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
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
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)