



# ESCALATE

DECARBONISING HEATING  
AND COOLING SYSTEMS

## D4.1 Regional Heating & Cooling Policy Mapping and Multi-Level Governance structures

29/04/2025

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## List of Acronyms

CET	Clean Energy Transition
DHC	District Heating and Cooling
EC	European Commission
ECEEE	European Council for an Energy Efficient Economy
EE1st	Energy Efficiency First
EEA	European Environment Agency
EED Recast	Energy Efficiency Directive Recast
ENC	Energy Cities
EPBD	Energy Performance of Building Directive
EU	European Union
Geo DHC	Geothermal District Heating and Cooling
GHG Emission	Green House Gas Emission
H&C	Heating and Cooling
HVAC	Heating, Ventilation, Air Conditioning
LRAs	Local and Regional Authorities
MLG	Multi-Level Governance
MS	Member States
NECPs	National Energy and Climate Plans
RES	Renewable Energy Sources
SECAPs	Sustainable Energy and Climate Action Plans

## About ESCALATE

The ESCALATE Project aims to speed up Europe’s shift to clean renewable energy by helping cities across the EU plan for more energy efficient heating and cooling. The project focuses on towns with over 45,000 people, ensuring they have the tools and knowledge to create local heating and cooling plans that reduce energy use and support the environment. ESCALATE empowers local communities to make their buildings sustainable, reduce pollution, and help Europe become climate-neutral by 2050 by providing expert training and a clear, easy-to-follow guide.



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## Keywords list

Policy mapping; Stakeholder assessment; Heating and cooling; Funding schemes; Governance structure.

## Executive summary

The ESCALATE project aims to support a systemic approach to climate neutrality, specifically the decarbonisation of heating and cooling (H&C) systems across Europe, by co-developing practical and accessible training and capacity building for local and regional authorities (LRAs) and all relevant stakeholders in the development of H&C plans. These trainings will be grounded in scientific evidence and real-world practices and will reflect current regional trends and challenges in achieving energy efficiency in district heating and cooling (DHC).

This report starts by introducing the importance of decarbonising H&C systems (*Chapter 1*), the objectives of this report (*Chapter 2*) and the activities in the eight project countries (*Chapter 3*): Austria, Croatia, France, Germany, Greece, Italy, Poland, and Slovenia. *Chapter 4* presents a comprehensive mapping of relevant stakeholders, including results from the stakeholders' identification process and Power-Interest matrices. *Chapter 5* outlines the methodology framework for mapping H&C policies and the results from the review and actual mapping of current national, regional as well as local policies/ plans/ strategies in the H&C sector. The same chapter also includes a section on financial opportunities for implementing H&C plans as well as an analysis of the current state of multi-level governance (MLG) initiatives and structures across all ESCALATE regions, with emphasis on national to local interactions in terms of policy-setting and implementation. *Chapter 6* translates the above outputs into actionable recommendations for a structured co-design process with LRAs and relevant stakeholders.

The report findings are intended to inform efforts to improve coordination, optimise policy outcomes, and accelerate the transition to sustainable H&C systems. The policy assessment within the scope of this report reveals that while countries such as Austria, Croatia, France, and Germany show varying degrees of integration between national, regional, and local frameworks, challenges remain. Greece, Poland, and Slovenia exhibit centralised models with limited local coordination, whereas Italy demonstrates a more integrated MLG structure with active spatial planning tools. A recurring barrier is the limited financial, administrative, and technical capacities at the regional and local level.

Also, despite notable progress in mapping current policies and identifying key stakeholders, some countries show a lack of systematic coordination between national, regional, and local levels, and insufficient alignment of local and regional actions with national strategic goals and EU directives. Addressing these deficiencies to reach EED-compliant H&C plans demands robust MLG and strong local engagement. It also requires targeted subsidies for municipalities, enhanced policy transparency, capacity building and training targeted to LRAs on the various funding mechanisms available to/for them, as well as a more equitable resource distribution across governance level – considering the pivotal role of local and regional actors in reaching the clean energy transition targets in the EU.

Effective transposition of the EU directive on local H&C planning requires a structured and inclusive approach that may include setting a lower population threshold for mandatory planning, providing tailored support based on municipal capacities, establishing clear adoption timelines, and ensuring access to reliable energy data. Strategic spatial planning, combined with local stakeholder engagement and strong national backing, is crucial to develop practical, coherent, and widely supported H&C plans. Only through these measures can Member States advance towards climate neutrality with equitable and effective H&C transitions. Ultimately, this report serves as the groundwork for the multilateral dialogues that are going to be organised at the local/regional and national level to encourage a guided exchange on the H&C planning process between policymakers and stakeholders.



# 1. Introduction

The energy consumption in residential buildings in Europe accounts for 25.8% of the total energy consumed by end-users (Eurostat 2022)<sup>2</sup>. This consumption consists mostly of natural gas and electricity which are the main resources for the various households purposed, such as heating and cooling (H&C). With 2024 being the hottest year ever recorded<sup>3</sup>, the decarbonisation of the H&C sector presents an enormous barrier to the EU's overall ambitious goals of climate neutrality. In order to address this issue, significant energy conservation measures and the early phase-out of fossil fuels are crucial components of national decarbonisation policies for H&C if the EU is to reach its climate change mitigation targets for 2030 and beyond. To make this shift, energy demand must be reduced by increasing the efficiency of the building stock, modernising heating, ventilation, air conditioning (HVAC) systems, and incorporating as much renewable energy as possible, especially locally produced. For this reason, the ESCALATE project aims to accelerate the Clean Energy Transition by supporting the regions and municipalities of the EU Member States (MS). Medium-to-large cities with more than 45,000 residents are now required to **prepare local H&C plans** by 2026, aligning with the national energy objectives under the **Energy Efficiency Directive (EED) Recast (EU) 2023/1791, Article 25<sup>4</sup>: an obligation of Member States to notify a comprehensive heating and cooling assessment as a part of its integrated National Energy and Climate Plan and its updates**. This legislation ensures both national and local authorities to take a systematic, strategic approach to H&C planning in prioritising energy efficiency and integrate renewable resources.

In addition, Article 25 is interlinked with other provisions of EU Directives such as Article 26 of Directive (EU) 2023/1791<sup>5</sup> which encourages the conversion towards a clean and carbon-neutral H&C supply, and the need for MS to take action to achieve these goals. Similar to the EED Recast, the 'Fit for 55' legislative package<sup>6</sup> introduced as part of the European Commission's 2021 Work Programme, aims to reduce the EU's greenhouse gas emissions by at least 55% by 2030, aligning with the European Green Deal's climate neutrality goal by 2050. A significant focus of this package is the decarbonisation of the H&C sector, which is crucial given that H&C accounts for a substantial portion of the EU's energy consumption and GHG emissions. As part of the work programme, the Energy Performance of Building Directive (EPBD)<sup>7</sup> demands a reduction of energy consumption and emissions from the building sector, most of the demand is met by H&C, however, consumption is not dependent on H&C systems. Collectively, these directives aim to promote policies in improving the energy efficiency in buildings and assisting in the transition towards climate-neutral by 2050.

As part of the EED recast 2023/1791 approach, MS must appoint a competent authority responsible for approving the plans of **DHC operators**. While the directive does not specify the approval procedures, the designated authorities should follow the existing national or regional procedures used for similar administrative tasks. Given the past transitions of studies and research, local and regional authorities (LRAs) are **primary actors** in driving the H&C decarbonisation of buildings (Herreras Martínez et al., 2022). However, the preparation and execution of local H&C plans is often challenging and requires a high level of technical knowledge and expertise. Such knowledge often

<sup>2</sup> EUROSTAT 2022. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy\\_consumption\\_in\\_households](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_consumption_in_households)

<sup>3</sup> [Confirmed: 2024 was the hottest year on record, says UN weather agency | UN News](https://www.un.org/press/en/2024/04/2404202401275&pk_keyword=Energy&pk_content=Directive)

<sup>4</sup> Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023L1791>

<sup>5</sup> Setting out guidelines for the interpretation of Article 26 of Directive (EU) 2023/1791 of the European Parliament and of the Council as regards the heating and cooling supply. [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L\\_202402395](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202402395)

<sup>6</sup> Fit for 55 Package. <https://www.consilium.europa.eu/en/policies/fit-for-55/>

<sup>7</sup> Directive (EU) 2024/1275 of the European Parliament and of the Council of 24 April 2024 on the energy performance of buildings (recast). [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L\\_202401275&pk\\_keyword=Energy&pk\\_content=Directive](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401275&pk_keyword=Energy&pk_content=Directive)

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lacks among LRAs. Supported by other research (Bertelsen & Mathiesen, 2020), many LRAs have encountered significant barriers from policy planning to implementation. The most important ones being a shortage of municipal capacity and the know-how to attain the competencies to develop such H&C plans. As a result, some expertise is being outsourced to external parties such as the energy agencies with the aim to reduce the administrative burden of the LRAs. Hence, in most cases, the LRAs depend on energy agencies to support them in relaying important information and in improving their technical capacity skills to develop H&C plans as well as to create synergies with similar EU initiatives and national policy areas. EU policymakers such as the European Environment Agency (EEA) and the European Commission (EC) have concluded that the need for H&C will decrease if policymakers properly apply the "Energy Efficiency first" (EE1st) principle and focus their efforts on improving building insulation (Written et al., 2021).

The EU tracker of local H&C plans developed by Energy Cities as one of the project partners, serves as a starting point for mapping the policies as it shows the current state of play for local H&C plans in the EU. More information can be found on EU Tracker – Local heating and cooling plans<sup>8</sup>. Energy Cities' latest analysis (September 2024) reveals that most EU MS are not on track to meet the EED objectives, with many falling behind in transposing Article 25.6, which mandates local H&C plans to be drawn up<sup>9</sup>. Only Germany has fully transposed the article, setting a phased approach based on city size and a structured planning process. The Netherlands and Denmark have established strong support frameworks, offering funding and technical assistance to municipalities. However, the analysis highlights that many countries lack appropriate legal frameworks and adequate support mechanisms. Southern MS such as Italy, Spain, and France face particular challenges, including fragmented data access, absence of clear targets, and insufficient financial or staffing support. The key learning is that legislative action alone is not enough, meaningful implementation also requires robust support systems. Financial resources, skilled staff, accessible and harmonized data, and multi-level coordination are essential to empower local authorities. Without these, municipalities lack the tools to implement effective heat transition strategies. The EU must strengthen its role in supporting local action if it aims to meet its climate and energy goals.

Another key resource that the ESCALATE project builds upon is the "EU-27 Country Mapping of Financing Schemes to Decarbonise Buildings, Heating and Cooling" paper and dataset<sup>10</sup>, which for the first time compiles all active public and private funding schemes supporting the decarbonisation of the building stock in the EU at the national level, including energy retrofits, H&C upgrades, and district systems. The study was conducted by e-think in the framework of three EU-funded research projects: Act!onHeat<sup>11</sup> (Horizon 2020 Grant N.101033706) supporting municipalities in decarbonizing their H&C sector; SAPHEA<sup>12</sup> (Horizon Europe Grant N.101075510) developing a single Market Uptake Hub for geothermal DHC; and CoolLIFE<sup>13</sup> (LIFE Grant N.101075405) driving a sustainable future in space cooling.

Hence, the ESCALATE project is determined to develop systematic information to advocate for better regulation and to support the development and implementation of H&C plans through the guided exchange between policymakers and stakeholders on local, regional and national levels. This process begins with identifying effective policy measures that are essential in establishing H&C decarbonisation visions, goals and strategies. The legal framework of the National Energy and Climate Plans (NECPs) require that investments and measures are to prioritise the EE1st approach and coordinate national H&C decarbonisation initiatives. In doing so, multilateral dialogues between the

<sup>8</sup> EU Tracker – Local heating and cooling plans. <https://energy-cities.eu/local-heating-and-cooling-plan/>

<sup>9</sup> Energy Cities - Energy Cities says it is time to turn up the heat. <https://energy-cities.eu/energy-cities-says-it-is-time-to-turn-up-the-heat-on-member-states-for-failing-on-local-heating-and-cooling-planning/>

<sup>10</sup> EU-27 Mapping of Financing Instruments v4.xlsx.

<https://zenodo.org/records/13886860/files/EU27%20Mapping%20of%20Financing%20Instruments%20v4.xlsx?download=1>

<sup>11</sup> ActionHeat project. <https://actionheat.eu/>

<sup>12</sup> SAPHEA project. <https://www.saphea.eu/>

<sup>13</sup> CoolLIFE project. <https://coollife.revolve.media/>

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policyholders, energy agencies, and various governance levels are encouraged in the government structure to keep monitoring and further developing energy policies with the aim to review the final energy consumption numbers.

This report is the first activity of many in the duration of the ESCALATE project that aims to analyse the existing H&C policies and the governance structure in project regions as the ground preparatory to support the local and regional policy working groups. The report consists of the H&C policies mapping of the following eight project countries: Austria, Croatia, France, Germany, Greece, Italy, Poland, and Slovenia. Moreover, it explains the interconnection between various governance levels through the multilateral dialogues in establishing H&C decarbonisation policy measures.

The report highlights several segments in presenting the existing policies overview:

- *Stakeholder assessment* (Chapter 4)
- *Comprehensive analysis of the H&C policies in eight project countries* (Chapter 5)
- *Recommendations* (Chapter 6).

## 2. Objectives

This report aims at providing an overview and analysis of the existing policies relevant for H&C decarbonisation plans and presents the governance structures as one of the first preparatory activities to the support structures for the local, regional, and national policymakers in the eight ESCALATE project countries. These countries include six MS (Croatia, France, Greece, Italy, Poland, and Slovenia) that are still in the process of defining the requirements for the establishment of the national structure in their H&C plans. Additionally, two advanced MS (Austria and Germany) that have developed comprehensive local H&C plans and will receive training on consumer-led initiatives. Moreover, this report serves as the groundwork for the multilateral dialogues that are going to be organised at the local/regional and national level to encourage a guided exchange on the H&C planning process between policymakers and stakeholders. Similarly, these support structures create long-term sustainable exploitation that reflect local, regional, national, and EU cross cooperation in integrating H&C planning into their policy framework.

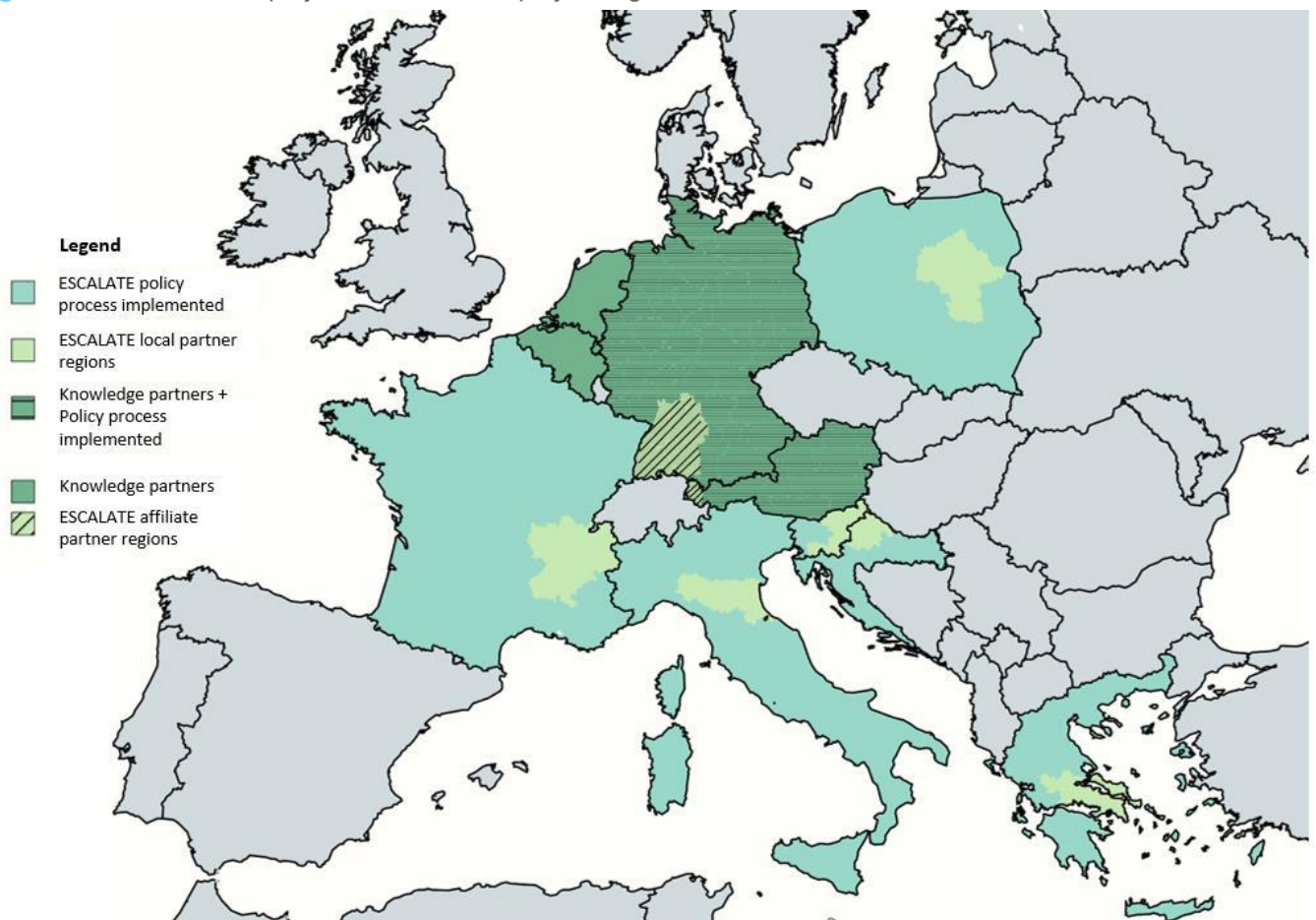
One of the specific objectives of ESCALATE is to develop and implement a systematic information campaign and ensure the institutionalisation and horizontal and vertical integration of local and regional H&C planning. The report leverages the existing policies especially to support the LRAs in the implementation of high-quality local and regional H&C plans that is aligned with Art. 25 of the EED recast. It is written and compiled for the benefit of policymakers, public officers of large municipalities, local and regional energy agencies, urban planners, consultants, as well as research and academia. This overview of policy mapping in eight project countries is the first step towards improved planning to support the large-scale implementation of successful policy-based solutions to enforce EU legislation on the transition to renewable energy.

To achieve this, the project will establish eight regional ecosystems through H&C policy groups, advocating for improved regulation and support for the H&C sector at both national and EU levels. National H&C policy working groups will be established in each of the eight project countries, considering the needs of consumer-led initiatives and energy communities in their engagement with local and regional governments. These groups will facilitate exchanges between stakeholders and play a key role in shaping local policy processes while also helping to create effective organisational structures for developing a comprehensive H&C policy framework. The aim is for the national H&C policy working groups to remain active beyond the ESCALATE project and to continue to be a strong voice for H&C decarbonisation in both national and EU policy discussions.

### 3. Upcoming activities at eight project countries

ESCALATE will establish organisational structures to support and coordinate the development of integrated clean energy transition (CET) plans in the H&C sector. Taking into account the extent to which the process of H&C plans is already established and implemented at the local level in the partner countries, the training and support provided by ESCALATE will be adapted and focused either on the development of plans and strategies (6 local partner regions HR, FR, GR, IT, PL, SL) or on the upgrading of existing H&C planning methodology to focus on the implementation of plans with an active role of consumer-led initiatives and energy communities (especially in 2 partner regions DE, AT).

**Figure 1.** ESCALATE project countries and project regions



The six energy agencies in the local partner regions will then develop H&C plans with at least two pilot municipalities in each country. Furthermore, a guided exchange on H&C planning between policymakers and stakeholders at local, regional and national levels in partner countries will be promoted and organised. The local policy group meetings are planned after the first H&C plan has been created. This plan will serve as a case study for the local policy group meetings. The national policy group meetings should take place after the local ones where local needs can be translated and communicated at regional/national level.

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The local and national policy process is crucial for the H&C transition. It is required to establish the ESCALATE tools as part of a long-term, stable learning environment, e.g., by developing national competence centres for heating transitions and providing LRAs with suitable resources. Therefore, the ESCALATE policy process will apply different formats, including local as well as national policy group meetings (2 local and 2 national meetings per project country), regional workshops (2 per project country), and policy briefs (at least 4, targeted mainly at the EU level), to disseminate results targeted at policymakers. Whereas the regional workshops are covered by REGEA in Work Package 3, more information will be published on the ESCALATE project website in due course (see ESCALATE Website: <https://escalate-project.eu/>).

The policy group meetings will be organised at both the local and the national level. A policy group will involve two to five stakeholders responsible for policy development and implementation and therefore provides a platform for intensive discussion. The local meetings will be closely linked to the establishment of a support framework, addressing barriers and needs from the local policy and organisational perspective rather than from the capacity building perspective. In each project region, at least two local policy group meetings are planned, plus two national meetings per country.

Throughout the project, two regional workshops are planned in each project region to (1) set up a suitable support framework and identify focus areas for capacity building by the energy agencies as local project partners and (2) accompany the policy process through inter-municipal exchange and the exchange between LRAs and other local stakeholders relevant to the implementation of H&C such as energy communities. Finally, policy briefs will disseminate the final results regarding best practices for the development of H&C plans. Policy briefs are intended for a wider group of policymakers, policy experts, and other relevant stakeholders such as national and EU-wide associations.

### 3.1. Local Policy Working Group

First, the ESCALATE project will initiate a local policymaking process in the participating countries and regions. In two selected regions of each ESCALATE country, this process will identify best practices, obstacles, and success factors related to organisational structures and knowledge transfer to LRAs. It will also assess needs regarding national regulatory frameworks and support systems. Additionally, communication between local policymakers and other stakeholders will be encouraged and institutionalised.

The development of local policies will involve identifying suitable organisational structures for multilateral dialogue between local and regional governments and the demands of consumer-led initiatives and energy communities. This is particularly relevant in the German and Austrian affiliate regions, where the focus is on implementing H&C solutions with the participation of energy communities.

The ESCALATE policy process will explore specific local challenges and the needs of LRAs in the partner countries, drawing on the experiences of other project countries. The primary targets of the local policy working group include LRAs responsible for implementing H&C measures, as well as key stakeholders such as experts, researchers, energy agencies, energy businesses, utilities and district heating operators, energy cooperatives, civil society groups, and One-Stop Shops.

## 3.2. National Policy Working Group

Working closely with the local level, the national policy process will transfer the lessons learnt from capacity building, the creation of H&C plans, and the requirements of LRAs to national frameworks. National policymakers will be engaged to advance the subject of H&C and the incorporation of EED Recast Art. 25 into national legislation, based on specific experiences, best practices, and constraints identified within the ESCALATE project in each project region. The main target group for the national policy working group are national authorities or policymakers that are primarily responsible for the energy efficiency, renewables related with H&C measurements in their respective countries within the ESCALATE project.

## 4. Stakeholder assessment

Several important criteria need to be taken into account to ensure advantageous stakeholder participation and minimise any possible risks. Aligning topics for discussion with the relevant stakeholder groups is crucial in order to prevent an uneven representation of perspectives. Building significant involvement activities and promoting long-term collaboration require a well-structured stakeholder assessment.

The assessment helps identify stakeholder positions, interests, levels of influence, areas of focus, and connections within relevant networks. In this case, the stakeholder mapping and power interest matrix enables insights to further develop strategic approaches in the project. Subsequently based on the analysis, the engagement strategy shall determine the stakeholders' potential contributions to the ESCALATE project and their relevance in future discussions on H&C decarbonisation topics. By engaging stakeholders in a structured and inclusive manner, the project not only strengthens participation but also builds lasting partnerships that enhance the effectiveness and sustainability of policy initiatives.

As part of this process, two key exercises were carried out during the kick-off meeting in September 2024 to gather essential input from the eight project countries represented by the project partners. First, a stakeholder identification process was conducted to list all the national, regional, local level of authorities, as well as other interested stakeholders from eight project countries, ensuring that their challenges and priorities are addressed. Second, a power-interest matrix was developed with project partners to map key actors, assess their influence, and strategically involve them in decision-making. These steps provide a strong foundation for effective stakeholder collaboration and impactful policy outcomes.

### 4.1. Stakeholders' identification process

In encouraging and organising guided exchange between policymakers and stakeholders for the eight project countries, relevant stakeholders have been identified. Table 1 shows a list of the relevant stakeholders that can potentially be involved and engaged in the ESCALATE project. The project partners act as representatives and as main contacts for the eight project countries. Regions in Austria and Germany have developed comprehensive local H&C plans in which their stakeholders will receive specific trainings focusing on the implementation of H&C for consumer-led initiatives and energy communities. The remaining countries will focus on two specific regions where their stakeholders will receive training on the development of H&C plans and strategies.

**Table 1.** Partner representation of ESCALATE project countries

Partner	Code	Countries	Region 1	Region 2
E-THINK	AT	Austria*	N/A	N/A
REGEA	HR	Croatia	City of Slavonski Brod	City of Karlovac
AURA-EE	FR	France	Valence Romans Agglomération	Aix-Les-Bains (Grand Lac)
IREES	DE	Germany*	N/A	N/A
SCN	GR	Greece	Municipality of Alexandroupoli	-
AESS	IT	Italy	Emilia-Romagna (Piacenza)	Veneto (Verona)
MAE	PL	Poland	Legionowo	Piaseczno
ENERGAP	SL	Slovenia	Municipality of Maribor	Municipality of Celje

\* Austria and Germany are two affiliated countries that have developed H&C plan and focus mainly on the consumer-led initiatives.



## D4.1. REGIONAL HEATING & COOLING POLICY MAPPING AND MULTI-LEVEL GOVERNANCE STRUCTURES

Within ESCALATE, the stakeholders are divided into two categories, primary and secondary stakeholders:

- **Primary stakeholders** are national, regional, and local energy agencies, regional and local administrations, urban planners, energy consultants, and any other user potentially involved in the development of H&C plans.
- **Secondary stakeholders** are policymakers, researchers and academics, energy companies, utilities and district heating operators, energy cooperatives, civil society groups, One-Stop Shops and anyone else who could promote the capacity-building programme and/or educate others about the significance of H&C plans without actually developing them. Information may be shared by secondary stakeholders who might also gain from some of the training and the resources offered by ESCALATE.

Subsequently, the stakeholders are further classified into different national, regional, and local levels, as detailed in Table 2.

**Table 2.** List of stakeholders in eight project countries of ESCALATE

<b>Country</b>	<b>Level</b>	<b>Stakeholder</b>
<b>Austria</b>	National	BMK, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology
	National	BMWFW, Austrian Federal Ministry of Science, Research and Economy
	National	National Energy Agency
	Regional	EIV, Energy Institute Vorarlberg
	Regional	EAShu*
	Regional	Wien MA20
	Regional	Representative of regional government
	Regional	1/2 important planners (in Dornbirn)
	Local	8 Municipalities ("Gemeinden"): Vienna, Graz, Linz, Salzburg, Innsbruck, Klagenfurt, Villach, Dornbirn.
	Local	Local Energiebüros/ agentur, Energy office/agency of the Municipality
<b>Croatia</b>	National	Ministry of Environmental Protection and Green Transition
	National	Ministry of Economy
	National	Ministry of Finance
	National	Ministry of Regional Development and EU Funds
	National	Ministry of Physical Planning, Construction and State Assets
	National	Croatian Energy Regulatory Agency
	National	Croatian Association of Cities
	National	Croatian Association of Counties
	National	Fund for Environmental Protection and Energy Efficiency
	National	Croatian Chamber of Commerce
	National	Faculty of Mechanical Engineering and Naval Architecture
	National	Faculty of Geology
	National	Faculty of Electrical Engineering and Computing
	National	Energy Institute Hrvoje Požar
	National	National Hydrocarbon Agency
	National	INA - National Oil and Gas Company
	National	HEP (National Utility Company)
	National	Technology Companies
	National	GDI/GIS planners
	Regional	Development Agencies

## D4.1. REGIONAL HEATING & COOLING POLICY MAPPING AND MULTI-LEVEL GOVERNANCE STRUCTURES

	Regional	Karlovac County
	Regional	Brod-Posavina County
	Regional	Regional Energy Agencies
	Local	Gas distribution companies
	Local	City of Zagreb
	Local	City of Slavonski brod
	Local	City of Karlovac
	Local	Other Cities with District Heating and population of more than 35.000
	Local	Geotermika - Geothermal Development Company of the City of Karlovac
<b>France</b>	National	GRDF (national gaz transport company)
	National	DGEC (General Directorate for Energy and Climate)
	National	CLER (Network for local energy transition)
	National	CEREMA, Centre for Studies and Expertise on Risks, the Environment, Mobility and Urban Planning
	National	AMORCE, national network of territories involved in ecology transition
	National	Ministry of Energy Transition
	National	Institute Delors
	National	RARE, Network of regional energy and environment agencies
	National	FLAME: Network of local energy agencies (Locales de l'énergie et du climat)
	National	Fedene, fédération professionnelle des entreprises de services pour l'énergie et l'environnement
	National/ Regional	ADEME, National agency for Energy
	National/ Regional	Caisse des Dépôts - National bank and investor for territories
	Regional	Regional Council
	Regional	Regional Energy Agency
	Regional	DREAL, Environment, Housing and Transportation governmental agency
	Local	EPCI (large), Établissement public de coopération intercommunale
	Local	EPCI (small), Établissement public de coopération intercommunale
	Local	Syndicats d'Énergie
	Local	Cities
	Local	ALEC(s), Agences Locales de l'Énergie et du Climat
	Local	Département
	Local	Aménageurs (= Planners/ developers)
<b>Germany</b>	National	BMWSB (Bundesministerium für Wohnen, Stadtentwicklung und Bauwesen)
	National	BMWK (Federal Ministry for Economic Affairs and Climate Action)
	National	KWW Kompetenzzentrum Kommunale Wärmewende (Competence Centre for Municipal Heat Planning, part of DENA)
	National	Forschungsnetzwerk Energie / Energiewende Bauen (Projekträger Jülich, 8. Energieforschungsprogramm)
	Regional	Landesministerien (Federal ministries)
	Regional/ Local	Energy agencies (e.g. KEA BW, KEK Karlsruhe)
	Local	Municipalities (climate change, managers, planning) above 10k inhabitants obliged to perform heat planning until 2028
	Local	Utilities
	Local	Energieberater / energy consultants
<b>Greece</b>	National	Ministry of Environment and Energy
	National/ Regional	Financial Institutions (Green Fund)
	Regional	Technical Department of Regional Authorities
	Local	NTUA (National Technical University of Athens)

## D4.1. REGIONAL HEATING & COOLING POLICY MAPPING AND MULTI-LEVEL GOVERNANCE STRUCTURES

	Local	Technical Department of Local Authorities
	Local	External Experts (engineers, urban planners)
<b>Italy</b>	National	ENEA (National Energy Agency)
	National	Ministry of Environment, Energy and Security
	National	ANCI, Associazione Nazionale Comuni Italiani
	National	RSE (Research), Ricerca sul Sistema Energetico
	National	CMCC (Climate Projections Research), Centro euro-Mediterraneo sui Cambiamenti Climatici
	National	AIRU, Associazione Italiana TeleRiscaldamento Urbano - the Italian District Heating Association
	National	Heat pumps producers Associations (Companies)
	National/ Local	Legambiente
	Local	Local Utility - Data
	Local	Local Energy Agencies
	Local	Municipality (Planning department)
	Local	Socio-economic data owners
	Local	Experts and consultants providing data
	Local	Department responsible for SECAPS - Piacenza
	Local	Department responsible for SECAPS - Verona
	Local	Emilia-Romagna Region Regional Energy Plan - Implementation Responsible
	Local	Veneto Region Regional Energy Plan - Implementation Responsible
<b>Poland</b>	National	Ministry of Climate and Environment
	National	Ministry of Infrastructure
	National	Polish Network Energie Cities (PNEC)
	National	Energy Regulatory Office
	National	PGE Energia, Polska Grupa Energetyczna SA
	National	PGNiG, Polskie Górnictwo Naftowe i Gazownictwo S.A.
	National	Polish Development Fund (PFR)
	National	Warsaw University of Technology
	National	AGH University of Science and Technology
	Regional	Mazovia Energy Agency
	Regional	Regional Authority of Mazovia Region
	Regional	Mazovia Energy Cluster
	Local	Piaseczno Municipality
	Local	Ciechanów Municipality
	Local	Serock Municipality
	Local	Legionowo Municipality
	Local	Local Politicians
	Local	Utility Companies
	Local	Local Future Energy communities
	Local	Private firms investing in energy infrastructure
<b>Slovenia</b>	National	Ministry of Natural Resources and Spatial Planning
	National	Ministry of the Environment, Climate and Energy
	National	Agency for Energy
	National	Borzen d.o.o. - Slovenian Power Market Operator
	National	Institute Jozef Stefan, leading research institute in Slovenia
	National	Faculty of Mechanical Engineering of the University of Maribor

Local	Municipality of Maribor
Local	Municipality of Celje
Local	Association of Municipalities and towns of Slovenia (SOS)
Local	Energy agencies
Local	Pilnarna Maribor d.o.o. (public utility company, distribution of natural gas - Maribor area)
Local	Snaga Maribor d.o.o. (public utility company, waste management - Maribor area)
Local	Energetika Maribor d.o.o. (public utility company, production and distribution of heating - Maribor area)
Local	Elektro Maribor d.d. (public utility company, distribution of energy - Northeastern Slovenia)
Local	Other local authorities

## 4.2. Power-interest matrix

As a second step of the stakeholder classification, the project partners were invited to further categorise all the identified stakeholders and extend them through a **Power-Interest** matrix exercise. The matrix is valuable to classify the stakeholders and their level of influence through high/low power of the stakeholders in making policy decisions, as well as the interest level in engaging with the ESCALATE topics and results. Ultimately, the matrix results highlight critical stakeholder groups in contributing to the foundation of the overall support structure and the potential impact for scaling up.

Based on the classification of stakeholders, the project will further develop their involvement and engagement in ESCALATE activities, particularly in setting up the local and national policy working groups. Below is the general guidance for each quadrant together with an explanation of stakeholders' interests, needs, and concerns.

### Manage closely (high power - high interest)

Highlighted in **green**, in which the stakeholders have high influential power and very interested in the topics and main objectives provided by ESCALATE. They are also eager to have decarbonisation H&C plans as one of the requirements in Art. 25. These stakeholders are the main decision-makers and have a big influence on the project's results. It's critical to closely manage these stakeholders and involve them in the process from early on, not just to obtain their feedback but also to include them as contributors at every stage of development.

### Keep satisfied (high power - low interest)

The areas highlighted in **yellow** represent those where the stakeholders may not be very engaged in the goals, actions, and solutions provided by ESCALATE, although they have considerable influence. Involving the stakeholders in this quadrant of the topic is crucial to maintaining their satisfaction. To emphasise the significance and possible influence of an activity that focusses on the accomplishments, communication with them must remain brief and tailored. Their interest can be stimulated, and incentives can be given in the form of nominations, recognition, or networking and collaboration opportunities.

**Keep informed (low power - high interest)**

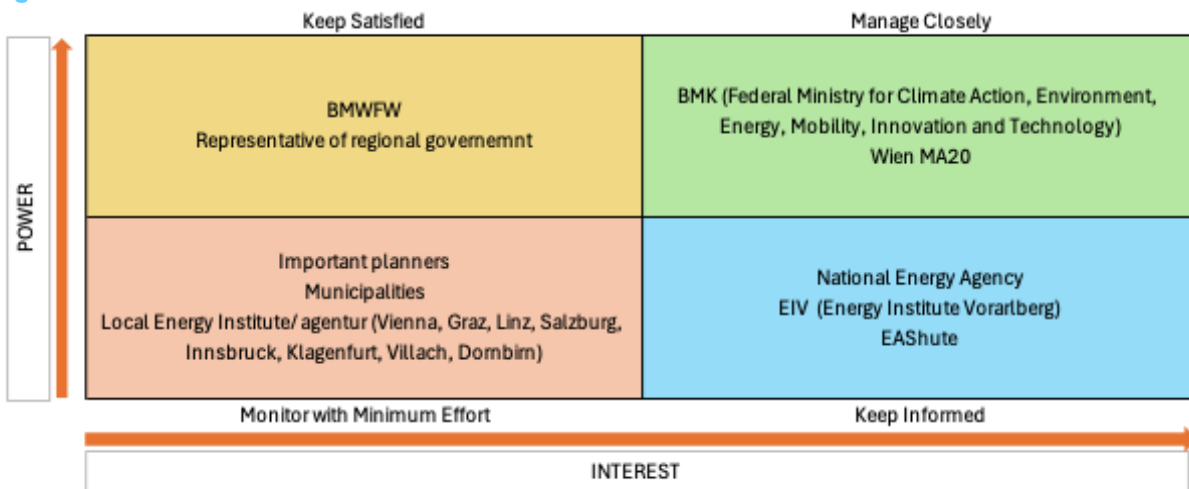
Stakeholders who may not have much influence but are very interested in the goals, initiatives, and solutions provided by ESCALATE are highlighted in blue. It is necessary to keep the high-interest stakeholders in this quadrant informed about the project or its results, e.g. by strengthening collaborations and offering support in the form of tools, instruction, or training to maximise their capacity building skills. Additionally, this could entail taking part in task forces, working groups, or advisory committees as these provide important viewpoints on successful decision-making procedures and significantly advance the project's objectives.

**Monitor with minimum effort (low power - low interest)**

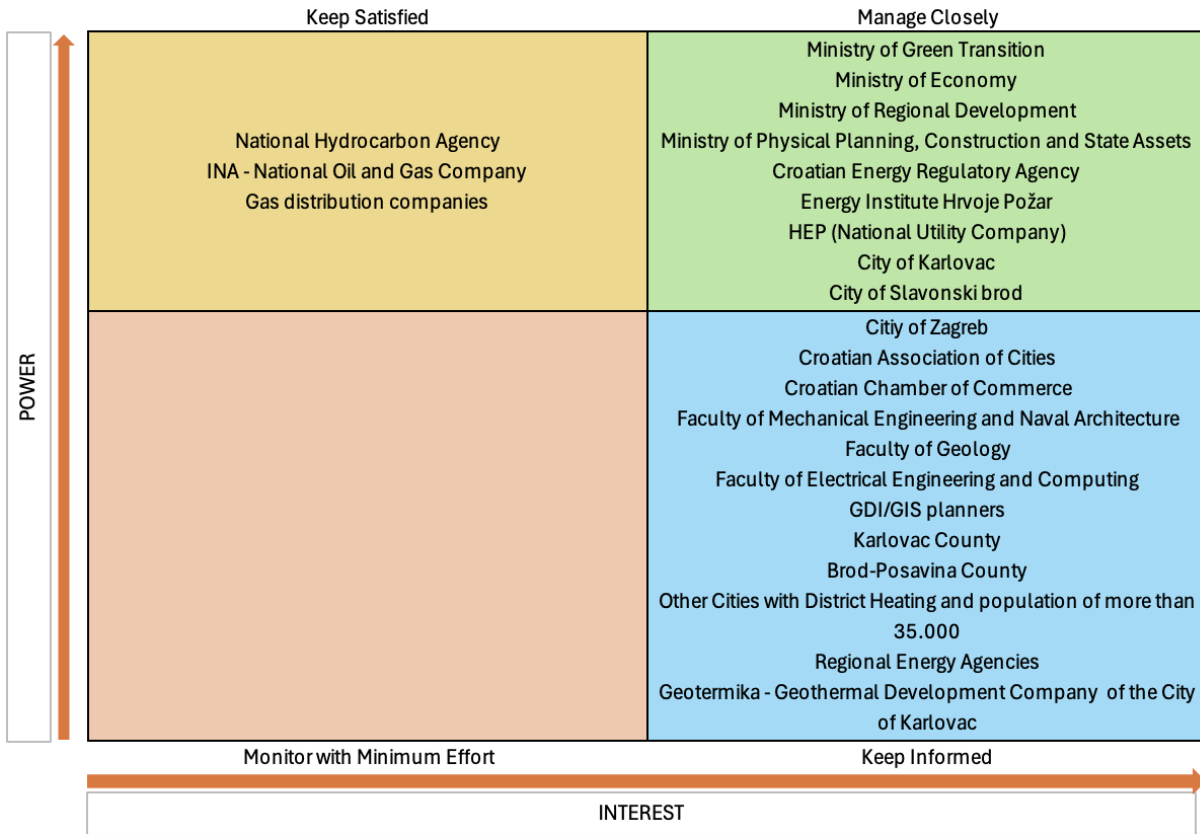
Stakeholders who may not have much influence or interest in the goals, initiatives, and solutions provided by ESCALATE are indicated in orange. It can be necessary to tailor different ways or channels that are of interest to the stakeholders in this quadrant, such as brochures with visual infographics. Streamlined roles with clear incentives will be necessary to engage these stakeholders, who will be monitored with minimal effort. It is important to communicate to them that their viewpoints are recognized and considered.

Figures 2 to 9 show the power-interest matrix for stakeholders in eight project countries.

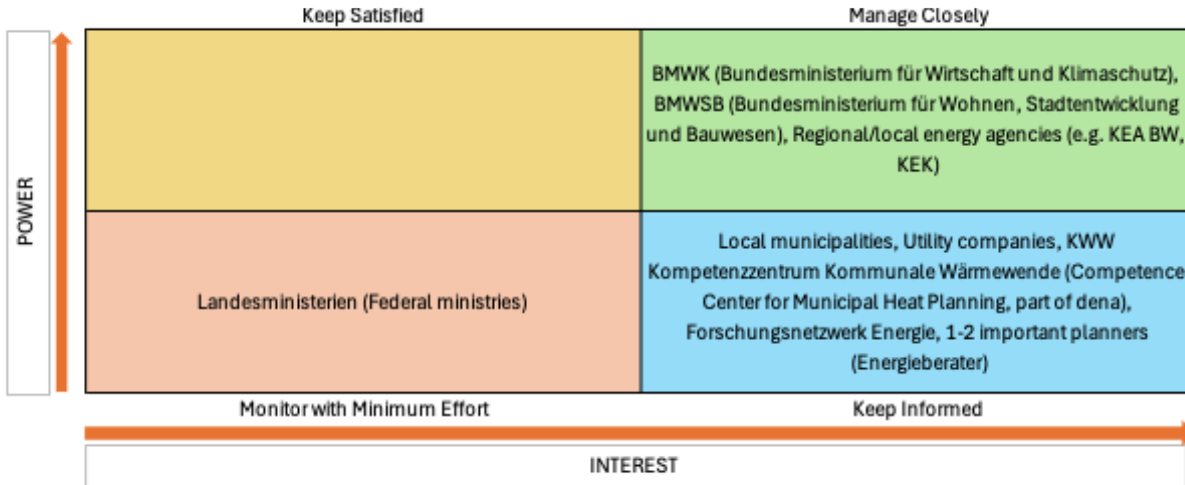
**Figure 2.** Power-interest matrix of Austrian stakeholders



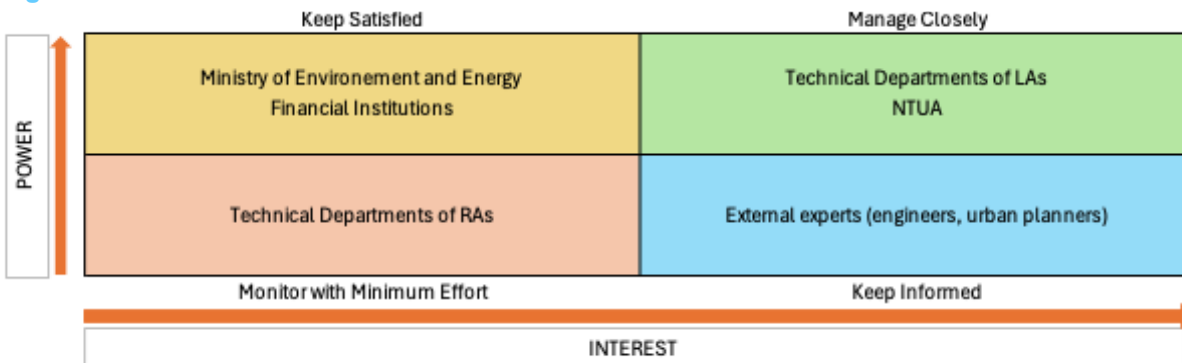
**Figure 3.** Power-interest matrix of Croatian stakeholders



**Figure 5.** Power-interest matrix of German stakeholders



**Figure 6.** Power-interest matrix of Greek stakeholders



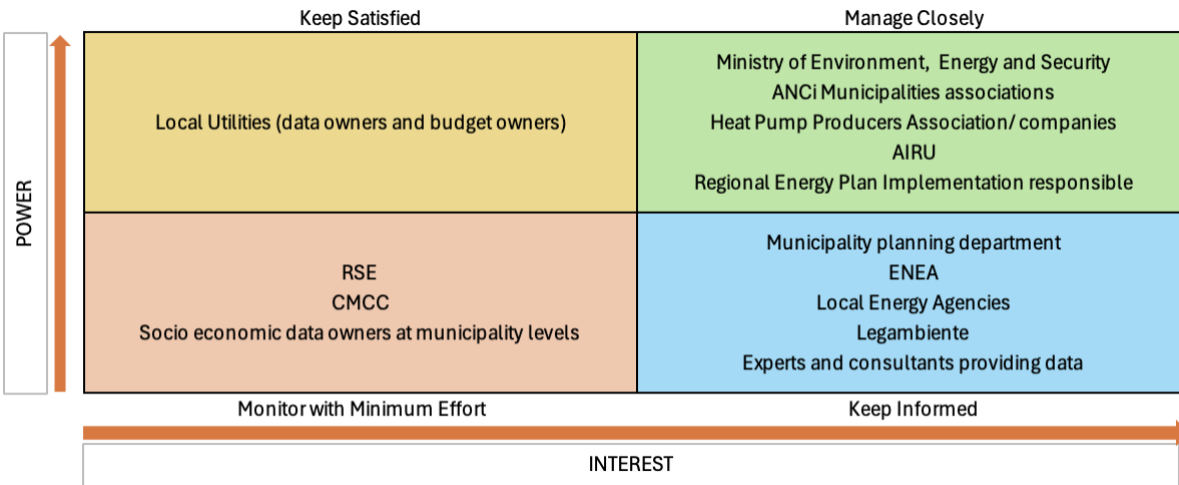


Figure 8. Power-interest matrix of Polish stakeholders

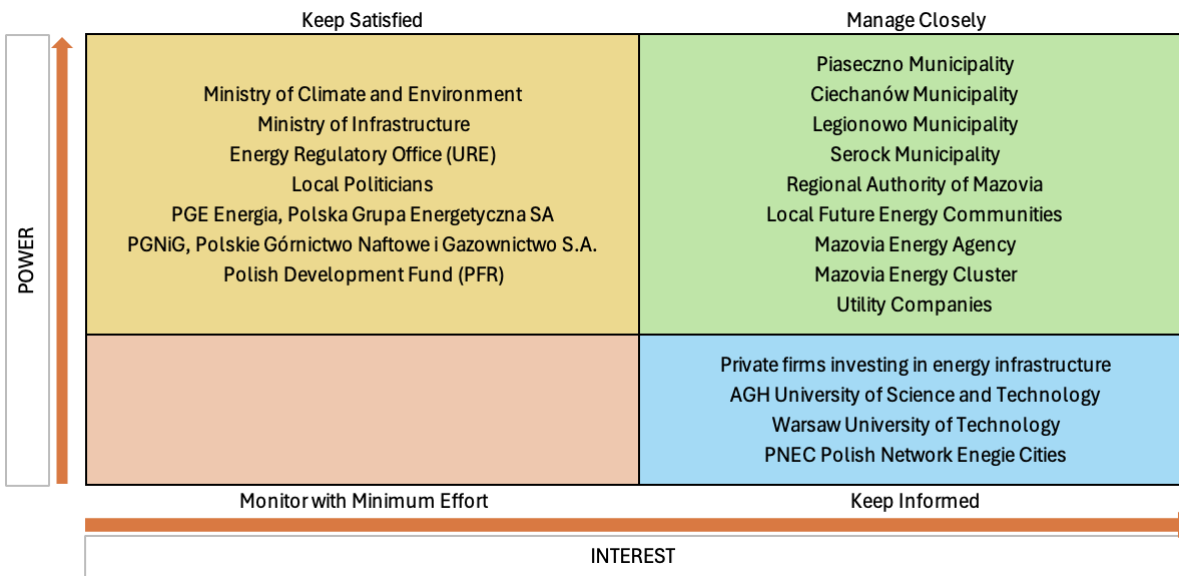
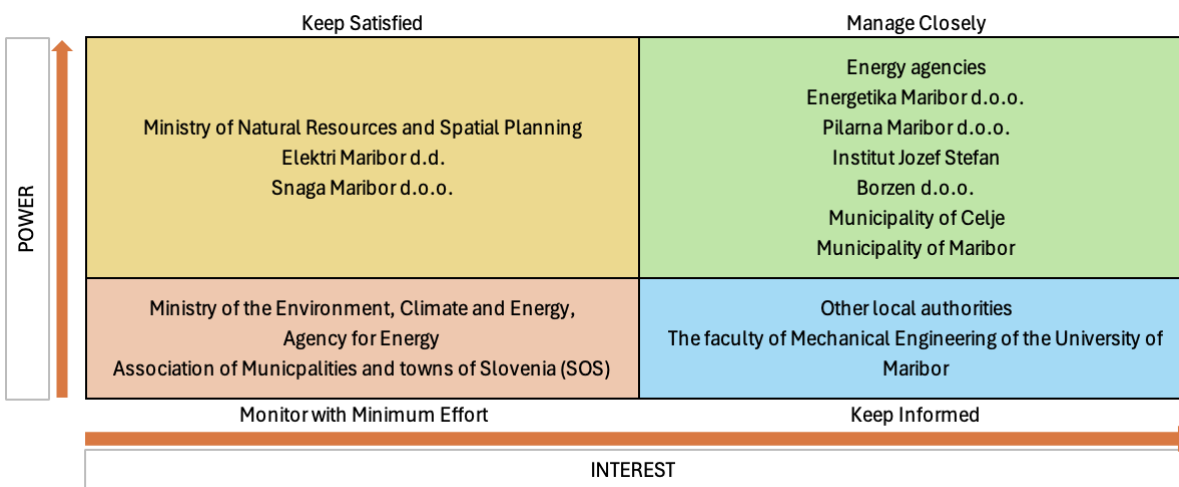


Figure 9. Power-interest matrix of Slovenian stakeholders



## 5. Comprehensive analysis of the H&C policies in eight project countries

This report serves as the foundational step for the next ESCALATE activities to better understand the status of the H&C policies and multi-level governance initiatives as well as stakeholder involvement in the decision-making, planning and implementation collected during the period between October 2024 – March 2025. There may be newer versions of some policies, plans and strategies in the targeted regions that may not be considered in this report. This analysis is different from the comprehensive assessment, nevertheless, but its purpose is to identify current gaps to streamline the development of H&C in each case study, identifying good practices relevant to advance exchange between actors at different governance levels (multi-level governance discourse). The various methodological steps followed by this report are detailed below.

### 5.1. Methodology framework for mapping policies

The methodology framework presented in Figure 10 outlines a structured, step-by-step process for mapping policies, governance structure, and financing instruments. The framework utilises KUMU software, Flourish, and Microsoft Excel for data collection, visualisation, and analysis. The relevance of the EU Tracker and EU27 Mapping Financing Instruments project are explained in *Chapter 1*. Below is an interpretation of the framework:

**Step 1 – Data collection:** The process begins with gathering information relevant to the H&C policies and governance structures from the EU Tracker as well as the full dataset of financing instruments. This information varies at the EU, national, regional, and local level for all eight project countries (Austria, Croatia, France, Germany, Greece, Italy, Poland, and Slovenia).

**Step 2 – Desktop research:** Once collected, the missing data on the policies and governance structures are being explored through online research. Various basic criteria such as description, objectives, goals, targets, sectors, H&C related measures, responsible actors, budgets, impacts, Key Performance Indicators (KPIs), approval and revision dates, as well as timeline of implementation are considered. No additional research is necessary for the list of financing instruments as it is finalised by CoolLIFE<sup>14</sup>.

**Step 3 – Data review:** Complete information on policies, governance structure, and financing instruments are being reviewed by the regional partners from each respective country (e.g. energy agencies, research institutes working at different levels of governance, from cities/regions to national stakeholders). This process aims to validate and support the latest information that has been collected so far.

**Step 4 – Data categorisation:** After a review exchange, the updated information is being categorised and sorted according to the objectives of this report. Specifically, the level of policies, types, and interactions between policies to map their influence and engagement levels.

**Step 5 – Desktop research:** The second desktop research focused on filling in missing information based on the data categorisation to achieve a comprehensive assessment of policy mapping, governance structure and financial

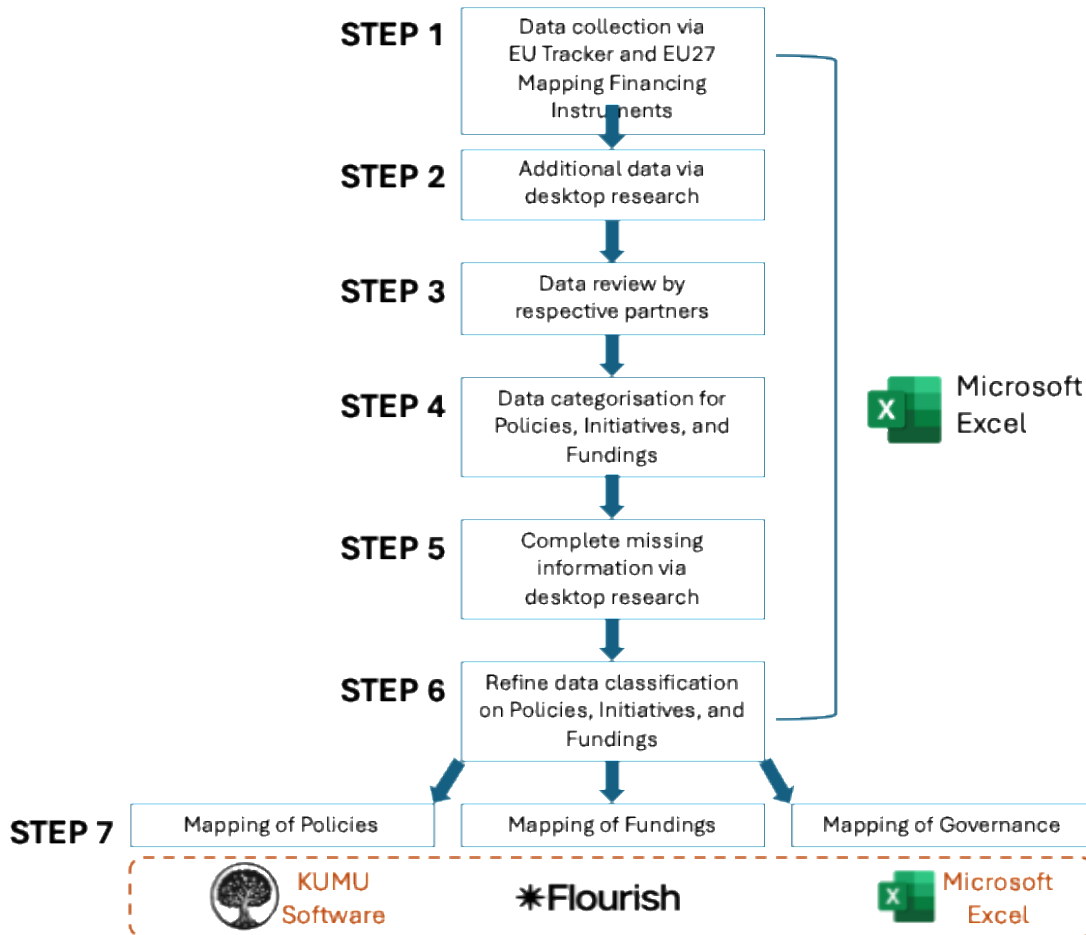
<sup>14</sup> [About CoolLIFE | Driving a Sustainable Future in Space Cooling](#)



instruments. This step has been strongly supported by the regional partners and their networks in case some updates were needed.

**Step 6 – Refinement of data classification:** The last step involves a final assessment of the data necessary to be visualised on different software programmes. The KUMU software is used to map networks and systems, the Flourish app is used to map the funding schemes for the ESCALATE project countries, and Microsoft Excel is used to list the existing governance structure.

**Figure 10.** Methodology framework for mapping policies of all eight project countries



## 5.2. Mapping of heating and cooling policies

This section presents a total of eight **KUMU Maps** illustrating the relationships between different policies within the target pilot country and the EU system. The map helps to identify interdependencies and key areas of influence. Each policy is represented as a **node**, while the **connections** between them are shown as arrows, visualising how different policies interact or influence each other. The links can be either ‘directed’ or ‘mutual’, illustrated respectively by a **single arrow** (→) if only one policy influences the other, or a **double arrow** (↔) if both policies affect and shape each other (mutual influence). Examples are made for each figure below (Figures 11 to 18).

As aforementioned, each node represents a policy, which is differentiated according to the multi-governance level at which it influences and/or operates. Below is the legend used for each mapping exercise:

#### D4.1. REGIONAL HEATING & COOLING POLICY MAPPING AND MULTI-LEVEL GOVERNANCE STRUCTURES

- **European Union (EU):** representing overarching frameworks, directives, and regulations that MS must implement, such as the EED or the EU Green Deal.
- **National:** policies set by the central government that align with or build upon EU regulations while addressing country-specific priorities, e.g. NECPs.
- **Regional:** policies implemented at a regional or state level, that adapt national frameworks to local conditions, e.g. Joint Climate Action Plans or peri-urban development strategies.
- **Local:** municipal or city-level policies that focus on specific community needs, often operationalizing higher-level policies at a grassroots level, e.g. local climate strategies or Sustainable Energy Action Plans (SECAPs).

In the context of this report, the KUMU maps are utilised as a fast and effective tool to visualise the policy landscape of a pilot country, supporting project partners in the initial stages of establishing **ESCALATE Local and National Working Groups**. Project partners, policymakers and targeted stakeholders involved in ESCALATE activities can use the maps to:

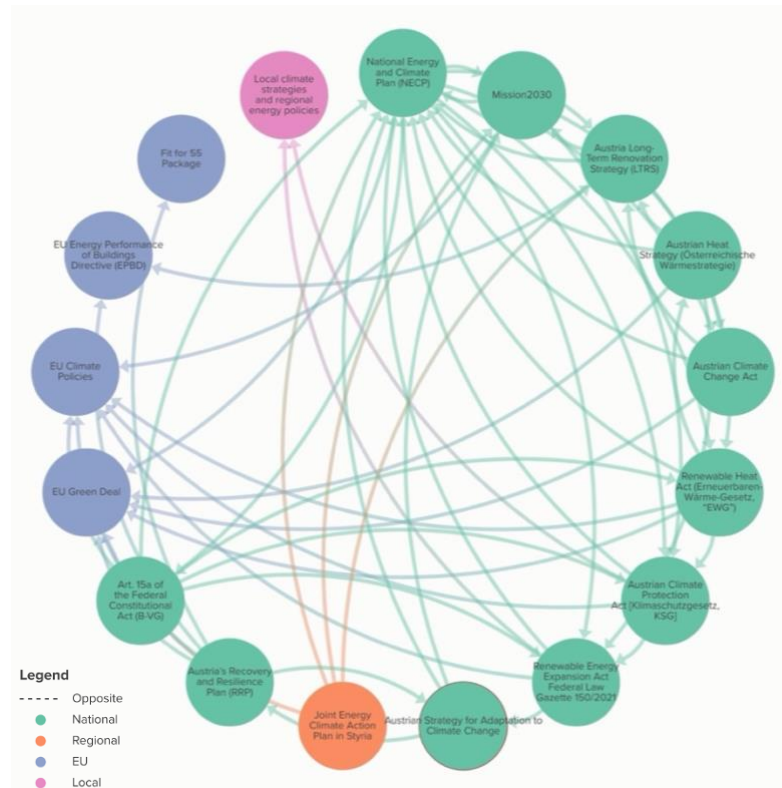
- Assess how local policies **align** with broader EU strategies and directives.
- Identify key points of **influence** (visualized as a concentration of arrows towards one or more specific nodes) in the given policy landscape for Austria, Croatia, France, Germany, Italy, Greece, Poland, and Slovenia.
- Detect **gaps** among governance levels, and areas of improvement to better coordinate H&C policies, plans, strategies and regulations at EU, national, regional, and local levels.

In addition, the KUMU maps and key findings from the listing of policies, plans etc, can be **compared across the pilots**, and lessons can be drawn for knowledge exchange in the next phase of the ESCALATE project in working groups, within and across countries.

The following sub-sections present eight maps, one for each pilot region. The interactive online KUMU maps are publicly available through the hyperlinks below, provided underneath each figure.

### 5.2.1. Austria

Figure 11. Mapping of Austria H&C policies



In the case of Austria, the map reveals the central role of its **federal government** in shaping H&C policies at lower levels. Austria's **integrated NECP** recognises spatial planning as a key tool for achieving emission reduction targets, facilitating the transition towards climate neutrality. Similar to the case of German regions (Figure 14), the implementation of H&C policies is **coordinated across national, regional (Länder), and local levels**.

The KUMU maps suggest that national-level policies and laws set targets, legal framework, building renovation strategies and financial instruments for the **federal states (Bundesländer) and local authorities**, which execute policies on the ground. However, the country does not require municipalities to establish local H&C plans. Not all 9 states are represented in this mapping exercise, and the degree of H&C policies effective implementation may vary from one federal state to another. One notable example of regional implementation is the Vienna Heating Plan 2040<sup>15</sup>, which aims to **decarbonise Vienna's heat supply by 2040**. The plan identifies appropriate heat supply solutions for different urban areas, considering existing and expected heat demand and existing infrastructure. Some studies suggest that decentralisation with different building codes and energy standards across states may negatively affect the implementation of climate mitigation targets in Austria, leading to fragmentation and disparities in the effectiveness of H&C plans and strategies<sup>16</sup>. At the same time, Austria's federalism has the potential to better reflect the needs, priorities, resources, and capacities of each region.

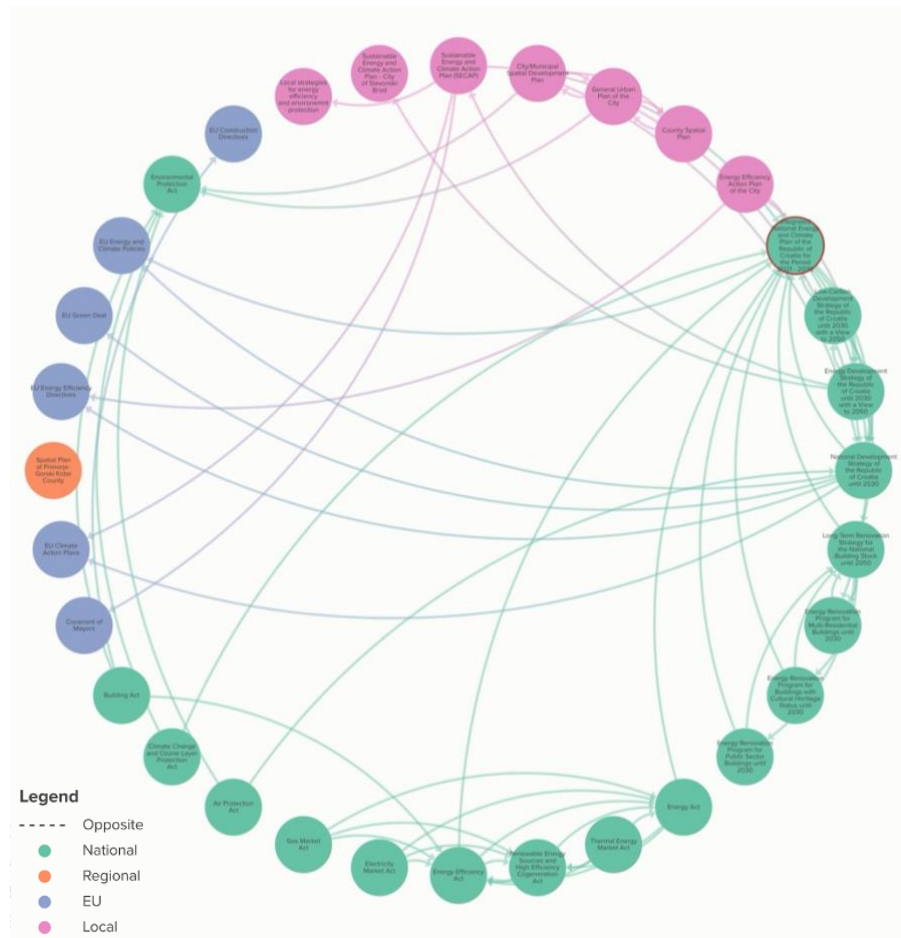
In order to view the interactive version of the KUMU map for Austria, and read the description for each node, visit the webpage: <https://embed.kumu.io/22b1122b1a957c0296c047ab620bc065>

<sup>15</sup> Vienna Heat Plan 2040. <https://www.wien.gv.at/umwelt/waermeplan-2040#>

<sup>16</sup> Steurer, R. and Clar, C. 2015. Is decentralisation always good for climate change mitigation? How federalism has complicated the greening of building policies in Austria. [https://boku.ac.at/fileadmin/data/H03000/H73000/H73200/InFER\\_Discussion\\_Papers/InFER\\_DP\\_15\\_4\\_Is\\_decentralisation\\_always\\_good\\_for\\_climate\\_change\\_mitigation.pdf](https://boku.ac.at/fileadmin/data/H03000/H73000/H73200/InFER_Discussion_Papers/InFER_DP_15_4_Is_decentralisation_always_good_for_climate_change_mitigation.pdf)

### 5.2.2. Croatia

Figure 12. Mapping of Croatia H&C policies



Similar to Austria, H&C policies at regional and local level in Croatia are shaped by the national government, specifically the Ministry of Economy and Sustainable Development. The **NECP is at the core of the development of H&C policies**, promoting district heating systems, heat pumps and modernisation of fossil-based systems. Other long-term strategies focus on the decarbonisation and renovation of buildings, such as the Long-term Renovation Strategy for Buildings. These plans and strategies include EU-level financing mechanisms, in line with EU Energy Efficiency and Renewables Directives.

Coordination with EU-level initiatives is shown by the **involvement of municipalities** in larger initiatives, such as the Covenant of Mayors for Climate and Energy, while municipalities' participation to EU projects is also increasing, especially on district heating and building renovations.

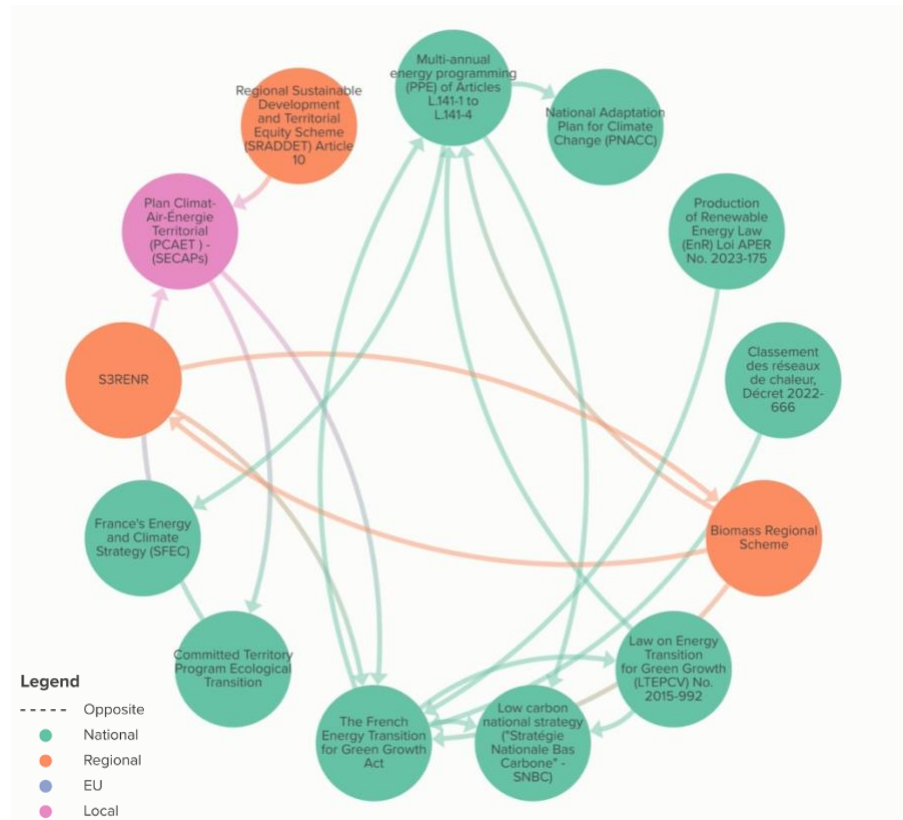
The **degree of coordination and integration of regional and local authorities and their SECAPs appears high**, as shown by the various interlinkages across the KUMU map, although regional bodies have low-medium policy-setting authority. Section 5.3 further presents the case of Croatia in taking steps to increase dialogue platforms to improve multi-level governance practices, particularly around the country's NECP framework implementation.

In order to view the interactive version of the KUMU map for Croatia, and read the description for each node, visit the webpage:

<https://embed.kumu.io/182d8bf6567360b83d25369002242ccb>

### 5.2.3. France

Figure 13. Mapping of French H&C policies



The KUMU map for France reveals a moderate degree of centralisation of H&C policies, with the **NECP and multi-annual energy programming of Articles L141-1 to L.141-4** influencing other national policies and plans (green nodes), as well as strategies at the regional level (orange nodes). The map also suggests a degree of collaboration and integration, involving national, regional and local authorities. As in the case of other countries hereby, the French national government plays a central role in shaping H&C targets as part of the country's climate and energy commitments.

The regions have experienced a **more central role** in the energy transition, with flagship initiatives and projects being implemented at the regional level, such as BiogasAction in Auvergne-Rhône-Alpes region<sup>17</sup>. At the local level, SECAPS and other district H&C plans and strategies follow the regional and national targets (orange nodes), with larger cities being signatories of EU-wide initiatives, such as the Covenant of Mayors, and linking their strategies to EU-level climate action targets, while smaller municipalities (*communes* and *intercommunalités*) are more active in developing local climate-air-energy plans or **Plan Climat-Air-Energie Territorial (PCAET)** (pink node) with H&C components.

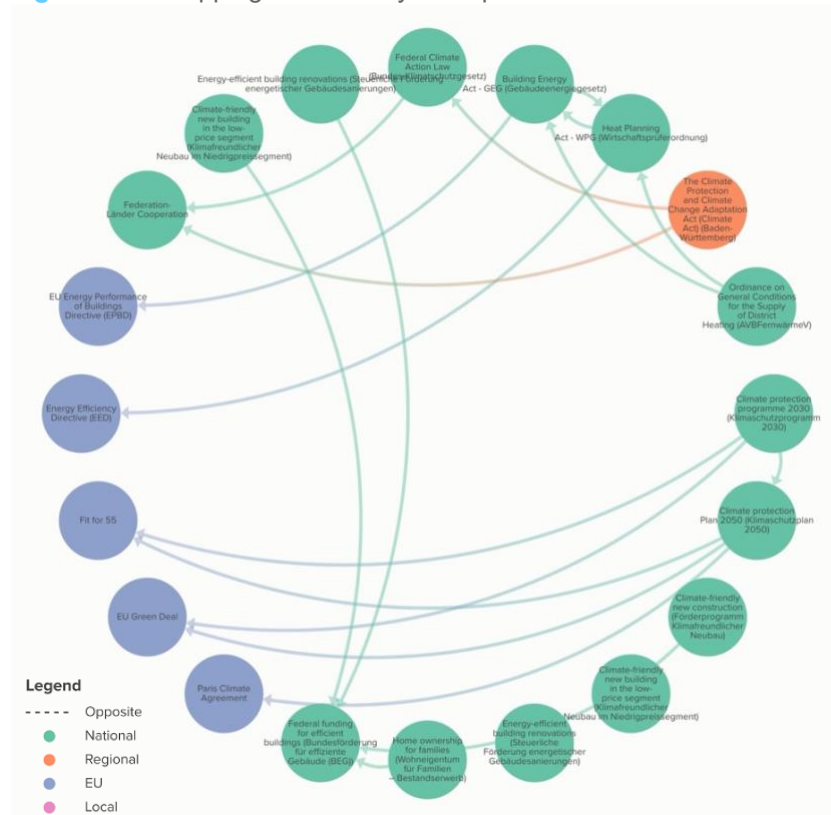
In order to view the interactive version of the KUMU map for France, and read the description for each node, visit the webpage:

<https://embed.kumu.io/1e0326fe7df16b7e54bdab28316ed92d>

<sup>17</sup> BiogasAction - New developments in Auvergne-Rhône-Alpes – Fedarene. <https://fedarene.org/biogasaction-new-developments-in-auvergne-rhone-alpes/>

### 5.2.4. Germany

Figure 14. Mapping of Germany H&C policies



In the case of Germany, H&C policy is shaped at the **national level**, with strong links to the federal and regional (Länder) levels. Overall, the level of integration is moderate to high, with regional authorities having autonomy in translating national targets into regional and federal programmes<sup>18</sup>. The Federal Climate Action Act or Bundes-**Klimaschutzgesetz** and the overall Heat Transition or **Wärmewende** (green nodes) set binding targets for emission reduction by sector, and guidelines for a shift of H&C from fossil fuels to renewables and waste heat.

In general, **lower sub-national levels abide to national funding mechanisms**, legal frameworks and reporting structures in H&C, which may explain why the current KUMU map shows strategies, plans and policies mainly at the Länder level. Municipalities still play an important role in implementing actions adapted to the regional context, using planning tools and heat supply technologies<sup>19</sup> to meet national targets, as suggested by recent literature on municipal heat supply and case studies on H&C planning<sup>20</sup>.

In order to view the interactive version of the KUMU map for Germany, and read the description for each node, visit the webpage:

<https://embed.kumu.io/5fd07193c82ed2de5e24a2fd29fa3f99>

<sup>18</sup> New German heating law boosts local heating and cooling planning - Energy Cities. <https://energy-cities.eu/new-german-heating-law-boosts-local-heating-and-cooling-planning/>

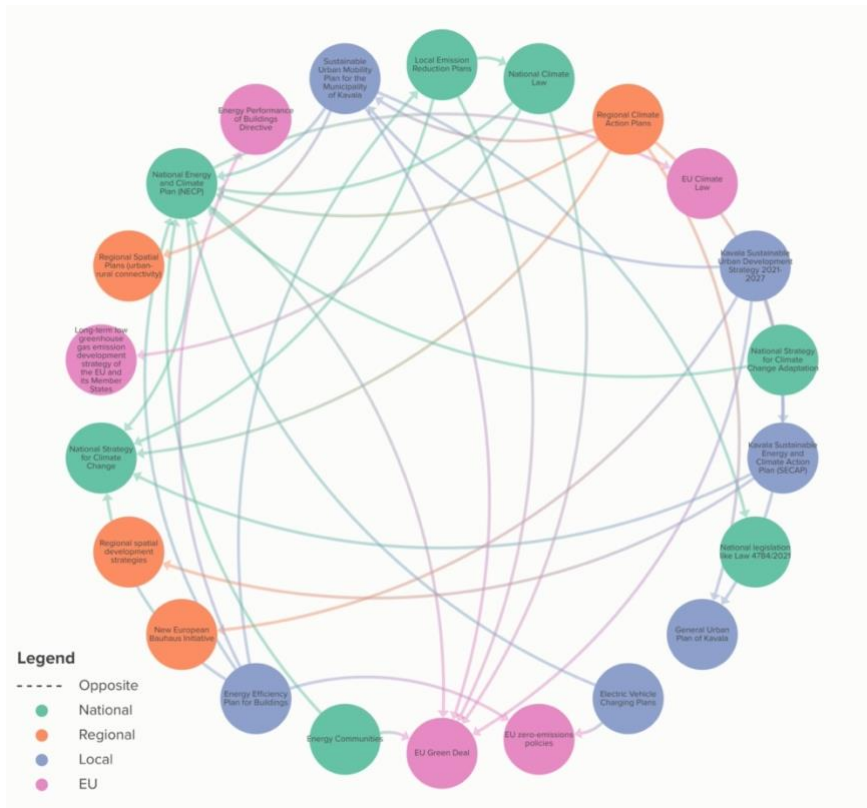
<sup>19</sup> Krikser, T., Ehlers, MH., and Profeta, A. 2024. Municipal heat provision experiences and expectations in Germany. Energy, Sustainability and Society. <http://dx.doi.org/10.1186/s13705-023-00433-0>

<sup>20</sup> Fritz, M., Billerbeck, A., et al. 2024. From policy to action: assessing the effectiveness of heating and cooling plans - a case study on heating and cooling plans of municipalities in Baden-Württemberg, Germany.

<https://doi.org/10.24406/publica-3324>

### 5.2.5. Greece

Figure 15. Mapping of Greece H&C policies



In the case of Greece, similar to Poland and Slovenia, most national level policies, plans and acts/regulations (green nodes) reveal a certain **degree of centralisation in energy and climate planning**, particularly by the Ministry of Environment and Energy. There is coordination with regional and local policies, strategies, and plans – although still limited as shown in the KUMU map.

The Greek NECP includes detailed targets for renewable H&C, energy efficiency, and district heating. The country aims to **substantially increase the share of renewables in H&C**, including solar thermal and biomass. Key measures in renewable heating, heat pumps, and energy retrofits are often supported by either national incentives and subsidies or EU funding schemes.

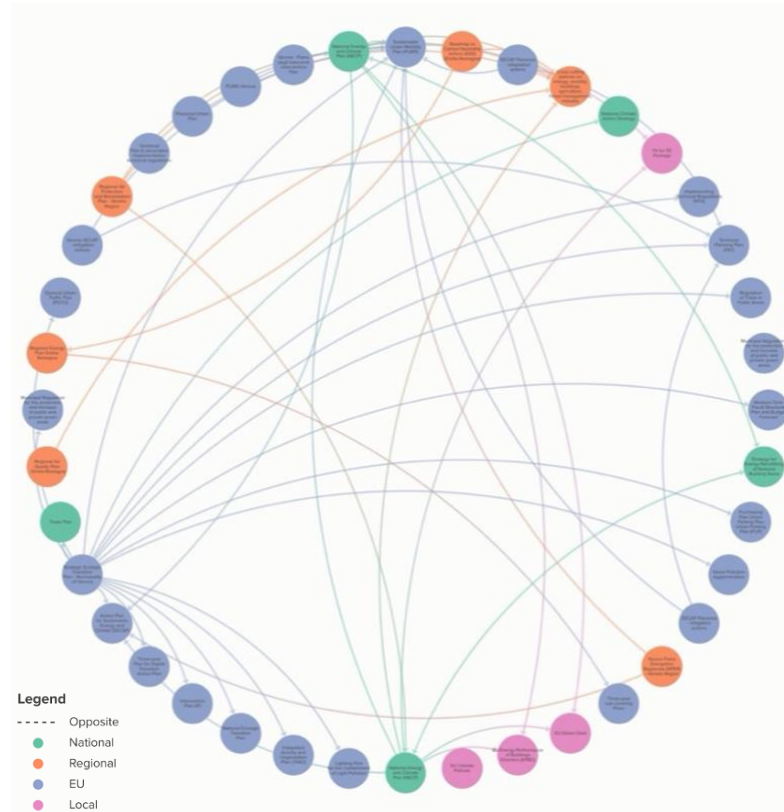
While Greek regions have limited autonomy (orange nodes), local authorities play a significant role in the implementation of energy planning (purple nodes), as the example of **Kavala SECAP**, sustainable mobility plans, urban development strategy and so forth shows.

In order to view the interactive version of the KUMU map for Greece, and read the description for each node, visit the webpage:

<https://embed.kumu.io/2bc949cb06929cd52b87b4c8da925372>

### 5.2.6. Italy

Figure 16. Mapping of Italian H&C policies



The KUMU visualisation for Italy suggests a **moderate to high level of linkage** across national, regional and local levels compared to other case studies. The NECP details the country's 2030 targets from renewable H&C, energy efficiency and overall emissions reduction. Each region is responsible for **regional-level planning** on energy and other environmental and climate topics, including the implementation of the EU-level EPBD, as illustrated in the KUMU map.

Regional administrations (orange nodes) show a high **degree of differentiation in adapting national climate and energy mitigation objectives to different climates**, e.g. taking into account diverse heating and cooling needs between the Mediterranean and Alps regions. At the local level (as shown by most purple nodes), H&C planning is not included in a dedicated plan but rather shaped by several local spatial planning tools, e.g. SECAPs or other plans, Urban Plans and Territorial Planning documents etc. Multiutility companies and their investment plans play a key role, operating as market players. As shown in the map, Italy's most common tools to finance building renovation including H&C plants are the i) **Superbonus 110%**<sup>21</sup> (now revised and no longer active) for energy-efficient renovations including heating systems, ii) **Conto Termico**<sup>22</sup> as a type of subsidy, that includes incentives to replace inefficient H&C systems with renewable alternatives (e.g., biomass boilers, heat pumps), and ii) **Ecobonus**<sup>23</sup> – tax deductions for energy efficiency upgrades. In order to view the interactive version of the KUMU map for Italy, and read the description of each node, visit the website:

<https://embed.kumu.io/eef1de3f3db5c1bcc731cc0182e733f7>

<sup>21</sup> Superbonus - Strengthening of the Ecobonus and Sismabonus for energy efficiency and building safety. [https://commission.europa.eu/projects/superbonus-strengthening-ecobonus-and-sismabonus-energy-efficiency-and-building-safety\\_en](https://commission.europa.eu/projects/superbonus-strengthening-ecobonus-and-sismabonus-energy-efficiency-and-building-safety_en)

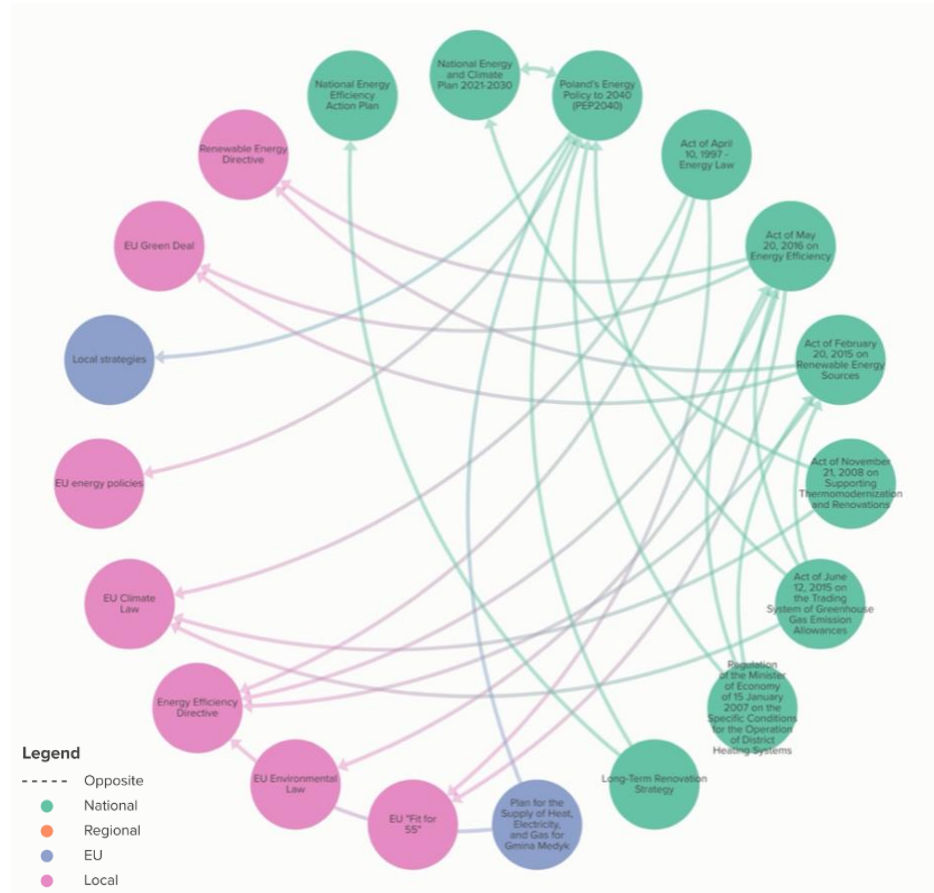
<sup>22</sup> Subsidy (Conto termico). <https://clean-energy-islands.ec.europa.eu/countries/italy/legal/res-heating-and-cooling/subsidy-conto-termico>

<sup>23</sup> Strengthening the Ecobonus for energy efficiency. <https://www.italiadomani.gov.it/content/sogei-ng/it/en/Interventi/investimenti/rafforzamento-dell-ecobonus-per-efficienza-energetica.html>



### 5.2.7. Poland

Figure 17. Mapping of Polish H&C policies



In the case of Poland, the majority of national level policies, plans, laws and regulations (green nodes) show a **certain degree of centralisation** in energy and climate planning, by the national government, particularly the Ministry of Climate and Environment. A core document is the **Energy Policy of Poland until 2040** (highly connected green node on the top right). It sets targets and KPIs for increasing renewable energy usage, phasing out coal in residential heating by 2040, and improving air quality. Another cornerstone is the **NECP 2021–2030**, which at EU level is aligned with EU directives and sets out detailed targets in five dimensions: decarbonisation, energy efficiency, energy security, internal energy market, and research and innovation.

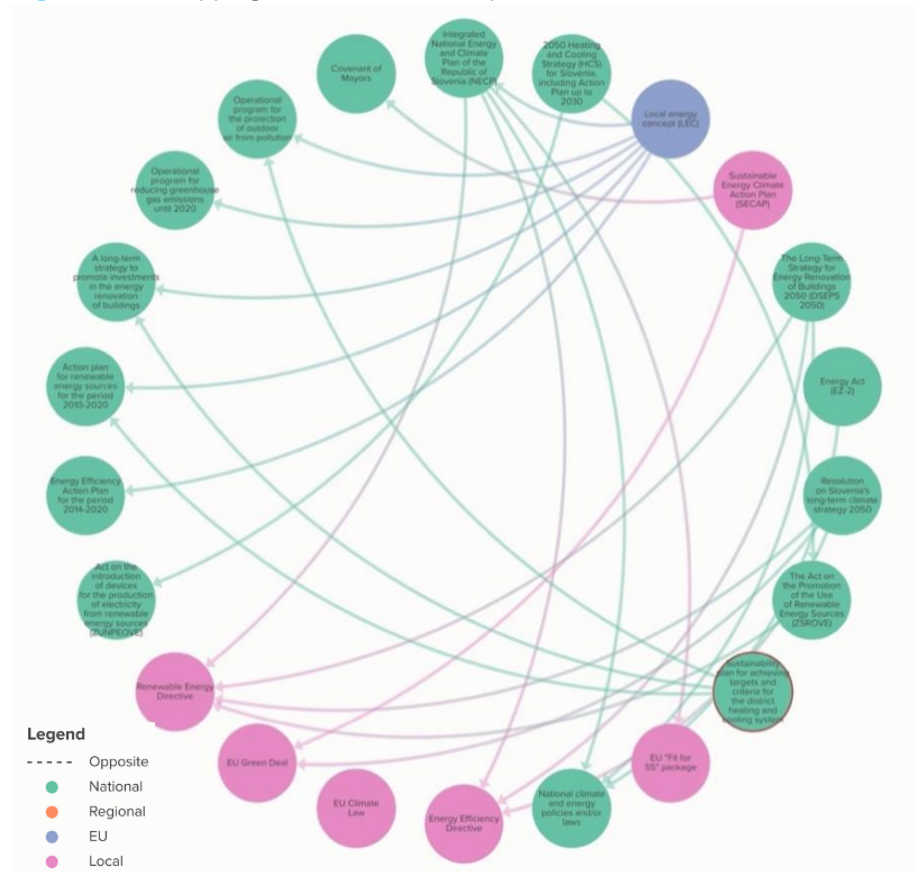
Following a hierarchical structure – with national policies leading the planning and implementation efforts as aforementioned –the **vertical exchange and coordination** of the MLG seem to face some challenges. These results confirm the findings presented in the EU Tracker by Energy Cities for Poland.

In order to view the interactive version of the KUMU map for Poland, and read the description for each node, visit the website:

<https://embed.kumu.io/5f89d1ea37d575811cb621323037ccce>

### 5.2.8. Slovenia

Figure 18. Mapping of Slovenian H&C policies



In the case of Slovenia, similar to Poland, there is a strong emphasis on **national level planning** of H&C policies (green nodes) by the central government, with a clear alignment of national objectives to EU level directives and other documents. Local initiatives, i.e. Local Energy Concepts or **Lokalni energetske koncepti** (LEKs) are then aligned with national policies. At the national level, the **NECP** (updated in 2024) sets targets for increasing the share of renewable energy in H&C by 2030, reducing emissions from (compared to 1990 levels), and banning new fossil fuel boilers.

Based on the KUMU map results and the EU Tracker information for Slovenia<sup>24</sup>, LEKs should follow national plans and strategies consistently, and are updated on a 5-year basis. There seems to be a **high level of integration between national and local policies** (purple nodes) in terms of alignment on policy objectives, structure and operation of LEKs.

In order to view the interactive version of the KUMU map for Slovenia, and read the description for each node, visit the webpage:

<https://embed.kumu.io/9b48a385f44a8e0d15ea8e60f335ce23>

<sup>24</sup> EU Tracker – Local heating and cooling planning in Slovenia - Energy Cities. <https://energy-cities.eu/countries/slovenia/>

## 5.3. Financial opportunities for implementing H&C measures

Access to financing and capital is often perceived as a major barrier to the implementation of decarbonisation measures in the H&C sector. However, the literature continues to identify a wide variety of financing instruments available across Europe (Bertoldi et al., 2021; Conforto & Hummel, 2022). A recent mapping exercise (Conforto, 2024) compiled nearly 600 public and private financing schemes supporting the decarbonisation of buildings, heating, and cooling across the EU-27. The instruments collected include public incentives, subsidies, green/soft loans, tax rebates, and private financing products tailored for individuals and small businesses.

The mapping counts the number of financing schemes per country, which varies significantly, reflecting different policy approaches and priorities, but does not say anything about the intensity of the public support for decarbonisation efforts. In this respect, it is necessary to analyse public expenditure data published by the IEA<sup>25</sup>. In fact, despite the extensive availability of financial opportunities, its uptake by municipalities remains timid.

This suggests that the barriers are not only financial but also stem from a lack of awareness, which was the main reason for the mapping of knowledge and political motivation. Research shows that the current levels of investment in building renovations and retrofitting fall short of what is needed to meet the EU's 2030 energy and climate goals. It is estimated that an additional €150 billion investment per year is needed to meet these targets (Calipel et al., 2024; Keliauskaitė et al., 2024).

While it is desirable that a comprehensive and integrated financial and fiscal strategy creates a stable and long-term favourable investment environment, this needs to be done at the systemic country level, it cannot be achieved by decarbonisation and energy financing policies alone. Raising awareness, simplifying access to financing, and fostering political commitment are essential steps to accelerate the implementation of H&C measures across Europe.

These funding instruments have an important role to play in minimising the financing barriers associated with the substantial costs of energy efficiency technologies. In the hope that there will be more opportunities to facilitate policy efforts at national, regional, and local levels, this section analyses several indicators taken from the dataset of the *EU-27 Mapping of Financing Instruments v4*<sup>26</sup> (last update in August 2024) to map the availability of funding schemes and the level of public expenditure on energy efficiency in building and industry for the eight ESCALATE project countries.

Figure 19 uses the Flourish app to map the total number of funding schemes (public and private schemes), including tax incentives, grants, green loans, green mortgage, soft loans, multiple public-private loans, energy efficiency obligations and investment support for businesses, municipalities, and individual consumers looking to improve H&C efficiency. The map uses sequential bins with user-defined thresholds ranging from 10; 20; 30; 40; and 51 with the lighter yellow colour indicating the fewest support schemes related to H&C decarbonisation. The interactive map can be explored at: <https://public.flourish.studio/visualisation/22559684/>

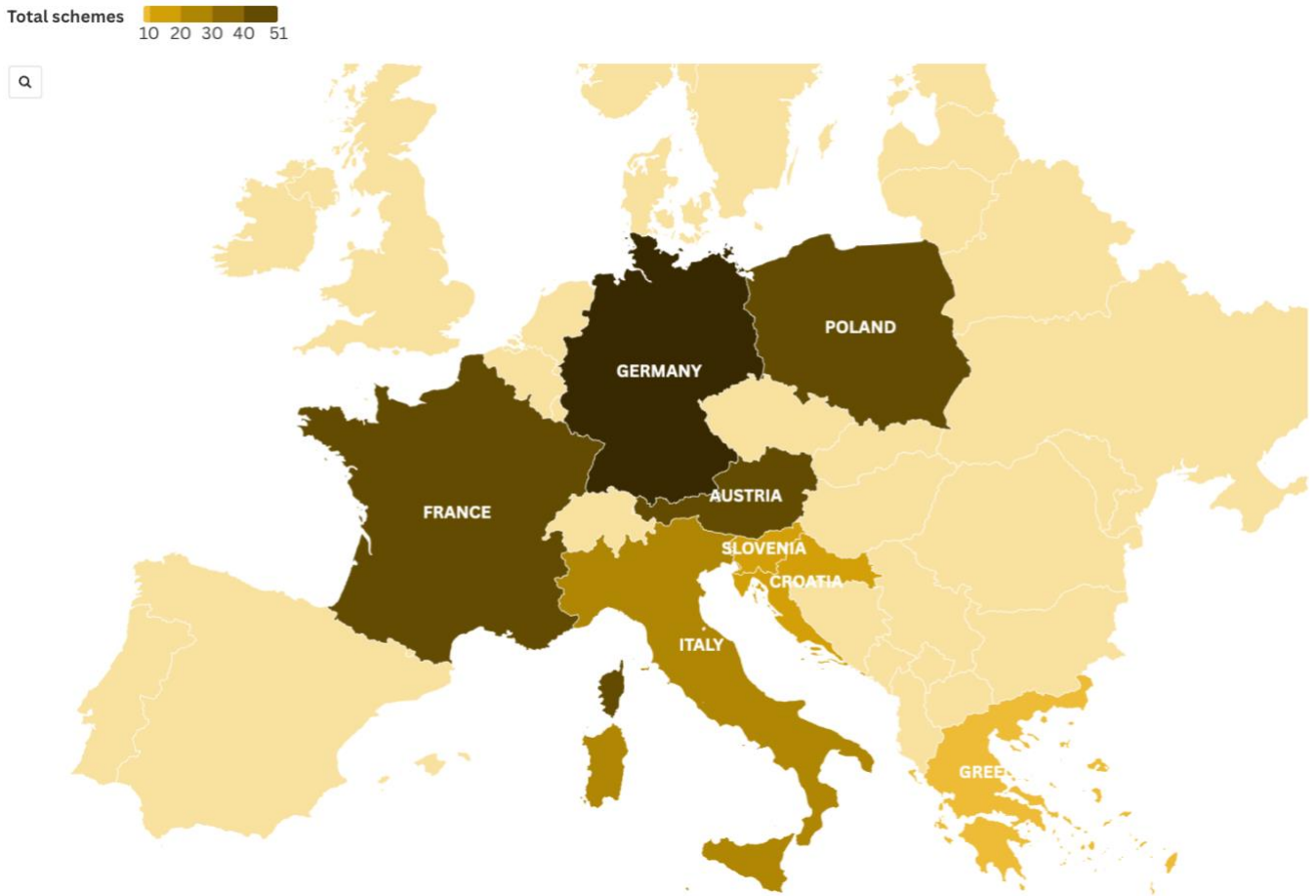
<sup>25</sup> IEA, Countries & Regions. <https://www.iea.org/countries>

<sup>26</sup> EU-27 Mapping of Financing Instruments v4.xlsx.

<https://zenodo.org/records/13886860/files/EU27%20Mapping%20of%20Financing%20Instruments%20v4.xlsx?download=1>

**Figure 19.** Available funding schemes in improving H&C efficiency for all eight project countries

### Number of H&C funding schemes by country



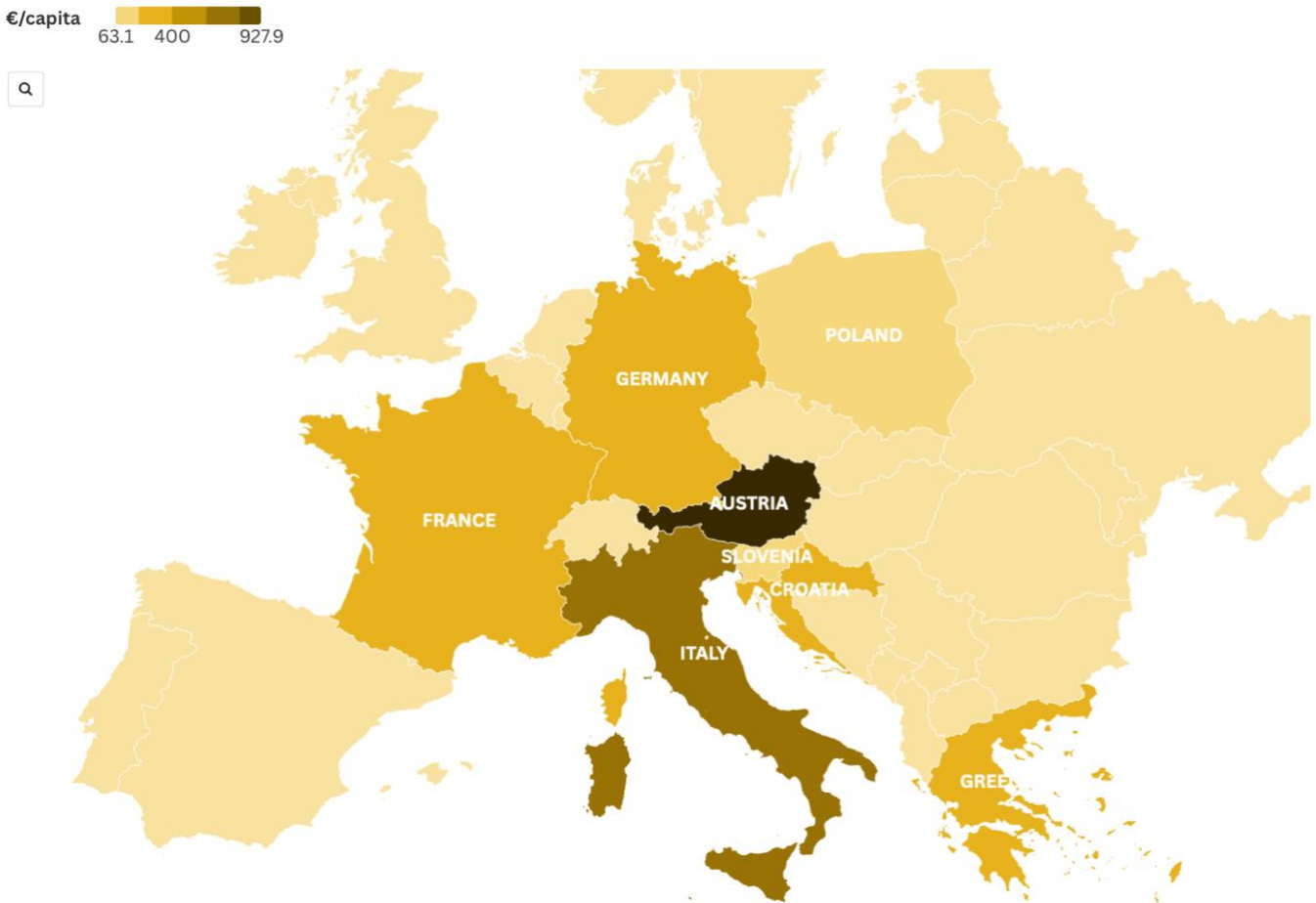
Source: EU-27 Country Mapping of Financing Schemes to decarbonize Buildings, Heating and Cooling

The map in Figure 19 illustrates the number of funding schemes for H&C in the EU-27 countries, highlighting significant disparities in national support frameworks. Germany, France, Poland, and Austria lead in terms of the availability of support, with 51, 46, 42, and 40 schemes respectively. These countries are followed by Italy, Slovenia, and Croatia, which show relatively moderate levels of activity, with 28, 15, and 16 schemes respectively, demonstrating increased efforts to align with the EED and stimulate investments in sustainable H&C solutions. In contrast, Greece has less than 10 schemes, indicating a notable funding gap. Although the number of schemes available per country varies widely, it is not representative of the amount of funding available per grant or per scheme. As explained above, it is important to note that the number of funding schemes does not automatically translate to better results in achieving the 2030 and 2050 decarbonisation targets. While these two indicators are correlated, the funding schemes represent one indicator among many others.

Figure 20 maps the energy spending on building and industry efficiency per capita for eight countries. The map uses sequential bins with user-defined thresholds ranging from 63.1; 200; 400; 600; 800; and 927.9 €/capita, where the lighter yellow colour shows low per capita expenditures for energy on building and industry efficiency. The interactive map can be explored at: <https://public.flourish.studio/visualisation/22674398/>

**Figure 20.** Public expenditures in building and industry energy efficiency per capita for all eight project countries

### Energy expenditures in building and industry efficiency by country



Source: EU-27 Country Mapping of Financing Schemes to decarbonize Buildings, Heating and Cooling

As shown in Figure 20, Austria stands out with the highest investment of almost €928 per capita, followed by Italy with €704 per capita, showing a strong national commitment to decarbonisation and energy efficiency. France and Germany indicate substantial expenditure on improving H&C efficiency, with €358 and €384 per capita respectively. Although slightly lower, Greece, Croatia, and Poland come next with expenditure ranging from €144 to €282 per capita. At a comparatively lower level, Slovenia has at least €63 per capita expenditure, in contrast to the rest of the project countries.

In conclusion, the maps reveal a fragmented but developing landscape of public and private financing for energy efficiency across Europe. Notably, a high number of funding schemes does not necessarily translate into high per capita investments. While a wide range of financing options are available, actual spending remains insufficient to meet the EU’s 2030 climate and energy targets. This gap underlines the need not only for more schemes, but also for larger and more effective investments. Incentives alone are not enough to close the renovation gap; greater transparency, stronger policy support and a better distribution of resources are needed to close the gap.

## 5.4. Existing governance structures

H&C policies are essential for achieving energy efficiency, reducing carbon emissions, and ensuring energy security across the EU. However, **governance structures vary considerably between EU Member States** due to differences in administrative organisation, regulatory frameworks, and energy market structures. This report provides an overview of the governance structures in Austria, Croatia, France, Germany, Italy, Greece, Poland, and Slovenia. These findings are derived from the data collection as detailed in the methodological framework (Figure 10). This section specifically **highlights the role** of national, regional, and local authorities in **policy development and implementation**. In line with the KUMU policy maps above, the following core elements have been identified for each country:



### Austria

Austria's H&C policy is primarily managed by the national level by the Federal Ministry of Agriculture, Forestry, Regions and Water Management, which sets overarching energy policies and supports the use of renewable energy. Regional (state) governments (Bundesländer) implement national policies and develop their own strategies, particularly for district heating and energy efficiency programmes. Municipalities oversee building regulations, zoning, and local heating networks, often in collaboration with energy utilities.

Since not all 9 federal states are represented in the KUMU mapping exercise above, the degree of H&C policies effective implementation may vary from state to state. Some regions like Styria or Upper Austria<sup>27</sup> have been reported in the literature as best practices<sup>28</sup>. Some other articles point out that decentralisation – marked by varying building codes and energy standards across states – can hinder regional coordination. As a result, this can hamper the effective implementation of climate mitigation goals. In terms of multi-level governance, this could increase the risk of fragmentation and uneven execution of H&C plans and strategies. However, Austria's federal structure also offers an opportunity to tailor climate policies more closely to the specific needs, priorities, resources, and capacities of each region<sup>29</sup>.

An example of **multi-level governance imitative** and structure is the Austrian heat strategy (Die österreichische Wärmestrategie)<sup>30</sup>. It is a national strategy jointly developed by the country's federal government in cooperation with the federal states to decarbonize the country's heating systems by 2040. Within the strategy, Austria has set up a Heat Coordination Team (WKT), involving federal and provincial representatives, and a Political Steering Committee (PSG) that guides its overall progress. An integral part of this plan is the gradual decarbonization of heat supply, as outlined in the government's 2020–2024 program.



### Croatia

H&C policy in Croatia is structured across three levels of government – national, regional, and local – each with clearly defined responsibilities, mandates, and implementation capacities.

<sup>27</sup> Kranz, L., Kalt, G., et al. 2013. Renewable energy in the heating sector in Austria with particular reference to the region of Upper Austria. <https://doi.org/10.1016/j.enpol.2012.08.067>

<sup>28</sup> EU Tracker – Local heating and cooling plans in Austria - Energy Cities. <https://energy-cities.eu/countries/austria/>

<sup>29</sup> Steurer, R. and Clar, C. 2015. Is decentralisation always good for climate change mitigation. [https://boku.ac.at/fileadmin/data/H03000/H73000/H73200/InFER\\_Discussion\\_Papers/InFER\\_DP\\_15\\_4\\_Is\\_decentralisation\\_always\\_good\\_for\\_climate\\_change\\_mitigation.pdf](https://boku.ac.at/fileadmin/data/H03000/H73000/H73200/InFER_Discussion_Papers/InFER_DP_15_4_Is_decentralisation_always_good_for_climate_change_mitigation.pdf)

<sup>30</sup> The Austrian heat strategy. [https://www.bmimi.gv.at/themen/klima\\_umwelt/energiewende/waermestrategie/strategie.html](https://www.bmimi.gv.at/themen/klima_umwelt/energiewende/waermestrategie/strategie.html)

At the national level, the key institution is the Ministry of Economy, which is responsible for the development of the strategic and legislative framework. The Ministry coordinates the development of key documents such as the National Energy and Climate Plan (NECP), the Low-Carbon Development Strategy, as well as legislation related to renewable energy sources and energy efficiency.

At the regional level, counties act as intermediaries between national policy and local implementation. Their responsibilities include spatial and infrastructure planning, integrating energy and climate goals into regional development strategies, and supporting local self-government units, often in cooperation with regional energy agencies.

At the local level, cities and municipalities are directly responsible for implementing energy transition measures. This includes drafting local Sustainable Energy and Climate Action Plans (SEAP/SECAP), carrying out energy renovation of public and private buildings, developing and modernizing district heating systems, and integrating renewable energy sources. Despite the formally well-defined division of responsibilities, policy implementation faces several challenges.

Key issues include:

- *A lack of systematic coordination between national, regional, and local levels;*
- *Limited financial, administrative, and technical capacities at the regional and local level;*
- *Insufficient alignment of local and regional actions with national strategic goals and EU directives.*

**Multi-level governance initiatives** in the H&C in Croatia have been largely driven by participation in European projects, such as Horizon 2020, Interreg, and LIFE. These initiatives foster coordination among different levels of government and promote collaboration between public institutions, private sector stakeholders and civil society organizations. They also serve as platforms for testing innovative solutions, building institutional capacities, and facilitating knowledge transfer. Notable examples include the NECPlatform, D2Heat, and ConnectHeat projects, which promote an integrated approach to heating and cooling planning, support the development of local and regional strategies, and enable pilot implementation of practical solutions based on renewable energy sources and energy efficiency first principle.



France has a centralised governance model, with the Ministry for the Ecological Transition overseeing H&C cooling policy. Regional councils have some authority over energy planning and coordinate with the national government on renewable energy initiatives. Municipalities, particularly in large cities, play a significant role in district heating development, local energy planning, and implementing building efficiency regulations.

**Multi-level governance initiatives** in the case of France – lessons learned and practices from the NECPlatform project<sup>31</sup>: the current landscape in France is favourable to an increased role of local and regional actors in climate and energy policymaking. Over the past 15 years there has been a national trend towards greater engagement and involvement of territories in energy and climate issues. Nevertheless, the French NECP explicitly mentions the need for technical and financial support to local authorities. According to the French NECP, the local level is viewed as the most pertinent to integrate renewable and recovered energy in the H&C sector. However, there is no mention of the Covenant of Mayors nor of the European Energy Award.

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<sup>31</sup> Idem



## Germany

Germany follows a federal governance structure, with H&C policies shared between the Federal Ministry for Economic Affairs and Climate Action (BMWK) and the Federal Ministry for the Environment (BMUV). The 16 federal states (*Länder*) develop their own energy strategies and regulations, including district heating initiatives. Municipalities have a high degree of autonomy in implementing local energy projects, managing district heating systems, and enforcing building efficiency standards.

**Multi-level governance initiatives** in Germany – similar to Austria – are influenced by the country’s cooperative federalism<sup>32</sup>. At the federal-level, governments set the overarching policies and objectives, such as the Renewable Energy Heat Act, mandating H&C for the new built. At the state-level (*Länder*), states can enact their own climate change and energy plans and strategies, implementing federal regulations. At the local level, municipalities develop SECAPs and other plans, coordinating with federal and state objectives. However, challenges remain in monitoring energy savings and H7C planning across states, due to the different progress of each state, as some are more advanced than others.



## Greece

In Greece, the Ministry of Environment and Energy is responsible for national H&C policies. The governance structure is relatively centralised, with regional and local governments mainly involved in the implementation of national programmes. Municipalities are engaged to a moderate to high degree in local energy planning and the development of district heating, particularly in the northern regions where heating demand is higher. SECAPs and other urban/spatial planning documents are an important cornerstone of local implementation, but a challenge remains in terms of bottom-up policy integration, as they are not always integrated at the national level. Regional and local authorities are dependent on the national government’s main direction, funding and legal frameworks for energy planning. The findings suggest that while emphasis on **multi-level governance** is increasing, more coordination is required to match EU targets with local capacities and resources for effective implementation.



## Italy

Italy’s H&C governance is coordinated by the Ministry of Environment and Energy Security, which sets national targets and regulatory frameworks. Regional governments play a significant role, particularly by setting targets within regional energy plans and in the implementation of EU-funded energy efficiency programmes. Municipalities manage zoning laws, building permits, and some district heating projects, often in cooperation with multiutilities. Despite the degree of integration, challenges remain, including the administrative burden to apply for incentives or financial schemes as well as fragmented implementation of climate and energy actions, especially in smaller municipalities, which have limited resources and capacities to access funding or larger networks<sup>33</sup>, compared to

<sup>32</sup> Eckersley P, Kern K, Haupt W, Müller H. Climate Governance and Federalism in Germany. In: Fenna A, Jodoin S, Setzer J, eds. Climate Governance and Federalism: A Forum of Federations Comparative Policy Analysis. Cambridge University Press; 2023:150-176.

<https://doi.org/10.1017/9781009249676.009>

<sup>33</sup> EU Annual Report. 2024. The states of regions and cities. <https://cor.europa.eu/sites/default/files/2024-09/Report-state-regions-and-cities-EN.pdf>



Milan Metropolitan City or others, part of the Covenant of Mayors<sup>34</sup>, Resilient Cities Network<sup>35</sup>, 100 Climate-Neutral and Smart Cities<sup>36</sup> and so forth.

**Multi-level governance initiatives** in the case of Italy – lessons learned and practices from the NECPlatform project<sup>37</sup>: Local authorities are currently the subjects that promote and implement energy and climate policies through adherence to the Covenant of Mayors and the implementation of SECAPs, achieving important results in reducing climate-changing gases, involving local stakeholders, businesses and the financial world in the realization of actions with important spin-offs in the local territory.

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### Poland

Poland's governance structure for H&C is hierarchical, with the Ministry of Climate and Environment setting national policies and regulations. Voivodeships (regional governments) coordinate national energy programmes and oversee district heating at a strategic level. Municipalities are key players in local energy planning, managing district heating networks, and applying energy efficiency measures.

**Challenges** include, but are not limited to, fragmented planning and lack of resources (financial and human resources) at the local and municipal level for policy implementation.

As in the case of Greece, **multi-level governance** is increasing, however national-level decision-makers, specifically through the Energy Policy of Poland until 2040, have a prominent role in mandating legal requirements for local-level actors, e.g. municipalities, to prepare the 15-years municipal heat, electricity and gas supply plans. These plans have however limited integration with territorial planning, without comprehensively addressing H&C decarbonisation actions<sup>38</sup>.

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### Slovenia

Slovenia's H&C policies are led by the Ministry of Infrastructure, which oversees national energy strategies. Regional governance is limited, with municipalities playing a crucial role in implementing district heating projects, integrating renewable energy sources, and enforcing energy efficiency standards in buildings.

**Challenges** include financing and human resources constraints, which may limit effective implementation of H&C measures at the sub-national level of municipalities and other local authorities.

Similarly to Greece and Poland, Slovenia H&C planning features thus far a limited degree of **multi-level governance**, when approaching local, regional and national needs. There is a certain degree of coordination between national and local levels, where municipalities are mandated to develop Local Energy Concepts (LECs, as in the KUMU map above). Nevertheless, these plans are not fully integrated with other municipal planning documents, hinting at a lack of horizontal dialogue and silo-thinking across different municipal departments.

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<sup>34</sup> Covenant of Mayors – Europe. <https://eu-mayors.ec.europa.eu/en/home>

<sup>35</sup> Resilient Cities Network. <https://resilientcitiesnetwork.org/>

<sup>36</sup> The 100 Climate-Neutral and Smart Cities by 2030 – Eurocities. <https://eurocities.eu/latest/the-100-climate-neutral-and-smart-cities-by-2030/>

<sup>37</sup> NECPlatform – best practices Italy. <https://energy-cities.eu/project/necplatform-best-practices/>

<sup>38</sup> EU Tracker – Local heating and cooling plans in Poland – Energy Cities. <https://energy-cities.eu/countries/poland/>

#### D4.1. REGIONAL HEATING & COOLING POLICY MAPPING AND MULTI-LEVEL GOVERNANCE STRUCTURES

The above section has provided an overview of the status of multi-level governance initiatives across the eight case studies of the ESCALATE project. Key findings are based on the results of the KUMU visualisation exercise, the stakeholders' mapping activities by IEECP with the support of all consortium partners and regional experts on H&C planning. The information is triangulated with data from the EU Tracker by ENC. Based on the overall results, governance structures for H&C policies in these EU countries reflect a **mix of centralised, regional, and local responsibilities**. While national governments provide overarching strategies and regulatory frameworks in line with the EU Green Deal and cornerstone Directives, e.g. EED, EPBD and RES Directive – regional and local authorities have a critical role in the effective implementation of DHC and energy efficiency measures. Despite their prominent role, cities and regions, especially smaller municipalities, face some challenges that hinder their capability to implement key measures. The following section will dive deeper into the challenges and potential enabling conditions for an effective planning and implementation of H&C policies in the eight EU countries within the scope of this report, although some elements may be applicable and replicable in other territories and regions.

## 6. Recommendations

### 6.1. Policy planning priorities based on case studies analyses

This section provides a summary of the key points that emerged from the H&C policy analysis and stakeholder mapping under the scope of this report in the targeted eight regions. Some countries share similar challenges and enabling conditions for effective H&C planning, e.g. Austria and Germany. Each challenge explained hereafter is supported by practical examples from a country where it is most prominent, without excluding its presence in other countries. In other words, some challenges/ barriers to effective H&C planning and multi-level governance integration, such as limited staff in small municipalities or lack of technical expertise to access funding at national or EU-level, are widespread to more than one country. Therefore, they may also apply to other cases outside the ESCALATE project.

**The cases of Austria and Germany** – due to their federal nature and consequently different energy standards and building codes in each federal state, the literature review and analysis hint at **regional discrepancies** in the effectiveness of H&C policies. This factor may undermine countries' efforts in increasing the vertical and horizontal coordination across national, regional/federal and local actions. On the other hand, the level of federalism in Austria and Germany has led each state to **adjusting** its H&C planning to **local needs and resources**. To this end, it is paramount to strengthen coordination mechanisms across federal states, combined with standardised evaluation and monitoring processes, in a more mainstreamed manner. These efforts will not only enhance policy coherence, but will also be in line with the technical capacities, especially among LRAs to implement and monitor the execution of effective climate and energy strategies in their federal states.



Among current initiatives to bridge the discrepancies between the federal states, the *Austrian Institute of Construction Engineering* (OIB) has issued harmonised guidelines focusing on, e.g., energy savings and thermal insulation, attempting to reduce the degree of variability of energy standards between the federal states<sup>39</sup>.

**The cases of Poland and Slovenia** – the existing need to increase **technical expertise**, especially in smaller municipalities, combined with **limited staffing** are prominent challenges faced by these S. Achieving coordinated H&C planning also depends on the availability of funding (or lack thereof), which is exacerbated in more isolated, rural areas, that have limited or no infrastructure to make effective progress towards the clean energy transition, compared to their urban counterparts. Nevertheless, recent studies from Poland's Ministry of Development Funds and Regional Policy, Ministry of Finance, and Statistics Poland<sup>40</sup> clearly show the proactive role taken by Polish municipalities in investing in renewables production, energy efficiency measures to boost a low-carbon economy, especially in those areas where industrial development opportunities are foreseen. This highlights once again the importance of supporting the upskilling and capacity building of technical and administrative staff, especially in **smaller and rural municipalities**, as they play a vital role in achieving EU's climate neutrality goals through **multi-level governance cooperation** and **private-public investment in infrastructure**.

<sup>39</sup> Global Building Codes Tool: Austria - ICC Global. <https://global.iccsafe.org/uncategorized/austria/>

<sup>40</sup> Kozera, A., Standar, A., Stanisławska, J., & Rosa, A. 2024. Low-Carbon Rural Areas: How Are Polish Municipalities Financing the Green Future?. *Energies*, 17(21), 5316. <https://doi.org/10.3390/en17215316>

**The cases of Italy and Greece** – even with strong energy incentives such as the Superbonus 110% or the Ecobonus exist for measures interventions in Italy, **access and application processes** suffer from administrative burdens, leading to uncertainty about the actual benefits such measures can entail. Lack of technical knowledge and financial resources at the sub-national levels, seem to hamper the efforts of both countries to develop and implement H&C plans at the local level<sup>41</sup>. Similar to other MS, there are discrepancies of H&C planning and development across regions, due to socio-economic, infrastructural, and climatic differences. For instance, historically, district heating is mostly present in the northern regions of Italy, however, the North is experiencing an increasing demand for cooling. Greece seems to be experiencing the negative consequences of more intense heatwaves. The **upgrade of current infrastructure**<sup>42</sup> is vital to meet the climate and energy objectives of Italy and Greece, supporting electrification and renewables integration<sup>43</sup>, which can reduce the load on the energy grid. This is related to another challenge, which is the limited **data availability** on building performance – given the aging stock<sup>44</sup> in both countries – and (local) energy demand, also included in the latest data from ENC EU tracker for Italy.

**The cases of Croatia and France** – upgrading **existing infrastructure** is a widely spread challenge. For instance, in the case of French municipalities, current DHC networks are outdated, leading to significant inefficiencies and distribution losses<sup>45</sup>. Additionally, H&C planning in France is hampered by **limited coordination** among policymakers between national-level policy ambitions and actual local implementation and project developers. In Croatia, based on the H&C policies analysis, municipalities are **not incentivised** by the central government to **develop local H&C plans**<sup>46</sup>. As a result, dedicated **funding** and **technical assistance** for sub-national authorities is limited, a combination of commonly reported challenges across the EU also by ENC<sup>47</sup>. This particularly affects rural municipalities or those territories where households lack the investment capacity<sup>48</sup> to support energy efficient renovations and retrofits as well as higher integration of renewable resources, such as solar thermal technologies<sup>49</sup>.

Finally, based on the above research and analyses, Figure 21 provides a number of suggestions that can be used as starting points for the next training activities and stakeholders' consultations under the ESCALATE project.

<sup>41</sup> Explainer: Why Italy's Superbonus blew a hole in state accounts – Reuters. <https://www.reuters.com/world/europe/why-italys-superbonus-blew-hole-state-accounts-2024-04-09/>

<sup>42</sup> EU Tracker – Local heating and cooling plans in Italy - Energy Cities. <https://energy-cities.eu/countries/italy/>

<sup>43</sup> Decarbonising the Italian energy sector with renewable heating and cooling solutions - Solar Heat Europe. <https://solarheateurope.eu/2022/11/30/decarbonising-the-italian-energy-sector-with-renewable-heating-and-cooling-solutions/>

<sup>44</sup> Chatzikonstantinou, E., Katsoulakos, N., and Vatavali, F. 2023. Housing, energy performance and social challenges in Greece. A quantitative approach. <https://doi.org/10.1051/e3sconf/202343601015>

<sup>45</sup> Malcher, X., and Gonzalez-Salazar, M. 2024. Strategies for decarbonizing European district heating: Evaluation of their effectiveness in Sweden, France, Germany, and Poland. Energy (306). <https://doi.org/10.1016/j.energy.2024.132457>

<sup>46</sup> EU Tracker - Local heating and cooling plans in Croatia - Energy Cities. <https://energy-cities.eu/countries/croatia/>

<sup>47</sup> EU Tracker – Local heating and cooling plans in France - Energy Cities. <https://energy-cities.eu/countries/france/>

<sup>48</sup> RENOVERTY. 2025. Rural Energy Efficiency Roadmap (REER) for the energy renovation of family houses of households experiencing energy poverty in Croatia: A framework for stakeholders. [https://ieecp.org/wp-content/uploads/2025/03/CRO-REER\\_National\\_final\\_EN\\_RENOVERTY-2.pdf?](https://ieecp.org/wp-content/uploads/2025/03/CRO-REER_National_final_EN_RENOVERTY-2.pdf?)

<sup>49</sup> Factsheet Renewable Energy in Croatia – NL Embassy in Zagreb, Croatia. <https://www.rvo.nl/files/file/2023-02/Factsheet%20Renewable%20Energy%20in%20Croatia.pdf>

**Figure 21.** Summary of findings on regional H&C policy mapping and multi-level governance structures



Such activities include workshops of Local and National Working Groups with the objective of better exploring how to implement an **effective H&C policy-setting** in the eight target countries and disseminate/replicate successful practices to other regions.

## 6.2. Examples of H&C good practices

While these policy measures represent good practices, they do not provide an exhaustive solution for achieving a smooth and affordable decarbonisation. Policymakers and experts need to make a context-specific selection that aligns with local needs and complements existing frameworks. The following boxes illustrate two good practices in developing H&C plan in Austria and Germany to ensure effective and practical H&C decarbonisation efforts for long-term implementation.

### Spatial Energy Planning (SEP) in Austria.

Austria has emerged as a leader in integrating spatial planning into H&C strategies. Since 2019, Austria has been proactively integrating spatial planning into its H&C strategies. The SEP initiative<sup>50</sup> focuses on harmonising energy, mobility, and settlement development to promote sustainable communities, particularly in the provinces of Styria, Vienna and Salzburg. This approach aims to coordinate renewable energy production, compact urban design and efficient transport to reduce energy consumption and carbon emissions. The Austrian Conference on Spatial Planning (ÖROK)<sup>51</sup> supports this approach, providing resources and guidance for local authorities.

Notable initiatives include the development of the HEATatlas<sup>52</sup>, a GIS-based platform that provides high-resolution data on renewable energy potentials, existing infrastructure, and dynamic H&C demand. This

<sup>50</sup> Spatial Energy Planning – Green Energy Lab. <https://greenenergylab.at/projects/spatial-energy-planning/?lang=en>

<sup>51</sup> Energy spatial planning. <https://www.oerok.gv.at/raum/themen/energieraumplanung>

<sup>52</sup> HEATatlas. <https://www.warmteatlas.nl/viewer/app/Warmteatlas/v2?debug=false>

tool supports long-term energy and infrastructure planning by illustrating complex energy system interrelationships. In addition, a prototype application, HEATapp, has been developed to enable automated queries and analyses, facilitating its use in public administration for site development, spatial planning and energy policy monitoring.

The "Spatial Energy Planning for the Heat Transition" project aimed to integrate energy into state-level spatial planning instruments and make them accessible to local authorities at state, regional, and municipal levels. The project used modelled data at building level instead of statistical aggregated data, combining harmonised methods from Austrian research institutions with thousands of real data to achieve optimal results. These practices exemplify Austria's commitment to integrating spatial planning with energy strategies for a sustainable future.

### H&C guidelines in German's municipalities.

Germany's four-step approach to drafting local H&C plans, offers a structured methodology that other countries could adapt. This method simplifies the complex task for local authorities by dividing the planning process into inventory analysis, mapping renewable potential or potential analyses, target scenarios and Action Plan consisting of strategies and measures. The German Heat Planning Act (Wärmeplanungsgesetz<sup>53</sup>), which came into effect in January 2024, mandates the development of comprehensive municipal heat plans to accelerate the transition to climate-neutral heating systems and ensure strategic alignment across local, regional, and national levels. In parallel, the Competence Centre for Municipal Heat Transition (Kompetenzzentrum für Kommunale Wärmewende – KWW<sup>54</sup>) has become a key knowledge hub for heat transition: the platform provides an extensive collection of guidelines, in-depth analyses, and case studies, offering LRAs a structured overview of current trends, regulatory developments, and practical approaches to local heat planning, and shows the map of Germany with the status of H&C plans in municipalities. These resources are substantial in navigating the complexities of the heat transition and offer insights into technological options, governance models, and stakeholder coordination.

Although the cooling component is currently less prominent in Germany's thermal planning landscape, a growing number of municipalities are beginning to implement local cooling strategies, particularly in response to the increased urban heat stress and climate risks. These local initiatives have prompted the federal government to consider the development of dedicated national guidelines for sustainable and integrated cooling planning<sup>55</sup>, aiming to ensure a balanced and forward-looking approach to the overall decarbonisation of the H&C sector.

<sup>53</sup> German Heat Planning Act. <https://www.bundesregierung.de/breg-de/aktuelles/waermeplanungsgesetz-2213692>

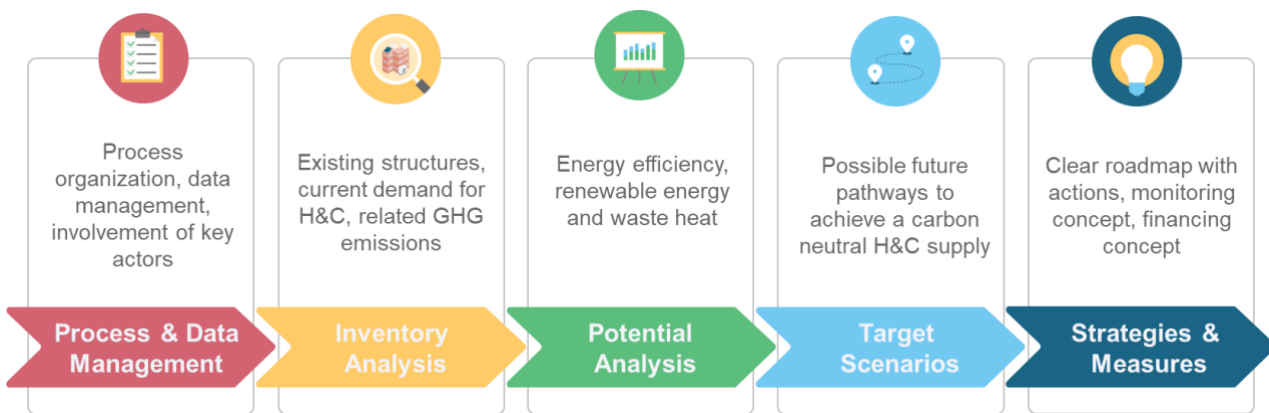
<sup>54</sup> Competence Centre for Municipal Heat Transition (KWW). <https://www.kww-halle.de/service/infothek/literatur-und-leitfaeden>

<sup>55</sup> Sustainable cooling strategies. <https://www.tab-beim-bundestag.de/english/news-2023-05-sustainable-cooling-in-germany-status-quo-and-future-perspectives.php>

## 6.3. The ESCALATE training and capacity building programme

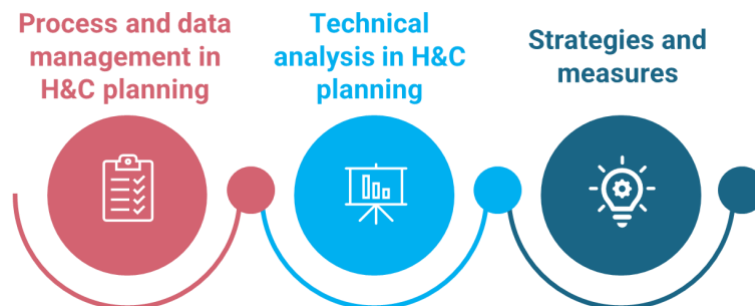
Developing an effective H&C plan requires a structured approach to ensure consistency, quality, and replicability in different planning contexts. The ESCALATE technical training and capacity building programme is structured around the five-step H&C planning process (Figure 22) to ensure coherence, relevance, and practical applicability for local authorities and other relevant stakeholders. Each step reflects a critical phase in developing robust, EED-compliant plans from laying a data-driven framework to defining clear implementation strategies. Participants will gain a comprehensive understanding of how to assess existing conditions, identify local opportunities, and translate findings into actionable plans, by developing training aligned with this sequence.

Figure 22. Five steps to develop a H&C plan



This structure (Figure 23) ensures that the technical context is not presented in isolation, but as part of an integrated planning cycle. While capacity building focuses on the development of plans and strategies as well as the improvement of existing H&C planning frameworks, it also supports the implementation structure of consumer-led initiatives and energy communities. This guarantees the progressive developing participants' skills, from technical analysis to policy design. Ultimately, this step-by-step approach equips stakeholders with the tools and knowledge to make informed, strategic decisions that reflect both local conditions and long-term climate and energy goals.

Figure 23. ESCALATE technical training and capacity building



H&C planning is a structured process that ensures energy systems are efficient, sustainable, and aligned with the EU EED recast. It begins with **comprehensive process and data management**, with clear planning steps and early involvement of stakeholders such as local authorities, agencies, utility experts, and other actors. Roles and responsibilities are divided to streamline coordination. Data collection and visualisation play a central role, covering

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building standards, infrastructure, and energy use, while adhering to EED-compliant principles like energy efficiency first.

The **technical analysis phase** begins with the inventory analysis. This includes assessing building structures and their heat demand, mapping current heat supply systems, and evaluating the overall energy and climate offset. This is followed by a potential analysis, which identifies opportunities for energy savings in buildings, use of local renewables, recovery of excess heat, and efficiency in industrial processes. This step also identifies areas suitable for DH. Based on these findings, planners develop target scenarios that project future heat demand, assess viable supply options and incorporate cooling requirements. These scenarios balance demand, efficiency gains and supply potential to create a city-wide target framework that informs concrete planning and implementation.

Finally, the planning process moves on to **implementation strategies**. This includes setting priorities, defining concrete measures, and promoting consumer-led efforts such as energy communities. A continuation strategy ensures that plans remain dynamic and adaptable, supporting long-term transformation of the H&C sector. Overall, this structured approach helps cities meet their energy goals while improving system integration and stakeholder alignment.



## 7. Conclusions

The ESCALATE project will use the results of this report on “Regional Heating & Cooling Policy Mapping and Multi-Level Governance Structures” in the first stages of designing and building Local and National Working Policies groups, to better understand the decision-making dynamics behind these governance models, together with directly involved stakeholders. The next stages of the project are crucial to define which elements are most useful for policymakers and stakeholders to enhance coordination, optimise policy effectiveness, and accelerate the transition to sustainable H&C systems across Europe. In particular large gaps remain in terms of institutional capacity, technical expertise, and comparable access to funding, although major progress has been made in mapping current policies, identifying important stakeholders, and evaluating financial frameworks. Achieving EED-compliant H&C plans and accelerating the clean energy transition require robust local engagement and effective MLG.

This report aimed to analyse existing H&C policies, financial opportunities, and governance structures in eight ESCALATE project countries. It therefore lays the groundwork for multilateral dialogue and coordinated planning, highlighting the importance of integrating H&C into national frameworks following Art. 25. The activities proposed to the project countries vary according to the needs and barriers in developing the structure of local and national policy working groups. Ultimately, these groups aim to foster dialogue encouraging exchanges on H&C planning process between policymakers and stakeholders, identify needs, and improve planning outcomes.

Details of the stakeholder identification and mapping process using a power-interest matrix categorise stakeholders by level (local, regional, national) as well as their influence and interest in H&C decarbonisation. The level of stakeholder influence and interest determines the engagement strategies. Eventually, these identified stakeholders will receive tailored technical support and capacity building to develop H&C plans.

The comprehensive policy assessment analysed in this report shows the interlinkages between various regulations, laws, and strategies, encouraging LRAs to be more affluent in streamlining the H&C approach. Austria’s H&C policies are led by the federal government, with strong national frameworks guiding implementation at regional and local levels. While spatial planning is recognised as key to achieving emission reductions, municipalities are not legally required to prepare local H&C plans. Croatia has a similar structure, with national leadership and a focus on district heating and building renovation, supported by EU-level strategies. Municipal engagement is increasing through initiatives like the Covenant of Mayors. France’s approach is moderately centralised, with national and regional coordination, and strong local-level action through climate and energy plans. Germany demonstrates a moderately high level of integration, where national laws set ambitious decarbonisation targets and regional authorities tailor them to their contexts.

Greece, Poland, and Slovenia all exhibit a centralised approach to H&C policy, with national governments especially their respective energy government, playing a leading role in setting targets and frameworks. In Greece, coordination with regional and local levels is present, but limited. The Greek NECP sets out plans to boost renewable H&C sources, such as solar thermal and biomass, supported by national and EU incentives. Poland follows a similar top-down structure, with its Energy Policy to 2040 and NECP 2021–2030 laying out clear goals, including phasing out coal in residential heating. However, challenges persist in achieving strong vertical coordination. Slovenia also aligns closely with national directives, where the local plans such as the Local Energy Concepts reflecting national goals, including increasing renewable H&C and banning new fossil fuels. In contrast, Italy shows a more integrated MLG structure and created several local spatial planning tools.

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Although a high number of funding schemes does not guarantee high investment in improving energy efficiency, current spending levels remain inadequate to meet the EU's 2030 climate and energy targets. As the analysis stand in this report, the funding schemes still remain fragmented, and bridging the financial gaps require targeted subsidies specifically aimed at local municipalities. This can be supported in ensuring an equitable clean energy transition, stronger policies, clearer transparency, and better resource distribution are also essential in reducing disparities and accelerating the H&C transition across MS.

The effective transposition of the EU directive on local H&C planning requires a comprehensive and integrated approach. Setting a lower population threshold, such as 20,000 inhabitants can ensure broader territorial coverage, while tailored support should be provided based on municipal capacity. Clear adoption timelines are essential, as local plans must be in place well before 2030 to align with long-term climate goals. These plans are built on the existing energy, climate, and urban planning frameworks to reduce administrative burdens and enhance coherence. Reliable, centralised access to energy data is crucial for assessing current conditions and developing robust decarbonisation scenarios. A structured methodology can guide municipalities through the entire planning process, from diagnostics and stakeholder engagement to scenario development and implementation. Strategic and spatial considerations must be integrated, reflecting the specific geographic, economic, and energy characteristics of each area. The involvement of local stakeholders, including authorities, residents, and energy experts, is key to ensuring the plans are both practical and widely supported. Finally, strong national support, both technical and financial, is necessary to move beyond rigid compliance and enable real progress toward climate neutrality.

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