

The integrated use of the free online tools Hotmaps and THERMOS

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Agenda

- Methodology definition and scope
- Integrated use process steps
 - Heat demand estimation
 - Identification of suitable DHC areas
 - Detailed feasibility analysis
- Data alignment
- Recommended bibliography



Methodology definition and scope

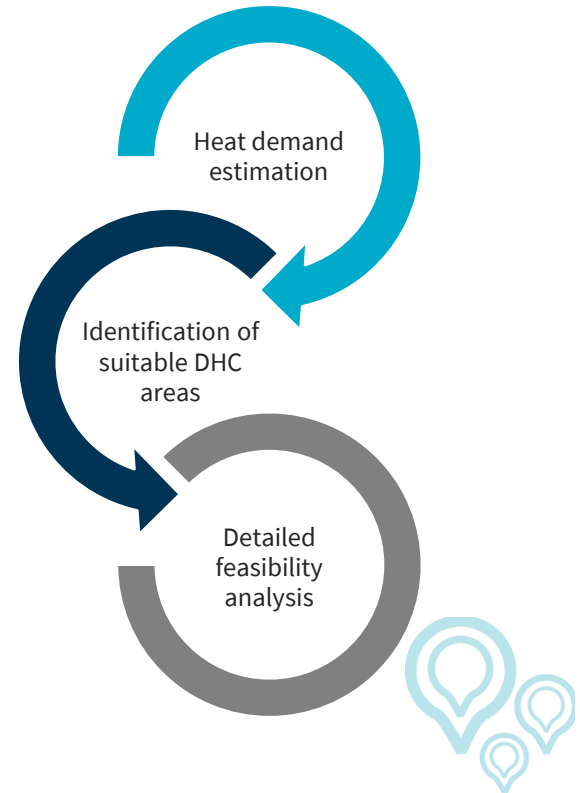


- The Act!onHeat integrated use of Hotmaps and Thermos is understood as the methodology developed to maximise the results produced using each tool individually by combining their functionalities
- Both of the tools have remarkable potential based on their individual capabilities, which provides several options for an integrated use
- The first iteration of the integrated use covers a specific case study that uses Hotmaps for the identification of areas susceptible of district heating and cooling (DHC) networks development and Thermos for the detailed financial feasibility analysis



Integrated use process steps

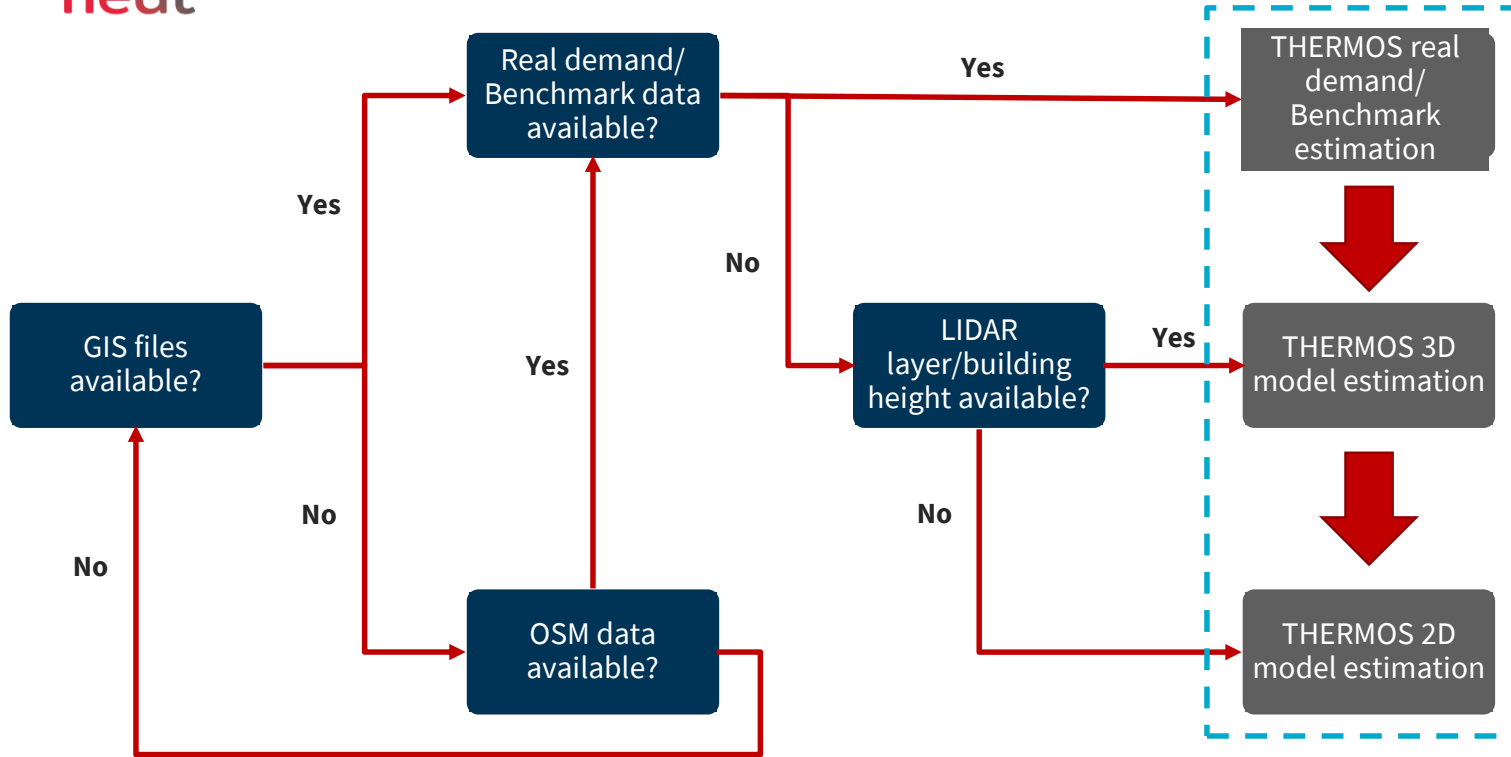
- The integrated use has been divided into three main steps, based on the need to send information from one tool to another in order to use their functionalities
- The main steps are:
 - Heat demand estimation
 - Identification of suitable DHC areas
 - Detailed feasibility analysis
- Steps 1 and 3 are developed using Thermos functionalities, while step 2 uses Hotmaps functionalities
- These steps have also been split into substeps in order to ease the user's experience



Heat demand estimation

1. **Identification of the working area** – Definition of the specific working region for the case study development
2. **Estimation of the demand associated with the building stock** – Association the thermal demand to each building candidate
 - i. **Status Quo: Identifying common sourced demand data** – Selection of the data source
 - ii. **Bottom-up heat demand density raster generation** – Formatting of the demand file to allow implementation onto Hotmaps



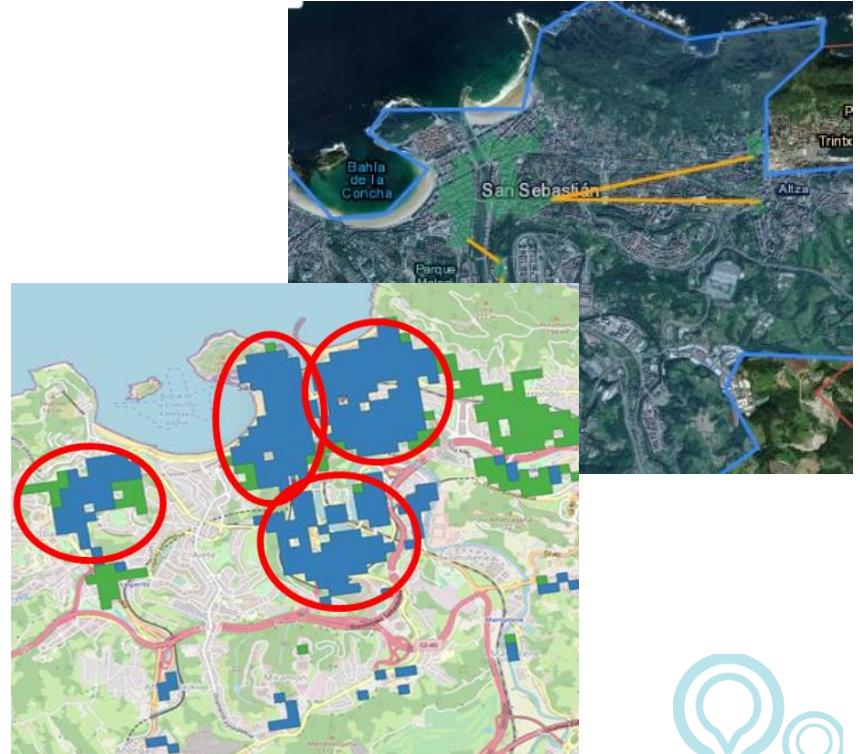


Decision tree for demand estimation



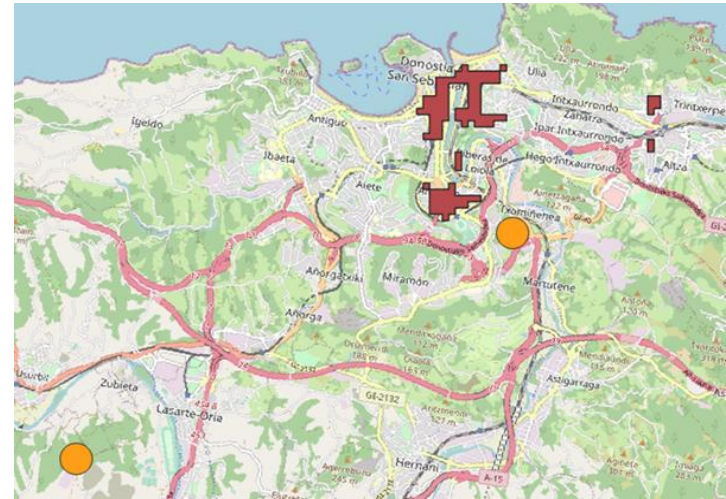
Identification of suitable DHC areas

- 1. DHC potential economic assessment -** Depiction of areas susceptible of DHC network deployment using the corresponding Hotmaps calculation module
- 2. Interpretation of Hotmaps results for the definition of the THERMOS cases -** Analysis of Hotmaps' outputs and conversion into suitable inputs for Thermos
- 3. Data alignment -** Review of relevant parameters that are common for both analyses



Detailed feasibility study

- Once the previous steps have been fulfilled a specific financial assessment can be carried out using Thermos
- In addition to the areas identified using Hotmaps, potential supply locations and supply parameters (MW size, CAPEX, and OPEX) are useful as inputs



Data alignment

- There are several parameters that need to be aligned in order to ensure that the results produced by both modules are coherent.
- Different methodologies for alignment may be needed depending on the input format:
 - Intrinsically aligned
 - To be aligned before optimisation
 - To be checked after producing the results from the feasibility study

Hotmaps inputs		
Intrinsically aligned	To be aligned before optimisation	To be checked after results
Demand estimation	Accounting period/Years of investment	Market Share
	Interest rate	
	Investment costs	



Recommended bibliography

As the tools have been developed in previous Horizon projects, there are several support materials that are already available online, the most relevant ones are:

Hotmaps

- **Hotmaps Wiki** – It is the most complete guide for Hotmaps use, users can find documentation, guidance and a manual to easily use Hotmaps
- **Short tutorial** – It is an online video that provides a quick overview of Hotmaps and its main features
- **Free trainings** – Set of materials used during the several free training sessions offered throughout the project lifespan
- **Hotmaps Brochure** – Brief document explaining what strategic heat planning is and how the toolbox helps to perform it, as well as examples from the pilot areas experience
- **Hotmaps Handbooks** - Set of “how to” documents to support the users of the software

Thermos

- **THERMOS Replication Guide** – Document that provides a high level of guidance on exploiting the methodologies and tools developed during the project, with special focus on the THERMOS Software
- **THERMOS Sustainable Adoption Roadmap** – Document outlining the adoption of the THERMOS tool in the last few years by different energy stakeholders
- **THERMOS City Case Studies** - A collection of THERMOS Case Studies by partners developed with THERMOS users from Ukraine to Spain
- **THERMOS User Case Studies** - Report presenting the work carried out by a group of tool users for developing high efficiency energy projects with the software



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