



THERMOS

Accelerating the development of
low-carbon heating & cooling networks

Capacity Building and Train-the-trainer programme
Module 0: Introduction to the capacity and training programme





Welcome to the THERMOS Capacity and Train-the-Trainer programme!

Introduction to THERMOS

- THERMOS in a nutshell

Objectives and structure

- Capacity Building programme
- Train-the-Trainer programme

Benefits

- Local governments
- Energy agencies, utilities, consultants
- Role and benefits of a THERMOS Trainer



THERMOS in a nutshell





Concept

1. Generalise, implement and share methods and data for **high-resolution energy system mapping**
2. Develop thermal **energy system models and optimisation** procedures that 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





Cities

- Free, open-source address-level energy system maps are being created and tailored to the specific needs of local authorities.
- The strong involvement of 4 cities in THERMOS as pilots, and 4 cities as replicators, is one of the unique elements of this project.
- Working with cities insures the relevance, usability, and replicability of the THERMOS approach and model.

Pilot City

Granollers, Spain

Islington, UK

Jelgava, Latvia

Warsaw, Poland

Replication City

Cascais, Portugal

London (GLA), UK

Alba Iulia, Romania

Berlin (dena), Germany

Supported by

CREARA, AAU, ICLEI

CSE, AAU, ICLEI

CSE, AAU, ICLEI

KAPE, AAU, ICLEI



Added value*

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**



*The magnificent seven



Objectives of the Programme





Aim: Knowledge Sharing and development

1. Capacity building (among 420 people)
2. Training of Trainers (for 80 people)

Target groups for capacity building and training:

- Local & regional public authorities & networks
- Energy agencies
- Public & private utilities and their consultants
- Industry and investors
- Consumer associations
- National & European institutions
- Research organisations



Objective of the THERMOS capacity and training programmes

- Achieve a tangible bottom-up engagement and support of local, regional and national stakeholders to replicate the THERMOS model
- Enable a realistic assessment of the replication potential
- Empower project partners as well as THERMOS trainers to multiply the impact in Europe
- Ensure a sustainable roll-out and adoption of the THERMOS model within and beyond the project lifetime throughout Europe.



How is THERMOS building capacity?

- 3 European and 8 National Inspire Events Series
- 5 European and 8 national workshops
- 4 webinars
- Stakeholders dialogues



EU and country specific training modules

1. Thermal energy supply and demand in Europe
2. Energy system mapping and modelling with THERMOS
3. Embedding THERMOS in your city
4. Optimising thermal planning, resources and technologies
5. Heating and cooling market and finance
6. Local stakeholders involvement for adopting THERMOS
7. Decarbonising the heating and cooling sector towards 2050

Complementary material:

- HEATING AND COOLING INNOVATION CATALOGUE (in EN)
- THERMOS USER MANUAL (in 8 EU languages)



Capacity building Modules

MODULES

1 Thermal energy supply and demand in Europe

(Author: lead AAU, supported by ICLEI)

1.1 Status of heating and cooling in Europe

1.1.1 HC supply (sectors, resources, technologies)

1.1.2 HC demand (sectors, resources, technologies)

1.2 Key EU objectives, plans and policies on thermal energy

1.2.1 European policies and legislation

1.2.2 Energy efficiency objectives and potential

1.2.3 Renewable objectives and potential

1.3 Translating EU objectives into national plans and policies

1.3.1 National Energy Efficiency & Renewable Action Plans

1.3.2 EU Directives with a main impact on heating and cooling

1.3.3 National initiatives on heating and cooling



MODULES

1 Thermal energy supply and demand in Europe

(lead AAU, supported by ICLEI)

1.4 Local and regional objectives, plans and policy on thermal energy (ICLEI)

1.4.1 Heating and cooling within urban development

1.4.2 Good policy and legislative initiatives

1.4.3 Local energy system planning

1.5 Policy barriers and opportunities optimising the heating and cooling sector (ICLEI)

1.5.1 European level

1.5.2 National level

1.5.3 Regional level

1.5.4 Local level



MODULES

2. Energy system mapping and modelling with THERMOS

(lead: CSE, supported by Imperial)

2.1 Energy system mapping

2.1.1 Concept, approach and methodologies

2.1.2 Data, resources and skills needed

2.1.3 Good practice examples

2.2 Energy system modelling

2.2.1 Concept, approach and methodologies

2.2.2 Data, resources and skills needed

2.2.3 Good practice examples

2.3 THERMOS – Thermal Energy Resource Modelling and Optimisation System

2.3.1 Concept, approach and methodology

2.3.2 Application design and features

2.3.3 Data, resources and skills needed



MODULES

3. Embedding THERMOS in your city

(lead: CSE, supported by ICLEI and Creara)

3.1 Planning the city's thermal system using THERMOS

3.2 Data set requirements, sources, preferences and proxies (*upcoming*)

3.3 Political and technical decision-makers' involvement

3.4 Cross-departmental potentials and impact of THERMOS

3.5 THERMOS used by different stakeholders



MODULES

4. Optimising thermal planning, resources and technologies with

THERMOS

(lead: Creara, supported by CSE)

4.1 How to optimise energy and resources planning?

- 4.1.1 Pinpoint heat and cold demand densities
- 4.1.2 Assess local renewable resources
- 4.1.3 Measure infrastructure costs
- 4.1.4 Shape your Heat Synergy Region

4.2 How to optimise thermal resources in urban areas? *(upcoming)*

- 4.2.1 Energy supply optimisation
 - 4.2.2 Impact and increasing renewable sources
 - 4.2.3 Energy demand optimisation
 - 4.2.4 Impact of low energy buildings
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MODULES

4. Optimising thermal planning, resources and technologies with THERMOS

(lead: Creara, supported by CSE)

4.3 Optimising technologies and systems (*upcoming*)

- 4.3.1 Optimising district heating and cooling
 - 4.3.2 Optimising heat pumps
 - 4.3.3 Optimising hybrid systems
 - 4.3.4 Optimising integration of waste heat
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MODULES

5. Heating and cooling market and finance

(lead: Creara, supported by ICLEI)

5.1 Market actors on all governmental levels

5.2 Dominant market design and finance structure

5.3 Dominant market and traditional partnership models

5.4 Market and investment barriers and opportunities

5.5 Innovative services and financing models



MODULES

6. Local stakeholders involvement for adopting THERMOS

(lead: ICLEI)

6.1 What is stakeholder involvement

6.2 Stakeholder identification

6.3 Engagement process and cycle

6.4 Engagement strategies for THERMOS

6.5 Tips and Tools

6.6 THERMOS soft skills package



MODULES

7. Outlook - Decarbonising the heating and cooling sector towards 2050

(lead: CSE, Supported by AAU and Imperial)

7.1 Scenarios and pathways

7.2 Effects within the energy system

7.3 Energy storage

ANNEXES

HEATING AND COOLING INNOVATION CATALOGUE

THERMOS USER MANUAL



What is the Train-the-Trainer Programme?

Capacity building Programme + Additional Features:

- Training and Capacity Modules
- Replication Guidelines
- Heating and Cooling Innovation Catalogue
- THERMOS User Manual



Who can benefit from THERMOS?



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Who can benefit from THERMOS?

- Local & regional authorities, organisations wanting to improve their thermal energy system planning
- local authorities, energy agencies, organizations or institutions wanting to become trainers and strategic multipliers



Why become a THERMOS trainer?

Local governments & local government associations:

- Become a hub and an example for best practice
- Get experienced in leading processes and group dynamics
- Improved knowledge of DHC and an extended professional network
- Exclusive access to the capacity building events of the 8 THERMOS cities.
- Expertise in how to use the THERMOS Tool
- Improved communication, marketing, facilitation/moderation and training skills



Why become a THERMOS trainer?

Energy agencies, Utilities:

- Valuable experience in leading processes and group dynamics
- Improved knowledge of local energy and climate action plans
- Extended international professional network
- Expertise in using the THERMOS Tool
- Promote your work and project developments
- Improved communication, marketing, facilitation/moderation and training skills
- Exclusive Access to capacity building events of the 8 THERMOS cities



Role & Benefits for a trainer?





What is the role of a THERMOS trainer?

- Mentor
- Facilitator
- Promoter of sustainable processes and adaptation



What do Trainers get?

- Know-how: training & communication skills
- Knowledge: climate & energy issues + local climate action plans
- Recognition
- Promotion – own activities, projects, etc.
- Profile
- Access: high level events, conferences etc.
- Visibility within and beyond the project – press, media activities



Get started!

- Go to Module 1 "Thermal energy supply and demand in Europe"
- Go to Module 2 "Energy system mapping and modelling with THERMOS "
- Go to Module 3 "Embedding THERMOS in your city"
- Go to Module 4 "Optimising thermal planning, resources and technologies with THERMOS"
- Go to Module 5 "Heating and cooling market and finance "
- Go to Module 6 "Local stakeholders involvement for adopting THERMOS"
- Go to Module 7 "Outlook - Decarbonising the heating and cooling sector towards 2050"

THERMOS



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