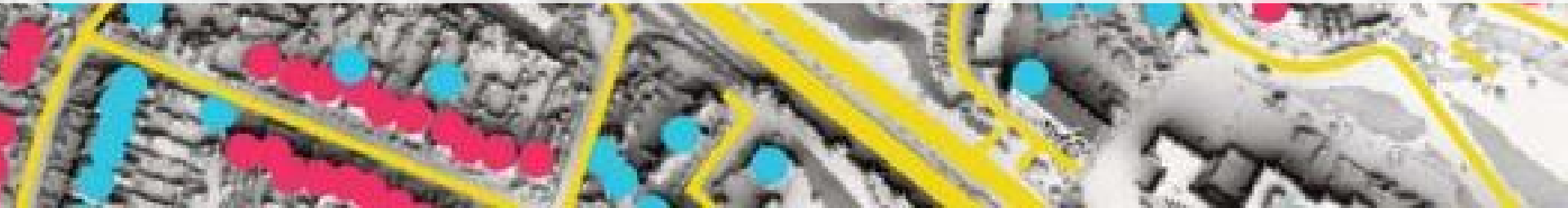
THERMOS

Accelerating the development of low-carbon heating & cooling networks

National Inspire Event in Aalborg

Steffen Nielsen, Aalborg University
Aalborg, 12 November 2018



Agenda

- 11:00 - 11:10 Welcome and introduction to THERMOS

  Steffen Nielsen, Aalborg University
- 11:10 - 11:25 THERMOS supporting local sustainable energy and climate action planning

  Alis Daniela Torres, ICLEI
- 11:25 - 11:35 Energy system modelling concepts for district heating

  Kamal Kuriyan, Imperial College London
- 11:35 - 12:20 Introduction and demonstration of the THERMOS tool

  Joshua Thumim, Centre for Sustainable Energy
- 12:20 - 12:30: Q&A

Introduction to

THERMOS

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The aim of THERMOS is to develop and share tools and data for identifying and selecting low-carbon heating options in real geographies

1. Generalise, implement and share and methods and data for **high-resolution energy system mapping**
2. Develop thermal **energy system models and optimisation** procedures which run on these maps
3. Integrate the maps and the models in an **open-source software** application developed in close collaboration with pilot local authority users
4. **Support the use** of the new tools with replication partners
5. **Promote and disseminate** our results to maximise post-project exploitation

1. **Building-level energy system mapping** – scalable to cities, regions and countries
2. **Energy system models** with direct representation of networks: **going beyond 2D heat mapping**
3. **Optimisation** to identify best solutions
4. **Free, open-source** product, aimed at local authorities: no requirement for expensive third-party software
5. Use of **open-data** for inputs whenever possible
6. Close collaboration with **Pilot local authority partners** to make sure we build tools with the most meaningful features
7. Supported rollout to **Replication partners** to ensure post-project sustainability

Who and where we are

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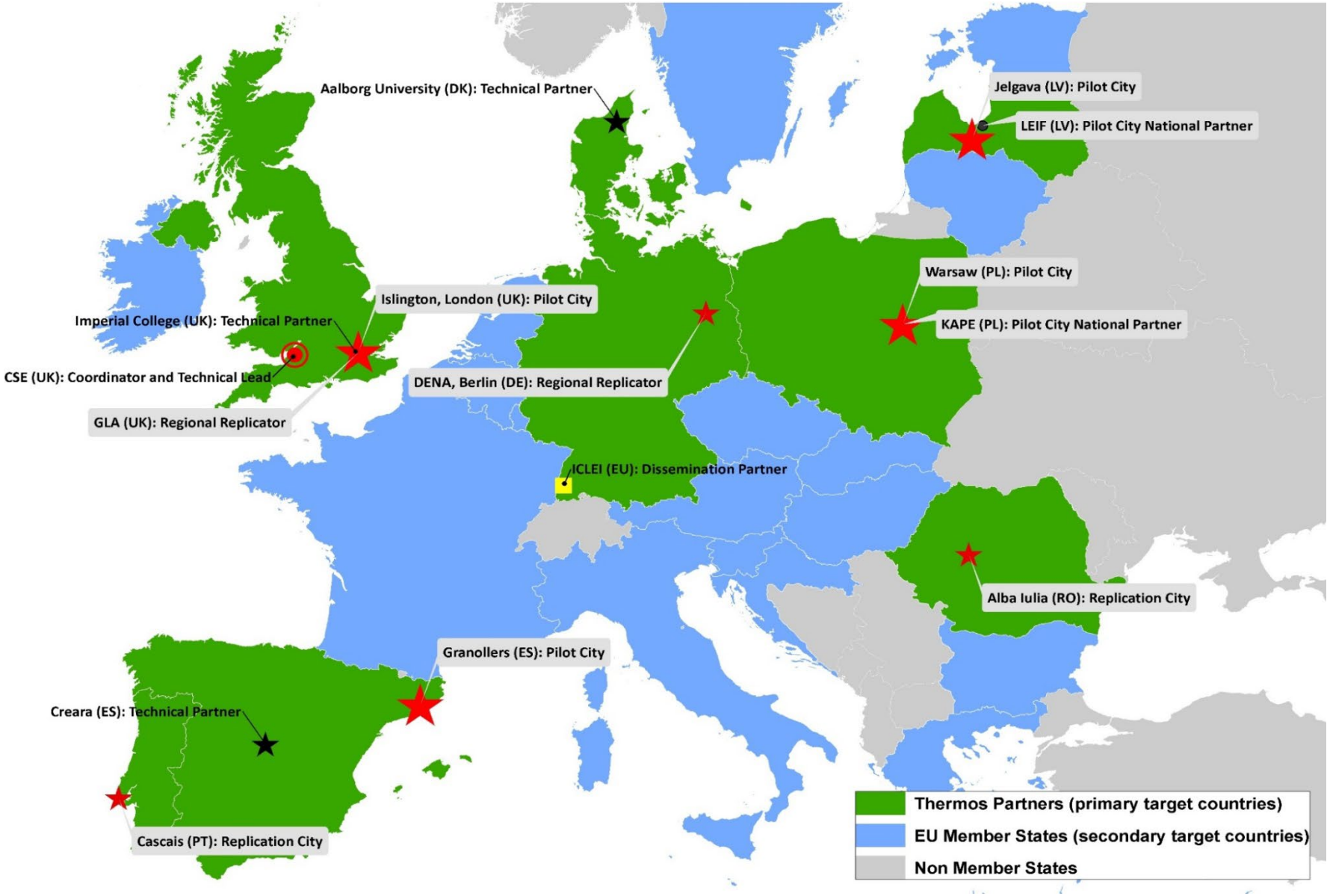

What kinds of question will THERMOS help with?

The purpose of THERMOS is to support the identification and development of low-carbon heating and cooling options.

The interests of the Pilot and Replication City users imply a need to support the following activities, and this is how we are designing the tool:

1. Adding new sites and connections to an existing network
2. Designing a new network based on an existing energy source
3. Designing a new network to supply a given set of buildings, with one or more potential energy sources
4. Assessing / comparing the performance of specific networks and non-networked solutions

What's in an answer?

The Thermos application identifies the *best solution*, given a set of available energy supplies, demands, and distribution routes and the choice of certain decision-making parameters

"Best" defines what quantity energy system model is trying to optimise. For example, we might want as our answer the solution with the:

- Highest net present value
- Lowest capital expenditure
- Lowest emissions
- Highest total demand met
- (other criteria are possible)

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thermos-project.eu

@thermos_eu

steffenn@plan.aau.dk

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