ISSN 1831-9424

European Commission

How to develop a Sustainable Energy and Climate Action Plan (SECAP)

Covenant of Mayors Guidebook | Main document

EUR 40339

Joint Research Centre

Contact information
Name: Giulia Melica
Address: European Commission, Joint Research Centre, Via E. Fermi 2749, 21027 Ispra (VA), Italy
Email: giulia.melica@ec.europa.eu
Tel.: +39 0332 78 9842

EU Science Hub
https://joint-research-centre.ec.europa.eu

JRC142148

EUR 40339

Print	ISBN 978-92-68-28293-9	ISSN 1018-5593	doi:10.2760/6588444	KJ-01-25-311-EN-C
PDF	ISBN 978-92-68-28242-7	ISSN 1831-9424	doi:10.2760/4489817	KJ-01-25-311-EN-N

Luxembourg: Publications Office of the European Union, 2025

How to cite this report: Davide, M., Bastos, J., Bezerra, P., Hernandez Moral, G., Palermo, V., Pittalis, M., Todeschi, V., Treville, A., Barbosa, P., Melica, G., *How to develop a Sustainable Energy and Climate Action Plan (SECAP) - Covenant of Mayors Guidebook Main document*, Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/4489817, JRC142148.

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Authors:
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Graphic design:
Bagdagul Tan

European Commission, Joint Research Centre, 2025

CONTENTS

Abstract

The Covenant of Mayors for Climate & Energy - Europe (CoM EU) is an ambitious initiative for local climate and energy actions supported by the European Commission. This document provides signatory municipalities with the context, objectives, methodological principles, procedures and best practices to develop their sustainable energy and climate action plan (SECAP). As the main part of the CoM Guidebook, this document guides signatories through the entire SECAP process. It is accompanied by a set of complementary documents providing concrete and detailed technical guidance on specific steps and components of the SECAP process.

Acknowledgements

This work has been developed by the European Commission's Joint Research Centre in the context of the Administrative Arrangement 'Technical and scientific assistance, analysis and support to the Covenant of Mayors for Climate and Energy in coordination with DG ENER'.

We would like to thank DG ENER and DG CLIMA for their strategic vision and guidance on the Covenant of Mayors initiative and for their comments on this document.

We also thank the Covenant of Mayors Office for the valuable work with municipalities and the support in reviewing this document.

Additionally, we are grateful to our colleagues at the JRC, who have provided thorough reviews and feedback on this document, enhancing its quality and relevance.

Special thanks go to Bagdagul Tan for the graphic design support, to DG DGT colleagues for editing the report and to Barbara Realini for her help in disseminating this guidebook.

The authors are also grateful to Christian Thiel for his unwavering support and guidance.

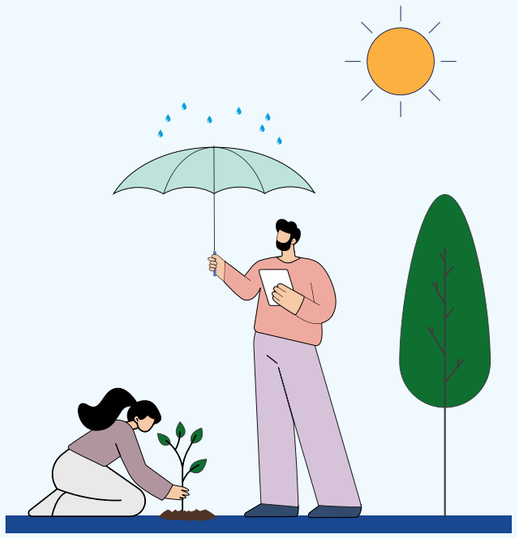
This document builds on the previous guidebook 'How to develop a Sustainable Energy and Climate Action Plan (SECAP)' published in 2018, and in particular on the work done on Part 1 by former JRC colleagues Paolo Bertoldi, Silvia Rivas and Jean-François Dallemand.

Executive summary

The Covenant of Mayors for Climate & Energy - Europe (CoM EU) is a major initiative involving local and regional authorities in a shared commitment to address the challenges posed by climate change. By fostering the design and implementation of effective urban strategies addressing climate change mitigation, adaptation, and energy poverty, CoM EU empowers municipalities to actively contribute to EU's climate and energy policy objectives. This guidebook provides support to CoM EU signatories through a detailed overview of the guiding principles necessary for setting out a comprehensive, ambitious, and effective action plan. It is supported by five complementary documents, which provide detailed guidance on specific components.

Policy context

As the climate crisis worsens, the European Union (EU) has taken more and more ambitious actions to cut greenhouse gas (GHG) emissions, increase the resilience of its territory and ensure the wellbeing of its people. Municipalities play a key role in the achievement of the long-term EU commitment to becoming climate-neutral by 2050, as set out in the European Green Deal and the EU's Climate Law. In line with the increased scope and ambition of EU climate policy, the CoM EU signatories currently aim to reduce their GHG emissions by at least 55% by 2030, as well as to make their cities and towns climate-neutral and increase their



resilience and energy security by 2050. By offering detailed and timely guidance, this guidebook provides municipalities with the tools and knowledge to undertake bold actions, ultimately enabling them to accelerate decarbonisation and to enhance the resilience and the wellbeing of their communities.

Guidance on local climate action

At the heart of the CoM EU initiative is the commitment by signatories to develop and implement a sustainable energy and climate action plan (SECAP), which serves as an integrated, strategic and operational instrument, outlining how municipalities intend to achieve their goals across three pillars: GHG emission reduction, climate change adaptation, and energy poverty alleviation within their territory. This comprehensive plan sets out the objectives and planned actions necessary to fulfil these commitments, all within a long-term strategic vision that aligns with national and international commitments and strategies.

After describing the SECAP's scope and coverage, this guidebook highlights the foundational elements necessary for developing and implementing a SECAP, such as securing political commitment, adapting municipality frameworks and engaging stakeholders. The scientific underpinnings of the initiative, namely the baseline emission inventory (BEI), the risk and vulnerability assessment (RVA), and the energy poverty assessment (EPOV), represent key tools to assess the status quo and set a common vision and ambitious targets. To achieve their objectives, municipalities can implement a wide portfolio of policies and measures including both short-term and long-term actions, building upon existing experience but with a view towards the vision that has been set. This would allow municipalities to plan strategically by selecting and prioritising different types of actions, starting from no or low regret options. A combination of soft and hard measures is crucial to effectively address climate and energy-related challenges. To overcome one of the key challenges, an overview of financing mechanisms supporting local actions is provided. Finally, the document provides guidance on how to set up an effective monitoring process, which represents a crucial step to allow municipalities to monitor target achievement and action implementation progress, identify potential gaps and take corrective actions.

By providing comprehensive, step by step guidance, this guidebook supports municipalities in building a low-carbon, resilient and inclusive society, playing a pivotal role in fostering a culture of sustainability within their communities.

This guidebook addresses crucial aspects of the design, elaboration, implementation and monitoring of the SECAP. It is built around 10 key elements that are essential to the success of the whole process, around which municipalities' action should focus:

1. Political commitment and formal engagement of the municipal council (or equivalent decision-making body)
2. Mobilising all relevant municipal departments
3. Stakeholder engagement and effective communication
4. Sound assessment of the current local situation
5. Defining a common vision and ambitious targets
6. Preparing comprehensive actions addressing key challenges
7. Identifying and securing adequate financing
8. SECAP adoption and submission
9. Detailed implementation strategies, with milestones and indicators
10. Monitoring and reporting

Related and future Joint Research Centre work

The European Commission's Joint Research Centre (JRC) has been responsible for providing scientific, technical, and methodological support to the CoM EU initiative since its inception. The JRC's role is to ensure the initiative's alignment with EU climate and energy policies, as well as its scientific integrity. A key part of the JRC's mandate is to help signatories develop and implement their action plans, which includes creating methodological guidebooks to facilitate the process.

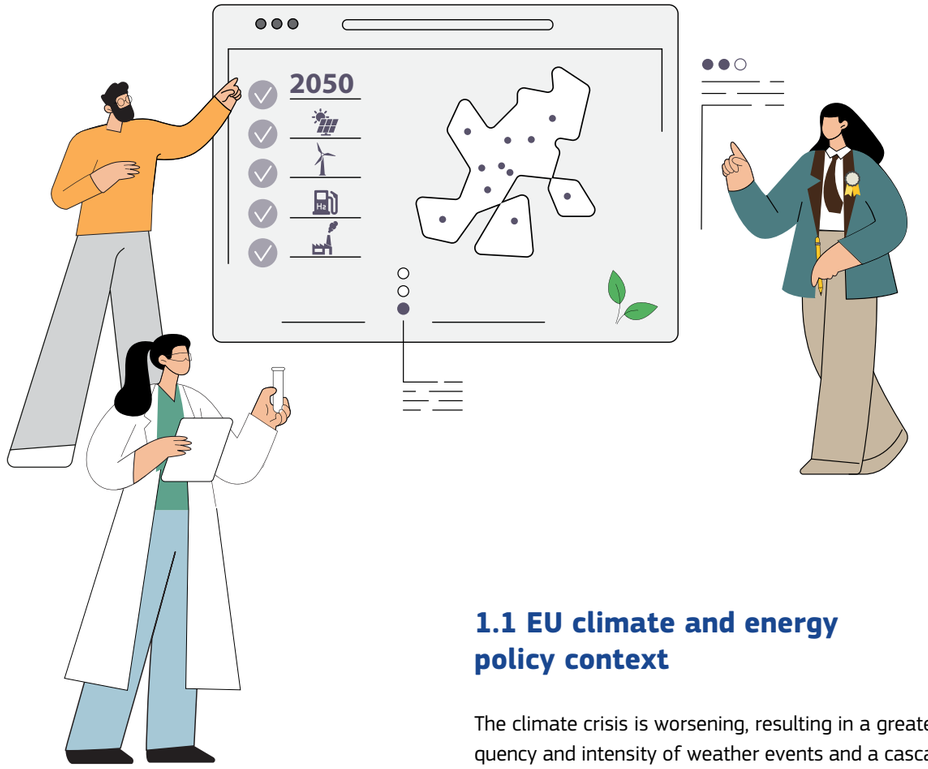
This guidebook represents a major update of the previous guidebook 'How to develop a Sustainable Energy and Climate Action Plan (SECAP)', published in 2018 (Bertoldi P. (eds) 2018a, pt. 1; 2018b, pt. 2; 2018c, pt. 3). It provides updated information on commitments, in line with progress of the EU climate policy goals. Additionally, it offers further guidance following the development of the CoM EU framework, notably the inclusion of the energy poverty pillar. The document now follows a new structure designed to ease reading and address the needs of different audiences. Future related JRC work could focus on adapting methodological guidelines to the context of other regional CoM initiatives.

Quick guide

This guidebook consists of a main document (this document) and five complementary documents. The main document provides the context, an overview of the whole process and the key elements of the SECAP preparation. It serves as a guide to the main steps and principles for CoM EU signatories and municipalities that want to engage in climate action. It is complemented by a set of documents that provide more detailed insights, including methodological and technical guidance, as well as examples of key actions and exemplary practices. The five complementary documents detailing key steps and elements of the SECAP preparation are:

1. How to prepare a greenhouse gas emission inventory
2. How to develop a risk and vulnerability assessment
3. How to develop an energy poverty assessment
4. How to plan mitigation, adaptation and energy poverty actions
5. Financial instruments for mitigation, adaptation and energy poverty actions

1. Introduction



1.1 EU climate and energy policy context

The climate crisis is worsening, resulting in a greater frequency and intensity of weather events and a cascade of interconnected impacts, including biodiversity loss, sea level rise, disruptions to food systems, and threats to public health. In this context, the EU has taken more and more ambitious actions to cut GHG emissions and increase the resilience of its territory.

In 2008, with the *2020 climate and energy package*, a first EU-wide mitigation target was set, aiming to reduce GHG emissions by 20% by 2020 compared to 1990. This commitment was updated in 2014, when EU Member States agreed on the 2030 *climate and energy framework* setting a 40% GHG emissions reduction objective to be achieved by 2030, and consolidating policies to support renewable energy deployment, improve energy efficiency and strengthen the EU emissions trading scheme.

In parallel, the EU has undertaken action to boost its resilience and face the unavoidable impacts of climate change. In particular, the 2013 adaptation strategy launched a set of measures which are now at the base of the EU climate response. These include all Member States drawing up national adaptation strategies or plans, as well as including adaptation in relevant policies addressing vulnerable sectors.

The European Covenant of Mayors for Climate & Energy (CoM EU) initiative brings together about 12 000 municipalities fostering the design and implementation of effective climate policies and strategies at the urban level. Under the CoM, signatories (typically municipalities or groupings of municipalities) voluntarily commit to developing and implementing a sustainable energy and climate action plan (SECAP), which is a strategic and operational instrument detailing how a municipality intends to reach its commitments on three pillars: greenhouse gas (GHG) emission reduction, climate change adaptation and energy poverty alleviation in its territory. The SECAP sets the goals and objectives to achieve, within a long-term strategic vision, as well as the planned actions and a roadmap on implementation, aligned with national and international commitments and strategies.

This document aims to support European municipalities throughout the SECAP design and implementation process and to provide them with an overview of the guiding principles to create a comprehensive, coherent and effective action plan.

As one of the key actors in the UN climate debate, in 2015 the EU helped shape the Paris Agreement that for the first time set a global collective goal to limit average temperature increase well below 2 °C compared to pre-industrial levels, with efforts to stay below 1.5 °C, by the end of the century. Under the agreement, countries are also called to strengthen resilience and ability to adapt to climate impacts, as well as to mobilise international climate finance.

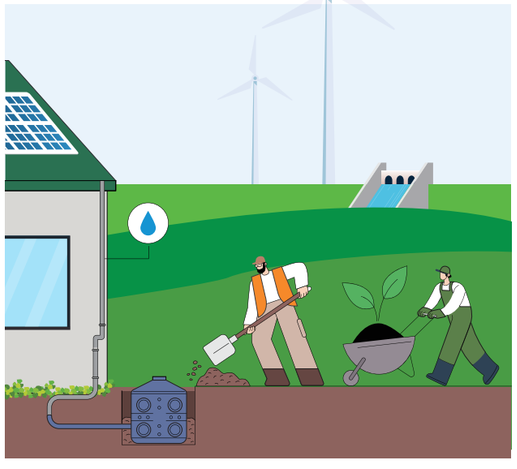
Recognising the strong relation between climate action and social equity, the EU has progressively developed a comprehensive policy framework to address energy poverty. Key milestones in this process include the 2016 launch of the Energy Poverty Observatory, which in 2020 evolved into the *Energy Poverty Advisory* Hub. In 2017, t*he European Pillar of Social Rights* declared energy to be an essential service and the *Clean Energy for All Europeans package* (2019) required Member States to address energy poverty in their National Energy and Climate Plans.

With the adoption of the *European Green Deal*[1], the EU set the path to comply with its international objectives and embraced a comprehensive approach to accelerate the green transition, while supporting economic prosperity and quality of life. Launched in 2019, it consists of a growth strategy promoting policies aimed at making the EU climate-neutral by 2050, increasing its resilience to climate impacts and ensuring a socially just transition.

The 2050 climate neutrality objective became binding under the *European Climate Law*[2] in 2021, making Europe the first continent to commit to net-zero emissions. To ensure the achievement of these long-term goals, but also to face the recent energy crisis, the regulation increased the EU's intermediate emission reduction goal to at least 55% by 2030 compared to 1990. This target was supported by the *'Fit for 55' package*[3], which also includes specific measures to identify key drivers of energy poverty risks for consumers, considering structural solutions to vulnerabilities and inequalities. Moreover, the *new EU adaptation strategy*[4] adopted in 2021 sets out key principles for the EU to become climate resilient by 2050: to make adaptation smarter, swifter and more systemic, and to step up international adaptation action.

More recently, the European Commission recommended reducing the EU's net GHG emissions by 90% by 2040 relative to 1990 as the next milestone on the path to climate neutrality[5].

Within this policy context, the Covenant of Mayors for Climate and Energy (CoM EU) brings together a broad community of stakeholders at local level to complement and support meeting long-term EU and national targets on mitigation, adaptation and energy poverty. As such, the initiative has evolved over time to reflect the ambition and scope of the EU climate and energy objectives.



1 COM(2019) 640 final.
2 Regulation (EU) 2021/1119.
3 COM/2021/550 final.
4 COM/2021/82 final.
5 COM(2019) 640 final.

Box 1. Definition of key concepts

Mitigation (of climate change) refers to a human intervention to reduce emissions or enhance the sinks of greenhouse gases. In climate policy, mitigation measures are technologies, processes or practices that contribute to mitigation, for example renewable energy technologies, waste minimisation processes and public transport commuting practices. Mitigation option refers to a technology or practice that reduces greenhouse gas (GHG) emissions (IPCC 2022).

Adaptation refers, in human systems, to the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities. In natural systems, it refers to the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects. Adaptation options include the array of strategies and measures that are available and appropriate for addressing adaptation. Maladaptive actions (maladaptation) may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased or shifted vulnerability to climate change, more inequitable outcomes or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence (IPCC 2022).

Energy poverty occurs when a household must reduce its energy consumption to a degree that negatively impacts the inhabitants' health and wellbeing. It is mainly driven by three underlying root causes: i) a high proportion of energy expenditure ii) low income iii) low energy performance of buildings and appliances[6].

1.2 The Covenant of Mayors Europe

Acknowledging the potential contribution of municipalities to tackling the climate challenge, the EC launched the Covenant of Mayors (CoM) initiative in 2008, after the adoption of the first EU Climate and Energy Package, to endorse and support the efforts deployed by municipalities in implementing sustainable energy policies. The initiative aimed to bring together and engage local and regional authorities committing voluntarily to implement sustainability policies on their territories and provided them with harmonised methodologies and reporting frameworks to translate their GHG emission reduction ambitions into reality. Initially, the commitment was for municipalities to achieve at least the EU 20% emission reduction objective by 2020 compared to the baseline by implementing a sustainable energy action plan (SEAP).

In light of the adoption of the EU adaptation strategy in 2014, the European Commission launched a separate initiative, called Mayors Adapt, based on the same principles as the Covenant of Mayors but focusing on adaptation to climate change. In 2015, the Covenant of Mayors and Mayors Adapt initiatives were merged into the Covenant of Mayors for Climate & Energy (CoM EU), stepping up the initial mitigation commitment to reach at least 40% emission reduction target by 2030 and integrating local actions for adaptation to climate change.

Following the increase in the scope and ambition of EU climate policy, the CoM EU embraced the carbon neutrality target by 2050, supported by strategies to improve local resilience and adaptation and to ensure secure, sustainable and affordable energy. From April 2021, EU signatories of the initiative are called to propose actions to reduce GHG emissions by at least 55% by 2030, and to make their cities and towns climate-neutral and increase their resilience and energy security by 2050 (Figure 1). In this context, the initiative is currently built around three pillars: mitigation of GHG emissions, adaptation to climate change and energy poverty alleviation. With bold commitments and actions for the three pillars, municipalities play a key role in achieving the European Green Deal objectives and the highest ambitions of the Paris Agreement.

More broadly, the CoM EU is part of a growing number of initiatives launched by the EU to support towns, cities and regions in their efforts to tackle climate change at local level. Other important initiatives are: i) the *EU Mission on 100 Climate-Neutral and Smart Cities by 2030*, which involves 100 EU cities and their local communities to deliver climate neutrality by 2030; ii) the *EU Mission on Adaptation to Climate Change* aimed at empowering at least 150 regions and municipalities to build climate resilience and implement innovative solutions by 2030; iii) the *EU Green City Accord*, a movement of European mayors that aims to make cities cleaner and healthier by committing to act on five areas (air, water, noise, nature and biodiversity, circular economy and waste); iv) the *Smart Cities Marketplace*, which helps cities explore solutions, shape sustainable urban projects, and successfully close a deal for financing them[7]. Finally, the *New European Bauhaus* (NEB) promotes solutions that are sustainable, inclusive and beautiful, while respecting the diversity of places, traditions, and cultures in Europe and beyond. It is a platform for experimentation and connection, but it also provides access to EU funding to support a green transition in built environments which are enjoyable, attractive and convenient for all[8].

All these initiatives together show the strong and growing commitment of the European Commission to support local communities as well as the relevance of a multilevel governance approach to foster ambitious sustainable energy and climate actions.

Figure 1. Covenant of Mayors pathway to 2050

Source: Covenant of Mayors Europe webpage

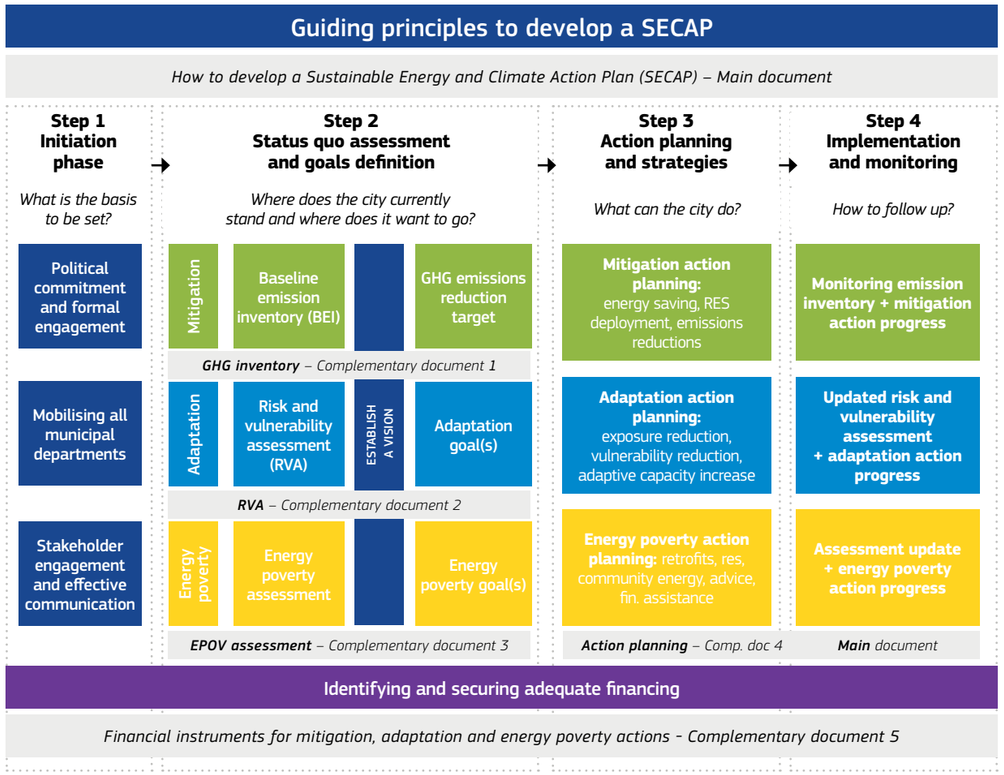
1.3 A worldwide movement: the Global Covenant of Mayors for Climate and Energy

Since the launch of the European Covenant of Mayors in 2008, the initiative has progressively grown outside the EU, thanks to the European Commission's support for the extension of the initiative in 'Eastern and Southern neighbourhood countries' (in 2011 and 2012 respectively) and later to sub-Saharan African countries.

Later, in 2017, the EU-funded Covenant of Mayors merged with the Compact of Mayors[9], creating the Global Covenant of Mayors for Climate and Energy (GCoM). Over the years, the GCoM has grown into the largest international alliance of cities and local governments with a shared long-term vision of promoting and supporting voluntary action to tackle climate change and move to a low-carbon resilient society. As part of its support to the GCoM, the European Commission funded regional and national Covenant Offices in America and Asia.

7 More information about these initiatives is available on the European Commission's webpage on Local and regional climate action
8 More information is available on the New European Bauhaus webpage.
9 The Compact of Mayors was a cooperative effort by the UN among mayors and city officials to pledge to reduce greenhouse gas emissions, track progress and prepare for the impacts of climate change. The initiative, part of the Lima-Paris Action Agenda (LPAA) was launched at the UN Climate Summit in New York 2014 by the UN Special Envoy for Cities and Climate Change, Michael R. Bloomberg, under the leadership of the world's global city networks – C40 Cities Climate Leadership Group (C40), Local Governments for Sustainability (ICLEI) and the United Cities and Local Governments (UCLG) – with support from UN-Habitat, the UN's lead agency on urban issues.

Figure 2. Structure of the CoM Guidebook 2025



Source: JRC elaboration

With the support of regional offices, municipal and regional networks and national governments, the GCoM brings together the commitments of municipalities to support and display the cities' contribution to reaching the objectives of the Paris Agreement. This coalition brings together 13 558 towns and cities, covering more than 1.2 billion people (almost 15% of the world population) across 147 countries (Global Covenant of Mayors 2024).

1.4 About this Guidebook

The European Commission's Joint Research Centre (JRC) has been responsible for providing scientific, technical and methodological support to the EU Covenant of Mayors initiative since its inception. The JRC's role is to ensure the initiative's alignment with EU climate and energy policies, as well as its scientific integrity. A key part of the JRC's mandate is to help signatory cities develop and implement their action plans, which includes creating methodological guidebooks to facilitate the process.

This CoM Guidebook 2025 (hereafter 'guidebook') aims to support EU municipalities in developing their SECAP and to provide them with an overview of the guiding principles to create a comprehensive, coherent and effective action plan. The guidebook consists of a main document (this document) and five complementary documents. The main document provides the context, an overview of the whole process and the key elements of the SECAP preparation. It serves as a guideline to the main steps and principles for CoM signatories and municipalities that want to engage in climate action through the initiative. It is complemented by a set of documents that provide more detailed insights, including methodological and technical guidance, as well as examples of key actions and exemplary practices (Figure 2). The five complementary documents detailing key steps and elements of the SECAP preparation are:

1. How to prepare a greenhouse gas emission inventory
2. How to develop a risk and vulnerability assessment
3. How to develop an energy poverty assessment
4. How to plan mitigation, adaptation and energy poverty actions
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This Guidebook represents a major update of 2018 version 'How to develop a Sustainable Energy and Climate Action Plan (SECAP)' (Bertoldi P. (eds) 2018a, pt. 1; 2018b, pt. 2; 2018c, pt. 3). It provides updated information on commitments, in line with progress of the EU climate policy goals. Additionally, it offers further guidance following the development of the CoM EU framework, notably the inclusion of the energy poverty pillar. The document now follows a new structure designed to ease reading and address the needs of different audiences (Table 1).

Table 1. Overview of 2018 and 2025 Guidebook's structure and documents

Guidebook 2018	Guidebook 2025
Part I SECAP process, step-by-step	**Main document** – focusing on the overall planning process and governance aspects, in a less technical language
	Complementary documents
Part II Baseline emission inventory (BEI) and risk and vulnerability assessment (RVA)	**1.** How to prepare a greenhouse gas emission inventory **2.** How to develop a risk and vulnerability assessment **3.** How to develop an energy poverty assessment
Part III Policies, key actions, good practices for mitigation and adaptation to climate change and financing SECAP(s)	**4.** How to plan mitigation, adaptation and energy poverty actions a) Horizontal aspects: b) Pillar-specific considerations: • mitigation • adaptation • energy poverty • integrated actions **5.** Financial instruments for mitigation, adaptation and energy poverty actions

Source: JRC elaboration

2. The SECAP – a way beyond the EU targets

2.1 What is a SECAP

The sustainable energy and climate action plan (SECAP) is an integrated, strategic and operational plan – formally adopted by a municipal council – that outlines commitments and actions to address climate change challenges and the transition to sustainable energy in the various intervention areas of the respective municipality. It is developed by municipalities, which set the goals and objectives to be achieved within a long-term strategic vision, as well as a set of actions across different sectors to reach those goals and a roadmap on implementation aligned with, or going beyond, national and international commitments and strategies.

The SECAP is structured around three pillars, namely climate change mitigation, adaptation to climate change, and energy poverty, which may be presented in a single integrated document or separate ones (Figure 3). For each pillar it sets a target and measures, with specific timeframes and assigned responsibilities, translating the long-term strategy into actions. The development of a SECAP must primarily draw on the understanding and evaluation of the current local situation.

Specifically, *three tools* are developed at an early stage to support and inform actions on the three pillars:

— The ***baseline emission inventory (BEI)*** is a GHG emission inventory for the baseline year. It identifies the various emission sources in the territory and helps signatories identify and target the best fields of action and opportunities for reaching the GHG reduction emission target.

— The ***risk & vulnerability assessment (RVA)*** identifies the most relevant climate hazards and vulnerabilities affecting the local territory, to inform the development of an adaptation strategy and the identification of appropriate adaptation actions to address such risks.

— Finally, the ***energy poverty assessment (EPOV)*** helps to identify local energy poverty conditions and informs strategies to eradicate it.

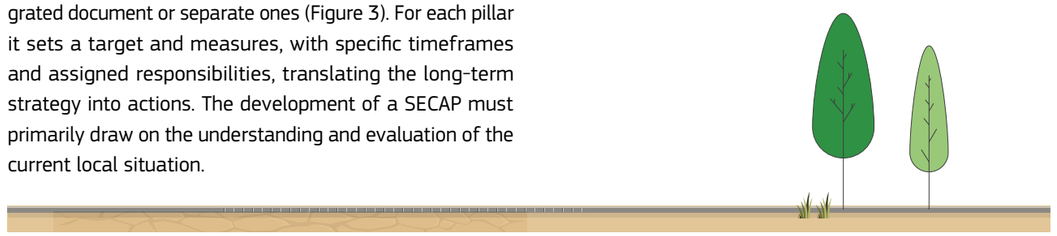
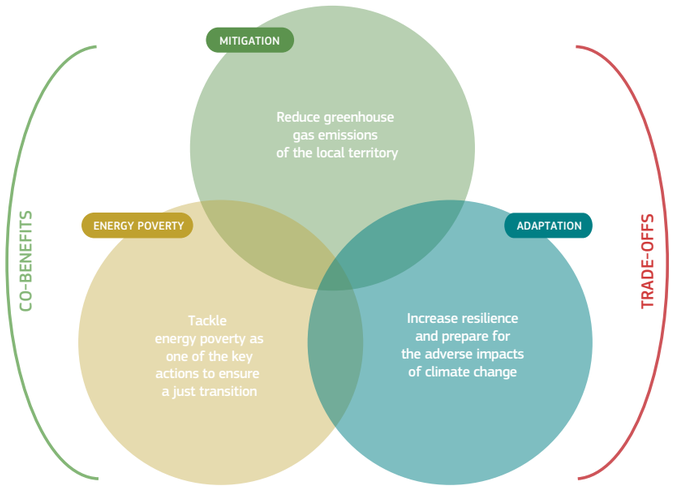


Figure 3. SECAP's three pillars

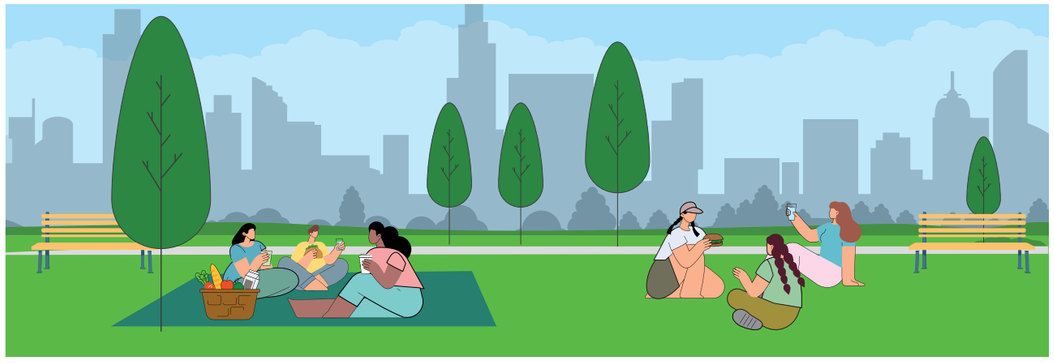


Source: JRC elaboration based on CoM EU commitment text

Targets and actions included in the SECAP should be integrated into municipalities' policy development and planning at all organisational levels. It is worth highlighting that some aspects of mitigation, adaptation and energy poverty are connected and should complement each other. This should be considered and reflected in sectoral and cross-cutting actions, to foster synergies and optimise the use of available resources. In addition, the SECAP should not be regarded as a fixed and rigid document. Since circumstances can change, it may be useful or necessary to revise the plan on a regular basis, based on constant monitoring that takes into account the ever-evolving context of climate change and the lessons drawn from implementing actions.

A well-designed SECAP, co-created with local stakeholders and communities and supported by the highest political levels within the municipality, provides a shared and concrete roadmap for action. This helps to plan ahead and increases the chances of successful implementation. It also offers the opportunity to increase the visibility and outreach of the climate actions and to improve the municipality's image.

From the moment a municipality joins the CoM as a signatory, it commits to prepare and submit a SECAP within two years.



Box 2. Can climate action plans developed under other initiatives or projects be considered valid as a SECAP in the context of the CoM EU?

Climate action plans that are aligned with the principles, commitments and scope of the European Covenant of Mayors may be considered equivalent to SECAPs. The action plan must show a commitment level that is equal or above that set by the CoM EU, ensure the minimum required coverage in terms of pillars, scope, sectors, timeline and geographical boundary, and provide all information connected to the status quo assessment, target setting, action planning, monitoring and reporting, as outlined in this guidebook. Separate documents may be used to complement required information not included in the original action plan.

Example: the case of the Climate City Contract (CCC) developed under the EU Mission for Climate-Neutral and Smart Cities (CNC)

In the CoM EU context, a SECAP must address three pillars: mitigation, adaptation and energy poverty.

As far as the mitigation pillar is concerned, a CCC prepared in the CNC mission context normally includes all the elements of a SECAP, i.e. emission inventory, emission reduction target, strategies and actions aimed at achieving the set target. The CNC mission target of climate neutrality by 2030 exceeds the CoM ambition to achieve climate neutrality by 2050. Concerning the sectors and greenhouse gases to be included in the emission inventory, the CNC mission has a broader scope than the CoM EU: while the latter targets mainly emissions from the stationary energy sector and from the transport sector, the former also includes waste, IPPU and AFOLU (and sinks, if applicable). Therefore, a Climate City Contract normally meets the requirements for the mitigation pillar of the CoM initiative. As far as the adaptation and energy poverty pillars are concerned, however, the CoM EU has specific requirements that go beyond the scope of the CNC mission. CoM cities are required to develop detailed risk and vulnerability assessments and energy poverty assessments to serve as a basis to set quantified and time-bound adaptation goals and energy poverty targets and to determine relevant adaptation and energy poverty actions, respectively. If these elements are included in the city's CCC, the CCC can be considered as equivalent to a SECAP. If these elements are not covered by the CCC, they may be presented as separate documents/plans together with the CCC.

2.2 The scope

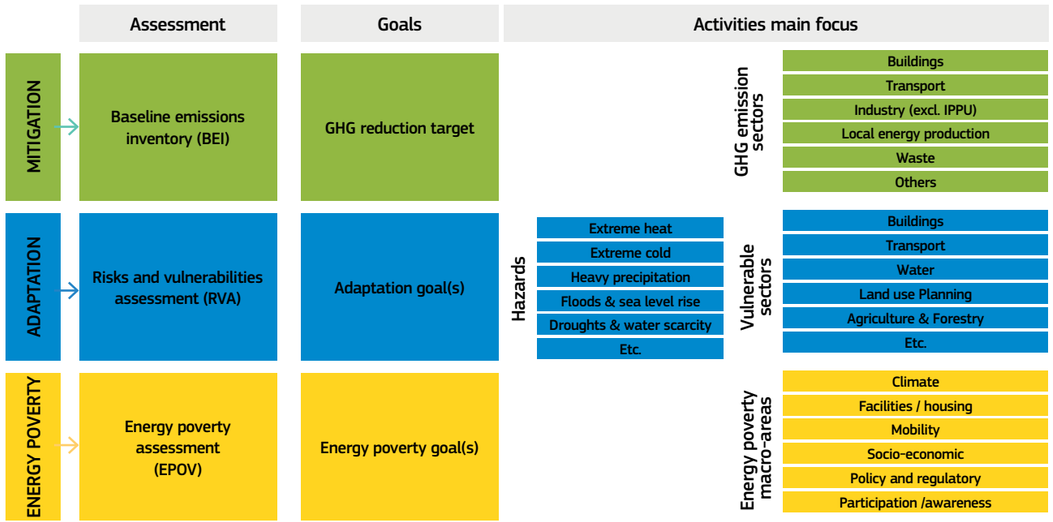
The SECAP focuses on actions at local level, addressing activities and sectors within the influence of the municipality. As such, it typically covers the geographical area under the jurisdiction of the municipality and includes actions affecting both public and private sectors.

As the SECAP includes climate change mitigation, adaptation (climate resilience) and energy poverty, municipalities should focus on activities and sectors in which, for example, they can influence energy use and sources, land use planning and climate change resilience in the long term.

For *climate change* ***mitigation***, the main target sectors, to be covered either in the inventories and actions, are buildings, equipment/facilities (residential, commercial and municipal) and urban transport. The SECAP has to both provide information on emissions produced from these sectors and include actions to reduce them. This could include promoting energy efficiency in the building and transport sector, incentivising energy-efficient products or promoting sustainable local electricity production, for example using solar photovoltaic (PV), wind power, combined heat power (CHP), improvement of local power generation, and local heating/cooling generation. The municipality is expected to set an example by taking ambitious measures related to its own buildings and energy facilities and to its internal mobility fleet and its use.

For ***adaptation*** *to climate change*, the SECAP needs to include sectors, areas and population that are likely to be most vulnerable to climate change in the territory covered. Vulnerable sectors (e.g. buildings, transport, energy, water, waste, land use planning, environment & biodiversity, agriculture & forestry, health, civil protection & emergency, tourism) as well as intensity and frequency of hazard can vary considerably within urban perimeters, from one municipality to another, and from urban areas to more rural areas. This is why gaining a deep understanding of the hazards and vulnerabilities of territories for which the municipality is responsible is of paramount importance to plan actions that reduce their impact and protect vulnerable groups.

Figure 4. Examples of activity sector focus per pillar



Source: JRC elaboration

Regarding ***energy poverty***, the scope of the SECAP is to consider the macro-areas of climate, facilities and housing, mobility, socio-economic, policy and regulatory frameworks, participation/awareness raising, and assessing the conditions relevant to energy poverty within the municipality boundaries. Based on this, the municipality will use the SECAP to set out related actions and targets to address and tackle the energy poverty aspects emerging from the assessment.

Although a SECAP generally covers the territory of one municipality, a group of municipalities may also decide to develop a joint action plan. This option is particularly suited to small municipalities, as it enables them to capitalise on the (operational and possibly financial) benefits of collaborative planning and shared actions. More details are provided in 7.1.

2.3 Time horizon

The SECAP must contain a clear outline of the strategic actions that the municipality intends to take to reach its commitments. The time horizon needs to be aligned with the national and regional context and strategies. A municipality joining the CoM commits to set mid- and long-term targets (consistent with the EU objectives, and at least as ambitious as national targets), with the goal of achieving climate neutrality by 2050. If the SECAP considers a long timeframe (e.g. until 2050), it should also contain short-term targets for 2030 or ideally for the next five years. This makes it possible to follow a clear pathway towards the climate neutrality objective.

As it is not always possible to plan in detail concrete measures and budgets for such a long timeframe, it is recommended to prepare a SECAP with:

- **a long-term vision, strategy and goals**, including firm commitments in areas like land use planning, transport and mobility, public procurement, standards for new/renovated buildings, for example, for 2050;
- **detailed targets and actions to be achieved**, implemented and monitored in the short- to medium-term (typically by 2030 or within the next five years), which are a milestone to achieve the long-term goals.

2.4 Key elements for a SECAP

To build a strong and consistent SECAP, municipalities are advised to pay attention to 10 essential elements, which are very important for the success of the whole process and aim to guide municipalities' action in the design, elaboration, implementation and monitoring of the SECAP. They are summarised in Figure 5.

The 10 key elements summarise what is presented in detail in the next sections of this guidebook. They are organised into four major sections according to the corresponding phases of the SECAP process: i) initiation phase, ii) status quo assessment and goals definition, iii) action planning and strategies, iv) implementation and monitoring. Table 2 illustrates the main steps within the SECAP elaboration and implementation process, indicating the respective guidebook section for each element.

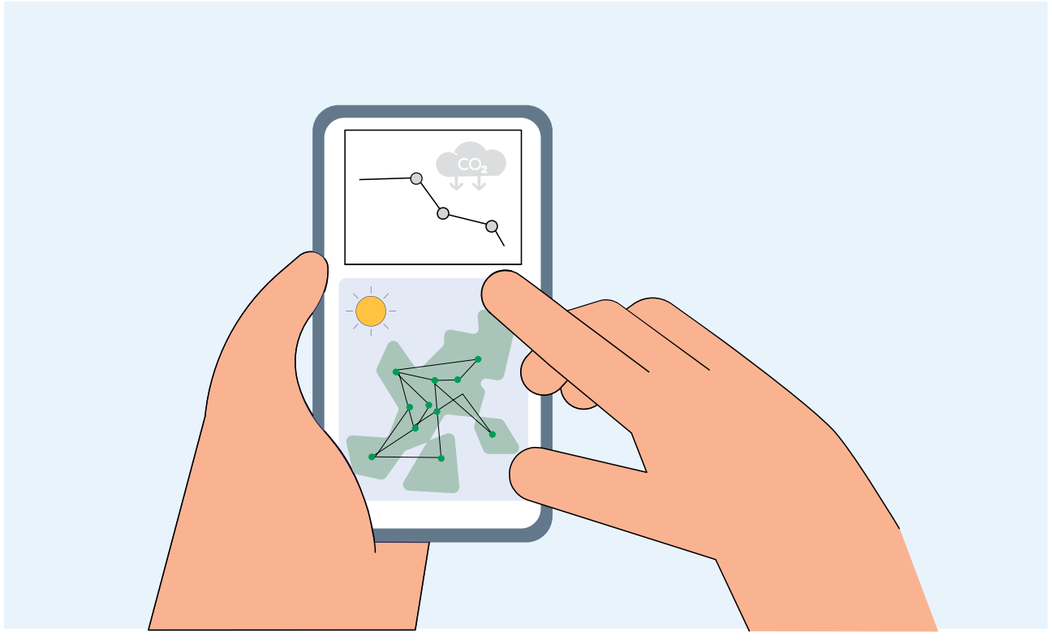
Figure 5. 10 Key elements of a SECAP

Source: JRC elaboration

Table 2. Main steps in the SECAP elaboration process

Phase	Key element	Section
Step 1: initiation phase	1. Political commitment and formal engagement of the municipal council	3.1
	2. Mobilising all relevant municipal departments	3.2
	3. Stakeholder engagement and effective communication	3.3
Step 2: status quo assessment and goals definition	4. Sound assessment of the current local situation	4.1
	5. Defining a common vision and ambitious targets	4.2
Step 3: action planning and strategies	6. Preparing comprehensive actions addressing key challenges	5.1
	7. Identifying and securing adequate financing	5.2
	8. SECAP adoption and submission	5.3
Step 4: implementation and monitoring	9. Detailed implementation strategies, with milestones and indicators	6.1
	10. Monitoring and reporting	6.2

Source: JRC elaboration



3. The SECAP initiation phase

3.1 Political commitment and formal engagement

The signature of the Covenant of Mayors must be supported by an official resolution adopted by the municipal council. This step represents a commitment to the objectives and principles of the initiative. This first act of commitment is then confirmed with the submission of the SECAP document, which must be approved by the municipal council (or equivalent decision-making body) too. Political commitment must also be ensured throughout the implementation phase of the SECAP.

To ensure the success of the planned actions, high level support is essential. It is crucial that key decision-makers of the municipality are fully involved in the SECAP preparation process, provide guidance and support, and give a clear mandate to their respective technical offices/units. It is also equally important that they allocate adequate human resources, sufficient time and budget to prepare and implement the SECAP. Political commitment and leadership are driving forces that stimulate the management cycle. Therefore, they should be sought from the very beginning.

Finally, key decision-makers[10] of the municipality could play an important role in:

— integrating the SECAP vision with relevant ongoing actions and initiatives of other departments and making sure it becomes part of overall planning;
— assuring the long-term commitment to implementation and monitoring, along the full duration of the SECAP;
— seeking and supporting public participation and stakeholders' involvement;
— ensuring that the SECAP process is 'owned' by the municipality and the residents;
— sharing their vision, results, experience and know-how with fellow local and regional authorities within the EU and beyond through direct cooperation and peer-to-peer exchange, to advance on a common climate action agenda.

Once the SECAP is approved, political commitment should be maintained throughout implementation and monitoring. As the highest responsible authority, the municipal council must remain closely informed of the SECAP implementation and adjust planning whenever appropriate.

There is no single route leading to political commitment. Administrative structures, patterns of political approval and political cultures vary from country to country and depend on the local context. For this reason, each municipality should identify how to proceed to raise the political commitment needed to ensure successful SECAP development and implementation.

10 Individuals or groups taking relevant decisions such as mayors, deputy mayors, directors, executive bodies, city councils, etc.

Box 3. Suggestions on how to ensure local political commitment

- Keep the mayor and other key decision-makers informed and updated about the importance and benefits of the SECAP and the resources needed. Make sure documents presented to political authorities are clear, short and comprehensive.
- Brief major political groups on the causes and effects of climate changes, highlighting potential impacts at the local level (already observed and on future risks) and examples of effective responses.
- Make a strong reference to other decisions and commitments taken by the municipal council in this field (e.g. related strategies and plans, urban agenda).
- Take advantage of opportunities and synergies, for example when the media are focusing on climate change issues.
- Highlight the benefits of climate policies (e.g. social, economic, employment, air quality, and health). Keep the message simple, clear and tailored to the audience.

3.2 Mobilising all relevant municipal departments

Designing and implementing a SECAP is a complex and time-consuming process that requires thorough planning and ongoing management. It requires collaboration and coordination between various departments in the administration of the municipality, such as environmental protection, land use and spatial planning, economics and social affairs, buildings and infrastructure management, mobility and transport, budget and finance, public procurement, but also communication and public relations. It is essential for these departments to view the SECAP as an integrated part of their daily operations, aligned with current and planned local projects and programmes, rather than as an external or imposed task.

A successful SECAP relies on a cross-sector and holistic approach, supported by a clear organisational structure with assigned responsibilities. Lack of coordination between the various policies, municipal departments and external organisations could be a major obstacle. Therefore, CoM signatories should create the conditions to foster interdepartmental collaboration. Departments should be assigned appropriate and clear tasks, while considering potential synergies (and trade-offs) with other internal competencies.

3.2.1 Creating suitable organisational structures

Existing organisational structures (e.g. energy management unit, sustainable development agenda coordination) may be used in the context of the CoM. At the beginning of the SECAP preparation process, a coordinator (an individual or a small group) should be appointed. This coordinator must enjoy the full support of the political authority and the hierarchy, as well as the necessary time and budgetary allocations to carry out planned tasks. A dedicated unit or team to support the coordinator may be envisaged[11]. Depending on the size of the municipality, several people dedicated to different tasks, such as data collection, elaboration and sharing, may also be necessary. While the specifics will vary depending on the specific context, a simple organisation structure might include (Figure 6):

— A **Steering committee** composed of policymakers and senior managers. Its mission would be to provide strategic direction and the necessary political support to the process and to mainstream climate change policies across different departments.

— A **SECAP working group**, composed of representatives from different departments of the municipality, as well as experts from public agencies and academia, responsible for driving the programme forward, developing projects and monitoring progress, which can be further structured in:

- **Thematic sub-groups** composed of the climate and energy planning managers, key people from various departments of the municipality, public agencies, experts from academia, etc. Their task would be to coordinate the activities around specific issues, possibly with contributions from non-municipal key actors directly involved in SECAP actions.
- **Cross-cutting sub-groups** including reference persons from municipal departments and external experts. They would help to understand GHG mitigation opportunities, vulnerabilities to climate change and energy poverty challenges from multiple sectoral perspectives – focusing on real municipality needs and available data, facilitating mainstreaming of climate issues into existing policy areas, and steering the projects towards actionable results.

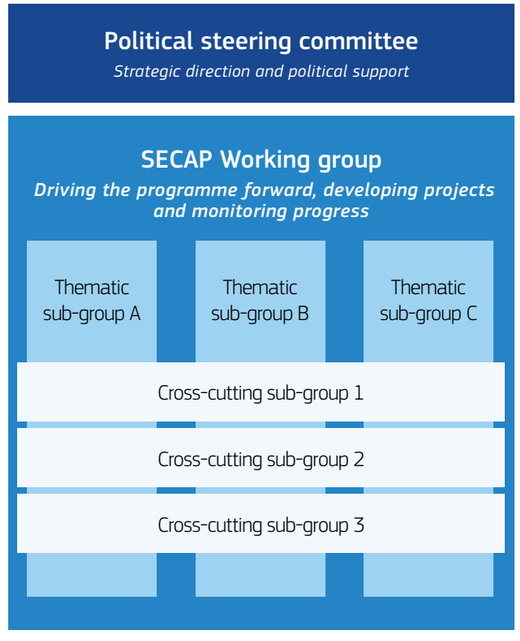
11 The concept of the Transition team and the different forms it can take, as envisaged by the 100 Climate-Neutral and Smart Cities Mission, can support municipalities in building a team that embraces both the internal and external skills, capabilities and resources required to deliver the climate transition. See additional resources at the end of the section.

The steering committee and the working group, as well as the sub-groups, need a distinct leader and clearly defined objectives and functions, although they should be encouraged to work together. A regular meeting schedule, a well-defined agenda and a shared project reporting strategy are recommended to have a good command over the SECAP process.

It is essential that all the components of the SECAP are integrated with other actions and initiatives of the relevant departments of the municipality, and they must become part of the overall planning of the municipality. Relevant municipal players should be assigned responsible roles to ensure strong ownership of the process in the organisation. Drawing up a flow chart indicating the various interactions between departments and actors would be useful to identify the adjustments that may be necessary to the municipality's organisation.

An internal communication campaign may help to reach and involve municipal workers in different departments. A contact point within the municipality's team should be set up to facilitate communication between the parties and foster data sharing.

Figure 6. An example of organisation structure



Source: JRC elaboration

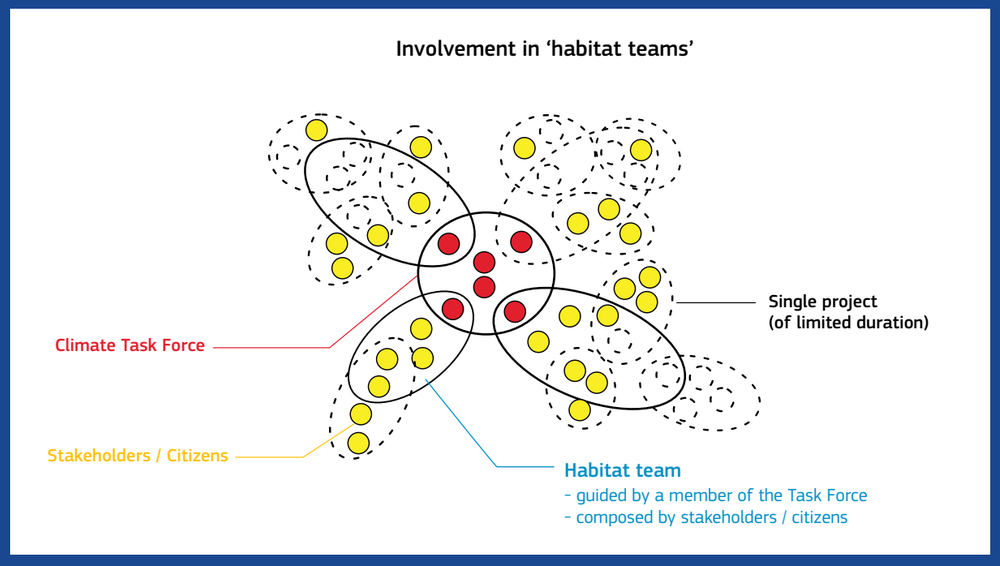
Box 4. An example: Florence 'Climate Task Force'

Since 2010, the municipality of Florence (Italy) formally created a dedicated interdisciplinary team, whose structure is interdepartmental and flexible to cover all possible needs and issues connected to the SECAP and climate change.

The Climate Task Force is formed by an internal steering group (22 people + Technical Assistance), which guides the design process and holds regular meetings to monitor activities, tune plans under development, benchmark and exchange with other cities and initiatives. It is led by the Mayor and the General Director, who is also the contact person and representative of the Covenant of Mayors. All the municipal sectors are involved: 1. General Direction and cooperation depart. (team leaders), 2. Environment Directorate, 3. New Infrastructure and Mobility Management, 4. Technical Services Department, 5. Urban Direction, 6. Financial Resources Management, 7. Economic Development Department, 8. Communication.

The internal steering group interacts with the 'habitat teams', thematic working groups which also include relevant stakeholders and residents. Each member of the internal steering group is responsible for one topic: the internal responsible member coordinates the habitat sub-groups and reports to the steering group.

Graphical representation of Florence's Climate Task Force structure



Source: Florence 2030 Climate Neutrality Action Plan

Additional resources on organisational structures

NetZeroCities (2022). Transition Team Playbook - Orchestrating a Just Transition to Climate Neutrality.

Tavella C., Pessina A., Yearworth M., Spoerndli C. (2019). Guidelines for stakeholders' engagement. Report developed by the H2020 CoME EAsy project.

3.2.2 Mobilising human resources

Effective SECAP preparation and implementation requires prompt mobilisation of human resources. The municipality should ensure that adequate staff resources are available to prepare the SECAP and implement the planned actions. This may involve identifying, involving and allocating support from other levels of government, or recommending and requesting this support.

Different human resources can be mobilised:

- Internal (in-house): human resources that already exist in the municipality management structure. They can be allocated by integrating the tasks linked to the SECAP process in existing departments of the municipality that are already involved in sustainable development and/or energy and climate-related topics. Specific training may be envisaged to improve staff skills on technical issues, data management, project and financial management, development of investment projects, communication tools and other identified gap areas.
- Internal (new): if departments and human resources are not in place or insufficient, new units can be set up in line with the assessment of needs for the SECAP design and implementation.
- Outsourcing: if the staff available within the municipality do not have sufficient expertise and background on the subject, external resources may be used for a limited period or to accomplish a specific task under the SECAP. Private consultants, municipal networks, universities and research institutes can be contracted to support the work on technical parts of the SECAP. If some tasks are outsourced, the municipality must closely monitor the work of contractors and ask them for detailed documentation on the accomplished tasks, to ensure consistent and smooth progress across all SECAP steps.
- Sharing resources: if the municipality does not have sufficient skills or resources to draft and implement their own SECAP (particularly small municipalities) it can join forces with other municipalities or with other levels of government. There are different ways to use joint resources, such as developing a joint SECAP in coordination and collaboration with neighbouring municipalities (section 7.1) or getting support from Covenant Coordinators (section 7.2).

It is worth highlighting that in-house human resources allocated to the SECAP may be particularly productive from a financial and strategic point of view. Involving resources from inside as much as possible offers the advantage of a higher ownership of the process, saves costs and supports the materialisation of a SECAP.

3.3 Stakeholder engagement and effective communication

Stakeholder engagement and participatory co-creation are central to local environmental governance. In the case of a SECAP, involving the public and organisations early in the planning process is particularly important, given the relevance of public and private sectors and of final users in achieving climate change commitments. Stakeholder engagement and participatory approaches are crucial to ensure the commitment of key actors and the transparency of the process, as well as the credibility of the SECAP and acceptance of actions. They also contribute to behavioural changes across all segments of society and are recognised to have a positive impact on environmental governance outcomes (Cattino and Reckien 2021; Rivas et al. 2021; Newig et al. 2023).

3.3.1 Identifying and mapping stakeholders

Identifying and mapping of stakeholders is the first step for the development of a co-created, shared and inclusive SECAP. The stakeholders are individuals or groups:

- whose interests are affected by the issue;
- whose activities affect the issue;
- who possess/control information, resources and expertise needed for strategy formulation and implementation;
- whose participation/involvement is needed for successful implementation.

Creating a comprehensive list of stakeholders is a prerequisite for municipalities that start building the local community to involve in the phases of the SECAP process. Depending on the local context, broad categories of stakeholders can be outlined to then scale down and identify representatives of different organisations, groups or entities.

In the context of climate change and sustainable development, the quintuple helix approach identifies five subsystems of stakeholders:

1. Education system (academia, universities, higher education systems, and schools);
2. Economic system (industry, firms, services and banks);
3. Political system (state and government);
4. Media-based and culture-based public (including civil society);
5. Natural environment (actors that represent environment/social ecology instances and know-how).

According to this model, the circulation of knowledge from one subsystem to the others triggers knowledge creation, generating new ideas for the socio-ecological transition. Table 3 proposes an example of mapping stakeholders using the quintuple helix model.

As identified stakeholders may differ in terms of characteristics, impact and interests at stake, it is important to map them according to their attributes, level of impact/interest and role in relation to key issues to be tackled. Some entities or groups may present greater potential risk or particularly high interests, making them more critical to the success of the plan. These key stakeholders require closer management, frequent monitoring, and possibly higher levels of engagement. There are different stakeholder mapping tools, which use charts to visualise all the stakeholder attributes. These may help municipalities to understand where one stakeholder stands compared to others, identify patterns, and organise stakeholders into groups based on shared attributes.

Table 3. Example of stakeholder categorised using the Quintuple Helix model

Helix		Category	Stakeholder
Natural Environment *To be considered at each level of the stakeholder mapping*	Education system	Schools, Research and Academia	Universities
			Schools
			Research centres/institutes
			Experts
	Economic system	Business and industries	Entrepreneurs
			Local industries
			Building/Construction companies
			Farms/Agriculture/Food companies
			Consulting firms
		Financial partners	Banks
			Private funds
			ESCOs
			Insurances
		Utility companies	Transport/mobility companies
			Waste management companies
			Energy providers
			Water management companies
	Political system	Public bodies	National/regional administrations and/or neighbouring municipalities
			Local and regional environmental and energy agencies
		Other governmental entities	Civil protection (e.g. police and fire departments)
			Chambers of commerce
			Port authority and/or coast guard
			Hospitals/emergency services
	Media-based and culture-based public	General public	Residents
			Tourists
		Cultural/civil society associations	Local associations, NGOs, and networks
			Foundations and museums
			Trade/worker unions
			Religious groups and societies
			Volunteers
		Communication	Local media
			Communication agencies

Source: JRC elaboration

3.3.2 How to engage stakeholders

Once identified and mapped, stakeholders should be involved from the very beginning of the SECAP process, although different stakeholder groups may be engaged at different stages. Some stakeholder groups may also have an active role in specific tasks of the SECAP preparation. For example, academic experts, utilities companies, NGOs and the private sector may contribute to collecting and sharing useful data and to proposing sound and policy-relevant indicators. Clear and meaningful engagement in all the stages of the decision-making process is a key element for ambitious and transformative local climate change adaptation and mitigation planning (Cattino and Reckien 2021).

There are various degrees of stakeholder involvement in SECAP design and decision-making: from information to higher levels of engagement such as consultation, participation, and empowerment (see Table 4). To design a shared and inclusive SECAP, the highest participation of stakeholders and individuals should be sought, promoting dialogue and collaboration between them.

Involvement of stakeholders can be fostered through a variety of methods and techniques, depending on the level of engagement (Table 4).

Preparing a stakeholder engagement plan outlining stakeholders to be involved, roles, methods and objectives of each phase may help cities in keeping track of progress, identifying stakeholders' needs and preventing potential barriers to participation (Table 5). In addition, it may be useful to call on stakeholder engagement professionals and animators.

Table 4. Examples of community engagement techniques

	Inform	Consult	Involve	Collaborate	Empower
ENGAGEMENT GOAL	Provide the community with relevant information	Gather input from the community	Ensure community needs and assets are integrated into process & inform planning	Ensure community plays a leadership role in implementation of decisions	Foster community-driven decision-making
MESSAGE TO COMMUNITY	*'We will keep you informed'*	*'We care about what you think'*	*'You are making us think (and therefore act) differently about the issue'*	*'Your leadership and expertise are critical to how we address the issue'*	*'It's time to unlock collective power and capacity for transformative solutions'*
ENGAGEMENT TECHNIQUES	- Website - General Information Channels - Videos - Infographics - Social Media - Advertising and Media Coverage - Printed Collateral - Presentations and Live Streaming - Expert Panel - Displays/Exhibits - Site visits/Tours - Public Meetings	- Polls - Voting - Surveys - Interviews - Focus Groups - Online Forums - Online Commenting - Social Media Listening - Social Media Discussion/Town halls - Workshops - Door-to-door - Kitchen table talks - Open houses/pop ups - Comment boxes	- Crowdsourcing ideas/ ideation - Community Mapping - Digital Storytelling - Design Charrette - Mind Mapping - Most Significant Change (MSC) - Visioning - Scenario Testing - Residents' panels - Hackathons - Participatory budgeting	- Large group meetings - Document co-creation - Online communities - Open space - Working groups/study circles	- Co-decision-making platform - Residents committees - Residents juries - Community indicator projects - Asset-based Community Development (ABCD)

Source: adapted from Tamarack Institute (2017) and Covenant of Mayors - Europe (2023)

Table 5. Possible outline of stakeholder engagement plan (for illustrative purposes only)

Phase	Name/ Reference	Type (Category)	Interest	Influence	Role	Communic. approach	Method	...
STEP 1: Initiation phase	Name	Municipal depart. (Public body)	+++	+++	Coordination	Email, Phone call	Periodic meetings	...
	Name	NGO (Civil society)	++	++	Engagement/ Consultation	Email	Citizens' panels	
	Name	Residents (Civil society)	++	+++	Consultation	Newsletter/ Comm campaign	Citizens' panels/Survey	
	...							
STEP 2: Status quo assessment and goals definition	Name	Expert (Academia)	+++	++	Data gathering/ analysis	Email, Video call	Working group	
	Name	Environ. Agency (Public body)	++	++	Data provider/ analysis	Email	Working group	
	Name	Energy provider (Utility)	++	+++	Data provider	Email, meeting	Working group	
	Name	NGO (Civil society)	++	++	Vision setting	Email	Citizens' panels	
	...							
STEP 3: Action planning and strategies	Name	Bank (Financial sector)	+	+++	Sponsor	Phone call, meeting	Crowdsourcing ideation	
	Name	NGO (Civil society)	++	++	Engagement/ Action implem.	Email	Workshop	
	Name	Private firm (Business)	+	++	Action implementation	Phone call, email	Hackathon	
	Name	Residents (Civil society)	++	+++	Action planning/ impl.	Newsletter/ Comm campaign	Participatory budgeting	
	...							
STEP 4: Implementation and monitoring	Name	Municipal depart (Public body)	+++	+++	Monitoring	Email, Phone call	Periodic meetings	
	Name	Local TV (Communication)	++	+++	Communication of results	Phone call, email	Press release	
	...	...						

Source: JRC elaboration

Box 5. An example: Zagreb's multi-stakeholder partnership to eradicate energy poverty

In 2018, the municipality of Zagreb (Croatia) set up a multi-stakeholder partnership to address energy poverty while contributing to the city's GHG emission reduction target. In partnership with the Faculty of Electrical Engineering and Computing of Zagreb University and the Croatian society for Sustainable Development Design, the municipality launched the project 'Fair (FER) solutions for a better community'. The project involved training students to carry out energy audits and implement low-cost energy improvements in households vulnerable to energy poverty identified by the municipality. The project pursued multiple objectives: mapping energy poor households in Zagreb, implementing low-cost energy efficiency measures and providing advice on how to reduce energy use, as well as building students' skills as part of a university programme. It was funded by the European Social Fund and the Croatian national budget via the Government Office for NGOs.

In two years, 102 households were visited, whose living conditions improved thanks to energy efficiency measures implemented at no cost, including installation of energy-efficient LED bulbs, timers for electric boilers, draught-proofing of windows and doors, etc. These measures are estimated to save households about 200 kg CO_2/year, and more than 1 200 kWh/year in electricity and heat. The students also advised households on the most cost-efficient and energy saving investments, based on a model for wall retrofitting developed as part of the project. In addition, data collected through the household survey allowed researchers to analyse and understand the drivers of energy poverty in Zagreb.

The municipality of Zagreb used the report recommendations to promote legislative changes and provide vulnerable residents with further information and support. Zagreb became the first city in Croatia to adopt a strategic document on the prevention of poverty and social exclusion, the 'Zagreb strategy for combating poverty and social exclusion for the period 2021-2025', which also includes a definition of energy poverty.

More information available on the Covenant of Mayors – Europe's library.

Additional resources on stakeholders' engagement
NetZeroCities, Quick Reads on "Citizens participation and stakeholder engagement".
Tavella C., Pessina A., Yearworth M., Spoerndli C. (2019). Guidelines for stakeholders' engagement. Report developed by the H2020 CoME EAsy project.
International Association for Public Participation, "IAP2 Public Participation Spectrum".
European Climate Pact "Quick tools for citizens engagement".

3.3.3 Communication

Communication is an essential mean to keep external and internal stakeholders informed, motivated and supportive during the development and implementation of the SECAP. Therefore, SECAP development should include a clear communication strategy that is feasible, efficient and adapted to local needs and the cultural context.

A communication strategy should take into account all phases of SECAP development and can be instrumental in getting support from stakeholders during this process, giving visibility to the commitments of both municipality and the partners, as well as acknowledging the results achieved.

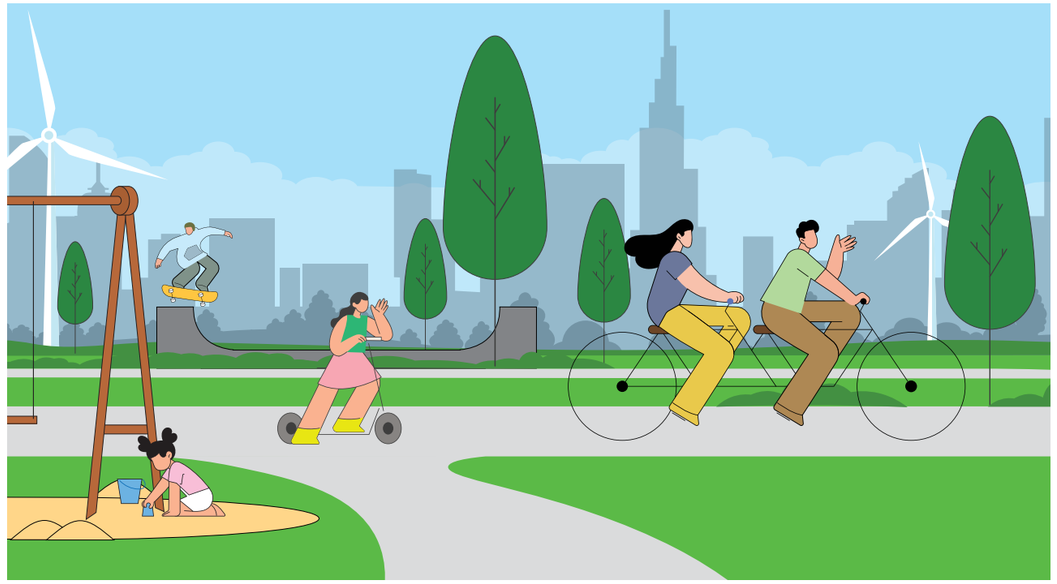
In the initial phase, a clear communication strategy and accurate information campaigns can ensure that the SECAP objectives are fully understood and avoid the risk of disinformation and misinformation around climate change topics. Mitigation and GHG emissions, adaptation to climate change and energy poverty are terms that are often misunderstood and not perceived as connected to everyday problems. Showing the connection to societal wellbeing and everyday activities can be crucial to social acceptance of the plan. It is important to focus on the benefits of mitigation, adaptation and energy poverty measures, such as positive impacts on health and quality of life or making cities liveable and attractive, to help overcome stakeholder concerns with the costs.

Good communication is also essential during the implementation phase, both internally among different departments of the municipality and externally with relevant stakeholders, including the public. In that case, communication plans could be connected to the implementation of specific actions or to the overall achievement of the plan.

Networking with other municipalities, especially other CoM signatories, to exchange experiences and best practices is highly recommended. It accelerates learning and highlights the actions taken by each municipality, which may also attract investors and additional funding to support pilot and/or demonstration projects.

Key points of an **effective communication strategy**:

- Define the desired outcome: the expected effect of the communication tool/plan should be clear and objective. Some examples of outcomes are: raising awareness, increasing knowledge on the theme, gaining political relevance, gaining acceptance, inspiring action, and promoting results.
- Focus on the key message: this should be clear, concise and simple.
- Identify and address the key audience: the target audience may vary from internal (inside municipal administrative institutions) or external (other stakeholders). Understanding the target audience will help capture their interest and address specific concerns.
- Determine indicators to evaluate the potential outreach and impact of communication (number of participants in an event, survey responses, hits on website, feedback via emails, etc.).
- Specify the budget.
- Specify the most appropriate communication channel(s), depending on the desired outcome and available resources: face-to-face, advertising, mail, email, website, blogs, talks/meetings, brochures, posters, newsletters, publications, media releases, sponsorship, etc.
- Specify the planning: draw up a plan summarising all indicative information above and details related to its implementation, such as timelines, responsibilities, costs of each action and potential barriers to implementation.



3.3.4 Embedding justice and equity considerations

Climate action in cities must be genuinely inclusive, prioritising the needs of vulnerable and marginalised population groups.

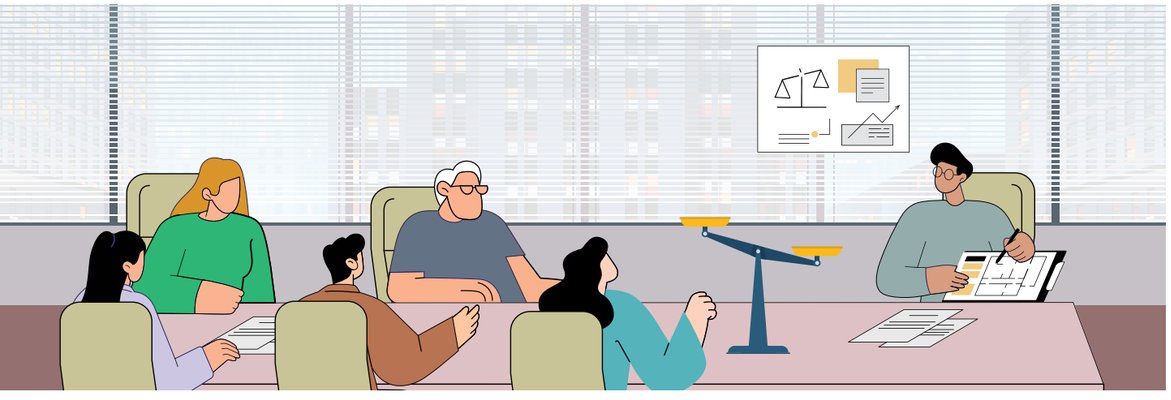
Ensuring the active representation and participation of vulnerable communities in decision-making processes is essential to obtain informed and meaningful inputs from those who are most affected by climate change, bear a heavier burden of high energy costs (e.g. low-income households and elderly populations), or are more exposed to the adverse consequences of the transition. Furthermore, empowering marginalised and vulnerable communities by providing them with access to information, education, training, and financial resources enables their active participation in energy efficiency programmes, renewable energy initiatives, and climate resilience projects. This ultimately enhances their capacity to drive and benefit from climate action initiatives.

In the past, climate action plans often prioritised environmental and economic considerations, potentially overlooking or neglecting the social dimension, or even increased inequalities, for example by driving 'green gentrification' (Anguelovski et al. 2022). To avoid becoming 'hotspots of injustice', cities need to recognise the links between climate efforts and their multiple implications, to be mindful of the unintended consequences of climate action and to become more justice-aware when planning climate action (Della Valle, Ulpiani, and Vetters 2023).

To incorporate justice and equity considerations, cities may adopt a number of policy tools (Diezmartínez and Short Gianotti 2022):

1. Enhance local engagement through 'justice partnerships', by engaging directly with vulnerable groups or with advocacy groups representing them. This way, cities can promote participation among historically underrepresented communities, tap into local knowledge and resources, and thus develop and implement climate actions that are responsive to the needs and priorities of all residents.
2. Create 'equity advisory boards', in charge of representing and engaging vulnerable populations, to ensure that actions are aligned with justice goals.
3. Develop 'equity tools', guiding municipal governments to recognise and embed justice and equity considerations throughout the policy process. These tools, which may include checklists or guiding questions, enable cities to assess the potential benefits and unforeseen effects of policies on local vulnerable populations, and to conduct evaluations of each policy and programme before they are put into action.
4. Set 'justice indicators' to quantify justice and equity impacts of climate action plans and monitor progress towards justice goals.

SECAPs have the potential to become key tools to advance just urban transitions. Social risks might arise if people do not understand or co-own the action taken (G. Ulpiani and Vetters 2023). Therefore, addressing social justice and inequality concerns early in the planning process is crucial to provide legitimacy to climate action plans and thus mitigate social risks. Additional guidance on how to embed equity considerations into the SECAP processes is provided by the Covenant of Mayors – Europe (2023).



Box 6. An example: Barcelona's new governance model to include justice

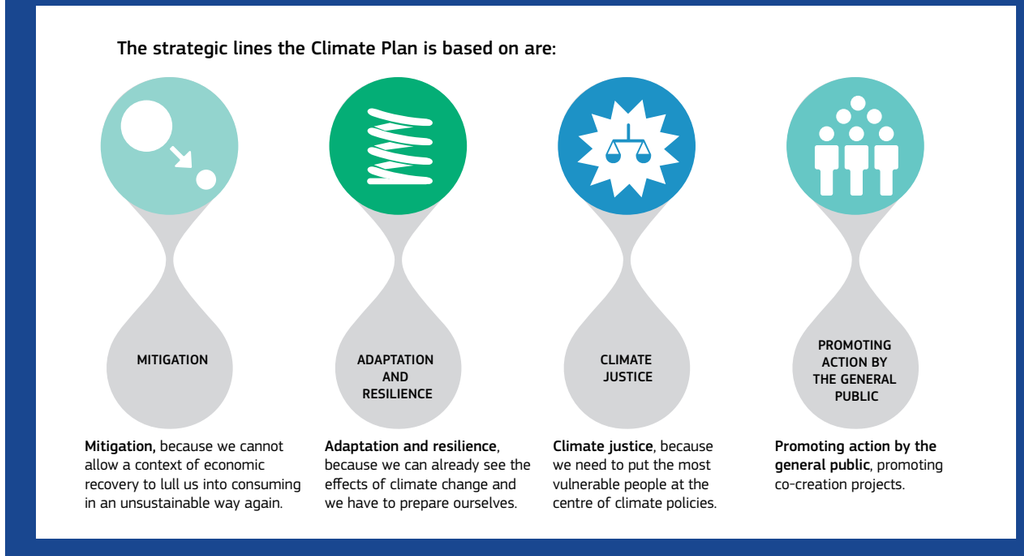
In 2021, Barcelona (Spain) adopted the climate emergency action plan for 2030, an integrated action plan (part of the SECAP). It represents an opportunity for joining forces and making Barcelona a pioneering city that not only takes responsibility for reducing emissions, but is also preparing to be less vulnerable to their effects and to be fairer and more participatory by promoting climate justice and civic action.

All activities in the plan are undertaken with strong equity considerations, including putting the needs of vulnerable groups or hard to reach people at the forefront. Different dimensions are considered, such as gender, economic, social and procedural justice, but also key challenges including poverty, employment, human rights and refugees.

Recognising the possibility of procedural injustice, new models of governance cooperative mechanisms have been set up within the municipality. To enable the implementation of planned activities, a new transversal department was put in place to facilitate active collaboration between different city departments. This interdisciplinary department aims at supporting a fairer redistribution of the benefits of climate-resilient infrastructure and ensuring more meaningful participatory processes.

Overall, Barcelona's approach to intersectional climate justice uses four different categories of governance and decision-making tactics: i) experimenting with disruptive urban and climate planning approaches; ii) breaking institutional silos to embed climate justice into all aspects of operation over time; iii) making the concept of care central to urban planning; iv) adopting place-based approaches to recognize local knowledge and include marginalized residents in decision-making.

Strategic lines of Barcelona's Climate Emergency Plan



Source: Climate Emergency Action Plan

More information is available in the article assessing intersectional climate justice published by the Autonomous University of Barcelona

4. Status quo assessment and goals definition

Sound assessment of the current local situation

Defining a common vision and ambitious targets

4.1 Sound assessment of the current local situation

4.1.1 Greenhouse gas emission inventory

The SECAP process includes the compilation of greenhouse gas (GHG) emission inventories. These emission inventories quantify potential GHG emissions associated with the territory and activities of the municipality. Starting from data on energy consumption from various carriers, energy production from renewable and non-renewable sources as well as other activity data and applying appropriate emission factors (EFs), the municipality can estimate the emissions associated with key urban sectors.

Accounting for GHG emissions is of critical importance to support climate change mitigation action and to enable the municipality to develop, monitor and measure the impacts of its SECAP and adapt or adjust the action path if needed. In particular, developing a baseline emission inventory (BEI) represents a key part of the SECAP aimed at setting a reference starting point against which the achieved GHG emission reductions will be compared, whereas the successive monitoring emission inventories (MEI) are crucial to monitor progress across implementation.

GHG emission inventories make it possible to identify sectors' relative contributions and support the design and prioritisation of GHG mitigation actions accordingly. Data on energy consumption and local energy production allow the municipality to track progress in terms of energy efficiency and renewable energy deployment. Moreover, they are key to ensuring a transparent process and communication - potentially increasing the motivation and uptake of all stakeholders and actors who can contribute to the local climate and energy objectives.

The scope, boundaries and methodology of CoM EU inventories must be based on well-established standards and frameworks to ensure quality, relevance and comparability, while remaining flexible and adjustable to municipalities' needs and capacities. For example, municipalities are encouraged to use GHG accounting approaches and principles that are in line with those of the Intergovernmental Panel on Climate Change (IPCC). However, the CoM framework sets a specific inventory structure that considers municipal activities as a sector for which energy use and emissions should be reported separately, to promote transparency and the exemplary role of the municipality.

Detailed guidance is provided in Complementary document 1 on "How to prepare a greenhouse gas emission inventory"

4.1.2 Risk and vulnerability assessment

Developing a risk and vulnerability assessment (RVA) is a critical step for municipalities. This process combines scientific data with local knowledge to assess climate risks and vulnerabilities. The RVA draws on a strategic approach that encompasses identification, analysis, communication, and continual improvement, all aimed at making communities resilient against the adverse effects of climate change.

Identifying climate-related hazards is the first key step of an RVA. Using climate data and services, municipalities can pinpoint the specific climate hazards their region faces. This stage involves careful analysis of historical climate patterns and future projections to map out potential hazards. With climate hazards identified, the next phase is to map the exposure of assets, infrastructure, and populations. This step is coupled with assessing the vulnerability of these entities (sectors and population groups) to the identified hazards. Adaptive capacity assessment then follows, where the focus turns to evaluating how well a community can adjust to climate impacts. This includes scrutinising resources, technology, knowledge, and infrastructure that can aid in climate adaptation.

Risk analysis and prioritisation are the subsequent stages of the RVA. This involves synthesising all gathered data to understand overall risks. It is about quantifying risks, evaluating potential impacts, and setting clear, measurable adaptation goals that align with the community's capacity and needs.

Box 7. Definition of key concepts related to this section

Climate Hazard. The potential occurrence of a natural or human-induced physical event, trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources. In this report, the term hazard usually refers to climate-related physical events or trends or their physical impacts (IPCC 2022).

Climate Exposure: The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected (IPCC 2022).

Climate Vulnerability:
For *Population Groups*: Climate vulnerability describes the extent to which a population group is vulnerable to harm from climate impacts. This can be influenced by factors such as socio-economic status, health, age, location, and access to resources. Vulnerable groups might include older people, low-income communities, or those with pre-existing health conditions.

For *Sectors*: Climate vulnerability for sectors refers to the vulnerability of economic sectors (like agriculture, water resources, or energy) to climate variability and extremes. This can depend on sector-specific factors such as technology, infrastructure, market dynamics, and regulatory frameworks.

Adaptive Capacity: Adaptive capacity is the ability of a system, community, or organisation to adjust to climate variability and extremes, to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. This includes elements such as resource availability, technology, information and skills, infrastructure, institutions, and equity.

Climate Impact: Climate impact refers to the effects of climate variability and change on natural and human systems. Impacts can be positive or negative and can result from both gradual changes (like temperature rise) and extreme events (like hurricanes). These impacts often lead to changes in the functioning and services provided by these systems.

Climate Risk: The potential for consequences where something of value is at stake and where the outcome is uncertain, recognising the diversity of values. Risk results from the interaction of vulnerability, exposure, and hazard (IPCC 2022).

Detailed guidance is provided in Complementary document 2 on "How to prepare a Risk and Vulnerability Assessment (RVA)"

4.1.3 Energy poverty assessment

Energy poverty is a specific form of poverty driven by a combination of factors such as low income, high energy expenses, and poor energy efficiency in buildings, which affect people's health, education, and their overall wellbeing. The objective of the assessment phase is to provide a comprehensive understanding of energy poverty within the local context, including its extent, underlying causes, and contributing factors, to inform effective action planning.

As energy poverty is a complex and multidimensional issue driven by various transversal factors, the assessment is particularly important to understand how these elements interact and impact the local context. The multidimensional aspects of energy poverty are reflected in five macro-areas used in the EU context: Climate, Facilities and housing,

Mobility, Socio-economic, Policy and regulatory framework and Participation/awareness raising. Following Energy Poverty Advisory Hub assessment recommendations (Energy Poverty Advisory Hub 2023) and ranging from local climate conditions to socio-economic circumstances and the existence of policy approaches, the macro-areas provide a framework to organise the assessment in a structured manner. For each macro area, a set of indicators is made available to provide a picture of the status of energy poverty for the municipalities.

At the end of the assessment, the signatory should have a detailed understanding of energy poverty in their local context, including insights from selected indicators across multiple macro-areas, enabling them to set informed goals, prioritise interventions, and design targeted policies and actions.

Detailed guidance is provided in Complementary document 3 on "How to develop an energy poverty assessment"

4.2 Defining a common vision and ambitious targets

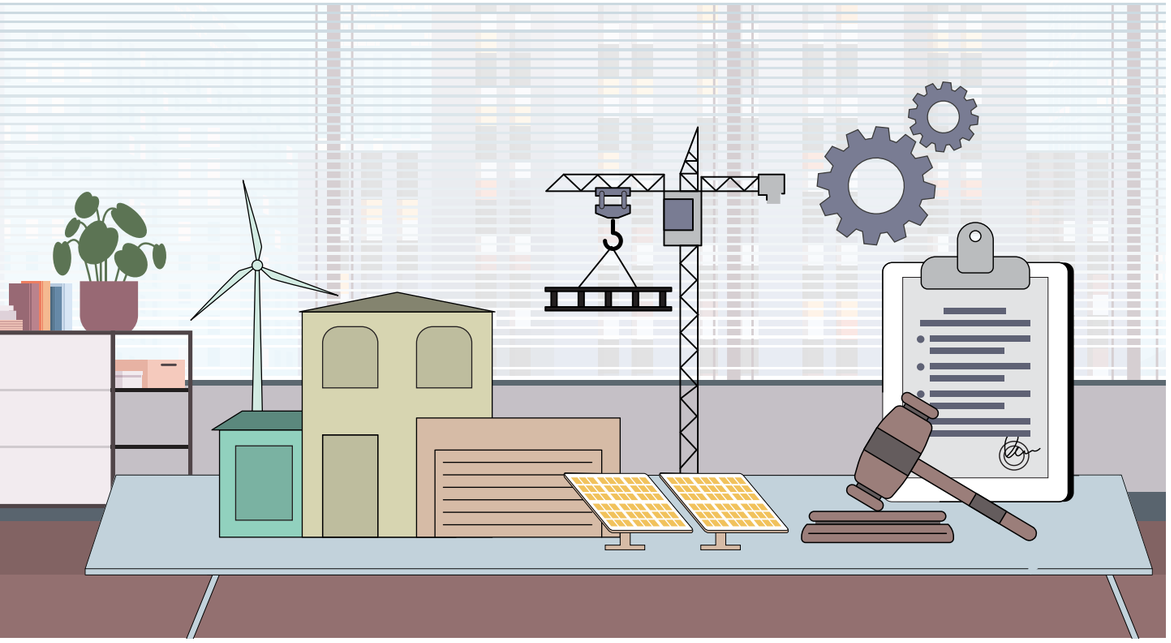
4.2.1 Regulatory provisions relevant to local climate action

When setting climate goals, municipalities need to have a clear overview of the existing municipal, regional, national and EU policies and regulations affecting energy and climate issues within their territory. This section provides an overview of the main EU regulatory provisions that can be relevant for municipalities.

With the adoption of the EU Green Deal and the EU Climate Law, the importance of climate action at a local level has been explicitly recognised. New directives and reforms, launched under the 'Fit for 55' package, involve sectors such as buildings, energy, mobility, nature and industry that are part of the municipalities' remit. Among them, the following are important in the context of the SECAP definition (details about the provisions affecting municipalities are provided in Table 6):

— The revised Energy Efficiency Directive (EED)[12] aims at increasing the energy efficiency requirements, including envisaging a leading role for public sector. It recalls the energy efficiency first principle and affirms the need to consistently apply it at all levels, including local policy, planning and investment decisions related to energy consumption or supply.

12 See the European Commission's webpage on Energy Efficiency Directive.



— The new Renewable Energy Directive (RED)[13] includes provisions that are going to affect local administrations' plans. Sectoral targets are set, for example at least 49% of renewable energy share to be achieved in the building sector.
— The Energy Performance of Buildings Directive (EPBD)[14], as revised in 2024, has the primary objective to fully decarbonise the EU building stock by 2050. National building renovation plans must be drawn up in consultation with local authorities, which should also receive appropriate training and information on the implementation of the Directive at national or regional level, in addition to intervention on their own public buildings.
— The new Electricity Market Design Directive[15] includes provisions to protect vulnerable consumers from the fluctuation of energy prices. Among the other things, it allows public bodies to participate in renewable energy sharing schemes.
— The new trans-European transport network regulation (TEN-T)[16], which aims at fostering efficient transportation for people and goods, identifies 431 cities as urban nodes and requires them, among other things, to adopt a Sustainable urban mobility plan (SUMP).
— The Directive on urban wastewater treatment[17], revised at the end of 2024, sets out the rules for the collection, treatment and discharge of urban wastewater, with the objective to protect the environment and human health, while reducing GHG emissions.
— The Regulation on Nature Restoration[18], as part of the 'natural resources' pillar of the European Green Deal, asks Member States to put in place measures that may influence green spaces and rivers in urban areas, and for which local and regional authorities should be engaged along with other relevant stakeholders.

13 See the European Commission's webpage on Renewable Energy Directive (RED).
14 See the European Commission's webpage on Energy Performance of Buildings Directive.
15 See the European Commission's webpage on Electricity market design.
16 See the European Commission's webpage on Trans-European transport network regulation.
17 See the European Commission's webpage on Urban wastewater.
18 See the European Commission's webpage on Nature Restoration Regulation.

Table 6. Major 'Fit for 55' new regulations affecting municipalities

Regulation	Requirement/provision affecting municipalities
Energy efficiency directive (Directive (EU) 2023/1791)	Achieve an annual energy consumption reduction of 1.9% in the public sector (Article 5).
	Annually renovate at least 3% of the total floor area of the buildings with a useful floor area >250 m² that are property of public bodies (including local government), to be transformed into at least nearly zero energy buildings. For buildings not owned by public bodies, they should negotiate energy improvements (Article 6).
	Prepare local heating and cooling plans, ensuring energy efficiency first, for municipalities with > 45 000 inhabitants, with the financial and technical support of Member States (Article 25).
Renewable energy directive (Directive (EU) 2023/2413)	Local and regional administrative bodies are encouraged to include heating and cooling from renewable sources in the planning of municipal infrastructure where appropriate, and to consult the network operators to reflect the impact of energy efficiency and demand-response programmes as well as specific provisions on renewables self- consumption and renewable energy communities, on the infrastructure development plans of the network operators (Article 15).
	Determine 'Renewables acceleration areas' for the deployment of renewables in coordination with local and regional authorities and entities, before 21 February 2026 (Article 15b).
	From February 2024, until climate neutrality is achieved, all renewable energy planning, construction and operation and the connection to the grid are presumed to be in the 'overriding public interest and serving public health and safety' (Article 16).
Energy performance of buildings directive (Directive (EU) 2024/1275)	- From 1 January 2028, new buildings owned by public bodies will be required to be Zero Energy Buildings (no emissions from fossil fuel combustion on-site). - From 1 January 2030, all new buildings have to follow the same requirements (Article 7).

	Solar energy installations should be ensured, as follows (Article 10):
	- On all new public and non-residential buildings with useful floor area > 250 m² by 31 December 2026;
	- On all existing public buildings with useful floor area larger than:
	  ○ 2 000 m², by 31 December 2027;
	  ○ 750 m², by 31 December 2028;
	  ○ 250 m², by 31 December 2030.
	- On existing non-residential buildings with useful floor area > 500 m², that undergo major renovation, by 31 December 2027;
	- On all new residential buildings and new roofed car parks physically adjacent to buildings by 31 December 2029.

	Non-residential buildings have to be equipped with building automation and control systems (Article 13): - when system output is > 290 kW by 31 December 2024 - when system output is > 70 kW by 31 December 2029.

	On infrastructure for sustainable mobility (Article 14):
	- By 1 January 2027, non-residential buildings with more than 20 car parking spaces, must be equipped with:
	  ○ At least 1 recharging point/10 car parking spaces (or conduits for electric cables for at least 50% of the car parking spaces);
	  ○ Bicycle parking spaces representing at least 15% of average or 10% of total user capacity of the building.
	- By 1 January 2033, buildings owned or occupied by public bodies must be equipped with the installation of pre-cabling for at least 50% of car parking spaces;
	- New non-residential buildings and those undergoing major renovation, with more than 5 car parking spaces, must be equipped with:
	  ○ At least 1 recharging point/5 car parking spaces;
	  ○ Pre-cabling for at least 50% of car parking spaces and conduits for the remaining car parking spaces;
	  ○ Bicycle parking spaces representing at least 15% of average or 10% of total user capacity.

Electricity market design directive (Directive (EU) 2024/1711)	- Public bodies have the right to participate in energy sharing as active customers in a non-discriminatory manner. - Energy sharing projects owned by public authorities must make the shared electricity accessible to vulnerable or energy poor customers or residents. When doing so, the amount of that accessible energy should be at least 10% on average of the energy shared (Article 15a).

TEN-T (Regulation (EU) 2024/1679)	Each urban node must (Article 41):
	- By 31 December 2027
	  ○ Adopt and monitor a Sustainable Urban Mobility Plan (SUMP) including measures to integrate different transport modes and shift towards sustainable mobility, promote efficient zero and low emission mobility, reduce air and noise pollution and where appropriate, assess the user's accessibility to transport;
	  ○ Collect and submit to the Commission urban mobility data in the fields of sustainability, safety and accessibility according to the indicators and methodology provided by the regulation;
	- By 31 December 2030, develop a multimodal passenger hub to facilitate first and last mile connections, including facilitation of access to public transport infrastructure and active mobility, and which are equipped with at least one recharging station;
	- By 31 December 2040, develop at least one multimodal freight terminal, if it does not already exist.

Urban wastewater treatment directive (Directive (EU) 2024/3019)	An integrated urban wastewater management plan must be established (Article 5): - By 31 December 2033, for drainage areas of agglomerations of 100 000 population equivalent (p.e.) and above; - By 31 December 2039, for drainage areas of agglomerations between 10 000 and 100 000 p.e.

	Total annual energy from renewable sources generated by urban wastewater treatment plants treating 10 000 p.e. and above must be (Article 11):
	  ○ 20% of their total annual energy use by 31 December 2030;
	  ○ 40% of their total annual energy use by 31 December 2035;
	  ○ 70% of their total annual energy use by 31 December 2040;
	  ○ 100% of their total annual energy use by 31 December 2045.

Regulation on nature restoration (Regulation (EU) 2024/199)	- By 31 December 2030, ensure no net loss in the total national area of urban green space and of urban tree canopy cover in urban ecosystem areas compared to 2024 (exemption if urban green space is > 45% and urban tree canopy cover >10%) (Article 8); - From 1 January 2031, until the satisfactory level is identified (Article 8): ○ Ensure an increasing trend in the total national area of urban green space, including through the integration of urban green space into buildings and infrastructure, in urban ecosystem areas measured every six years; Ensure an increasing trend of urban tree canopy cover, in each urban ecosystem area, measured every six years.
	Make an inventory of and remove artificial barriers to the connectivity of surface waters, and restore at least 25 000 km of rivers to free-flowing rivers within the EU by 2030 (Article 9).
	Urban ecosystem areas for all cities, towns and suburbs must be determined and mapped by Member States (Article 14).

Source: JRC elaboration

In addition, the 2023 revision of the Emission Trading System - ETS Directive introduces a new emissions trading scheme (ETS2), which is to become fully operational in 2027. It may be relevant for cities and municipalities as it covers CO_2 emissions from fuel combustion in buildings, road transport and other sectors, such as small industries not covered by the current trading scheme. ETS2 regulates emissions upstream and therefore requires fuel suppliers to monitor and report their emissions.

Connected to this, the Social Climate Fund (SCF) will support a fair transition towards climate neutrality, helping alleviate the social and economic impacts of the ETS2. It will provide EU Member States with dedicated funding so that the most affected vulnerable groups, such as households in energy or transport poverty, are specifically supported to allow them to benefit from the green transition directly. Local and regional authorities must be consulted by Member States in drafting the Social Climate Plans. The fund represents an opportunity for municipalities to finance SECAP actions and investments for a just and equitable transition in their territory.

Overall, the EU policy initiatives described above can bring wide economic, environmental and societal benefits to the public (e.g. by decreasing energy costs, reduce inefficiencies, freeing up public resources for other purposes). This will allow local communities to benefit from a synergetic action in terms of emission reduction, energy security and energy poverty.

4.2.2 Setting a long-term vision

The SECAP draws primarily on a long-term vision, which will be the guiding principle of the SECAP preparation and planning. It points out the direction that the municipality intends to take. It is important that the vision sets out 'where the municipality wants to be in the future', which will serve as a basis to identify the actions necessary to get there, starting from the current situation.

The vision should be implemented in cooperation with the local community through public participation and discussion groups to develop a shared idea of sustainable future and prioritise areas of intervention. The vision must be realistic but still ambitious. It needs to be in line with the Covenant of Mayors' commitments, i.e. it should be at least as ambitious as the 55% GHG emission reduction target by 2030 and include the climate neutrality target by 2050, it should highlight how the municipality will gradually become resilient and adapted to the impacts of climate change and how it will tackle energy poverty, while highlighting what the benefits for the public will be. A clear and ambitious long-term vision is considered a key success factor of the SECAP as it shows the municipality's political commitment and gives a strong message to the public and stakeholders on how the municipality wants to develop in the future, paving the way for more substantial investment in sustainable infrastructure.

4.2.3 Targets and goals

Once the long-term vision is well established, it is necessary to translate it into more specific targets and goals in the areas where the municipality intends to take action within each of the CoM pillars. Targets should build upon the outcomes and indicators identified in the status quo assessment (section 4.1).

The targets and goals should follow the SMART principles: Specific, Measurable, Achievable, Realistic and Time-bound. To set SMART targets and objectives, municipalities may use the following questions:

1. **Specific** (well-defined, focused, detailed and concrete): What are we trying to do? Why is this important? Who is going to do what? When do we need it done? How are we going to do it?
2. **Measurable** (kWh, time, money, %, etc.): How will we know when this objective has been achieved? How can we make the relevant measurements?
3. **Achievable** (feasible, actionable): Is this possible? Can we get it done within the timeframe? Do we understand the constraints and risk factors? Has this been done (successfully) before?
4. **Realistic** (in the context of the resources that can be made available): Do we currently have the resources required to achieve this objective? If not, can we secure extra resources? Do we need to reprioritise the allocation of time, budget and human resources to make this happen?
5. **Time-Bound** (fixed deadline or schedule): When will this objective be accomplished? Is the deadline unambiguous? Is the deadline achievable and realistic?'

Each of the CoM pillars (mitigation, adaptation and energy poverty) has some specificities on how to set targets and objectives, which are explained below.

4.2.3.1 GHG mitigation targets

The mitigation target is the overall GHG emission reduction that the municipality commits to achieve annually by the target year (e.g. 2030, 2050), in relation to the baseline year.

A reduction target can be set on an 'absolute' or 'per capita' basis. Generally, absolute reduction targets are appropriate if no significant changes in population are observed or expected between the baseline and the target year. However, if significant changes in population are observed, an absolute reduction target is likely inadequate. If there is a large population increase, the reduction target might be unrealistic and underestimate the effort needed in the SECAP, and if there is a sharp population decrease, the reduction target might be achieved as a result of the reduction in activity and might not reflect the municipality's actual effort.

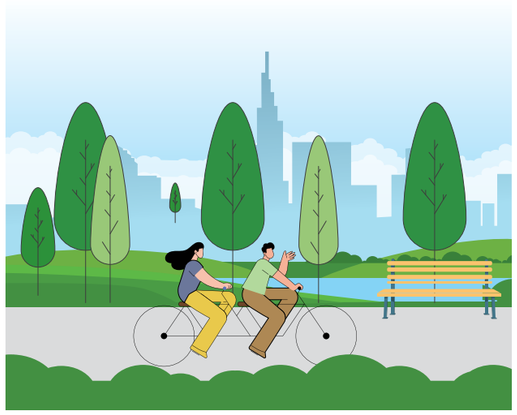
Local mitigation targets should be aligned with (or go beyond) regional or national commitments and regulations. In line with the EU climate mitigation objectives, the GHG reduction target proposed by the CoM is at least a 55% absolute reduction by 2030, in comparison to 1990 levels. A larger percentage reduction, or the selection of a more recent year as a baseline, may reflect higher ambition. Also, in line with the EU goal to achieve net-zero GHG emissions

by 2050, as enshrined in the Climate Law[19], CoM EU cities commit to becoming climate-neutral by 2050. Climate neutrality means achieving net-zero GHG emissions, in other words a condition that does not add any GHG to the atmosphere (Davis et al. 2018). Unabated emissions by 2050 should be compensated via negative emissions. The compensation actions and calculation methods, however, are not within the scope of the present guidebook.

The concept of net-zero GHG emissions allows balancing residual emissions (emissions that cannot be fully mitigated due to technological, financial and/or other constraints) through CO_2 removal. Residual emissions should be reduced to the minimum possible and any form of offsetting should only be considered for emission sources that are very difficult or impossible to mitigate. Municipalities should follow specific frameworks and guidance when calculating their residual emissions.

Detailed guidance on how to define mitigation targets is provided in Complementary document 1 on "How to prepare a greenhouse gas emission inventory"

These frameworks could contribute to a solid planning and definition of what should be considered residual emissions (Ulpiani et al. 2024).



19 See the European Commission's webpage on the European Climate Law.

4.2.3.2 Adaptation goals

Adaptation goals should address the most important identified risks and vulnerabilities and provide measurable targets for increasing community resilience to climate change. They should be quantifiable and reflect the intention to reduce potential impacts. This can be achieved by focusing on different aspects, such as reducing the number of people, activities, infrastructure and ecosystems that could be adversely affected (i.e. decreasing exposure), reducing the susceptibility of exposed people and sectors to being adversely affected (i.e. decreasing vulnerability), and increasing the ability of people, sectors or systems to adapt or respond to potential damages and to seize opportunities (i.e. increasing adaptive capacity).
Therefore, adaptation goals should include the main climate hazard addressed, indicators, units, base year value, and target value for monitoring progress.

Some examples include (see also Table 7):

— Decrease the risk of heat-related illnesses in the community by 40% by 2030: this goal focuses on decreasing the overall risk level linked to the 'extreme heat' hazard and to the 'health' vulnerable sector. To make this goal measurable, a linked indicator could be 'number of heat-related illnesses' measured with the unit 'number of cases'. This way, a municipality can measure in the base year [e.g. 2020] the number of cases (e.g. 100 cases), and in the target year [2030] observe whether the municipality has reached their expected reduction [i.e. 60 cases].
— Reduce to zero the number of buildings severely damaged by floods by 2030: this goal focuses on reducing the vulnerability of buildings exposed to floods. A key indicator to measure this goal is 'Number of buildings damaged', measured in absolute terms with the unit 'number of buildings'. The municipality, can, therefore, assess the progress and check whether the base value [e.g. 50 buildings] in the reference year [e.g. 2022] is brought to zero in the target year [2030].

Detailed guidance on how to define adaptation goals is provided in Complementary document 2 on "How to prepare a Risk and Vulnerability Assessment (RVA)"

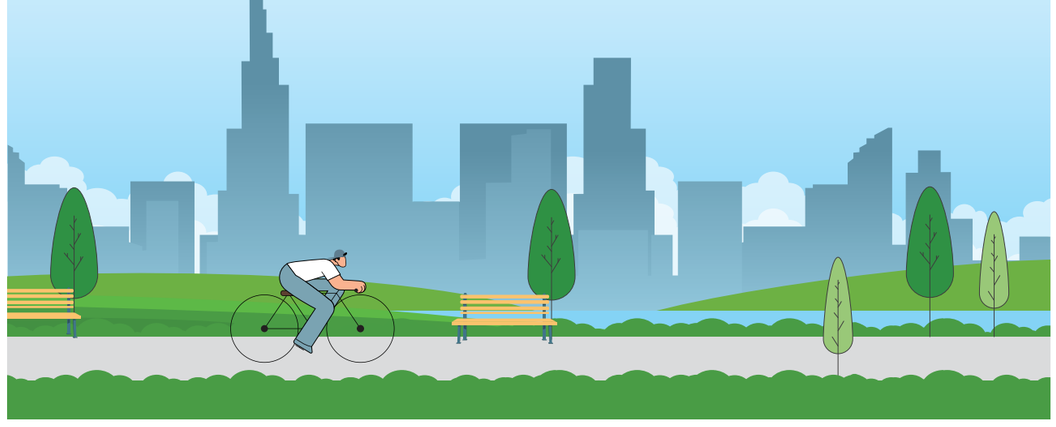


Table 7. Example of adaptation goals

Adaptation goal	Main objective [Main Adaptation sectors]	Hazard	Indicator	Unit	Base value [year]	Target value [year]
Decrease the risk of heat-related illnesses in the community by 40% by 2030	Decrease overall risk level [Civil protection & emergency. Buildings]	Extreme heat	Number of heat-related illnesses	Number of Cases	100 cases [2020]	60 cases [2030]
Reduce to zero the number of buildings severely damaged by floods by 2030	Reduce vulnerability [Civil protection & emergency. Buildings]	Floods	Number of buildings damaged	Number of buildings	50 buildings [2022]	0 buildings [2030]

Source: JRC elaboration

4.2.3.3 Energy poverty targets

Building on the insights gained in previous phases – in which the local energy context was analysed and initial data collected – the municipality is now asked to set an energy poverty target.

According to the CoM EU approach, municipalities should set both a general and a specific energy poverty target:

— **General energy poverty target:** This involves committing to address energy poverty by a specific year. In the European context, the municipality will explicitly declare this commitment and select a target year.
— **Specific energy poverty target:** The municipality identifies and quantifies the desired improvement using a chosen energy poverty indicator from the assessment process. European municipalities can set one or more specific targets using the list of indicators available. Examples of specific targets set using one or more indicators are provided in the complementary document 'How to develop an energy poverty assessment'.

During this target-setting process, it is also important to consider absolute numbers and demographic projections. Achieving a higher percentage of people living under better conditions is one goal, at the same time ensuring that the total number of individuals or households experiencing energy poverty is also reduced makes the target more meaningful and reflective of true progress.

Detailed guidance on how to define energy poverty targets is provided in Complementary document 3 on "How to develop an energy poverty assessment"

5. Action planning and strategies

5.1 Preparing comprehensive actions

The third step within SECAP development consists of two main sub-steps: planning the actions and preparing the implementation and monitoring. These must be preceded by gaining a sound understanding of the status quo and setting a vision and goals (explained in sections 4.1, 4.2 and 4.3) to build a bridge towards the overall *implementation and monitoring* phase of the plan (i.e. 'execute' in Figure 7).

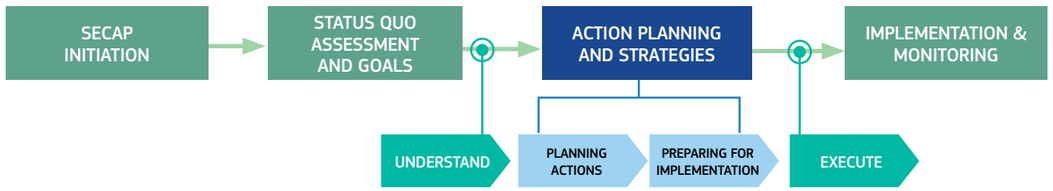
5.1.1 Planning actions

Starting from the understanding of the local context, municipalities should draw up a coherent, balanced, ambitious and achievable action plan. The actions included in the SECAP need to be aligned with the goals set by the municipality for the different pillars (mitigation, adaptation and energy poverty). Overall, the SECAP should include both short-term (2-5 years) and long term (6 years or more) actions, building upon existing experience but with a view towards the vision that has been set. This would allow municipalities to plan strategically by selecting and prioritising different types of actions, starting from no regret or low regret options, breaking down actions implying consistent efforts or costs, and having the possibility to review and adjust possible problems. For this reason, it is important to have information about the main characteristics of each action, i.e. duration, required resources, expected results, associated risks, etc. A combination of soft and hard measures is crucial to effectively address climate and energy-related challenges. Soft measures promote behavioural change and community engagement, while hard measures provide the necessary infrastructure and systems.

To develop a comprehensive portfolio of actions, the municipality should take the following steps:

- Evaluate the potential impact of each action, assessing its contribution to achieving the targets and goals, such as energy savings, greenhouse gas emissions reduction, protecting vulnerable populations from climate hazards, minimising building damage, and savings on energy expenses for vulnerable families;
- Conduct a thorough risk assessment to anticipate both the positive and negative unintended consequences of each action on the community, economy, and environment, for example considering impacts on air quality, water pollution, energy demand, housing affordability, and costs for low-income households;
- Develop a financial plan by estimating the costs associated with each action and identifying potential sources of financing;
- Gauge public support by understanding the level of acceptance and potential resistance to each proposed action in the community;
- Assess potential disruptions that may arise from implementing each action, particularly for large-scale infrastructural projects, to mitigate any adverse effects;
- Ensure strategic alignment by evaluating each action's compatibility with the municipality's long-term vision and objectives, guaranteeing that all efforts contribute to decarbonisation, resilience and energy poverty alleviation.

Figure 7. The action planning step: planning and implementing actions



Source: JRC elaboration

For each of the three pillars, the following aspects should be considered:

— **GHG mitigation actions:** all relevant emitting sectors should be addressed to achieve the planned GHG emission reduction. Each action should include an estimate of the energy savings, renewable energy production and total reduction of emissions for each sector producing emissions. In *energy-related sectors*, this is mainly associated with actions aimed at reducing energy use and their GHG emission content; for example, by increasing energy efficiency, increasing the share of renewable energy, and optimising or managing demand by using smart technologies or behavioural changes. In this context, the energy efficiency first principle should be upheld (Box 8).

  On the other hand, to reduce emissions associated with non-energy-related sectors (i.e. waste or agriculture, forestry and other land use (AFOLU)), strategies like waste reduction, sustainable agriculture and reforestation can be planned. In the waste sector, actions fostering waste prevention should be prioritised, in line with the Waste Framework Directive20.

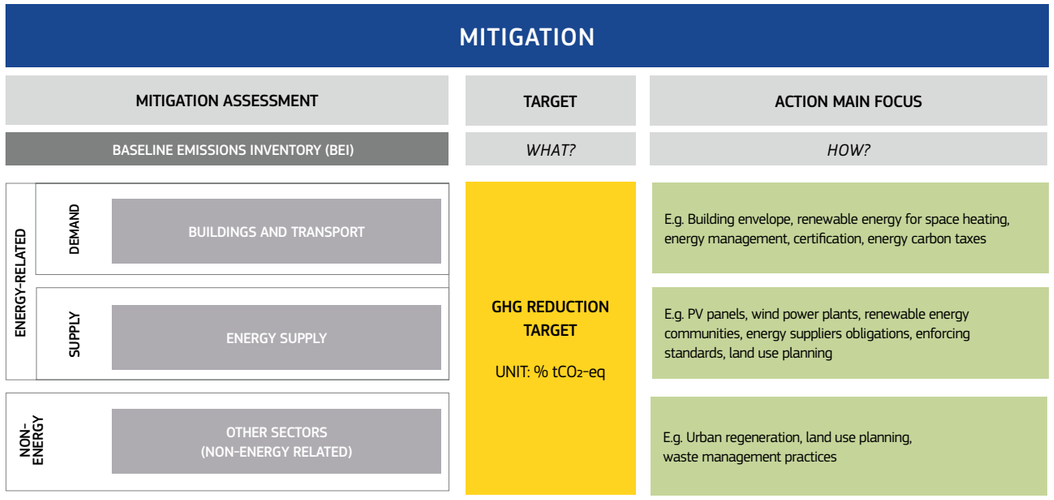
  Other examples of actions to reduce GHG emissions associated with non-energy-related sectors include composting programmes, agroforestry practices and green infrastructure investments.

Box 8. The energy efficiency first principle

> The **energy efficiency first principle** (based on the revised Energy Efficiency Directive) is a guiding concept in energy policy and planning that prioritises energy efficiency as the primary strategy for achieving energy sustainability. This principle is based on the idea that reducing energy consumption through efficient technologies, practices and behaviours is often the most cost-effective and environmentally beneficial way to meet energy demands. Therefore, according to the Directive, this principle should be applied in all relevant scenarios and policy, planning and major investment decisions through the corresponding cost-benefit analyses.

The following diagram (Figure 8) provides an overview of how to approach mitigation actions.

Figure 8. Planning mitigation actions: overview with action examples

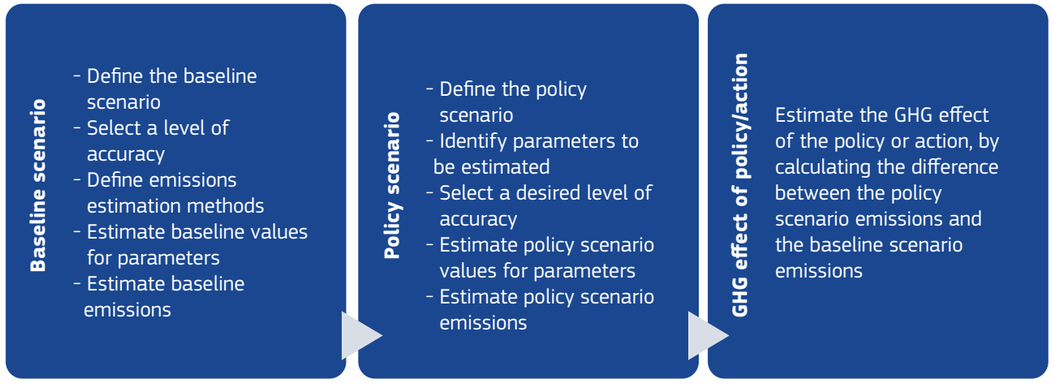


Source: JRC elaboration

20 More information available on the European Commission's webpage on Urban wastewater.

When developing its mitigation actions portfolio, the municipality should conduct an *ex-ante* assessment, i.e. it should estimate its effectiveness in achieving the desired GHG emission reduction target. To this end, it should set a baseline scenario, describing how GHG emissions would evolve by the target year in the absence of the actions being assessed (i.e. including already ongoing policies and actions). Then, it should develop a policy scenario, illustrating the conditions likely to occur in the presence of the assessed actions and estimate policy scenario emissions. Finally, it should calculate the expected future GHG effects of each action by subtracting baseline emissions from policy scenario emissions. The process is summarised in Figure 9.

Figure 9. How to estimate the expected GHG effects of mitigation actions (*ex-ante* assessment)



Source: JRC elaboration based on 'Greenhouse Gas Protocol - Policy and Action Standard' (WRI, 2014)

— **Adaptation actions:** The potential impacts linked to climate change derive from the risks, which are a combination of hazards, exposure, vulnerability and can also be affected by the adaptive capacity[21]. Municipalities should include actions targeting all relevant high-risk hazards identified in the risk and vulnerability assessment (RVA) in the SECAP. These actions should be aligned with the adaptation goals set. Figure 10 provides some examples on how actions can contribute to achieving three examples of goals, which are linked to extreme heat, floods, and mass movements (landslides) respectively. As it can be observed, more than one action can be deployed to address each adaptation goal, and the types of actions can vary, including both soft (e.g. governance) and hard (e.g. infrastructure) actions.

21 For a definition of these concepts refer to Box 7.

Figure 10. Planning adaptation actions: overview with action examples

ADAPTATION			
ADAPTATION ASSESSMENT	GOAL(S)		ACTION MAIN FOCUS
RISKS AND VULNERABILITIES ASSESS. (RVA)	*WHAT?*		*HOW?*
EXTREME HEAT	INCREASE RESILIENCE Several possible options: Decrease exposure / vulnerability / risks / impacts / increase adaptive capacity UNIT: DEPENDS ON THE GOAL	E.g. Decrease the risk of heat-related illnesses in the community by 60% by 2030	E.g. Set up a heatwave early warning system, conduct public education campaigns, provide cooling centres (e.g. public buildings), improve building design/ refurbishment actions
EXTREME COLD		E.g. Protect at least 80% of agricultural land in the flood-prone area by 2025	E.g. Design and plan flood-control measures (levees, dikes, floodwalls…), develop climate-resilient agricultural practices, develop a flood warning system, implement natural flood-control measures (wetlands, floodplains, etc.)
HEAVY PRECIPITATION		E.g. Improve transport sector by reducing the risk of road closures due to landslides by 80% by 2029	E.g. Implement landslide mitigation measures (slope stabilisation, retaining walls, drainage improvements, etc), upgrade road infrastructure, use landslide-resistant materials, develop emergency response plans, enforce building codes and regulations
FLOODS & SEA LEVEL RISE			
DROUGHTS & WATER SCARCITY			
STORMS			
MASS MOVEMENT			
WILD FIRES			
CHEMICAL CHANGE			
BIOLOGICAL HAZARDS			

Source: JRC elaboration

— **Energy poverty actions**: To address the full scope of energy poverty and its complexity, municipalities can draw upon multiple toolboxes and adopt a variety of approaches to target the specific manifestations of energy poverty in their local context. The actions proposed must be coherent with the results of previous steps, in line with the macro-areas and indicators that define local energy poverty in the municipality and with the target set. Also in this case the energy efficiency first principle (Box 8) may be relevant in guiding the decision on the actions to implement. As illustrated in Figure 11, the structure used to present actions here follows the categorisation in macro-areas of intervention used for the energy poverty assessment (section 4.1.3).

Many types of measures can be proposed in this pillar. Varying from physical and technological measures to knowledge and behavioural change, energy poverty initiatives focus on targeted support for populations at risk of not meeting their basic energy needs. Energy efficiency measures primarily planned under the climate change mitigation pillar may also indirectly address energy poverty. An energy poverty measure is distinguished from the mitigation measures by its focus on specific energy-vulnerable groups, including for example low-income households, women, and older people.

Some examples include:

- building climate shelters, offering accessible cooling options for vulnerable populations, particularly those at high risk during extreme heat;
- implementing tailored policies that enhance energy efficiency and affordability within residential and urban spaces by financing support with energy efficiency improvements, enabling low-income households to afford upgrades;
- supporting renewable energy communities in areas with a high share of people at risk of energy poverty;
- reducing or abating public transport fees.

Figure 11. Planning energy poverty actions: overview with action examples

ENERGY POVERTY		
ENERGY POVERTY ASSESSMENT	TARGETS	ACTION MAIN FOCUS
MACRO-AREA	*WHAT?*	*HOW?*
CLIMATE	TACKLE ENERGY POVERTY IN 2030 + SPECIFIC TARGET(S) UNIT: DEPENDS ON THE TARGET(S)	E.g. Financial support to adapt to extreme weather; expansion of urban shelters/greenery
FACILITIES/HOUSING		E.g. Building certification; energy communities; income-based financing mechanisms
MOBILITY		E.g. Free public transport; income-based transit passes; smart mobility app targeting vulnerable people
SOCIO-ECONOMIC		E.g. Local energy offices; energy vouchers and grants; renewable energy communities
POLICY AND REGULATORY FRAMEWORK		E.g. Energy self-consumption local definition; minimum energy efficiency standards for rentals
PARTICIPATION/AWARENESS RAISING		E.g. Climate-related and/or smart mobility apps; energy-use related training and campaigns

Source: JRC elaboration

— **Integrated actions**: by adopting a holistic approach, municipalities can maximise the effectiveness of their actions and create synergies among different pillars or objectives. This integrated approach can lead to multiple effects (co-effects) in other sectors / hazards / macro-areas, or even other pillars, as well as co-benefits, where a single action addresses multiple challenges, increasing efficiency and impact. However, careful analysis of interactions among actions is required to identify potential co-benefits and minimise unintended consequences (trade-offs). Engaging with various stakeholders, including the public, municipal departments, and other relevant actors, from the outset is crucial to ensure that their voices are heard and their concerns are addressed. This ultimately creates a more comprehensive and sustainable strategy that promotes the wellbeing of the community as a whole.

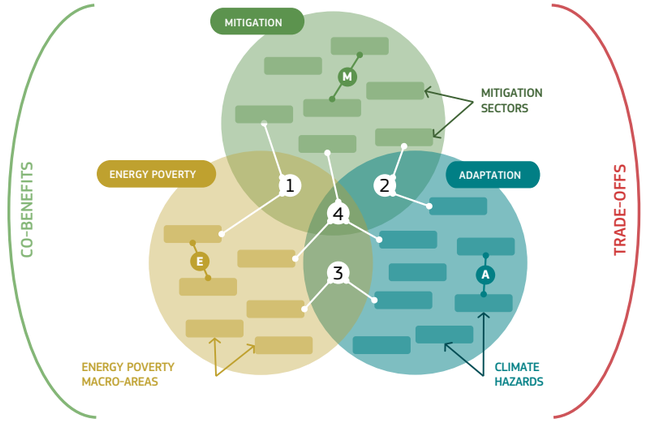
As can be seen in Figure 12, municipalities can plan integrated actions that have co-effects within the same pillar. For instance, actions can address:

- Two or more *mitigation sectors*[22] (e.g. a district heating system that integrates heat production with industrial processes, see 'M');
- Two or more *climate hazards*[23] (e.g. a terrain stabilisation project that integrates reforestation and can address mass movement and floods see 'A');
- Two or more *energy poverty macro-areas*[24] (e.g. sustainable mobility options for low-income households, see 'E').

Also, co-effects can be sought by addressing two pillars at the same time (see '1', '2', or '3' in the figure below), or all of them (e.g. retrofitting low-income residential buildings with energy-efficient and climate-resilient features, see '4'). In all cases, co-benefits and trade-offs should be observed.

22 Mitigation sectors: residential buildings, municipal buildings, public lighting, industry, transport, waste and wastewater, AFOLU, electricity production and heat/cold production.
23 Adaptation hazards: extreme heat, extreme cold, heavy precipitation, floods/sea level rise, mass movement, wildfires, storms, drought and water scarcity, chemical change and biological hazards.
24 Energy poverty macro-areas: climate, mobility, facilities and housing, socio-economic.

Figure 12. Planning integrated actions



Source: JRC elaboration

To ensure the successful implementation of these actions, it is essential to draw up a clear plan that allocates the necessary resources and engaging stakeholders, sets a realistic timeline for their deployment and assesses their impact. Municipalities have the capacity to support and mobilise the implementation and monitoring of different types of actions, including physical and technological, economic and finance, governance and regulatory, and knowledge and behaviour change. By ensuring an adequate combination of types of actions, municipalities can activate different stakeholders and promote climate action even in sectors where municipalities do not have direct control.

Additionally, organising the actions into a portfolio, which includes a series of detailed fiches, can help to streamline the process and facilitate monitoring and evaluation. To standardise the process, a template can be used to capture the relevant information, such as the one provided in complementary document 4 on action planning and strategies, which can serve as a useful tool for municipalities to organise and track their progress.

5.1.2 Preparing for implementation and monitoring

Maintaining an enabling environment throughout the action's implementation that supports its deployment is critical. This includes the regulatory framework, governance structure and engagement with relevant stakeholders and / or the public. Seeking support from other levels of government may also be necessary for a successful implementation of the actions. It is recommended to account for potential disturbances during the actions' implementation that would require the municipality to readjust the path, if necessary, towards reaching the expected goals.

To prepare for the actions' implementation and monitoring it is advisable to set relevant indicators at action level that make it possible to measure i) the action's impact, ii) the action's deployment and iii) potential (co-)benefits or trade-offs. By tracking the progress with an adequate frequency, the municipality can assess whether the progress falls in line with the expectations or if modifications or adjustments to the plan need to be made. Additionally, by observing the progress at action level it is possible to understand where the municipality stands in its climate action journey and contribute to the overall monitoring of the process, as explained in section 6.

Detailed guidance is provided in Complementary document 4 "How to plan mitigation, adaptation and energy poverty actions"

5.2 Identifying and securing adequate financing

Municipalities often face challenges in securing the necessary funds to achieve their climate goals, which may require substantial investments in energy efficiency and renewable energy projects, as well as in infrastructure for adaptation.

To ensure the successful implementation of SECAPs, it is essential to go beyond the definition of climate and energy actions and assess their financial implications. This includes estimating the overall investment and non-investment costs, identifying available funding sources, and mapping out a provisional financing strategy to close potential funding gaps.

The ability to access diverse financing mechanisms, models and tools is essential to ensure the stability and continuity of the process, and to ensure the transition to low-carbon, resilient and sustainable urban systems.

A wide range of instruments is available to support climate and energy actions, including both well-established approaches and more innovative or community-based solutions. These instruments vary in terms of sources of funding, contractual structure, level of risk-sharing, and engagement of private or public actors, offering municipalities multiple options to match their specific needs and project types.

Traditional instruments include public funding like grants, tax incentives, and soft loans, which support municipalities in covering the upfront costs of sustainable projects. Private financing options such as traditional bonds, leasing, and vendor financing help municipalities acquire energy-efficient infrastructure without large initial investments. These mechanisms are essential for launching and financing the initial stages of energy efficiency and renewable energy projects.

Innovative instruments, such as Energy Performance Contracts (EPCs) and Energy Services Companies (ESCOs), allow municipalities to implement energy efficiency measures with no upfront costs, repaid through savings. Municipalities may for example raise funds to finance their climate actions through green bonds or green loans. Blended finance combines public and private investments to reduce risks and enable larger-scale projects, making them more financially feasible.

Alternative instruments focus on community-based funding, such as crowdfunding and energy cooperatives, which engage local populations in funding renewable energy or efficiency projects. Pooled procurement and carbon finance allow collaboration between municipalities, businesses and the public, enabling the financing and implementation of large-scale sustainability projects while sharing risks and rewards.

Each of these mechanisms offers unique advantages and opportunities, enabling municipalities to tailor their financing strategies to their specific needs and projects. By exploring these tools, municipalities can better understand how to leverage available resources to ensure adequate funding throughout all phases of the SECAP process.

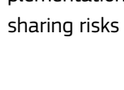
Box 9. Östersund's Green Bond Framework

In November 2017, Östersund (Sweden) set up a green bond framework to finance projects with distinct environmental benefits. Swedbank acted as adviser to the municipality in its establishment. Östersund has increasingly issued five-year term green bonds to fund projects aimed at reducing GHG emissions, adapting to climate change and increasing resilience. Projects have been implemented by municipal units, the energy company Jämtkraft, and the city-owned housing company Östersundshem AB. The framework was updated in 2023 to reflect recent market trends and best practices (e.g. the EU Taxonomy).

As of 2023, the municipality had released green bonds for SEK 5 975 million (EUR 536 million) for a total of 441 323 t CO_2-eq reduced/avoided per year. These funds have been allocated to projects on renewable energy (78%), energy-efficient buildings (18%), sustainable transport (2%) and water management (2%).

The framework is aligned with the green bond principles ('GBP'), voluntary process guidelines drawn up by the International Capital Markets Association, and its four core components: i) net share of proceeds to finance or re-finance green eligible projects; ii) process for project evaluation and selection managed by a dedicated group, the Green Bond Committee, iii) management of proceeds on a portfolio level and iv) reporting regularly and transparently to investors and stakeholders. Further, the framework is reviewed by an impartial firm, CICERO, which has provided a second opinion to confirm its alignment with the applicable principles.

Information, annual reports and documents are available on the city's website.



Detailed guidance is provided in Complementary document 5 "Financial instruments for mitigation, adaptation and energy poverty actions"

Additional resources on financing
Covenant of Mayors – Europe's funding guide on "Financing opportunities"

5.3 SECAP adoption and submission

Once the SECAP is ready, it needs to undergo formal approval by the municipal council or by an equivalent administrative body.

Municipalities joining the Covenant also commit to report on the action plan and on its implementation within the deadlines. Open and transparent reporting of local climate actions fosters trust, credibility, and accountability, enabling thorough analysis and aggregation. This highlights the vital role of municipalities in addressing climate change, strengthens advocacy efforts, and enhances their ability to secure funding and financial support (Global Covenant of Mayors 2023).

The minimum reporting timeline is as follows:

- The SECAP must be submitted within two years after officially joining the initiative;
- Monitoring reports on the implementation of actions must be submitted every two years;
- Monitoring reports accompanied by recent GHG emission inventories must be submitted every four years.

Guidance on how to report on the SECAP and its implementation is available on the Covenant of Mayors - Europe website[25].

25 Covenant of Mayors – Europe's webpage on Reporting

6. SECAP implementation and monitoring

6.1 Detailed implementation strategies, with milestones and indicators

The implementation phase of a SECAP is the most critical stage of the process. It requires careful planning, coordination, and execution to ensure that the actions are duly implemented and that the desired outcomes are achieved. SECAP implementation requires substantial time, efforts and financial means. It is essential to ensure that the implementation strategy is realistic, achievable, and aligned with the plan's objectives, and that it is regularly reviewed and updated to reflect any changes or challenges that may arise during the implementation process. In this phase, municipalities should pay attention to potential unexpected barriers and outcomes. In addition, time-related changes in political, social and/or economic areas may challenge the implementation of the plan. This is why a solid, detailed and consistent project management plan is needed.

The successful implementation of the SECAP depends to a large extent on the consistency and solidity of the process that has been built in the initiation phase (section 3): continuous political commitment, mobilisation of human resources, and engagement of stakeholders and the public remain critical in the implementation phase.

A key factor to ensure the implementation of the SECAP is the continuous engagement of all municipal bodies and departments. The project management responsibilities should be assigned to all relevant municipal departments and bodies, assuring horizontal cooperation. If possible, key roles should not be linked only to 'political' positions (non-permanent positions with regular change), to ensure that changes in some administrative positions do not become a challenge to the continuation of the plan. Likewise, if there are changes in the sectors/areas/persons involved in the plan, detailed information on the plan development, including methodological and data collection approaches, needs to be well documented and accessible.

Monitoring and communicating progress on the three pillars of the SECAP should always be an integral component of its implementation. The municipality should decide on key indicators on mitigation, adaptation and energy poverty for monitoring progress (details on Section 6.2).

Finally, although stakeholders' involvement and social support may vary during the period of implementation, communicating results and benefits for the public and other stakeholders should be done regularly.

Some tips to put a SECAP into practice:

— Adopt a project management approach: timeline control, financial control, planning, deviations analysis and risk management. Use a quality management procedure, identify key milestones and deliverables.
— Divide the implementation strategy into different parts and clearly select responsible roles. Provide adequate training for staff and persons directly involved in the implementation.
— Set up specific procedures and processes aimed at implementing each part of the SECAP. A quality system is a useful tool to make sure that procedures are in line with the objectives.
— Anticipate future events and take into account negotiation and administrative steps to be followed by the municipality to start a project. Public projects usually require time to obtain authorisation and approvals. In this case, a precise strategy, including a contingency plan, may be convenient, especially at the beginning of the SECAP implementation phase.

- Set and use indicators for tracking and monitoring the plan, i.e. focusing on the parameters related to the tangible deployment of the actions. These may include the share of actions that meet their deadlines, the share of total implemented measures, the percentage of budget deviations or the percentage of emissions reduction associated with the measures already implemented. This is ideally accompanied by a plan for future iterations and adjustments to the SECAP, e.g. based on monitoring results, lessons learned, or emerging challenges.
- Identify potential barriers and challenges (including financial needs), and develop strategies to address them, including resistance to change, lack of resources, and conflicting priorities.
- Plan the follow-up with the stakeholders, setting a calendar of meetings to inform and involve them on the implementation. Interesting ideas could arise during these meetings, or possible future social barriers could be detected.
- Motivate and offer training and support to the team. Internal staff members are important stakeholders.
- Regularly inform the municipal council (or equivalent body) and politicians to secure their commitment and strategic guidance.

Box 10. Common mistakes to avoid in the implementation phase

- Lack of clear goals and objectives;
- Insufficient stakeholder engagement;
- Inadequate project planning and management;
- Failure to monitor and evaluate progress;
- Lack of contingency planning;
- Failure to adapt to changing conditions;
- Inadequate training and support for team members;
- Poor communication with stakeholders and the public.

6.2 Monitoring and reporting progress

Monitoring progress is an important part of the SECAP implementation process. It serves the purpose of periodically assessing the outcomes of the implemented processes, the advancement status of actions, and the progress towards the targets set (Bertoldi P. (eds) 2018a).

Through a well-established and sound monitoring process, municipalities can answer the following questions:
- Are we on track to achieve our climate and energy targets?
- What weaknesses hindered the effectiveness of the policies/actions?
- How can we improve the efficiency and quality of the outcomes?
- What are the potential challenges that we need to address?

Therefore, monitoring processes support municipalities in identifying and correcting for delays, gaps, or underperformances that may otherwise be discovered too late or even go unnoticed, as well as in recognising successful practices that may be replicated. Municipalities can also reflect on potential improvements and changes to the process to enhance its efficiency. Moreover, the monitoring process also provides the opportunity to assess the impacts of the changes in the local context and municipal structure triggered by the instauration of the SECAP process (Covenant of Mayors - Europe Office 2020). The monitoring exercise tells the story of the local climate actions and makes it possible to understand whether the municipality is on track to reach the target and to identify factors that affect results.

The CoM approach provides the framework for setting clear and measurable goals closely aligned with municipalities' vision and strategy and selecting key performance indicators. With regards to the SECAP process, municipalities will monitor the changes in their municipal structure, the staff capacity allocated for plan implementation, the budget spent and the overall progress towards the target. Through the monitoring process, municipalities assess the evolution of their energy consumption and production and of their GHG emission, any changes in their risk and vulnerabilities and in their energy poverty assessments, following the same approaches as for the initial assessments. They will also evaluate the advancements and outcomes of their actions in each specific pillar:

— ***Mitigation***

Signatories prepare monitoring emission inventories (MEI), following the same approach and methods as the BEI. Compiling GHG inventories on a regular basis enables monitoring and tracking the overall progress towards the emission reduction target(s). In addition, the status of implementation of actions needs to be checked, to understand if there are actions that have been delayed or cancelled and if completed actions have reached the expected outcomes. This assessment will also help identify the barriers and challenges encountered and appreciate the strengths and weaknesses of the plan.

— ***Adaptation***

Changes in the level of impact and intensity of identified climate hazards and in the identified vulnerable sectors and vulnerable population groups can be recorded in the updated version of the risk and vulnerability assessment. In addition, it is important to regularly evaluate the progress of planned actions and check the actual outcomes against the objectives that were set when developing the plan. It might also be necessary to adjust or postpone certain actions or develop new ones on the basis of the monitoring results (European Environment Agency 2016).

Compared to the other CoM pillars, two elements specifically characterise the climate adaptation monitoring process: i) the timeframes might be irregular, as longer periods might be necessary to assess the progresses of actions; ii), inherent uncertainty of climate change events can influence the RVA, the actions and the subsequent monitoring results, thereby requiring regular updates using data on observed changes when available (UNFCCC 2023). Adaptation actions often focus on prevention, and these two key elements can significantly influence the appropriateness and timing of actions originally planned. This emphasises the importance of incorporating expected short-term and long-term outcomes into actions, selecting suitable indicators to track actions' progresses and setting quantified adaptation goals that align with the identified hazards.

— ***Energy Poverty***

The methodological foundations of the energy poverty pillar recommend identifying the indicators deemed important for monitoring as early as the assessment stage. Therefore, the monitoring process is based on the indicators flagged for monitoring, for which signatories can declare the intended forecasted target value. The changes in the values of the selected indicators and the comparison with the expected target makes it possible to effectively track progress in energy poverty alleviation and evaluate the outcomes of actions undertaken. Actions can also be fine-tuned and adjusted to realign with the original goals and get back on track. If changes occur that alter the context, the framework allows for revisiting the assessment phase, where additional indicators can be identified and incorporated to ensure continued relevance.

In case of significant changes to existing plans, signatories can work on the impacted sections of their SECAP and resubmit it, ideally after the updated plan has been adopted by the municipal council.

The monitoring exercise should be regarded by the municipal council and by the municipal administration as an opportunity to reconsider the strategy and the actions of the SECAP considering the progress achieved, new available knowledge and expertise, the changed regulatory context and the latest technological or financial opportunities for sustainable energy projects and/or for adaptation action. Through the monitoring process, the SECAP can be up-to-date and reflect changes and transformations occurring in the municipality, becoming a dynamic document.

Finally, the monitoring activity can reinforce stakeholders' trust by demonstrating accountability and transparency, and can strengthen communication with the public through regular updates on progress, challenges, opportunities, and emerging needs.

7. Coordinated options and support for small municipalities

7.1 Joint SECAPs

Developing a SECAP can be perceived as a time- and resource-consuming endeavour, especially by small and medium-sized municipalities, which represent a large share of municipalities in the CoM EU.

Municipalities have often highlighted challenges associated with:

- Limited capacity or resources to develop a SECAP, including for the collection and analysis of relevant data for GHG emission inventories, risk and vulnerability assessments and energy poverty assessments;
- Insufficient capacity to involve the stakeholders needed to trigger action in the private sector;
- Limited access to funding and financing to implement actions;
- Reporting requirements perceived as too burdensome.

By joining forces with neighbouring municipalities, municipalities may overcome some of these challenges and seize opportunities to create economies of scale and leverage regional synergies in both the development and the implementation of a SECAP, for example to design and implement collective actions (e.g. supra-municipal public transport planning).

There are two approaches to developing a joint SECAP (see also Table 8):

- **Joint SECAP option 1.** This option is very similar to a standard SECAP, requiring municipalities to commit individually to the achievement of the emission reduction targets and other goals. Its main difference compared to a standard SECAP is the opportunity for municipalities to include one or more actions developed jointly with other municipalities, and thus share the benefits in terms of GHG emission reductions from the shared actions among all the municipalities participating in the joint plan.
- **Joint SECAP option 2.** This option allows municipalities to commit to a shared GHG emission reduction target based on the results of a joint GHG emission inventory, covering the overall territory of participating municipalities. This option allows municipalities to report jointly to the CoM. Compared to option 1, this option implies a stronger level of integration (and hence greater coordination efforts), and it is considered more suitable for very small municipalities that otherwise would be ill-equipped to subscribe to the CoM EU commitments on their own.

Table 8. Main features of standard SECAP, Joint SECAP Option 1 and Joint SECAP Option 2

	'Standard' SECAP	Joint SECAP - Option 1	Joint SECAP - Option 2
Emission reduction target	Individual	Individual	Shared
Emission inventory	Individual	Individual	Shared
Action plan preparation	Individual	Shared	Shared
Action plan approval	The Municipal Council approves the plan	Each Municipal Council approves the joint plan	Each Municipal Council approves the joint plan
Action plan submission	Individual reporting	Individual reporting	Shared reporting

Source: JRC elaboration

Box 11. An example: Joint SECAP option 2 - Cluster 'Dora 5 Laghi', Italy

The Cluster 'Dora 5 Laghi' brings together seven towns in Piedmont, Italy (Chiaverano, Borgofranco d'Ivrea, Burolo, Lessolo, Montalto Dora, Quassolo and Quincinetto) covering a total population of 13 057 inhabitants in 2022, and represents an example of joint SECAP option 2. The plan sets a collective emission reduction target of 56.9% by 2030, compared to the levels of 2000. To this end, it includes a set of territorial (shared) actions and municipal (individual) actions. On mitigation, among the territorial actions, the SECAP lists communication and awareness campaigns, energy desk, appointment of an energy manager, increase in cycling and pedestrian infrastructure, increase in the number of charging point for e-vehicles, setting up a renewable energy community, etc.

Actions aimed at improving the energy efficiency of public buildings or street lighting are reported as municipal actions. On adaptation to climate change, territorial actions include community awareness and preparedness for climate risks, joint interventions for the protection of the territory and measures to adapt to the climate threat of drought. Municipal adaptation actions include slope stabilisation and landslide repair, hydraulic system interventions and forestry management. Acknowledging the importance of ensuring an effective coordination of the plan, the SECAP clearly describes the governance, appointing a coordinator, an advisory committee, a working group and a technical committee, and describing the way they work together.

7.2 Covenant Coordinators supporting SECAP processes

While only municipalities are eligible to join the CoM as signatories, the initiative also officially recognises the role of Covenant Coordinators[26], i.e. national, regional and sub-regional public authorities that commit to providing strategic guidance, financial and technical support to Covenant signatories within their geographical scope. National and sub-national authorities recognise municipalities as crucial partners to achieve their climate and energy targets mandated by EU or national legislation. In this context, supporting municipalities' involvement in the Covenant of Mayors represents an opportunity for national and sub-national authorities to better tailor approaches to local needs and deliver climate action on the ground, closer to the public and stakeholders.

26 https://eu-mayors.ec.europa.eu/en/coordinators

In some countries, notably Italy, Spain and Belgium, Covenant Coordinators have been instrumental in fostering the participation of municipalities in the initiative, particularly for small- and medium-sized ones, which sometimes lack resources to conduct the preparatory work that is needed for robust climate action planning. Covenant Coordinators have therefore taken over some tasks, such as the data collection for the elaboration of GHG emission inventories, the creation of geographic information systems to support the assessment of risks and vulnerabilities at local level, the development of tools to estimate the potential impact of the actions, or the preparation of a model SECAP document. This has relieved municipalities from resource-intensive, technical tasks and has enabled them to focus on more strategic aspects, such as engaging with the public and stakeholders in developing a suitable action package to achieve their climate targets and goals.

As a result of the support provided by Covenant Coordinators, municipalities may develop similar, more harmonised SECAPs, which may also facilitate project aggregation and consequently access to funding.

Box 12. An example: Province of Flemish Brabant, Belgium

A Covenant coordinator since 2012, the Province of Flemish Brabant has a target to reduce its GHG emissions by 55% by 2030 and become climate-neutral by 2040. In this context, the adhesion of the municipalities to the CoM is a first step towards reaching this ambitious target. The Province provided relevant scientific support to all municipalities under its coordination to ensure a good quality of their SECAPs, thanks also to the availability of several tools provided by the Flemish regional government. The support from the Province mainly related to:

- the development of the GHG emission inventory and RVA, including tailor-made data collection;
- process management, involving the local population and target groups and organising workshops;
- editing and submitting the SECAP in line with the reporting requirements.

The Province developed its GHG emission inventory methodology, aligned with the EU CoM approach, using the tool developed by VITO on behalf of the Flemish Government. By using a common tool and guidance, the base year, the sources of information, the parameters, and calculations behind the emissions estimation are coherent among all signatories. The Province guided signatories in identifying the most appropriate set of measures needed to reach their emission reduction target in the buildings and transport sectors, including, when relevant, agriculture, industry and energy production.

In relation to adaptation to climate change, the risks and vulnerabilities assessment was developed from the information available at the Climate Portal for Flanders, which includes figures on climate situation (historical/current and scenarios until 2100), climate hazards (heat, flooding, sea level rise and drought) and climate impacts (https://klimaat.vmm.be) and at the Climate Portal from the Flemish Environment Agency. The Province ensured that each SECAP contained actions coherent with the outcome of the RVA, targeting the most relevant high-risk hazards and addressing the sectors with the highest level of vulnerability.

Each SECAP document included a specific item on multilevel governance and described how the local governance would take place for the implementation of the action plan. It also highlighted the organisational support and structure needed to develop the plan.

The coordinator also supported municipalities in the stakeholders' engagement process, involving the local population and target groups and organising workshops. The coordinator also identified the financial instruments that could be available for implementing SECAP actions.

8. Conclusions

The European Covenant of Mayors for Climate & Energy (CoM EU) represents a major initiative involving local communities in a shared commitment to address the climate challenge. By fostering the design and implementation of effective climate strategies and actions at urban level, the CoM EU empowers municipalities to take a proactive role across three pillars: GHG emission reduction, climate change adaptation, and energy poverty alleviation within their territory.

The sustainable energy and climate action plan (SECAP) represents a key instrument outlining how municipalities intend to translate their commitments into concrete actions. Through an integrated and comprehensive SECAP, municipalities can contribute to meeting supranational climate targets, such as the EU's Climate Law and the Paris Agreement, while at the same time improving the health, wellbeing and quality of life of their people. Well structured, coherent and ambitious SECAPs can help local communities to unlock new economic opportunities and stimulate innovation.

This guidebook addresses crucial aspects of the development, implementation and monitoring of the SECAP, across all phases of the process. By providing comprehensive, step by step guidance, as well as examples and common practices, this guidebook supports EU municipalities in building a low-carbon, resilient and inclusive society, playing a pivotal role in fostering a culture of sustainability within their communities.

Detailed technical guidance is provided in the guidebook's five complementary documents:

1. How to prepare a greenhouse gas emission inventory
2. How to develop a risk and vulnerability assessment
3. How to develop an energy poverty assessment
4. How to plan mitigation, adaptation and energy poverty actions
5. Financial instruments for mitigation, adaptation and energy poverty actions

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List of abbreviations and definitions

Abbreviations	Definitions
BEI	Baseline emission inventory
CO_2	Carbon dioxide
CO_2-eq	CO_2-equivalent
CoM	Covenant of Mayors for Climate and Energy
CoM EU	European Covenant of Mayors for Climate & Energy
EC	European Commission
EPOV	Energy poverty assessment
EU	European Union
GCoM	Global Covenant of Mayors for Climate and Energy
GHG	Greenhouse gas
JRC	Joint Research Centre
RVA	Risk and vulnerability assessment
SEAP	Sustainable energy action plan
SECAP	Sustainable energy and climate action plan

List of boxes

List of figures

List of tables

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