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Report on the adaptation of the service to the public stakeholders

D5.6

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LOCALISED

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List of Abbreviations

SECAPs	Sustainable Energy and Climate Action Plan
CoM	Covenant of Mayors
SDGs	Sustainable Development Goals
BEI	Baseline Emission Inventory
RVA	Risks and Vulnerability Assessment
SOIs	SDG Oriented Indicators
EUCALC	European Calculator
EUROSTAT	STATistical office of the EUROpean union
NUTS	Nomenclature of Territorial Units for Statistics
KPI	Key Performance Indicators
DSP	Data Sharing Platform
CDP	Carbon Disclosure Project
ERF	Estudi Ramon Folch
ICLEI	International Council for Local Environmental Initiatives
JRC	Joint Research Center

Executive Summary

The following document serves as a record of the interactions and methodologies applied to adapt the WP5 developments to local realities throughout the entire duration of the project. Stakeholder engagement was fundamental to ensuring the scalability of the proposed solutions, the validation of results, the co-design of approaches and tools, and the practical utility of the developments for municipalities and regions. It also created opportunities for mutual learning, particularly through the experiences of the pilot cases (Barcelona, MAGGS and Vienna).

The process of stakeholder interaction provided essential insights into local priorities and the current status of climate and energy planning. It revealed existing data gaps, highlighted areas where progress and expertise are more advanced, and identified the frameworks and methodologies currently in use. Moreover, it shed light on reporting practices and frequencies at different governance levels as well as the specific objectives and ambitions of local stakeholders. The feedback received has been crucial when refining the proposed climate indicators and methodologies, thereby ensuring that the WP5 output remains aligned with local needs, administration capacities, and long-term strategies.

The diverse developments achieved within WP5, including the compilation of the list of SOIs, the design of functionalities for filling the SECAP template, the alignment with existing EU and national directives, and the definition of monitoring needs and data validation procedures (30 SECAPs generation), have been made possible through continuous interaction with third parties. These exchanges, combined with the systematic adaptation of methodologies to the realities of stakeholders and the lessons drawn from their experiences, have ensured that the outcomes of WP5 are both relevant and applicable in practice as reflected in the following document.

1.Introduction

The LOCALISED project is dedicated to developing tools that support local administrations in their transition towards carbon neutrality and climate adaptation. These tools are particularly valuable for municipalities that face challenges in accessing reliable data or in generating comprehensive climate and energy plans on their own. By providing practical resources tailored to their capacities, the project aims to reduce barriers to action and enable evidence-based decision-making at the local level.

Achieving this objective requires a thorough understanding of the specific needs and constraints of local administrations, who represent the primary users of the services developed and key stakeholders in the overall value chain. Their perspectives, priorities, and operational realities are essential to ensure that the solutions are not only scientifically robust but also feasible, user-friendly, and aligned with local planning processes. In this sense, stakeholder engagement and continuous feedback loops form a cornerstone of the project's methodology, ensuring that the outputs effectively respond to real-world challenges and deliver tangible value for municipalities of different sizes and capacities.

The main LOCALISED outputs of WP5 are the list of harmonized Sustainable Development Goals Oriented Indicators (SOIs), dynamic Sustainable Energy Climate Action Plan (SECAP) templates for automatic data filling, linkages between SOIs and renovation wave programs, guidelines for monitoring implementation on CAST and the data validation exercise for 30 municipalities included in this document.

The different developments are further described in the corresponding deliverables:

Table 1 WP5 LOCALISED Developments

Set of SDG oriented indicators	Nadia Soledad Ibañez Iralde (IREC), J. P. (2022). D5.1 Report on SOIs for SECAPs definition and assessment (LOCALISED **Deliverable 5.1**) [1]
Dynamic SECAP templates for automatic data filling	Mont Lecocq, Enric, Pascual, Jordi (2023), BEI and RVA dynamic templates for dynamic implementation (LOCALISED **Deliverable 5.2**) [2]
Linkages between SOIs and renovation wave programs	Shayegh S., (2024), Report on buildings and energy strategies linked to renovation wave policies and climate change mitigation initiatives (LOCALISED **Deliverable 5.4**) [3]
Guidelines for an effective monitoring implementation on CAST	Mont Lecocq, Enric, Nadia Soledad Ibañez Iralde, Pascual, Jordi, (2025), Report on semi-automated methodology to monitor, check and maintain the service (LOCALISED **Deliverable 5.5**) [4]

This report presents the methodology for stakeholder interaction and how the different developments from WP5 have been refined based on stakeholder learnings.

The multiple feedback stakeholders can be divided into different groups depending on the established connection and position as visible in the following **Figure 1**.

Figure 1 Considered stakeholders and initiatives

City partners were powerful actors in supervising the different developments, particularly in defining the set of harmonized indicators and assessing the usefulness of the developed tools. The Wise Group provided expert insights into climate planning as well as existing reporting gaps and barriers. The Covenant of Mayors [5] and SDG [6] reporting initiatives served as the main frameworks to harmonize the various developments, ensuring upscaling, replicability, harmonization, and continuity.

Additional information was gathered from the local competencies of 43 municipalities in Catalonia and 10 municipalities each from Lower Austria, Twente, and the Tuscany region. This helped us to better understand how local governments are organized and how the CAST developments could be aligned with competency requirements.

Finally, an analysis of 30 municipalities representing different climates, socio-economic contexts, and population sizes was conducted. This analysis aimed to assess the representativeness of the reporting methodologies, the frequency of reporting, the indicators used, and to compare the deviations between CAST-proposed data and the data reported in local plans. Other initiatives, such as NetZero Cities [7] and the Carbon Disclosure Project [8], were also analyzed during this analysis.

A short definition of the reporting initiatives considered is available hereunder:

Covenant of Mayors (CoM)

The Covenant of Mayors is a European initiative that brings together local and regional authorities committed to reducing greenhouse gas emissions, improving energy efficiency, and adapting to climate change. Signatories develop Sustainable Energy and Climate Action Plans (SECAPs) and regularly report on progress. It is the main reporting tool at the local level in the EU and the principal framework with which the development of the projects is aligned.

Sustainable Development Goals (SDGs)

The SDGs, adopted by the United Nations in 2015, are a set of 17 global goals addressing environmental, social, and economic challenges. They provide a universal framework for sustainable development, guiding local governments and organizations in aligning their strategies with global priorities. It is a valuable framework to monitor progress at local level and many cities have already implemented them.

NetZero Cities

NetZero Cities is a European initiative supporting cities in their transition toward climate neutrality by 2030, as part of the EU's Mission on Climate-Neutral and Smart Cities. It provides technical assistance, knowledge sharing, and funding opportunities to accelerate decarbonization at the urban level. Cities' reports have been used as a good source of indicators for the 30 municipalities analysis.

Carbon Disclosure Project (CDP)

CDP is a global non-profit organization that operates a disclosure system for companies, cities, and regions to measure and manage their environmental impacts. Through standardized reporting, CDP helps local governments track greenhouse gas emissions, climate risks, and adaptation strategies, thereby enhancing transparency and comparability. Many city administrations report their emissions to CDP because it addresses a broader audience—such as investors, businesses, and international organizations—not only public administrations. CDP also provides a comparable dataset across cities, enabling benchmarking with peers, and offers a simplified reporting mechanism. It was analyzed as a common methodology in the 30-city study and identified as a relevant source of emission inventories.

The document is organized chronologically, section 2 explains how stakeholder interaction shaped the definition of the climate indicators selection, section 3 contains information on local reporting methodologies and how the proposed WP5 tools have been shaped to be used by local administrations. Section 4 provides the comparison between the platform downscaled indicator values and the values retrieved from local plans from 30 UE municipalities. Finally, section 5 provides an overview of the adaptation phases and the different outcomes and adjustments that resulted from them.

The information provided in this document is directly associated with the rest of deliverables from WP5 (D5.1, 5.2, D5.3, D5.4 and D5.5) and it includes interactions from the task 8.1 Stakeholder interaction methodology and schedule [9]. This report also features the work done under WP2 [10], and the list of indicators identified as a part of D2.6 Mitigation and Adaptation Indicators [11]. Furthermore, the different stakeholders' interactions have been shared to enrich multiple parts of the project such as Platform design (WP8), the measure database definition (WP4) and the DSP from WP3 [12].

2. Adaptation of climate indicators to public stakeholders

With the objective of simplifying reporting at the local level, LOCALISED task 5.1 aligned two key initiatives for local reporting, the SDGs and SECAPs indicators, in a single filtered set considering data availability, granularity, feasibility and matching with project objectives. This development may help municipalities, especially those with limited resources, to better assess, implement, and monitor effective climate strategies using a single set of harmonized indicators.

Figure 2 Methodological steps to define the list of SOIs. Source: Own elaboration from D5.1

D5.1 introduced the SDG Oriented Indicators (SOIs) harmonized set to help local and regional authorities establish baselines (Baseline Emission Inventories – BEI), assess risks and vulnerabilities (RVA), report Energy Poverty indicators (EP) and monitor progress dynamically rather than through static reports. Data was drawn from official statistics and downscaled proxies to provide practical and location-specific options as described in the D3.3.

As shown in **Figure 2**, the development of a robust framework required not only collecting inputs from partners and work packages but also gathering feedback from a wide range of key stakeholders, both within and outside the consortium, throughout all stages of SOI development. Interactions with internal partners were organized individually through scheduled interviews and dedicated sessions during project meetings, while engagement with external stakeholders was carried out through guided interviews based on a template that included key questions and focus areas.

The development steps involved several online meetings, conducted with city partners in the project consortium to share experiences on the subject and gather specific feedback around indicators. In addition to the identification of key aspects, feedback on the preliminary list of sustainability indicators was collected. City partners (Barcelona and the Metropolitan Area of Gdansk-Gdynia-Sopot) reviewed the metrics to assess data availability, relevance to local priorities, comparability, and alignment with existing frameworks. Barcelona emphasized the need for simplified, locally relevant, and goal-oriented indicators, highlighting priorities such as social housing, emissions data, and economic/tourism impacts. MAGGS underlined challenges with limited baseline data but is developing mobility and climate plans with key transport-related KPIs, while stressing priorities such as energy transition, household decarbonisation, and citizen support. Both

partners noted the importance of aligning actions across governance levels, linking mitigation and adaptation measures, and engaging citizens through clear, relatable KPIs.

Additional feedback was gathered through interviews with experts from ERF, ICLEI, and the JRC as part of the D8.1. These actors were considered relevant as they were part of the CoM initiative or had a long-standing experience in the development of local plans. Rather than reviewing KPIs individually, the discussions were organized through the development of a template, which focused on synergies between SECAPs and SDGs, the methodology, and potential platform uses. In addition, a set of specific questions, such as the main barriers or issues associated with indicators were prepared, in order to facilitate the discussions. During these interactions, several common issues emerged regarding the definition of indicators and the assessment of progress on SDGs and SECAPs. Key challenges included the complexity of the process, limited resources in small and medium-sized municipalities, a low percentage of monitoring reports after the initial plan, overly broad indicator lists, data-sharing and ownership issues, and difficulties in monitoring air quality. The recommendations emphasized the need to simplify indicators, ensure regular updates (annually or at least every four years), prioritize outcome-oriented and scalable metrics, and design indicators that are both feasible and adaptable within a dynamic platform. This feedback was then incorporated into the exercise, resulting in the prioritization of indicators to ensure that the framework was not only useful but also feasible for the target users.

The list started at 181 indicators and ended up being reduced to **93** after the stakeholder interaction process [13]. This initial list of SOIs served as the main reference for the subsequent WP5 developments. It was designed to remain flexible, allowing adaptation to different needs, such as disaggregation, to link each indicator to a corresponding data source provided by the DSP.

3.Shaping the reporting tools

After defining the first map of indicators on which the WP5 will operate, it is important to ground the developments and assess how they support the reporting and monitoring of the selected initiatives. At the same time, we need to examine how these indicators can be linked with existing plans and measures, so that they can serve as effective monitoring elements. Particular attention is given to their usability and clarity from the municipalities' perspective, as well as to the extent of their capacity and authority to manage sectoral data.

Task 5.2 focused on assessing how useful these indicators are for reporting within the SECAP template. In Task 5.3, the indicators were assigned to renovation plans, while Task 5.4 carried out an in-depth analysis at the municipal level to refine the indicators and align them more closely with local monitoring processes.

3.1. Alignment of the SOIs with the CoM SECAP reporting template

In Task T5.2, dynamic templates were developed for the Baseline Emission Inventory (BEI), the Risk and Vulnerabilities Assessment (RVA), and Energy Poverty (EP) within the framework of the Sustainable Energy and Climate Action Plans (SECAPs).

These dynamic templates replicate the official Excel template provided by the Covenant of Mayors, which serves as a reference for collecting the information required for SECAP reporting. Several sections of this template are mandatory and must be uploaded into the signatory profile when submitting a SECAP. The templates created in T5.2 go one step further by integrating variables from the DSP [14], enabling their use within the semi-automatic filling tool on the platform and thereby streamlining the reporting process.

Figure 3 illustrates the official Covenant of Mayors SECAP template, which provides structured guidance to ensure that local authorities submit consistent and complete plans.

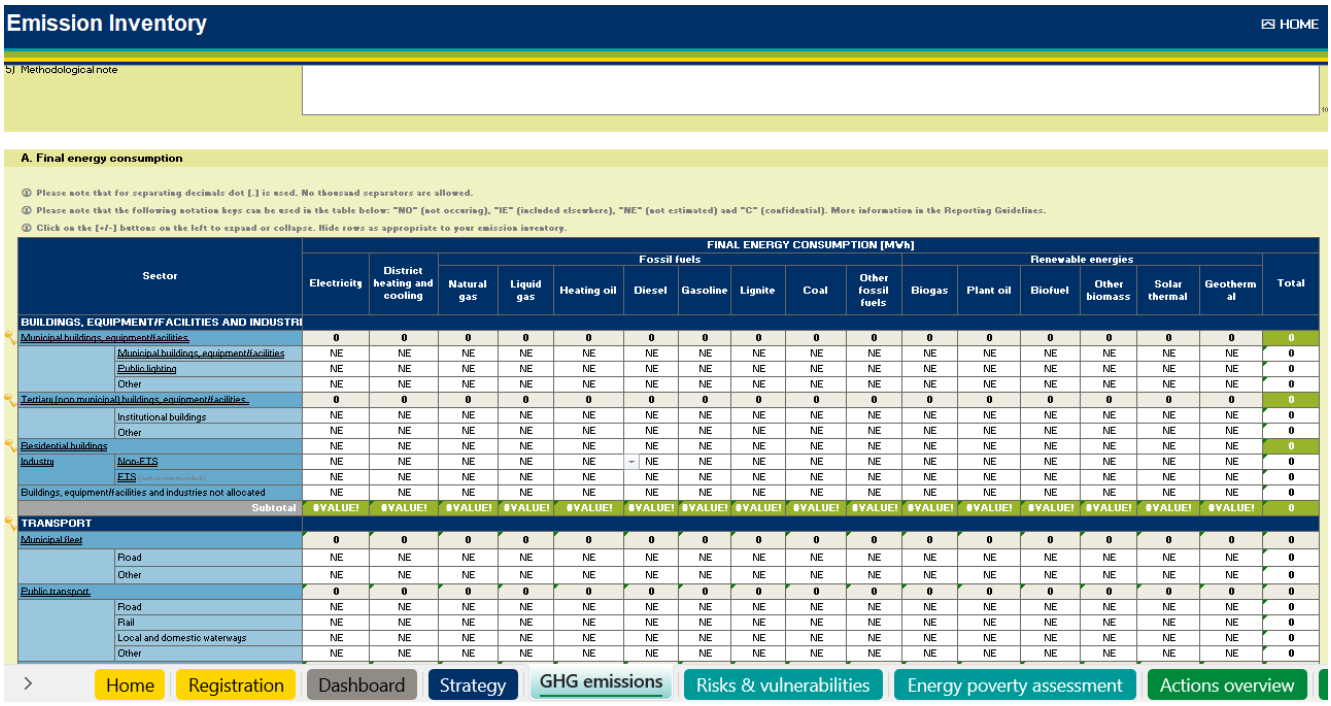


Figure 3 Excel SECAP template provided by the Covenant of Mayors Source: CoM

In the MyCovenant online application tool (**Figure 4**), signatories are required to enter this information. Some values must be entered manually, while others can be uploaded directly by importing the Excel template.

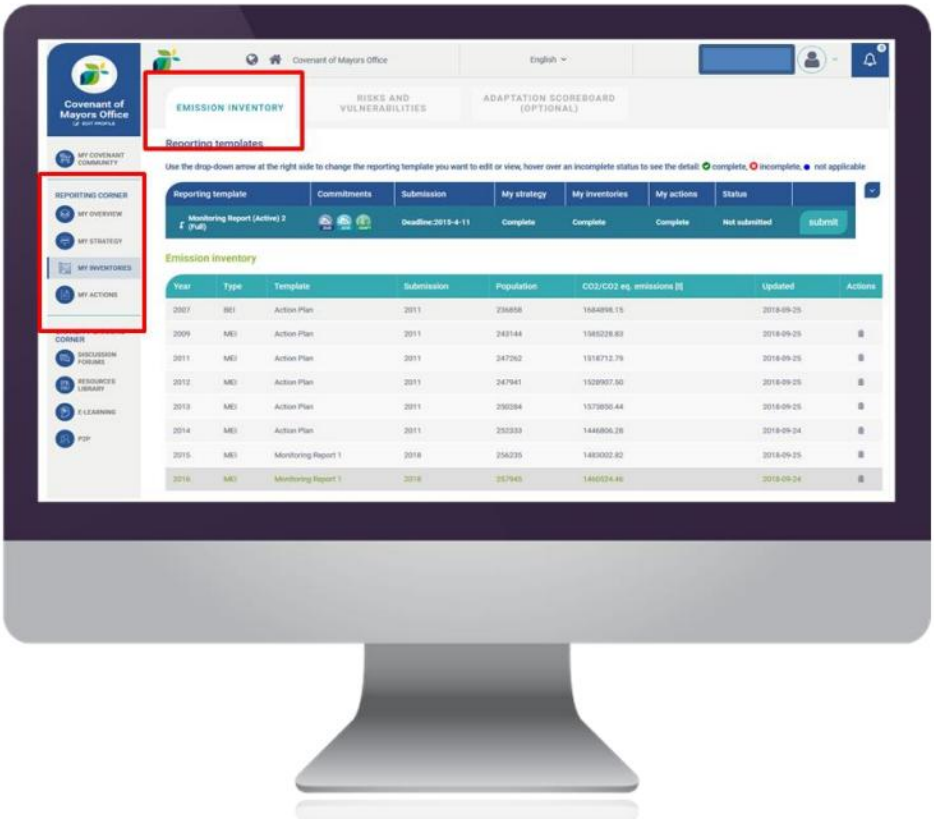
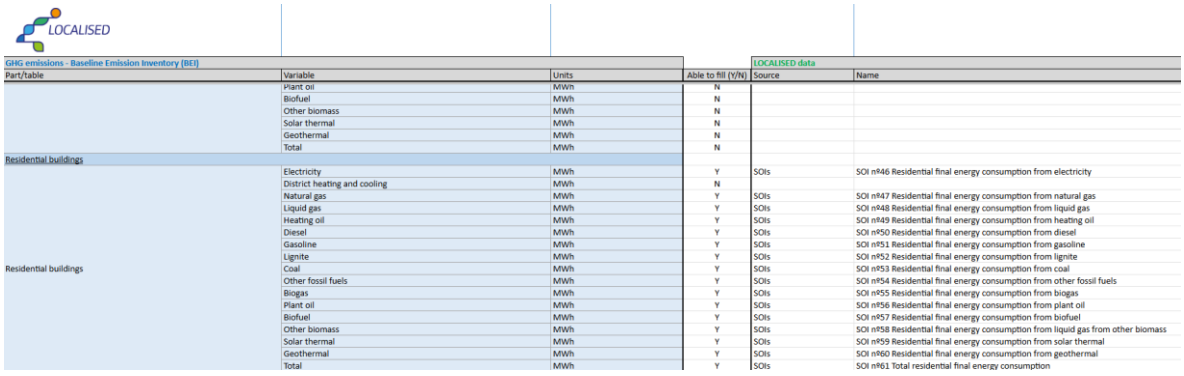


Figure 4 "Mycovenant" online SECAP reporting app screenshot Source: CoM

Figure 5 shows the templates developed within the LOCALISED project, which establishes a connection between the reporting requirements of the Covenant of Mayors and the SDG-oriented indicators and other useful disaggregated data from the DSP.



GHG emissions - Baseline Emission Inventory (BEI)				LOCALISED data	
Part/table	Variable	Units	Able to fill (Y/N)	Source	Name
	Plant oil	MWh	N		
	Biofuel	MWh	N		
	Other biomass	MWh	N		
	Solar thermal	MWh	N		
	Geothermal	MWh	N		
	Total	MWh	N		
Residential buildings					
	Electricity	MWh	Y	SOIs	SOI n°46 Residential final energy consumption from electricity
	District heating and cooling	MWh	N		
	Natural gas	MWh	Y	SOIs	SOI n°47 Residential final energy consumption from natural gas
	Liquid gas	MWh	Y	SOIs	SOI n°48 Residential final energy consumption from liquid gas
	Heating oil	MWh	Y	SOIs	SOI n°49 Residential final energy consumption from heating oil
	Diesel	MWh	Y	SOIs	SOI n°50 Residential final energy consumption from diesel
	Gasoline	MWh	Y	SOIs	SOI n°51 Residential final energy consumption from gasoline
	Lignite	MWh	Y	SOIs	SOI n°52 Residential final energy consumption from lignite
Residential buildings	Coal	MWh	Y	SOIs	SOI n°53 Residential final energy consumption from coal
	Other fossil fuels	MWh	Y	SOIs	SOI n°54 Residential final energy consumption from other fossil fuels
	Biogas	MWh	Y	SOIs	SOI n°55 Residential final energy consumption from biogas
	Plant oil	MWh	Y	SOIs	SOI n°56 Residential final energy consumption from plant oil
	Biofuel	MWh	Y	SOIs	SOI n°57 Residential final energy consumption from biofuel
	Other biomass	MWh	Y	SOIs	SOI n°58 Residential final energy consumption from liquid gas from other biomass
	Solar thermal	MWh	Y	SOIs	SOI n°59 Residential final energy consumption from solar thermal
	Geothermal	MWh	Y	SOIs	SOI n°60 Residential final energy consumption from geothermal
	Total	MWh	Y	SOIs	SOI n°61 Total residential final energy consumption

Figure 5 Screenshot from the dynamic templates developed in Task 5.2

As a result, when CAST users run the SECAP semi-automatic filling tool, the information is harmonized with the Covenant of Mayors framework, automatically entered into the correct cells, and made ready for direct use in the SECAP reporting process. The completed template is also downloadable in Excel format, allowing signatories to store, review, reuse the data outside the platform or upload directly the file to the CoM to report the SECAP.

A key outcome of the dynamic template creation task was the need to align the indicators from D5.1 with the reporting requirements of the Covenant of Mayors. In this process, several indicators had to be refined or further disaggregated. For example, the indicator

on final energy consumption by sector and fuel was broken down according to the categories required by the Covenant of Mayors—Municipal Buildings, Tertiary, Residential Buildings, Industry, Transport, Agriculture Forestry and Fisheries—as well as by energy vectors such as Electricity, District Heating and Cooling, Natural Gas, Liquid Gas, and others. As a result, the initial set of 93 SDG-oriented indicators was expanded and disaggregated into 234 indicators.

Figure 6 represents an example on how the original SOIs had to be broken down to relate to the DSP and the CoM SECAP requirements.

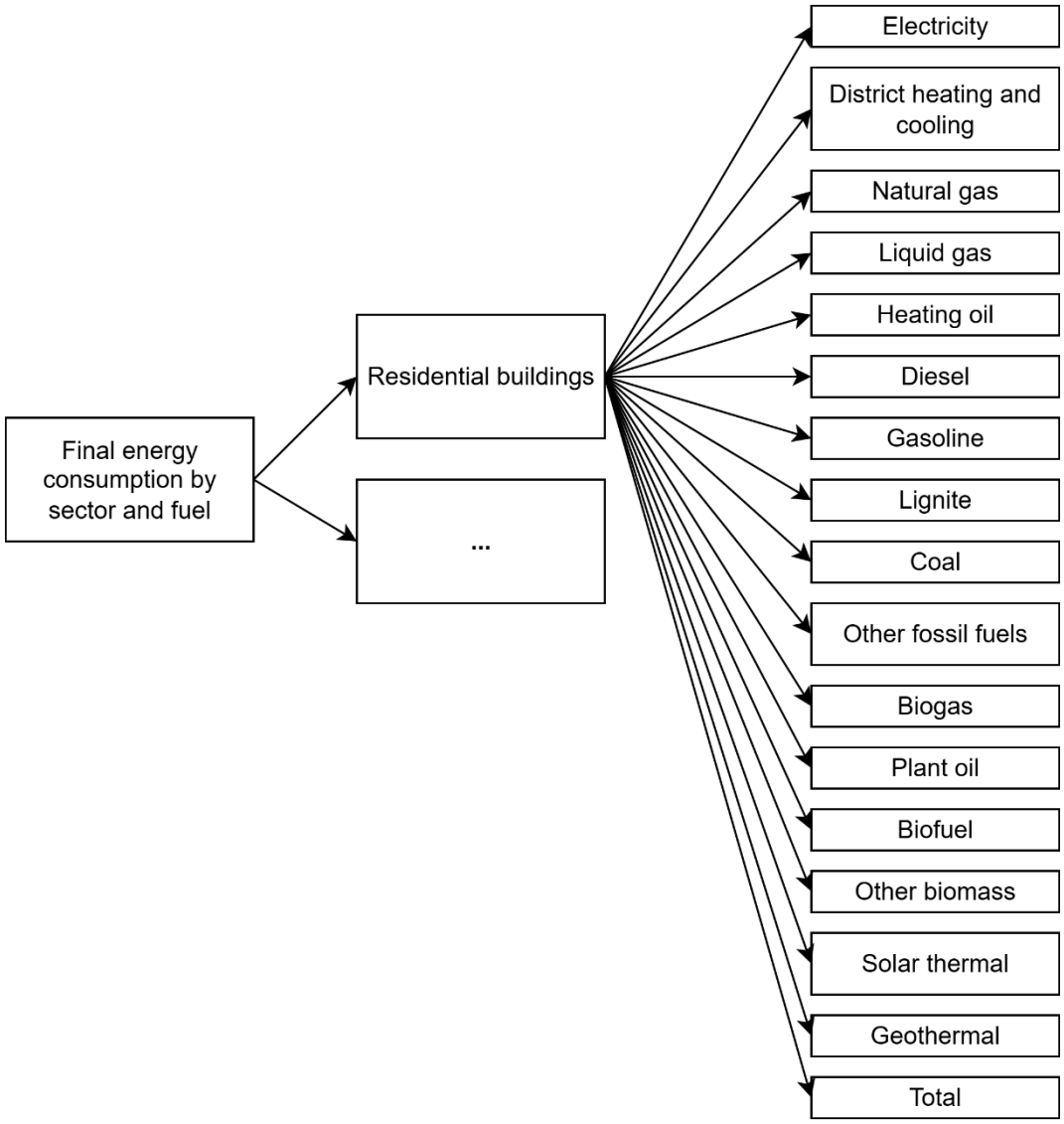


Figure 6 SOI disaggregation to comply with the CoM SECAP requirements

3.2. Alignment with renovation wave EU programs

In report D5.4, the set of SOIs was connected to the defined decarbonisation pathways. This process involved assigning SOIs to each of the measures considered within the modelling engine. In parallel, the national renovation programs of Italy, Spain, Poland, Germany, Austria, Portugal, and Belgium were broken down into specific measures. As a result, the action established a clear link between the renovation wave programs, the corresponding measures, and the monitoring SOIs, as visible in the following example **Table 2.**

Table 2 Example on linkage between renovation plans, measures and SOIs

National plan	Specific measures	Associated SOIs
SPAIN National Recovery and Resilience Plan (C2 Housing Rehabilitation and Urban Regeneration Program)	Installing heat pumps	• Exposure of vulnerable people to Heat waves • Final energy consumption by sector and fuel • Electricity consumption per capita • Final energy consumption of public buildings per year • Final energy consumption in homes including all types of energy • Energy consumption of households for heating • Energy demand of households for the different uses: appliances, lighting, air conditioning/ heating demand • CO2 emissions per capita • CO2 emissions for buildings

As a result, the CAST engine was fully connected to the SOIs through the defined LOCALISED measures [15]. This integration ensures that, when the engine is run, it can generate a set of indicators associated with each measure. These indicators provide a clear quantification of the regional impacts and deliver a set of monitoring KPIs aligned with both the SECAP reporting requirements and the SDG framework.

3.3. Alignment with monitoring requirements

The D5.5 document provided guidelines for integrating effective monitoring of adaptation and mitigation measures into the CAST platform, ensuring consistency with the CoM and SECAP framework.

The T5.4 task included an analysis on municipal competencies from municipalities originally from four partner regions (Catalonia, Lower Austria, Twente and Tuscany) to ensure that the platform's classifications align with local administrative structures. The

report proposes improvements in data labelling, such as indicating update dates and frequencies, and introduces qualitative impact assessments to support monitoring where numerical data is lacking. It also outlines a future optimization functionality designed to prioritize measures and indicators most relevant for achieving decarbonization and adaptation goals. In addition, the D5.5 report provides design guidance for CAST developers, including references on classification methods, data visualization approaches, and navigation requirements, while also suggesting the inclusion of a "Tips" section to highlight best practices and local examples. Altogether, these developments shape CAST into a public stakeholder-oriented reporting tool that harmonizes with CoM requirements and enhances the capacity of local administrations to monitor climate action effectively.

3.3.1. Frequency of reporting

Accurate data labeling by noting the date when data was last updated is very important so that users can verify whether information falls within the required reporting period. Data updated only every ten years will likely be of little use for monitoring, since the values will never change over the reporting phases. According to the Covenant of Mayors requirements, the greenhouse gas emission inventory (including the Baseline Emission Inventory) should be updated at least every four years. SECAP signatories are encouraged to submit monitoring templates every two years, but a full monitoring template that includes a new Monitoring Emission Inventory (MEI) is mandatory every four years. The Risks & Vulnerabilities Assessment should also be included in the monitoring templates following the same timeline as visible in **Figure 7**.

III. FREQUENCY OF REPORTING

Table 1 below includes the associated **frequency of reporting** for the different sections of *MyCovenant*.

	Registration	Action plan	Monitoring	
	Year 0	Within 2 years	Within 4 years	Within 6 years
My strategy	o	✓	✓	✓
Action plan documents upload	o	✓	o	o
Emission inventory	o	✓ (BEI*)	o	✓ (MEI*)
Risk & vulnerabilities assessment	o	✓	✓	✓
Mitigation actions	o	✓ (min. 3 key actions)	✓	✓
Adaptation actions	o	o	✓ (min. 3 key actions)	✓
Energy poverty actions	o	o	✓ (min. 1 key action)	✓

Table 1 Frequency of reporting

Legend: ✓ Mandatory | *o* Optional

BEI = Baseline Emission Inventory; MEI = Monitoring Emission Inventory

Figure 7: Reporting periods from CoM Reporting guidelines [5]

3.3.2. Alignment with municipal competencies

Effective intersectoral communication between municipal departments is essential to ensure that data, responsibilities, and actions related to climate and energy are coherent and mutually reinforcing. Since the Covenant of Mayors SECAP framework organizes information by sectors such as buildings, transport, industry, and agriculture, municipal departments managing these areas must coordinate closely. Aligning their work with SECAP categories not only avoids data gaps and overlaps but also enables municipalities to produce consistent emission inventories, design integrated measures, and report in line with EU requirements.

73 municipalities (43 from Catalonia, 10 from Twente, 10 from Lower Austria and 10 from Tuscany) were analyzed to understand how competences interlink and how information could be better classified to address intersectoral communication barriers.

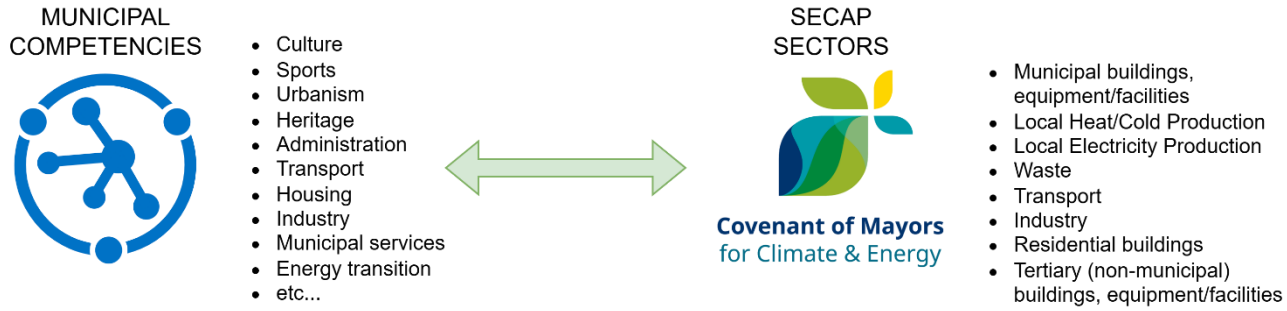


Figure 8 Exercise overview. Linkage between municipal competences and SECAP categories

Figure 8 presents an overview of the exercise. The analysis showed that, for example, actions related to local electricity production from the SECAP categorization are typically managed by "New Technologies" and "Energy Transition" departments at the local level, which were identified in 51.16% and 37.21% of the studied municipalities, respectively. This indicates that some municipalities may lack the capacity to fully understand, implement, or monitor the proposed measures and indicators.

More detailed information is provided in report D5.4 regarding the most represented competences at the local level and the way clusters can be formed around the SECAP categories. This approach aims to simplify coordination at the local level and enhance the usability of developments when integrating them into municipal administrations.

4. Analysis and SECAP generation for 30 municipalities

One of the project's DOA impact indicators was the development of 30 SECAPs. This objective was taken a step further by not only generating semi-automatically filled SECAP templates for 30 cases, but also by analyzing the corresponding local plans and comparing the retrieved indicator values with the values proposed by the CAST platform.

The selection of cities included LOCALISED partners, municipalities engaged through other EU projects, and additional cities chosen to complete the sample and ensure representativeness in terms of climate, population, and socio-economic conditions.

Drawing on the project's municipal partnerships, the EU climate clusters generated in Task 5.3, population data retrieved from local municipal plans, and GDP per capita levels from EUROSTAT, the following localities were selected: Athens (GR), Barcelona (ES), Boden (SE), Bucharest (RO), Burgas (BG), Cartagena (ES), Cascais (PT), Cesena (IT), Enschede (NL), Gabrovo (BG), Larnaca (CY), Les Sables-d'Olonne (FR), Liepāja (LV), Ljubljana (SI), Lörrach (DE), Milan (IT), Nice (FR), Patras (GR), Potsdam (DE), Prešov (SK), Skanderborg (DK), Sopot (PL), Surbo (IT), Szombathely (HU), Tampere (FI), Utena (LT), Valencia (ES), Vienna (AT), Warsaw (PL), and Zagreb (HR).

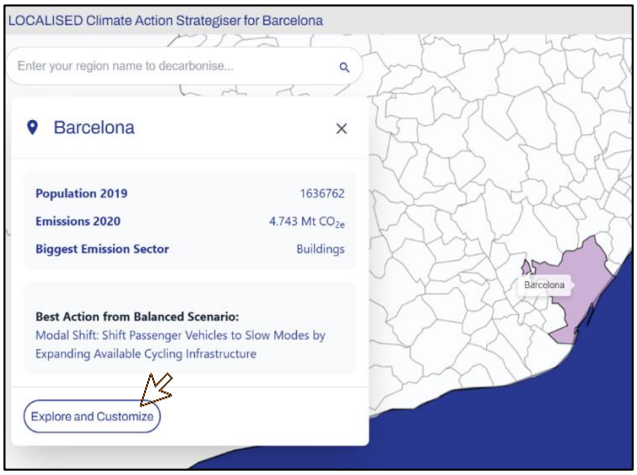
Figure 9 Map with the 30 municipalities forming the sample

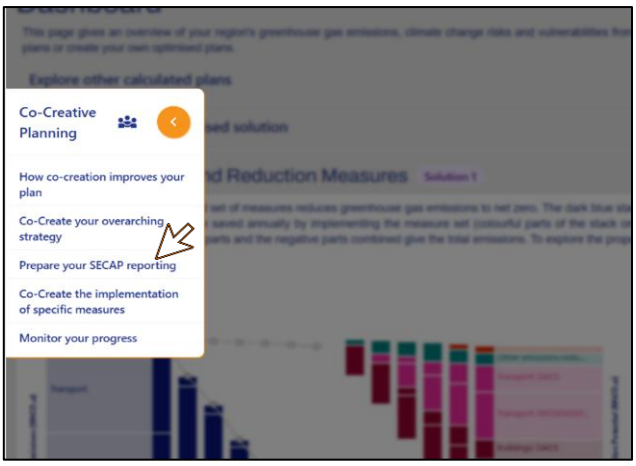
For each municipality, a detailed search was carried out on their official websites to identify decarbonisation plans, energy plans, mobility plans, environmental plans, SECAPs, and other documents likely to contain relevant climate indicators comparable to the SOIs defined in D5.1. In total, 290 plans were identified, and 1,627 documents were retrieved.

Some conclusions can be drawn by analyzing the municipal reporting methodologies as stated in the LOCALISED policy brief "Comparative Analysis of Emission and Adaptation Reporting Across 30 Cities" [16].

- Two-thirds of the cities omit certain sectors in their assessments. For instance, Agriculture, Forestry, and Other Land Uses (AFOLU) are excluded or left unjustified in more than ten cities within the sample. Industrial Processes and Product Use (IPPU) are also frequently disregarded. While these sectors may not be central to every municipality or may represent only a minor share of emissions, their exclusion reduces the overall completeness and comparability of the inventories. Even sectors with relatively small contributions should be quantified to some extent, both to ensure methodological consistency across regions and to capture potential future changes that could make these sectors more relevant.
- Energy mix choices represent another source of divergence. Some cities rely on national energy mixes whereas others use local ones.
- Only one-third of administrations report carbon inventories on an annual basis. Larger cities, such as Barcelona, Milan, and Ljubljana, have adopted regular reporting through initiatives like the Carbon Disclosure Project, often alongside sectoral plans. Smaller municipalities, however, report less consistently—sometimes with decade-long gaps.
- Scope 3 is not considered, except for waste or wastewater processed outside city boundaries which has been considered for 6 out of the 30 municipalities.
- Some municipalities are not reporting or stopped reporting to CoM but do report to the CDP and the NetZero cities initiative.

A SECAP has been generated for each of the municipalities using the CAST platform and using the "Export SECAP" tool.





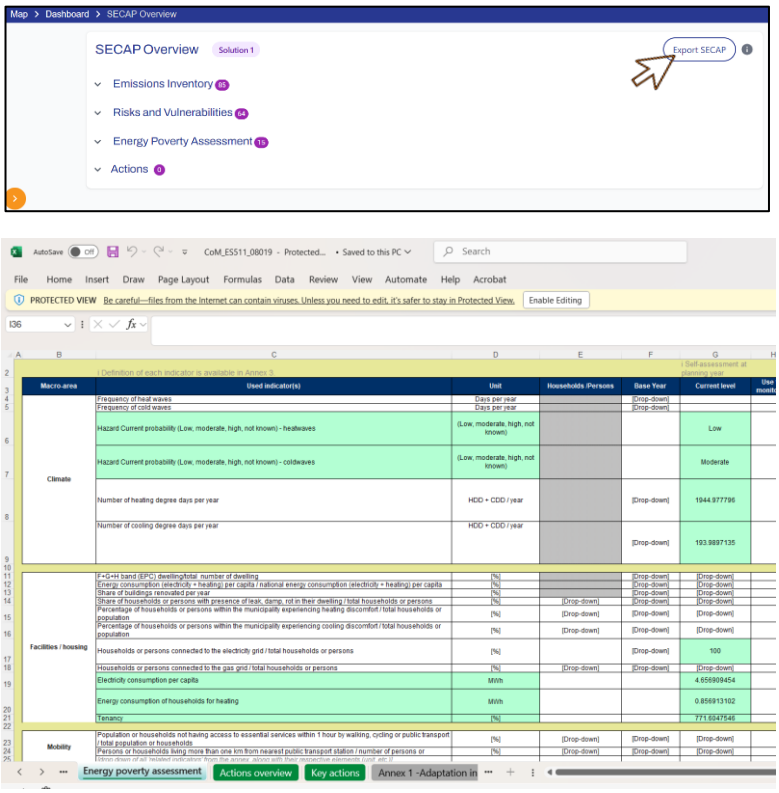


Figure 10 SECAP template CAST generation process

The process uncovered several issues in the reporting mechanism that were subsequently resolved. First, users needed an option for selecting which measures to include in the template, as the system initially lacked this flexibility. Second, the exporting process was too slow, and in some cases, the exported Excel files crashed upon opening. These problems were corrected to ensure faster and more stable performance.

It also became clear that, in addition to the CoM template, a complementary Excel file was required to contain the full list of completed SOIs together with all relevant information, including units, descriptions, linked SDGs, SECAP category, and last update time. Finally, some indicators had to be adjusted to fully comply with SECAP requirements, as a few inconsistencies had slipped through earlier fine-tuning phases.

At this point, it was decided to move on to the next step and validate the information from the 30 CAST-generated SECAP templates against locally reported data from various municipal initiatives. In cases where differences in values were not caused by calculation errors, the discrepancies stemmed from the use of different methodologies. In such situations, there was no clear way to determine which value was closer to reality.

At this stage the set of SOIs was formed by 263 indicators. This is the average deviation found for each of the indicators by comparing them with the DSP downscaled data for the 30 municipalities.

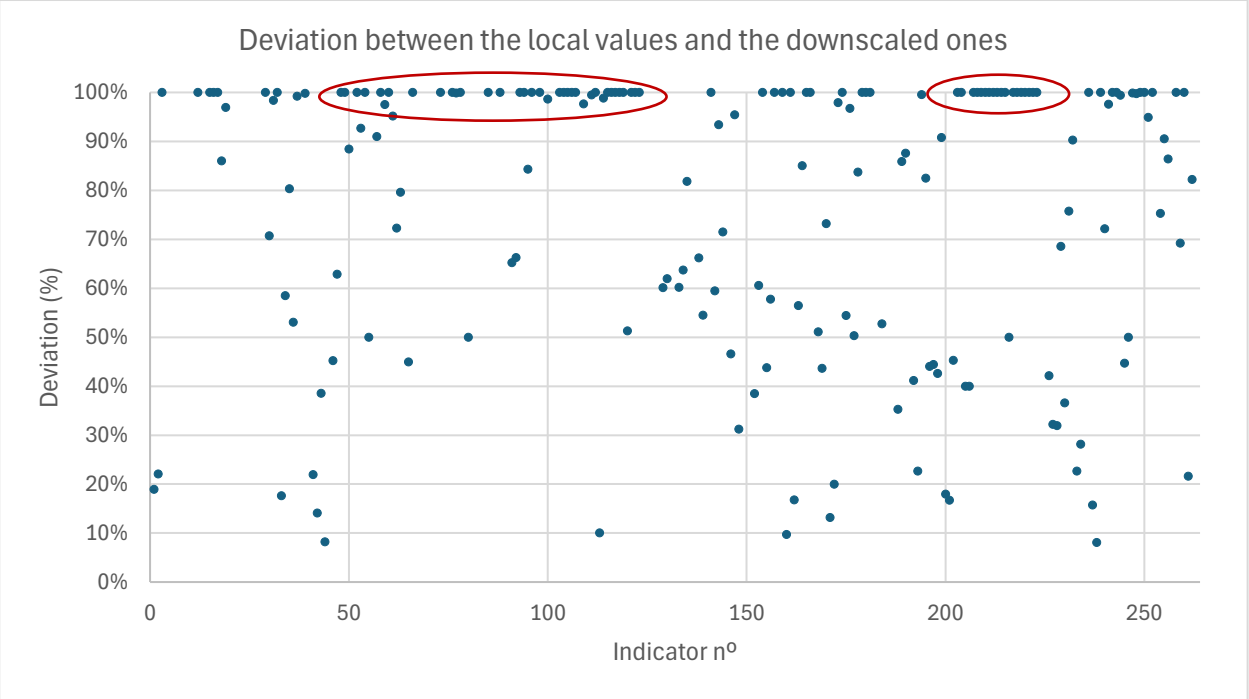


Figure 1 Deviation between locally reported data and the LOCALISED downscaled data

Figure 11 illustrates the deviation between indicator values reported locally and those obtained from national open data sources that were downscaled to the local level. The first group of circled indicators, ranging from 49 to 123, includes final energy consumption by sector and by energy carrier SOIs. The second group, between 203 and 223, corresponds to adaptation SOIs related to hazard impacts and frequency. These results highlight that the two main pillars for building mitigation and adaptation strategies show significant deviations when comparing top-down estimates with locally reported data.

The **ANNEX** of this document includes municipal summary cards with relevant information for each of the cases studied.

4.1. Deviation levels for each SOI section based on SECAP categories

The following section takes a closer look, and examines the deviations for each indicator section, based on the CoM SECAP classification [5]: Adaptation (hazard impact and frequency), Adaptation (hazard vulnerability and adaptive capacity), Mitigation (final

energy consumption), Mitigation (energy generation), Mitigation (emissions), and Energy Poverty (housing, mobility, economy, demography).

4.1.1. Hazard current and expected levels, local vs DSP deviation

This section of indicators included current and expected frequency and impact levels for climate hazards, being qualified as (Low, Moderate, High) for current levels, and (Increase, No change or Decrease) for expected changes. The assessment produced by the LOCALISED engine aligns with locally published data only 26.05% of the time. In most cases, the reported impact, frequency, and expected change levels differ from the local data. This divergence can be caused not only by data quality issues but also by methodological differences. Depending on the span of historical data analyzed, results can vary considerably. Another factor contributing to discrepancies is the scope of analysis; some municipalities rely on national or regional climate assessments to estimate their local situation.

4.1.2. Adaptation complementary indicators, local vs DSP deviation

This section presents indicators on land use, health, agriculture, and ecosystems that complement hazard risk levels by assessing vulnerability and adaptive capacity. **Table 3** presents the average deviation between some of the most represented local reported indicators and the LOCALISED downscaled values from national open data sources.

Table 3 Deviation for the adaptation complementary indicators

Indicator name	Deviation
Livestock units	>100%
Artificial land coverage	>100%
Green urban area	50-100%
Forest area	20-50%
Pollutants atmospheric concentrations (PM2.5, NO2, O3)	20-50%
Share of vulnerable groups (% Children, % Elderly)	0-20%

The deviation presented in **Table 3** highlights that the demographic indicators are the ones with the lowest deviation on average for the 30 studied municipalities compared to the DSP downscaled data, on the opposite site, livestock units and land measurements are the ones having the biggest deviations.

4.1.3. Mitigation (Final energy consumption and energy generation), local vs DSP deviation

This section presents indicators on municipal energy consumption, disaggregated by sector and energy carrier. They form the basis for identifying key emission sources and provide the core data required for the SECAP mitigation template. The average deviation between some of the most represented local reported indicators and the LOCALISED downscaled values from national open data sources can be seen in the following **Table 4.**

Table 4 Deviation between energy related indicators and DSP values

Indicator name	Deviation
Residential final energy consumption	50-100%
Transport final energy consumption	>100%
Industry (non-ETS) final energy consumption	50-100%
Agriculture final energy consumption	>100%
Residential electricity consumption	20-50%
Residential natural gas consumption	50-100%
Transport diesel consumption	50-100%
Transport gasoline consumption	50-100%
Industry (non-ETS) electricity consumption	50-100%
Industry (non-ETS) natural gas consumption	50-100%
Electricity consumption per capita	50-100%
Installed renewable capacity	>100%
Electricity generation from PV	50-100%

In this case, the SOI with the lowest deviation between DSP values and locally reported data is residential electricity consumption, with deviations ranging from 20% to 50% across the 30 municipalities. All other indicators show deviations above 50%, and in some cases exceeding 100%, particularly for transport and agricultural final energy consumption, as well as renewable installed capacity.

4.1.4. Mitigation (Emissions), local vs DSP deviation

Emission indicators are key metrics for tracking local greenhouse gas sources and monitoring progress toward decarbonisation goals, typically calculated from final energy consumption using standard or locally adjusted emission factors. **Table 5** shows the deviations when comparing them to the downscaled data.

Table 5 Deviation for Emission SOIs

Indicator name	Deviation
CO_2 emissions from households	50-100%
CO_2 emissions from transport	20-50%
CO_2 emissions from non-ETS industry	50-100%
CO_2 emissions from agriculture	50-100%
CO_2 emissions from the tertiary sector	50-100%
CO_2 emissions per capita	20-50%
Carbon content of electricity consumption	50-100%

Among the most represented SOIs from the emission section, CO_2 emissions per capita and CO_2 emissions from transport are the ones with a lower deviation of between 20 to 50% for the 30 municipalities. The rest of emission SOIs have a deviation between 50 and 100%.

4.1.5. Socio-economic indicators (Housing, mobility, economy, demography), local vs DSP deviation

This section presents indicators capturing local energy poverty, social patterns, and structural characteristics, including consumption, living conditions, mobility, economy, and demography. **Table 6** presents the deviation between the SOIs and the locally identified data for the most represented indicators in the 30 municipalities.

Table 6 Deviation of energy poverty SOIs

Indicator name	Deviation
People at risk of income poverty after social transfers	0-20%
Families or households that allocate more than 40% of their resources to housing expenditures or services or housing cost burden	0-20%
Income of households	20-50%
Education Index: Population with tertiary education	20-50%
Gender pay gap	0-20%
Share of foreign-born population	50-100%
Traffic accidents with deaths per 100,000 inhabitants	>100%
Number of motor road vehicles per 100 inhabitants	0-20%
Gross Value Added (GVA) growth	50-100%
Generation of plastic waste per capita	50-100%

This section includes the indicators with the lowest deviation, featuring 4 of them with a value below 20%, those are People at risk of income poverty after social transfers, Families or households that allocate more than 40% of their resources to housing expenditures or services or housing cost burden, Gender pay gap and Number of motor road vehicles per 100 inhabitants.

4.2. SOI refining based on the deviation analysis

When analyzing the indicators from the local plans, it was observed that some indicators not highlighted in the first pilot cases (Barcelona, MAGGS, and Vienna) turned out to be very important for other regions. This was the case, for example, with district heat consumption across all sectors, electricity generation from waste, and electricity production from diesel. To address these gaps, those indicators were ultimately included in the list of SOIs, using data sources from EUROSTAT and EUCALC.

Other improvements included renaming indicators (e.g., "Number of children" to "Percentage of children") to align with the proposed units, as well as redefining downscaling methodologies by using EUCALC as the initial dataset and applying EUROSTAT shares to disaggregate by energy vectors as EUCALC data includes SCOPE 3 activities.

For cases where deviations exceeded 100% and the order of magnitude was significantly inconsistent between values, corrections were applied to mitigate errors. However, not all large deviations necessarily represented errors in the provided data, as some municipal datasets were either outdated or incorrectly estimated. Therefore, corrective strategies were only applied where values clearly conflicted with common sense. In other cases, indicators were marked for future improvement, where available data or downscaling proxies could not be adequately addressed with the current variables, tools, or project timeframes.

The final list of SOIs comprises 273 indicators, which are available in both the DSP and the LOCALISED CAST platform for all EU NUTS-3 and LAU regions.

Future considerations may include searching for new reliable data sources, exploring improved disaggregation and downscaling methodologies for the most problematic cases, and validating against other datasets—whether from parallel projects or locally produced measurements.

5.Adaptation to public stakeholders, process timeline

Table 7 summarizes the different actions performed during the project to adapt WP5 developments to public stakeholders. Highlighting the different stakeholders involved and the outcomes of each part of the adaptation process.

Table 7 Stakeholder adaptation process, timeline

Time	Process
M1 to M3	Interaction with the project partners. **Outcome:** gathering of necessities and metrics needed for SECAPs, SDG reporting and other relevant project aspects such as Business (WP7) and social aspects (WP6).
M2 to M3	Interaction with LOCALISED city partners: Barcelona, Vienna, Sopot and MAGGS. **Outcome:** Improvement and inclusion of relevant aspects in the set of SOI indicators.
M3	Interviews with ERF, ICLEI, JRC **Outcome:** Adaptation and prioritization of the indicator set to account for current issues and gaps and reduce the complexity of the task.
M4	First version of the indicator framework with a total of 93 potential metrics to gather during the project.
M10	Second round of interviews with the wise group. **Outcome:** The SECAP energy poverty part is included in the semi-automatic filling tool.
M10 to M15	Interaction with the project partners. **Outcome:** Filtering, disaggregation, changing data source, SOI reformulation to improve data quality and the set of SOIs.
M12	SECAP semi-automatic filling templates for CAST tool integration.
M15	New set of 234 SOIs.
M18	Interaction with project partners. **Outcome:** Association of SOIs to the MIDAS engine measures.
M24	Interaction with project partners. **Outcome:** Updated version of D2.6 based on WP5 developments. Fine tuning of transport indicators based on ÖGUT expertise.

M27 to M36	Multiple interviews with ICLEI. **Outcome:** Assess the SECAP near future reporting changes to adapt semi-automatic reporting tool developments.
M32	Interaction with project partners for Lower Austria and Twente municipalities. **Outcome:** Clustering of local competences to simplify responsibilities at local level in the monitoring guidelines and the frontend.
M36	Monitoring guidelines based on identified needs at local level.
M42 to M45	Interaction through mail with diverse local administrations with the help of project partners PIK, ÖGUT, IMP (Vienna, Sopot, Barcelona, Surbo, Lörrach, Warsaw, Potsdam). **Outcome:** Clarification on reporting methodologies and reception of the latest updated plans at local level to feed the 30 municipalities analysis and improve the collected data for the deviation analysis.
M43	Interview with CoM. **Outcome:** Assess the SECAP implementation in the EU and what are the current gaps in reporting. One of them is complexity for local municipalities, CoM is evaluating the possibility of having a semi-automatic filling engine in the official platform to improve reporting.
M48	Report on adaptation of the service to the public stakeholders.
M48	Final version of the indicator framework (SOIs) with a total of 273 indicators.

Conclusions

The process of adapting the service to public stakeholders proved extremely valuable, as it guided the various developments toward becoming practical and usable tools.

In the first phase, efforts focused on collaboratively designing a set of KPIs that could be easily implemented while addressing the diverse needs of the project partners and specifically the public partners (Barcelona, Vienna, MAGGS). These indicators were built on solid foundations: they were well represented in the grey literature, as stated in the corresponding article [13], supported by reliable data sources, and strongly connected to two of the most widely adopted reporting frameworks, the SECAP and the SDG initiatives.

The indicators were then tested and refined by completing the CoM SECAP Excel template and creating a dynamic connection that enabled its automatic population with data generated in WP3 and WP4. Continuous interactions with ICLEI, responsible for SECAP developments within CoM, ensured alignment with existing practices. This step was critical, as it not only validated the tool's usability within established reporting frameworks but also allowed the disaggregation of the initial set of 93 SOIs into the 234 detailed indicators required by the SECAP framework.

The reporting cycles of the Covenant of Mayors also played a decisive role in shaping indicator periodicity. A shift toward data sources with higher updating frequency was pursued to align with the SECAP's two- and four-year reporting requirements, thereby ensuring usability over time. To further account for local realities, a competence-mapping exercise was conducted. This helped translate SECAP categories into more intuitive clusters that could be readily applied in the tool's front end.

The SECAP semi-automatic generation tool was then tested across 30 municipalities. This exercise revealed diverse reporting methods, scopes, update frequencies, and data gaps, all of which informed improvements in the CAST-developed tool. Testing in municipalities with different regional, climatic, and socio-economic contexts also demonstrated that indicator representativity is not uniform everywhere. This insight pushed the refinement of several methodologies that had not been sufficiently challenged in earlier stages and affected the total number of SOIs to a total of 273.

Although the main methodological umbrella guiding WP5 was the CoM SECAP framework, the developed assets extend beyond it. They proved equally valuable for enriching sectoral local plans (such as energy, mobility, waste, and environmental plans) and for supporting reporting initiatives like the CDP platform or the NetZero Cities initiative. The analysis of local plans from the 30 municipalities confirmed that many of the developed SOIs are also relevant and compatible within these initiatives.

The comparison between locally reported values and DSP downscaled SOIs also offered important lessons. In cases where values were significantly divergent, the exercise prompted a final review of data sources and calculations, allowing several issues to be corrected. For volatile indicators, such as *Installed renewable energy capacity*, divergences were expected due to annual fluctuations in deployment. By contrast, demographic and socio-economic indicators, which vary less from year to year, showed lower deviations.

This highlighted the importance of systematically including the date of the last update for each indicator, so stakeholders can better interpret the relevance and accuracy of the reported values.

Key lessons identified during the process:

- **Ensure alignment with established frameworks**: Building on methodologies such as the Covenant of Mayors SECAPs and the SDGs provides a solid foundation, ensuring methodological consistency, broad representativity, and compatibility with international reporting standards.
- **Strengthen monitoring** as a core dimension: Indicators must be designed with periodicity and data availability in mind, ensuring that municipalities can track progress regularly and respond to evolving challenges. Linking indicator updates to existing reporting cycles (e.g., 2- and 4-year SECAP reviews) enhances usability and reliability.
- Enrich developments through **diverse partnerships**: Involving actors across governance levels, sectors, and local realities ensures that tools are adaptable to different capacities and contexts, from advanced municipalities to those still building capacity.
- Prioritize usability and **stakeholder perspective**: Testing tools in real contexts and adopting the viewpoint of end users is essential to create solutions that are practical, user-friendly, and directly relevant to municipal needs.
- Promote **flexibility and scalability**: Tools should be robust enough to integrate into sectoral plans (energy, mobility, environment, etc…) while also serving broader initiatives (CDP, NetZero Cities), maximizing their value and adaptability across contexts.

Table 8 summarizes how the different identified needs from the public stakeholders have been integrated in the WP5 developments.

Table 8 Public Stakeholders requirements and WP5 assets

Requirement from public stakeholder use	CAST proposed asset
Lack of a common climate reporting framework that is locally relevant, and inclusive of social, emission, economic, mobility, and hazard KPIs.	Development of a set of KPIs, called SDG-Oriented Indicators (SOIs), enabling simultaneous SECAP and SDG reporting. These were created through an exhaustive process emphasizing usability, robustness, multi-sectoral coverage, and co-design. [13]
Climate reporting mechanism complexity	Development of a semi-automatic SECAP template-filling tool that enables municipalities to generate an initial overview of their local data and selected measures from the CAST engine.
Low incision of monitoring reports after BEI	Definition of monitoring guidelines and a set of indicators linked to mitigation and adaptation measures, designed to be updated regularly to

	help municipalities track the progress of their plans.
Data sharing issues	Ready-to-use downscaled SOIs, fed with downscaled open data sources from the DSP.
Difficulty in assessing the impact of measures, particularly in the long term and for adaptation actions	Definition of monitoring guidelines and a set of indicators linked to mitigation and adaptation measures. These indicators have been enriched with a qualitative evaluation to highlight the expected impacts of implementing each measure.
Communication and responsibility barriers between climate objectives and local competencies	Analysis on municipal competencies performed in 73 municipalities to understand how clusters could be formed and what is the representativity of some measure sectors at local level.
Sectoral omissions in locally reported plans	The CAST provides solutions and SOIs for all sectors considered in the CoM reporting framework.
SCOPE 3 omission in locally reported plans	The CAST engine data builds on the EUCALC baselines which consider material flows from outside the region borders (SCOPE 3).

Finally, it is worth mentioning that an in-depth article on the analysis of the 30 municipalities will be published shortly after this report. It will highlight which data is harder to find, which is typically available at the local level, correlations between reporting methodologies and municipal characteristics and where future efforts should be concentrated in future local climate planning-related developments.

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ANNEX

30 municipalities analysis summary cards

A summary card was created for each of the studied cities in the 30 municipalities analysis, containing information on the region characteristics, the emission and adaptation methodologies and plans, and a general comparison between the locally reported data and the LOCALISED-DSP downscaled one.

Searching method

The plans were identified through searches on local administration websites using the following keywords: *Sustainable/Sustainability Plan, Energy Plan, Emissions Plan, Climate Change Plan, Mitigation Plan, and Adaptation Plan.* These searches were carried out both in English and in the respective local language. Additionally, secondary references and statistical sources cited within the plans were reviewed. This approach also provided insight into the level of transparency local governments maintain concerning emissions reporting, as well as their mitigation and adaptation strategies.

1.Barcelona

Climate zone	Zone 8 Mediterranean climate, with mild winters and hot summers, occasional rains.
Population	1660000 (Climate Neutrality Action Plan 2023)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 4
Reporting initiatives	**Covenant of Mayors** Baseline submission 2008 submitted in 2012 and MEI submission in 2017. The JRC 5th release CoM only includes information from 2012. Submitted PECQ 2011-2020 using 2008 as the baseline year. The Barcelona administration stopped reporting to the CoM directly since 2017. as it required a lot of work and adapting to a specific methodology. Barcelona proposed to simplify the reporting as much as possible to not repeat the same work multiple times, without success. **Carbon Disclosure Project** Reporting annually to the CDP. The rest of organizations obtain the information from there.
Mitigation objective	Reduction of 80% of scope 1 and scope 2 emissions compared to a BAU projection for 2030. Ref: *Pla Clima 2024*. This objective is considered as a NetZero point.
Last reported emission inventory	3075000 tCO2eq (2023, Pla Clima 2024)

Yearly reduction until NetZero objective (absolute)	405714 tCO2eq/year
Yearly reduction until NetZero objective (per capita)	0.2444 tCO2eq /year/capita
Scope	Scope 1 and 2 associated emissions from the following sectors: Transport, Buildings and heating, Electricity, Waste management and Industry sectors.
Current reporting methodology	**Mitigation** Developed by the Barcelona Energy Agency using the national energy mix in line with the "EU Mission: 100 Climate-neutral and smart cities by 2030" and the Carbon Disclosure Project platform. No further methodology information is provided in the plan about specific applied emission factors or calculation strategies. **Adaptation** Own elaboration, using locally collected data from meteorological stations from the Catalan Meteorological Service.
Comments	The is a huge difference in the past reported emission inventory values provoked by methodological changes and use of different energy mixes (National or NUTS-2). In the context of the organization of the Spanish cities for the 2030 neutrality mission, the administration had to change the criteria to be able to compare with other cities. Additionally, Barcelona has committed to accelerate mitigation and reach the 2050 NetZero objective in 2030.
Identified reported local plans	**33 analyzed plans** Pla Calor 2025-2035 (2025) Pla Clima Barcelona (2024) Urban Mobility Plan (2024) Action plan to prevent the health effects of heatwaves (annual) Agenda 2030 Barcelona (2023) Barcelona Climate City Contract (2023) Plan for the Use of Alternative Water Resources in Barcelona (PLARHAB) Plan for Global Justice Cooperation 2023-2026 (2023) Barcelona Sustainability Economy Roadmap 2030 (Boosting and promoting the sustainability of economic sectors in the framework of the Barcelona Green Deal) (2023) Let's Change for Climate 2030 Plan. Barcelona's 2030 Sustainability Culture Strategy (2023)

	Healthy and Sustainable Food Strategy 2030. A road map for transforming the city's food system (2022) Balanç energia Barcelona (2022) Resilience Profile Barcelona (2022) Strategy for the Social and Solidarity Economy in Barcelona 2030: reactivation and strengthening of an economy for life in the city (2021) Pla d'acció per l'emergència climàtica 2030 (2021) Natura Barcelona 2030 Plan (2021) Barcelona Nature Plan 2021-2030 (2021) Declaració d'emergència climàtica (2020) Zero Waste Plan 2021-2027 (2020) Barcelona Integrated Sanitation Master Plan (PDISBA) Pla Clima 2018-2030 Barcelona (2018) Barcelona Electric Mobility Strategy (2018) Olympic Port Master Plan (2018) Strategic plan for the city's coastal areas (2018-2025) Strategy for Inclusion and Reduction of Social Inequalities (2017-2027) Programme to promote solar energy generation in Barcelona (2017-2019) Government measure on the democratisation of care (2017-2020) Creation of energy advising and basic supply guarantee points (2016) Strategy against the feminisation of poverty and precariousness (2016-2024) Barcelona Neighbourhood Plan (2016-2024) Barcelona Right to Housing Plan (2016-2025) Zero Waste Strategy (2016) and Zero Waste Plan (2021-2027) Bicycle strategy (2015)
Plans containing the most indicators	Agenda 2030 (2023) & Pla Clima (2024)
Retrieved indicators considered in the	50

Localised SOIs framework	
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	12
Deviation between downscaled DSP data and local reported data	217%
Nº of indicators lower than 10%	5
Nº of indicators between 10% and 20%	6
Nº of indicators between 20% and 50%	9
Nº of indicators between 50% and 100%	16
Nº of indicators higher than 100%	14
Nº of indicators lower than 20%	22%
Nº of indicators lower than 20% (Energy and emission related)	25%
Good matching examples	**Share of demand for passenger walk** LOCALISED – DSP: 11.94% (2022) Local source Agenda 2030: 11.5% (2023) **Percentage of green urban areas** LOCALISED – DSP: 11.24% (2018) Local source Agenda 2030: 11.93% (2023) **People at risk of income poverty after social transfers** LOCALISED – DSP: 20.4% (2025) Local source Agenda 2030: 23.6% (2022)
Bad matching examples	**Percentage of renewable electricity production** LOCALISED – DSP: 86.41% (2022) Local source Agenda 2030: 1.2% (2023) **Traffic accidents with deaths per 100,000 inhabitants** LOCALISED – DSP: 5.25 (2022) Local source Agenda 2030: 1.38 (2023) **CO2 emissions from tertiary sector** LOCALISED – DSP: 0.04 Mt CO2 (2022) Local source Agenda 2030: 0.72 Mt CO2 (2022)

2.Vienna

Climate zone	Zone 4 Temperate continental climate, with cold winters and warm summers, moderate rainfall throughout the year.
Population	2005760 (Vienna Climate Guide 2022)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 6
Reporting initiatives	**Covenant of Mayors** Baseline submission 1990 submitted in 2013 and MEI submission in 2014 and 2016. The JRC 5th release CoM only includes information from the MEI 2016. Submitted KLiP 2010-2020. **Carbon Disclosure Project** Reporting annually to the CDP. The rest of organizations obtain the information from there.
Mitigation objective	Reduction of 55% per-capita greenhouse gas emissions in 2030 and climate-neutrality in 2040 compared to the 2005 emission baseline. Ref: Vienna Climate Guide 2022. Achieve climate neutrality by 2040 in line with the Austria national plans.
Last reported emission inventory	5000000 tCO2eq (2021, Vienna Climate Guide 2022), 60000000 tCO2eq Carbon budget remaining
Yearly reduction until objective (absolute)	263157 tCO2eq /year
Yearly reduction until objective (per capita)	0.1312 tCO2eq /year/capita
Scope	Scope 1 and 2 associated emissions from the following sectors: Transport, Buildings, Waste, Industry and trade, agriculture, small power and district heating plants. Vienna only takes account of the emissions of "Transport in Vienna", only considering emissions released on the city's territory, that is also applied in all the other sectors (territorial accounting). The scope of the European Emission Trading System (ETS) for the energy sector and large industrial plants is not included, as these sectors remain under national responsibility according to the European Effort Sharing Regulation, rather than the EU's 2005 distinction. Additionally, domestic air transport is excluded from consideration.
Current reporting methodology	**Mitigation** Own creation based on the pollutant inventory for Austria's federal provinces from the Environment Agency Austria (2021).

	Transport emissions calculated using vehicle kilometers driven in Vienna multiplied by CO2 emission factors per kilometer of the vehicle fleet. Model calculation by IVT of Graz University of Technology for UIV. Building emissions calculated using final energy consumption multiplied by CO2 emission factors. Calculation based on Statistics Austria, Environment Agency Austria (2021). Waste emissions are attributable to thermal recovery of petroleum-based residual materials and diffuse methane emissions of closed-down landfills. Calculation based on the pollutant inventory for Austria's federal provinces published by Environment Agency Austria (2021) in consultation with the City of Vienna – Municipal Department 48 – Waste Management, Street Cleaning and Vehicle Fleet. Industry emissions based on the air pollutant inventory for Austria's federal provinces published by Environment Agency Austria (2021). Fluorine gases estimation based on the air pollutant inventory for Austria's federal provinces published by Environment Agency Austria (2021). Electricity and district heat generation associated emissions based on Ave/Burger (2021). **Adaptation** Own elaboration, calculations, maps and graphs defined by different municipal departments (ex: Urban Development and Planning) based on local studies. Impact of forest in reducing city summer temperatures based on Biosphärenpark Wienerwald Management GmbH: Regionalökonomische Analyze Biosphärenpark Wienerwald, 2020. Heat island effect city temperatures based on Vienna University of Technology studies.
Comments	The is a huge difference in the past reported emission inventory values provoked by methodological changes and use of different energy mixes (National or NUTS-2). Vienna has municipal elections coming up very soon (on April 27). As a result, there will be a new government program in 2025, and the current strategies are likely to be revised. That's why many existing documents are not entirely up to date. Co2 emission values are being reported to Statistik Austria. If they are shared to third parties depends on the Statistik Austria or the BLI.

Identified reported local plans	**12 analyzed plans** Vienna visitor economy strategy 2025 Statistical Yearbook of the City of Vienna 2024 Smart City Strategy Vienna 2022 Vienna Climate Guide 2022 Energy Framework Strategy 2030 for Vienna 2020 The-Vienna-Children-and-Youth-Strategy 2020 Energy! ahead: energy report of the City of Vienna 2020 Urban energy efficiency program 2019 Energy zoning planning 2018 SEAP 2016 2016 Climate protection program of the City of Vienna Update 2010–2020 KliP II 2010 Climate protection program of the City of Vienna Update 1999–2009 KliP I 1999
Plans containing the most indicators	Statistical Yearbook of the City of Vienna (2024) & Vienna Climate Guide (2022)
Retrieved indicators considered in the Localised SOIs framework	42
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	13
Deviation between downscaled DSP data and local reported data	147%
Nº of indicators lower than 10%	8
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	9
Nº of indicators between 50% and 100%	10

Nº of indicators higher than 100%	18
Nº of indicators lower than 20%	22.91%
Nº of indicators lower than 20% (Energy and emission related)	23.07%
Good matching examples	**Heating degree-days needed to maintain an average building indoor temperature of 15.5 degree Celsius** LOCALISED – DSP: 2573.11 HDD (2021) Local source Energy Report of the City of Vienna 2020: 2559 HDD (2018) **Electricity generation from non-renewable sources** LOCALISED – DSP: 6231181 MWh (2022) Local source Vienna Climate Guide 2022: 6100000 MWh (2019) **GVA in Manufacturing** LOCALISED – DSP: 7294 M Euros (2025) Local source Statistical Yearbook of the City of Vienna 2024: 6858 M Euros (2022)
Bad matching examples	**Number of bovines** LOCALISED – DSP: 1225 nº of heads (2022) Local source Statistical Yearbook of the City of Vienna 2024: 67 nº of heads (2023) **Tenancy** LOCALISED – DSP: 64.77% (2015) Local source Vienna Climate Guide 2022: 21% (2011) **Percentage of green urban areas** LOCALISED – DSP: 13.02 % (2018) Local source Statistical Yearbook of the City of Vienna 2024: 3.13% (2023)

3.Valencia

Climate zone	Zone 11 Mediterranean climate, with mild winters and hot, dry summers, occasional rainfall in autumn and spring.
Population	789744 (Estrategia València Ciudad Inteligente 2022)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 3
Reporting initiatives	**Covenant of Mayors** Baseline submission 2007 submitted in 2010 and MEI submission in 2021.

	The JRC 5th release CoM only includes information from the MEI 2010 which is not mentioned anywhere else.
Mitigation objective	Achieve climate neutrality of Scope 1 and Scope 2 related activities in the municipality by 2030 using BAU 2030 reference. Ref: València 2030 Climate City Contract
Last reported emission inventory	1470539 tCO2eq (2019, Valencia Climate City Contract 2022)
Yearly reduction until objective (absolute)	133685 tCO2eq /year
Yearly reduction until objective (per capita)	0.169 tCO2eq /year/capita
Scope	Scope 1 associated emissions from the following sectors: Transport, Buildings and heating and other. Scope 2 associated emissions from the following sectors: Electricity consumption. Scope 3 associated emissions from waste.
Current reporting methodology	**Mitigation** Own creation comparing two different methodologies; Economic model: Activity data x Emission factors. EIT Climate-KIC Deep Demonstration program that uses life-cycle approach using bottom-up activity data to generate the BAU2030 state. And SECAP inventory methodology using IPCC factors. EIT Climate-KIC Deep Demonstration program carried out in Madrid in 2020, an economic model was developed to identify the most cost-effective decarbonisation strategies for the city. This model, developed by Material Economics, has served as the basis for the development of a common tool for the 7 cities of the Spanish Platform for Climate Neutrality, citiES2030. The methodology used by the SECAP inventory, follows the fuel consumption in the province and prorates it by the number of vehicles registered in the city of València. This is a very imprecise approximation because the vehicles registered do not necessarily have to be in circulation in the city. However, the methodology we have followed in our bottom-up study to provide data for the economic model is based on the mobility surveys of the SUMP (Sustainable Urban Mobility Plan) and the PMoME (Sustainable Metropolitan Mobility Plan for the València area) as well as data from the IMD (Average Daily Intensity) measured on the different access roads to the city. The differences are considerable, from 1,176 ktonnes of CO2 eq in the inventory to a calculation of 513.5 ktonnes. Using registered km within the city limits multiplied by a CO2 emission factor. Building emissions calculated using heating and DHW demand multiplied by a CO2 emission factor. Electricity consumption derived emissions calculated using the national electricity mix, population growth projections and increase of efficiency. Waste emissions are calculated by multiplying the total collected tonnes within the city by an emission factor.

	IPPU and AFOLU emissions are not considered in the plan, these and other sectors such as Port derived ones will be considered in the future. Reference from Valencia Climate City Contract. **Adaptation** External assessment, Factor CO2 in collaboration with the different local administration areas. The study considers the evolution of the current situation for the main climate impacts to which the Municipality of Valencia is exposed, for three temporal horizons of 30 years each analyzed in the vulnerability analysis conducted at the municipal level: 2010-2039 (short term), 2040-2069 (medium term) and 2070-2099 (long term). The SECAP includes the Adaptation risks and vulnerabilities completed table.
Comments	There is a huge difference in the different reported inventory values provoked by methodological changes and use of different energy mixes (National or NUTS-2). In the context of the organization of the Spanish cities for the 2030 neutrality mission, the administration had to change the criteria to be able to compare with other cities. Additionally, Valencia city has committed accelerating mitigation and obtaining the 2050 NetZero objective in 2030.
Identified reported local plans	**16 analyzed plans** Valencia climate city contract 2022 Estrategia urbana valencia 2030 2022 València 2030 Strategy: València Smart City 2022 SECAP Monitoring 2021 2021 SECAP 2019 Municipal Framework Plan for Immigration and Interculturality 2019-2022 2019 Municipal Agri-Food Strategy 2025 2018 València's Road Safety Master Plan 2018 Equality Plan 2018-2019 2018 Social Services Plan 2019-2023 2018 Plan de adaptación al cambio climàtico 2017 Strategic Housing Plan 2017-2021 2017

	International Development Cooperation Plan 2019-2022 2017 Strategic plan for employment, entrepreneurship and training 2017-2020 2017 Adaptation SECAP template 2016 Sustainable Urban Mobility Plan (PMUS) 2013
Plans containing the most indicators	Estrategia urbana valencia 2030 (2022) & SECAP MEI (2021)
Retrieved indicators considered in the Localised SOIs framework	48
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	23
Deviation between downscaled DSP data and local reported data	77%
Nº of indicators lower than 10%	8
Nº of indicators between 10% and 20%	6
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	19
Nº of indicators higher than 100%	9
Nº of indicators lower than 20%	29.16%
Nº of indicators lower than 20% (Energy and emission related)	21.74%
Good matching examples	**CO2 Emissions from transport** LOCALISED – DSP: 1.1832 Mt CO2eq (2022) Local source SECAP 2019: 1.1762 Mt CO2eq (2016) **Gini-Index** LOCALISED – DSP: 34.3 (2021) Local source Estrategia urbana valencia 2030: 34.68 (2019) **People at risk of income poverty after social transfers**

	LOCALISED – DSP: 27.5% (2025) Local source Estrategia urbana valencia 2030: 26.1% (2020)
Bad matching examples	**Percentage of renewable electricity production** LOCALISED – DSP: 79.99% (2022) Local source Estrategia urbana valencia 2030: 15% (2018) **Generation of paper waste in the municipality per capita** LOCALISED – DSP: 37.14 kg /inhabitant (2024) Local source SECAP MEI 2021: 12.22 kg /inhabitant (2014) **Final energy consumption in industry from electricity** LOCALISED – DSP: 242988 MWh (2022) Local source SECAP 2019: 91258 MWh (2016)

4.Sopot

Climate zone	Zone 8 Temperate oceanic climate, with cold winters and mild summers, frequent rainfall throughout the year.
Population	31903 (Central Statistical Office 2023)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 3
Reporting initiatives	**Covenant of Mayors** Baseline submission 1997 submitted in 2014 and MEI submission in 2018. The JRC 5th release CoM only includes information from the MEI 2018. But the MEI document has not been found anywhere.
Mitigation objective	Reduction of 20% for the year 2020 compared to the 2005 emission baseline. Ref: Low-Emission Economy plan 2014.
Last reported emission inventory	338034 tCO2eq (2010, Low-Emission Economy Plan 2014)
Yearly reduction until objective (absolute)	No quantitative targets towards NetZero emissions
Yearly reduction until objective (per capita)	No quantitative targets towards NetZero emissions
Scope	The emission inventory considers the municipal heating system, other heat producers, local and individual heat production, energy consumption from transport, electric consumption for economic, living and lighting purposes and renewable energy sources. Only considering emissions released from energy consumption on the city’s territory.
Current reporting methodology	**Mitigation** Own creation based on the CoM guidelines "How to develop a Sustainable Energy Action Plan" and "How to fill in the Sustainable

	Energy Action Plan Template?". The emission volume is determined based on the final energy consumption using draft assumptions for the heat, electricity and gas fuels for the city of Sopot and using IPCC factors. To calculate the emissions related to electricity consumption the national emission factor for Poland is used. **Adaptation** Done externally by ekovert in 2021 for the whole Gdansk-Gdynia-Sopot Metropolitan Area (OMGGS). The study contains assessments on vulnerability, impact, exposure for each of the municipalities based on the results of the Euro-CORDEX model based on data from the E-OBS project; the results were verified using the results of the Klimada 2.0 project by comparing the variability between the obtained and modeled series; the presented results concern the RCP4.5 carbon dioxide concentration scenario. Also flood hazard and risk maps from ISOK , Digital Terrain Model 30m from the European Digital Elevation Model (EU-DEM), Corine Land Cover 2018, PIG-PIB data – depth of the first aquifer, lithology, soil maps, "Annual assessment of air quality in the Pomeranian Voivodeship – report for 2019 and the KOBiZE database. Reference: Diagnosis of adaptation and mitigation to climate change in the Gdańsk-Gdynia-Sopot Metropolitan Area
Comments	Lack of transparency to reach out the most recent emission inventory. The latest values are from 2010. The collection of alternative data sources didn't help to identify more recent inventories. Contacting the local administration allowed to identify updated emissions only from the municipal heat district network. Updated values (2015) are only available for the whole metropolitan area. Most of the information is available only for the Pomeranian region (Central statistical office Statistics data by areas, Local data bank 2025). The local plans contain a lot of qualitative evaluation with no tangible values attached. 53 percent of the indicators are obtained from the Open data bank at regional level.
Identified reported local plans	**10 analyzed plans** Statistics data by areas, Local data bank 2025 Regional Strategic Program for Environmental and Energy Security 2021 Diagnosis of adaptation and mitigation to climate change in the Gdańsk-Gdynia-Sopot Metropolitan Area 2021 Diagnosis of Sopot city strategy for 2021-2030 2020 Sopot anti-smog resolution 2020 Immigrant integration plan 2019

	Low-Emission Economy Plan 2016 Environmental protection program for the city of Sopot 2015 Low Emission Economy Program for the Metropolitan Area Gdansk-Gdynia-Sopot 2015 Low Carbon Economy Plan for Municipalities of the City of Sopot SECAP 2014 Energy Policy of The Municipality of Sopot 2011
Plans containing the most indicators	SECAP 2014 (2010) + Indicators from the Central statistical office Statistics data by areas, Local data bank 2025
Retrieved indicators considered in the Localised SOIs framework	32
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	10
Deviation between downscaled DSP data and local reported data	286%
Nº of indicators lower than 10%	8
Nº of indicators between 10% and 20%	1
Nº of indicators between 20% and 50%	9
Nº of indicators between 50% and 100%	8
Nº of indicators higher than 100%	6
Nº of indicators lower than 20%	28%
Nº of indicators lower than 20% (Energy and emission related)	0%

5.Milan

Climate zone	Zone 8 Humid subtropical climate, with cold, foggy winters and hot, humid summers, moderate rainfall year-round.
Population	1407044 (2024, MILANO Popolazione 2024)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 6
Reporting initiatives	**Covenant of Mayors** Baseline submission 2005, and MEI 2013 submitted in 2017 with 20% reduction objective in 2020. The JRC 5th release CoM only includes information from the MEI 2013. **CDP ICLEI track** Regularly reporting to CDP using CIRIS tool.
Mitigation objective	Reduction of 60% for the year 2030 and achieve carbon neutrality by 2050. (Climate City Contract)
Last reported emission inventory	4567400 tCO2eq (2021, 2030 Climate-Neutrality ACTION PLAN)
Yearly reduction until NetZero objective (absolute)	157496 tCO2eq /year (2050 netzero target)
Yearly reduction until NetZero objective (per capita)	0.112 tCO2eq /year/capita (2050 netzero target)
Scope	Only sectors required by the GPC protocol (Basic) are included. The emission inventory considers Scope 1 and Scope two for Stationary energy consumption and transport. The SCOPE 3 is included only for Wastewater treated outside the city, only for GPC protocol. Industrial processes and product use, agriculture, forestry and other land use are not considered in the baseline due to their minimal impact (less than 5% of total emissions). Only considering emissions released from energy consumption on the city's territory and wastewater treatment.
Current reporting methodology	**Mitigation** Own creation using the CIRIS tool. Energy consumption from utilities in charge of the gas grid, Diesel Oil, LPG, Gas, incinerated waste distribution companies and electricity grid. AMAT (Municipal Company for Mobility Environment and Territory) and CURIT (Catasto Unico Regionale Impianti Termici - Regional Database of heating plants). Transport emissions calculated using emission factors per km using the AMAT traffic model and data from LPT companies. Emissions from waste to energy are included in the building sector according to the provisions of the GPC Protocol. Emissions from the

	wastewater treatment plant are calculated through a calculator included in the CIRIS Tool on the base of No of served inhabitants. Emissions from the wastewater treatment plant are calculated through a calculator included in the CIRIS Tool on the base of n° of served inhabitants. All emission factors based on Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) guidelines. Ref: Climate City Contract 2030 Climate Neutrality ACTION PLAN **Adaptation** Own elaboration with the collaboration of different studies and institutions: Surface temperature analysis by Bloomberg Associates e dall'Osservatorio Nazionale di Atene (National Observatory of Athens, NOA), CARIPLO. Politecnico di Milano for the heatwaves risk. Flooding: Progetto EIT Climate-KIC Safer Places, dell'Universita Iuav di Venezia (Planning Climate Change Lab). Heatwaves vulnerability using CARIPLO CCT 2017. The analysis considers risk, impacts, frequency, exposure, vulnerability and sensibility for heatwaves and flooding.
Comments	They mention it's difficult to compare Baselines with other years since they use different emission factors and energy mixes. Objectives change depending on the plan, example: Piano Aria Clima objective was 45% reduction in 2030 (2017), for the CCC 2022 is 60% for 2030. Lack of engagement and commitment from central government who have control over regulatory and legislative levers, possibility of conflicting national, regional and municipal frameworks: Milan has no direct control on all sources of emissions within its territories. Lack of the right skills and expertise in the administration needed for climate neutrality, siloed work organization within the public administration. Difficulty to integrate climate targets in the financial budget of the Municipality. It is difficult to find a political consensus to take action for climate change. Cost of implementing actions to decarbonize the technological/infrastructure system. Long-term interventions versus uncertainty of financial resources. Individual behaviors (f.i for the use of public local transport) impacting the infrastructures. Lack of incentives to take part in greener and carbon-neutral constructions, which are more costly. Complex and fragmented regulatory framework, especially regarding the energy transition path. o Difficulty to assess and monitor the benefits and co-benefits of the implemented solutions in newly built neighborhoods or regenerated areas.

	Difficulty capitalizing on the spin-off potentialities and knowledge spillover opportunities of the financed and/or supported projects. It is difficult to create a territorially based convergence between the interventions of the stakeholders providing strategic support. Lack of a unified understanding and common vision on climate-neutrality. Citizens: deep-rooted, individual behaviors that hamper the climate-neutrality pathway. Environmental associations: short-term vision due to the uncertainty of financial resources and fundraising.
Identified reported local plans	**14 analyzed plans** Circular Economy Action Plan 2024-2030 2024 Verso il comune benessere energetico 2024 Milano Statistica 2024 MILANO Popolazione 2024 2024 Delibera Oneri 2023 Milan's Housing Strategy 2023 Piano per il Contrasto alla Povertà e Precarietà Energetiche 2023 Climate City Contract 2030 Climate Neutrality ACTION PLAN 2022 https://sdg-portal.it/it/milano 2021 FORESTAMI 2020 Milan's 2020 Adaptation Strategy and the 15-Minutes City Pledge 2020 Piano Aria Clima 2020 Piano di Azione per l'Energia Sostenibile (PAES) del Comune di Milano 2018 The Sustainable Urban Mobility Plan (PUMS) 2018 Milan's Food Policy 2015 Milan's Masterplan (Piano di Governo del Territorio - PGT) 2005
Plans containing the most indicators	2030 Climate-Neutrality ACTION PLAN (2022) + Indicators from the Milano Open Data Portal
Retrieved indicators considered in the	57

Localised SOIs framework	
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	22
Deviation between downscaled DSP data and local reported data	216%
Nº of indicators lower than 10%	8
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	8
Nº of indicators between 50% and 100%	16
Nº of indicators higher than 100%	22
Nº of indicators lower than 20%	19%
Nº of indicators lower than 20% (Energy and emission related)	9%

6.Potsdam

Climate zone	Zone 4 Temperate oceanic climate, with cold winters and warm summers, moderate rainfall evenly spread throughout the year.
Population	191882 (Datenstand umwelt monitoring flyer 2024)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 6
Reporting initiatives	Reporting to national databases. 1995 Baseline year.
Mitigation objective	Achieve carbon neutrality by 2050. (Gutachten zum masterplan 100% Klimaschutz potsdam 2050)

Last reported emission inventory	734514 tCO2eq (2020, Climate Report 2020)
Yearly reduction until NetZero objective (absolute)	24483 tCO2eq /year (2050 netzero target)
Yearly reduction until NetZero objective (per capita)	0.127 tCO2eq /year/capita (2050 netzero target)
Scope	The **BISKO** (Bilanzierungssystematik für kommunale Treibhausgasemissionen) system is Germany's **standardized accounting framework** for municipal greenhouse gas (GHG) emissions. It is coordinated by the **Klima-Bündnis (Climate Alliance)** and widely used by cities and municipalities. Typically, the territorial approach is chosen for GHG accounting for a specific area. This means that emissions from electricity and district heating generation are attributed to the producer according to the source balance, which leads to an unfair distribution of GHG emissions, particularly in the case of electricity. BISKO relies on a final energy-based territorial balance. In this approach, all GHG emissions occurring in the territory under consideration are considered at the final energy level and allocated to the various consumption sectors to achieve a polluter-pays balance. Depending on the choice of GHG emission factors, balances can vary by up to 20%. Interregional journeys and air traffic are not considered in transport. Scope 1 and Scope 2 are considered: Energy use in buildings (electricity, gas, district heating), Local transport (private and public), Industrial emissions (within municipal borders), Waste management (local incineration or treatment), Electricity imports and local generation, District heating and cooling, Agriculture (methane, nitrous oxide within area). Scope 3 is not usually included.
Current reporting methodology	**Mitigation** Use of national recommended municipal accounting system (BISKO). The software Climate Protection Planner was used to support the project. This standardized set of instruments for climate protection municipalities has been developed to enable a uniform calculation of municipal GHG emissions. BISKO or LOCAL ENERGY MIX changes considerably the emission baseline in order to harmonize the reported information for all German municipalities, BISKO was developed. Air traffic emissions are not considered, since the municipality has no influence on them. BISKO: Final energy-based territorial balance. Use of CO2eq. No weather projection adjustments in the original methodology but Potsdam applies one. Creation of a detailed building model. For transport they use a transport emission model. Use of final energy consumption + traffic performance (mileage, urban, outside, traffic bid).

	Adaptation Use of The Climate Protection Planner is an internet-based software and can also be used as a controlling instrument for municipal climate protection. Use of multiple indicators and digital twin.
Comments	The long-term master plan goal would not be achieved with the actual measures, need to do more. The master plan is very detailed but it's quite old, there is not a more recent plan. They say they are reporting climate reports every 2 years but that's not true, none of them since 2016. There are discrepancies between reported in emissions in different plans, example: Climate Plan and Climate Report 2020. Some documents are mentioned but not reachable online. Own creation in collaboration with local institutions. The environmental department collects data.
Identified reported local plans	**4 analyzed plans** Open data Potsdam - datenstand umwelt monitoring flyer 2024 Statistischer Jahresbericht 2022 2022 Klimabericht 2020 Landeshauptstadt Potsdam 2020 Gutachten zum masterplan 100% Klimaschutz potsdam 2050 2017
Plans containing the most indicators	State Capital Potsdam, Annual Statistical Report 2022 (Statistischer Jahresbericht 2022)
Retrieved indicators considered in the Localised SOIs framework	52
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	20
Deviation between downscaled DSP data and local reported data	107%
Nº of indicators lower than 10%	5
Nº of indicators between 10% and 20%	4

Nº of indicators between 20% and 50%	16
Nº of indicators between 50% and 100%	15
Nº of indicators higher than 100%	12
Nº of indicators lower than 20%	18%
Nº of indicators lower than 20% (Energy and emission related)	5%

7.Enschede

Climate zone	Zone 3 Temperate oceanic climate, with cool winters and mild summers, frequent rainfall throughout the year
Population	162256 (Municipal Open Data, 2025)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 5
Reporting initiatives	None. Mentioned Baseline is 2010.
Mitigation objective	Enschede will be climate neutral by 2050, "CO2 emissions will be reduced to zero and homes and businesses will be off natural gas." (Green and sustainable Enschede 2023)
Last reported emission inventory	459000 tCO2eq (2023, Regional Climate Monitor 2024)
Yearly reduction until NetZero objective (absolute)	17000 tCO2eq /year (2050 netzero target)
Yearly reduction until NetZero objective (per capita)	0.105 tCO2eq /year/capita (2050 netzero target)
Scope	The scope and methodology are not explained in the reports. Nonetheless, the source says: The Regional Climate Monitor methodology includes Scope 1 (direct regional emissions) and Scope 2 (electricity and heat consumption); Scope 3 emissions are only partially included and not systematically tracked.
Current reporting methodology	**Mitigation**

	The information used by the city comes from the regional downscaled data. Mitigation is assessed by tracking changes in regional activity data energy use, transport and waste and applying standardized emission factors annually—allowing municipalities to monitor the impact of policies and trends on territorial emissions. Using downscaled national emission repositories. The downscaling methodology provides the well-known emissions of natural gas, electricity, heat and vehicle fuel to a specific region. **Adaptation** Own elaboration using National meteorological institute data and following the Delta Plan Spatial Adaptation. Every municipality in the Netherlands maps out the consequences of extreme weather. describes how we can all ensure that as little damage as possible occurs. The risk assessment is calculated based on this methodology.
Comments	The information for most indicators was found in the regional data repositories, and not in the local plans. The whole initiative is very interlinked with the national plans. A lot of qualitative information and methodology is cited as an external source. Even though the multiple plans cite Klimatemonitor as their reference, multiple values can be seen for the year 2021.
Identified reported local plans	**11 analysed plans/references** Regional Climate Monitor 2024 Municipal data repository 2024 Twente climate monitoring 2024 3.2 Sustainable living and working online document 2023 Water and Climate Adaptation Plan Municipality of Enschede 2022-2026 2022 Risk matrixes methodology 2022 Green Ambition Plan 2050 2021 Climate Change Adaptation in Enschede and Zwolle C A T C H + WP3 Final Report 2019 Action plan sustainability Enschede 2015 Raw Materials Vision 2015 Waste Policy Vision 2011
Plans containing the most indicators	Online data repositories: Municipal data repository and Climate Monitor Open Data Online document from the Enschede municipal website: 3.2 Sustainable living and working
Retrieved indicators	48

considered in the Localised SOIs framework	
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	29
Deviation between downscaled DSP data and local reported data	1976%
Nº of indicators lower than 10%	3
Nº of indicators between 10% and 20%	6
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	8
Nº of indicators higher than 100%	19
Nº of indicators lower than 20%	21%
Nº of indicators lower than 20% (Energy and emission related)	17%

8.Cesena

Climate zone	Zone 8 Humid subtropical climate, with mild winters and hot, humid summers, moderate rainfall mainly in spring and autumn.
Population	97190 (SECAP, 2017)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 4
Reporting initiatives	**Covenant of Mayors** Baseline Inventory in 1995 and MEI in 2012 and 2022. The 5th JRC Release does not include any monitoring values.

Mitigation objective	Emission reduction of 40% by 2030 compared to 2012 values. PAESC 2018.
Last reported emission inventory	540931 tCO2eq (2012, PAESC 2018)
Yearly reduction until objective (absolute)	12020 tCO2eq /year (2030 -40% target)
Yearly reduction until objective (per capita)	0.123 tCO2eq /year/capita (2030 -40% target)
Scope	Scope 1 and 2 within the municipal boundaries from the Building, Industry and Transport sectors.
Current reporting methodology	**Mitigation** Emission projections do not consider population evolution. The calculation uses final energy consumption within the municipal limits multiplied by emission factors. The emission factors are taken from the IPSI (Regional Emilia-Romagna) and developed in collaboration with ARPA Emilia-Romagna. Using local electricity emission factor considering renewable energy production. IPCC factors for the rest of fuels. Use of regional data for residential, tertiary and industrial final energy consumption. Fuel consumption from Agenzia Dogane e Monopoli, GSE for the solar panels, ACI for the motor road vehicle registry and AIRU for the heating energy consumption. Categories: Residential buildings, Tertiary buildings, Municipal buildings, Industry consumption, public lighting and Transportation. Waste, Agriculture, Land use are not considered. **Adaptation** Own elaboration based on available climatic regional data from ARPAE. Heavy precipitation, Heatwaves, frequency, vulnerability. Use of MODAMB a simulation model developed by the Biometeorology Institute of Bologna to identify the air temperatures across the municipality. Qualitative impact on Agriculture production based on average values for the impacts of climate change on drum and soft wheat crops. Taken from Impacts and adaptation of European crop production systems to climate change.
Comments	Differences between the reported CoM website baseline and the one mentioned in the local plans. Ex: 1995 and 2012. Nothing reported since 2012. Some information is available at ISTAT but the website is not working properly and most of the indicators are not SOIs.
Identified reported local plans	**5 analyzed plans/references** Piano Urbano della Mobilità Sostenibile (PUMS) 2022 Rapporto di monitoraggio delle azioni messe in campo attraverso il Paesc 2022 SECAP 2018 2018

	Rapporto Urbes 2015 2015 ISTAT - Atlante Statistico dei Comuni
Plans containing the most indicators	PAESC 2030 COMUNE DI CESENA (SECAP 2018)
Retrieved indicators considered in the Localised SOIs framework	48
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	29
Deviation between downscaled DSP data and local reported data	136%
Nº of indicators lower than 10%	8
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	7
Nº of indicators between 50% and 100%	12
Nº of indicators higher than 100%	18
Nº of indicators lower than 20%	23%
Nº of indicators lower than 20% (Energy and emission related)	12%

9.Zagreb

Climate zone	Zone 4 Temperate continental climate, with cold winters and warm to hot summers, moderate rainfall spread across the year.
Population	807254 (Statistical yearbook 2020)

Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 3
Reporting initiatives	**Covenant of Mayors** Baseline Inventory from 2008 provided in 2010 and MEI in 2015 and 2017. The 5th JRC Release does not include any monitoring values.
Mitigation objective	Emission reduction of 40% by 2030 compared to 2008 values. SECAP 2017.
Last reported emission inventory	2930308 tCO2eq (2015, SECAP 2017)
Yearly reduction until objective (absolute)	195353 tCO2eq /year (2030 -40% target)
Yearly reduction until objective (per capita)	0.241 tCO2eq /year/capita (2030 -40% target)
Scope	Scope 1 and 2 for Public, Commercial and residential Buildings, Public and Private transport, public lighting and District heating.
Current reporting methodology	**Mitigation** Baseline and measure impact calculated based on CoM SECAP Guidebook, CoM Guidelines and Urban AST platform. Decarbonisation scenarios were modelled using LEAP (Long-range Energy Alternatives Planning) program. Direct emissions and indirect emissions are calculated by applying IPCC factors over final fuel consumption. COPERT III, a European Environmental Agency (EEA) software, was used in calculating the emissions generated by fuel combustion and vaporization in the traffic sector. The EMEP/CORINAIR methodology was applied in the calculations. **Adaptation** Risks and Vulnerabilities analysis Initiated by the City Office for Energetics, Sustainable Development and Environmental protection and performed by the Energy Institute Hrvoje Pozar. With information from the Meteorological and Hydrological Service (RegCM model). Risk estimation for Heatwaves, Droughts and Floods. No assessment has been provided to the CoM initiative.
Comments	Most of the indicators have been found in the Statistical yearbook of the city of Zagreb 2020. Lack of transparency and adaptation plan. The latest public energy and emissions information from the SECAP is from 2015.
Identified reported local plans	**Analyzed plans/references (8)** Zagreb Urban Agglomeration Development Strategy 2024 ZAGREB IN FIGURES 2021 Statistical Yearbook of the City of Zagreb 2020 Smart City Zagreb Initiatives 2019

	City of Zagreb strategic planning until 2020 2017 SECAP 2019 (MEI) 2019 Climate Change Adaptation Strategy for the City of Zagreb 2015 SECAP 2010
Plans containing the most indicators	Statistical yearbook of the city of Zagreb 2020. (2020)
Retrieved indicators considered in the Localised SOIs framework	46
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	16
Deviation between downscaled DSP data and local reported data	248%
Nº of indicators lower than 10%	7
Nº of indicators between 10% and 20%	2
Nº of indicators between 20% and 50%	4
Nº of indicators between 50% and 100%	17
Nº of indicators higher than 100%	16
Nº of indicators lower than 20%	19%
Nº of indicators lower than 20% (Energy and emission related)	19%

10.Cascais

Climate zone	Zone 12

	Mediterranean climate, with mild, rainy winters and warm, dry summers, abundant sunshine year-round.
Population	214000 (Plano Cascais pelo Clima – MITIGAÇÃO, 2021)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 3
Reporting initiatives	**Covenant of Mayors** Baseline Inventory from 2005 provided in 2010. The 5th JRC Release does not include any monitoring values. **CDP cities network** **ODS Local PT**
Mitigation objective	Reach carbon neutrality in 2050 compared to 2005 values. (Plano Cascais pelo Clima - MITIGAÇÃO, 2023)
Last reported emission inventory	420549 tCO2eq (2021, Plano Cascais pelo Clima - MITIGAÇÃO)
Yearly reduction until objective (absolute)	13727 tCO2eq /year (2030 -55% compared to 2005)
Yearly reduction until objective (per capita)	0.064 tCO2eq /year/capita (2030 -55% compared to 2005)
Scope	Scope 1 for Stationary Energy, Transport within the municipal limits. Scope 2 for the purchased electricity.
Current reporting methodology	**Mitigation** Following the guidelines of GPC Protocol (WRI, C40 Cities & ICLEI, 2021), the latest inventory (Plano Cascais pelo Clima – MITIGAÇÃO, 2023) calculated emissions associated with stationary energy and transport in the municipality for the year 2021. It does not cover aviation, waste, wastewater, land use, forestry and land use change. IST (2017). This is to speed up the monitoring and action towards the relevant components. **Adaptation** Cascais is the first municipality to have an adaptation plan in Portugal. This work presents a summary of the global and local impacts of climate change, including an update of the climate projections for Cascais, published in 2010 in the Strategic Plan for Cascais in the Face of Climate Change (PeCaC). It also presents a summary of the main results of the scientific research that has been developed since the launch of PeCaC, in collaboration with the CCiam (Climate Change Impacts and Modelling) group of the Faculty of Sciences of the University of Lisbon (Ce3C research center). In particular, the results of the European project Base (Bottom-up Climate Change Adaptation Strategies for a Sustainable Europe), coordinated in Portugal by CCiam, stand out. This study, co-developed with around 150 participants (including

	representatives from the local authority, companies, civil protection agents, the General Directorate of Health and local associations, among others), led to the identification of a set of measures considered to be priorities and which constitute the basis for this Action Plan.
Comments	The first energy plan considered the 2005 inventory in 2010. The 2050 climate neutrality plan used the 2015 emission baseline in 2020. And the 2023 mitigation plan considers only the 2030 -55% reduction horizon. The municipality entered the C40 Cities initiative and changed their methodology. For the same year 2015 there are four different baseline emission values in four documents: 529300 TCO2eq, 504776 TCO2eq, 494410 TCO2eq, 567000 TCO2eq. This is caused by the different protocols, methodologies, emission factors and scopes considered (CoM, GHG Protocol for Cities, National guidelines, C40 Cities initiative). The previous document had the objective of 2050 carbon neutrality compared to 2015, the latest one has an objective of reducing 55% compared to 2005.
Identified reported local plans	**Analysed plans/references (9)** Plano Cascais pelo Clima - MITIGAÇÃO - 2023 ODS local Portugal 2022 Cascais ODS 2030 2020 Municipal Roadmap for Carbon Neutrality by 2050 2020 Climate adaptation plan 2017 Adaptation SECAP tables 2017 Action plan for energy and sustainability in the municipality of Cascais 2012 Energy plan 2010 Municipal Action Plan for Energy Efficiency and Sustainability 2010
Plans containing the most indicators	Municipal Roadmap for Carbon Neutrality by 2050 (2020)
Retrieved indicators considered in the Localised SOIs framework	54
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	25

Deviation between downscaled DSP data and local reported data	90%
Nº of indicators lower than 10%	7
Nº of indicators between 10% and 20%	1
Nº of indicators between 20% and 50%	2
Nº of indicators between 50% and 100%	24
Nº of indicators higher than 100%	20
Nº of indicators lower than 20%	15%
Nº of indicators lower than 20% (Energy and emission related)	4%

11.Bucharest

Climate zone	Zone 4 Temperate continental climate, with cold winters and hot summers, moderate rainfall mainly in spring and early summer.
Population	1716961 (2021, Statistical Yearbook Bucuresti)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2
Reporting initiatives	**Covenant of Mayors** BEI from 2008 submitted in 2011 by the District 1. The 5th JRC Release does not include any monitoring values. No submission from the main administrative entity.
Mitigation objective	No statements have been found in the identified documents
Last reported emission inventory	
Yearly reduction until objective (absolute)	

Yearly reduction until objective (per capita)	
Scope	
Current reporting methodology	**Mitigation** **Adaptation**
Comments	The municipality of Bucharest is divided into 6 administrative units. In CoM of mayors, only District 1 is reported. The other plans affecting the whole municipality include Waste, Mobility or Energy plans, although this last one is from 2007 and not up to date.
Identified reported local plans	**Analyzed plans/references (8)** Bucuresti STATISTICAL YEARBOOK 2024 2025 Analiza riscurilor și planul de acoperire (Risk analysis plan) 2024 WASTE MANAGEMENT PLAN 2020 2020 Air quality plan 2018 planul_de_mobilitate_durabila_2016-2030 2016 Planul local de actiune pentru mediu 2015 SEAP - MARATHON 2020 – Bucharest Sector 1 2012 Energy Strategy for Bucharest Municipality 2007
Plans containing the most indicators	Bucuresti STATISTICAL YEARBOOK (2024)
Retrieved indicators considered in the Localised SOIs framework	40
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	4
Deviation between downscaled DSP data and local reported data	7874%
Nº of indicators lower than 10%	1
Nº of indicators between 10% and 20%	1

Nº of indicators between 20% and 50%	8
Nº of indicators between 50% and 100%	9
Nº of indicators higher than 100%	19
Nº of indicators lower than 20%	6%
Nº of indicators lower than 20% (Energy and emission related)	0%

12.Tampere

Climate zone	Zone 1 Cold continental climate, with long, snowy winters and mild summers, moderate rainfall mostly in summer months.
Population	249009 (2022, Statistical Yearbook Tampere 2022)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 5
Reporting initiatives	**Covenant of Mayors** 1990 BEI submitted in 2011, MEI submitted in 2015 and 2020. The 5th JRC Release includes monitoring values from 2016. **National yearly reporting initiative CO2-rapporti** **Carbon Disclosure Project** Reporting to the CDP since 2021.
Mitigation objective	Reach climate neutrality by 2030. (Climate Neutrality Action Plan 2030, 2022)
Last reported emission inventory	898000 tCO2eq (Climate Neutrality Action Plan 2030, 2022)
Yearly reduction until NetZero objective (absolute)	112250 tCO2eq /year (2030 Carbon Neutral objective)
Yearly reduction until NetZero objective (per capita)	0.450 tCO2eq /year/capita (2030 Carbon Neutral objective)
Scope	Scope 1 and Scope 2 for stationary energy and Transport. Emissions within the geographical borders of the city. Tampere is actively involved in developing Scope 3 emissions calculation for

	Energy, Construction, Transportation, Food, Goods and services (1838 kt CO2eq, 2022) but those aren't included yet in the emission reporting.
Current reporting methodology	**Mitigation** Considers emissions from heating and electricity use in Buildings using production and consumption real data. Heating is divided into categories: district heating, separate heating (oil and gas), electric heating and ground source heat pumps (electricity use). Electricity is divided into industrial electricity consumption and other electricity consumption. Transport emissions provided by vehicle type only considering road traffic. Waste emissions are divided into municipalities based on population. AFOLU sector covers the emissions from agriculture. There is no national methodology for land use and forestry emissions to be broken down by region. This is the next gap to be covered in the inventory. *F-gases* are calculated by SYKE, a national environmental research center. The numbers are not yet integrated into the basic inventory or the climate budget, but that will be addressed at the latest in 2024. Tampere follows up on the energy system separately from the emissions calculation, which is performed by an external partner. Energy use of road transport based on fuel sold and emissions based on kilometers driven in Tampere from the national model. **Adaptation** Probability, Impact, expected changes in the upcoming years are provided following the CoM Template. The information is obtained by a mix of local, regional and national documents. Local documents: Tampere city center stormwater program, Service and annual plan, Community Board and Public Transport Board.
Comments	
Identified reported local plans	**Analyzed plans/references (11)** Tampere CO2 report 2025 Sustainable Urban Mobility Plan (SUMP) 2024 Tampere net zero city contract 2022 City of Tampere STATISTICAL YEARBOOK 2022 Voluntary review of the SDGs in Tampere 2022 Tampere City Strategy 2021 Biodiversity program 2021-2030 2021 CLIMATE NEUTRAL TAMPERE 2030 ROADMAP 2020 SECAP 2019 2019 Walking and Urban Life Program 2030 2018 Tampere Urban Region Climate Strategy 2030 2010

Plans containing the most indicators	Climate Neutrality Action Plan 2030, 2022
Retrieved indicators considered in the Localised SOIs framework	75
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	38
Deviation between downscaled DSP data and local reported data	111%
Nº of indicators lower than 10%	12
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	11
Nº of indicators between 50% and 100%	16
Nº of indicators higher than 100%	33
Nº of indicators lower than 20%	20%
Nº of indicators lower than 20% (Energy and emission related)	21%

13. Cartagena

Climate zone	Zone 11 Hot semi-arid climate, with mild winters and very hot, dry summers, low annual rainfall mostly in autumn.
Population	213943 (2017, SECAP 2020)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 3

Reporting initiatives	**Covenant of Mayors** 2008 BEI submitted in 2015, Monitoring report submitted in 2020. The 5th JRC Release includes monitoring values from 2017.
Mitigation objective	Reduce the emissions by 40% compared to 2008 values.
Last reported emission inventory	685000 tCO2eq (2017, SECAP 2020)
Yearly reduction until NetZero objective (absolute)	14175 tCO2eq /year (-40% compared to 2008)
Yearly reduction until NetZero objective (per capita)	0.066 tCO2eq /year/capita (-40% compared to 2008)
Scope	Scope 1 and 2 for energy consumption within the municipality limits.
Current reporting methodology	**Mitigation** The emission calculation includes final energy consumption in buildings, Private and public transport fuel consumption, Waste and Water treatment. Using national emission factors provided by JRC. Using fixed emission factors throughout the year to be able to compare the impact of mitigation measures. Use of IPCC emission factors. **Adaptation** The municipal government created a specific group for the development of SECAP adaptation measure implementation. Own elaboration with the collaboration of other public and private entities and information from the national meteorological service, Civil protection and Fire control. Using RCP8.5.
Comments	Only two sources of information, the SECAP and the regional statistical database.
Identified reported local plans	**Analyzed plans/references (3)** City council open data 2025 Centro regional de estadistica de Murcia 2025 SECAP 2020 2020
Plans containing the most indicators	SECAP 2020
Retrieved indicators considered in the Localised SOIs framework	57
Emissions and energy related indicators (MWh,	14

CO2, MW, renewable shares)	
Deviation between downscaled DSP data and local reported data	360%
Nº of indicators lower than 10%	12
Nº of indicators between 10% and 20%	2
Nº of indicators between 20% and 50%	4
Nº of indicators between 50% and 100%	15
Nº of indicators higher than 100%	24
Nº of indicators lower than 20%	25%
Nº of indicators lower than 20% (Energy and emission related)	14%

14. Liepaja

Climate zone	Zone 3 Temperate oceanic climate, with cold, snowy winters and mild summers, frequent rainfall and strong coastal winds year-round.
Population	66680 (2023, Liepāja City Socio-Economic Report 2023)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2
Reporting initiatives	**Covenant of Mayors** 2006 BEI submitted in 2013, Monitoring report submitted in 2014, 2016, 2018, 2019, 2020, 2021, 2023 and 2024. The 5th JRC Release includes incomplete information, It does say the monitoring report has been submitted but no values are available.
Mitigation objective	Reach climate neutrality by 2030. (80% CO2 emissions reduction compared to 2006)

Last reported emission inventory	137940 tCO2eq (2022, SECAP 2023)
Yearly reduction until NetZero objective (absolute)	11010 tCO2eq /year (-80% compared to 2006)
Yearly reduction until NetZero objective (per capita)	0.165 tCO2eq /year/capita (-80% compared to 2006)
Scope	Scope 1 and 2 for the energy consumption within the municipality limits. Doing efforts to report Scope 3 and missing sectors in the future.
Current reporting methodology	**Mitigation** The emission calculation includes Heat consumption from district heating, final energy consumption in all buildings from electricity, City natural gas consumption, Private and public transport fuel and electricity consumption. Waste, water treatment, Industrial processes and AFOLU are not included. Using the CoM guidelines. Using a mix of IPCC and national emission factors (Heat consumption, local heat production and electricity from the grid). **Adaptation** Climate change scenarios refer to the projections of climatic parameter values calculated by the Latvian National Climate Change Centre for the future period until 2100 in the territory of Latvia, based on the conditions predicted in the Representative Concentration Pathways (RCP 4.5 and RCP 8.5) scenarios of the IPCC 5th Assessment Report.
Comments	
Identified reported local plans	**Analyzed plans/references (6)** Official statistics of latvia 2024 SECAP 2023-2030 2023 Climate city contract 2023 City council yearly reports 2023 Liepāja City and South Kurzeme Region Development Program for 2022–2027 2022 Liepāja City Air Quality Improvement Action Program for 2021–2025 2021
Plans containing the most indicators	SECAP 2023
Retrieved indicators considered in the Localised SOIs framework	43

Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	18
Deviation between downscaled DSP data and local reported data	774%
Nº of indicators lower than 10%	6
Nº of indicators between 10% and 20%	4
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	11
Nº of indicators higher than 100%	16
Nº of indicators lower than 20%	23%
Nº of indicators lower than 20% (Energy and emission related)	11%

15.Szombathely

Climate zone	Zone 4 Temperate continental climate, with cold winters and warm summers, moderate rainfall mainly in late spring and summer.
Population	78190 (2022, SECAP 2024)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2
Reporting initiatives	**Covenant of Mayors** 2006 BEI provided in 2021. The 5th JRC Release does not include any information.
Mitigation objective	The mitigation strategic goal is for the city to reduce its CO emissions by 37.8% by 2030 compared to the base year 2006.

Last reported emission inventory	487836 tCO2eq (2022, SECAP 2023)
Yearly reduction until objective (absolute)	16161 tCO2eq/year (-37.8% compared to 2006)
Yearly reduction until objective (per capita)	0.206 tCO2eq/year/capita (-37.8% compared to 2006)
Scope	Scope 1 and Scope 2 for energy consumption within the municipality limits.
Current reporting methodology	**Mitigation** Energy consumption in public buildings, district heating, natural gas and electricity in residential buildings and industry, the public transport buses multiplied by average fuel consumption. District heating emission factors are calculated every year depending on the energy mix. Data from statistical office + energy distribution companies. Industry and services are calculated deducting the residential and public consumption from total electricity consumption. In the current version of SECAP, we do not examine the transport sector in terms of emission reduction, since it cannot directly influence its development due to the lack of tools either in the base year or in the target date period. No private transport included! The solar power installed capacity is reducing emissions without any clear methodology. **Adaptation** Vulnerability of Szombathely for the periods between 2021and 2050 based on the ALADIN-Climate model. Self-evaluation of risks with qualitative information. No clear conclusions or guidelines.
Comments	Other SECAP MEI are available on the city council website but not visible in the CoM nor the 5th JRC release. Methodology is very poor for the assessment of the emission inventory. In the regional statistical office, you need to ask for access to whatever information "Procedure for requesting data of public interest Anyone may submit a request for access to data of public interest – orally, in writing or electronically." The information at the National Statistical office is at NUTS-3 level.
Identified reported local plans	**Analyzed plans/references (7)** SECAP MEI 2024 SUSTAINABLE URBAN DEVELOPMENT STRATEGY 2021-2027 2023 SUSTAINABLE URBAN MOBILITY PLAN (SUMP) 2022 SECAP BEI 2021 Environmental program 2022-2027 2021 Szombathely County Town environmental assessment (2015-2018) Blautech 2019 SOMBATHELY CITY AIR QUALITY PLAN 2016

Plans containing the most indicators	SECAP 2023
Retrieved indicators considered in the Localised SOIs framework	47
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	12
Deviation between downscaled DSP data and local reported data	220%
Nº of indicators lower than 10%	2
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	10
Nº of indicators between 50% and 100%	11
Nº of indicators higher than 100%	21
Nº of indicators lower than 20%	10%
Nº of indicators lower than 20% (Energy and emission related)	17%

16.Surbo

Climate zone	Zone 9 Mediterranean climate, with mild, wet winters and hot, dry summers, abundant sunshine throughout the year.
Population	14204 (2024, SECAP 2025)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2

Reporting initiatives	**Currently developing SECAP BEI 2019 (2025)**
Mitigation objective	The strategic mitigation goal is for the city to reduce its CO emissions by 55% by 2030 compared to the base year 2019. (SECAP 2025)
Last reported emission inventory	23461 tCO2eq (2019, SECAP 2025)
Yearly reduction until objective (absolute)	1173 tCO2eq/year (-55% compared to 2019)
Yearly reduction until objective (per capita)	0.082 tCO2eq/year/capita (-55% compared to 2019)
Scope	Scope 1 and Scope 2 within the city limits.
Current reporting methodology	**Mitigation** Emissions are calculated based on energy consumption from the municipal competencies. Public buildings, public lighting, public vehicles, private buildings, tertiary sector, non ETS industries, agriculture and public transportation. Use of IPCC 2006 factors and the national emission factor for the grid electricity consumption. The Puglia Region has assigned ARPA Puglia the management of the atmospheric emissions inventory through the IN.EM.AR. system, a database that estimates municipal-level emissions by activity type and fuel type. The system uses activity indicators, emission factors, and statistical data to spatially and temporally break down the emissions. IN.EM.AR. is a key national database used for environmental studies, territorial planning, and assessing the impact of emission reduction policies. **Adaptation** The climatic conditions of Surbo are analyzed based on a supra-municipal analysis. The references are the National resilience plan (PNACC), the regional analysis ("Indirizzi per la stesura della Strategia Regionale di Adattamento ai Cambiamenti Climatici SRACC"), and other documents provided by the region to help elaborate the adaptation section. Climate Maps, Climate Context, Climate Sheets for each Municipality – Toolkit, Future Scenario Maps, Actions Platform.
Comments	It's the Puglia NUTS3 administration that guided and encouraged local municipalities to join the CoM and deliver a SECAP. They created guides and provided information, for example on climate hazards. Invested 1 million euros to finance the generation of SECAPs in the local authorities. Interestingly, they compare the information from natural gas and electricity providers with data coming from supra-municipal institutions. Surbo is using data from the distribution companies' records.

	SECAP has been redacted by the city administration along with two external consulting agencies.
Identified reported local plans	**Analyzed plans/references (3)** SECAP 2025 2025 Piano della Mobilità Ciclistica e Ciclopedonale 2025 ISTAT - Atlante Statistico dei Comuni 2024
Plans containing the most indicators	SECAP 2025
Retrieved indicators considered in the Localised SOIs framework	36
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	16
Deviation between downscaled DSP data and local reported data	3551%
Nº of indicators lower than 10%	6
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	6
Nº of indicators higher than 100%	15
Nº of indicators lower than 20%	25%
Nº of indicators lower than 20% (Energy and emission related)	17%

17.Skanderborg

Climate zone	Zone 3

	Temperate oceanic climate, with cool winters and mild summers, frequent rainfall and cloudy days year-round.
Population	87000 (2021, Waste Plan 2023)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 6
Reporting initiatives	
Mitigation objective	As part of the Danish Climate Municipality, Skanderborg has the goal to be CO2 Neutral by 2050. And has committed to reduce to 70% the emissions by 2030 compared to 2018 values. Ref: Climate Plan 2023-2050
Last reported emission inventory	305351 tCO2eq (2022, Climate accounts 2022)
Yearly reduction until objective (absolute)	23036 tCO2eq/year (-70% compared to 2018)
Yearly reduction until objective (per capita)	0.264 tCO2eq/year/capita (-70% compared to 2018)
Scope	Scope 1 for Agriculture, Forestry and Land use, Stationary energy, Waste, Industry and Transport. Scope 2 for purchased electricity.
Current reporting methodology	**Mitigation** The emissions are estimated using the IPCC factors and the Denmark National Inventory Factors. available in the major reports over the years on the state of the climate. The NIR factors describe how much several activities in the bio-account emit, for example agriculture area for a given crop, emissions per animal, carbon uptake in the forest, etc… These factors are based on the national emissions inventory (NIR) and are therefore referred to as NIR factors. These factors change over time and are affected, among other things, by the actual climatic conditions of the particular year. All factors in the present account are based on NIR2024, published on March 15, 2024. The emission inventory is obtained by multiplying energy and activity data (nº of animals, kg of waste, etc…) by emission factors. *"The municipality's climate accounts do not include emissions from things we consume that are produced outside the municipality and country borders. Here we follow international practice. However, Denmark has one of the world's highest CO2e and resource footprints measured by consumption. We therefore have a great responsibility to work with our consumption-based emissions. Even if they are not formally included and can be read from our climate accounts." Ref: Climate plan for Skanderborg Municipality 2023-2050* **Adaptation**

	new legislation in the wastewater area and the upcoming national climate adaptation strategy will have an impact on the efforts in Skanderborg. Skanderborg is takin its first steps on building knowledge on risk analysis on flooding, heatwaves, drought and wind. And focusing on flooding. Updated flood maps have been created to identify potential risk areas. Collaboration with GEUS to generate groundwater elevation maps and identify related risks. No local knowledge on heatwaves and droughts. It is expected that there will be a national knowledge build-up regarding drought and heatwaves in the coming years. We will follow this development, as it will make our projections more accurate and provide better opportunities to adapt our instruments and planning.
Comments	The emission conversion factors have been changing throughout the years.
Identified reported local plans	**Analyzed plans/references (7)** Danmarks statistik 2025 Climate plan for Skanderborg Municipality 2023-2050 2023 Climate accounts 2022 Waste plan 2023-2026 2022 The Municipal Plan 2021-2023 2021 Population forecast 2021-2037 2020 Climate adaptation plan 2014
Plans containing the most indicators	Climate accounts 2022
Retrieved indicators considered in the Localised SOIs framework	51
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	30
Deviation between downscaled DSP data and local reported data	3910%
Nº of indicators lower than 10%	4
Nº of indicators between 10% and 20%	3

Nº of indicators between 20% and 50%	10
Nº of indicators between 50% and 100%	14
Nº of indicators higher than 100%	20
Nº of indicators lower than 20%	14%
Nº of indicators lower than 20% (Energy and emission related)	10%

18. Warsaw

Climate zone	Zone 4 Temperate continental climate, with cold winters and warm summers, moderate rainfall mainly in late spring and summer.
Population	1860000 (2021, Warsaw Green City and Climate Action Plan)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 5
Reporting initiatives	**Covenant of Mayors** BEI 2007 reported in 2011, MEI 2012 reported in 2015, The 5th JRC Release includes information from 2010 and 2015.
Mitigation objective	Warsaw aims to reach net-zero emissions by the year 2050. The city has set itself the important goal of reducing CO2emissions by 40% by 2030 compared to 2007.
Last reported emission inventory	12014384 tCO2eq (2018, Warsaw Green City and Climate Action Plan)
Yearly reduction until objective (absolute)	352998 tCO2eq/year (2030, -40% compared to 2007)
Yearly reduction until objective (per capita)	0.1953 tCO2eq/year/capita (2030, -40% compared to 2007)
Scope	Scope 1: Emissions from public transport, municipal buildings, energy consumption in water and wastewater treatment processes. Scope 2: Emissions from energy consumption for all buildings within the city boundaries, electricity, heat and fuels. Scope 3 emissions are not included.
Current reporting methodology	**Mitigation** Warsaw's greenhouse gas (GHG) emissions inventory follows C40's CIRIS tool and aligns with the Global Protocol for Community-Scale

	Greenhouse Gas Emission Inventories (GPC), reported at the BASIC level. This includes CO_2 emissions from residential buildings, energy infrastructure, transport, and waste. However, data gaps remain in the waste sector, and air traffic emissions are excluded, as they fall outside the city's direct control. The inventory prepared for the Warsaw Green City and Climate Action Plan uses GPC methodology, covering all buildings in the city. Data sources include: Electricity, district heating, and network gas consumption from the Monitoring of Energy Policy of Warsaw (2018) and SEAP monitoring. Fuel consumption and energy production data from PGNiG Termika. The energy consumption distribution is based on the Assumptions for the Electricity, Heat and Gas Fuel Supply Plan, which provides historical and projected demand by building type. These categories were mapped into CIRIS sectors to estimate each sector's share of total electricity and heat use. Emission factors (EFs) were drawn from the 2018 National Inventory Report. For electricity, a weighted average EF was calculated using data from PGNiG TERMIKA's cogeneration plants (Siekierki and Żerań) and the national grid (KOBiZE indicator). For district heating, EFs were determined for each heat source. Embedded (embodied) carbon emissions were not included. **Adaptation** Own elaboration in collaboration with the Institute for Sustainable Development based on local observations on temperature, precipitation, storms and strong winds. The report includes vulnerability, exposure and adaptability analysis along with some exposure indicators. The analyses conducted are part of the ADAPTCITY project.
Comments	The last estimation of emission inventory is from 2018. Warsaw ordered an estimation in 2021 but did not publish the full report. Energy consumption in the Low carbon plan is presented per fuel type and not per sector. Some plans are mentioned but not public, ex: Renewable energy action plan for Warsaw.
Identified reported local plans	**Analysed plans/references (10)** Local data bank (Warsawa Statistics) 2024 City report 2023 2023 Report on the implementation of the city development strategy 2023 Warsaw Green City and Climate Action Plan 2023

	Urban adaptation plan - THE CLIMATE CHANGE ADAPTATION STRATEGY FOR THE CITY OF WARSAW BY 2030 WITH THE PROSPECTS UNTIL 2050 2019 Low-carbon Economy Plan 2015 Strategy for adapting to change climate for the capital city of Warsaw by 2030 with a perspective to 2050 2014 SECAP 2013 2013 Integrated Revitalization Program for the years 2014-2022 2013 Transportation Strategy 2009
Plans containing the most indicators	Warsaw Green City and Climate Action Plan
Retrieved indicators considered in the Localised SOIs framework	49
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	9
Deviation between downscaled DSP data and local reported data	92%
Nº of indicators lower than 10%	3
Nº of indicators between 10% and 20%	6
Nº of indicators between 20% and 50%	7
Nº of indicators between 50% and 100%	11
Nº of indicators higher than 100%	22
Nº of indicators lower than 20%	18%

Nº of indicators lower than 20% (Energy and emission related)	22%

19.Larnaka

Climate zone	Zone 13 Mediterranean climate, with mild, rainy winters and hot, dry summers, abundant sunshine year-round.
Population	131375 (2021, Statistical service Cyprus)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 3
Reporting initiatives	**Covenant of Mayors** BEI 2009 reported in 2011, MEI 2014 reported in 2015, The 5th JRC Release includes information from 2014. **Reporting at the Pact of Islands EU, Covenant of Islands**
Mitigation objective	Goal of reducing CO2 emissions by at least 20% by 2020 with respect to the reference year 2009. Long term CO2 reduction target.
Last reported emission inventory	278044 tCO2eq (2014, MEI 2014)
Yearly reduction until objective (absolute)	No objectives up to date
Yearly reduction until objective (per capita)	No objectives up to date
Scope	No comments on the Scopes considered. But it seems like they considered only direct and indirect emissions from energy consumption within the municipality limits (Scope 1 and 2).
Current reporting methodology	**Mitigation** Using IPCC emission factors. Final energy consumption multiplied by emission factors for the Municipal, tertiary, Residential, non-ETS industry, public and private transportation and Agriculture sectors. The Cyprus Energy Agency, established in 2009, developed a tool called local energy balances for the calculation of local Energy Balances in Cyprus. The use of this tool has been very useful not only for the creation of baseline emission inventories of the Municipalities, but also in monitoring the impact of the implementation of SEAPs. It is moreover an important information and transparency tool as it enables local authorities to follow their total energy consumption. The tool based on accurate detailed local electricity consumptions followed by assumptions based on national

	statistics and studies. This tool provides energy data for the territory of a municipality. The energy data of the Municipal service provided by the energy team of the municipality which is responsible for keeping the records of the consumptions in the appropriate monitoring tools. Local and National electricity emission factors are considered the same. The SECAP was developed in collaboration with the Cyprus Energy Agency. **Adaptation** Adaptation planning is managed at national level. Included in the National Adaptation Strategy for Cyprus.
Comments	Data is at national level, only the SECAP contains info at LAU level. Reports are aggregated at national level. Nothing reported since 2014.
Identified reported local plans	**Analyzed plans/references (4)** LARNAKA: A proposed strategic plan for sustainable development «Larnaka 2040» — 2014 LARNAKA: Sustainable Energy Action Plan MEI — 2014 LARNAKA: Sustainable Energy Action Plan — 2011 LARNAKA: Statistical service Cyprus — -
Plans containing the most indicators	SECAP MEI 2014
Retrieved indicators considered in the Localised SOIs framework	38
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	33
Deviation between downscaled DSP data and local reported data	93%
Nº of indicators lower than 10%	1
Nº of indicators between 10% and 20%	1

Nº of indicators between 20% and 50%	8
Nº of indicators between 50% and 100%	18
Nº of indicators higher than 100%	10
Nº of indicators lower than 20%	6%
Nº of indicators lower than 20% (Energy and emission related)	6%

20.Ljubljana

Climate zone	Zone 4 Temperate oceanic climate, with cold winters and warm summers, frequent rainfall throughout the year, especially in spring and autumn.
Population	293845 (2022, 2030 Climate Neutrality Action Plan)
Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 5
Reporting initiatives	**Covenant of Mayors** BEI 2008 reported in 2014. The 5th JRC Release does not include any information. **Carbon Disclosure Project** Ljubljana has been continuously reporting to CDP/ICLEI since 2017.
Mitigation objective	80% reduction in CO2e emissions by 2030 from a 2018 baseline. Ref: Climate city contract.
Last reported emission inventory	2119477 tCO2eq (2022, Climate City Contract)
Yearly reduction until objective (absolute)	207395 tCO2eq/year (80% compared to 2018)
Yearly reduction until objective (per capita)	0.705 tCO2eq/year/capita (-80% compared to 2018)
Scope	Scope 1 emission from stationary energy consumption from Buildings, Industry, Transport, Waste and water treatment, IPPU and AFOLU. Scope 2 includes use of electricity for on-road

	transportation and railways, and grid supplied district heating and electricity for all building uses. Scope 3 is not considered. Solid waste is treated within the Ljubljana city borders.
Current reporting methodology	**Mitigation** The City of Ljubljana estimates its greenhouse gas (GHG) emissions primarily using the GHG Protocol for Cities (GPC), based on IPCC guidelines. A parallel inventory follows the Covenant of Mayors (CoM) SECAP Guidebook, which excludes some sectors (e.g., IPPU and non-energy AFOLU emissions). Emission factors for grid electricity and heat are calculated using both GPC and CoM methods, as per the Mission's Info Kit for Cities. The emissions inventory includes: Direct and indirect emissions from energy use Direct emissions from agriculture (e.g., enteric fermentation, manure, fertilizer) Emissions from solid waste and wastewater F-gases from air conditioning and transport refrigeration (mobile sources) Data for other F-gas uses (e.g., commercial refrigeration) are only available at the national level. Since these make up less than 5% of national emissions, they are considered insignificant but will be included where data permits. Ljubljana has no industrial facilities emitting process-related GHGs (e.g., from the mineral, chemical, or metal sectors), so these are not included. Land Use, Land Use Change, and Forestry (LULUCF) emissions/removals are calculated using local data by the Slovenian Forestry Institute, applying IPCC Approach 3 (spatially explicit data) across six land categories. Changes in carbon stocks are assessed for biomass, deadwood, litter, and soils using IPCC emission factors. For agriculture, the city uses a mix of Tier 1 and Tier 2 IPCC methodologies: Tier 2: CH_4 emissions from livestock Tier 1: Other livestock, manure management, soil emissions, liming, and fertilization For the waste sector, the First Order Decay (FOD) method is used to estimate CH_4 from landfill sites, based on the long-term decay of degradable organic carbon in waste. **Adaptation** The City of Ljubljana's adaptation program is developed in line with Article 43 of the Act on Protection against Natural and Other Disasters and the Ordinance on Protection against Natural and Other Disasters in the City of Ljubljana. It addresses risks posed by natural and other disasters to people, animals, property, cultural heritage, and the environment.

	The program considers: Risk factors influencing disasters and protective measures Available human and material resources for disaster response National strategic priorities from the Resolution on the National Program for Protection against Natural and Other Disasters (2016–2022) Doctrines of protection, rescue, and assistance, which guide Slovenia's approach to ensuring sovereignty, security, environmental balance, and societal resilience. These frameworks provide a coordinated foundation for disaster risk management and long-term protection strategies at both the national and municipal levels.
Comments	The last statistical yearbook was published in 2013. When better data is acquired at the city level, calculations are also retroactively adjusted for previous years. Very good methodological note and scope considered, this should be mandatory in any emission reporting plan. The administration stopped reporting to CoM since 2014 and switched to CDP.
Identified reported local plans	**Analyzed plans/references (7)** Republic of Slovenia Statistical Office 2025 Climate City contract 2023 Natural and other disaster program 2023 LJUBLJANA figures from city council website 2018 Sustainable urban mobility plan for the city of Ljubljana 2017 Statistical yearbook 2013 Local energy concept Municipalities of Ljubljana 2011
Plans containing the most indicators	Climate City Contract
Retrieved indicators considered in the Localised SOIs framework	64
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	38
Deviation between downscaled DSP data and local reported data	189%

Nº of indicators lower than 10%	8
Nº of indicators between 10% and 20%	5
Nº of indicators between 20% and 50%	10
Nº of indicators between 50% and 100%	21
Nº of indicators higher than 100%	20
Nº of indicators lower than 20%	21%
Nº of indicators lower than 20% (Energy and emission related)	19%

21.Nice

Climate zone	Zone 8 Mediterranean climate, with mild, wet winters and hot, dry summers, abundant sunshine year-round.
Population	353701 (2022, INSEE France)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 5
Reporting initiatives	**Covenant of Mayors** BEI 2010 provided in 2013, MEI 2013 submitted in 2016 for all the metropolitan region (Métropole Nice Côte d'Azur). **PCAET**
Mitigation objective	The carbon reduction target by 2030 has been raised to -55% compared to 1990. The 2025 Climate Plan of the Nice Côte d'Azur Metropolis sets objectives based on the reference year 2012. The objective is at metropolitan level.
Last reported emission inventory	982622 tCO2eq (2022, AtmoSud)
Yearly reduction until objective (absolute)	51390 tCO2eq/year (-55% compared to 2012) Ref: 2025 Climate Plan of the Nice Côte d'Azur Metropolis. Applied at LAU level even though there are no objectives specific for this level.
Yearly reduction until objective (per capita)	0.145 tCO2eq/year/capita (-55% compared to 2012) Ref: 2025 Climate Plan of the Nice Côte d'Azur Metropolis. Applied at LAU level even though there are no objectives specific for this level.
Scope	Scope 1,2 and 3 considered.

Current reporting methodology	**Mitigation** The Nice metropolitan region calculates its emissions using the Bilan Carbone® tool developed by the Association Bilan Carbone (ABC). This methodology aligns with international standards such as the GHG Protocol and IPCC guidelines, and covers Scopes 1, 2, and 3. It includes direct emissions, indirect emissions from energy use, and a wide range of indirect upstream and downstream emissions (e.g., transport, materials, waste, and services). The tool provides a comprehensive life-cycle approach, making it well-suited for local climate planning and the development of mitigation strategies. The emission inventory considers Transport, Buildings, Agriculture, Industry, Energy production and Waste sectors. **Adaptation** Planification also at metropolitan level. Basic evaluation on floods, landslides, fire, earthquakes, coastal and climatic risks.
Comments	Reporting at metropolitan level, difficult to find information at LAU level. The baseline changes depending on the document, difficult to understand which one leads. The adaptation documents at municipal level are not publicly available (DICRIM and PCS).
Identified reported local plans	**Analyzed plans/references (7)** Open Data Nice Côte d'Azur (Metropole) 2025 Institut national de la statistique INSEE 2025 Bilan à mi-parcours du Plan Climat 2025 (Metropole) 2024 Inventaires regionaux disponibles sur la base Cigale AtmoSud (L'observatoire de la qualité de l'air en Région Sud Provence-Alpes-Côte d'Azur) 2022 PCAET 2019 - 2025 (Metropole) 2018 PCAET 2012-2017 (Metropole) 2011 France energy opendata DICRIM : Document d'information communal sur les risques majeurs : Ville de Nice Plan Communal de Sauvegarde (PCS)
Plans containing the most indicators	Most of the information was taken from Atmosud, which is a regional data observatory.
Retrieved indicators considered in the Localised SOIs framework	37
Emissions and energy related indicators (MWh, CO2, MW,	22

renewable shares)	
Deviation between downscaled DSP data and local reported data	90%
Nº of indicators lower than 10%	3
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	9
Nº of indicators higher than 100%	16
Nº of indicators lower than 20%	16%
Nº of indicators lower than 20% (Energy and emission related)	5%

22. Les Sables-d'Olonne

Climate zone	Zone 7 Oceanic climate, with mild winters and warm summers, moderate rainfall spread throughout the year and frequent sea breezes.
Population	48740 (2022, INSEE France)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 4
Reporting initiatives	**PCAET** Mandatory for all the municipalities with more than 20.000 inhabitants in France. Last reported in 2016. Waiting for the publication of a new strategy for the period 2023-2028. The plan contains diagnosis, objectives, actions, adaptation and monitoring to reach EU emission reduction objectives.
Mitigation objective	Reduction of emissions by 80% in 2050 compared to the 2008 baseline.

Last reported emission inventory	177530 tCO2eq (2020, PCAET)
Yearly reduction until objective (absolute)	4074 tCO2eq/year (-80% in 2050 compared to the 2008 baseline) Ref: PCAET Les Sables D'Olonne Agglomeration. Applied at LAU level even though there are no objectives specific for this level.
Yearly reduction until objective (per capita)	0.084 tCO2eq/year/capita (-80% in 2050 compared to the 2008 baseline) Ref: PCAET Les Sables D'Olonne Agglomeration. Applied at LAU level even though there are no objectives specific for this level.
Scope	Scope 1 considered, including direct emissions from transport, tertiary, residential, industry and agriculture sector activity within the municipal limits. Scope 2 considers energy consumption purchased for the consumption within the municipal limits including the Scope 1 sectors and Waste. Scope 3 is not considered.
Current reporting methodology	**Mitigation** The emission inventory is calculated in the regional plan (Plan AIR Pays de la Loire Rapport annuel 2016). Emissions for the Pays de la Loire region in the 2016 AIR report were calculated using the BASEMIS® tool developed by Air Pays de la Loire. This tool follows national guidelines (PCIT, CITEPA/SECTEN) and applies a bottom-up approach using regional activity data (e.g. energy consumption, transport flows, agricultural activity) combined with standardized emission factors (e.g. from CITEPA, COPERT). Emissions are estimated using the formula E = Activity × Emission Factor, and results are reported by sector (residential, transport, agriculture, etc.) and energy vector. Two reporting formats are used: SECTEN (direct territorial emissions including imported electricity) and PCAET (emissions by final consumption sector). **Adaptation** The hazard risks and vulnerabilities are included also within the PCAET framework. The environmental evaluation measures quantitatively de incidence of different hazards in the territory combining frequency, impact and duration. The plan uses the GASPAR database, the GASPAR (Gestion Assistée des Procédures Administratives Relatives aux Risques Naturels) is a national database managed by the French State to monitor and archive administrative procedures related to natural risk prevention, including the elaboration, approval, and revision of Risk Prevention Plans (PPRN). The plan includes flooding, coastal erosion, storms, earthquakes and fires.
Comments	As for nice, they are reporting for 5 aggregated municipalities, although some information in the plan is disaggregated for each one of them. It seems like the multi-level planification works quite well in the French territories. Surprisingly informed and organized besides having a small municipality.
Identified reported local plans	**Analyzed plans/references (7)** Institut national de la statistique (INSEE) 2025 PCAET Plan Climat Air Énergie Territorial PLAN D'ACTION 2022

	PCAET Plan Climat Air Énergie Territorial STRATEGIE 2020 PCAET Plan Climat Air Énergie Territorial DIAGNOSTIC 2016 PCAET EVALUATION ENVIRONNEMENTALE 2016 LA QUALITÉ DE L'AIR DANS LES PAYS DE LA LOIRE 2016 Open data Vendée
Plans containing the most indicators	PCAET Plan Climat Air Énergie Territorial DIAGNOSTIC
Retrieved indicators considered in the Localised SOIs framework	48
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	25
Deviation between downscaled DSP data and local reported data	60%
Nº of indicators lower than 10%	10
Nº of indicators between 10% and 20%	4
Nº of indicators between 20% and 50%	7
Nº of indicators between 50% and 100%	14
Nº of indicators higher than 100%	13
Nº of indicators lower than 20%	29%
Nº of indicators lower than 20% (Energy and emission related)	8%

23. Patras

Climate zone	Zone 13 Mediterranean climate, with mild, wet winters and hot, dry summers, abundant sunshine most of the year.
Population	215922 (Housing Census 2021, National Hellenic Statistical Authority)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2
Reporting initiatives	**Covenant of Mayors** BEI 2009 submitted in 2012. The 5th JRC Release does not include any information.
Mitigation objective	No objectives beyond the 2020 20% reduction objective compared to 2009.
Last reported emission inventory	1064886 tCO2eq (2009, SECAP)
Yearly reduction until objective (absolute)	No updated objective
Yearly reduction until objective (per capita)	No updated objective
Scope	No mention on the Scope considered, although it can be deduced that the inventory only considers direct emissions from Scope 1 energy consumption for the Buildings and Transportation sectors and Scope 2 for the purchased electricity outside the city boundaries.
Current reporting methodology	**Mitigation** Use of IPCC 2006 emission factors considering energy consumption within the municipality boundaries and electricity consumption imported from outside the city limits. The factors are then corrected using national values, for example to include biodiesel share in Oil consumption. The sectors considered are: Municipal buildings, Municipal lighting, Residential, Tertiary, Municipal and Private vehicles. **Adaptation** No planification at local level, the plan including Patras is at regional level (Western Greece Regional Climate Change Adaptation Plan)
Comments	There is no current municipal-level emissions inventory publicly available for Patras since the 2012 SECAP.
Identified reported local plans	**Analyzed plans/references (5)** National Hellenic Statistical Authority 2023 Smart city plan 2022

	Patras: Intelligent City Transformation Overview 2020 SUD STRATEGY SUBMISSION FORM SUSTAINABLE URBAN DEVELOPMENT STRATEGY 2016 SECAP 2012 2012
Plans containing the most indicators	SECAP 2012
Retrieved indicators considered in the Localised SOIs framework	30
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	17
Deviation between downscaled DSP data and local reported data	79%
Nº of indicators lower than 10%	2
Nº of indicators between 10% and 20%	1
Nº of indicators between 20% and 50%	2
Nº of indicators between 50% and 100%	14
Nº of indicators higher than 100%	11
Nº of indicators lower than 20%	10%
Nº of indicators lower than 20% (Energy and emission related)	6%

24. Athens

Climate zone	Zone 10 Mediterranean climate, with mild, wet winters and hot, dry summers, plentiful sunshine year-round.
Population	643452 (Housing Census 2021, National Hellenic Statistical Authority)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 4
Reporting initiatives	**CDP-ICLEI Track** Reporting annually to the CDP. The rest of organizations obtain the information from there. Athens is also a long-standing **C40 member** (since at least 2008) and received technical support to develop its first GPC-compliant GHG inventory in 2014–2016, used for its Climate Action Plan.
Mitigation objective	For Athens it was calculated that GHGs should be reduced by 61% by 2030 (compared to 2018) and be zero by 2050. Ref: Climate Action Plan 2021.
Last reported emission inventory	1935000 tCO2eq (2021, Climate City Contract)
Yearly reduction until objective (absolute)	72082 tCO2eq/year (-61% compared to 2018)
Yearly reduction until objective (per capita)	0.109 tCO2eq/year/capita (-61% compared to 2018)
Scope	No mention on the Scope considered, although it can be deduced that the inventory only considers direct emissions from Scope 1 energy consumption for the Buildings and Transportation sectors and Scope 2 for the purchased electricity outside the city boundaries and waste treatment.
Current reporting methodology	**Mitigation** The methodology followed is based on the Greenhouse Gas Protocol: Global protocol for community-scale greenhouse gas emission inventories17, while the City Inventory Reporting and Information System (CIRIS) tool is used of the C40 network, which is based on recorded energy consumption and waste volume. The results are submitted every year to the CDP – Disclosure Insight Action network, as follows from the Protocol of Mayors and the Paris Agreement, which the Municipality has signed. The inventory includes Building, Transport and Waste sectors. **Adaptation** The Climate Action plan 2021 includes main Climate Risks in the Municipality of Athens and their evaluation based on the probability of occurrence, the impact of the risk, the expected change in the intensity of the risk, the expected change in the frequency of the risk elaborated by

	(Global Covenant of Mayors, Envirometrics,2021). The plan includes different RCP scenarios with impact on the different city dimensions.
Comments	General comment, increase transparency, it's so hard to access the different plans, there is no repository. The final energy consumption values for the city of Athens were not found.
Identified reported local plans	**Analyzed plans/references (8)** Climate City contract 2030 Netzero cities 2024 National Hellenic Statistical Authority 2023 Sustainable Urban Development Plan 2021 Sustainable Urban Mobility Plan (SUMP) 2021 Climate plan 2021-2030 2021 Online emission inventory (https://athens.paths.kausal.tech/) 2021 Athens Resilience Strategy for 2030 2016 Integrared Urban Development Plan (SOAP) 2015
Plans containing the most indicators	Climate plan 2021-2030
Retrieved indicators considered in the Localised SOIs framework	44
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	5
Deviation between downscaled DSP data and local reported data	188%
Nº of indicators lower than 10%	14
Nº of indicators between 10% and 20%	2
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	7

Nº of indicators higher than 100%	15
Nº of indicators lower than 20%	37%
Nº of indicators lower than 20% (Energy and emission related)	20%

25. Lörrach

Climate zone	Zone 4 Temperate oceanic climate, with cool winters and warm summers, moderate rainfall evenly distributed throughout the year.
Population	50512 (2023, Baden-Württemberg Statistical office)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 5
Reporting initiatives	**Covenant of Mayors** BEI 1990 submitted in 2012, MEI submitted in 2010 and 2013. The CoM platform states that the municipality has been reporting other MEI reports (2015,2017 and 2022) but the values or documents are not available on the platform. The JRC 5th release only includes values from 2010 and 2013.
Mitigation objective	According to the Climate Protection Report from 2024, Lörrach wants to reach climate neutrality by 2040 (-90% compared to 1990 values).
Last reported emission inventory	273233 tCO2eq (2020, Climate Protection Report 2024)
Yearly reduction until objective (absolute)	10661 tCO2eq/year (-90% compared to 1990)
Yearly reduction until objective (per capita)	0.211 tCO2eq/year/capita (-90% compared to 1990)
Scope	Although there are no specific mentions on the Scopes, it can be deduced that Lörrach considers Scope 1 and Scope 2 emissions related to energy consumption from Households, Industry, Transport, municipal infrastructure and tertiary within the municipal limits.
Current reporting methodology	**Mitigation** In 2017, a new standard for the accounting of municipal greenhouse gas balances was introduced: the BISKO standard (Bilanzierungs-Standard Kommunal). The BISKO standard is a methodological standardization of greenhouse gas accounting for municipalities in Germany. This principle forms the basis for

	accounting at the state, federal, and international levels. According to this standard, developed by the Institute for Energy and Environmental Research Heidelberg (Ifeu), municipal CO2 -Balance sheets are now calculated uniformly. This is a "final energy-based territorial balance," meaning that all final energy consumption in the Lörrach district is recorded and the associated GHG emissions are calculated. The calculation is based on CO2- Equivalent factors, which also consider the upstream chains required to provide the energy sources. The balances provide an overview of the distribution of energy consumption and GHG emissions by various sectors (e.g., private households, commercial, industrial) and energy sources (e.g., oil, gas, electricity) in a municipality and help to demonstrate long-term trends in energy use and GHG emissions over several years. (Source: BISKO) (Municipal Accounting System, ifeu Institute 2019). Emissions resulting from consumption or travel outside the city limits, especially air travel, are not included in this balance. However, emissions from product manufacturing in Lörrach, such as chocolate, are fully included in Lörrach's balance sheet, even if only a small portion of the chocolate is consumed here. The greenhouse gas footprint of the city of Lörrach was calculated using the ECOSPEED Region accounting tool. Due to the transition to the BISKO standard, deviations may occur compared to previous climate protection reports of the city of Lörrach. **Adaptation** At NUTS-3 level, Concept zur Anpassung an den Klimawandel (2021). Which includes current and projected climate impacts for heat extremes, drought, heavy rainfall and floods.
Comments	Most of the indicators from the regional statistical office are not available at LAU level.
Identified reported local plans	**Analyzed plans/references (11)** Lörrach statistical office 2025 Baden-Württemberg Statistical office 2025 Climate Protection Report 2024 2023 Update of the Integrated Energy and Climate Protection Concept 2021 SECAP MEI 2019 Climate protection in Lörrach 2015 Climate Protection Report 2014 2014 Climate-neutral city of Lörrach summary 2012 Climate-neutral city of Lörrach 2011

	SECAP BEI 2011 eea® report of the City of Lörrach 2010 2010
Plans containing the most indicators	SECAP MEI 2019
Retrieved indicators considered in the Localised SOIs framework	52
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	38
Deviation between downscaled DSP data and local reported data	66%
Nº of indicators lower than 10%	3
Nº of indicators between 10% and 20%	5
Nº of indicators between 20% and 50%	12
Nº of indicators between 50% and 100%	15
Nº of indicators higher than 100%	17
Nº of indicators lower than 20%	16%
Nº of indicators lower than 20% (Energy and emission related)	11%

26. Gabrovo

Climate zone	Zone 6 Temperate continental climate, with cold, snowy winters and warm summers, moderate to high rainfall mainly in spring and early summer.
Population	68005 (2020, SECAP 2021)

(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 1
Reporting initiatives	**Covenant of Mayors** BEI 2008 provided in 2015. MEI submitted in 2017, 2020 and 2022. The JRC 5th does not include any values.
Mitigation objective	Reducing greenhouse gas emissions by 40% by 2030 compared to 2008 levels as mentioned in the SECAP. But the Climate City Contract, which was signed in 2024, mentions a reduction of 80.5% compared to 2008 emission values.
Last reported emission inventory	216743 tCO2eq (2018, Climate City Contract 2024)
Yearly reduction until objective (absolute)	4795 tCO2eq/year (-80.5% in 2030 compared to 2008)
Yearly reduction until objective (per capita)	0.076 tCO2eq/year/capita (-80.5% in 2030 compared to 2008)
Scope	Scope 1: Direct emissions from stationary and mobile combustion processes Scope 2: Indirect emissions from the production of used heat and electricity (no matter where it is produced). Other direct emissions - CH emissions in the treatment of solid household waste. No scope 3.
Current reporting methodology	**Mitigation** The carbonization plan considers emissions derived from final energy consumption in buildings and facilities, final energy consumption in transport, solid waste treatment and local heat production. Using the IPCC emission factors from 2006 and the National electricity factor for the purchased electricity. **Adaptation** Own elaboration based on information from the National Institute of Meteorology and Hydrology (NIMH). Risk, vulnerability and exposure to different hazards are presented in the Climate Action Plan. Floods, Landslides, Blizzards and Snowfalls, Extreme heat, Extreme cold, Heavy rainfall and droughts are included.
Comments	Objectives and inventories for the Climate City Contract are different than the ones from the SECAP.
Identified reported local plans	**Analyzed plans/references (13)** MEI 2020 2022 Action plan for sustainable energy and climate 2021

	Integrated Development Plan for the Municipality	2021
	Report on the implementation of the Sustainable Energy Action Plan development and monitoring of an inventory of greenhouse gas emissions on the territory	2020
	Municipal development plan 2021-2027	2020
	Short-term program for promoting the use of energy from renewable sources and biofuels	2020
	Sustainable Urban Mobility Plan	2020
	Climate city contract	2020
	REPORT on the mayor of Gabrovo municipality	2019
	Strategy for the development of the green infrastructure of the city of Gabrovo	2017
	Social services development plan in municipality of Gabrovo for 2017	2017
	Gabrovo Municipality Waste Management Program 2016-2020	2016
	Integrated plan for urban regeneration and development of the city of Gabrovo	2012
Plans containing the most indicators	Action plan for sustainable energy and climate (SECAP) 2021	
Retrieved indicators considered in the Localised SOIs framework	66	
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	18	
Deviation between downscaled DSP data and	528%	

local reported data	
Nº of indicators lower than 10%	9
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	7
Nº of indicators between 50% and 100%	16
Nº of indicators higher than 100%	31
Nº of indicators lower than 20%	19%
Nº of indicators lower than 20% (Energy and emission related)	6%

27. Boden

Climate zone	Zone 1 Subarctic climate, with long, cold winters and short, mild summers, moderate precipitation and frequent snowfall in winter.
Population	28049 (2024, Statistics Sweden)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 6
Reporting initiatives	**Covenant of Mayors** BEI 2005 was provided in 2019. MEI 2015 and MEI 2020 provided in 2019 and 2023 respectively. The JRC 5th does not include any values.

Mitigation objective	Reduce the emissions by 45% in 2030 compared to the 2005 baseline. (SECAP MEI 2020)
Last reported emission inventory	127000 tCO2eq (2020, SECAP MEI)
Yearly reduction until objective (absolute)	2251 tCO2eq/year (-45% in 2030 compared to 2005)
Yearly reduction until objective (per capita)	0.080 tCO2eq/year/capita (-45% in 2030 compared to 2005)
Scope	It seems like the municipality is only considering direct emissions from energy consumption and indirect emissions from electricity purchases. No Scope 3 is considered.
Current reporting methodology	**Mitigation** The data reported in the city documents comes from SMED (Swedish Emissions Database) and Energikontor Norr's statistics tool Energyluppen. The sectors considered are Building, plants and industries energy use, Transport energy use and agriculture, forestry and fishing energy use. **Adaptation** Own elaboration based on national meteorological projections for different scenarios. The document includes heatwaves, cold waves, heavy rain, flooding and storms qualitative evaluation based on the available data. Some hydrological studies have been acquired by the municipality to adapt to flooding hazards.
Comments	The central statistical office variables are mostly at national or regional level, not LAU. No documents available at the CoM website. The emission values visible in the covenant of mayor's platforms are different from the one presented in the SECAP documents. As the municipality mentions in its document, climate adaptation needs to be driven from a top-down level with the help and participation of local authorities. Strengthening collaboration with other regions affected by the same hazards.
Identified reported local plans	**Analyzed plans/references (9)** Description of the population and population growth in Municipality of Boden 2025 Municipal stats from National stats (kommunsiffror) 2025 National statistical database SCB 2025 Svergies Ekokommuner Green key indicators 2024 Climate adaptation plan 2024 Strategic plan 2025-2027 2024 Risk and vulnerability analysis for the municipality of Boden 2023-2026 2022

	Sustainable energy use and adaptation to a changing climate in the municipality of Boden – goals and measures (SECAP) 2019 Stormwater strategy Municipality of Boden 2019
Plans containing the most indicators	SECAP 2019
Retrieved indicators considered in the Localised SOIs framework	28
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	11
Deviation between downscaled DSP data and local reported data	1492%
Nº of indicators lower than 10%	7
Nº of indicators between 10% and 20%	2
Nº of indicators between 20% and 50%	2
Nº of indicators between 50% and 100%	7
Nº of indicators higher than 100%	10
Nº of indicators lower than 20%	32%
Nº of indicators lower than 20% (Energy and emission related)	0%

28.Utena

Climate zone	Zone 2

	Humid continental climate, with cold, snowy winters and mild to warm summers, moderate rainfall mostly in summer and autumn.
Population	25608 (2023, Lithuanian National Statistical Office)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2
Reporting initiatives	**Covenant of Mayors** BEI 2011 submitted in 2014. The JRC 5th does not include any values.
Mitigation objective	There are no mitigation objectives beyond -20% reduction compared to 2011 by 2020.
Last reported emission inventory	53369 tCO2eq (2011, SECAP 2012)
Yearly reduction until objective (absolute)	No up-to-date objectives
Yearly reduction until objective (per capita)	No up-to-date objectives
Scope	Scope 1 and Scope 2. Direct emissions from fuel consumption within the municipal limits. Indirect emissions from electricity consumption. Scope 3 is not included.
Current reporting methodology	**Mitigation** The municipal documents do not include a methodological note. Nevertheless, it can be deduced that the last emission inventory has been calculated following the Covenant of Mayor's guidelines. Using energy consumption from Residential, municipal, commercial, transport, industry and public lighting sectors. Electricity consumption was supplied to Utena District Municipality by AB LESTO. Centralized heat is supplied in Utena District Municipality by UAB "Utenos šilumos tinklai". **Adaptation** No adaptation plan at local level. In March 2024, Utena District announced it is preparing its "Prisitaikymo prie klimato kaitos planas" (Climate Change Adaptation Plan), as part of the ClimAdapt-LT project, funded by Norwegian grants and coordinated by Lithuania's Ministry of Environment in partnership with Vilnius University and the Environmental Protection Policy Center.
Comments	Reporting to the Covenant of Mayors, first and last time in 2014. No other SECAP plans have been seen beyond the 2011 one. No emission reduction monitoring.

	The best document is the renewables implementation one "Utena District Municipality's action plan for the development of renewable energy use until 2030", which states to obtain 45% of renewable share in the municipality by 2030 by national rules, they do, but not in all sectors. It does not include emission values. In the absence of more data, the total electricity consumption in the municipality is estimated based on the number of inhabitants and the relative electricity consumption per capita in Lithuania. They divided the national statistics per unit and multiply example: Fishery sector consumes 100 divided by nº of fisheries. If the municipality is then consumption per fishery by number of fisheries
Identified reported local plans	**Analyzed plans/references (9)** Lithuania National Statistical Office 2025 Utena District Municipality Strategic Development Plan for 2025-2034 2024 2024–2029 Sustainable development strategy of the city of utena 2024 Strategic activity plan of utena district municipality for 2024-2026 2024 Sustainable mobility plan of the city of utena 2024 2024–2029 Sustainable development strategy of the city of utena 2024 Utena district municipality environmental monitoring report 2024 Utena District Municipality's action plan for the development of renewable energy use until 2030 2022 SECAP 2011
Plans containing the most indicators	Utena District Municipality's action plan for the development of renewable energy use until 2030
Retrieved indicators considered in the Localised SOIs framework	47
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	31
Deviation between downscaled DSP data and	11736%

local reported data	
Nº of indicators lower than 10%	4
Nº of indicators between 10% and 20%	5
Nº of indicators between 20% and 50%	5
Nº of indicators between 50% and 100%	14
Nº of indicators higher than 100%	19
Nº of indicators lower than 20%	20%
Nº of indicators lower than 20% (Energy and emission related)	9%

29. Burgas

Climate zone	Zone 6 Humid subtropical climate, with mild, wet winters and hot, humid summers, moderate rainfall mainly in autumn and winter.
Population	204804 (2021, Sustainable Urban Mobility Plan 2023)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 1
Reporting initiatives	**Covenant of Mayors** BEI 2005 was provided in 2011. MEI 2015 and MEI 2020. The JRC 5th does not include any values.
Mitigation objective	Reduce the CO2 emissions in the municipality by 40% compared to 2005.
Last reported emission inventory	746000 tCO2eq (2020, SECAP MEI 2020)
Yearly reduction until objective (absolute)	26600 tCO2eq/year (-40% in 2030 compared to 2005)
Yearly reduction until objective (per capita)	0.129 tCO2eq/year/capita (-40% in 2030 compared to 2005)

Scope	Scope 1 direct emissions from fuel consumption. Scope 2 indirect emissions from electricity purchased. No scope 3.
Current reporting methodology	**Mitigation** Energy consumption and emissions data are compiled by sector and fuel from municipal records and energy suppliers: Municipal buildings/facilities & lighting: based on municipal consumption and cost data. Industry & tertiary: combined due to supplier reporting structure. Residential sector: supplemented with a 2015 household survey to account for unrecorded solid fuel and RES use. Transport: derived from municipal vehicle/public transport data and estimates for private car fuel use. Agriculture/forestry/fishery: not assessed. Emissions are calculated from energy consumption using national ecological equivalent coefficients (Regulation 7/2004), covering all major sectors: municipal, residential, industry, and transport. **Adaptation** Own elaboration under the Global Covenant of Mayors framework, Burgas integrates climate adaptation into its Sustainable Energy and Climate Action Plan. Including climate risk assessment: Analysis of natural and meteorological hazards over a 20-year period, evaluating likelihood, impact, frequency trends, and timeframes. Sectoral vulnerability analysis: Combining exposure and sensitivity to identify risks for population groups and sectors (infrastructure, environment, economy). Population impact assessment: Focus on at-risk groups such as children, elderly, and socially disadvantaged households. Adaptive capacity evaluation: Self-assessment against six stages of adaptation planning (from preparation to monitoring), rated. Using data from the National Strategy for Adaptation to Climate Change (MoEW, 2014) projections. Regional climate model ALADIN. And data from own meteorological stations on average annual temperatures, average annual precipitation, number of days with snow cover, number of frosty days, number of days with fog, and average annual number of days with storms for the period 2000 – 2021.
Comments	They reported the SECAP plan in 2009. And continued developing plans until 2020. They started because it was financed by a project (Sustainable Now in 2010).
Identified reported local plans	**Analyzed plans/references (9)** National statistical institute 2025 Strategy for Sustainable Blue Growth and Smart Specialization of the Blue Economy and Action Plan of the Municipality of Burgas, 2024 – 2030 2023 Sustainable Urban Mobility Plan of the Municipality of Burgas 2023-2031 2023 Monitoring of the Integrated Development Plan of the City of Burgas, 2021-2027 2023 Strategy for Sustainable Development of Tourism in the Municipality of Burgas, 2022-2030 2022

	Sustainable Energy and Climate Strategy 2021-2030 2020 Integrated Development Plan of the City of Burgas, 2021-2027 2020 SECAP Monitoring 2015 Burgas municipality strategy for sustainable energy development 2011 - 2020 2009
Plans containing the most indicators	SECAP MEI 2020
Retrieved indicators considered in the Localised SOIs framework	61
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	23
Deviation between downscaled DSP data and local reported data	94%
Nº of indicators lower than 10%	5
Nº of indicators between 10% and 20%	3
Nº of indicators between 20% and 50%	5
Nº of indicators between 50% and 100%	18
Nº of indicators higher than 100%	30
Nº of indicators lower than 20%	13%
Nº of indicators lower than 20% (Energy and emission related)	8%

30. Presov

Climate zone	Zone 4
Population	90281 (2021, Sustainable urban development of Prešov for the period 2023 - 2030)
(Economic level, GDP per capita (EUROSTAT 2020) (1-6)	Level 2
Reporting initiatives	**Covenant of Mayors** SECAP BEI 2004 reported in 2019. The JRC 5th does not include any values.
Mitigation objective	Reduce greenhouse gas emissions CO2 on its territory by at least 40% by 2030 compared to the 2004 BEI. Ref: SECAP 2018
Last reported emission inventory	204076 tCO2eq (2017, SECAP 2018)
Yearly reduction until objective (absolute)	6784 tCO2eq/year (-40% in 2030 compared to 2004)
Yearly reduction until objective (per capita)	0.075 tCO2eq/year/capita (-40% in 2030 compared to 2004)
Scope	Scope 1 direct emissions from fuel consumption. Scope 2 indirect emissions from electricity purchased. No scope 3.
Current reporting methodology	**Mitigation** Written by a local energy agency, Eneco. The submitted Action Plan for Sustainable Energy Development of the City of Prešov is prepared according to the manual "How to Create an Action Plan for Sustainable Energy (SEAP)". Using final energy consumption from Municipal Buildings, Tertiary buildings, Residential Buildings, Public lighting, Private and Public transport, and District heating. No agriculture or industry or waste sectors. Using the IPCC emission factors provided by the CoM guidelines. The emission inventory for the Action Plan for Sustainable Energy Development of Prešov was compiled using a combination of municipal, regional, and national datasets. Key sources included: Energy analyses and balances of city heating systems (Slovak Energy Agency, Eneco s.r.o., 2006) and the City Energy Development Concept (Warbeck Energy, 2015). Municipal energy consumption data: fuel use in municipal buildings and transport, reported by city-managed companies (e.g., Prešov City Transport, PKO Čierny orol, Prešov Real, Technical Services). Utility data: electricity consumption (Východoslovenská distribučná) and natural gas consumption (SPP-distribúcia) for 2015–2017, disaggregated by tariff groups. Sectoral data and reports: annual management reports of heating companies (OSVO Prešov, Spravbytkomfort), and information on emissions for 2004–2017 from Spravbytkomfort. Transport data: from the Slovak Road Administration and the Sustainable Transport Development Strategy of Prešov (NDCON, 2017–2018). Statistical data: from the

	Statistical Office of the Slovak Republic and the city's Department of Environmental Care. **Adaptation** The Adaptation strategy 2018 is highly detailed plan developed by the Carpathian Development Institute KRI, Vulnerability as a factor of sensitivity and adaptive capacity considering all the sensitivity factors (Green space, vulnerable groups, density, buildings, citizen knowledge, air conditioning, etc…) for heatwaves and floods. The document uses as a basis satellite data (National Landsat 8 imagery) to map the different variables on the whole city. The information is then processed by the KRI.
Comments	The baseline inventory emission values are different in the plans and the ones presented on the CoM website. Also, regarding the emission reduction objectives (47% by 2030 on the CoM website, 40% in the SECAP plan). The municipality of Presov has its own open data portal and a highly detailed adaptation strategy even considering being a relatively small city.
Identified reported local plans	**Analyzed plans/references (9)** Presov open data portal (egov.presov.sk) 2025 Report on the evaluation of the strategy document 2024 Sustainable urban development of Prešov for the period 2023 - 2030 2023 Presov region statistical report issued by the national statistical office 2019 SECAP 2018 Adaptation strategy 2018 2018 Strategy for sustainable development of city transport presov 2018 Public space plan city of Presov 2018 Smart Cities Individual Report Prešov October 2018 2018
Plans containing the most indicators	SECAP 2018
Retrieved indicators considered in the Localised SOIs framework	43
Emissions and energy related indicators (MWh, CO2, MW, renewable shares)	14

Deviation between downscaled DSP data and local reported data	72%
Nº of indicators lower than 10%	12
Nº of indicators between 10% and 20%	4
Nº of indicators between 20% and 50%	6
Nº of indicators between 50% and 100%	12
Nº of indicators higher than 100%	9
Nº of indicators lower than 20%	37%
Nº of indicators lower than 20% (Energy and emission related)	21%

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