



Toolkit – Tools study template

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www.becoop-project.eu



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Document information

Document Factsheet	
Full title	
Work Package	WP2 – Developing the BECoop support tools and services for the uptake of community bioenergy
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Date	


Document dissemination Level

Dissemination Level	
	PU - Public
	PP - Restricted to other programme participants (including the EC)
	RE - Restricted to a group specified by the consortium (including the EC)
	CO - Confidential, only for members of the consortium (including the EC)

Document history

Version	Date	Main modification	Entity
v0.1		Draft version distributed for partners' review	
V1.0		Final version submitted to the EC	

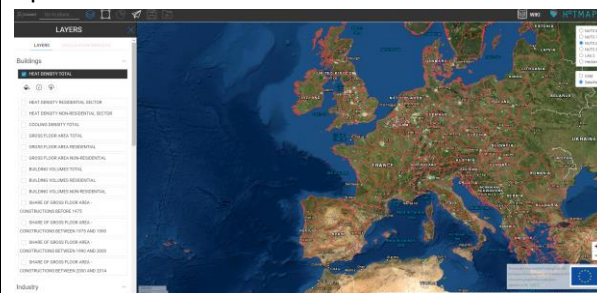
1. Template for selected tools

Name of the tool	HOTMAPS
Logo	
Link	https://www.hotmaps-project.eu/
Brief Description	<p>The overarching goal of Hotmaps is the development of an open source heating / cooling mapping and planning toolbox and to provide default data for EU28 at national and local level. These data and tool allow public authorities to identify, analyse, model and map resources and solutions to supply energy needs within their territory of responsibility in a resource and cost efficient way. Those results will help authorities to develop heating and cooling strategies on local, regional and national scale which are in line with RES and CO₂-Emission targets on national and EU level.</p>
Type of tool	Bioenergy relevant tool
Subtype	Tool
Related to	Technical tool
Most valuable information that can be obtained	<p>The toolbox allows the user to:</p> <ul style="list-style-type: none"> Identify the location of current heating and cooling demand as well as supply on a map for EU28; Identify renewable energy potential to supply heating and cooling for a selected area; Identify waste heat potential from industrial facilities within a selected area; Estimate the potential for efficient district heating options within a selected area; Estimate and compare the costs of individual heating vs. district heating options within a selected area; Develop scenarios for decarbonisation pathways of heating and cooling.

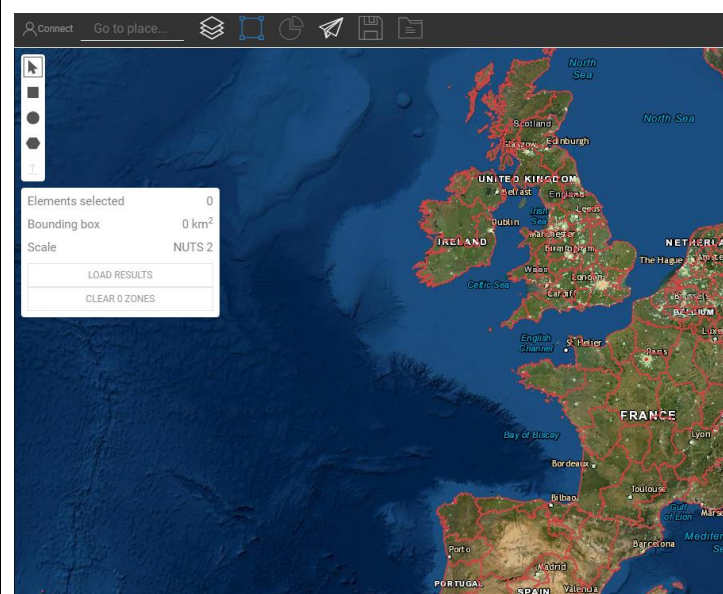
How does the tool work / manual of the tool

The Hotmaps toolbox allows you to provide within 5 minutes a first estimation of heating and cooling demand in your region and the potentials of local renewable energy to cover this demand. Subsequently, by using data that are more detailed and applying calculation modules of the toolbox, you are able to elaborate much more comprehensive heating and cooling strategies.

Quick introduction into the toolbox: As a starting point, the Hotmaps toolbox provides a wide range of relevant data for heating and cooling planning in EU-28 countries. This data can be visualized on the toolbox. Once you open the toolbox, you see the map of Europe. In order to visualize the data in the toolbox, you should open the “LAYERS” window from the Hotmaps toolbar.



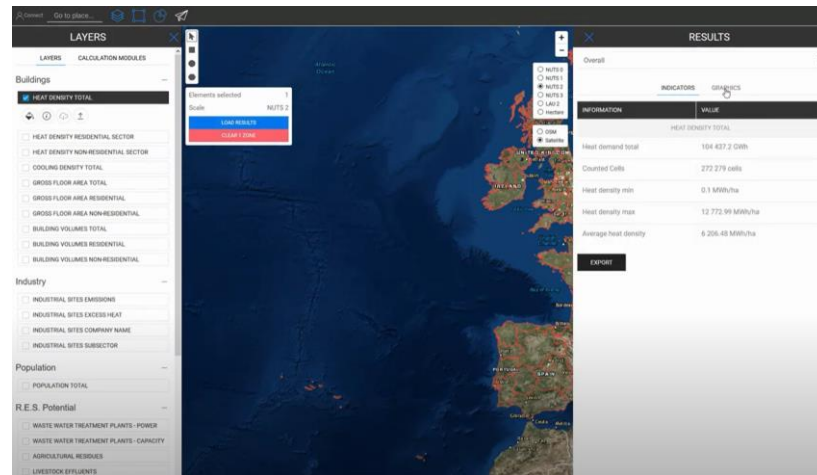
The default data sets are categorized in “Building”, “industry”, “population”, “R.E.S. potential”, “Climate” and “Electricity”. The symbology helps you to understand the meaning of colours on the map. Also for additional information about the layer, you can use the information button. You may download the whole data set, or just select an area and download the corresponding data for your selection. The selection tool allows for administrative boundary selection and flexible selection including rectangular selection, circular selection, and free selection. If you wish to select and administrative boundary, you should first determine the zoom level on the pan provided on the top-right corner of the toolbox.



For flexible selection types, you should choose the Hectare zoom level. You can also select or deselect multiple areas in each zooming level. For example, you can select a number of areas or deselect some of them.

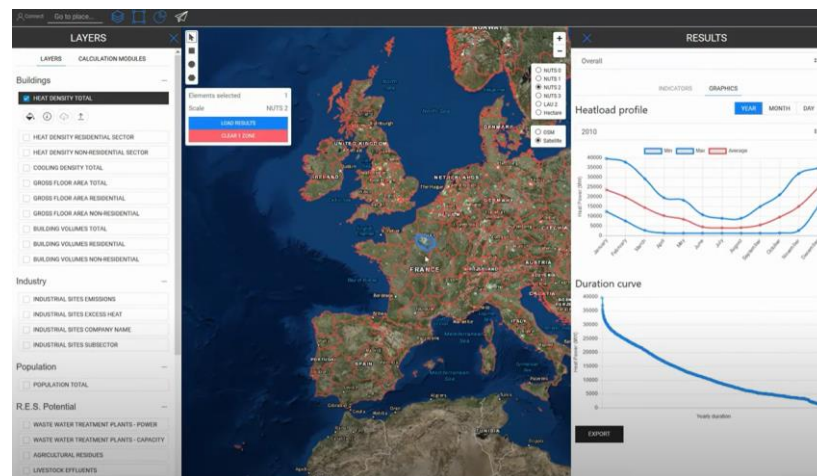
With the Hotmaps toolbox, not only you can visualize and download data, but also you can get some indicators of your area of interest.

Once you select an area, you can press on the “LOAD RESULTS” button and see the corresponding indicators and graphics in the “RESULTS” window.



The values

on the “RESULTS” window update as you select or deselect areas.



In addition, new indicators appear to the RESULTS window as you select more layers.

The user account allows the user to upload data to a confidential, secure space on the platform, compare own data or other data sources with the existing Hotmaps data sets or just visualize them, perform calculations, save working sessions and much more. Click on the “connect” button on the Hotmaps toolbar.

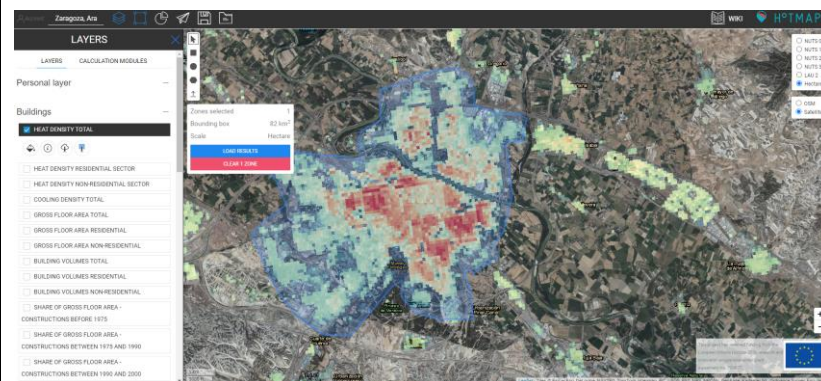


If you already have the username and password, you can directly log into your account. Otherwise, you must register first. Registration is easy. You just need to write your name and email address. Then, a confirmation email is sent to your email address. You just need to follow the instructions in the confirmation email to register your account – really easy and usual method.

Once you are logged in, the “personal layer” category is added to the layers. Here, you see the list of your uploaded layers. To upload a layer, click on the connect button. Here, select the type of layer you want to upload and then, press the upload button. You can delete the uploaded layer any time you want by pressing on the delete button.

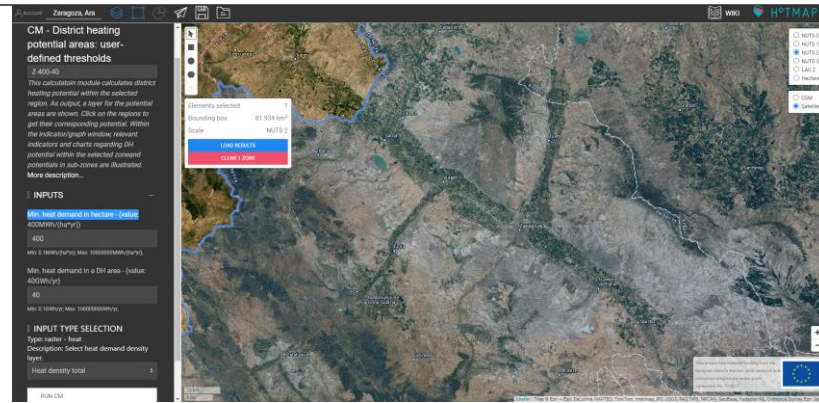
Now we are going to show an example of a practical calculation with the toolbox, after we have a some impression of it.

For example, as a heating and cooling planner, lets assume I am interesting on knowing the district heating potential in the municipality of Zaragoza, in Spain. We can use the “Go to place” bar to find Zaragoza and zoom to it. Then, we select the part of the city that we are interested in.

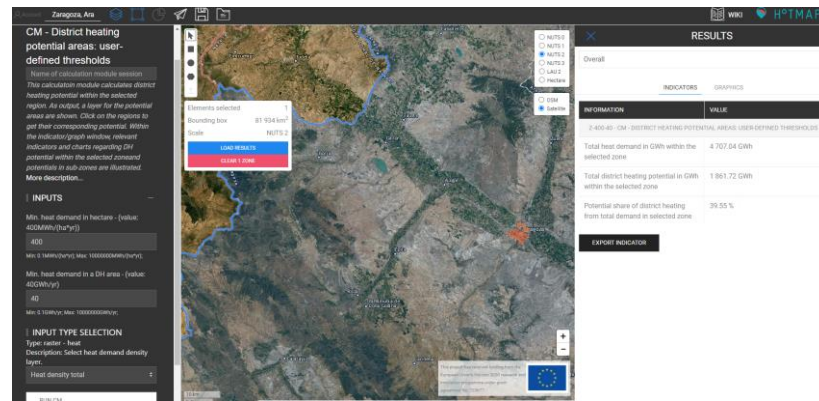


Now, let’s go to the “CALCULATION MODULE” tab and select the “district heating potential areas: user-defined thresholds” calculation module. The short explanation of the calculation module should help to understand the idea behind this calculation module. If you need further explanation about the methodology, concept, and running of the module, use the Hotmaps Wiki page.

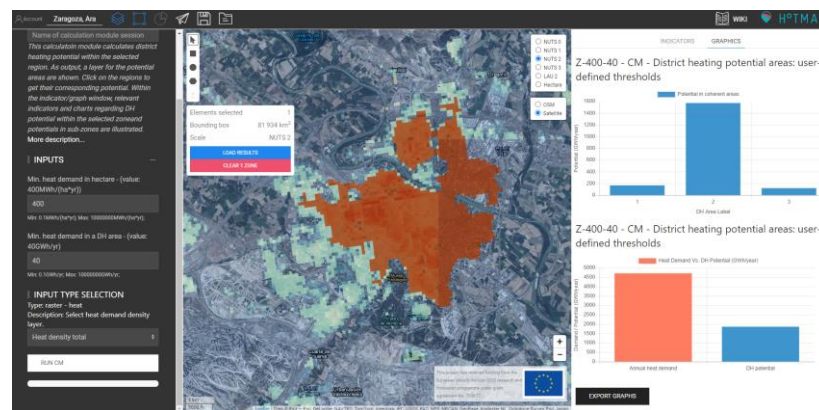
For our case study, I want to see the district heating areas with minimum heating demand of 400 MWh/ha and minimum annual demand of 40 GWh in the area. (Recommendation: Give a meaningful name to your running session – this name will appear for all output layers, therefore, you can be sure that you will not mix up different runs. Here, I write “Z-400-40”).



Now press the “Run CM” button and wait until the calculation is done. New graphics and indicators will appear to the results window. The name of the running session is shown also above them. In the indicator section, we can see the total heat demand and district heating potential in the selected area.




These two are also illustrated in graphics and you can see the potential in each district heating area with the labels given to them.



Additionally, the district heating area map is added to the maps and to the Layer window.

If you click on the district heating area on the map, you see the label assigned to the district heating area potential. In the layer window, this layer appears under “calculation mode” category.

	<p>The Hotmaps toolbox is still under development and many more features will be added to it. Meanwhile, you just can report your feedback by clicking in the Feedback button on the Hotmaps toolbar.</p>  <p>You just need to write your name and affiliation, set the feedback type, the title of your message and insert your feedback in the description field. You can also attach some screenshots to share it with the developers.</p>
<p>Who is this tool destined to (potential users)</p>	<p>Local authorities, local economic players, RESCoops, Energy Communities, Research Centers, Investors.</p>
<p>How can this tool affect/benefit or help a relevant stakeholder?</p>	<p>Hotmaps is a GIS-based online software that supports authorities and energy planners to set up a strategic heating and cooling plan for their region.</p> <p>Hotmaps offers an open-source online software that supports the planning processes of the energy sector at local and national levels in a transparent manner. It is a website that allows you to provide within 5 minutes a first estimation of the heating and cooling demand in any European region as well as the local renewable energy potential to meet this demand. Subsequently, by using more detailed data and applying Hotmaps calculation modules, much more comprehensive heating and cooling strategies can be elaborated. Thanks to this software, you will be able to make practical decisions in your area of interest (village, town, city, region, etc.). The applicability of Hotmaps has been proven and demonstrated in seven pilot areas.</p> <p>The same projects also includes the creation of two handbooks (Definition & experiences of strategic heat planning; Guidance for comprehensive assessment of efficient heating and cooling) which can be really useful for those who want to establish a new district heating successful case and have fewer experience. It also includes case description of strategic heat planning.</p>
<p>Additional information of the tool</p>	<p>For additional supports on heating and cooling planning, please refer to the Hotmaps handbooks and to the Training Material page:</p> <ul style="list-style-type: none"> • Summary of the Hotmaps Handbooks for strategic heat planning • Handbook 1 – Definition & experiences of strategic heat planning • Handbook 2 – Guidance for comprehensive assessment of efficient heating and cooling • Appendix report to the Handbook for strategic heat planning: Case descriptions • Training Material

	<p>We can also find a Hotmaps Wiki, where the documentation, guidance and manual of the Hotmaps toolbox is hosted. It consists of the following main parts:</p> <ol style="list-style-type: none"> 1. Data sets, 2. General toolbox functionalities, 3. Calculation modules, 4. How to apply the Hotmaps toolbox? 5. Developers. <p>The Data sets section provides information about Hotmaps data set repositories as well as methodologies for gathering these data sets.</p> <p>The General tool functionalities and structure section guides the user through the interface of the toolbox. The section covers all general aspects of the toolbox, which are related to the user experience, e.g. navigating through different parts of the toolbox, layer selection, retrieving indicators, data upload and export functionalities etc.</p> <p>The Calculation Modules section provides an in-depth explanation of concepts and methodologies behind the calculation modules. Besides the explanation of the methodology, the provided examples and test runs for each calculation module help the user to obtain an understanding of input parameters and output results. Some calculation modules are integrated into the toolbox, while others are stand-alone.</p> <p>The section "How to apply the Hotmaps toolbox?" is one of the most important sections of the wiki. It helps Hotmaps users to perform heating and cooling planning with the Hotmaps toolbox and includes guidelines on using Hotmaps at the local and national levels, as well as training materials. This section illustrates how different calculation modules can be used to analyse different aspects of the heating and cooling system and different research questions. Furthermore, it shows, how the calculation modules can also be used as a chain of tools to derive scenarios for heating and cooling of certain areas.</p> <p>The Developers section contains all information required for developers to contribute to the Hotmaps toolbox or to understand how it works. It explains the IT infrastructure of the Hotmaps toolbox, data set integration, contribution in calculation module development, etc.</p>
<p>Organisation/ project that developed/ manages the tool</p>	<p>The project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 723677EEG - TU Wien: Lukas Kranzl, Mostafa Fallahnejad, Jeton Hasani</p> <p>CREM: Thierry Bernhard, Lesly Houndole, Albain Dufils</p> <p>e-think: Marcus Hummel, Andreas Müller, Giulia Conforto, David Schmidinger</p> <p>EURAC: Pietro Zambelli, Giulia Garegnani, Simon Pezzutto</p> <p>Fraunhofer ISI: Ali Aydemir, David Schilling, Lisa Neusel, Tobias Fleiter</p> <p>HES-SO: Daniel Hunacek, Lucien Zuber, Matthieu Dayer</p> <p>Planenergi: Anders M. Odgaard</p>

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