



THERMOS

Accelerating the development of
low-carbon heating & cooling networks



creara
ENERGY EXPERTS

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Problem

Pre-feasibility studies for thermal networks are **expensive**, take **time**, and rely on **uneven approaches**, leading public authorities to face **growing challenges** to effectively manage their energy planning tasks.

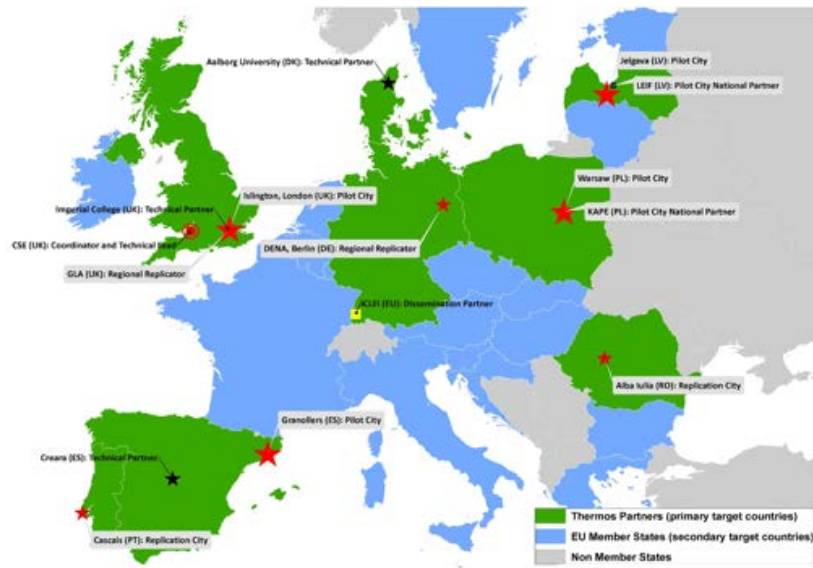


Needs of Local Authorities



- Consistency in approaches
- Comparability of results
- Information about methodologies used
- Time and cost efficiencies
- **Robust methodologies and tools to rapidly identify, analyse and compare specific thermal energy system option**
- **Building capacity for energy planning is essential to develop strategic local sustainable energy solutions.**

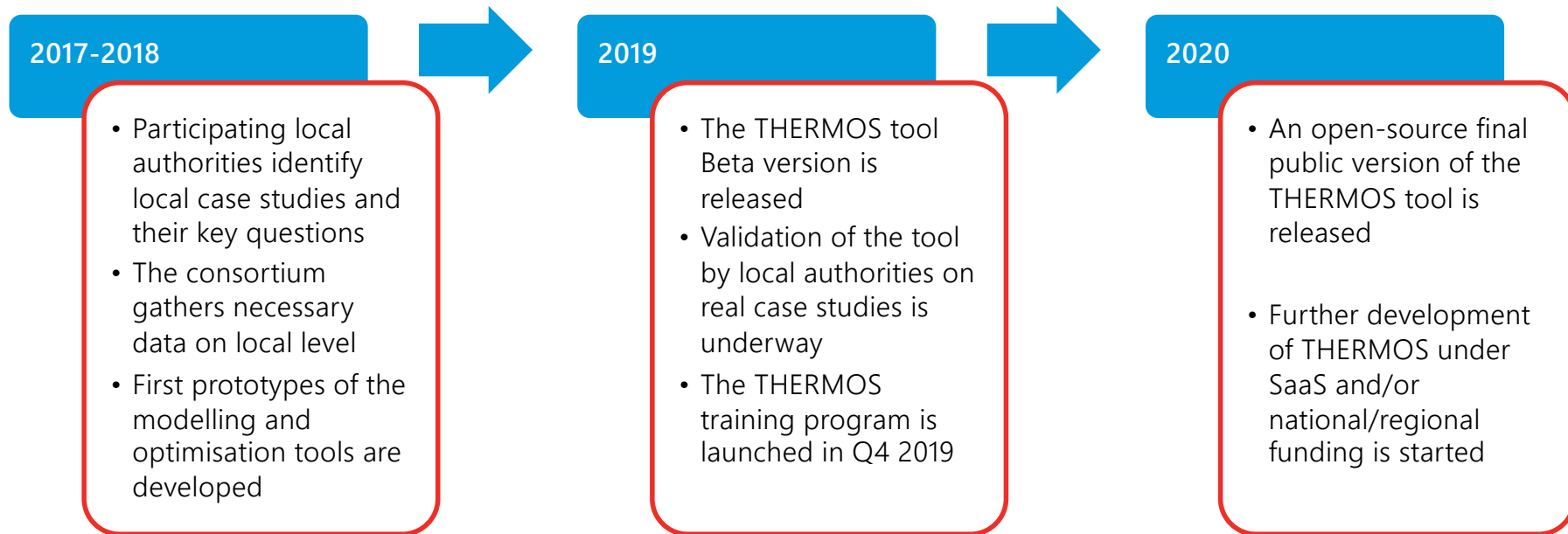
THERMOS Consortium



- Brings together research, consulting and multiplier organisations with local, regional and national authorities - the final users
- Provides for development, validation and exploitation



Timeline and Milestones

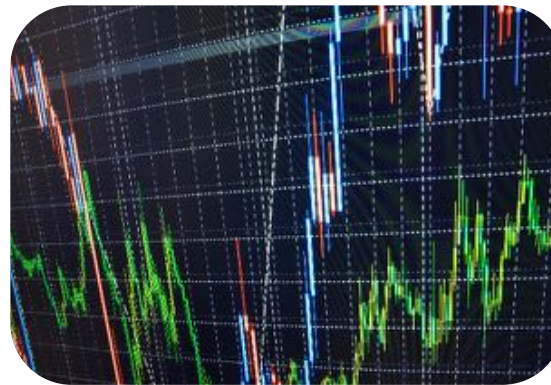


THERMOS: Thermal Energy Resource Modelling and Optimisation System

An open-source software designed to:



optimise local district energy network planning processes



support sustainable energy master planning



identify and select low-carbon heating options in real geographies



THERMOS Questions - Examples

- What is the (approximate) thermal energy demand of a group of buildings?
- What is the most convenient path to connect a set of buildings to a given energy thermal source?
- What is the requires thermal energy supply capacity for a given demand?
- What is the energy tariff that can guarantee sufficient economic returns to a given network?
- In which cases it is worth expanding/developing a network rather than providing a set of buildings with individuals supplies or energy efficiency measures?

THERMOS addresses four main thermal planning use cases



1

Expansion of existing district heating and cooling networks



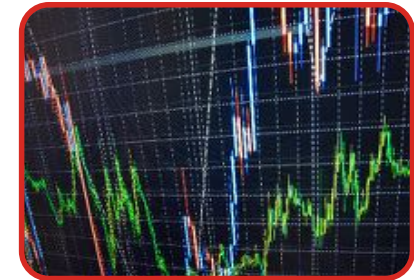
2

Planning a new network given a known energy source



3

Planning a new network serving a given local thermal demand utilising one or more energy sources

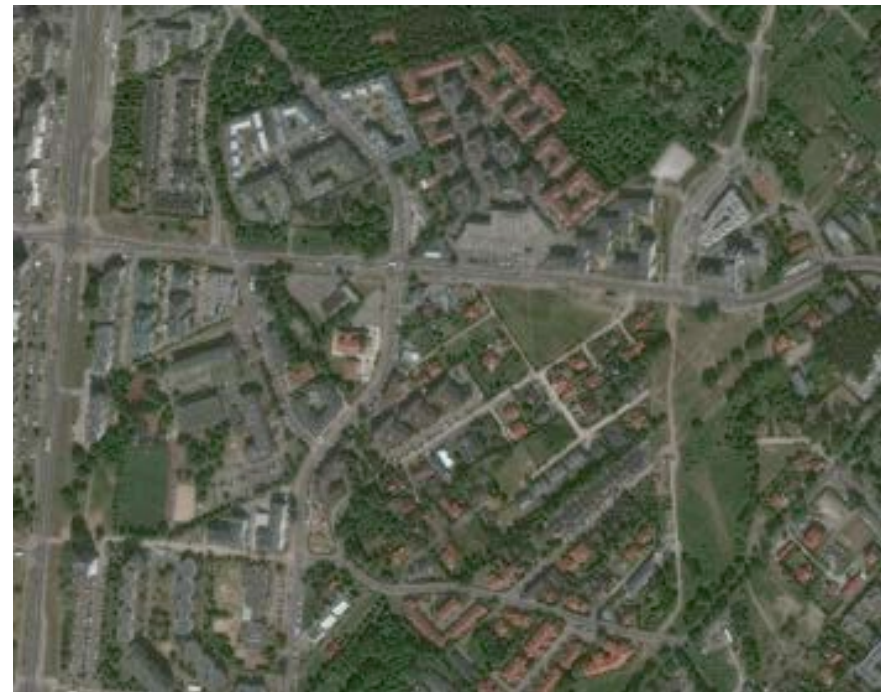


4

Identifying optimised solutions when considering energy efficiency measures, thermal networks and/or individual H&C measures

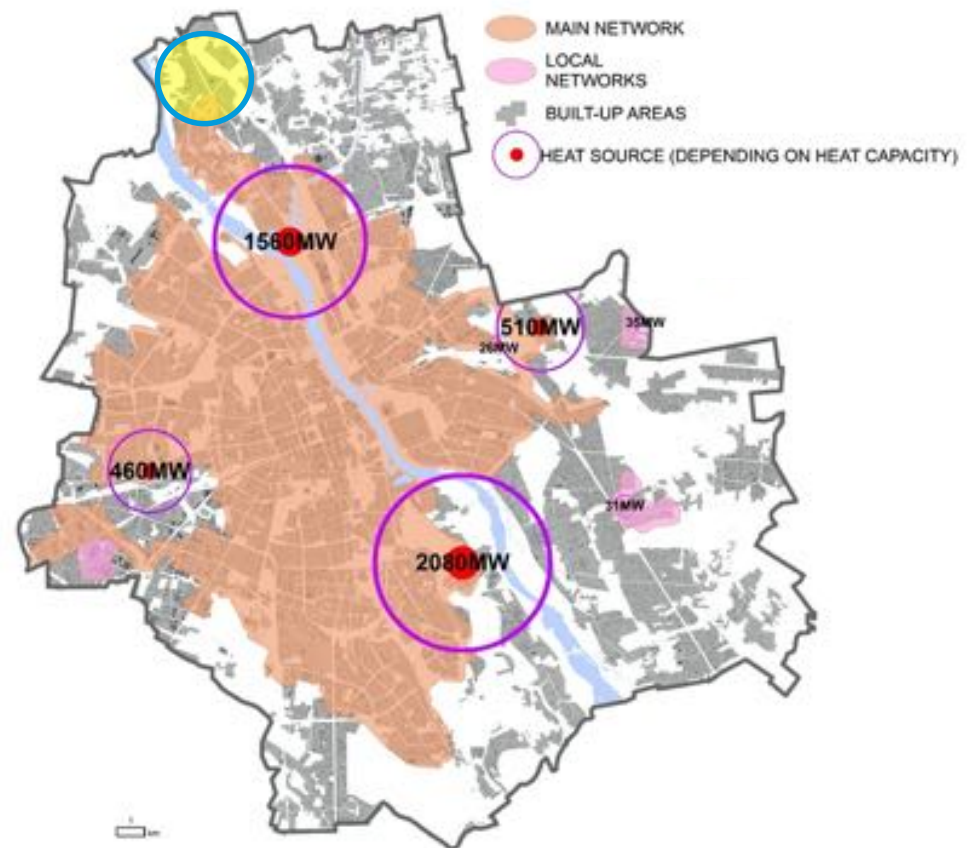
THERMOS in Warsaw

- **THERMOS helps Warsaw** to meet the local thermal planning objectives:
 - **Better estimation** of thermal energy demand
 - Evaluation of **different alternatives** for local policy-makers
- **THERMOS** as a useful tool for assessment of Warsaw's heat sector challenges in terms of heat planning and reduction of CO₂ emissions, towards the **SECAP** preparation



Warsaw - Key information

- Warsaw is the signatory of **Covenant of Mayors** and plans to join new **Covenant of Mayors for Climate and Energy**
- **Objectives:**
 - 20% CO₂ emission reduction by 2020,
 - 40% CO₂ emission reduction by 2030
 - Zero-emission city by 2050
- Warsaw's district heating network is one of the biggest in Europe with **1,800 km** of pipes, covering the heating needs **of 80% of its inhabitants.**



Case study – Warsaw B

Key objectives

- Comparison of existing heating network and individual sources solutions in the *Białołęka* district

200+ buildings involved

- mainly residential, not connected to the network

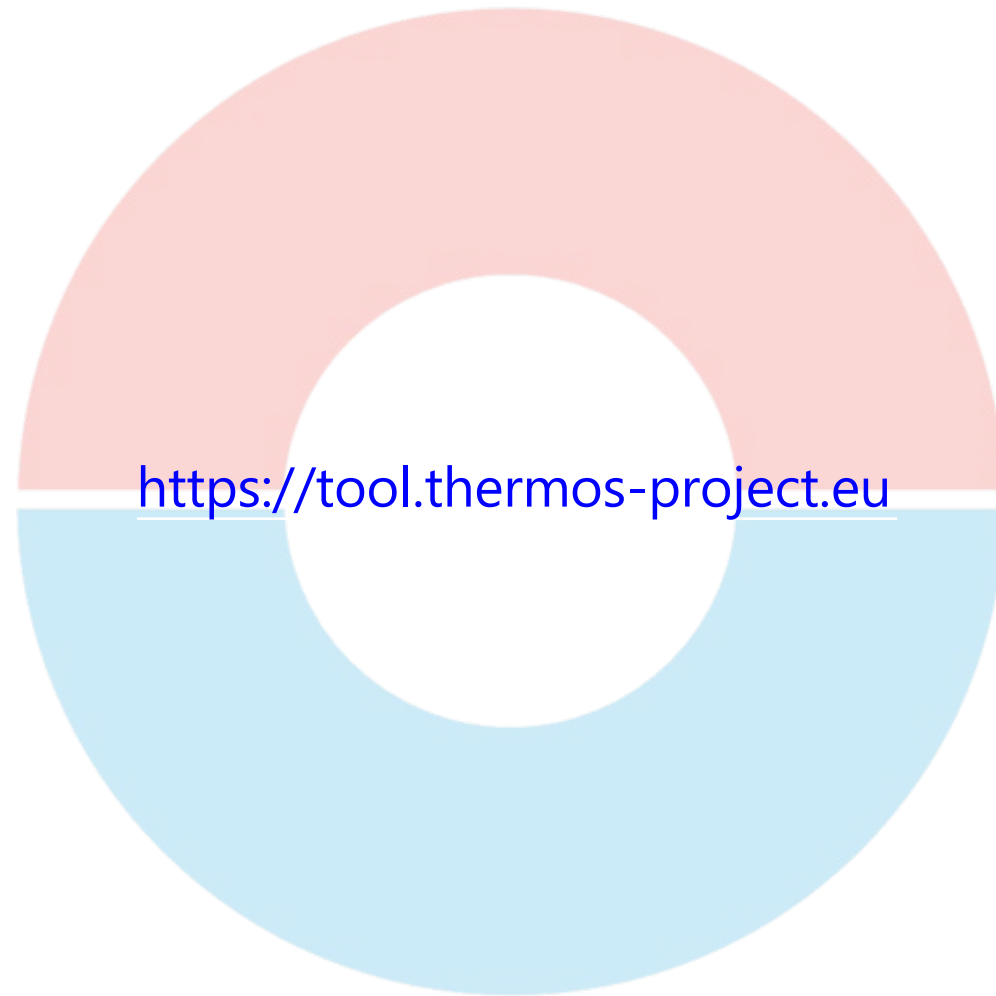
Total demand

- 19.1 GWh/year

Project calendar

- Estimated completion by 2025





Case study – Warsaw B

Key Results

- The choice was whether to expand the network and connect these building or rely on (upgraded) individual solutions based on gas, oil or coal
- Most buildings should be connected to the network
- Remaining buildings should be switched to cleaner supplies (mostly natural gas)



Benefits of using THERMOS for energy planners



Integrating local (low-carbon) energy sources to their local thermal networks

Better network design on a prefeasibility stage



To meet local sustainability goals, such as energy, GHG emissions and air pollution reduction goals



To reduce energy costs and promote energy efficiency



To foster innovation and collaboration among public and private sector

Additional Information

- THERMOS website: www.thermos-project.eu
- THERMOS tool demonstration video: www.youtube.com/watch?v=r14L63Bf2t0
- THERMOS training material: <https://www.thermos-project.eu/get-involved/training/>
- Try out the THERMOS tool: <https://v5.thermos-project.eu> (email registration needed)

All you need is a standard web browser and an internet connection!



Thank you!



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