usage of grid need to be defined. The respective rules need to ensure that independent heat/cold producers gain grid access on equivalent terms compared to the production plants of the integrated grid operator.

In addition to the technical challenges TPA regulations need to be adapted as to ensure that e.g. grid losses or the costs of technical grid adaptations or upgrading the grid infrastructure are distributed among the DH participants in a fair and non-discriminatory way. The same applies to the establishment of technical requirements regarding feed-in and offtake from the grid, the provision of reserve capacity and balancing heat and how the grid-charges are set. Finally, if the proposed preferential TPA stimulates many renewable energy producers to access a DHC system and if increasing demand within the DHC does not compensate for the additional renewable production, existing non-renewable heat and/or cold producers (e.g. operated by the integrated DHC system operator) will be replaced by the new entrants. This might lead to stranded investments if the replaced capacities had not been fully amortised. Even more, the problem of stranded investments could also affect renewable capacities, if the corresponding district heating grid is moving towards a high share of renewables and if – in contrast to currently propsed by the European Commission – the TPA should not only be applied in case of fossil district heating supply. Accordingly the question arises of how to allocate the respective stranded investment costs.

Furthermore, we analyse competition issues possibly arising with preferential TPA considering the interlinkage of DHC, electricity and gas markets as well as the housing sector. TPA can be facilitated either by the single-buyer model or via the so-called network access model where producers use the (open) DHC grid to supply their own end-customers (Korhonen, 2014). Currently the single buyer model is the dominating market model for DHC in most European states. Legal statements of national regulatory authorities do not see the need for changing the single buyer model from a competition policy point of view. We will discuss if the underlying market definition is appropriate or whether the definition might be too narrow considering that DHC companies are often gas distribution system operators at the same time. In this respect we also challenge the theory that there is no need for further competition by TPA in a single-buyer-model since district heating has to compete against decentralised heating technologies. In particular this is relevant for the following reasons: (1) tenants have no or only very limited choice of the heating system; (2) high up-front costs as a barrier to switch between heating systems; a comparable competition would only be in place if in the corresponding area and building also contracting solutions would be available; (3) if the district heating grid operator is identical with the gas grid operator, the district heating grid operator decides about the availability of the competing technology.

The presentation will provide thoroughly differentiated results for the different representative types of TPA in different economic, cultural, climatic and political environment.

Conclusions

The conclusions of the presentation will highlight how TPA is expected to have different impacts on the penetration of renewables and related costs for different types of district heating grids. The current form of the proposed revised Art 24 of the renewable energy directive would imply high regulatory efforts and/or complete unbundling with corresponding challenges and open questions – at the same time with limited impact on RES-H penetration. Moreover, the conclusions will include guidelines how the regulatory setting and framework should be designed, e.g. regarding regulation of district heating prices, allocation of district heating grid losses and costs, consumer rights etc, since they are essential for the assessment of TPA in the DHC-sector.

References

European Commission, 2016. Proposal for a directive of the European Parliamante and of the Council on the promotion of the use of energy from renewable sources (recast).

Korhonen, H.-P., 2014. Regulated third-party access in heat markets (No. Oxera Agenda June 2014). Oxera.

progRESsHEAT, 2017: Case study reports from the H2020 project progRESsHEAT (Fostering the use of renewable energies for heating and cooling); internal working documents to be published in Summer 2017 (www.progressheat.eu).

Söderholm, P., Wårell, L., 2011. Market opening and third party access in district heating networks. Energy Policy 39, 742–752. doi:10.1016/j.enpol.2010.10.048