Favourable policy frameworks for renewable heating and district heating. Results from local case studies within the progRESsHEAT project

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Outline

- Introduction to progRESsHEAT
- Local case studies
- Method
  - Modelling Framework
  - Policy Assessment
- Results
- Discussion
Introduction


- Aim: Assisting local, regional, national and EU political leaders in developing policies and strategies to ensure a strong and fast deployment of renewable and efficient heating and cooling systems

- Policy assistance process:
  - Policy Groups
  - Policy Workshops
  - Capacity building workshops

- Empirical analysis:
  - interviews & surveys
  - barriers and success factor

- Quantitative analysis:
  - development of modelling frameworks (separate for loc/nat)
  - analysis of current demand and supply + RES potentials
  - economic feasibility of technical solutions / detection of business cases and need for policy

www.progressheat.eu
6 Local case studies

1) Excess heat utilisation + New development area
2) Reinvestment in DH grid Reincreasing connection rate
3) Biomass CHP Heat savings
4) Geothermal energy Reinvesting in grid
5) Excess heat from refinery PV+AC+HP
6) Waste incineration Heat pump
Method

Modelling Framework on local level

Idea: Find cost optimal combination between

Heat savings

- Minimization of investments into building envelope (windows, roof, basement, walls) to achieve 8 different levels of heat savings
- Heat saving potential and levelized costs (EUR/kWh saved) derived for 30 different building classes (10 categories + 3 construction periods) in Invert/EE-Lab model

Heat supply options

- Individual vs.
  - Levelized costs of heat for 5 individual technologies in 30 different building classes
- District heating
  - Individual GIS based analysis: Four different types of areas per case
    - District heating areas
    - Next-to-DH areas
    - Individual areas
    - Scattered Buildings/ Individual buildings
  - Dispatch optimisation model in energyPRO for DH supply

→ All put together in “Least Cost Tool”
→ Choose heat saving level that is most economic with supply option
→ Iterations to calculate new levelized costs of heat after renovation

1) http://www.invert.at/
2) http://www.emd.dk/energypro/
**Method**

**(Local) Policy Assessment**

- Technical reference and alternative scenarios for DH (2030/2050)

- Policies on different levels
  - Long term loans
  - Taxes (CO2, PM, electricity)
  - Investment subsidy
  - Zoning (heat planning)

- Indicators
  - Energy demand for SH&DHW
  - CO₂ emissions for SH&DHW
  - Share of RES / district heating
  - Total costs of supply and savings
  - Levelized cost of heat
Quantitative Results

The diagram shows the heating demand in 2030 (MWh) for various scenarios, including Base Case, EXP, GEO, and INDO. The bars represent different energy sources and technologies, such as DH heat pump, DH biomass boiler, DH solar thermal, DH waste incineration, DH coal boiler, Individual solar thermal, Individual heat pump, Individual direct electric heat, Individual biomass boiler, Individual oil boiler, and Individual gas boiler.

The chart also illustrates the CO2 emission reduction and the energy demand (GWh) for different policies and scenarios, such as no policy, long-term loans, CO2 Tax of 3.15 EUR, DH connection subsidy, RES, Zoning/DH-Area. The policies are represented by different colors, including Heat pump, Biomass boiler, Natural gas boiler, and DH Share.
Results

A favourable policy framework should… (1/2)

- “Energy efficiency first”

- Include strategic heating and cooling planning with
  - Binding climate protection targets
    - (long term targets)
  - Institutional setting for long term investments
  - H&C planning as public service task / provide resources

- Raise awareness, skills and competences by
  - Addressing crucial change agents
    - (craftsmen, architects, planners…)
  - Involving local stakeholders and the public (transparency)
  - Communication of local decarbonization strategy
Regulate
- Heat zoning / priority areas
  - (ensure high connection rate)
- “Ban” of fossil fuel heating system in new installations
  - (e.g. RES obligation in building codes)
- Implement mandatory energy management system in industry

Set economic incentives
- In line with strategic targets
- Innovative financial schemes
  - (e.g. soft loans, contracting, crowdfunding…)
- Internalize CO₂ costs
Thank you for your attention!

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