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# WHAT IS THE IMPACT OF THE POLICY FRAMEWORK ON THE FUTURE OF DISTRICT HEATING IN EASTERN EUROPEAN COUNTRIES? THE CASE OF BRASOV

Tags: District heating, heat savings, heat supply, policies

Abstract:

**Introduction**

Decarbonising the heating sector is essential to reach the climate goals agreed on COP 21 meeting held in Paris. District heating in general is seen as an important technology to decarbonise the heating sector especially in urban areas. In many Eastern European cities district heating systems are already in place. However, they face a number of challenges: These district heating systems typically were installed in the communist era, without relevant re-investments since that time. Thus, they often still have installed old supply technology and are based on fossil fuels and therefore are not suitable to reach the desired level of decarbonisation. High losses due to overdimensioned infrastructure and outdated technology make many district heating systems economically unfeasible and lead to unsecure supply. The association with communism and the lack of confidence ends up in further disconnection of costumers. Many cities with a district heating system in Eastern Europe face these problems. The aim of this work is to find economically and ecologically sound solutions for the heat supply under these difficult conditions and to identify how local and national policy frameworks can be improved to realise such solutions.

**Approach**

The assessment is based on a case study of the municipality of Brasov, located in the centre of Romania, which is representative for different cities in Romania and Eastern Europe. The modelling framework to analyse the research question combines different tools and models which are described in the following: (1) As a first step, the existing and possible alternative supply portfolios of the district heating system are modelled in energyPRO to obtain the district heating generation costs. (2) Costs for decreasing the thermal losses through the building envelope (heat savings) and costs for supply of heat with individual heating technologies are calculated for ten different building types with three different construction periods. (3) The municipality is divided into various areas according to the availability of a current district heating network or the feasibility and costs of expanding the network into adjacent areas. (4) Finally, for all buildings and all areas within the municipality the cheapest combination of heat savings with district heating or individual heat supply is calculated. This is done for a reference scenario and for various technical alternative scenarios depicting desirable futures regarding the heat supply portfolio. Different indicators like total system costs, total $CO_2$ emissions, share of renewables etc. are calculated both for the reference and for the alternative scenarios. By

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comparing the indicators between the different scenarios and the reference case, the need for support to reach the respective future will be estimated. The needed support will be incorporated into different policy packages that have the potential to create the required side conditions leading to the desired future scenarios.

**Results**

Expected results will be the definition of different policy packages and associated costs that allow for a high share of renewables in the heating sector. These packages may include regulations to force certain technologies in certain areas, different kinds of subsidies for different favourable technologies and also the knowledge building to inform people on advantages of different options. Not all of these aspects can be quantified with the used modelling framework but the policy packages will be created to harmonise in best manner. The assessed policy frameworks may be applied to different regions in Eastern Europe. Preliminary results show that a precondition for an economically viable district heating system is an enforced investment into the network infrastructure. Otherwise, the currently high distribution losses of about 50% would never make district heating a competitive solution. To facilitate these investments, frameworks have to be implemented that allow investment decisions to use longer time horizons or to receive preferable conditions for loans. Another prerequisite to make district heating solutions feasible are high connection rates of costumers. Therefore policies have to be adopted that secure high connection rates or that encourage costumers to reconnect to the system.