



# Supporting heat planning in Act!onHeat

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## Executive Summary

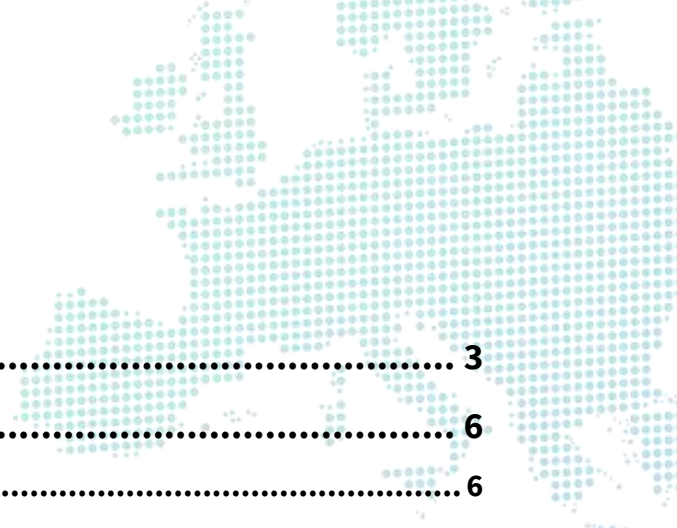
The Act!onHeat project, funded by the European Commission, was designed to help municipalities improve their strategic planning capabilities for heating and cooling (H&C) systems, aiming to reduce fossil fuel dependency and greenhouse gas emissions in line with sustainability goals. The project offered specialized support to develop decarbonization measures and plans, with stronger focus on district heating and cooling (DHC) networks.

This report details the activities undertaken within the Act!onHeat project under Support Facility 1 (SF1), which assisted municipalities with strategic H&C planning. SF1 delivered customized support packages tailored to the unique needs and current planning stages of each municipality. The support comprised four core modules: Heating and Cooling Transition Strategy, Inventory and Potentials, Zoning, and Scenarios. The process followed three key phases: identifying municipal needs, delivering group-based support, and providing personalized individual assistance. Municipalities had the flexibility to select action points that align with their specific needs and priorities.

Group support activities included webinars that address key challenges and opportunities in H&C decarbonization, such as data availability, political factors, and technological solutions like geothermal energy and district cooling. Individual support involved tools like Hotmaps for data analysis, scenario modeling, and access to technical resources, fostering collaboration and building capacity.

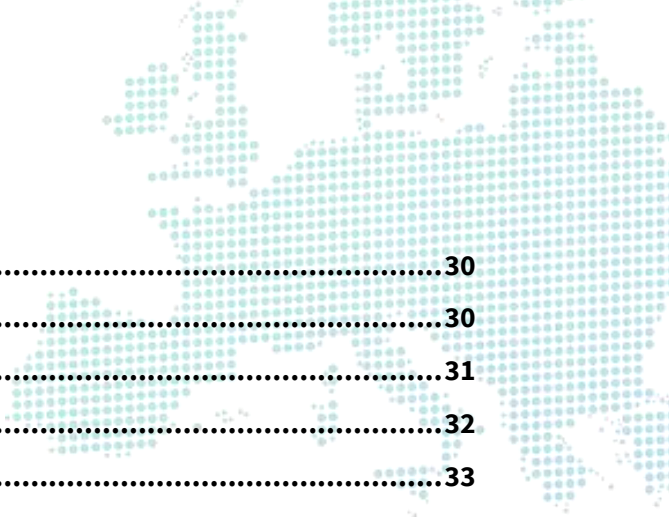
Despite the project's success, several challenges emerged. The number of SF1 applicants was lower than expected, with only 54 entities applying and 33 receiving support. Smaller municipalities faced difficulties due to limited financial and staffing resources and a lack of technical expertise. Key lessons learned highlight the importance of regional energy agencies in capacity building, financial support mechanisms, and a supportive legislative framework to enhance H&C planning. Financial constraints and political barriers also slowed progress in some regions, emphasizing the need for streamlined financing and clearer regulations on data sharing and zoning.

In conclusion, Act!onHeat has made meaningful progress in advancing H&C decarbonization through tailored support and collaborative knowledge sharing. To ensure long-term success, future efforts should focus on expanding financial support, improving data-sharing frameworks, and strengthening regional agencies to facilitate sustainable and effective implementation across all municipalities.



# Content

- Executive Summary ..... 3**
- 1 Introduction..... 6**
  - 1.1 The Act!onHeat project..... 6**
  - 1.2 Support offered in Support Facility 1 (SF1) – Assistance in Strategic heat and cold planning..... 6**
    - 1.2.1 Heating and cooling transition strategy ..... 7
    - 1.2.2 Inventory and potentials ..... 8
    - 1.2.3 Zoning..... 9
    - 1.2.4 Scenarios..... 9
  - 1.3 Identification of applicants ..... 11**
  - 1.4 Content of this report ..... 11**
- 2 Support provided in SF1 and estimated impact .....11**
  - 2.1 Overview of participants and key data..... 13**
  - 2.2 Group support activities ..... 17**
    - 2.2.1 Identification of group necessities.....17
    - 2.2.2 Group support webinar .....17
  - 2.3 Individual support activities ..... 19**
    - 2.3.1 LEA Hessen .....19
    - 2.3.2 MANU – bottom-up.....20
    - 2.3.3 Gladbeck .....21
    - 2.3.4 El Vorarlberg.....21
    - 2.3.5 SOL .....22
    - 2.3.6 Berlin’s Senate .....23
    - 2.3.7 The City of Poznań .....24
    - 2.3.8 Vilnius .....24
    - 2.3.9 Stadt Dietzenbach .....25
    - 2.3.10 MANU - top-down.....26
    - 2.3.11 AIT .....27
    - 2.3.12 REGEA .....27
    - 2.3.13 Žabljak .....28
    - 2.3.14 Kakanj.....29



<b>2.3.15 Babina Greda .....</b>	<b>30</b>
<b>2.3.16 Göppingen .....</b>	<b>30</b>
<b>2.3.17 Bitola .....</b>	<b>31</b>
<b>2.3.18 VEKA .....</b>	<b>32</b>
<b>2.3.19 Durham County Council.....</b>	<b>33</b>
<b>2.3.20 Kreis Steinfurt.....</b>	<b>33</b>
<b>2.3.21 WMCA.....</b>	<b>34</b>
<b>2.3.22 Plejades.....</b>	<b>35</b>
<b>2.3.23 Ville de Liège .....</b>	<b>36</b>
<b>3 Summary and Conclusions .....</b>	<b>37</b>



# 1 Introduction

## 1.1 The Act!onHeat project

The European Commission has identified heating and cooling (H&C) as one of the key action points to achieve the sustainability goals set for the next decades, specifically with regards to fossil fuel reduction and greenhouse gas emission targets. This is reflected in the amendment of the Energy Efficiency Directive (EED) stating: “Member States shall encourage regional and local authorities to prepare local H&C plans at least in municipalities having a total population higher than 45,000” (EU Parliament and EU Council 2023<sup>1</sup>).

The Act!onHeat project aims to aid municipalities to improve their strategic H&C planning and to ensure this translates into tangible decarbonisation measures, such as district heating and cooling (DHC) networks. To achieve this, the process was organized into three key steps: first, identifying and analyzing the specific support needs of applicants; second, delivering group-based support; and finally, providing tailored individual assistance to address the unique needs of each applicant.

## 1.2 Support offered in Support Facility 1 (SF1) – Assistance in Strategic heat and cold planning

The municipalities received customized support packages, which were carefully designed based on calls for applications. Through this process, the specific support needs of each municipality were assessed, allowing for the creation of tailored packages. In essence, each municipality was met where it currently stood in its H&C planning efforts and provided with the necessary support to advance further. The following storylines exemplify how this approach has worked in practice.

Storyline 1: A city has no experience with strategic heat planning. There are no data and only very rough top-down targets.

Storyline 2: A city already has previous experience in strategic heat planning. Renewable potentials are analysed, the current heat demand is known but not regionally disaggregated. The targets have only been formulated until 2030 and only very roughly.

Storyline 3: A city has recently developed a heating strategy in which district heating plays a key role. However, it is not clear where to start building the network, what scale of network is feasible and which technologies to use to achieve decarbonisation.

SF1’s assistance was organized into four modules:

- Heating and Cooling Transition Strategy: Aims to help municipalities develop or refine their H&C strategies and building renovation plans.
- Inventory and Potentials: Focuses on compiling building inventories, assessing renewable energy potentials, and mapping waste heat opportunities.
- Zoning: Supports municipalities in defining district heating zones and identifying areas

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<sup>1</sup> EU Parliament, and EU Council. 2023. *Directive (EU) 2023/1791 on Energy Efficiency (Recast)*. OJ L. Vol. 231. <http://data.europa.eu/eli/dir/2023/1791/oj/eng>.





suitable for individual heating solutions.

- Scenarios: Assists in developing and evaluating future H&C scenarios, including supply systems and infrastructure needs.

In each module, tailored support activities were offered to address specific action points, contributing to the development of a comprehensive heat and cold transition strategy. Applicants had the opportunity to express interest in multiple action points across different modules, allowing them to align the support with their unique needs and level of expertise. For each selected module, applicants provided a brief description of their primary interests or requirements related to the action points and specified their focus—whether on heating, cooling, or both.

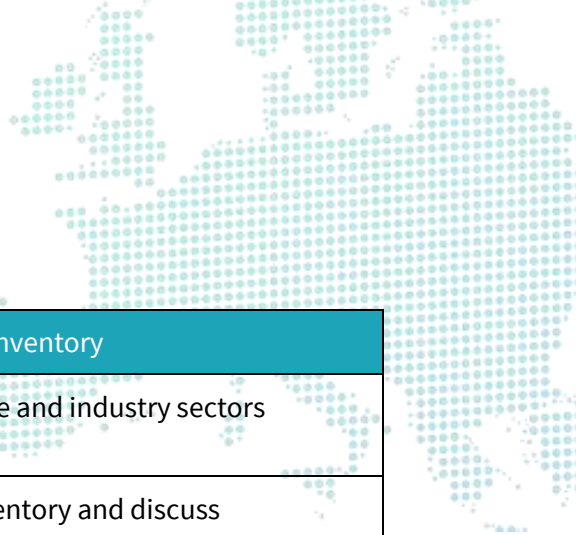
There were no restrictions on the number of action points applicants could choose, offering flexibility to address diverse priorities. The exact combination of action points and the corresponding support activities was determined collaboratively during the project definition phase through discussions between the applicants and the Act!onHeat team. This adaptable approach ensured that the Act!onHeat Support Facility could provide a broad range of activities, effectively assisting in the formulation of robust heat and cold transition strategies.

### 1.2.1 Heating and cooling transition strategy

Start strategic H&C planning
Introduce H&C planning
Define concrete first steps on the To-Do List – what to do internally, what to tender

Develop a renovation strategy for the (local/regional) building stock
Introduce developing building stock renovation strategies
Plan the steps in the renovation strategy development process
Draft text elements for tendering (part of) the development of a renovation strategy

Develop a H&C strategy for the city / region
Introduce developing H&C strategies
Plan the steps in the H&C strategy development process
Draft text elements for tendering (part of) the development of a H&C strategy



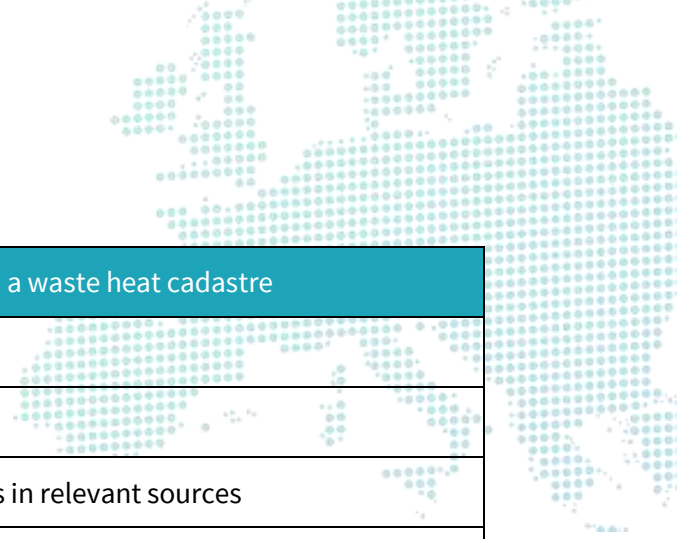
## 1.2.2 Inventory and potentials

Develop a building stock and H&C demand inventory
Introduce characteristics of building stock and processes in service and industry sectors relevant for H&C planning
Compile available open-source data relevant for setting up an inventory and discuss applicability in supported region
Show best practise examples of building stock and H&C inventories and discuss applicability in supported region
Define steps / roadmap to set up a building stock and H&C inventory
Draft text elements for tendering (part of) the development of an inventory

Compile potentials of renewable energy to supply H&C demand
Introduce renewable resources for energetic use and specifically for H&C supply
Compile available open-source data and discuss applicability in supported region
Show best practise examples of potential analysis for different renewable sources and discuss applicability in supported region
Allocate renewable potentials for the supply of heat / cold and other demands
Define steps / roadmap of more detailed analysis of potentials for selected renewable sources
Draft text elements for tendering (part of) the potential analysis for selected renewable sources

Compile potentials for saving heat demand / avoiding cold demand in buildings
Introduce to building stock characteristics, archetypes, renovation measures and related costs
Roughly establish heat saving scenarios for the building stock based on available default data
Roughly quantify potentials for avoiding cooling demand in the building stock
Introduce methods for more detailed analysis of heat saving potentials and renovation strategy development and discuss applicability in supported region
Define steps of detailed analysis of heat saving potentials and renovation strategy development
Draft text elements for tendering (part of) the renovation strategy development





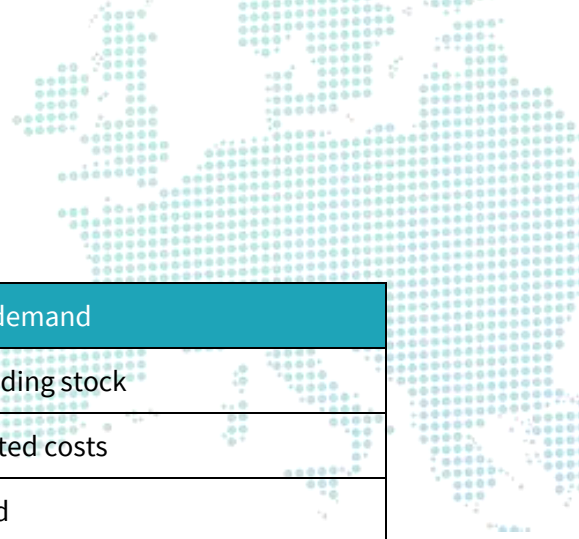
Compile potentials for waste heat / set up a waste heat cadastre
Introduce analysing waste heat potentials
Identify relevant waste heat sources
Roughly estimate waste heat potential and characteristics in relevant sources
Introduce setting up a waste heat cadastre
Define steps of more detailed waste heat potential analysis and cadastre development
Draft text elements for tendering (part of) the waste heat potential analysis / cadastre development

### 1.2.3 Zoning

Develop an analytical basis for defining zones for district heating and zones for individual supply
Introduce existing zoning approaches in the context of H&C
Identify potential district heating zones based on user defined thresholds for heat demand and discussion of applicable threshold values for supported region
Identify potential district heating zones based on economic evaluation of heat distribution costs and discussion of applicability in supported region
Define steps / roadmap to derive analyses of potential district heating zones
Draft text elements for tendering (part of) the development of district heating zoning analysis

### 1.2.4 Scenarios

Develop and assess scenarios for H&C at local level
Introduce scenario development for H&C
Show up-to-date scenarios of entire energy systems and resulting framing conditions at EU and national levels and discuss relevance for local scenario development
Compile available open-source data on energy carrier prices, technology costs, and properties
Define potential scenarios to be developed and discuss game-changing parameters
Define steps / roadmap of scenario calculation and assessment
Draft text elements for tendering (part of) the scenario calculation



Develop scenarios of future heat and cold demand
Introduce characteristics and inertia of system changes in the building stock
Compile available open-source data on saving potentials and related costs
Define key assumptions for development of heat and cold demand
Develop rough estimates of scenarios for heat demand development and discuss applicability for supported area
Start setting up a calculation framework for heat / cold demand scenarios
Define steps / roadmap of deriving scenarios of future heat and cold demand for supported area
Draft text elements for tendering (part of) the heat / cold demand scenario development

Develop scenarios for individual supply
Introduce characteristics of individual H&C supply systems for buildings
Compile available open-source data on individual supply technologies and related costs and energy carrier prices
Define key assumptions
Develop rough estimates of scenarios for individual H&C supply and discuss applicability for supported area
Start setting up a calculation framework for individual supply scenarios
Define steps / roadmap of deriving scenarios of individual H&C supply for supported area

Develop scenarios for district heating / cooling (DHC)
Introduce characteristics of DHC systems – supply and distribution systems
Compile available open-source data on DHC systems and related costs and energy carrier prices
Define key assumptions
Develop rough estimates of scenarios for DHC and discuss applicability for supported area
Start setting up a calculation framework for district H&C supply and distribution scenarios
Define steps / roadmap of deriving scenarios of district H&C for supported area
Draft text elements for tendering (part of) the DHC scenario development

### **1.3 Identification of applicants**

The process of identifying applicants for support under Act!onHeat was carefully structured and implemented through four calls for applications. Following these calls, municipalities participated in ramp-up workshops and bilateral meetings, enabling an in-depth assessment of their specific support needs. Based on these evaluations, customized support packages were developed to address the unique challenges and priorities of each municipality effectively.

This tailored approach aimed to inspire and empower municipalities to take proactive steps in advancing their H&C transitions, while also offering expert guidance to facilitate these efforts. Through the initiative, municipalities were integrated into existing H&C networks and partner communication platforms, fostering the exchange of positive experiences and best practices.

Ultimately, Act!onHeat provided municipalities with the necessary tools and strategic guidance to design and implement comprehensive plans for decarbonizing their H&C systems, advancing their progress toward sustainable energy solutions.

### **1.4 Content of this report**

This report outlines the support provided through the Act!onHeat project's first Support Facility (SF1), focusing on strategic H&C planning. The next section details both group and individual support activities. Group support includes identifying shared needs and hosting webinars, while individual support is tailored to specific applicants. The final section summarizes the impact of the support, highlighting its role in advancing H&C planning across the participating regions.

## **2 Support provided in SF1 and estimated impact**

SF1 offers two types of assistance: group support through tailored webinars on topics relevant to the applicants and individual support customized to address the specific needs of each applicant. These support services were provided to applicants through four Calls for Applications (CfA).

The tables below present an overview of the successful applicants who received support under SF1. They include details such as the ID of application, regions, technical data on estimated heat demand and gross floor area as well as different indicators for the number of municipalities supported.





## 2.1 Overview of participants and key data

Table 1: Support facility 1 – Call for Applicants 1

Applicant ID	Applicant name	Country	Regional indicators		KPI indicators		
			GWh/yr Total heat demand	Mio m <sup>2</sup> GFA total	Total nr. of assisted municipalities	Municipalities at workshops	Individual support received
CfA1-1	LEA Hessen	Germany	57 286	451	8	8	Yes
CfA1-4	Sint Niklaas	Belgium	606	4	1	1	No
CfA1-8	Macedonian Academy (MANU)	North Macedonia	Not included in Hotmaps	Not included in Hotmaps	3	7	Yes
CfA1-9	Stadt Gladbeck	Germany	533	4	1	1	Yes
CfA1-10	Vorarlberg	Austria	3 544	28	3	70	Yes
CfA1-11	Le Syndicat de l'Ouest Lyonnais (SOL)	France	6 968	46	41	0	Yes
CfA1-12	AEE - Institute for Sustainable Technologies	Austria	0	0	0	0	No
CfA1-13	San Lucido	Italy	29	0	1	1	No
CfA1-14	Braga Municipality	Portugal	143	3	1	1	No
CfA1-15	Senate Department for the Environment, Berlin	Germany	32 408	243	12	1	Yes



Table 2: Support facility 1 – Call for Applicants 2

Applicant ID	Applicant name	Country	Technical details		KPI indicators		
			GWh/yr Total heat demand	Mio m <sup>2</sup> GFA total	Total nr. of assisted municipalities	Municipalities at workshops	Individual support received
CfA2-4	The City of Poznań, Department of Climate and Environment	Poland	3 969	35	2	2	Yes
CfA2-6	AB Vilniaus silumos tinklai	Latvia	3 782	28	21	0	Yes
CfA2-8	City of Mechelen	Belgium	17 813	120	1	0	No
CfA2-15	Kreisstadt Dietzenbach	Germany	282	2	1	5	Yes
CfA2-18	Riga Technical University	Latvia	0	0	0	0	No
CfA2-24	MANU	North Macedonia	Not included in Hotmaps	Not included in Hotmaps	81	0	Yes
CfA2-25	Carbon alternatives	United Kingdom	0	0	0	0	No
CfA2-26	AIT	Austria	0	0	0	0	Yes
CfA2-27	REGEA	Croatia	29 694	230	3	4	Yes

Table 3: Support facility 1 – Call for Applicants 3

Applicant ID	Applicant name	Country	Regional indicators		KPI indicators		
			GWh/yr Total heat demand	Mio m <sup>2</sup> GFA total	Total nr. of assisted municipalities	Municipalities at workshops	Individual support received
CfA3-2	Municipality of Žabljak	Montenegro	Not included in Hotmaps	Not included in Hotmaps	1	1	Yes
CfA3-4	Kakanj Municipality	Bosnia and Herzegovin	Not included in Hotmaps	Not included in Hotmaps	1	1	No
CfA3-7	Municipality of Babina Greda	Croatia	10	0	1	1	Yes
CfA3-10	MH Teplárenský holding a.s.	Slovakia	0	0	0	0	No
CfA3-12	Stadtwerke Göppingen	Deutschlan	465	4	2	2	Yes
CfA3-13	Municipality of Bitola	North Macedonia	Not included in Hotmaps	Not included in Hotmaps	1	1	Yes
CfA3-15	University of Galway	United Kingdom	0	0	0	0	No
CfA3-16	VEKA	Belgium	14 734	92	19	11	Yes





Table 4: Support facility 1 – Call for Applicants 4

Applicant ID	Applicant name	Country	Regional indicators		KPI indicators		
			GWh/yr Total heat demand	Mio m <sup>2</sup> GFA total	Total nr. of assisted municipalities	Municipalities at workshops	Individual support received
CfA4-2	Durham County Council	United Kingdom	3 767	33	1	1	Yes
CfA4-4	Kreis Steinfurt	Germany	3 592	30	23	15	Yes
CfA4-5	WMCA	United Kingdom	19 878	175	4	6	Yes
CfA4-7	Plejades	Bulgaria	3	0	1	1	Yes
CfA4-9	Vielle de Liege	Belgium	1 930	13	1	1	Yes
<b>Total nr. of applicants receiving support:</b>		<b>33</b>	<b>Total KPIs:</b>		<b>277</b>	<b>135</b>	<b>23</b>





## 2.2 Group support activities

### 2.2.1 Identification of group necessities

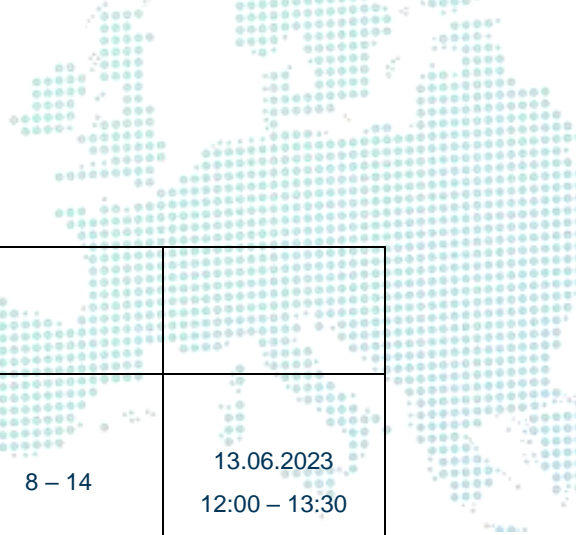
At the beginning of the support activities (several) ramp up calls with each applicant have been performed. Based on the identified needs and wishes of the applicants and the expertise available in the Act!onHeat project team support activities have been defined. For overlapping topics interesting for many or all applicants group support webinars have been defined and implemented. These also provided the ground for exchange between the applicants on the specific topics.

### 2.2.2 Group support webinar

During the project, nine group support webinars were conducted. The table below provides an overview of their topics, timing, duration, and participation.

Table 5: Group support webinars performed within M1 – M25

#	Topic and content	Nr. participants	Date
W1	<p><b><u>Data for municipal heating and cooling planning</u></b></p> <p>The webinar addressed data accessibility challenges in H&amp;C planning, focusing on identifying, acquiring, processing, and utilizing data—along with leveraging the Hotmaps platform—to support integrated strategic policy development and implementation.</p>	7 – 10	03.11.2022 09:00 – 11:00
W2	<p><b><u>Development of a data inventory for heat planning</u></b></p> <p>The webinar focused on the development of dynamic data inventories and heat atlases for H&amp;C planning, addressing data resolution, geospatial visualization, validation methods, and strategies to overcome data inconsistencies, while enabling participants to identify data gaps, prioritize planning zones, and prepare for implementation phases.</p>	7 – 10	17.11.2022 13:00 – 15:00
W3	<p><b><u>The use of Hotmaps for strategic heat planning</u></b></p> <p>The webinar introduced the Hotmaps platform as a free, open-source tool designed to support H&amp;C strategy development by enabling data analysis, resource mapping, and scenario planning, while demonstrating its functionality, use cases, and limitations for achieving energy and climate objectives.</p>	4 – 7	06.12.2022 13:00 – 15:00
W4	<p><b><u>Use of Industrial Excess Heat (EH) for district heating</u></b></p> <p>The webinar focused on the potential reuse of industrial excess heat for district H&amp;C, discussing types of industries</p>	6 – 13	05.06.2023 12:00 – 13:30



	producing excess heat, regional projects mapping these sources, tools for identifying and planning distribution, and applications like Hotmaps to support cost calculations and infrastructure planning for stakeholders and policymakers.		
W5	<p><b><u>Using EH from data centers for heating buildings</u></b></p> <p>The webinar explored data centers as sources of excess heat for district heating, highlighting trends toward urban locations to lower heat recovery costs and the role of heat pumps in utilizing low-temperature waste heat through existing European district heating networks.</p>	8 – 14	13.06.2023 12:00 – 13:30
W6	<p><b><u>The use of excess heat from wastewater treatment plant</u></b></p> <p>The webinar focused on using low-temperature wastewater, enhanced by heat pumps, for sustainable and cost-effective district H&amp;C, showcasing its environmental and economic benefits for municipalities.</p>	3 – 10	27.06.2023 12:00 – 13:30
W7	<p><b><u>Geothermal in District heating</u></b></p> <p>The presentation showcased geothermal energy as a low-emission solution for sustainable DHC systems, highlighting flexibility, storage, and the importance of region-specific planning.</p>	5-13	13.03.24 10:00 – 12:00
W8	<p><b><u>Space Cooling– demands, potential reduction, and sustainable supply opportunities</u></b></p> <p>The presentation addressed the growing cooling demand in Europe, focusing on passive and active energy reduction measures, the efficiency of centralized and decentralized systems, and the impact of EU policies in driving sustainable cooling strategies to support decarbonization goals.</p>	8-10	17.06.2023 11:00 – 12:00
W9	<p><b><u>Existing heat planning policies in Europe-overview and selected examples</u></b></p> <p>The presentation highlighted Europe's heat planning policies under the EED, emphasizing the need for efficient, CO<sub>2</sub>-neutral systems. It addresses disparities in implementation and advocates for strategic zoning, public engagement, and tailored approaches to align municipal plans with sustainability and decarbonization goals.</p>	8-15	11.10.2024 11:00 – 12:00

The webinars are not accessible, but their slides with written explanations are available for download at the [Local Replication Roadmap | Act!onHeat](#).



## 2.3 Individual support activities

In this chapter the individual support activities as well as the expected impact in the region of the participants are described.

### 2.3.1 LEA Hessen

**Applicant ID:** CfA1-1

**Long Name:** LEA LandesEnergieAgentur Hessen

**Type of support received:** Individual support + Hotmaps Intro

#### **Description of the individual situation of the participant:**

Hessen is Germany's fifth-largest federal state with about 6 million inhabitants living in approximately 400 cities and municipalities. Hotmaps estimates Hessen's heat demand to be about 57 TWh per year.

Early 2022, two German federal states (Hamburg and Baden-Württemberg) had already introduced mandatory heat planning. At that time, Hessen aimed to introduce mandatory planning in the near future as well. This process was accompanied by the state's own energy agency (LEA Landes Energie Agentur Hessen, hereafter abbreviated as LEA). In this context, LEA contacted Act!onHeat to evaluate potential support options.

#### **Description of the support received within Support Facility 1**

The SF1 support activities agreed upon and implemented with LEA focused on advancing municipal H&C planning and enhancing advisory services for renewable district heating solutions. Collaborative efforts with Act!onHeat included consultancy during workshops, desk research, and the development of a comprehensive slide deck, "*Best Practices for Renewable Energies in District Heating Networks*," to strengthen LEA's capacity to support stakeholders.

Key meetings throughout 2022, including brainstorming sessions, success factor reviews, and workshop preparations, helped refine these efforts. Four workshops engaged municipalities, ministries, and the contracting sector, focusing on mandatory heat planning, H&C policies, and data management. LEA played a central role in agenda preparation, delivering presentations, and moderating discussions, while Act!onHeat experts provided insights and addressed technical queries.

These activities improved understanding of policy and technical frameworks, strengthened LEA's advisory capabilities, and fostered collaboration among key actors, establishing a strong foundation for implementing heat planning strategies.

#### **Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat's workshops and provision of know-how have backed up the introduction of heat planning in Hessen. In November 2022, mandatory heat planning came into force in Hessen, requiring municipalities from 2023 to submit a first version of heat planning by 2026. LEA continues to be the first point of contact for the municipalities. Thus, knowledge about the processes of heat planning, but also about technical tools that has been contributed by Act!onHeat will probably gradually be passed on to numerous municipalities, at least in part.



### 2.3.2 MANU – bottom-up

**Applicant ID:** CfA1-8

**Long Name:** Macedonian Academy of Sciences and Arts: Research Center for Energy and Sustainable Development (MANU)

**Type of support received:** Individual support + Hotmaps Advanced

#### **Description of the individual situation of the participant**

MANU is a research and consulting agency at the national level in North Macedonia. It performed several studies in the field of H&C planning for various national ministries and assists municipalities in North Macedonia in better understanding their H&C situation. As North Macedonia is not part of the European Union, the country was not included in the default data set developed within the Horizon 2020 project Hotmaps. At the same time, the Hotmaps toolbox could potentially be an interesting and powerful tool for assisting H&C planning in North Macedonia. Thus, the goal of the support within Act!onHeat was to a) deeply introduce MANU in the application of the Hotmaps toolbox for H&C planning, and b) assist in setting up default data for North Macedonia.

#### **Description of the support received within Support Facility 1**

Between October 2022 and autumn 2023, MANU and the Act!onHeat team collaborated to advance heat planning in Macedonian municipalities through data analysis, and the application of the Hotmaps toolbox.

The Act!onHeat team conducted an in-depth analysis of the additional data and adaptations required for Macedonian municipalities to effectively use the Hotmaps toolbox. Based on this, an introduction to the toolbox was provided, and options for customization and further support were outlined. Regular meetings, held every 3–4 weeks, supported data compilation, adaptation processes, and detailed application of the toolbox. These sessions facilitated both the generation of default data for North Macedonia and capacity-building for MANU in applying the toolbox's various tools.

To showcase the tool's capabilities, a workshop was conducted in early autumn 2023 in Skopje, introducing Macedonian municipalities to the toolbox and its potential for advancing strategic heat planning. This collaborative effort equipped MANU to better support local municipalities in their transition to more sustainable and efficient heating solutions.

#### **Description of the expected impact out of the support received within Support Facility 1**

The Research Center for Energy and Sustainable Development of the Macedonian Academy of Sciences and Arts (MANU) is regularly involved in heat planning tasks for the Macedonian ministry. Also, it has a strong link to North Macedonian municipalities via various research and consulting activities in the past.

The support received within Act!onHeat allows MANU to use and promote the Hotmaps datasets and toolbox for heat planning in North Macedonia. The detailed understating of the approach to generate bottom-up gross floor area and heat demand density maps with data from the local level will allow MANU to further apply this method in other municipalities.

The workshop performed in Skopje delivered heat planning knowledge to several municipalities and instances in North Macedonia. It backed up the introduction of heat planning in the country, as well as the use of the Hotmaps database and toolbox for heat planning in the region.





### 2.3.3 Gladbeck

**Applicant ID:** CfA1-9

**Long Name:** City of Gladbeck (Environmental Department)

**Type of support received:** Individual support

**Description of the individual situation of the participant:**

Gladbeck is a city in the industrial "Ruhrgebiet", located in North Rhine-Westphalia, the most populated federal state in Germany. Around 76 thousand people live in Gladbeck. Hotmaps.eu estimates the city's heat demand at around 534 GWh per year.

Two federal states (Hamburg and Baden-Württemberg) had already introduced mandatory heat planning at the beginning of 2022. At that time, the introduction of mandatory heat planning was also discussed in North Rhine-Westphalia. In this context, Gladbeck applied for support from Act!onheat to determine whether a knowledge transfer could be useful.

**Description of the support received within Support Facility 1**

A meeting addressed financial challenges faced by Gladbeck in integrating waste heat into its district heating network. Based on insights from this meeting Act!onHeat provided a detailed financing model inspired by the successful Karlsruhe refinery project, demonstrating how similar challenges were overcome. Additionally, a curated database of industrial waste heat feed-in projects, including an extensive Excel list, was shared to offer practical examples and solutions based on thorough desk research.

**Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat provided Gladbeck with information that might lead to a waste heat feed-in project being relaunched. It also supported Gladbeck with knowledge regarding tender documents for finding external service providers for developing a heat plan for the city. Both streams could contribute to the development of effective H&C planning measures in Gladbeck.

### 2.3.4 EI Vorarlberg

**Applicant ID:** CfA1-10

**Long Name:** Energieinstitut (EI) Vorarlberg

**Type of support received:** Individual support

**Description of the individual situation of the participant:**

Energieinstitut Vorarlberg (EIV) serves as the primary contact for municipalities in the region seeking guidance on H&C planning. To support this effort, EIV is currently developing a heat atlas for the federal state of Vorarlberg. This atlas will help identify areas with potential for district heating expansion and integrate them into local energy planning.

**Description of the support received within Support Facility 1**

Act!onHeat's analysis of heat planning regulations in Austria, Switzerland, and Denmark highlighted how spatial heat planning could be integrated into Austria's *Regionale Entwicklungspläne* (REP). The findings, tailored to the context of Vorarlberg, were presented in a slide deck and formed the basis for discussions during four individual support sessions held between September 2023 and February 2024.



Additionally, inputs on existing and upcoming regulations for communal heat planning in Germany and the EU, as well as best practices, were prepared for a meeting with representatives from e7 municipalities in Vorarlberg. This effort culminated in a workshop attended by 60-70 municipal representatives and supported by a comprehensive slide deck summarizing the key insights shared.

### **Description of the expected impact out of the support received within Support Facility 1**

EIV is the first contact point for municipalities in the region to receive knowledge and assistance in H&C planning. With the support provided by Act!onHeat EIV was able to develop a guideline on how to implement spatial heat planning into the existing REP structure. Furthermore, with the slides and knowledge provided for the e7 workshop EIV was able to prepare the municipalities in Vorarlberg for upcoming needs in heat planning in the region.

## **2.3.5 SOL**

**Applicant ID:** CfA1-11

**Long Name:** Le Syndicat de l'Ouest Lyonnais (SOL)

**Type of support received:** Individual support + Hotmaps Intro

### **Description of the individual situation of the participant:**

In France, inter-communities are clusters of municipalities. Under the 2015 *Transition énergétique pour la croissance verte* law, inter-communities with over 20,000 inhabitants must implement a Sustainable Energy and Climate Action Plan (SECAP). They can either enforce it themselves or delegate the responsibility to local public establishments. The Syndicat de l'Ouest Lyonnais (SOL) is one such public body overseeing the SECAPs for four inter-communities: CdC de la Vallée du Garon, CdC du Pays Mornantais, CdC Pays de l'Arbresle, and CdC Vallon du Lyonnais.

The lack of resources for achieving their set SECAP targets is a primary issue faced by the inter-communities and their municipalities. They envision the development of an action plan that defines renovation pathways for their building stock to ensure the heat demand reduction targets. They require support for the development of such a methodology.

### **Description of the support received within Support Facility 1**

In Act!onHeat a replicable solution was developed to identify effective building renovation measures, addressing the building stock, which accounts for over 60% of energy consumption within the network and is therefore a key priority for SOL. Using open-source data from the network [TerRistory](#) and public data from other EU projects ([TABULA](#)), building archetypes in the region were identified. Collaborative discussions with the network led to the modeling and selection of the most cost-effective renovation packages for each archetype. The number of buildings per archetype requiring renovation to meet SECAP targets for 2030 and 2050 was also estimated.

To support this effort, the Act!onHeat team developed a techno-economic methodology to identify renovation packages that align with these targets. This included an Excel tool to evaluate demand reduction from various measures, defining renovation pathways for 2030 and 2050, and estimating the costs involved. The analysis results were reviewed in a series of meetings, where improvement measures were identified, and strategies for applying the findings to develop renovation policies for municipalities and inter-communities were discussed.



The methodology and results were shared during a workshop for inter-communities and municipalities in autumn 2023, fostering knowledge exchange and guiding future actions.

### **Description of the expected impact out of the support received within Support Facility 1**

As a public body, the SOL network has the legal power over the inter-communities to determine the local planning documents. The inter-communities are legally obliged to implement the decarbonization plans suggested by the network. As of now, the lack of technical resources in the network has limited the development of such plans and hindered the implementation of the SECAP targets. Thus, the methodology and results developed by the Act!onHeat project will be directly applicable to the heating/cooling transition strategy development of the 4 inter-communities (41 municipalities) and a step towards achieving the SECAP targets.

## **2.3.6 Berlin's Senate**

**Applicant ID:** CfA1-15

**Long Name:** Berlin's Senate Department for Environment, Transport, Mobility and Climate Protection

**Type of support received:** Individual support + Hotmaps Intro

### **Description of the individual situation of the participant:**

Berlin is Germany's largest city and capital. Around 3.6 million people live there, which is split into 12 districts. Hotmaps.eu estimates Berlin's heat demand at around 30 TWh per year.

At the beginning of 2022, two German states (Hamburg and Baden-Württemberg) had already introduced mandatory heat planning. At that time, Berlin also aimed for mandatory planning to be introduced in the near future, which would be implemented by the districts. This process was accompanied by Berlin's Senate Department for Environment, Transport, Mobility and Climate Protection (hereafter abbreviated as Berlin's Senate). In this context, Berlin's Senate approached Act!onHeat to explore potential support options.

### **Description of the support received within Support Facility 1**

The support provided for Berlin's Senate focused on defining specific requirements for implementing heat planning at the district level. This effort included exploring practical and feasible IT tool support options for districts, which played a significant role in shaping the requirements. An expert call in October 2022 established the foundation for heat planning and outlined the next steps.

The assistance also included the design of a tender for developing an IT tool tailored to heat planning. A standard service description from Baden-Württemberg was evaluated to identify key steps in the heat planning process and determine which ones could be facilitated by IT tools. In March 2023, the findings and recommendations were presented in a three-hour expert discussion with Berlin's Senate, addressing and clarifying any remaining questions.

### **Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat's has enabled the Berlin's Senate to gain a comprehensive understanding of the technical options for IT tools in heat planning, enabling them to design the most effective requirements. By early 2023, the initial tender for the development of the first part of the IT tool was completed.



### 2.3.7 The City of Poznań

**Applicant ID:** CfA2-4

**Long Name:** Department of Climate and Environment: Municipality of The City of Poznań.

**Type of support received:** Individual support

#### **Description of the individual situation of the participant**

Poznań, a Polish city with approximately 530,000 residents, relies heavily on district heating, predominantly powered by hard coal-fired CHP systems. With ambitions to transition away from fossil fuels, particularly coal, the city aims to develop target scenarios for a more sustainable energy future. Poznań is seeking support to initiate additional local heating projects within the municipality. The city, which is traversed by the Warta River, is focused on transitioning to cleaner energy solutions.

#### **Description of the support received within Support Facility 1**

Act!onHeat's support focused on assessing the feasibility of large-scale heat pumps using river water as a heat source. Cities like Mannheim, which have implemented similar systems, provided valuable insights. Act!onHeat facilitated connections between cities facing comparable challenges to encourage knowledge exchange and discuss potential technical solutions.

On October 15, 2023, a meeting brought together representatives from the city of Poznań, the local energy supplier Veolia, and Mannheim's utility company, MWV AG. During this exchange, Mannheim's river water heat pump project was presented and explored in detail, fostering a collaborative dialogue on implementing such systems.

#### **Description of the expected impact out of the support received within Support Facility 1**

Providing information from the experience of implementing a water heat pump project in Mannheim allowed us to become familiar with the investment process, the scope of work and the solutions used. The exchange of experiences with the city that has implemented the proposed solution constitutes an added value in terms of considering different variants of the development and decarbonisation of the heating network in Poznań.

### 2.3.8 Vilnius

**Applicant ID:** CfA2-6

**Long Name:** AB Vilniaus silumos tinklai

**Type of support received:** Individual support + Hotmaps Advanced

#### **Description of the individual situation of the participant:**

VST is the district heating utility of the city of Vilnius. The current supply portfolio has a remarkable share of renewable energy, mainly based on biomass CHP. To increase the share of renewable and excess heat in the supply portfolio, the data and tools within Hotmaps should be explored.

#### **Description of the support received within Support Facility 1**

Within Support Facility 1, support focused on enhancing participants' skills in using the Hotmaps toolbox for district heating integration and planning. A workshop introduced default datasets and



resource analysis modules, demonstrating methods for estimating excess heat and renewable energy potential. Best practices were explored for resources such as wastewater treatment plants, industrial excess heat, and river water heat pumps. Participants gained proficiency in basic Hotmaps functions, learned how to create custom data maps, and showed strong interest in the District Heating supply calculation module.

Further training included three individual sessions on using the District Heating (DH) supply calculation module (CM) in Hotmaps to support heat planning. Participation in these sessions increased from three to six members after the initial Dispatch CM workshop. However, many participants lacked experience with scenario modeling tools and required assistance in understanding the programming and data requirements for running the module. They expressed interest in uploading specific data to compare economic scenarios for H&C planning in Vilnius. To meet this need, a second Dispatch CM workshop was planned, focusing on integrating specific energy sources for regional economic analysis.

### **Description of the expected impact out of the support received within Support Facility 1**

VST is the largest provider of heating and hot water in Lithuania. The supply portfolio already now shows a remarkable share of renewable energy. To further increase the share of renewable energy and excess heat in the portfolio, additional data and knowledge is needed. With the support of Act!onHeat VST now has the knowledge and thus the opportunity to use two new tools: the Hotmaps online toolbox for visualising demand and resource data, and the stand-alone District Heating supply Calculation Module. This will allow VST to further explore the opportunities for integrating renewables and excess heat, especially of non-biomass resources.

## **2.3.9 Stadt Dietzenbach**

**Applicant ID:** CfA2-15

**Long Name:** Municipality of Stadt Dietzenbach

**Type of support received:** Individual support

### **Description of the individual situation of the participant:**

The municipality is in the early stages of preparing a municipal heating plan and requires guidance on the initial steps to take. A significant challenge is the municipality's limited financial capacity, making it essential to demonstrate how effective heat planning can be implemented in financially constrained settings. The objective is to develop a strategy for progressing with heat planning that enables the municipality to work towards a greenhouse gas-neutral heat supply despite its limited financial resources.

### **Description of the support received within Support Facility 1**

The support of the Act!onHead team included comprehensive assistance to address the financial challenges faced by Dietzenbach in developing heat plans. Desk research was conducted alongside outreach to municipalities in Baden-Württemberg with similar financial constraints to identify best practices and establish connections with relevant contacts.

Interviews with representatives from other financially constrained cities provided valuable insights into their approaches to heat planning. These findings were documented and presented during a workshop that offered guidance for advancing heat plans in Dietzenbach. A contact list was also compiled to facilitate future inquiries and collaboration with municipalities facing similar

challenges.

### **Description of the expected impact out of the support received within Support Facility 1**

Through its participation in the support facility, the municipality has gained valuable insights into the cost-efficient implementation of heat planning. The advice from other municipalities has been especially helpful. Moreover, the contact list provides the local authority with an ongoing opportunity to collaborate with other financially constrained municipalities, enabling them to address future challenges in the heat planning process even after the project concludes.

## **2.3.10 MANU - top-down**

**Applicant ID:** CfA2-24

**Long Name:** Macedonian Academy of Sciences and Arts: Research Center for Energy and Sustainable Development (MANU)

**Type of support received:** Individual support + Hotmap Advanced

### **Description of the individual situation of the participant:**

After seeking support during the first round of the call for applications, MANU also requested assistance in the second round to prepare for using the Hotmaps top-down approach. Heat planning is neither mandatory nor widely practiced in North Macedonia, where it remains a relatively new concept. Municipalities face significant challenges in implementing heat planning due to limited data availability and a lack of expertise.

The accessibility of data needed to create gross floor area and heat demand density maps varies across regions in North Macedonia. To develop these maps for all municipalities, the Hotmaps top-down approach must be adapted to the national context and systematically applied. Once completed, this data can be integrated into the Hotmaps toolbox for visualization, enabling more comprehensive heat planning analyses through its calculation modules.

### **Description of the support received within Support Facility 1**

The support focused on data collection and the development of top-down density maps for North Macedonia. A hectare-level mapping approach was implemented using the latest available data, and assistance was provided in developing Python code to automate the generation of these maps.

The initiative resulted in the successful creation of heat demand density and gross floor area density maps for North Macedonia. These maps were validated and refined through comparison with bottom-up density maps developed within Act!onHeat (CfA1-08). A Python script was also delivered to streamline the map creation process.

The support process included four sessions held between September 6 and December 27, 2023, ensuring that the tools and methodologies were effectively tailored to the country's needs.

### **Description of the expected impact out of the support received within Support Facility 1**

The support received with Act!onHeat CfA2 allows MANU to use and further promote the Hotmaps datasets and toolbox for heat planning in North Macedonia. The generated top-down gross floor area and heat demand density maps for the entire country will allow MANU to use the Hotmaps toolbox in the entire country. This dataset will also allow other municipalities in the country to start with heat planning in their region quickly and easily. In the in-place workshop performed during CfA1 in Skopje in September 2023, the respective dataset was already announced.





### 2.3.11 AIT

**Applicant ID:** CfA2-26

**Long Name:** Austrian Institute of Technology

**Type of support received:** Individual support + Hotmaps Advanced

#### **Description of the individual situation of the participant:**

AIT performs analyses on the potential of future H&C systems at the national, regional and local levels. AIT has developed and used different models for that. However, a model to quickly assess the potential for district heating, including its spatial allocation, is not available. Therefore, the Hotmaps Calculation Model District Heating Economic Assessment should be learned to apply in the newest and stand-alone versions.

#### **Description of the support received within Support Facility 1**

The support provided focused on introducing the stand-alone version of the CM DH potential tool for economic assessment using Hotmaps. This involved preparing the input data for the model, reviewing and discussing the calculation results, and developing Heat Density Demand (HDD) and Gross Floor Area (GFA) density maps. These maps are now used for District Heating (DH) economic assessments.

As a result, the applicant gained the capability to use the tool for calculations, generate the necessary input data, and interpret the outcomes. The support process included four individual sessions held between January and June 2023.

#### **Description of the expected impact out of the support received within Support Facility 1**

AIT was trained on the stand-alone DH economic assessment module and used it to analyze district heating potential in part of Tyrol, Austria. The results, which identified DH opportunities, were shared with municipalities, potentially advancing DH and decarbonization efforts in the region. AIT is now equipped to apply the model in other areas, supporting H&C planning and decarbonization initiatives across the EU.

### 2.3.12 REGEA

**Applicant ID:** CfA2-27

**Long Name:** Regionalna Energetska Agencija Sjeverozapadne Hrvatske (Regional Energy Agency of Northwestern Croatia)

**Type of support received:** Individual support + Hotmaps Advanced

#### **Description of the individual situation of the participant:**

In Croatia, the demand for strategic H&C planning is increasing, prompting REGEA to provide technical advice to municipalities. However, the organization lacked a straightforward, easily applicable tool in its portfolio to address these needs effectively.

#### **Description of the support received within Support Facility 1**

Act!onHeat's assistance helped REGEA enhance its understanding of energy planning and district heating in Croatia. A workshop was organized to assess the feasibility of using the Hotmaps toolbox in Croatian municipalities. During this session, the team examined the toolbox's functions, legal status, and ongoing developments. They also discussed how to adapt the toolbox for local



use, focusing on calculation modules for district heating potential. The workshop resulted in a draft heat demand analysis, an initial estimate of district heating potential, and the identification of further tool development needs, including the addition of more key performance indicators (KPIs). Six online meetings were held between February and December 2022.

Additionally, an updated district heating potential calculation module was developed, along with an analysis of district heating potential for the relevant municipalities. This work supported the data compilation and adaptation of the Hotmaps toolbox for Croatian municipalities. Through ongoing discussions with REGEA, specific needs were addressed, culminating in the creation of a guiding document for using the toolbox in municipal heat planning across Croatia.

### **Description of the expected impact out of the support received within Support Facility 1**

With the support of the Act!onHeat project, REGEA used HotMaps to develop a draft heat demand assessment for the city of Rijeka. This was the basis of the assessment of potential scenarios for the development of the district heating system as well as its overall decarbonisation of Rijeka. The results of this study have identified the best options for the decarbonisation process which were in turn further specified.

After that, a similar approach with a lower level of detail was followed in 3 other cities, namely Osijek, Karlovac and Slavonski Brod. REGEA is involved in various H&C projects and analyses, performing SECAPs and further analyses for the municipalities in Northern Croatia; thus, assistance given in the Act!onHeat project will have a sustainable impact on the decarbonisation process in the entire region.

### **2.3.13 Žabljak**

**Applicant ID:** CfA3-2

**Long Name:** Municipality of Žabljak

**Type of support received:** Individual support

#### **Description of the individual situation of the participant:**

The municipality of Žabljak is currently in the process of developing a detailed plan for the implementation of a district heating network. While biomass is already planned as the primary energy source, the municipality is exploring the potential of integrating other supply technologies and sources. In particular, they are interested in assessing the techno-economic feasibility of large-scale air-source heat pumps and solar thermal as a supplementary or alternative solution for their heating supply.

#### **Description of the support received within Support Facility 1**

Assistance under Support Facility 1 focused on identifying renewable supply options for the city's heating sector, with an emphasis on developing a district heating system. The team evaluated the best-fitting renewable sources and technologies, alongside the existing biomass supply, and highlighted air-source heat pumps as a key technology of interest.

A techno-economic analysis was conducted to assess district heating supply portfolios that combined biomass, air-source heat pumps, and solar thermal panels. The results were summarized in a slide deck and brief report. Throughout the process, five individual support sessions were held between January and November 2024 to guide and refine the analysis.



### **Description of the expected impact out of the support received within Support Facility 1**

The support provided to Žabljak has laid the foundation for discussions on diversifying the city's energy supply. While the current plan is to develop a district heating network powered solely by a biomass boiler, an initial economic assessment suggests that incorporating air-source heat pumps could be cost-effective and reduce reliance on biomass. The municipality intends to build on these findings with a detailed technical assessment and explore the inclusion of air-source heat pumps in their energy supply portfolio.

The next step involves presenting these results in an internal workshop with the district heating working group, established by the mayor, to discuss the potential role of air-source heat pumps. With insights from Act!onHeat, the municipality now has a clearer path forward for developing its district heating network and has identified areas where external expertise may be needed.

## **2.3.14 Kakanj**

**Applicant ID:** CfA3-4

**Long Name:** Kakanj Municipality

**Type of support received:** Individual support

### **Description of the individual situation of the participant:**

Geothermal energy is a renewable resource that can help municipalities reduce reliance on energy imports and cut carbon emissions in the heating sector. A neighboring city to Kakanj has geothermal potential, and the key question is whether it is economically viable to use this energy for Kakanj's heating demand. Act!onHeat is tasked with providing an overview of existing studies on geothermal energy in the region and identifying key lessons for a potential geothermal plant in Kakanj.

### **Description of the support received within Support Facility 1**

The objective was to assess the geothermal potential for district heating in the municipality of Kakanj. The analysis involved reviewing data provided by the municipality, including information on temperature, depth, and generation potential. Based on this data, estimates for CAPEX, OPEX, and thermal breakthrough were developed, alongside a discussion of sensitivities and potential variabilities in these figures. The findings were summarized in conclusions, with recommendations for potential next steps. Six online meetings were held between February and December 2022 to guide and refine the assessment.

### **Description of the expected impact out of the support received within Support Facility 1**

The municipality of Kakanj aims for a decarbonisation of its heat demand and is searching for opportunities to do so. A nearby geothermal energy potential could be used to decarbonise relevant shares of the heat demand in the municipality. With the support provided by Act!onHeat a clearer understanding of potential costs and the usability of the geothermal potential for supplying the municipality's heat demand could be gained. Together with suggestion of next steps the municipality is now able to approach in analysing a potential project to develop the geothermal plant.



### 2.3.15 Babina Greda

**Applicant ID:** CfA3-7

**Long Name:** Municipality of Babina Greda

**Type of support received:** Individual support

**Description of the individual situation of the participant:**

The evaluation of current and future heat demand is crucial for integrating renewable heat sources in Babina Greda. However, the absence of GIS data on building stock complicates this evaluation and the next steps. The task is to analyze available options and identify additional data required to assess potential heat sources and energy suppliers in the area. Babina Greda expects Act!onHeat to provide insights, share experiences on data management and collection, and guide the use of the Hotmaps platform to support this process.

**Description of the support received within Support Facility 1**

Babina Greda received assistance in establishing a heat cadaster, including a heat demand and gross floor area density map tailored to their needs. Open data and building stock information for Croatian municipalities were assessed, and a detailed guide was provided to facilitate data access and usage. Two online meetings offered direct guidance, ensuring smooth implementation of tools and methods.

**Description of the expected impact out of the support received within Support Facility 1**

Through the support within Act!onHeat, the municipality of Babina Greda learned which data on the building stock in the area are freely accessible for the municipality, how the data can be accessed and how it can be used to generate a heat cadastre as well as heat demand and gross floor area density maps for the region. This allows the municipality to derive a strategy for the decarbonisation of heating in the area as well as to assess potential district heating systems in pre-feasibility studies.

### 2.3.16 Göppingen

**Applicant ID:** CfA3-12

**Long Name:** Stadtwerke Göppingen

**Type of support received:** Individual support

**Description of the individual situation of the participant:**

The city of Göppingen, located in Baden-Württemberg, Germany, was required to submit a municipal heating plan by the end of 2023. The municipality developed the plan jointly for Göppingen and Geislingen, presenting it to the municipal administration by year-end. The next step is to implement the plan. The municipality seeks an assessment of whether the proposed measures are more or less ambitious compared to other heating plans. Additionally, Göppingen is exploring geothermal energy and requests further information on available technologies and how to initiate such projects.

**Description of the support received within Support Facility 1**

The municipality requested support in geothermal energy and sought guidance on available technologies and how to initiate such projects. The process began with an initial meeting to





discuss the municipality's needs. A comprehensive 20-page handbook on geothermal energy was then compiled, covering technologies, data, legal aspects, project organization, and funding programs. The handbook was presented in a workshop to provide further insights.

Additionally, an analysis was conducted to evaluate the proposed measures in the municipality's heat plan, comparing their level of ambition to other heat plans. After an initial discussion to outline the required support, a review was carried out on 22 heat plans, encompassing 134 measures. The findings were categorized into six groups, each with three levels of ambition, and summarized in a slide deck. These results were presented in a workshop to provide further clarity and support decision-making.

### **Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat's support provides the municipality with an assessment of how the proposed measures in their heat plan compare to those in other heat plans. This comparison is valuable when presenting the heat plan to the local council, as it offers insight into what other municipalities are planning and how their own plan measures up. The geothermal energy handbook serves as a resource to help initiate a geothermal project, giving stakeholders a comprehensive overview of the technology and all relevant aspects of implementation.

## **2.3.17 Bitola**

**Applicant ID:** CfA3-13

**Long Name:** Municipality of Bitola

**Type of support received:** Individual support + Hotmaps Intro

### **Description of the individual situation of the participant:**

The REK Bitola Thermal Power Plant, which currently operates with coal, is scheduled to phase out by 2029. However, the construction of heat supply pipelines from the plant to the city was approved in 2023 and will be completed by 2025/26. The municipality is exploring district heating options and the integration of renewables.

They are developing a DHC strategy and conducting a pre-feasibility study for a new system in the Bitola Region. The study will assess scenarios for incorporating renewable energy sources (RES), energy storage systems, and heat pumps into the DHC system.

### **Description of the support received within Support Facility 1**

The support involved introducing the Hotmaps toolbox and guiding its application for developing a DH strategy. This included conceptualizing its use, facilitating data exchange, and assisting with input data preparation. An introduction was delivered, and several online meetings were held to discuss data requirements, analysis steps, and implementation options. However, further support was discontinued due to time and resource limitations on the applicant's side, as they prioritized a newly defined municipal project.

### **Description of the expected impact out of the support received within Support Facility 1**

The municipality of Bitola currently relies mainly on fossil fuels to supply the heat demand in the area. For the city, it is important to understand the opportunities to decrease the heat demand and from which renewable or excess heat sources the remaining demand could be supplied. The support in Act!onHeat provided the municipality with an understanding of the capabilities of the





Hotmaps toolbox and dataset to do such analyses.

Compared to the analyses done by City Energy Analyst (CEA) by Mr Goran Nedelkov and the municipality's external consultants, it is possible to benefit from less data- and calculation-intensive environment of Hotmaps for the analyses of heat demand and use it for communications inside the municipality.

### **2.3.18 VEKA**

**Applicant ID:** CfA3-16

**Long Name:** VEKA - Flemish Energy and Climate Agency

**Type of support received:** Individual support

#### **Description of the individual situation of the participant:**

In Flanders the need for local heat planning has been recognised and several municipalities have or are on the way of developing local plans for the decarbonisation of H&C. Since the publication of the recast EED in summer 2023 it became clear that local H&C plans developed by municipalities above 45 k inhabitants will need to comply with specific requirements as set out in Art. 25 (6) of the directive. VEKA will most probably be the entity that must assess the compliance of the plans with requirements. Therefore, VEKA is in the need of understanding how the different requirement could be interpreted and how the compliance with the requirements could be assessed for existing or to be developed plans.

#### **Description of the support received within Support Facility 1**

The support focused on developing a criteria catalogue to assess the compliance of local H&C plans with the 2023 recast of the Energy Efficiency Directive (EED). This involved evaluating existing H&C plans from Flemish municipalities and providing recommendations for VEKA's implementation process. A literature analysis was conducted, and expert interpretation was applied to address each EED requirement. A draft catalogue was shared with VEKA and tested on the Flemish plans provided. Based on the results of the testing, a revised catalogue was delivered, giving VEKA a refined tool for assessing compliance.

A workshop was organized to discuss the outcomes of this work with the affected municipalities. A draft slide deck with assessment results and the criteria catalogue was provided for the session. VEKA hosted the workshop with representatives from 11 municipalities, where they discussed the outcomes, conclusions, and next steps. Additionally, five online meetings were held throughout the support period to further refine and clarify the process.

#### **Description of the expected impact out of the support received within Support Facility 1**

The transposition of the recast EED2023 into national law will make local H&C plans mandatory for municipalities with over 45,000 inhabitants. These plans must meet specific requirements, and a designated entity will be responsible for ensuring compliance. VEKA is likely to be the entity overseeing compliance in Flanders.

With the support in Act!onHeat VEKA is now equipped to prepare for this role and can also assist the municipalities in their region in fulfilling these requirements. This is relevant for currently 19 municipalities larger than 45 k inhabitants. In the future this could become relevant for even more municipalities, as the process of merging neighboring municipalities is currently under discussion in Flanders.



### 2.3.19 Durham County Council

**Applicant ID:** CfA4-2

**Long Name:** Durham County Council

**Type of support received:** Individual support

**Description of the individual situation of the participant:**

The United Kingdom (UK) is undergoing a significant shift in decarbonisation, with heating identified as a key priority. Heat networks are gaining interest as a solution, though public awareness of them remains low due to their limited prevalence. Durham County Council is working to establish heat networks and seeks to improve public engagement on the topic. To support this, Durham County Council has conducted a county-wide heat study to identify heat demand and sources. The Council is seeking assistance in training to help effectively engage town and parish councilors, as well as guidance on the best practices for involving the public in the development of heat networks.

**Description of the support received within Support Facility 1**

On 17/10/2024, Durham County Council officers participated in a workshop, which focused on two key areas: specialized engagement at the town and parish level, and public engagement in heat network projects. Following the workshop, an advice note for engaging town and parish councilors, based on the prepared slides, was shared with DCC to support their ongoing efforts.

The workshop also included a review of selected case studies to provide a deeper understanding of public engagement strategies. It highlighted both the successes and challenges of various approaches. The slides from this session were shared with DCC to further assist in their heat network development efforts.

**Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat's workshops and support have built upon the existing heat planning knowledge in County Durham. The insights gained from these workshops have contributed to the development of new processes within the council. Participants noted that several engagement techniques introduced during the sessions were particularly appealing and expressed interest in incorporating them into DCC's communications strategy. As a result, this support has effectively integrated existing heat network work, as well as the efforts delivered under WP4, into the implementation phase.

### 2.3.20 Kreis Steinfurt

**Applicant ID:** CfA4-4

**Long Name:** District administration: Kreis Steinfurt, Amt für Klimaschutz und Nachhaltigkeit

**Type of support received:** Individual support

**Description of the individual situation of the participant:**

In Germany, a national heat planning law was passed last year, with implementation in North Rhine-Westphalia (NRW) expected by the end of 2024. Eight municipalities in the Kreis Steinfurt have already started voluntary heat planning. As a service center, Kreis Steinfurt supports

municipalities with heat planning and maintains regular dialogue with local climate protection managers. The region is rural with small municipalities, making heat planning particularly challenging. Analytical advice, based on a survey and webinar, could help identify the region's needs, challenges, and opportunities. Therefore, Kreis Steinfurt has requested consultancy from Act!onHeat for implementing H&C planning.

### **Description of the support received within Support Facility 1**

An online survey with around 18 questions was conducted between June and July 2024 to gather insights from municipalities on the success factors and challenges in heat planning. Kreis Steinfurt distributed the survey to 24 municipalities, resulting in 23 responses from municipal stakeholders and utility providers, with some municipalities submitting multiple responses.

In September 2024, an interactive webinar was held, attended by Kreis Steinfurt and about 10-15 municipalities. The webinar focused on discussing the survey results and exploring the challenges and opportunities for improving heat planning in the Steinfurt municipalities.

### **Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat's survey and workshop supported the knowledge of heat planning in Steinfurt. The service centre Kreis Steinfurt is a contact point for the municipalities. In this way, Act!onHeat has contributed knowledge about the processes of heat planning, success factors and challenges, which is likely to be passed on, at least in part, to numerous municipalities.

## **2.3.21 WMCA**

**Applicant ID:** CfA4-5

**Long Name:** West Midlands Combined Authority (Combined Authority for the West Midlands Metropolitan County)

**Type of support received:** Individual support + Hotmaps Intro

### **Description of the individual situation of the participant:**

As stated above, The United Kingdom is currently undergoing a significant transition towards decarbonisation, with one of the key priorities being the decarbonisation of heating. As part of this, heat networks are gaining considerable attention as a solution. However, heat networks have had limited presence in UK society, leading to a relatively low public awareness of their benefits. Moreover, a national Heat Network Zoning programme is expected to be introduced soon, potentially placing responsibilities on local authorities to act as zoning coordinators (HNZCs). The specifics of this role, however, are still unclear.

The West Midlands Combined Authority (WMCA) has applied for support on behalf of its seven constituent authorities. Their goal is to understand the tools available for their potential role as HNZCs, how these tools might align with upcoming zoning regulations, and how they can integrate them with existing planning frameworks.

### **Description of the support received within Support Facility 1**

In June 2024, an online workshop was held to introduce the Hotmaps and THERMOS tools, with expert presentations from Act!onHeat partners. The session emphasized how these tools can assist WMCA and its local authorities in developing effective heat planning strategies across the region.



Another online workshop took place on 25th September 2024, where Act!onHeat experts discussed the current methodology of the National Zoning Model, alongside a sample of its results, which remain subject to change. The session also explored the potential impact of these results on the delivery of the HNZN role and the formulation of heating and heat network strategies.

Later that same day, Act!onHeat partners presented their research findings on zoning regulations for district heating in various European countries. The session examined the different approaches to implementing these regulations and distinguished between those used purely for zoning purposes and those that enforce mandatory connections.

The final part of the 25th September workshop was dedicated to reviewing the outputs from earlier sessions and discussing the next steps for utilizing Hotmaps and THERMOS. Experts from Act!onHeat shared results from other work packages, while exploring the potential applications of these tools for future objectives and outlining any follow-up actions required.

### **Description of the expected impact out of the support received within Support Facility 1**

Act!onHeat's workshops and provision of know-how have reinforced the knowledge of zoning regulations and how they can interact with strategic H&C planning. In particular, WMCA and its constituent authorities have been informed about the upcoming National Zoning Regulations (to the extent the regulations are currently known), how zoning and mandatory connection is implemented in other regions in the EU and can now begin to plan for its implementation in WM. They are also prepared in how to use tools such as Hotmaps and THERMOS to support their heat planning and potential future role as Heat Zone Coordinators.

## **2.3.22 Plejades**

**Applicant ID:** CfA4-7

**Long Name:** Plejades, Bulgaria

**Type of support received:** Individual support

### **Description of the individual situation of the participant:**

PLEJADES Bulgaria OOD is a strategic consulting company, acting at the interface between technical and management consulting. The company currently provides consultancy to Avren, an Eastern Bulgarian Municipality. The company in collaboration with the municipality wants to explore the potentials for geothermal H&C supply. For this Plejades seeks the support of Act!onHeat to identify the most suitable geothermal configuration for implementing geothermal systems in district heating networks and develop strategies to promote their implementation and application

### **Description of the support received within Support Facility 1**

Plejades received support through a comprehensive document that addressed their specific queries. This document provided insights into the operational mechanisms of geothermal systems across Europe, highlighting successful case studies and innovative applications. It also outlined available financial incentives and funding mechanisms. In addition to the document, two individual support meetings were held to further assist the applicant.





### **Description of the expected impact out of the support received within Support Facility 1**

Geothermal technology is comparably new in Bulgaria and may face political and social challenges. However, Plejades sees its potential benefits, particularly for the heating sector, and aims to promote it. Using inputs from Act!onHeat, Plejades plans to deepen its understanding of the application geothermal plants in the region. The company intends to use this data to initiate discussions within municipalities, engage political leaders and demonstrate the benefits to encourage supportive policies and financial incentives for the development of geothermal plants in Bulgaria.

### **2.3.23 Ville de Liège**

**Applicant ID:** CfA4-9

**Long Name:** Ville de Liège, Belgium

**Type of support received:** Individual support + Hotmaps Intro

#### **Description of the individual situation of the participant:**

The city of Liège is in the early stages of its H&C planning process, but progress has been delayed due to a lack of technical expertise and staffing. Aware of the importance of effective H&C planning, the municipality is seeking support from Act!onHeat to initiate the process. They require guidance on available tools and support in hiring a technical expert to strengthen the city's technical capacity and ensure the successful development of the plan.

#### **Description of the support received within Support Facility 1**

The municipality received support through a 2-hour online meeting, which provided an introduction to the Hotmaps/Citiwatts platform. During the session, the current data status was reviewed, and the immediate needs for developing H&C plans were discussed. Relevant assistance was provided to address these needs. By the end of the meeting, the municipality had a clearer understanding of how the Hotmaps platform can be utilized to create effective heat plans and the data requirements essential for developing comprehensive H&C strategies.

#### **Description of the expected impact out of the support received within Support Facility 1**

The support provided by Act!onHeat offers the city a foundational understanding of the requirements for H&C plans, while also clarifying the depth of data needed. The toolbox demonstration highlights potential pathways for developing these plans and emphasizes the importance of acquiring technical expertise in the sector. Additionally, establishing connections with other municipalities is expected to further accelerate the process and create opportunities for collaboration with neighboring cities.





### 3 Summary and Conclusions

This report details the activities undertaken within the Act!onHeat project under Support Facility 1 (SF1), which assisted municipalities with strategic H&C planning. SF1 delivered customized support packages tailored to the unique needs and current planning stages of each municipality. The support comprised four core modules: Heating and Cooling Transition Strategy, Inventory and Potentials, Zoning, and Scenarios. The process followed three key phases: identifying municipal needs, delivering group-based support, and providing personalized individual assistance. Municipalities had the flexibility to select action points that align with their specific needs and priorities.

Group support activities included webinars that address key challenges and opportunities in H&C decarbonization, such as data availability, political factors, and technological solutions like geothermal energy and district cooling. Individual support involved tools like Hotmaps for data analysis, scenario modeling, and access to technical resources, fostering collaboration and building capacity.

Despite the project's success, several challenges emerged. The number of SF1 applicants was much lower than expected, with only 54 total applicants, of whom 33 received support. Identifying the most relevant support for each municipality was a time-consuming process. Small-scale activities often failed to engage municipalities, which, despite their motivation, face significant challenges. These include limited financial and staffing resources, a lack of heat planning expertise, and the need for clear guidance, a supportive legislative framework, and sufficient funding to succeed.

A key takeaway is that strategic H&C planning should prioritize regional knowledge building, as energy agencies are well-positioned to provide essential capacity building. These agencies must be empowered and trained to support municipalities effectively. Financing is equally critical, with municipalities often lacking resources for planning and implementation. Local funding is typically insufficient, underscoring the need for streamlined options like regional one-stop-shops to simplify processes and ensure adequate financial support.

Effective plans and implementation require a robust legislative framework. Municipalities often create plans to meet legal obligations, relying on key elements like reliable data, cost-benefit analysis, and zoning. Legislation must facilitate data sharing among stakeholders, with specific ordinances governing data transfer, aggregation levels, and protection. Effective zoning also depends on clear regulations, ideally defined at the national or regional level, supported by consistent policies to ensure success.

In conclusion, Act!onHeat has made meaningful progress in advancing H&C decarbonization through tailored support and collaborative knowledge sharing. To ensure long-term success, future efforts should focus on expanding financial support, improving data-sharing frameworks, and strengthening regional agencies to facilitate sustainable and effective implementation across all municipalities.

