Renewable district heating: best practices & challenges from Litomerice and Brasov

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In a nutshell

• Strategies and policies for increasing renewable heating were developed for Brasov and Litomerice (and four other cities and six countries) based on
  • Stakeholder analysis
  • Analysis of barriers and drivers
  • Techno-economic modelling
  • Intensive stakeholder dialogue

• The ownership structure and an active role of the municipality in the process (remunicipalisation) turned out to be crucial for renewing the district heating system.

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The project progRESsHEAT

March 2015-October 2017
www.progressheat.eu
Starting point

Litomerice
- Relevant share of heat demand covered by district heating
- Current district heating supply through coal
- High temperature level in the grid (110-130°C), high losses (30%)
- Sustainability and long-term investments no priority of private district heating companies

Brasov
- Old district heating formerly for industry and households
- Industry closed down 1990
- Now overdimensioned, unreliable
- Change to individual gas boiler
- Bad image of district heating
- Big losses in network (>50%)
- Split ownership of grid and heat generation

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Stakeholder discussion process

1. Main topics of interest and legislation framework
2a. Pre-analysis of status-quo technical potentials
2b. Analysis of barriers and drivers
3. Specify research questions
4. Definition and quantitative assessment of technical scenarios
5. Policy recommendations

5. Roadmap
Heating and cooling strategy

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Analysis and involvement of stakeholders

• Stakeholder analysis based on interviews and surveys
• Identified key common barriers in Brasov & Litomerice:
  • High investment costs
  • Lack of awareness
  • Lack of information and demonstration sites
  • Inadequate grid

Five most important reasons to use geothermal energy in Litoměřice (n=99)

- Environmental friendly
- Advanced technology
- Good comfort in my household
- Expected future subsidies for RES
- Independence of local heat supplier
- Low price
Reference scenario:
• Purchased heat from external company, heat produced in natural gas fired HI-CHP engines
• Produced heat in natural gas fired district thermal plants
• Renewing 50% of the old parts of the network
• Building renovation

Alternative scenario:
• RES Production units installed in various parts of grid: solar thermal panels and heating storage, biomass boiler, heat pump, natural gas boilers
• Purchase additional heat needed from external company (gas CHP)
• Renewing 50% of the old parts of the network
• Building renovation

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Techno-economic model results - Brasov (2)

Heat price for Reference and Alternative Scenario (with network investments)

- Reference scenario with private investor
- Reference scenario with public investor
- Alternative scenario with private investor without subsidies
- Alternative scenario with private investor with RES-subsidies
- Alternative scenario with public investor without subsidies
- Alternative scenario with public investor with RES-subsidies

Zoning, Support of DH-connection

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Techno-economic model results - Litomerice

- Expansion of district heating with supply from geothermal energy turns out to be cost-effective and leads to lowest CO2-emissions.

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<th>Exp no policy</th>
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Lessons learned and next steps - Brasov

• CO₂ emissions can be significantly reduced with heat savings and integration of renewables into DH
• Long term investment horizon into network needed
• Long term horizon needs long term targets and planning
• Support of connection to DH network
• Zoning with prohibition of individual fossil technologies
• Subsidies for integration of RES into DH
• New image of DH: Modern, reliable, renewable
• Municipality created new public service for district heating

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Lessons learned and next steps - Litomerice

- Feasibility study and roadmap for re-purchase of district heating into municipal property
- Future energy mix: strong role of geothermal energy
  - SECAP – to be finished in 2018 – GeoCHP main part of the future measures for CO2 mitigation
  - New proposals for national and EU programs prepared – investment cost for drilling of GEO
  - New municipal owned company for geothermal energy
- Finance supporting RES and EE
  - Wider use of Energy saving fund also for residential sector
Lessons learned and next steps - Litomerice

- Municipality campaign for DH support
- ENGAGE – information campaign since 2016
- New municipality web portal – sustainable energy and transport – since 2018
- Calculation tool for „real“ price of individual heating – residential sector
Lessons learned & key policy messages

- Local level
  1. STRATEGIC PLANNING
  2. AWARENESS RAISE, SKILLS
  3. REGULATIONS
  4. ECONOMICS INCENTIVES

European level
National level

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The Hotmaps project develops a toolbox that supports heating and cooling mapping and planning processes.

Development of a toolbox that will be:

- **User-driven**: developed in collaboration with pilot areas
- **Open source**: the developed tool will run without requiring any other commercial tool or software and the code will be accessible
- **EU-28 compatible**: the tool will be applicable for cities in all 28 EU Member States

**The experts behind the project**: 17 partners combining scientific institutions and pilot areas for developing and testing the tool

Contact: info@hotmaps-project.eu

Project duration: October 2016-September 2020
Q&A and Discussion

• What is a suitable framework to require long-term investments?
  • Remunicipalisation as a key strategy?
  • Or rather innovative private companies?
• What is the added-value of quantitative model results for local policy making?
  • Which type of model results are useful and sufficient?
  • What is required from models to convince the city council and other bodies?
• How can citizens be actively engaged in DH related decisions?