

Ensuring energy security and cost-efficient heat supply



BRASOV
Romania

274,500



1 Key figures

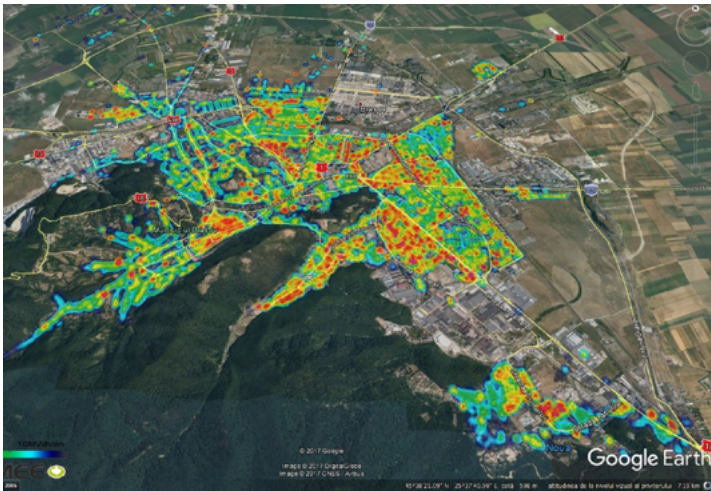


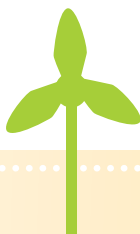
Fig.: Heat density map of Braşov
Source: ABMEE

2 Main challenges

The district heating system of Braşov has gone through several transformations in the attempt to find a solution for the zones located within the urban agglomeration of Braşov. Unfortunately, the lack of vision and the misunderstanding of the advantages of such a system, coupled with a legislation that allows for easily installing natural gas individual boilers, led to a situation where only 4% of the local population was still connected to the DH in 2014 (reference year of the project).

The future of this system is directly linked to the local policies, which should be supported by the population, by the real estate developers and last but not least, by policy makers.

The current strategy is trying to provide insight into the renewable sources that could be used in the future in order to ensure energy security and cost efficient heat supply at local level.





3 Current policies and targets

The current overall targets of the Braşov municipality have been developed in the Sustainable Energy Action Plan (SEAP) for 2010-2020 (2008 as reference year), developed as part of the Covenant of Mayors, which is full part of the strategic political documents for the sustainable development of the city. The general objectives for 2020 are:

- reducing CO₂ emissions by 32 %
- reducing of the total energy consumption by 12 %
- reaching a target of 4 % of energy produced from renewable sources in all sectors mentioned in the SEAP.

Regarding the policy measures, the municipal buildings are being submitted to an advanced process of energy upgrading and are permanently monitored (monthly) by the ABMEE (local energy agency), who annually develop an energy performance report for all pre-university educational institutions, based on which the municipality prepares its investment plan. From 2017, ABMEE has been acting as the community energy manager.

4 Barriers and drivers

Main barriers

- The main barrier in Braşov is the lack of interested consumers that has resulted from discontinuity in the heat supply, creating a lack of trust in the district heating system. Most consumers are using individual heating systems. Residential areas have been transformed to use gas boilers. Even new neighbourhoods in Braşov are heated individually or per building, mainly from natural gas. Because of the losses in the distribution system and of an underperforming infrastructure, further and continuous investment in transport and distribution networks is needed.

Main drivers:

- The highly-efficient cogeneration with private investment works well.
- The municipality is the owner of the heating infrastructure and of 11 district small power plants.

5 Results from scenarios and policy assessment

The DH system is split into 4 areas and each area is using a mix of energy sources like natural gas heat boilers and the heat purchased from an external company. The purchased heat is generated from highly-efficient cogeneration plants using natural gas, part of the DH system.

The reference scenario reflects a development where no certain additional action will be undertaken and the current supply situation will persist within the considered time horizon. The heat for the main district heating networks will be purchased from the private company producing heat in **highly-efficient natural gas-fired cogeneration** engines and heat only boilers at a certain price expected for the investigated time horizon. Investments will be made to replace 50 % of the old parts of the network (not renewed within the last 10 years).

In the alternative scenario there will be networks

optimization to cut down the losses in each of the district heating systems to 20% of annual produced heat. Also 50% of the not yet renewed networks will be renewed within the considered time horizon to be able to connect additional consumers. Additionally, the public local service will install own production units (A small biomass boiler, solar thermal panels plus heat storage, a heat pump and also refurbishment of district heating plants (transforming substations to district heating plants) in the different parts of the district heating system to bring supply closer to the final consumers. Additional needed heat will be purchased from the private company, part of Braşov DH system.

In order to enable the transformation of the heating and cooling sector of the city of Braşov, a quantitative assessment of the following selected policies has been performed: long term loans for DH infrastructure, support of connection to DH network, CO₂ tax, subsidies for RES technologies in DH, zoning.

6 Recommendations and possible solutions

The quantitative assessment showed that single policies are not enough to tackle all problems district heating faces in Braşov.

It is necessary to combine different policies to ensure a modernization of the DH systems and to bring back confidence and the required consumers, the complex package of local policies being:

- Public service following a long-term investment horizon with a very low profit and therefore assuring the long term loans
- Subsidies for RES DH technologies
- A CO₂ tax of around EUR 35 / tCO₂ should be targeted
- Zoning
- Support to the final consumers for connecting/reconnecting to the DH network
- Increasing the share of RES in the DH system using solar thermal energy, heat pumps, and biomass
- Making consumers the main concern: raising the number of consumers for the DH network and improve the overall efficiency of the system.
- Further collaborating with the current producer (highly-efficient cogeneration).

7 Outlook and open questions

- How will the heating system look like in the following years, in a city that is constantly expanding, where new buildings have already installed individual boilers with no plans to be connected to the DH network?
- Will the local authority be convinced that sound policies are necessary to connect more and more consumers to the DH system and to use as much as possible local RES for heating?
- Will the citizens understand that such an approach will improve air quality, reduce CO₂ emissions and ultimately contribute to improving quality of life in Braşov?

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Interested?
Find more information in the full-text case study on the project website!



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