

Geothermal energy for ensuring sustainable and affordable heating & cooling



LITOMERICE
Czech Republic
24,000



1 Key figures

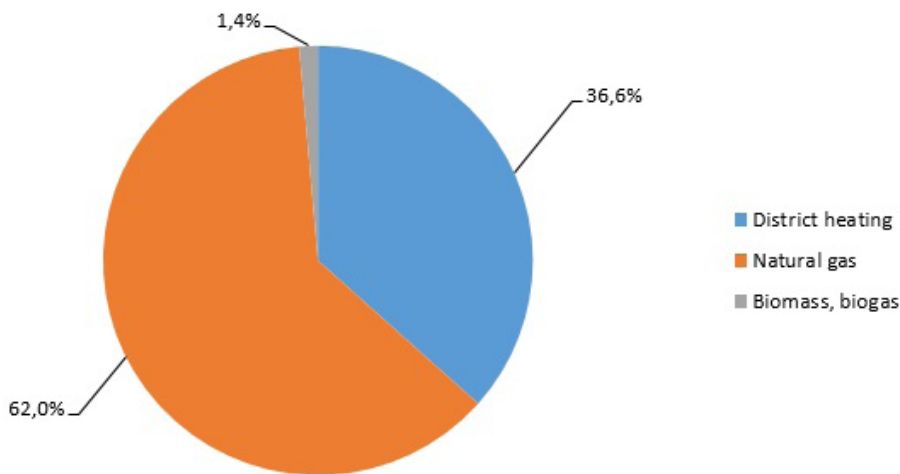
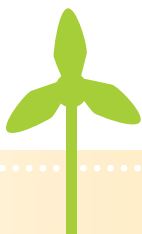


Fig.: Energy mix in Litoměřice

2 Main challenges

- Defining an optimal energy mix for 2030 and 2050
- Developing a feasibility study and a roadmap to buy the CHP plant and network back
- Working on a sound database for developing and implementing the city's Sustainable Energy and Climate Action Plan
- 'Bridging the information gap' through a campaign focused on prevention of disconnection from DH.





3 Current policies and targets

The city of Litoměřice developed an **Energy Concept** in 2009 and adopted a **Municipal Energy Plan** in 2014. The main goal of the municipality is to reduce energy consumption by 20 % by 2030 (baseline year 2012). There are no specific targets regarding renewables (RES) in Litoměřice in the heating and cooling sector.

The city is developing a **Sustainable Energy and Climate Action Plan** as part of the Covenant of Mayors (www.eumayors.eu), which will define specific targets for RES.

Based on an in-depth territorial analysis, the preparatory works for an ambitious geothermal heat plant - with an output up to 40 MWth - started in 2008.

4 Barriers and drivers

Main barriers

- Little financial and operational support to RES – the operational support was cancelled for the most of RES in the Czech Republic
- District heating (DH) system owned by an external body – the municipality has been in a weak position for negotiating and bringing changes to the district heating system
- Lack of information about renewable energy sources – still lot of disinformation about RES and their practical use and benefits in the local context
- Energy savings have been increasing the fixed cost of the DH system
- Preference for ad-hoc projects over complex projects – projects are not prepared according to the Life Cycle Cost method. The projects with a lower investment cost are preferred, which is expected to affect operational costs.

Main drivers:

- Availability of innovative financing programs for RES and EE projects
- A subsidy scheme for solar water heaters
- Mapping the potential of RES installed in the city area
- A good communication process within the geothermal project
- Initial analysis of the potential for CHP and roadmap for the whole process
- Installation of solar systems into common municipal property, e.g. a solar bench
- The European ENGAGE campaign and other information campaigns
- Setting an indicative target for renewable energy
- An Energy Saving Fund supporting complex energy measures.

5 Results from scenarios and policy assessment

In 2050, the optimal mix scenario - characterized by the **expansion of the district heating network and geothermal district heating plant** (Exp Geo 2050) - could achieve the following results:

- Heat savings of 46 % compared to 2015 are achieved with support from the municipal budget
- A renewable energy share of 53-58 %
- The average cost of heating for the end consumers is comprised between EUR 98/MWh and EUR 121/MWh

- The total cost of the heating system for the end consumers is between EUR 14.1 million to 19.3 million/year for different policies
- Saved CO₂ emissions are around 62 kt/year compared to 2015.

The results show that amongst all the scenarios, the district heating system based on a geothermal expansion (GeoExp) is feasible in 2030 and 2050, also when no other policy is implemented.

The GeoExp scenario is the least expensive, shows the best results in terms of CO₂ emissions and has the highest RES penetration rate. Proceeding with the geothermal energy scenario appears to be the most feasible both from an economic and an environmental point of view. Carrying on with the current DH system based on coal and natural gas or expanding it using fossil fuels is not beneficial and in some cases even more expensive than the individual gas boilers scenario.

6 Recommendations and possible solutions

In order to increase the penetration of RES, it is recommended that the city of Litoměřice take the following actions:

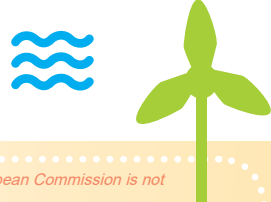
- Based on a feasibility study and a roadmap, **buy the CHP plant and network back** to have it under municipal property
- Include the **geothermal plant as the main part of its future strategy** for CO₂ reduction into the Sustainable Energy and Climate Action Plan – to be finalised in 2018
- Prepare new - and finalise ongoing - offers for national and EU programs to **cover the investment costs** for the drilling of the geothermal plant
- Establish some **innovative local financial instruments** for RES and EE – a new financial scheme combining sources from the municipal budget, local banks and firms supporting deep renovation of buildings, accompanied by technical advice
- Integrate local RES into sustainable transport – Litoměřice has been working on a pilot project on RES accumulation with the city of Dresden for 2018.
- Develop a new municipal web portal focused on sustainable energy and transport.

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

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