



JRC SCIENCE FOR POLICY REPORT

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

Part 1 - The SECAP process, step-by-step towards low carbon and climate resilient cities by 2030

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Abstract

The Covenant of Mayors for Climate and Energy (CoM) is an ambitious initiative for local climate and energy actions. This document provides signatories with a set of methodological principle, procedures and best practices to develop their SECAP. The Part 1 of this document relates to the SECAP process; while Part 2 gives an insight on the elaboration of municipality assessments (BEI and RVA), finally Part 3 describes technical issues, measures and policies that can be implemented at local level.

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Executive summary

The Covenant of Mayors for Climate and Energy (CoM) is the mainstream European voluntary movement involving local authorities in the development and implementation of sustainable energy and climate policies.

Policy context

The European Union is leading the global fight against climate change, and has made it one of its top priorities. Local authorities have a key role in the climate change challenge. Over half of greenhouse gas emissions are created in and by cities. 80% of the population lives and works in cities, where up to 80% of energy is consumed. In addition, cities are vulnerable to and face growing difficulties in dealing with the effects of climate change. The increasing frequency of extreme weather events sends a clear signal that cities and towns must become resilient to the impacts of climate change.

Local authorities play a key role in the achievement of the EU's energy and climate objectives and are leading actors for implementing local sustainable energy policies.

The Covenant of Mayors for Climate and Energy is intended to complement the national Climate Change strategies and plans with a specific initiative to support cities. The initiative aims to convene local authorities voluntarily committing to implement sustainability policies on their territories. Harmonised data compilation, methodological and reporting framework to translate greenhouse gas (GHG) emissions reduction ambitions into reality are provided to local authorities. CoM includes both climate mitigation and adaptation aspects and is built around three pillars:

- Mitigation (at least 40% emission reduction target by 2030 compared to the baseline)
- Adaptation to Climate Change
- Access to secure, sustainable and affordable energy

Signatory local authorities share a vision for making cities decarbonised and resilient, where citizens have access to secure, sustainable and affordable energy.

The formal commitment of signatories is translated into concrete measures and projects by the implementation of a Sustainable Energy and Climate Action Plan (SECAP). The SECAP includes the key actions local authorities intend to undertake. The SECAP is based on the outcomes of the Baseline Emission Inventory – BEI and the Risks and Vulnerabilities Assessment- RVA on the territory. Signatory cities accept to report and monitor their implementation of the SECAPs. Cities also commit to allocating sufficient human resources to the tasks, mobilising society in their geographical areas to take part in implementation of the action plan, including organisation of local energy days, and networking with other cities. Moreover, joining the initiative brings several co-benefits: creating a sustainable environment for citizens and local assets, overall improving of the quality of life, consolidating the success of measures to reduce CO₂ emissions in their territory, benefitting from the European support, recognition and the best practices.

Main findings

The Covenant of Mayors was launched in 2008 in Europe with the ambition to gather local governments voluntarily committed to achieving and exceeding the EU climate and energy targets. The initiative has been growing gathering more than 7,000 local and regional authorities across 57 countries. In 2016 the 5,403 CoM signatories overall commitment for 2020 was a reduction of the total GHG emissions of 27%, 7 percentage point above the minimum requested target of 20 %. Results from the plans monitoring reported, reveal an already achieved 23% overall reduction in emissions.

Related and future JRC work

The success of the Covenant of Mayors in Europe has attracted more and more signatories from cities in other parts of the world. To support the international dimension

of CoM, the European Commission has launched a number of initiatives to support the Covenant of Mayors in the Eastern Partnership countries, in the Central Asian countries, in the South neighbouring countries of Europe and later to sub-Saharan African countries. In January 2017, the Global Covenant of Mayors for Climate and Energy was announced. This is an international alliance of cities and local governments with a shared long-term vision of promoting and supporting voluntary action to combat Climate Change and move to a low-emission resilient society. This coalition already represents about 11% of the world's population as of May 2018, and 7,755 towns and cities, have joined it through the Covenant of Mayors framework, while 428 global cities joined via the Compact of Mayors.

Quick guide

This Guidebook aims at supporting local authorities in the European Union (EU) Member States joining the Covenant of Mayors for Energy and Climate (2030 target). The present guidebook provides detailed, step-by-step guidance to local authorities to develop an effective SECAP, in particular:

- Define the key elements of the initiative
- Elaborate a Baseline Emission inventory (BEI)
- Perform a Risk and Vulnerabilities Assessment (RVA)
- Develop a Sustainable Energy and Climate Action Plan (SECAP)
- Support the implementation and monitoring of the SECAP.

Step-by-step recommendations are provided for the entire process of elaborating a local energy and climate strategy, from initial political commitment to implementation and monitoring of the Sustainable Energy and Climate Action Plan. The guidebook is providing a set of flexible but coherent principles and recommendations, allowing both local authority front runners and newcomers to take local level climate action through the CoM, while considering site specific circumstances and capabilities.

The Guidebook is divided into three Parts:

Part 1: Relates to the overall SECAP process, from the initiation to the monitoring phase. This part includes: detailed description of the SECAP requirements, options, timelines and template, the benefits local authorities can obtain when supporting SEAP implementation, an overview of the role of the key actors involved and suggestions on how to organise the administrative structures.

Part 2: Relates to municipality assessments, as pre-requisite to the SECAP development. These provide knowledge on the nature of the emitting entities, risk and vulnerabilities in the municipality territory. In particular:

Part 2.a focuses on how to elaborate the Baseline Emission Inventory (BEI) and the Monitoring Emission Inventory (MEI), while

Part 2.b: focuses on how to perform a Risk and Vulnerability Assessment (RVA).

Part 3: Relates to the description of technical issues, measures, policies and financial mechanisms with examples of good practice that can be implemented at local level by the local authority per sector of activity. In particular:

Part 3.a: Focuses on Climate Change mitigation,

Part 3.b: Focuses on Climate Change adaptation, and

Part 3.c: Focuses on financing mechanisms for SECAPs.

The number of topics covered by this guidebook is quite large; hence, a number of these has not been approached thoroughly. However, links to further readings and detailed information are provided through the text.

The Guidebook has been prepared by the Joint Research Centre Directorate-General (JRC) of the European Commission, with the support and input of the Directorate-General for Energy (DG ENER), Directorate-General for Climate Action (DG CLIMA), the Covenant

of Mayors Office (CoMO) and experts form municipalities, regions agencies and private companies.

1 Introduction

1.1 Policy context

Climate Change mitigation

Tackling Climate Change is a priority for the European Union who has set targets for reducing greenhouse gas emissions progressively up to 2050. The Key climate and energy targets are set in two progressive documents: the "2020 climate and energy package" included in the "Europe 2020 Strategy for smart, sustainable and inclusive growth" and the "2030 Climate and Energy Framework", defined to put the EU on the way to achieve the transformation towards a low-carbon economy as detailed in the 2050 low-carbon roadmap ⁽¹⁾. The former, enacted in legislation in 2009, aimed at reducing by 20% greenhouse gas emissions (from 1990 levels), at improving energy efficiency and at increasing the share of energy from renewables to 20% by 2020. The latter proposes new targets and measures forwarding the commitments beyond 2020 and it builds on the 2020 Climate and Energy Package. The "2030 Climate and Energy Framework" shows an ambitious commitment to reduce greenhouse gas emissions in line with the 2050 Roadmaps and sets three key targets for the year 2030: at least 40% cuts in greenhouse gas emissions (from 1990 levels), at least 27% share for renewable energy and at least 27% improvement in energy efficiency. This framework was adopted by EU leaders in October 2014 and it is also in line with the longer term perspective set out in the Roadmap for moving to a competitive low carbon economy in 2050, "The Energy Roadmap 2050". This explores the transition of the energy system in ways that would be compatible with the 80% domestic greenhouse gas reductions target while also increasing competitiveness and security of supply. The roadmap requires the reach of the target of cutting of 40% GHG in comparison to 1990 levels by 2030 already endorsed as a milestone as part of the "2030 Framework". Moreover, the implementation of the "2030 Energy and Climate Framework" is a priority in follow up to the Paris Agreement, the first multilateral agreement on Climate Change covering almost the global emissions, which vindicates the EU's approach. The international climate agreement aims to keep global warming below 2°C, in accordance with the recommendations of the Intergovernmental Panel on Climate Change (IPCC) ⁽²⁾. The key features of the Paris Agreement include: GHG reduction with a long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels and limit the increase to 1.5°C; a dynamic and transparent mechanism to take stock of ambition over time, an ambitious solidarity package with adequate provisions on climate finance. Moreover, the agreement promotes individual and collective action on adaptation, with the aim to enhance climate resilience and reduce climate vulnerability. It also recognises the role of non-Party stakeholders in addressing Climate Change, including cities, other subnational authorities, civil society, the private sector and others who are invited to scale up their efforts and support actions to reduce emissions, build resilience and decrease vulnerability to the adverse effects of Climate Change ^(1,2).

Climate change Adaptation

Adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause, or taking advantage of opportunities that may arise. It has been shown that well planned, early adaptation action saves money and lives later.

Adaptation strategies are needed at all levels of administration: at the local, regional, national, EU and also the international level. Due to the varying severity and nature of

⁽¹⁾ https://ec.europa.eu/clima/policies/strategies_en Accessed in May 2018

⁽²⁾ EUROPEAN COMMISSION, COM(2016) 110 final, Communication from the Commission to the European Parliament and the Council "The Road from Paris: assessing the implications of the Paris Agreement and accompanying the proposal for a Council decision on the signing, on behalf of the European Union, of the Paris agreement adopted under the United Nations Framework Convention on Climate Change", Brussels, 2.3.2016

climate impacts between regions in Europe, most adaptation initiatives will be taken at the regional or local levels. The ability to cope and adapt also differs across populations, economic sectors and regions within Europe ⁽³⁾.

In April 2013 the European Commission adopted a European Union (EU) strategy on adaptation to Climate Change (4). This strategy aims at making Europe more resilient to Climate Change. The strategy is meant to enhance adaptive capacity of all governance levels to deal with the impacts of Climate Change. The EU Adaptation Strategy pursues three main objectives:

- 1) promote action by Member States (MS) by means of adopting comprehensive adaptation strategies and provide funding to help MS build up their adaptation capacities and take action;
- 2) promote adaptation in relevant vulnerable sectors such as agriculture, fisheries and cohesion policy, guaranteeing that Europe's infrastructure is made more resilient, and promote the use of insurance against natural and man-made disasters;
- 3) promote better informed decision-making by addressing gaps in knowledge about Climate Change adaptation and further developing the European climate adaptation platform (Climate-ADAPT) as the 'one-stop shop' for adaptation information in Europe.

The Covenant of Mayors for Climate and Energy falls under the first key objective and includes both climate mitigation and adaptation aspects, and is intended to complement the national Climate Change strategies and plans with a specific initiative to support cities. The climate adaptation pillar of the Covenant of Mayors for Climate and Energy is the follow up of the Mayors Adapt initiative, a voluntary commitment that has been set up by the European Commission to engage cities in taking action to adapt to Climate Change. Cities signing up to the initiative commit to contributing to the overall aim of the EU Adaptation Strategy by developing a comprehensive local adaptation strategy or integrating adaptation to Climate Change into relevant existing plans. They agree to submit an adaptation strategy within two years of signing the commitment and report every second year on their city's achievements. By joining the initiative, participating local authorities will benefit from support for local activities to tackle Climate Change, a platform for cooperation and exchange of best practice, and greater public awareness about adaptation and the measures that need to be taken.

In 2016, the Commission launched an evaluation of the EU Adaptation Strategy to examine the actual implementation and performance of the strategy. The evaluation is planned to be completed by the end of 2018.

1.2 About the Covenant of Mayors for Climate and Energy in Europe

Covenant of Mayors (2020 target)

The **Covenant of Mayors (CoM) "2020 target"** initiative was launched in 2008 by the European Commission after the adoption of the 2007 EU Climate and Energy Package, to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies towards a low carbon future. The initiative aimed to convene local and regional authorities voluntarily committing to implement sustainability policies on their territories and to provide them with harmonised data compilation, methodological and reporting framework, to translate their greenhouse gas (GHG) emissions reduction ambitions into reality.

⁽³⁾ https://ec.europa.eu/clima/policies/adaptation_en

⁽⁴⁾ https://ec.europa.eu/clima/sites/clima/files/docs/eu_strategy_en.pdf

The CoM (2020 target) local authorities' commitment was to achieve and exceed by 2020 at least the European 20% reduction of the total emissions objective compared to the baseline, in the area of influence of the local authority, by the implementation of a Sustainable Energy Action Plan (SEAP). The SEAP includes energy related actions tackling the largest emitting activity sectors in the city towards an increasing of energy efficiency and the use of renewable energy sources (RES). The SEAP is based on the results coming from an initial emissions evaluation (Baseline Emission Inventory – BEI) on the territory and an adaptation of city structures. Mobilisation of civil society is needed in order to ensure an effective implementation of the SEAP. In 2010, the Joint Research Centre (JRC) published the first Covenant of Mayors Guidebook ⁽⁵⁾ guiding the local authorities joining the initiative in the BEI calculation and in the development, implementation and monitoring of their SEAPs.

In parallel, in 2014, in the context of the European Commission's European Strategy on adaptation to Climate Change ⁽⁶⁾, the European Commission launched a separate initiative called Mayors Adapt, based on the same principles as the Covenant of Mayors. This *sister* initiative focusing on adaptation to Climate Change invited local authorities to demonstrate leadership in adaptation, and was supporting them in the development and implementation of local adaptation strategies.

Covenant of Mayors for Climate & Energy ("2030 targets")

In October 2015, the Covenant of Mayors and Mayors Adapt initiatives were officially merged. The Covenant of Mayors for Climate & Energy (2030 targets) was launched stepping up the initial greenhouse gas emission reduction commitments and integrating adaptation to Climate Change. The initiative is built around three pillars:

Mitigation (at least 40% emission reduction target by 2030)

Adaptation to Climate Change

Secure, sustainable and affordable energy

Signatory local authorities share a vision for making cities decarbonised and resilient, where citizens have access to secure, sustainable and affordable energy. To translate commitments into action, they commit to (**Figure 1**):

- Setting ambitious mitigation and adaptation goal(s) / target(s);
- Measuring their GHG emission level in a base year, according to a common methodological approach; Baseline Emission Inventory (BEI)
- Assessing climate risks and vulnerabilities within their cities; Risk and Vulnerability Assessments (RVAs)
- Defining a comprehensive set of actions that local authorities plan to undertake in order to reach their climate mitigation and adaptation goals; Sustainable Energy and Climate Action Plan (SECAP). The plan will be based on the results coming from the previous assessments (BEI and RVAs)
- Approving and making their action plan publicly available;
- Regularly reporting (both qualitatively and quantitatively) to the EC on the implementation of their action plan
- 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.

⁽⁵⁾ "How to develop a Sustainable Energy Action Plan" Bertoldi P et al. 2010

⁽⁶⁾ COM/2013/216

With these commitments and actions, local authorities are contributing significantly to the implementation of the EU 2030 Climate and Energy package ⁽⁷⁾ and of the EU Strategy on Adaptation to Climate Change ⁽⁸⁾. As stated before, the role of sub-national level actors is becoming increasingly important as we strive to implement the Paris Agreement and keep global warming well below 2°C.

Figure 1. Overview table, showing the differences in terms of commitments and reporting requirements for the different (past/current) versions of the Covenant initiatives



Initiative:	Covenant of Mayors	Mayors Adapt	Covenant of Mayors for Climate & Energy
Time period:	From 2008 to 2015	From 2014 to 2015	From 2015 onwards
Commitments:	- Mitigation (2020 time horizon)	- Adaptation	- Mitigation (2030 time horizon) - Adaptation - Energy Access
Reporting template to be filled in:	SEAP template	Mayors Adapt template	SECAP template

Source: CoMO

About the European Covenant of Mayors Methodological & Reporting Frameworks

The Covenant of Mayors helps local authorities to translate their commitments into reality, while taking into account the immense diversity on the ground. It provides signatories with a set of methodological principles (defined in the present Guidebook) and a harmonised data compilation and reporting framework (consisting of a reporting template ⁽⁹⁾, and complemented by comprehensive reporting guidelines ⁽¹⁰⁾) which are unique in Europe. These reference documents have been developed by the Joint Research Centre of the European Commission and the Covenant of Mayors Office - in collaboration with a group of practitioners from local and regional authorities.

Main achievements

In 2016 ^(11,12) the 5 403 CoM signatories overall commitment for 2020 was a reduction of the total GHG emissions of 27 %, 7 % above the minimum requested target of 20 %. Results from the plans monitoring reported, reveal an already achieved 23 % overall reduction in emissions. The important role of the Covenant is mentioned and acknowledged in several European Commission policy documents: the Energy Efficiency Directive ⁽¹³⁾, the European Commission’s Energy Union Package ⁽¹⁴⁾, the European

⁽⁷⁾ https://ec.europa.eu/clima/policies/strategies/2030_en
⁽⁸⁾ https://ec.europa.eu/clima/policies/adaptation/what_en
⁽⁹⁾ SECAP template (CoMO, 2016) - available in all EU languages and downloadable from the Covenant website library: https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=142
 Commonly referred to as SEAP or SECAP template, it aims to assist signatories in presenting their action plan in a structured way as well as tracking their implementation progress.
⁽¹⁰⁾ Covenant of Mayors Reporting Guidelines (CoMO, 2016) - available in all EU languages and downloadable from the Covenant website library: https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=172. It provides signatories with practical information on how to fill in the reporting template and includes illustrative examples.
⁽¹¹⁾ "Covenant of Mayors: Greenhouse Gas Emissions: Achievements and Projections" (Kona A. et al 2016)
⁽¹²⁾ "Covenant of Mayors in figure: 8-years Assessment" (Kona A. et al 2017)
⁽¹³⁾ EED 2012/27/EU
⁽¹⁴⁾ COM/2015/080

Commission’s European Energy Security Strategy ⁽¹⁵⁾, and the European Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy ⁽¹⁶⁾.

1.3 About the Global Covenant of Mayors

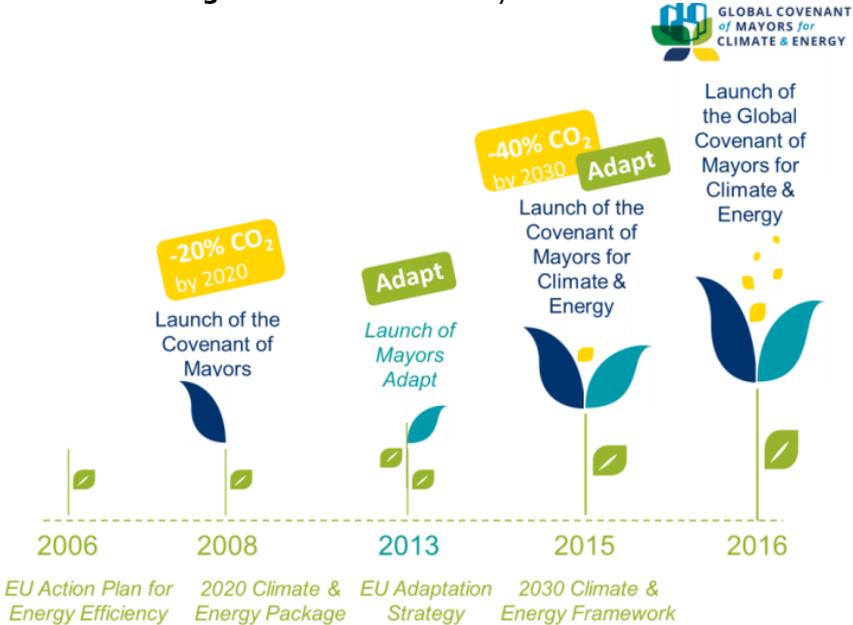
Since its launch in 2008, the initiative has progressively grown into a worldwide city movement ⁽¹⁷⁾, extending first to the East and South neighbouring countries of Europe (respectively in 2011 and 2012) and later to sub-Saharan African countries.

In January 2017, a merge of the initiatives Covenant of Mayors for Climate and Energy (2030 target) and Compact of Mayors ⁽¹⁸⁾ into the Global Covenant of Mayors for Climate and Energy (GCoM) was announced.

The Global Covenant of Mayors is an international alliance of cities and local governments with a shared long-term vision of promoting and supporting voluntary action to combat Climate Change and move to a low-emission resilient society. This new initiative brings together all the commitments of these local authorities with the support of Regional offices, city/regional networks and/or national governments to link city contributions to the Paris Climate Agreement. This coalition already represents about 11% of the world’s population as of May 2018, and 7,755 towns and cities, have joined it through the Covenant of Mayors framework, while 428 global cities joined via the Compact of Mayors. An overview of the evolution of the initiative from 2008 to present days is shown in **Figure 2**.

Thus far, the European Commission has been funding nine regional and national Covenant Offices (including in North America, Latin America and the Caribbean, China and South-East Asia, India and Japan - in addition to the 3 regions mentioned above: East and South neighbouring and Sub-Saharan African countries) in order to support the international dimension of the initiative.

Figure 2. Covenant of Mayors evolution



⁽¹⁵⁾ COM/2014/0330 final

⁽¹⁶⁾ COM 2016/501final

⁽¹⁷⁾ 'Origin & developments' page of the EU Covenant of Mayors website: <https://www.covenantofmayors.eu/about/covenant-initiative/origins-and-development.html>

⁽¹⁸⁾ Launched in 2014 by UN Secretary General Ban Ki-moon and former New York City Mayor Michael Bloomberg (former UN Special Envoy for Cities and Climate Change), the Compact of Mayors was a global coalition of city leaders addressing Climate Change by pledging to cut greenhouse gas emissions and prepare for the future impacts of Climate Change (Barron-Lopez, Laura. "UN launches global mayors network to fight climate change". The Hill. Retrieved 2015-12-03.)

Towards a Global Covenant Reporting Framework

The current shaping of the Covenant as a global initiative will influence how local level climate action will be supported, recognised and used in the international (but also national) processes. The Global Covenant movement indeed showcases the collective impacts of cities from around the globe. Efforts are underway to streamline measurement and reporting procedures, and enable meaningful comparison and aggregation with other cities. To this end, a set of recommendations (to be released in 2019) towards a common global reporting framework for city i) emissions inventories, ii) targets, iii) risk and vulnerability assessments and iv) climate action plans have been developed and submitted for public consultation in the various regions and nations. These recommendations will be refined based on the outcomes of the consultation to ensure they best meet local governments' needs in specific local or regional circumstances.

Note that the resulting Global Covenant framework will in any case allow for the continuation of the reporting requirements by current European Covenant cities (as defined in the present document).

1.4 About this Guidebook

This Guidebook aims at supporting local authorities in the European Union (EU) Member States joining the Covenant of Mayors for Energy and Climate (2030 target). Local authorities will play a key role in the achievement of EU's energy and climate objectives (reduce the overall emissions to at least 40% by 2030, enhance the resilience of cities and assure a sustainable, secure and affordable access to energy).

The concrete purpose of the present guidebook is helping European local authorities in developing the steps towards the committed targets, in particular:

- Define the key elements of the initiative
- Elaborate a Baseline Emission inventory (BEI)
- Perform a Risk and Vulnerabilities Assessment (RVA)
- Develop a Sustainable Energy and Climate Action Plan (SECAP)
- Support the implementation and monitoring of the SECAP.

Step-by-step recommendations are provided for the entire process of elaborating a local energy and climate strategy, from initial political commitment to implementation and monitoring of the plan. The guidebook is providing a set of flexible but coherent principles and recommendations, allowing both local authority front runners and newcomers to take local level climate action through the CoM ⁽¹⁹⁾ in the way which best suits their circumstances and capabilities.

The Guidebook is divided into three Parts:

Part 1: Relates to the overall SECAP process, covering strategic issues.

Part 2: Relates to municipality assessments, as pre-requisite to the SECAP development, they will provide knowledge on the nature of the emitting entities, risk and vulnerabilities in the municipality territory.

- Part 2.a: Guidance on how to elaborate the Baseline Emission Inventory (BEI) and the Monitoring Emission Inventory (MEI)
- Part 2.b: Guidance on how to perform a Risk and Vulnerability Assessment (RVA)

⁽¹⁹⁾ "In -depth analysis of Sustainable Energy Action plans" Rivas S. et al , 2015

Part 3: Relates to the description of technical questions, measures and policies that can be implemented at local level by the local authority per sector of activity

- Part 3.a: Focuses on Climate Change mitigation
- Part 3.b: Focuses on Climate Change adaptation
- Part 3.c: Focuses on financing mechanisms for SECAPs

The Guidebook has been prepared by the Joint Research Centre Directorate-General (JRC) of the European Commission, with the support and input of the Directorate-General for Energy (DG ENER), Directorate-General for Climate Action (DG CLIMA), the Covenant of Mayors Office (CoMO) and experts from municipalities, regions agencies and private companies.

The terms **“cities”** and **“local authorities (LAs)”** are used throughout this document, understanding that the geo-political institutions of local governments may vary from country to country and terminology used may differ. In this document, a city refers to a geographical subnational jurisdiction (“territory”) such as a community, a town, or a city that is governed by a local authority as the legal entity of public administration.

2 The Sustainable Energy and Climate Action Plan – a way to go beyond the European Union targets

The Sustainable Energy and Climate Action Plan (SECAP) is the key document that shows how a Covenant signatory will reach its commitments by 2030. The development of the SECAP primarily draws on the findings from the Baseline Emission Inventory (BEI) and the Climate Change Risk and Vulnerability Assessment (RVA). Through the development of the BEI, the signatory is able to develop an overview of its greenhouse gas (GHG) emissions, and set appropriate strategies to reach its reduction target (of at least 40% by 2030 compared to the baseline). Similarly, the RVA identifies the most relevant climate hazards and vulnerabilities affecting the local authority, facilitating the process of addressing such risks through the development of an adaptation strategy and identification of appropriate adaptation actions. Through the combination of these aspects, the SECAP defines concrete measures for both climate mitigation and adaptation, with timeframes and assigned responsibilities, translating the long-term strategy into action. Signatories commit themselves to submitting their SECAPs within two years following adhesion.

To ensure that adequate action is taken to mitigate and adapt to Climate Change, the SECAP should not be regarded as a fixed and rigid document. Since circumstances can change and the ongoing actions provide results and generate local experience, it may be useful or necessary to revise the plan on a regular basis.

Opportunities to make cities more climate-resilient arise with every new development project to be approved by the local authority. The impacts of missing such an opportunity can be significant and will last for a long time. This means that climate related considerations should be taken into account for all new developments, even if the SECAP has not yet been finalised or approved.

If a signatory has already developed a Sustainable Energy Action Plan (SEAP) in the past with an emission reduction target by 2020 and/or a climate adaptation strategy/plan (under Mayors Adapt), their previous commitment(s) remain(s) valid. Joining the new Covenant of Mayors for Climate and Energy will demand to sign up to the new initiative to formalise new (post-2020) commitments through a decision by the municipal council, and to prepare a SECAP as a natural extension of the existing plan.

2.1 Scope of the SECAP

The Covenant of Mayors concerns action at local and regional level within the competence of the local authority. The SECAP should concentrate on measures aimed at reducing GHG emissions such as carbon dioxide (CO₂), and the final energy consumption by end users, as well as include adaptation actions in response to the impacts of Climate Change. The Covenant's commitments cover the whole geographical area of the local authority (town, city, region). Therefore, the SECAP should include actions concerning both the public and private sectors. However, the local authority is expected to play an exemplary role and therefore to take outstanding measures related to its own buildings and facilities, vehicle fleet, etc.

For Climate Change mitigation, the main target sectors are buildings, equipment/facilities and urban transport ^(20,21). The SECAP may also include actions related to local electricity production (development of solar photovoltaic (PV), wind power, combined heat power (CHP), improvement of local power generation), and local heating/cooling generation. In addition, the SECAP should cover areas where local authorities can influence energy consumption on the long term (as land use planning), encourage markets for energy efficient products and services (public procurement), as well as changes in consumption

⁽²⁰⁾ "Urban CO₂ mitigation strategies under the Covenant of Mayors: An assessment of 124 European cities. Croci et al, 2017

⁽²¹⁾ "Covenant of Mayors in figures: 8 years assessment" Kona et al, 2017

patterns (working with stakeholders and citizens) ⁽²²⁾. On the contrary, the industrial sector is not a key target of the Covenant of Mayors, so the local authority may choose to include actions in this sector or not. In any case, plants covered by the EU Emissions Trading Scheme (EU ETS)²³ shall be excluded, unless they were included in previous plans of the local authority. A detailed description of the sectors to be covered in the Baseline Emission Inventory is provided in Section 3.1. of Part 2.a.

For adaptation to the impacts of Climate Change, the SECAP should include actions in the sectors and areas, which are likely to be most vulnerable to Climate Change in a city (hotspots). Vulnerable sectors (e.g. buildings, transport, energy, water, waste, land use planning, environment & biodiversity, agriculture & forestry, health, civil protection & emergency, tourism) can vary considerably within urban perimeters, from one city to another, from urban areas to more rural areas: this is why gaining a deep understanding of the hazards and vulnerabilities of the local authority is of paramount importance.

Finally, as recognised by the Paris Agreement establishing a global goal on mitigation ⁽²⁴⁾ and adaptation ⁽²⁵⁾ and putting mitigation and adaptation in parity, SECAPs should seek and identify complementarities between mitigation and adaptation, and mainstream them into existing sectorial policies in order to foster synergies and optimize the use of available resources. Due consideration should be taken during the development of mitigation and adaptation actions alike to enhance synergies, and to the greatest extent possible, avoid adverse impacts. This is particularly relevant in the case of maladaptation, where actions might lead to an increased vulnerability of other systems, sectors or social groups ⁽²⁶⁾.

2.2 Time horizon

The time horizon of the Covenant of Mayors is 2030. Therefore, the SECAP has to contain a clear outline of the strategic actions that the local authority intends to take in order to reach its commitments by 2030. The SECAP may cover a longer period, but in this case it should contain intermediate values and objectives for the year 2030. For local authorities who joined the Covenant before the 1st November 2015, the 2020 target remains an important milestone towards the 2030 commitments.

As it is not always possible to plan in detail concrete measures and budgets for such a long time span, the local authority may distinguish between:

- A vision, with long-term strategy and goals until 2030 and/or beyond, including firm commitments in areas like land-use planning, transport and mobility, public procurement, standards for new/renovated buildings etc.
- Detailed measures for the next 3-5 years, which translate the long-term strategy and goals into real actions.

Both the long-term vision and the detailed measures shall form an integral part of the SECAP. Example of long-term vision and its translation into real action is provided in the following box.

⁽²²⁾Effective information measures to promote energy use reduction in EU Member States" Rivas S. et al 2016

⁽²³⁾ Consolidated version of the Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC

⁽²⁴⁾ Article 2 of the Paris Agreement establishes the global temperature goal, i.e. holding the increase in the global average temperature well below 2 degrees C above preindustrial levels and pursue efforts to limit the temperature increase to 1.5 degrees C above pre-industrial levels.

⁽²⁵⁾ Article 7.1 of the Paris Agreement establishes the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change.

⁽²⁶⁾ Barnett, J., & O'Neill, S. (2010). Maladaptation. *Global Environmental Change*(20), 211-213.

Example of **long-term strategy** on transport: a local authority decides that all the cars purchased for the municipal fleet should be electric.

Of course, the municipality cannot vote the budget for all the cars that will be purchased up until 2030, but they could reflect it in its public procurement procedures can include this measure in the plan and evaluate its impact till 2030.

For the duration of the local authority's political mandate, this measure should be presented in very practical terms, with budgets, identification of financing sources, etc.

A robust planning of climate action must integrate short-term needs with long-term threats and consider the full range of interactions between sectors and policies in order to avoid maladaptation ⁽²⁷⁾.

Maladaptation: (see also the glossary) interventions and investments in a specific location or sector that could increase the vulnerability of another location or sector, or increase the vulnerability of the target group to future climate change. Maladaptation arises not only from inadvertent badly planned actions, but also from deliberate decisions focused on short-term benefits ahead of longer-term threats, or that fail to consider the full range of interactions, feedbacks and trade-offs between systems and sectors arising from planned actions. As an example, water desalination technologies that are based on fossil fuels.

As mentioned, setting an Emission reduction target to 2030 is mandatory for all signatories of the Covenant of Mayors for Climate and Energy. Nevertheless, signatories are warmly recommended to set and to report on a longer-term target as well, to demonstrate that they have a vision towards decarbonised and resilient territories, providing universal access to secure, sustainable and affordable energy services for all. For this purpose, both the target year (beyond 2030) and the minimum emission reduction objective can be freely set by the local authority. Nonetheless, the Covenant recommends that these are in line with the national commitments or with the EU commitments (80 - 95% overall GHG reduction objective by 2050 as mentioned in the Roadmap to a low carbon economy ⁽²⁸⁾ choosing whichever is higher).

It is also strongly recommended that measures related to the local authority's own buildings and facilities are implemented first, in order to set an example and motivate the stakeholders (**Table 1**).

⁽²⁷⁾ Juhola, S., Glaas, E., Linnér, B.-O., & Neset, T.-S. (2016). Redefining maladaptation. *Environmental Science & Policy*(55), 135-140.

⁽²⁸⁾ COM/2011/0112 final - Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions a Roadmap for Moving to a Competitive Low Carbon Economy in 2050

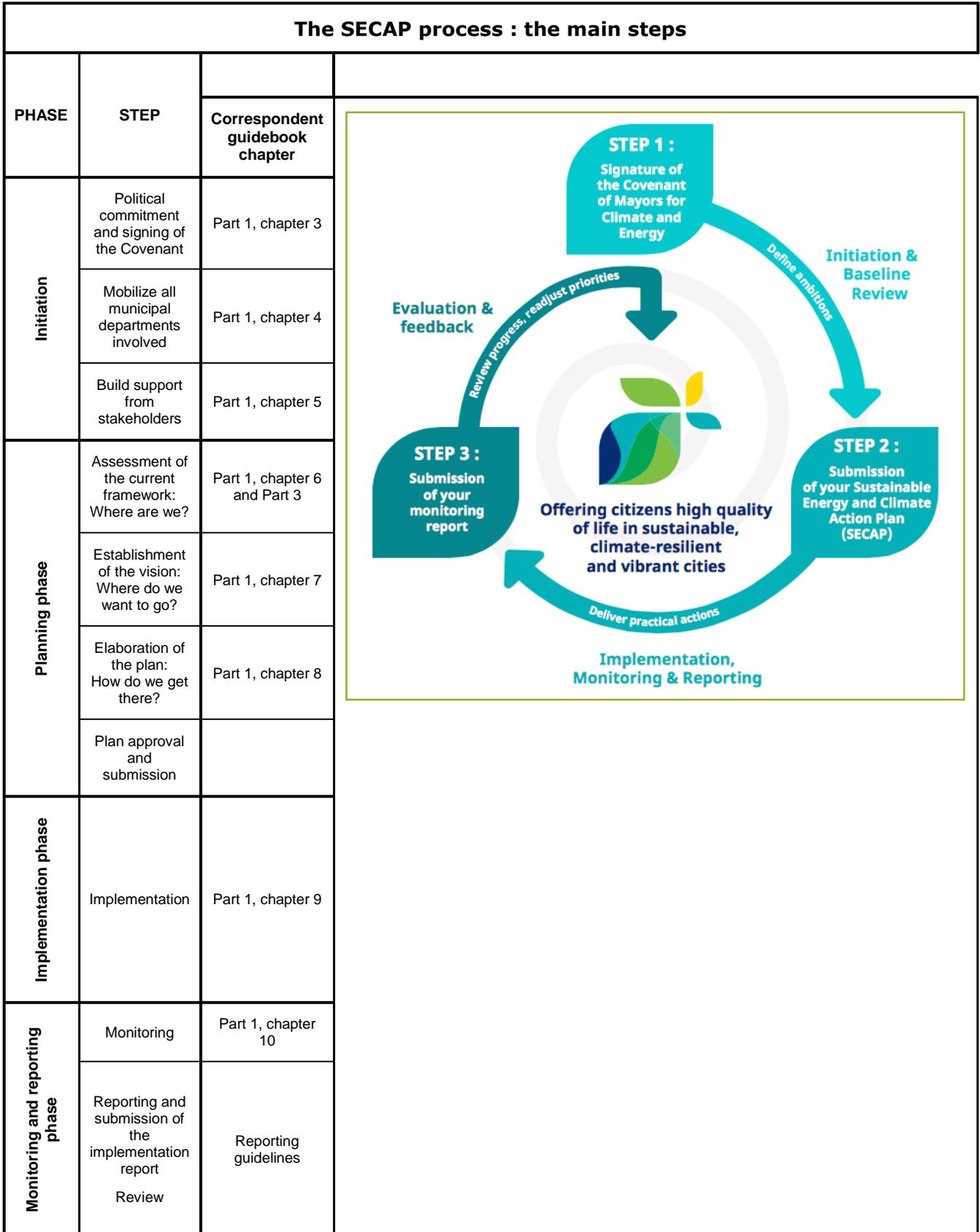
Table 1. Exemplary actions implemented in municipal buildings

Actions in Municipal buildings, equipment and facilities	
City	Measure
Barcelona	Installation of solar thermal systems in sports centres. Monitoring energy systems in every municipal building.
Turin	Energy action plan for municipal building stock: development of a base-line energy consumption inventory and planning of retrofit of the building stock.
Ostrava	Energy action applied in 21 public buildings including: additional thermal insulation of the building shell; replacement of windows; thermal insulation of ceilings; modernisation of the boiler or the heat exchanger plant, as appropriate heating control (incl. the use of IRC - Individual Room Control). Energy Performance Contracting: yearly mandatory energy audit in all municipal buildings.
Tallin	Consuming Green: renovation of 48 kindergarten. Installation of new efficient lights and their control in the public lightning net.
Larnaka	A wide range of measures which complement themselves in saving energy and reducing CO2 in the building stock: thermal insulation of buildings, lamp replacement with high efficiency ones, voltage rectifier, maintenance of air conditioning systems, installation of solar panels.
Sonderborg	Various programs and concepts for: energy renovation of public buildings, purchase of energy efficient appliances and equipment, energy efficient lighting and energy training of employees.
Burgas	Retrofitting and renovation of municipal, social, cultural, administrative infrastructure and introduction of energy efficiency measures. Energy monitoring of buildings municipal properties.

2.3 The SECAP process

The chart in **Figure 3** details the key steps for elaborating and implementing a successful SECAP. As shown in the graph, the SECAP process is not a linear one, and some steps may overlap with others. Besides, it is possible that some actions will have started before the adhesion to the Covenant (not shown in the graph).

Figure 3. The SECAP process



2.4 Human and financial resources

SECAP elaboration and implementation requires human and financial resources. Local authorities may adopt different approaches:

- Using internal (in-house) resources, for example by integrating the tasks in (an) existing department(s) of the local authority involved in sustainable development/energy- and climate-related topics (e.g. local Agenda 21 office, environmental and/or energy department).
- Setting up a new unit within the local administration (approx. 1 person/100,000 inhabitants).
- Outsourcing (e.g., private consultants, city-networks, universities ...).
- Sharing one coordinator among several local authorities, particularly in the case of small local authorities.
- Getting support from local and regional energy agencies (LAREAs) or Covenant Territorial Coordinators (CTCs)⁽²⁹⁾ (see chapter 4).
- Developing a joint SECAP in coordination and collaboration with neighbouring local authorities.

Note that the human resources allocated to the SECAP may be highly productive from a financial point of view, via savings on the energy bills, access to European funding for the development of projects in the field of Energy Efficiency (EE) and RES.

In addition, extracting as much as possible resources from inside offers the advantages of a higher ownership, saves costs and supports the very materialisation of a SECAP. Adequate training should also be offered to officers dealing with SECAP elaboration and implementation.

2.5 Joint SECAPs

Should a group of adjoining Covenant of Mayors' signatories want to elaborate a common SECAP, they are allowed to do so, preferably under the aegis of a Covenant Territorial Coordinator (CTC) a role officially recognised by the European Commission. CTCs are decentralised authorities, such as regions, provinces or groupings of local authorities, or national public bodies. Authorities acting as Covenant Coordinators commit to providing signatories with the technical, financial, administrative and political support necessary to fulfil their commitments.

Since Climate Change has a regional scale in many sectors – e.g. water management and transport – collaboration at regional level between municipalities and with regional agencies is needed. This network of cities within the same risk zone and with similar vulnerability factors could facilitate data and good-practice exchange, better use of available resources (e.g., river basin management), and define common targets and monitoring systems.

Two options of joint SECAP are allowed:

- Joint SECAP Option 1, recommended for two or more local authorities willing to implement one or several joint actions, but remaining individually committed to the 2030 target. In this case cities can submit one single SECAP document approved by the municipal council (or equivalent decision-making body) of each of the municipalities, but each city has to fill-in its own template. The mitigation objective of reducing 40% of the CO₂ emissions by 2030 is not shared by the group of cities as it remains an individual objective of each city participating in the joint SECAP. The

⁽²⁹⁾ Covenant Coordinators (roles, list): <https://www.covenantofmayors.eu/about/covenant-community/coordinators.html>

emissions' reductions corresponding to the common measures proposed in the SECAP will be divided among each city sharing these measures.

As examples, the case of Avola in Italy or Berlaar in Belgium.

— Joint SECAP Option 2, recommended for:

- a group of small- and medium-sized municipalities within the same territorial area (indicatively with less than 10,000 inhabitants each);
- an urban agglomeration, like a metropolis with its suburbs.

In this case, the group is registered as one signatory and has to submit only one SECAP document, approved by the municipal council (or equivalent decision-making body) of each of the local authorities and to fill-in only one template. In the SECAP document, the specific contribution to the overall plan of each local authority needs to be defined.

Under this option we can find as example "Associazione Intercomunale Terre Estensi" in Italy, "Lokaal klimaatbeleid Noord-West-Vlaanderen" in Belgium, "Municipis de la Serra de l'Estela de l'Alt Empordà" in Spain, "Bacău County" in Romania, or Mezilesí in Check Republic.

For the adaptation pillar: Signatories can decide to prepare a Risk and Vulnerability Assessment and its corresponding actions jointly or individually.

More information can be found in the Quick Reference Guide 'Joint Sustainable Energy Action Plan' by the Covenant of Mayors Office– available in the main EU languages:

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=210.

2.6 SECAP document, template and submission procedure

Covenant signatories commit to submitting their SECAPs within two years following adhesion. They also commit to providing regular implementation reports outlining the progress of their action plan.

The SECAP official document must be approved by the municipal council (or equivalent decision-making body) and uploaded in national language via the 'My Covenant' (on-line password-restricted area: <http://mycovenant.eumayors.eu/>). Covenant signatories will be required, at the same time, to fill in an online SECAP template in English. This will allow them to summarise the results of their Baseline Emission Inventory and of the Climate Change Risk and Vulnerability Assessment, as well as the key elements of their SECAP. The timeline and requirements of reporting are shown in **Table 2**.

Table 2. Minimum reporting requirements

	Registration stage	SECAP	Monitoring Action Reporting	Monitoring Full Reporting
	Year 0	Within 2 years	Within 4 years	Within 6 years
Strategy	x	✓	✓	✓
Emission Inventories	x	✓ <i>(BEI)</i>	x	✓ <i>(MEI)</i>
Mitigation Actions	x	✓	✓ <i>(min. 3 Benchmarks)</i>	✓
Adaptation Scoreboard	✓	✓	✓	✓
Risks and Vulnerabilities	x	✓	✓	✓
Adaptation Actions	x	x	✓ <i>(min. 3 Benchmarks)</i>	✓

Moreover, the template is a valuable tool that provides visibility to the SECAP and facilitates its assessment, as well as the exchange of experience among the Covenant signatories. Highlights of the information collected will be shown online in the Covenant of Mayors website under the [signatory profiles](#).

The SECAP template is available online as an internet-based tool that the Covenant signatories are required to fill in themselves. A public copy of the SECAP template and supporting instructions document ⁽³⁰⁾ are available in the library of the Covenant of Mayors website: <https://www.covenantofmayors.eu/support/library.html> (under "type", select "technical materials").

The JRC of the European Commission is in charge of the evaluation of the documentation and data provided by signatories. The analysis is essentially focusing on the compliance of the SECAP with the Covenant formal commitments and principles as well as on the evaluation of the completeness and consistency of the data inserted in the template.

The signatory receives a feedback report serving the purpose of informing the signatory on whether the SECAP fulfils the eligibility criteria and also provides observations and suggestions for improvement.

⁽³⁰⁾ The Covenant of Mayors for Energy and Climate Reporting Guidelines. JRC103031

2.6.1 Recommended SECAP structure

The Covenant signatories could follow the structure of the SECAP template when preparing their Sustainable Energy and Climate Action Plans. The suggested content of the SECAP document is (see also **Figure 4**):

(a) SECAP Executive Summary

(b) Strategy

1. Vision
2. Commitments both for mitigation and for adaptation:
 - a. For mitigation, the SECAP document should clearly indicate the emission reduction target by 2030 (and possibly beyond) clearly stating the BEI year and the reduction target type (absolute reduction or per capita reduction³¹)
 - b. For adaptation, the SECAP should include a certain number of adaptation goals, coherent with the identified vulnerabilities, risks and hazards.
3. Coordination and organisational structures created/assigned
4. Staff capacity allocated
5. Involvement of stakeholders and citizens
6. Overall budget for implementation and financing sources
7. Implementation and Monitoring process
8. Assessment of the Adaptation Options
9. Strategy in case of extreme climate events

(c) Baseline Emission Inventory (BEI)

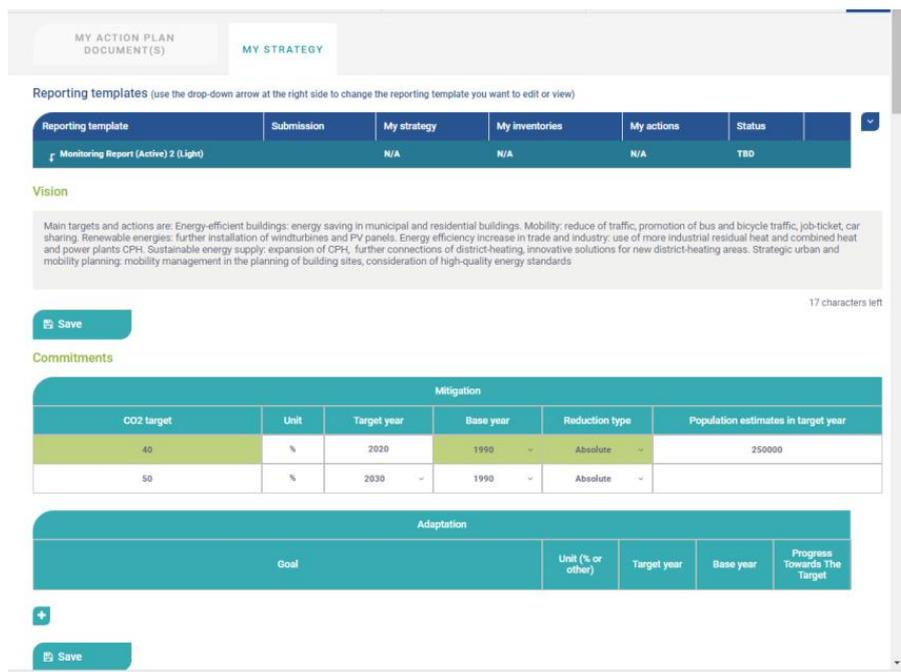
1. Inventory year
2. Number of inhabitants in the inventory year
3. Emission factors approach (standard or LCA)
4. Emission reporting unit (CO₂ or CO₂-equivalent)
5. Responsible body/department (main contact)
6. Detailed BEI results in terms of final energy consumption and GHG emissions

If relevant, please also specify:

7. Inclusion of optional sectors and sources
8. Assumptions made, references or tools used
9. Reference to the BEI inventory report

⁽³¹⁾ See Chapter 2 of Part 2.a of the SECAP Guidebook for more advise on the choice of the reduction target type

Figure 4. SECAP template



Strategy	Dedicated to the vision, the overall CO ₂ emissions reduction target(s), the adaptation goals, the attribution of staff and financial capacities and the involvement of stakeholders and citizens.
Emission Inventories	Dedicated to the amount of final energy consumption and associated CO ₂ emissions by energy carrier and by sector in the base year.
Mitigation Actions	Dedicated to the list of key mitigation actions to put the overall strategy into action, together with time frames, assigned responsibilities, allocated budgets and estimated impacts.
Scoreboard	Dedicated to understanding the areas of the adaptation cycle in which the signatory has made progress.
Risks and Vulnerabilities	Dedicated to the climate vulnerabilities, hazards as well as the impacts and assessments thereof.
Adaptation Actions	Dedicated to the Action Plan(s) and individual (key) actions, including various relevant parameters (i.e. sector, timeframe, stakeholders and cost).

Source:

Top image: Screenshot of the "strategy" tab of the online reporting template available at: "My Covenant" area of the website);

Bottom image: Summary table of the template content (Source: Reporting Guidelines, CoMO, 2017)

It is in the interest of the local authority to prepare a detailed documentation of the methodologies and data sources used to develop the BEI. This will facilitate the compilation of the Monitoring Emission Inventories (MEI) in the following years. Covenant Signatories are encouraged to compile MEIs on a regular basis. The minimum requirement in the context of the Covenant of Mayors is to do it every 4 years. In this way, subsequent inventories may be compared with the Baseline Emission Inventory (BEI), and progress in terms of emissions reduction can be monitored. A MEI for the target year should as well be provided once local authorities have the available data in order to assess the achievement of their CO₂ emissions reduction target. Detailed information relating to the inventory, including data interpretation, can be provided either as part of the SECAP document or in separated BEI/MEI inventory reports (see Part 2.a of this Guidebook, chapter 5 "Documentation and Reporting").

(d) Climate Change Risk and Vulnerability Assessment (RVA)

1. Expected weather and climate events particularly relevant for the local authority or region
2. Vulnerabilities of the local authority or region
3. Expected climate impacts in the local authority or region
4. Assets and people at risk from Climate Change impacts

(e) Mitigation actions and measures for the full duration of the plan (2030). For each measure/action, please specify (whenever possible):

1. Description
2. Responsible department, person or organisation
3. Timing (end-start, major milestones)
4. Cost estimation (Investment and running costs)
5. Estimated energy saving/increased renewable energy production by target year
6. Estimated GHG reduction by target year
7. Indicators for monitoring

(f) Adaptation actions and measures for the full duration of the plan (2030). The actions should be coherent with outcomes of the city vulnerability and risk assessment (RVA). For each measure/action, please specify (whenever possible):

1. Sector
2. Title
3. Description
4. Responsible body/department/ and contact point
5. Timing (end-start, major milestones)
6. Action also affecting mitigation?
7. Stakeholders involved/advisory group
8. Impacts, vulnerabilities and risks tackled
9. Costs (€) (Investment and running costs)
10. Indicators for monitoring

Both for mitigation and for adaptation, the level of detail in the description of each measure/action is to be decided by the local authority according to expected results, data availability and quality. However, bear in mind that the SECAP is at the same time:

- A working instrument to be used during implementation (at least for the next few years)
- A communication tool towards the stakeholders
- A document that is agreed at the political level by the various parties in charge within the local authority: the level of detail should be sufficient to avoid further discussion at the political level over the meaning and scope of the various measures.

2.7 Key elements of a successful SECAP

- Build support from stakeholders and citizen participation: if they support the SECAP, nothing should stop it!
- Secure a long-term political commitment
- Ensure adequate financial resources
- Do a proper GHG emissions inventory as this is vital
- Make a Climate Change RVA, based on an analysis of the local/regional trends of various climate variables and city socioeconomic and biophysical specificities
- Integrate the SECAP into everyday management processes of the municipality: it should not be just another nice document, but part of the corporate culture!
- Ensure proper management during implementation
- Make sure that staff has adequate skills, and if necessary offer training
- Learn to devise and implement projects over the long term

2.8 Ten key elements to keep in mind when preparing a SECAP

As a summary of what is presented in this Guidebook, here are the 10 essential principles that should be kept in mind when elaborating a SECAP ⁽³²⁾. These principles are linked to the commitments taken by the Covenant signatories and constitute key ingredients to success. Failure to meet these principles may prevent SECAP acceptance.

1. Formal adoption of the plan by the municipal council (or equivalent decision-making body)

Strong political support is essential to ensure the success of the process, from SECAP design to implementation and monitoring ⁽³³⁾. This is why the SECAP document must be approved by the municipal council (or equivalent decision-making body).

2. Definition of clear mitigation and adaptation target(s) / goal(s)

The SECAP document must contain a clear reference to the core emission reduction commitment taken by the local authority when signing the Covenant of Mayors. The recommended baseline year is 1990, but if the local authority does not have data to compile a CO₂ inventory for 1990, then it should choose the closest subsequent year for which the most comprehensive and reliable data can be collected. The overall CO₂ reduction commitment has to be translated into concrete actions and measures together with the CO₂ reduction estimates in tons/year by 2030. For the local authorities that have a longer term CO₂ reduction target (for example by 2050) they should set an intermediary target by 2030 (40% as a minimum) for the reasons of comparability. In addition to the mitigation commitment, adaptation goals have to be specified coherently with the main outcomes of the vulnerability and risk assessment.

3. Sound assessment of the local situation (based on the Baseline Emission Inventory (BEI) and a Climate Change Risk and Vulnerability Assessment (RVA) outputs)

The SECAP should be elaborated based on a sound knowledge of the local situation in terms of energy and greenhouse gas emissions, as well as of climate hazards, vulnerabilities and impacted policy sectors. Therefore, an assessment of the current framework should be carried out ⁽³⁴⁾. This includes elaborating a Baseline Emission Inventory (BEI) and preparing a Climate Change Risk and Vulnerability assessment (RVA) – in line with the CoM commitments. The results of both the BEI and BEI and the RVA have to be included in the SECAP document.

The BEI and subsequent inventories are essential instruments that allow the local authority to have a clear vision of the priorities for action, to evaluate the impact of the measures and determine the progress towards the objective. It allows maintaining the motivation of all parties involved, as they can see the result of their efforts. Here are some specific points of attention:

- The BEI has to be relevant to the local situation, i.e., based on energy consumption/production data, mobility data etc. within the territory of the local authority. Estimates based on national/regional averages would not be appropriate in most cases, as they do not allow capturing the efforts made by the local authority to reach its CO₂ targets.
- The methodology and data sources should be consistent through the years.
- The BEI must cover at least the sectors in which the local authority intends to take action to meet the emission reduction target. The following are considered key Covenant

⁽³²⁾ More practical tips are available in the e-learning tool developed by CoMO and available in the restricted area of the Covenant website (in particular in the "Getting started" module).

⁽³³⁾ See chapter 3 of part 1 of the SEAP guidebook for guidance on political commitment

⁽³⁴⁾ See chapter 6 of part 1 of the SEAP guidebook for guidance on assessment of the current framework

sectors as they represent significant CO₂ emission sources in urban environment and can be influenced by the local authority: residential, municipal and tertiary buildings and facilities, and transport.

- The BEI should be accurate, or at least represent a reasonable vision of the reality.
- The data collection process, data sources and methodology for calculating the BEI should be well documented (if not in the SECAP then at least in the local authority's records).

The RVA enables local authorities to identify their exposure to current and potential Climate Change impacts, vulnerabilities and risks, as well as understand the main city specificities that contribute to aggravating the consequences of a specific climate hazard. Similarly to the BEI, the RVA defines the basis for setting the priorities of investment and monitoring the effectiveness of implemented adaptation measures for a specific region or sector. To this end, indicators of climate vulnerability and risk have to be constructed - on the basis of available data - and regularly monitored and evaluated versus a baseline scenario.

4. Comprehensive measures addressing the key sectors of activity - as identified in the signatory's assessments (BEI & RVA)

The commitment taken by the signatories concerns the reduction of the CO₂ emissions *in their respective territories*. Therefore, the SECAP has to contain a coherent set of mitigation measures covering possibly all the Covenant key sectors of activity: not only the buildings and facilities that are managed by the local authority, but also the sectors of activity in the territory of the local authority: residential sector, tertiary sector, public and private transport ⁽³⁵⁾. Before starting the elaboration of actions and measures, the establishment of a long-term vision with clear objectives is highly recommended³⁶.

The adaptation strategy should be part of a stand-alone document (e.g. the so-called SECAP) and/or mainstreamed in separate documents. Based on recognised local risks and vulnerabilities, the local authority should identify actions aimed at enhancing local adaptive capacity to respond to Climate Change impact and/or reducing city sensitivity to climate extremes. The key actions should be implemented within the prioritized hotspots of vulnerability and risk in order to reduce the probability of high losses and damages. Mitigation actions should be looked at through a Climate Change lens, to understand if they themselves are vulnerable to the impacts of Climate Change and/or they can influence the vulnerability of natural and human systems to Climate Change. The SECAP Guidebook contains many suggestions of policies and measures that can be applied at the local level ⁽³⁷⁾.

5. Strategies and actions until 2030

The plan must contain a clear outline of the strategic actions that the local authority intends to take in order to reach its commitments by 2030. It has to contain:

- The strategy and goals until 2030, including firm commitments in areas like land-use planning, transport and mobility, public procurement, standards for new/renovated buildings etc.
- Detailed measures for the coming years, which translate the long-term strategy and goals into actions. For each measure/action, it is important to provide a general description, the responsible body, the timing (start-end, major milestones), the cost estimation and financing/source, the indicators for monitoring. In addition, for mitigation actions the following should also be indicated: estimated energy saving/increased renewable energy production and associated estimated CO₂ reduction. For the key

⁽³⁵⁾ See chapter 3 of Part 2.a of the SECAP Guidebook for more advice on the sectors to be covered

⁽³⁶⁾ See chapter 7 of Part 1 of the SECAP Guidebook for guidance on the establishment of a vision and objectives

⁽³⁷⁾ See part 3 of this SECAP Guidebook

adaptation actions, the stakeholders involved, the risk and/or vulnerability tackled and the outcome reached should also be specified.

6. Mobilization of all municipal departments involved

The SECAP process should not be conceived by the different departments of the local authority administration as an external issue, but it has to be integrated into everyday processes³⁸. The SECAP should outline which structures are in place or will be organised in order to implement the actions and follow the results. It should also specify the human resources made available. A coordinated (inter)action between mitigation and adaptation through the mobilisation of all departments involved should be ensured. This implies strong horizontal cooperation among policy sectors that are used to working in separate silos to comply only with their sectoral agenda.

7 Engagement of citizens and stakeholders

In order to develop successful mitigation and adaptation planning, multiple stakeholder engagement is required (³⁹). Stakeholder engagement should be carried out since the very first steps of the planning process until the end of it, in order to have a successful planning (Hernández-González and Corral, 2017). The plan has to describe how the citizens and stakeholders have been involved in its elaboration, and how they will be involved in implementation and follow up. Advisory Groups should be created to ensure an exhaustive understanding of city specificities and problems, meet end-user expectations, guarantee a common agreement about selected indicators, and ensure a full uptake of the main outcomes and their inclusion into decision-making.

8 Financing

A plan cannot be implemented without adequate financial resources. The plan should identify the key financing resources that will be used to finance the actions (⁴⁰).

9. Monitoring and reporting

Regular monitoring using relevant indicators followed by adequate revisions of the SECAP allows to evaluate whether the local authority is achieving its targets, and to adopt corrective measures if necessary. The CoM signatories are therefore committed to submit a "Monitoring Report" every second year following the submission of the SECAP. The SECAP should contain a brief outline on how the local authority intends to ensure the follow-up of the actions and monitor the results (⁴¹). Signatories who had already committed to 2020 targets should continue to monitor and report on the progress to achieve them while starting to report on 2030 targets.

10. SECAP submission and filling the template

The covenant signatories commit to submitting their SECAPs within two years following adhesion. The SECAP document must be uploaded in national language (or in English) via the Covenant of Mayors' website. Signatories are required, at the same time, to fill in an online SECAP template in English. This will allow them to summarise the results of their Baseline Emission Inventory and of the Climate Change Risk and Vulnerability Assessment as well as the key elements of their SECAP. Dedicated monitoring templates are available to report on the SECAP implementation. The template has to be filled in carefully with sufficient level of detail, and should reflect the content of the SECAP, which is a politically approved document. Specific reporting guidelines are available on the [Covenant website](#).

⁽³⁸⁾ See chapter 3 of part 1 of the SECAP Guidebook for guidance on city structures adaptation

⁽³⁹⁾ See chapter 4 of part 1 of the SECAP Guidebook for guidance on the mobilisation of the civil society

⁽⁴⁰⁾ See part 3 C of the SECAP guidebook for guidance on how to finance the SEAP

⁽⁴¹⁾ See chapter 10 of part 1 of the SEAP guidebook for guidance on Monitoring and reporting

ADDITIONAL RESOURCES

i) The **Quick Reference Guide - Joint Sustainable Energy & Climate Action Plan (CoMO, 2017)** explains:

- what a joint SECAP is,
- why local authorities would engage in a joint SECAP approach,
- who can carry out a joint SECAP, the differences between options,
- how to join the Covenant of Mayors when opting for a joint SECAP,
- how existing signatories can conduct a joint SECAP,
- the uptake of the joint SECAP approach amongst signatories.

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=210 (EN version) – available in other EU languages in the Covenant website library

ii) Developed by the Mayors Adapt Office and updated by the Covenant of Mayors Office, the Urban Adaptation Support Tool is a step-by-step guide to adaptation for practitioners in the urban context and it is structured around the 6 steps of the adaptation cycle:

- Preparing the ground for adaptation,
- Assessing risks and vulnerabilities to Climate Change,
- Identifying adaptation options,
- Assessing & selecting adaptation options,
- Implementing adaptation measures,
- Monitoring & evaluation.

<https://www.covenantofmayors.eu/support/adaptation-resources.html>

(iii) Quick Reference Guide - Monitoring SECAP implementation (CoMO, 2017).

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=209 (EN version) – available in other EU languages.

3 Political commitment

To ensure the success of the process (from SECAP design to implementation and monitoring), it is essential that sufficient empowerment and support is provided at the highest political level. For example, the European Union develops legislative tools (e.g., laws, regulations and directives) and funding to help guiding local, regional and national footsteps towards adaptation (see section 2.1 of Part 3). Meanwhile, Member States also provide with legal tools and standards for urban adaptation and organise knowledge transfer to cities in-country (see section 2.2 of Part 3). More concretely, the signature of the Covenant of Mayors by the municipal council (or equivalent decision-making body) is already a clear and visible sign of commitment. In order to reinforce the political support, it may be useful to give a reminder regarding the numerous benefits that SECAP implementation can bring to local authorities (see Annex 2).

10 reasons for joining the Covenant⁽⁴²⁾

1. Gain high international recognition and visibility
2. Contribute to shaping the EU's climate and energy policy
3. Strengthen the credibility of your commitments
4. Secure long-term support for your climate and energy actions
5. Boost access to financing for your local climate and energy projects
6. Participate in networking events, capacity building sessions and discussions
7. Receive tailored guidance
8. Enjoy easy access to 'excellence know-how and find ways to successfully implement your projects
9. Benefit from facilitated self-assessment and benchmarking
10. Get connected to national and subnational authorities

The key decision-makers of the local authority should further support the process by allocating adequate human resources with clear mandate and sufficient time and budget to prepare and implement the SECAP. It is essential that they are involved in the SECAP elaboration process so that it is accepted and backed up by them. Adequate training should be provided to municipal officers dealing with the SECAP. Political commitment and leadership are driving forces that stimulate the management cycle. Therefore, they should be sought from the very beginning. The formal approval of the SECAP by the municipal council (or equivalent decision-making body), along with the necessary budgets for the first year(s) of implementation is another key step.

As the highest responsible entity and authority, the municipal council must be closely informed of the follow-up of the implementation process. An implementation report should be produced and discussed periodically. In the context of the Covenant, a monitoring report has to be submitted every second year for evaluation, monitoring and verification purposes. If necessary, the SECAP should be updated accordingly.

Finally, the key decision-makers of the local authority could also play a role in:

- Integrating the SECAP vision with the other actions and initiatives of the relevant departments and making sure it becomes part of the overall planning
- Assuring the long-term commitment to implementation and monitoring, along the full duration of the SECAP
- Seek and support citizens' participation and stakeholders' involvement

⁽⁴²⁾ 10 reasons to join the Covenant of Mayors for Climate and Energy. [online]Available at: www.eumayors.eu/IMG/pdf/10reasonstojoin_en.pdf

- Ensure that the SECAP process is 'owned' by the local authority 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.

There is no single route leading to political commitment. Administrative structures, patterns of political approval and political cultures vary from country to country. For such reason, the local authority itself is best suited to know how to proceed to raise the political commitment needed for the SECAP process.

Suggestions on how to ensure the necessary local commitment:

- Provide the Mayor and key political leaders with informative notes about the benefits and resources needed for SECAP. Make sure documents presented to political authorities are short, comprehensive and understandable
- Brief major political groups (e.g. on the changes already observed and the future risks, illustrating the potential impacts at the local level)
- Inform and involve general public/citizens and other stakeholders
- Make a strong reference to the other decisions taken by the municipal council in this field (related strategies and plans, Local Agenda 21, etc.)
- Take advantage of windows of opportunity, for example when the media is focusing on Climate Change issues
- Inform clearly about the causes and effects of Climate Change along with information about effective and practical responses
- Highlight the co-benefits of climate policies (social, economic, employment, air quality, health...). Keep the message simple, clear and tailored to the audience
- Focus on measures on which the agreement of the key actors can be obtained
- Create local Advisory groups with key-stakeholders and relevant experts.

ADDITIONAL RESOURCES

i) The UKCIP Adaptation Wizard is a collection of tools and resources for organizations willing to plan adaptation strategies: it describes some principles to build a good adaptation strategy.

http://www.ukcip.org.uk/wp-content/PDFs/UKCIP_Managing_adaptation.pdf

ii) The Policy Network, in its publication "Building a low carbon future: the politics of Climate Change", dedicates a chapter to political strategies for strengthening climate policies.

<http://politicsofclimatechange.files.wordpress.com/2009/06/building-a-low-carbon-future-pamphlet-chapter-05.pdf>

4 Mobilization of all municipal departments involved ⁽⁴³⁾

Devising and implementing a sustainable energy and climate action plan is a challenging and time-demanding process that has to be systematically planned and continuously managed. It requires collaboration and coordination between various departments in the administration of the local authority, such as environmental protection, land use and spatial planning, economics and social affairs, buildings and infrastructure management, mobility and transport, budget and finance, procurement, etc. In addition, one of the challenges for success is that the SECAP process should not be conceived by the different departments of the local administration as an external issue, but that it has to be integrated in their everyday processes, coordinated with plans and programmes in force. For example, mobility and urban planning, management of the local authority's assets (buildings, municipal fleet, public lighting ...), internal and external communication, public procurement departments, etc. should collaborate and focus on the same goal.

A clear organisational structure and assignment of responsibilities are prerequisites for the successful and sustainable implantation of the SECAP. A lack of horizontal coordination between the various policies, local authority departments and external organisations has been a considerable shortcoming in the energy or transport planning of many local authorities.

This is why Covenant signatories acknowledge that their commitment requires, among other things, "*A coordinated (inter)action between mitigation and adaptation through the mobilisation of all municipal departments involved; A cross-sector and holistic territorial approach; The allocation of appropriate human, technical and financial resources*"⁽⁴³⁾.

Therefore, all Covenant signatories should adjust and optimise their internal administrative structures. They should assign specific departments with appropriate competencies as well as sufficient financial and human resources to implement the Covenant of Mayors' commitments.

4.1 How to adjust administrative structures

Where organisational structures have already been created for other related policies (energy management unit, local Agenda 21 coordination, etc.), they may be used in the context of the Covenant of Mayors.

At the beginning of the SECAP elaboration process, a 'Covenant coordinator' should be appointed. She/he must have full support of the local political authorities and from the hierarchy, as well as the necessary time availability, and the budgetary means to carry out his/her tasks. In large cities, he/she could even have a dedicated unit at his/her disposal, with several staff. Depending on the size of the local authority, several people dedicated to data collection and sharing, CO₂ inventory, and RVA, may also be necessary.

As an example of simple organisation structure, the following groups may be constituted:

- A climate policy steering committee, constituted by politicians and senior managers. Its mission would be to provide strategic direction and the necessary political support to the process and to mainstream Climate Change policy across different departments.
- One or several working group(s), constituted by the energy planning manager, key persons from various departments of the local authority, public agencies, 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.

⁽⁴³⁾ Parts of this chapter are adapted from <http://www.movingsustainably.net/index.php/movsus:mshome> developed by the Union of the Baltic Cities Environment and Sustainable Development Secretariat and part-funded by the European Union. Further information about capacity-building and previous experiences are available in the MODEL project webpage www.energymodel.eu

- One or several working group(s) including relevant public servants from local authority's services, utilities and departments. They would help to understand city's vulnerabilities to Climate Change from multiple sectoral perspectives – focusing on real city needs and available data, facilitating mainstreaming of adaptation issues into existing policy-areas, and steering the projects towards actionable results.

Both the steering committee and the working group need a distinct leader, although they should be able to work together. Moreover, the objectives and functions of each one of these groups must be clearly specified. A well-defined meeting agenda and a project-reporting strategy are recommendable in order to have a good command over the SECAP process.

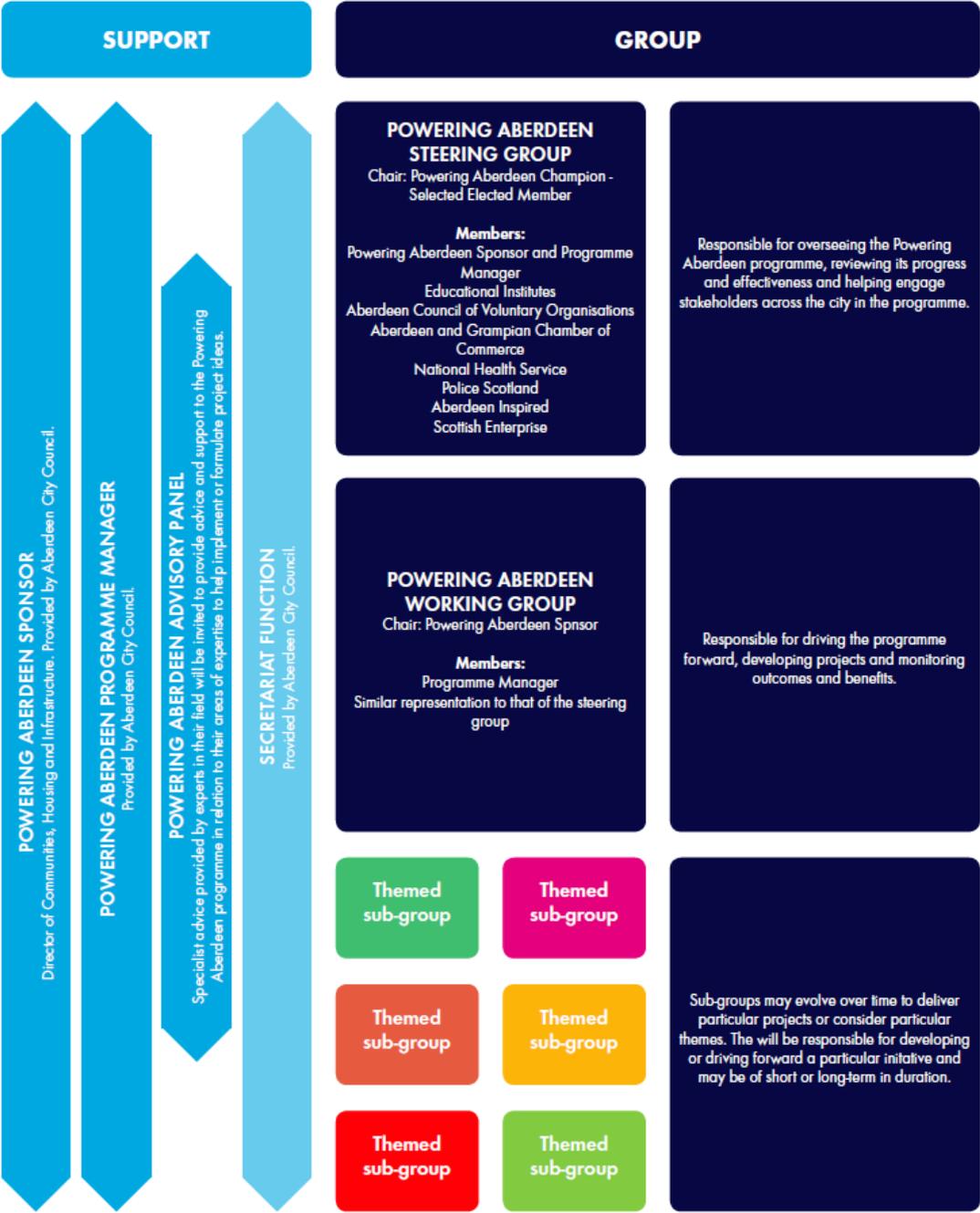
It is essential that both sustainable energy management and climate adaptation are integrated with the other actions and initiatives of the relevant departments of the local authority, and it must be ensured that they become part of the overall planning of the local authority. Multi-departmental and cross-sectoral involvement is required, and organisational targets need to be in line and integrated with the SECAP. The establishment of a flow chart, indicating the various interactions between departments and actors, would be useful to identify the adjustments that may be necessary to the local authority's organisation. As many key municipal players as possible should be assigned responsible roles to ensure strong ownership of the process in the organisation. A specific communication campaign may help reach and convince the municipal workers in different departments. A contact point within the local authority's team should be entrusted with facilitating the communication between the parties and fostering data sharing.

Moreover, adequate training should not be neglected in different fields, such as technical competencies (energy efficiency, renewable energies, efficient transport, vulnerability and adaptation assessment, climate science, public health, emergency management, cultural heritage...), project management, data management, financial management, development of investment projects, and communication (how to promote behavioural changes, etc). Linking with local Academia can be useful for this purpose.

4.2 Examples from Covenant signatories

Figure 5 shows an example of structures set up by the city of Aberdeen for developing and implementing their local energy strategies.

Figure 5. Administrative structure of the City of Aberdeen



Source "Powering Aberdeen: Aberdeen's Sustainable Energy Action Plan"

The city of Barcelona has introduced 'superblocks' or 'filling the streets with life' programme to free up space for green areas and recreation by reducing the amount of traffic and vehicles on certain streets.

The superblocks programme is multi-sectoral as it is linked to the city's climate change commitments, as well as to its climate, urban mobility, green infrastructure, and biodiversity plans.

The programme has the potential to significantly reduce the city's carbon footprint and by building up the city's green spaces, urban heat island effect can be addressed and habitats encouraging biodiversity are created. Further benefits include reducing storm water runoff and flooding ⁽⁴⁴⁾. See also Box 20 in Part 3.b.

Hamburg developed a comprehensive Green Roof Strategy with the aim of planting a total of 100 hectares of green roof surface in the metropolitan area in the next decade. Green roofs improve both the city climate and water management. With respect to the city's climate, green roofs cool the surrounding and increase humidity, which reduces the urban heat island effect. Also, green roofs provide improved insulation to buildings and therefore better adaptation to more extreme temperatures. Water management is improved through rain water retention and natural evaporation. Dealing with storm water in Hamburg is a cross-disciplinary and cross-administrative objective. The sectors involved for this project are: Buildings, Financial, Urban, Water management. The multi-collaborative approach is evident in the massive involvement of stakeholders: local politicians, authorities, architects, engineers and economists and in the incorporation of green roofs into legally binding instruments such as the Hamburg Building law, the wastewater law, planting regulations on structural systems and land-use plans ⁽⁴⁵⁾.

The city of Worms put in place several measures and activities for the reduction of energy consumption and the use of renewable energies under the "klik" concept. To strength its climate resilience, Worms aims to assess climate risks and vulnerabilities and to identify possible adaption options, through the development of an interdisciplinary expert team. Furthermore, climate protection and adaption are integrated in the planning process early ⁽⁴⁶⁾.

4.3 External support: Covenant Territorial Coordinators and Local and Regional Energy Agencies

Depending on their size and human resources availability, local authorities may benefit from the assistance of Covenant Territorial Coordinators or energy agencies. It is even possible for them to subcontract some specific tasks (e.g. compilation of a BEI or of a RVA) or to use interns (Master or PhD students can do much of the work associated with the collection of data and entry into a GHG calculation tool to produce the BEI or to develop a RVA).

→ Covenant Territorial Coordinators (CTCs) or Covenant National Coordinators (CNCs)

Local authorities, which do not have sufficient skills or resources to draft and implement their own SECAP, should be supported by public administrations with such capacities. Provinces, regions, national public bodies, metropolitan areas, groupings of local authorities which officially commit to provide strategic guidance, financial and technical support to Covenant signatories will be officially recognized as Covenant Coordinator by the European Commission.

CTCs are in a position to provide strategic guidance and financial and technical support to local authorities with political will to sign up to the Covenant of Mayors, but lacking the skills and/or the resources to fulfil its requirements.

⁽⁴⁴⁾ https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=104

⁽⁴⁵⁾ https://climate-adapt.eea.europa.eu/metadata/case-studies/four-pillars-to-hamburg2019s-green-roof-strategy-financial-incentive-dialogue-regulation-and-science/#success_limitations_anchor

⁽⁴⁶⁾ <https://climate-adapt.eea.europa.eu/eu-adaptation-policy/covenant-of-mayors/city-profile/worms>

Public administrations willing to take on the role of CTCs commit to:

- Promoting accession to the Covenant of Mayors among local authorities in their territory and providing support and coordination to those local authorities signing up;
- Providing technical and strategic assistance to those local authorities willing to join the Covenant but lacking the necessary resources to prepare a SECAP;
- Providing financial support and opportunities to the local authorities for the development and implementation of their SECAP; this may also be done through the use of European Regional Development Funds (ERDF); and other EU funding mechanisms and facilities targeted at climate issues (see Part 3.C);
- Assisting in the organisation of local energy days and dissemination tools to raise awareness and communicate effectively about climate impacts;
- Reporting regularly to the Commission on the results obtained and participating in the strategic implementation of the Covenant.

Some concrete examples:

The Province of Flemish Brabant in Belgium has made efforts in guiding local authorities throughout all the steps of the SEAP process, from generating interest in the Covenant of Mayors initiative to the preparation of the emission inventories and to planning actions. In particular, they have proposed a number of tools ranging from communication material to technical documents and templates, which represent a practical help for Covenant signatories.

The Province of Barcelona, while directly financing the development of SECAPs of the signatories it supports, has applied for funding under the ELENA facility and signed a contract with the European Investment Bank in 2010. The Province has received a grant of 2 million euros, which allowed the financing of 190 feasibility studies for energy efficiency in buildings, public lighting, renewable energies and legal studies and resulted in 122.5 million euros of investments. The CTC has also helped the local authorities in the organization of low cost actions: one example is the project Euronet 50/50, supported by Intelligent Energy Europe, aiming at achieving energy savings at school through behavioural changes.

Regione Abruzzo, in Italy, supported the elaboration of SEAPs from 2007-2013 with the financial support of the European Regional Development Fund (ERDF) operational programme that guaranteed 20.7 million for the plans development. The Region is also partner of the project "Alterenergy" for local authorities under 10 000 inhabitants. The project aims at improving their capacity to plan and manage integrated actions of energy saving and the production of energy from renewable sources.

The Province of Luxemburg undertook a number of promotional actions including meeting candidate local authorities (16) and explaining the benefits of joining the CoM, as well as disseminating leaflets at events and emphasising the potential for the territory to create renewable energy and energy savings. In several cities, conferences were given to inform citizens about the commitment of their local authorities to the CoM. In September 2016, the CTC created a new website to further promote the CoM and all the actions already taken by their associated local authorities, inviting others to join. Since they began their coordination efforts, a total of 29 local authorities officialised their CoM adhesion ⁽⁴⁷⁾.

The Liège Province (Belgium) is a Covenant of Mayors Territorial Coordinator since 2015. It provides support to 47 signatories and in particular is supporting the development of

⁽⁴⁷⁾ http://www.covenantofmayors.eu/about/covenantcoordinators_en.html
CoMO (2016), Covenant Coordinators 2016 report (en) [online]. Available at:
https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=74

vulnerability assessments. The province carried out a study on risks and vulnerabilities regarding climate change on its territory, e.g. how climate change is - and will be - affecting health, biodiversity, water availability, flooding and food supply. This assessment was not only carried out at the province level, but also broken down to the municipal level, accompanied by a catalogue of individual possible measures out of which the signatory cities can pick the most appropriate ones for their situation. In addition, the province has also developed a Sustainable Energy and Climate Action Plan (SECAP), accompanies its signatories in the development of their individual SECAPs, and supplies various support measures such as seminars and tools for the cities.

→ Local and Regional Energy Agencies

Local and Regional Energy Agencies (LAREAs) have been active in local energy policy for decades and their knowledge and expertise could be very useful for the Covenant signatories, especially those lacking the technical capacities.

In fact, one of the first activities of each agency is to prepare an energy plan, or to update existing ones in the geographical area covered by the Agency. This strategic process usually comprises several steps, including the collection of energy data, the establishment of an energy balance, as well as the development of short-, medium- and long-term energy policies and plans. Hence, Covenant signatories can expect their Local and Regional Energy Agencies (LAREAs) to give wide-ranging advice on all energy aspects, as well as useful technical assistance in the design of their BEI and SECAP.

→Regional Agencies

Since Climate Change impacts often have a regional scale (e.g., flood control, water supply, transport and mobility, etc.) the collaboration between local authorities and regional offices (e.g., river basin agency, Civil Protection, etc.) should be strengthened. Even though in some countries (e.g., Italy) regional authorities are responsible for urban planning legislation, to date, regional coordination has played a limited role in promoting local adaptation. Examples of public bodies that could be engaged for supporting adaptation action are: Environment and air quality agencies, universities and research institutes, Department of Civil Protection and Emergency Management. When applicable, synergies between the COM and the Region Adapt program should be further explored.

ADDITIONAL RESOURCES

i) Ireland's national energy agency (SEI), provides a link with guidance to "Resourcing the Energy Management Programme".

<http://www.sustainableenergyireland.ie/uploadedfiles/EnergyMAP/tools/01-10a%20Resourcing%20the%20Energy%20Management%20Programme%20v1.0.pdf>

ii) The Covenant CapaCITY project has developed a CapaCITY SEAP Training Booklet as guidance for political and technical local authorities' decision-makers.

http://www.covenant-capacity.eu/fileadmin/uploads/en/SEAP_training_booklet/EN_web_final.pdf

iii) The Covenant of Mayors Office has published a report describing the financial support given to municipalities through the ERDF in Italian Regions for the CoM.

http://www.covenantofmayors.eu/IMG/pdf/ERDF_CoM_Final.pdf

iv) Covenant library – set of case studies available.

<https://www.covenantofmayors.eu/support/library.html>

v) Covenant publication - Sustainable, Climate-Resilient and Vibrant Cities: Good practices from Covenant of Mayors signatories (en) (CoMO, 2016).

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=104

vi) Covenant interactive Funding Guide (CoMO, annually updated).

<https://www.covenantofmayors.eu/support/funding.html>

5 Building support from stakeholders

All members of society have a key role in addressing the energy and climate challenge with their local authorities. Together, they have to establish a common vision for the future, define the paths that will make this vision come true, and invest the necessary human and financial resources.

Stakeholders' involvement is the starting point for stimulating the behavioural changes that are needed to complement the technical actions embodied in the SECAP. This is the key to a concerted and co-ordinated way to implement the SECAP.

Citizens and stakeholders – given their activities and their impact on the environment – are likely to be influenced by the solutions devised but they can also help reach the targets. The views of citizens and stakeholders should be known before detailed plans are developed. Therefore, citizens and other stakeholders should be involved in the key stages the SECAP elaboration process: building the vision (Hernandez et al., 2018), defining the objectives and targets, setting the priorities, etc. There are various degrees of involvement: 'informing' is at one extreme whilst 'empowering' is at the other. To make a successful SECAP, it is highly recommended to seek the highest level of participation of stakeholders and citizens in the process. Stakeholder and citizens engagement should be carried out since the very first steps of the planning process until the end of it, if a successful planning is desired (Hernández-González and Corral, 2017). Advisory groups including relevant experts from academia, NGOs, city networks and private sectors, among others, contribute to collect and share useful data and to define sound and policy-relevant indicators. See for example **Figure 6**.

Stakeholders and citizens participation is important for various reasons:

- Participatory policy-making is more transparent and democratic
- A decision taken together with many stakeholders and citizens is based on more extensive knowledge
- Broad consensus improves the quality, acceptance, effectiveness and legitimacy of the plan
- Sense of participation in planning ensures the long-term acceptance, viability and support of strategies and measures
- SECAPs may sometimes get stronger support from external stakeholders than from the internal management or staff of the local authority

5.1 Who are stakeholders?

The first step is to identify the main stakeholders. The stakeholders are those:

- 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.

The following table (**Table 3**) shows the potential roles that the local authority and the stakeholders can play in the SECAP process outlined in chapter 2.

Figure 6. Participatory process for the Adaptation Plan of Bologna (adapted from Piano di Adattamento – Città di Bologna)

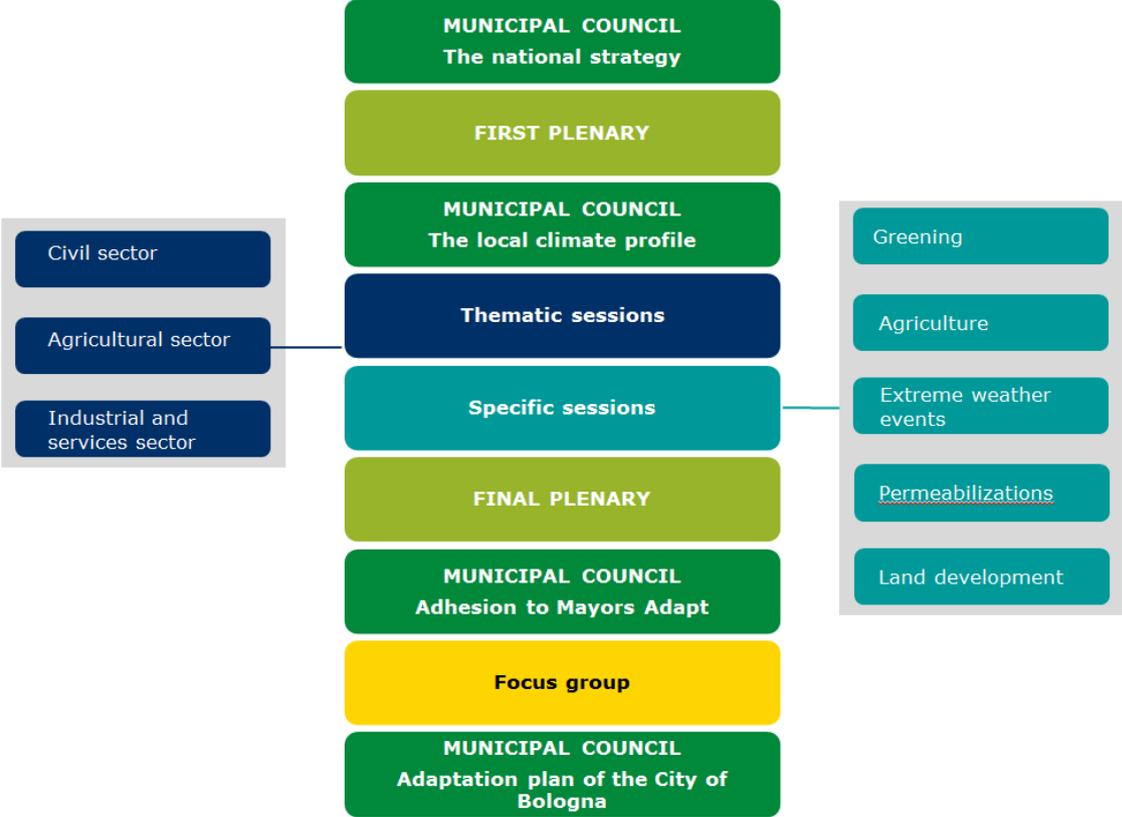


Table 3. The SECAP process: main steps - role of key actors

PHASE	STEP	ROLE OF THE ACTORS		
		Municipal council or equivalent body	Local administration	Stakeholders
Initiation	Political commitment and signing of the Covenant	Make the initial commitment. Sign the Covenant of Mayors. Provide the necessary impulse to the local administration to start the process.	Encourage the political authorities to take action. Inform them about the multiple benefits (and about the necessary resources).	Make pressure on political authorities to take action (if necessary).
	Mobilize all municipal departments involved	Allocate sufficient human resources and make sure adequate administrative structures are in place (e.g. horizontal offices ensuring collaboration amongst different departments of the administration) to ensure a coordinated action between mitigation and adaptation.		
	Build support from stakeholders	Provide the necessary impulse for stakeholders' participation. Show that you consider their participation and support as important.	Prepare an inventory of the relevant stakeholders, decide what channels of communication/participation you want to use, establish collaboration practices. Inform them about the process that is going to start, and collect their views.	Express their views, explain their potential role in SECAPs development and implementation.
Planning phase	Assessment of the current framework: Where are we?	Make sure the necessary resources are in place for the planning phase.	Conduct the initial assessment, collect the necessary data, and elaborate the CO ₂ baseline emission inventory and the climate risks and vulnerabilities assessment. Make sure the stakeholders are properly involved.	Provide valuable inputs and data, share the knowledge.
	Establishment of the vision: Where do we want to go?	Support the elaboration of the vision. Make sure it is ambitious enough. Approve the vision (if applicable).	Establish a long-term vision and objectives that support the vision. Make sure it is shared by the main stakeholders and endorsed by the political authorities.	Participate in the definition of the vision, express their view on the city's future.
	Elaboration of the plan: How do we get there?	Support the elaboration of the plan. Define the priorities, in line with the vision previously defined.	Elaborate the plan: define policies and measures in line with the vision and the objectives, establish budget and financing sources and mechanisms, timing, indicators, responsibilities. Keep the political authorities informed, and involve stakeholders. Make partnerships with key stakeholders.	Participate in the elaboration of the plan. Provide input, feedback. Contribute to initiating and designing the processes.
	Plan approval and submission	Approve the plan and the necessary budgets, at least for the first year(s).	Submit the SECAP via the CoM website. Communicate about the plan.	Make pressure on political authorities to approve the plan (if necessary)
Implementation phase	Implementation	Provide long-term political support to the SECAP process.	Coordinate the implementation. Make sure each stakeholder is aware of its role in the implementation.	Each stakeholder implements the measures that are under its responsibility and shares the results.
		Make sure that the energy and climate policy is integrated in the everyday life of the local administration.	Implement the measures that are under responsibility of the local authority. Be exemplary. Communicate about the actions.	Make pressure / encourage the local administration to implement the measures under its responsibility (if necessary).
		Show interest in the plan implementation, encourage stakeholders to act, show the example.	Motivate the stakeholders to act (information campaigns). Inform them properly about the resources available for EE, RES and adaptation.	Changes in behaviour, EE, RES and adaptation action, general support to SECAP implementation.
		Networking with other CoM signatories, exchanging experience and best practices, establishing synergies and encouraging their involvement in the Covenant of Mayors.		Encourage other stakeholders to act
Monitoring and reporting phase	Monitoring	Ask to be informed regularly about the advancement of the plan.	Proceed to a regular monitoring of the plan: advancement of the actions and evaluation of their impact.	Provide the necessary inputs and data.
	Reporting and submission of the implementation report	Approve the report (if applicable).	Report periodically to the political authorities and to the stakeholders about the advancement of the plan. Communicate about the results. Every second year, submit an implementation report via the CoM website.	Provide comments on the report and report on the measures under their responsibility.
	Review	Ensure that plan updates occur at regular intervals.	Periodically update the plan according to the experience and the results obtained and based on new opportunities. Involve political authorities and stakeholders.	Participate in plan update.

Here is a list of potentially important stakeholders in the context of a SECAP:

- Local Authority: relevant municipal departments and companies (municipal energy and water utilities, transport companies, etc)
- Local and regional energy agencies
- Representatives of national/regional/provincial administrations and/or neighbouring local authorities, to ensure coordination and consistency with plans and actions that take place at other levels of decision
- Financial partners such as banks, private funds, ESCOs ⁽⁴⁸⁾, insurers
- Institutional stakeholders like chambers of commerce, chambers of architects and engineers
- The building sector : building companies, developers, housing authorities
- Transport /mobility players: private/public transport companies, etc.
- Energy suppliers, utilities
- Water supplies utilities
- Business and industries
- Civil protection (e.g. police and fire departments)
- NGOs and other civil society representatives' incl. students, workers etc.
- General public (e.g. residents)
- Knowledgeable persons (consultants, ...)
- Existing structures (Agenda 21 ...)
- Universities, schools and research centres/institutes
- Hospitals/emergency services
- Tourists and tourist industry, where appropriate
- Agricultural community, where appropriate
- Port authority and/or coast guard, where appropriate
- Media

⁽⁴⁸⁾ ESCO is the acronym of Energy Services Companies

5.2 How to engage in stakeholder participation

Participation can be obtained through a variety of methods and techniques, and it may be useful to make recourse to a (professional) animator as a neutral moderator. Different levels of participation and tools may be considered (⁴⁹):

Degree of involvement		Examples of tools
1	Information and education	brochures, newsletters, social networks, advertisement, exhibitions, site visits
2	Information and feedback	telephone hotline, website, public meetings, teleconferences, surveys and questionnaires, staffed exhibitions, deliberative polls
3	Involvement and consultation	workshops, focus groups, forums, open house
4	Extended involvement	community advisory committees, planning for real, citizen's juries

Box 1. Local Energy Forums in Almada, Portugal

A local energy forum is a local authority driven participatory process, which engages local stakeholders and citizens to work together in order to prepare and implement common actions that can be formalised into an Action Plan. Such forums are already used by some Covenant Signatories. For example, Almada (Portugal) organised a local energy forum and invited all interested companies and organisations in order to gather ideas and project proposals that could contribute to their Action Plan. A partnership with a local energy agency and a university was established to develop their plan. Similarly, the city of Frankfurt (Germany) asked the forum participants to make their own contributions to meet common energy targets and propose concrete actions to be carried out.

Box 2. Smart metering in Sabadell, Spain

The municipality of Sabadell (Spain) raised the awareness of citizens by providing smart meters to 100 households. Such meters give an instant reading of energy consumption in euro, kWh and tonnes of CO₂, via a wireless device. Besides, workshops were organised to inform and educate households in relation with energy saving. The data related to energy consumption and CO₂ emissions were collected and the reduction achieved was calculated (expected around 10% of reduction). Finally, the results were communicated to the families.

⁽⁴⁹⁾Adapted from Judith Petts and Barbara Leach, Evaluating methods for public participation: literature review, Bristol Environment Agency, 2000.

Box 3. Public Participation Geographic Information System in London, UK

The following methods have been employed at the Greater London Authority during the delivery of the London Mayor's environmental strategies, in order to engage multiple stakeholders in the process:

Public Participation Geographic Information Systems (PPGIS) was used to empower and include marginalized populations (e.g., ethnic groups, young and old people), who normally have little voice in the public arena, through interactive participation and integrated applications of GIS (in a user-friendly format), to change involvement and awareness of the SECAP at a local level. Simplified GIS-based maps and models could be used to visualise the effects of the SECAP at local levels in order to facilitate interactive participation and further promote community advocacy in the SECAP's strategic decision making processes. The use of PPGIS's transparent tools and participative process helped to build trust and understanding between professionally and culturally diverse stakeholders.

Problem Structuring Methods (PSMs) was used to build simple SECAP models in a participative and iterative manner to help stakeholders with distinctive perspectives or conflicting interests to understand and secure shared commitments to the SECAP; embrace value differences, rather than trade-off; represent the complexities of the SECAP diagrammatically not by algebra; appraise and compare discrete strategic alternatives; and also address uncertainty in terms of 'possibilities' and 'scenarios' rather than in terms of 'probability' and 'prediction' only. Cognitive mapping (a means of mapping individual stakeholders' perspectives) can also be used as a modelling device to elicit and record individuals' view of the SECAP. The merged cognitive maps will provide the framework for workshop discussions aimed at assessing the SECAP's objectives and generating agreement on a portfolio of actions.

Box 4. Stakeholders engagement in Sondenborg, Denmark

The medium sized city of Sondenborg in Denmark (70,000 inhabitants) demonstrates to what extent the stakeholders could be involved in the development and implementation of the sustainable energy actions plans.

They propose a very radical shift in focus in the elaboration and implementation of their plan, from the traditional one where the municipality is initiating and proposing actions by consulting the stakeholders into one where the municipality takes the role of a partner together with all interested parties in developing a common vision for the local community.

Therefore they have created a public-private partnership called ProjectZero, which aims to inspire and drive Sonderborg's transition to a ZEROcarbon community by 2029, based on improved energy efficiency, conversion of energy sources into renewables and by creating participation of all stakeholders to reach the ambitious goal: CO2-neutral growth and sustainable urban development.

The project invites partnership and cooperation and tackles all the potential area of intervention putting emphasis on educating and informing all the actors involved (e.g. citizens, craftsmen, shops, companies, farms, banks).

It also proposes an inspiring brand -"ZERO"- applied to all activity sectors (e.g. 100 ZERO families, ZERO business, ZERO shops) which aims to incentivize actions through example and create local cohesion within the local community around a common goal.

Box 5. Stakeholder engagement for energy efficient schools in Osona, Spain

Desendolla't was created in 2012, when a benchmark of the energy cost of public schools against private ones carried out by the Local Energy Agency revealed that public schools were lagging far behind. The objective of Desendolla't project is to improve energy efficiency of public schools buildings. What makes this project unique is stakeholder engagement: Desendolla't aims to educate students, teachers, caretakers and cleaning team in energy saving and efficiency, both in school and at home. The structure of the project was as follow:

First, public schools were selected and their energy consumption was analysed.

In a second phase, smart meters were installed and an analysis of passive electric consumption was carried out. During a six-month period the central heating system management was optimized.

In the last phase of the project, tele-management systems were designed and installed in central heating of certain schools. In parallel to the technical part, workshops on better management techniques with caretakers, teachers and cleaning teams were organized during the first and second half of the year.

The project was finalized with delivery of an educational kit to teachers.

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=266

Box 6. Helping citizens of Slupsk save energy, Poland

Slupsk (Poland) has the ambition to become a green city within one generation, combining innovative and green economy with social justice, environmental protection and climate mitigation. The "Green Point" is an advisory centre, amongst the first of its kind in the country, which aims to provide citizens with free advice on eco-friendly and energy-saving actions, as well as their related financial benefits. In Green Point examples of how to save energy from lighting modernisation, renewable energy use can be discovered, or more on how to get funding for replacing a heating system and reducing energy bills can be learnt. Employees at Green Point participate in meetings of condominiums, reaching out to inhabitants, providing information about the city's policy in matter of environmental activities, jointly organising trainings on energy management, recycling, or renewable energy sources. They distribute materials such as LED light bulbs, watt-hour meters, small solar lamps and educational leaflets. Besides, they provide information on energy saving opportunities for all newly-built homes and city owned buildings. Green Point is also involved in the coordination of activities carried out by the municipality and governmental and social organisations. During the first four months, the staff of the Green Point reached out to about 2,500 people in the city. Their educational activities contributed to raising awareness of the inhabitants, employees of municipal institutions, NGOs and entrepreneurs, presenting practical solutions for energy savings that generate profits and improve quality of life.

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=270

To meet the challenge of adaptation to Climate Change, traditional models of stakeholders' involvement might not be sufficient, while integrated solutions in the urban planning and design process are required. Innovative ways to support the efforts and the commitments and to consolidate the knowledge of different groups and individuals need to be found. An innovative tool could be a Private-Public Partnership, which allow the community to "be part of" instead of "taking part in" the change. In this context, each partner is asked to play a specific role for reaching the climate related goal and accepts to be accountable. This mechanism allows partners to enjoy shared benefits (such as increased knowledge and skills, creation of new methods and solutions, strengthened

credibility and trust, etc.), while providing benefits to the external community (e.g. satisfying collective needs, strengthening civil society, sustainable territorial development, creation of wellbeing, etc.). The Partnership must be formalised through a Protocol Agreement specifying:

- The goals and partnership models
- Funding arrangements
- The categories and roles to be carried out
- The governance mechanisms of the partnership.

Enforcing the partnership requires support actions, which can vary considerably depending on the resources the partnership can count on and range from networking, facilitating awareness and access to credit, possibilities for funding, until technical planning and co-financing investments. The partnership must be regularly monitored not only in terms of results, but also of relations, communication, transparency and management.

Some practical tips to engage stakeholders:

- Think big- think diverse: Do not focus on the usual contacts.
- Get decision-makers on board.
- Choose an appropriate facilitator/moderator.
- Some stakeholders can have conflicting interests. In this case, it could be advisable to organise workshops for each particular group separately to understand the conflicting interests before bringing them together. Outstanding techniques like the European Awareness Scenario Workshop (EASW) and /or Open Space technology (OST) combined with good moderators conflicting stakeholders can generate powerful results
- In order to raise the interest of the citizens, it is recommended to use visual tools (GIS tool showing the energy efficiency of the various districts of the local authority or the hydrogeological risk, aerial thermography showing thermal losses of individual buildings, or any simple model, which allows to show visually the data being presented).

5.3 Communication

Communication is an essential means to keep the stakeholders informed and motivated. Therefore, a clear communication strategy should be integrated in the SECAP. Communication should also give visibility to the commitments of the partners and acknowledge the results achieved.

Before initiating a communication campaign, some information should be specified in order to maximise the impact of the action.

- Specify the message to be transmitted and the effect to be produced (desired outcome).
- Identify the key audience.
- Establish a set of indicators to evaluate the impact of the communication (head count at a seminar, surveys – quantitative/qualitative, hits on website, feedback, e.g. e-mails, ...)
- Specify the most appropriate communication channel(s) (face to face – most effective form of communication, advertising, mail, e-mail, internet, blogs, talks/meetings, brochures, posters, newsletters, printed publications, media releases, sponsorship).
- Specify planning and budget.

It is important to identify the benefits of mitigation and adaptation measures, such as positive impacts on well-being and quality of life of the citizens or making cities liveable and attractive, in order to help overcome stakeholder concerns with the costs and such terms as 'Climate Change', 'baseline inventories', 'risks' and 'vulnerability'.

Communication can also be internal to the local authority: setting up internal communication means may be necessary to improve collaboration between the departments involved within the local authority. A horizontal office coordinating different departments of the local administration may serve this purpose.

Information accessibility can be improved through communicating about adaptation targets, efforts, good practices, multi-stakeholder engagement and funding allocation, as well as gaps and difficulties. Likewise, communication with all parties - e.g., civil society, vulnerable communities, private sector, and public authorities - can integrate different expectations, increase consensus about city adaptation-related needs and planned climate-resilient investments, and transparently evaluate progress towards the goals of the urban adaptation plan.

Box 7. Structural energy-saving measures, City of Ghent (Belgium)

With 15% of households facing energy poverty, Ghent city council made a very conscious choice for a social climate policy, trying to keep into consideration the vulnerable part of the society. This policy aims at empowering families, organizations, institutions, and companies against rising energy prices, by supporting structural energy-saving measures financed through additional resources earmarked for low income families.

In order to offer a comprehensive assistance to the residents, the city council has established an office, "De Energiecentrale", as a contact for all products and services offered by the City on energy efficient living and renovation of building.

Other services, such as "Check je huis" (Check your house), an online tool that provides a personal step-by-step plan for making your own house more energy efficient, allows residents to access detailed information on the estimated investment cost for every intervention, as well as the available grants and the annual energy savings. In 2015, 13,000 Ghent citizens drafted a personal energy efficiency plan using "Check je huis".

https://www.eumayors.eu/index.php?option=com_attachments&task=download&id=254

ADDITIONAL RESOURCES:

i) The Belief Project produced a comprehensive guide on how to "Involve stakeholders and citizens in the local energy policy" through energy forums.

<https://ec.europa.eu/energy/intelligent/projects/en/projects/belief>

ii) The Environment Agency of Bristol published a review of a variety of public participation techniques, with their main advantages and disadvantages (p. 28).

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.129.8717&rep=rep1&type=pdf>.

iii) The Partner Foundation for Local Development has developed training for elected leaders. See Handbook 4, the councillor as communicator.

http://www.fpd.l.ro/publications.php?do=training_manuals&id=1

iv) Interesting information about communication strategy can be found in the Energy Model project in step 9 named "Programme implementation".

www.energymodel.eu

v) Information on how to engage stakeholders through a private-public partnership approach for adaptation is reported in Chapter 7 of the "Planning for adaptation to Climate Change – Guidelines for municipalities" developed within the ACT – Adapting to Climate Change in Time project.

<http://www.actlife.eu/medias/306-guidelinesversionefinale20.pdf>.

6 Assessment of the current framework: where are we?

6.1 Analysis of relevant regulations

Within a local authority, there are sometimes conflicting policies and procedures. A first step is to identify the existing municipal, regional and national policies, plans, procedures and regulations that affect energy and climate issues within the local authority. For example, National Adaptation Strategies in Climate-ADAPT ⁽⁵⁰⁾, serve as a good entry point for existing information on adaptation at country level. Cities can also draw on existing national RVAs and available climate projections, and may come across adaptation-related instruments, but also ongoing actions at the city level (i.e. disaster risk reduction, biodiversity protection, land use planning, existing regional or sectoral plans).

The mapping and analysis of these existing plans and policies is a good starting point towards better policy integration. See Part 3 for a list of the key European regulatory instruments relevant for local authorities.

The next step is to go through, check and compare the objectives and goals in the identified documents with the ones for a sustainable energy policy and resilient sectoral development. The aim is to establish whether these objectives and goals are supporting or conflicting. If such conflicts are detected in policy goals, they should be amended and aligned with the SECAP goals. In order to do so, the local authority should invite all the relevant actors and stakeholders to discuss the conflicts identified. They should try to reach an agreement on the changes that are necessary to update policies and plans.

6.2 Baseline review: Baseline Emission Inventory and Climate Change Risk and Vulnerability Assessment

6.2.1 Baseline Emission Inventory (BEI)

Energy consumption and CO₂ emissions at the local level are dependent on many factors: economic structure (industry/service oriented and nature of the activities), level of economic activity, population, density, characteristics of the building stock, usage and level of development of the various transport modes, citizens' attitudes, climate, etc. Some factors can be influenced in the short term (like citizens' behaviour), while others can only be influenced in the medium or long term (energy performance of the building stock). It is useful to understand the influence of these parameters, how they vary in time, and identify upon which the local authority can act (in the short, medium and long term).

This is the purpose of baseline review: establish a clear picture of "where we are", a description of the city's current situation in terms of energy and Climate Change.

A baseline review is the starting point for the SECAP process from which it is possible to move to relevant objective-setting, elaboration of adequate Action Plan and monitoring. The baseline review needs to be based on existing data. It should map relevant legislations, existing policies, plans, instruments and all departments/stakeholders involved.

Completing a baseline review requires adequate resources, in order to allow the data sets to be collated and reviewed. This assessment permits elaborating a SECAP that is suited to the emerging issues and specific needs of the local authority's current situation.

The aspects to be covered can be either quantitative (evolution of energy consumption...) or qualitative (energy management, implementation of measures, awareness...). The baseline review allows prioritising actions and then to monitor the effects based on relevant indicators. The most demanding element is to build a complete CO₂ emission

⁽⁵⁰⁾ <https://climate-adapt.eea.europa.eu/countries-regions/countries>

inventory, based on actual energy consumption data (see Part 2.a of this Guidebook, which provides guidance on how to collect the energy data and how to elaborate the CO₂ emission inventory). In Annex 1, a list of suggested aspects to be covered in the baseline review can be found.

The baseline review can be carried out internally within the local authority as a self-assessment process, but combining the self-assessment with an external peer review can add additional value to the process. Peer review offers an objective third-party review of achievements and future prospects. Peer reviews can be carried out by external experts who work in other local authorities or organisations in similar fields of expertise. It is a cost-effective method and often a more politically acceptable alternative to consultants.

Based on the data collected and on the different sets of hypothesis, it may be relevant to establish scenarios: how would energy consumption and CO₂ emissions evolve under current policies, what would be the impact of the projected actions, etc.? It may be appropriate to build a Business as Usual (BAU) scenario, to forecast the level of energy consumption and CO₂ emissions during the target year(s) in a scenario without SECAP. If there is an increasing trend, the local authority will need to make a greater effort to counterbalance it. To the opposite, in case of a decreasing trend, the local authority should consider setting a more ambitious reduction target than the minimum set by the Covenant (see section 2.4.5 of Part 2.a).

Detailed steps for conducting the baseline review:

1. **Setup the** (preferably inter-sectoral) **team**, setting roles, timeframe and schedule.
2. **Identify** and **involve** key external **stakeholders**
3. **Identify the most important indicators to be included in the assessment.** The following elements should be covered:
 - What is the energy consumption and CO₂ emissions of the different sectors and actors present in the territory of the local authority and what are the trends? (See Part 2.a).
 - Who produces energy and how much? Which are the most important sources of energy? (See Part 2.a).
 - What are the drivers that influence energy consumption?
 - What are the impacts associated with energy consumption in the city (air pollution, traffic congestion ...)?
 - What efforts have already been made in terms of energy management and what results have they produced?
 - Which barriers need to be removed?
 - What is the degree of awareness of officials, citizens and other stakeholders in terms of energy conservation and climate protection?
 - In annex, a table with more detailed specifications of the aspects that could be covered in the assessment is provided.
4. **Collect the baseline data**, by collecting and processing quantitative data, establishing indicators and gathering qualitative information using document review and interviews/workshops with stakeholders.
5. **Compile the CO₂ baseline emission inventory**, based on energy data and analyse it, in order to inform policy.
6. **Write the self-assessment report** – be honest and truthful, as a report that does not reflect reality serves no purpose

6.2.2 Risk and Vulnerability Assessment

A Risk and Vulnerability Assessment (RVA) determines the nature and extent of a risk by analysing potential hazards and assessing the vulnerability that could pose a potential

threat or harm to people, property, livelihoods and the environment on which they depend. This can take the form of a single assessment or various assessments undertaken per sector, for example. It can also be different types of assessment, such as institutional risk assessments, a hazard assessment, a retrospective assessment of vulnerabilities to extreme weather such as a Local Climate Impacts Profile, for example.

Several approaches Following IPCC (2014) recommendations are proposed on Part 2. B of this Guidebook to help city authorities better understands Climate Change impacts, vulnerabilities and risks within their city.

Methodological approaches:

1. Larger cities (*spatial impact models*)

- Exploratory analysis
- Downscaling data to regional context
- Modelling
- Mapping vulnerabilities
- Defining exposure
- Assessing the assets at risk
- Assessing the risk

2- Small-mid size cities (*Indicator-based vulnerability assessment*)

- City exploratory analysis
- Identifying climate hazard for the city
- Selecting indicators
- Data gathering and processing
- Assessing vulnerability score

6.3 SWOT analysis

The strategic planning approach comes from private sector and has been recently adopted by urban planners and municipal actors. This approach includes the identification of objectives, and strategies and actions to reach them. Moreover, the involvement of stakeholders is a key element. One of the most common and powerful planning tool of strategic planning is the SWOT analysis. The acronym stands for: Strengths, Weakness, Opportunities and Threats, which are all core elements to improve a holistic knowledge of the territory and to identify sectors of interventions. However, the SWOT analysis can be applied in the SECAP process. Based on the findings of the baseline review, it allows one to determine the Strengths and Weaknesses of the local authority in terms of energy and climate management, as well as the Opportunities and Threats that could affect the SECAP. This analysis can help to define priorities when devising and selecting SECAP actions and measures.

ADDITIONAL RESOURCES

i) The Managing Urban Europe 25 project gives detailed instructions on how to prepare a baseline review (based on sustainability management).

http://www.localmanagement.eu/index.php/mue25:mue_baseline

ii) The charity village website provides additional guidance on SWOT Analysis.

https://charityvillage.com/cms/content/topic/how_to_conduct_a_swot_analysis#.WzuAc_IMSUK

iii) The business balls website provides free resources on SWOT analysis, as well as examples.

<http://www.businessballs.com/swotanalysisfreetemplate.htm>

iv) NEW - The online tool Integrated Management for Local Climate Change Response consists of guidance papers, training materials, tools and case studies for enhancing local capacities on Climate Change adaptation and mitigation. Among others, it provides guidance to local authorities on how to conduct a climate baseline review.

http://www.localmanagement.eu/index.php/cdp:local_authorities_baseline_review

7 Establishment of a long-term vision with clear objectives

7.1 The vision: towards a sustainable future

A further step to undertake to make a signatory in line with the Covenant of Mayors' climate and energy objectives is to establish a vision. The vision for a sustainable future is the guiding principle of the local authority's SECAP work. It points out the direction in which the local authority wants to head. A comparison between the vision and the local authority's current situation is the basis for identifying what action and development is needed to reach the desired objectives. The SECAP work is a systematic approach to gradually get closer to the vision.

The vision serves as the uniting component that all stakeholders can refer to, meaning everyone from leading politicians to citizens and interest groups. This vision should be developed along with the local communities through citizen participation and discussion groups (Hernandez et al., 2018). It can also be used for marketing the local authority to the rest of the world.

The vision needs to be compatible with the Covenant of Mayors' commitments, i.e. it should imply that the 40% GHG emission reduction in the 2030 target will be reached (at the minimum) and that the city will gradually become resilient and adapted to the impacts of Climate Change. However, it could also be more ambitious than that. Some local authorities already plan to become carbon neutral in the long run. Setting a longer-term target is considered a key success factor of SECAPs as it clearly shows the local authority's political commitment and gives a strong message to citizens and stakeholders on how the local authority wants to develop in the future, paving the way for more substantial investment in sustainable infrastructure (Rivas, et al., 2015).

Even though the main commitment concerns GHG emission reduction, it is advisable to define also energy savings and/or energy production targets, and to state sector-specific targets. This will contribute to give a clearer message on the vision of the local authority (e.g. on priority areas of intervention) and will allow for a better monitoring of results.

Adapting to Climate Change is often a new challenge to most cities across Europe, which are still learning to develop a greater understanding of their vulnerabilities, and define sound adaptation targets and investments. Since local authorities hardly have a specific budget for adaptation, they should focus on mainstreaming adaptation objectives into on-going development plans and existing sectoral strategies, setting clear short- and longer-term expected results. Integrating mitigation and adaptation goals under a common umbrella should avoid sectoral trade-offs, spill-over effects and subsequent maladaptation.

The vision should be realistic but still ambitious. It should describe the desired future of the city and be expressed in visual terms to make it more understandable for citizens and stakeholders.

Examples of visions of some local authorities

Växjö (Sweden):

"In Växjö, we have the vision that we will live and act so as to contribute to sustainable development where our consumption and production are resource-effective and pollution free." And "The vision is that Växjö shall become a city where it is easy and profitable to live a good life without fossil fuels."

Lausanne (Switzerland):

"Our 2050 vision is a reduction by 50% of the CO₂ emissions on the city's territory"

Tenerife (Spain):

"I would implement ecological principles in cities; they could be covered with green. Lots of more trees and vegetation everywhere. That does help against heatwaves. The air would be cooler due to all those green areas. Air pollution would improve too, because trees consume CO₂. In addition the more green areas the more permeable zones we'd have in the cities, since land absorb water. We are talking about super powerful drainage systems. And it would avoid flooding, for example. It's not just a matter of temperature" (vision for adaptation, stated in a focus group with citizens in the Municipality of San Cristóbal de La Laguna).

"Unless we change energy production, turning on the air conditioning means increasing the pollution a lot due to the power plants" (vision for maladaptation to heatwaves, stated in a focus group with citizens in the Municipality of San Cristóbal de La Laguna).

7.2 Setting objectives and targets

Once the vision is well established, it is necessary to translate it into more specific objectives and targets, for the different sectors in which the local authority intends to take action. These objectives and targets should be based on the indicators selected in the baseline review (see chapter 6.2).

Such targets and objectives should follow the principles of the SMART acronym: Specific, Measurable, Achievable, Realistic, and Time-bound. The concept of SMART objectives became popular in the 1980s as an efficient management concept.

To set SMART targets, 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** (defined deadline or schedule): When will this objective be accomplished? Is the deadline unambiguous? Is the deadline achievable and realistic?

Examples of SMART objectives are provided in the following **Table 4**:

Table 4. Smart objectives examples

Type of instrument	Example of SMART target
Subsidy scheme	<p><i>S: Focus on specific target group and on specific technologies</i></p> <p><i>M: Quantified energy saving target</i></p> <p><i>A: Minimise free riders</i></p> <p><i>R: Link the savings target to the available budget</i></p> <p><i>T: Link the energy savings target to a target period</i></p>
Energy performance standard	<p><i>S: Focus on specific product</i></p> <p><i>M: Performance characteristics aimed for set/baseline</i></p> <p><i>A: performance standard links to best available products on the market and is regularly updated</i></p> <p><i>R: Best available products is accepted by the target group</i></p> <p><i>T: Set clear target period</i></p>
Energy audit (voluntary)	<p><i>S: Focus on specific target group</i></p> <p><i>M: Quantify the targeted audit volume</i></p> <p><i>A: encourage to implement recommended measures</i></p> <p><i>R. ensure that sufficient qualified auditors have been assigned and financial incentives are in place to carry out audits</i></p> <p><i>T: Link the quantified target to a target period</i></p>

Type of instrument	Example of SMART target (<i>suite</i>)
Health	<p><i>S: focus on vulnerable social groups to heat waves (aged people, poor communities, etc.)</i></p> <p><i>M: Monitor trends of relevant health indicators (e.g, mortality rate) vs. baseline</i></p> <p><i>A: Replicate successful pilot-initiatives and adapt them to the site specific context</i></p> <p><i>R: Ensure that the initiative has been mainstreamed into existing sectoral-strategy and budgets (health policy)</i></p> <p><i>T: Link the quantified target to a target period</i></p>

Source: <http://www.aid-ee.org/documents/SummaryreportFinal.PDF> - April 2007

In practice, a potential SMART target could be: "15% of the dwellings will be audited between 1/1/2018 and 31/12/2020". Then, it is necessary to check every condition of being SMART. For example, the answer could be:

*"It is **Specific** because our action (energy audits) and target group (dwellings) is well defined. It is **Measurable** because it is a quantified target (15%) and because we have a system in place to know the number of audits actually carried out. It is **Achievable** because there is a financial incentive scheme that allows people to be reimbursed and because we will organise communication campaigns about audits. It is **Realistic** because we have trained 25 auditors that are now well-qualified, and we have verified that this number is sufficient. It is **Time-bound** because the time-frame is well defined (between 1/1/2018 and 31/12/2020)."*

The nature of adaptation (long timescales, multi-sectoral) makes the setting of the objectives more challenging. Successful adaptation may mean that adverse impacts are avoided, which could be difficult to measure. Specific adaptive measures also reduce outcomes. As a consequence, every step described for SMART targets should be carefully evaluate and addressed.

Some Tips

- ✓ Avoid putting "raising awareness" as an objective. It is too big, too vague and very difficult to measure.
- ✓ Add the following requirements to the objectives:
 - understandable – so that everyone knows what they are trying to achieve.
 - challenging – so everyone has something to strive for.
- ✓ Define specific targets for 2030 for the different sectors considered and define intermediate targets (at least every 4 years, for instance)

ADDITIONAL RESOURCES

The European Sustainable Development Network publishes a study on (SMART) Objectives and Indicators of Sustainable Development in Europe.

www.sd-network.eu/?k=quarterly%20reports&report_id=7.

8 SECAP elaboration

The core part of the SECAP relates to the policies and measures that will allow reaching the objectives that have been previously set (see chapter 6).

SECAP elaboration is only one step in the overall process and it should not be considered as an objective in itself, but rather as a tool that allows to:

- Outline how the city will look like in the future, in terms of energy, mobility, resilience infrastructure and land use, population, consumption patterns and climate projections
- Analyse current action in the field of energy and climate and build a systematic plan starting from the existing experience but with a view to an ambitious vision
- Communicate and share the plan with the stakeholders
- Translate this vision into practical actions assigning deadlines and a budget for each of them
- Serve as a reference during the implementation and monitoring process.

Also, remind that the work does not finish after drafting the SECAP and its formal approval. On the contrary, this moment should be the start of the concrete work of putting the planned actions into reality. A clear and well-structured SECAP is essential for this (i.e. all actions should carefully be designed and described properly, with timing, budget, sources of financing and responsibilities, etc.).

Part 3 of this Guidebook provides useful information in order to select and devise adequate policies and technical measures for the SECAP. Adequate policies and measures are dependent on the specific context of each local authority. Therefore, defining measures that are suited to each context is also highly dependent on the quality of the assessment of the current framework.

Here is a list of recommended steps for drafting a successful SECAP:

- ✓ Make a prospective of good practices

In addition to the resources on policies and measures provided in this Guidebook, it may be useful to identify what best practices (successful examples) have delivered effective results in similar contexts in reaching similar targets and objectives than those set by the local authority, in order to define the most appropriate actions and measures. On the Covenant of Mayors' website you can consult good practice examples submitted by Covenant signatories, i.e. actions which have successfully been implemented and that have led to significant benefits.

<https://www.covenantofmayors.eu/plans-and-actions/good-practices.html>

- ✓ Set priorities and select key actions / measures

Different kinds of actions and measures may contribute to the achievement of the objectives. Undertaking the entire list of possible actions will often surpass the current capabilities of the local authority, in terms of costs, project management capacities, etc. In addition, some of them may be mutually exclusive. This is why an adequate selection of actions in a given time horizon is necessary. At this stage, a preliminary analysis of the possible actions is necessary: what are the costs and benefits of each of them (even in qualitative terms).

To facilitate the selection of measures, the local authority may rank the possible measures by importance in a table summarising the main characteristics of each action: duration, level of required resources, expected results, associated risks, etc. The actions may be broken down in short-term actions (i.e. 3-5 years) and long-term actions (towards 2030).

Specific methods for the selection of priorities are available.

In simple terms, you should:

- define which criteria you want to consider for the selection of measures (investment required, energy savings, reduction of climate impacts and related costs, cross-cutting and infra-sectoral benefits, employment growth, improved air quality, relevance to the overall objectives of the local authority, political and social acceptability, timeframe, payback, ...)
- decide which weight you give to each criterion (this decision has to be socially robust and subject to sensitivity analysis, since weighting criteria may be used by decision-makers to choose actions that have already been pre-selected beforehand. (See Munda, 2008 ⁽⁵¹⁾)).
- evaluate each criterion, measure by measure, in order to obtain a "score" for each measure
- if necessary, repeat the exercise in the context of various scenarios in order to identify the measures whose success is not scenario-dependent (see chapter 6).
- such an evaluation is a technical exercise, but selecting the criteria and their respective weighting should be part of the participatory process (as indicated above). Therefore, it should be carried out in a careful manner, and be based on socially robust knowledge, i.e. public debate among the stakeholders and citizens involved. It may be useful to refer to various scenarios (see chapter 6).

✓ Carry out a risk analysis

The selection of actions and measures should also be based on the careful estimation of risks associated with their implementation (especially when significant investments are planned): how likely is it that an action fails or does not bring the expected results? What will be the impact on the objectives? And what are the possible remedies?

Risks can be of different nature:

- Project-related risks: cost and time overruns, poor contract management, contractual disputes, delays in tendering and selection procedures, poor communication between project parties...
- Government-related risks: inadequate approved project budgets, delays in obtaining permissions, changes in Government regulations and laws, lack of project controls, administrative interference...
- Technical risks: inadequate design or technical specifications, technical failures, poorer than expected performance, higher than expected operation costs...
- Contractor-related risks: inadequate estimates, financial difficulties, delays, lack of experience, poor management, difficult in controlling nominated subcontractors, poor communication with other project parties, etc.
- Market-related risks: pay cuts, increase in wages, shortages of technical personnel, materials inflation, shortage of materials or equipment, and variations in the price of the various energy carriers...

⁽⁵¹⁾ Munda, G. (2008). Social Multi-Criteria Evaluation for a Sustainable Economy, Springer-Verlag Berlin Heidelberg

Risks may be assessed using conventional quality management techniques. Finally, remaining risks have to be evaluated and either accepted or rejected.

- ✓ Specify timing, clear responsibilities, budget and financing sources of each action

Once the actions have been selected, it is necessary to plan them carefully so that they can become a reality. For each action, specify:

- the timing (start date – end date)
- the body responsible for implementation
- the stakeholders involved (only for adaptation actions)
- the risk and /or vulnerability tackled (only for adaptation actions)
- the estimated cost
- the modality of financing: as municipality resources are scarce, there will always be competition for available human and financial resources. Therefore, efforts should be continuously made to find alternative sources of human and financial resources
- the estimated impacts in terms of energy savings, energy production, CO₂ emission reduction (for mitigation actions)
- the modality of monitoring: identify data and indicators to monitor progress and results of each action, the methods for data gathering and timing (how often they will be collected). Specify how and by whom the data will be collected, and who will compile it. To facilitate implementation, complex actions could be broken down into simple steps, each of them having its own timing, budget, person responsible, etc.

- ✓ Draft the Action Plan

At this stage, all the information should be available to complete the SECAP. A suggested table of content is presented in chapter 2.

- ✓ Approve the Action Plan and its associated budget

Formal approval of the SECAP by the municipal council is a mandatory requirement of the Covenant. In addition, the local authority should allocate the necessary resources in the annual budget and whenever possible make commitments for the forward (3-5 year) planning budget.

- ✓ Perform regular SECAP reviews

Continuous monitoring is needed to follow SECAP implementation and progresses towards the defined targets in terms of energy / CO₂ savings, and/or climate vulnerability and risk reduction and eventually to make corrections. Regular monitoring followed by adequate adaptations of the plan allows initiating a continuous improvement cycle. This is the "loop" principle of the project management cycle: Plan, Do, Check, Act. It is extremely important that progress is reported to the political leadership. SECAP revision could for example occur every second year, after the implementation report has been submitted (mandatory as per the Covenant of Mayors' commitments).

Box 8. Core and complementary steps	
CORE steps/Activities	Complementary steps/Activities
✓ Set priorities and select key actions/measures	✓ Make a prospective of good practices
✓ Specify timing, clear responsibilities, budget and financing sources of key actions	✓ Carry out a risk analysis ✓ Specify timing, clear responsibilities, budget and financing sources of each action
✓ Draft the Action Plan	
✓ Approve the Action Plan	✓ Approve the Action Plan's associated budget
✓ Perform regular SECAP monitoring	✓ Perform regular SECAP reviews according to monitoring results

ADDITIONAL RESOURCES

i) The JRC published a review of existing methodologies and tools for the development and implementation of SEAPs.

http://re.jrc.ec.europa.eu/energyefficiency/pdf/CoM/Methodologies_and_tools_for_the_development_of_SEAP.pdf

ii) Climate Alliance developed a "Compendium of Measures" helping to develop a Climate Change strategy at local level. Local authorities have the possibility to choose a set of measures in those fields where they are more interested and decide the level of ambition (that will help to define the indicators of achievement) for each field.

http://www.pro-ee.eu/fileadmin/pro_ee/inhalte/dokumente/ProEE_Compendium_of_measures.pdf

There are also case studies based on the different areas of action relevant for the Action Plan:

<http://www.climate-compass.net/>

iii) Within the Energy for Mayors project, a toolbox of methodologies on Climate and Energy has been developed, where local governments and their partners can search, add and rate resources to support local action.

<http://toolbox.climate-protection.eu/>

iv) Set of Key actions submitted by Covenant signatories can represent useful examples of implemented actions by Covenant Signatories, Coordinators and Supporters.

<https://www.covenantofmayors.eu/plans-and-actions/good-practices.html>

v) Urban Adaptation Support Tool (various relevant links for every step of the adaptation cycle).

<https://www.covenantofmayors.eu/support/adaptation-resources.html>

9 SECAP implementation

The implementation of the SECAP is the step that takes the longest time, efforts and financial means. This is the reason why mobilisation of stakeholders and citizens is critical. Whether the SECAP will be successfully implemented or will remain a pile of paperwork depends to a high extent on the human factor.

During the implementation phase, it will be essential to ensure both good internal communication (between different departments of the local authority, the associated public authorities and all the persons involved) as well as external communication (with citizens and stakeholders). This will contribute to awareness-raising, increase the knowledge about the issues, induce changes in behaviour, and ensure wide support for the whole process of SECAP implementation.

Monitoring of project performances in terms of energy/CO₂ savings and climate vulnerability/risk reduction should be an integral part of SECAP implementation (see chapter 10). Networking with other signatories developing or implementing a SECAP, will provide additional value towards meeting the targets by exchanging experience and best practices, and establishing synergies. Networking with potential CoM signatories, and encouraging their involvement in the Covenant of Mayors is also recommended. Liaising with Regions and Provinces who could become CTCs and/or with LAREAs could also help municipality receive more support in the development and implementation of a SECAP.

Some tips to put a SECAP into practice:

- Adopt a Project Management approach: deadline control, financial control, planning, deviations analysis and risk management. Use a quality management procedure.
- Divide the project into different parts and select persons responsible.
- Strengthen horizontal cooperation between different policy-areas and mainstream climate actions into existing sectoral strategies.
- Prepare specific procedures and processes aimed at implementing each part of the project. A quality system is a useful tool to make sure that procedures are in accordance with the objectives.
- Establish a score-card system for tracking and monitoring the plan. Indicators such as percentage of compliance with deadlines, percentage of budget deviations, percentage of emissions reduction with the measures already implemented and other indicators deemed convenient by the local authority may be proposed.
- Plan the follow-up with the stakeholders establishing a calendar of meetings in order to inform them. Interesting ideas could arise during these meetings or possible future social barriers could be detected.
- Anticipate future events and take into account negotiation and administrative steps to be followed by the Public Administration to start a project. Public projects usually require a long time to obtain authorisation and approvals. In this case, a precise planning including security factors is convenient mainly at the beginning of the SECAP implementation.
- Propose, approve and put into operation a training programme at least for those persons directly involved in the implementation.
- Motivate and offer training and support to the team. Internal people are important stakeholders.
- Inform frequently the city council (or equivalent body) and politicians in order to make them an important part of successes and failures and get their commitment.
- Some measures proposed in the SECAP may need to be tested before a massive implementation. Tools such as pilot or demonstration projects can be used to test the suitability of these measures.

10 Monitoring and reporting progress

Monitoring is a very important part of the SECAP process. Regular monitoring followed by adequate adjustments of the plan allows initiating a continuous improvement of the process.

As mentioned before, CoM signatories commit to submitting a "Monitoring Report" every second year following the submission of the SECAP "for evaluation, monitoring and verification purposes". Such report should include an updated monitoring emission inventory (MEI), developed according to the same methods and data sources of the BEI to ensure comparability. Local authorities are encouraged to compile CO₂ emission inventories on an annual basis (see Part 2.a, chapter 5: Documentation and reporting of the GHG emission inventories). However if, the local authority considers that such regular inventories put too much pressure on human or financial resources, it may decide to carry out the inventories at larger intervals. But local authorities are required to compile a MEI and report on it at least every fourth year, which means carrying out alternatively every 2 years an "**Action Reporting**" – without MEI" - (years 2, 6, 10, 14...) and a "**Full Reporting**" – with MEI (years 4, 8, 12, 16...) (see **Figure 7**). For each type of reporting, specific templates are available on the Library of the Covenant of Mayors' website at <https://www.covenantofmayors.eu/support/library.html>

The **Action Reporting** contains mostly qualitative information about the implementation of the SECAP, including barriers encountered during the implementation, status of implementation of each action, etc. The **Full Reporting**, through the MEI, allows analysing the evolution in terms of energy consumption, energy production and CO₂ emissions compared to the BEI: this way it provides a deeper understanding of the results delivered by the SECAP and allows defining corrective and preventive measures when this is required.

Local authorities committed to starting adaptation actions in their territories have to fill in a Monitoring and Reporting template every second year following the SECAP submission, in order to monitor and outlines the interim results of implemented adaptation measures – and allow corrections to achieve the targets when it is required. Signatories are invited to specify arrangements in place to review current / future climate risks, monitor and evaluate the impact of the adaptation actions.

Figure 7. Minimum requirements concerning monitoring



The monitoring exercise should be regarded by the Municipal council and by the administration of local authorities as an opportunity to reconsider the strategy and the actions of the SECAP in light of the progress achieved, of new available knowledge and expertise, of the latest technological or financial opportunities for sustainable energy projects and/or for adaptation action. The SECAP should indeed be considered as a living document and not as a static one, as it should be periodically adjusted to improve its effectiveness.

The local authority is encouraged to draft also a monitoring report (in national language) and have it approved by the Municipal Council to ensure transparency and accountability. This monitoring report could be used to reinforce communication towards citizens and

stakeholders, keeping them informed on progress achieved, barriers encountered, opportunities, possible need for corrective measures, etc.

Box 9. Illnau-Effretikon (15,600 inhabitants, suburban municipality, European Energy Award® since 1998)

The city of Illnau-Effretikon in Switzerland set up a baseline emissions inventory in 2001 and approved an activity plan (similar to SEAP), based on the results of an initial energy review on the basis of the European Energy Award®. Within a project group with other EEA® municipalities, an evaluation of 44 out of 87 measures of the EEA assessment tool of potential CO₂ reductions and energy savings was carried out to monitor the GHG emissions. The implementation of the activity plan/SEAP is monitored in real-time by recording the CO₂ reduction as soon as a measure has been implemented and inserted in the EEA assessment tool. Therefore, the assessment of the quality is accompanied by a quantitative analysis.

ADDITIONAL RESOURCES

i) The CoM Quick Reference Guides to monitoring touches on why monitoring is important, how to carry out the monitoring process, tips for success, what to report to the Covenant and the minimum Covenant reporting requirements.

<https://www.covenantofmayors.eu/support/library.html>

ii) The Covenant of Mayors for Climate and Energy reporting guidelines (Annex III) contain examples of indicators for mitigation (Annex III) and adaptation (Annex IV).

http://www.covenantofmayors.eu/IMG/pdf/Reporting_Guidelines_Final_EN.pdf

https://www.covenantofmayors.eu/index.php?option=com_attachments&task=download&id=172

iii) The Adaptation Sub-Committee's 2nd Progress Report describes how the UK is prepared to deal with Climate Change impacts and risks. It sets out a range of indicators against which the UK's progress will be measured, and focuses on three priority areas of land-use planning, managing water resources, and the design and renovation of buildings as adaptation measures.

<https://www.theccc.org.uk/publication/adapting-to-climate-change-in-the-uk-measuring-progress-2nd-progress-report-2011/>

iv) The ClimateXChange (CXC) adaptation indicator framework has been designed to guide the development of Climate Change adaptation indicators for Scotland. The indicator framework takes a risk-based approach, is designed to work across the 12 sectors of the Scottish Adaptation Framework.

http://www.climateexchange.org.uk/files/7113/7837/3920/CXC_Indicator_Framework_Summary_2013.pdf

v) Establishment of an Indicator Concept for the German Strategy on Adaptation to Climate Change.

<http://www.umweltbundesamt.de/en/publikationen/establishment-of-an-indicator-concept-for-german>

11 Conclusions

The Covenant of Mayors is the world's largest urban climate and energy initiative, involving thousands of local and regional authorities. The initiative facilitates and accelerates the implementation of effective actions to fight climate change. With this aim, the present guidelines provide support to local authorities signing the CoM and committing to developing and implementing actions at the local level to contribute to the climate challenge and the sustainability of their territories. This document covers the main steps of the process in detail and can be easily followed by local authorities at early stage. The first part contains the basics for a successful development and implementation of the SECAP, which goes beyond the elaboration of the document itself. This requires a real political commitment, the involvement of the key stakeholders, a reorganisation of the Local authority structure and the will to embrace a sustainable approach in the long term. Baseline Emission Inventory (BEI), Monitoring Emission Inventories (MEIs), Risk and Vulnerability Assessment (RVA) under the Covenant of Mayors for Climate & Energy contribute to the scientific side, along the political one, of the initiative, since sound science is the core of the procedures and methodologies developed. In particular, the BEI allows local authority (LA) to become aware of its conditions (in terms of emissions) at the beginning of the process (in its baseline year). The successive MEIs show the progress towards the target. The RVA determines the nature and extent of a risk by analysing potential hazards and assessing the vulnerability that could pose a potential threat to people, property, livelihoods and the environment on which they depend. In part 2, procedures and recommendations for compiling BEI, MEI and RVA are provided. The accurate and correct elaboration of these assessments is of critical importance, as they will be the instrument allowing the LA to measure the impact of its Sustainable Energy and Climate Action Plan (SECAP) and adjust it over time. Part 3 focuses on policies and measures that can be implemented at local level by local authorities in a wide range of sectors of activity for both mitigation and adaptation. Moreover, the successful implementation of SECAPs requires sufficient financial resources. However, local authorities have been often finding this aspect quite awkward and challenging. For this reason, this guidebook includes a session on the financing which provides an overview on the existing financing mechanisms and available funds with the aim of addressing the main barriers local authorities face when dealing with the implementation of their actions. Suggestions and recommendations to guide local authorities in the choices of tools and promotion of investments are provided. With the appropriate set of policy tools, it is generally accepted that local authorities can play a crucial role in promoting energy efficiency and leveraging more investments at local level. However, the need for more market action and enhanced private sector involvement is increasingly highlighted as this offers the only sustainable route for scaling up existing efforts.

Through its three parts, this Guidebook aims at both supporting and guiding local authorities in achieving their target through the successful elaboration and implementation of their SECAP. Moreover, this document complements with other CoM initiatives which intend to motivate signatories by providing and sharing successful good practice examples and, hence, to build upon the already achieved results to shape an aware community committed to a path towards sustainability.

Annex 1. Example of aspects suggested to be covered in the baseline mitigation reviews

SCOPE	KEY ASPECTS FOR ASSESSMENT
Energy structure and CO ₂ emissions	<ul style="list-style-type: none"> • Level and evolution of energy consumption and CO₂ emissions by sector and by energy carrier (see part 2.a). Absolute and per capita.
Renewable energies	<ul style="list-style-type: none"> • Typology of existing facilities of production of renewable energies • Renewable energy production and trends • Use of agricultural and forest biomass as renewable energy sources • Existence of bio-energetic crops • Degree of self-supplying with renewable energies • Potentialities for renewable energy production: solar thermal and photovoltaic, wind, mini-hydraulics, biomass, others
Energy consumption and energy management in the local administration	<ul style="list-style-type: none"> • Level and change in the energy consumption of the local administration by sector (buildings and equipment, public lighting, waste management, waste water treatment, etc.) and by energy carrier (see Part 2.a) • Assessment of the energy efficiency of buildings and equipment using efficiency indexes of energy consumption (for example: kWh/m², kWh/m² • user, kWh/m² • hours of use). This allows identifying the buildings where there are more improvement potentialities. • Characterization of the largest energy consumers among municipal buildings and equipment/facilities. Analysis of key variables (for instance: type of construction, heating, cooling, ventilation, lighting, kitchen, maintenance, solar hot water, implementation of best practices ...) • Assessing the types of lamps, lighting and energy-related issues in public lighting. Assessment of energy efficiency using efficiency indexes of energy consumption. • Degree and adequacy of energy management in public buildings/equipment and public lighting (including energy accounting and audits) • Established initiatives for improving energy saving and efficiency and results obtained to date • Identification of potentialities for improvement in energy savings and efficiency in buildings, equipment/facilities and public lighting.
Energy consumption of the municipal fleet	<ul style="list-style-type: none"> • Evaluation of the composition of the municipal fleet (own vehicles and of externalized services), annual energy consumption (see Part 2.a) • Composition of the urban public transport fleet, annual energy consumption • Degree of the energy management of the municipal fleet and public transport • Established initiatives for improving reducing energy consumption and results obtained to date • Identification of potentialities for improvement in energy efficiency

SCOPE	KEY ASPECTS FOR ASSESSMENT
Energy infrastructures	<ul style="list-style-type: none"> • Existence of electricity production plants, as well as district heating/cooling plants • Characteristics of the electricity and gas distribution networks, as well as any district heat/cold distribution network • Established initiatives for improving energy efficiency of the plants and of the distribution network and results obtained to date • Identification of potentialities for improvement in energy efficiency
Buildings	<ul style="list-style-type: none"> • Typology of the existing building stock: usage (residential, commerce, services, social...), age, thermal insulation and other energy-related characteristics, energy consumption and trends (if available, see Part 2.a), protection status, rate of renovation, tenancy, ... • Characteristics and energy performance of new constructions and major renovations • What are the minimal legal energy requirements for new constructions and major renovations? Are they met in practice? • Existence of initiatives for the promotion of energy efficiency and renewables in the various categories of buildings • What results have been achieved? What are the opportunities?
Industry	<ul style="list-style-type: none"> • Importance of industry sector in the energy balance and CO₂ emissions. Is it a target sector for our SECAP? • Existence of public and private initiatives address to promote energy saving and efficiency in industry. Key results achieved. • Degree of integration of energy/carbon management in industry businesses? • Opportunities and potentialities on energy saving and efficiency in industry
Transport and mobility	<ul style="list-style-type: none"> • Characteristics of the demand of mobility and modes of transport. Benchmarking and major trends. • What are the main characteristics of the public transportation network? Degree of development and adequacy? • How is the use of public transportation developing? • Are there problems with congestion and/or air quality? • Adequacy of public space for pedestrians and bicycles. • Management initiatives and mobility planning. Initiatives to promote public transport, bicycle and pedestrian.
Urban planning	<ul style="list-style-type: none"> • Characteristics of existing and projected "urban spaces", <u>linked to mobility: urban density, diversity of uses (residential, economic activity, shopping...)</u> and <u>building profiles</u>. • Degree of dispersion and compactness of urban development. • Availability and location of the main services and facilities (educational, health, cultural, commercial, green space...) and proximity to the population. • Degree and adequacy of integration of energy-efficiency criteria in urban development planning • Degree and adequacy of integration of sustainable mobility criteria in urban planning.

SCOPE	KEY ASPECTS FOR ASSESSMENT
Public procurement	<ul style="list-style-type: none"> • Existence of a specific policy commitment on green public procurement. • Degree of implementation of energy and Climate Change criteria in public procurement. Existence of specific procedures, usage of specific tools (carbon footprint or others).
Awareness	<ul style="list-style-type: none"> • Development and adequacy of the activities of communication and awareness to the population and stakeholders with reference to energy efficiency. • Level of awareness of the population and stakeholders with reference to energy efficiency and potential savings. • Existence of initiatives and tools to facilitate the participation of citizens and stakeholders in the SECAP process and the energy and Climate Change policies of the local authority.
Skills and expertise	<ul style="list-style-type: none"> • Existence of adequate skills and expertise among the municipal staff: technical expertise (energy efficiency, renewable energies, efficient transport ...), project management, data management (lack of skills in this field can be a real barrier!), financial management and development of investment projects, communication skills (how to promote behavioral changes etc.), green public procurement...? • Is there a plan for training staff in those fields?

Source: Methodology Guide for the revision of the Local Agenda 21 Action Plans in the Basque Country – UDALSAREA21 (Basque Network of Municipalities for Sustainability) www.udalsarea21.ent

Annex 2. Benefits of SECAP

The local (political) authorities can obtain the following benefits in supporting SEAP implementation:

- Contribute to the global fight against Climate Change - the global decrease of greenhouse gases will also protect the city against Climate Change
- Demonstrate commitment to environmental protection and efficient management of resources
- Participation of civil society, improvement of local democracy
- Improve the city's image
- Political visibility during the process
- Revive the sense of community around a common project
- Economic and employment benefits (retrofitting of buildings...)
- Better energy efficiency and savings on the energy bill
- Obtain a clear, honest and comprehensive picture of budgetary outflows connected with energy use and an identification of weak points
- Develop a clear, holistic and realistic strategy for improvement in the situation
- Access to National/European funding
- Improve citizens well-being (reducing energy poverty)
- Local health and quality of life (reduced traffic congestion, improved air quality ...)
- Secure future financial resources through energy savings and local energy production
- Improve long-term energetic independence of the city
- Eventual synergies with existing commitments and policies and systemic approach to energy and climate policies
- Preparedness for better use of available financial resources (local, EU grants and financial schemes)
- Better position for implementation of national and/or EU policies and legislation
- Benefits from networking with other Covenant of Mayors signatories with a view to funding opportunities
- Reduction of potential impacts of Climate Change and related losses and damages
- Climate-proof buildings and resilient productive systems
- Improved health, housing, sanitation indicators, among others, for vulnerable social groups
- Proactive and long-term planning based on long-term risk reduction and cross-cutting benefits

Annex 3. Glossary

This document provides a glossary with some specific but most recurrent terms within the CoM documents and informative materials. The definitions are consistent with the IPCC terminology and with official documents.

Adaptation

The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

Albedo

The fraction of solar radiation reflected by a surface or object, often expressed as a percentage. Snow-covered surfaces have a high albedo, the albedo of soils ranges from high to low, and vegetation covered surfaces and oceans have a low albedo. The Earth's planetary albedo varies mainly through varying cloudiness, snow, ice, leaf area and land cover changes

Baseline Emission Inventory

The Baseline Emission Inventory (BEI) quantifies the amount of CO₂ emitted in the key sectors and other activity sectors in the territory of the Covenant signatory for the baseline year. It allows identifying the principal anthropogenic sources of CO₂ (and other GHGs) emissions and to prioritise the reduction measures accordingly.

Behavioural change

The alteration of human decisions and actions in ways that mitigate/ reduce negative consequences of Climate Change impacts.

Carbon dioxide (CO₂)

A naturally occurring gas, also a by-product of burning fossil fuels from fossil carbon deposits, of burning biomass, of land use changes (LUC) and of industrial processes. It is the principal anthropogenic greenhouse gas (GHG) that affects the earth's radiative balance. It is the reference gas against which other GHGs are measured and therefore has a Global Warming Potential (GWP) of 1.

Carbon sequestration

The uptake of carbon containing substances, in particular carbon dioxide (CO₂), in terrestrial or marine reservoirs. Biological sequestration includes direct removal of CO₂ from the atmosphere through land-use change (LUC), afforestation, reforestation, revegetation, carbon storage in landfills, and practices that enhance soil carbon in agriculture (cropland management, grazing land management). In parts of the literature, carbon sequestration is used to refer to Carbon Dioxide Capture and Storage (CCS).

Climate change

Climate change refers to a change in the state of the climate that can be identified by changes in the mean and the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the United Nations Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: 'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods'. The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes.

CO₂-equivalent emission

CO₂-equivalent emission is a common scale for comparing emissions of different GHGs. It is the amount of carbon dioxide (CO₂) emission that would cause the same integrated radiative forcing, over a given time horizon, as an emitted amount of a greenhouse gas (GHG) or a mixture of GHGs. The CO₂-equivalent emission is obtained by multiplying the emission of a GHG by its Global Warming Potential (GWP) for the given time horizon. For a mix of GHGs it is obtained by summing the CO₂-equivalent emissions of each gas.

Co-benefits

The positive effects that a policy or measure aimed at one objective might have on other objectives. Co-benefits are often subject to uncertainty and depend on, among others, local circumstances and implementation practices.

Decarbonisation

The process by which countries or other entities aim to achieve a low-carbon economy, or by which individuals aim to reduce their carbon consumption.

Ecosystem

A functional unit consisting of living organisms, their non-living environment, and the interactions within and between them. The components included in a given ecosystem and its spatial boundaries depend on the purpose for which the ecosystem is defined. Ecosystem boundaries can change over time. Ecosystems are nested within other ecosystems, and their scale can range from very small to the entire biosphere. In the current era, most ecosystems either contain people as key organisms, or are influenced by the effects of human activities in their environment.

Emission factors

The emissions released per unit of activity.

Emissions

(Anthropogenic) Emissions of greenhouse gases (GHGs), aerosols, and precursors of a GHG or aerosol caused by human activities. These activities include the burning of fossil fuels, deforestation, land use changes (LUC), livestock production, fertilization, waste management, and industrial processes. Emissions are usually classified in direct emissions that physically arise from activities within well-defined boundaries and Indirect emissions that are a consequence of the activities within well-defined boundaries.

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.

Global warming

Global warming refers to the gradual increase in global surface temperature, as one of the consequences of radiative forcing caused by anthropogenic emissions.

Global warming potential (GWP)

An index, based on radiative properties of greenhouse gases (GHGs), measuring the radiative forcing following a pulse emission of a unit mass of a given GHG in the present-day atmosphere integrated over a chosen time horizon, relative to that of carbon dioxide (CO₂). The GWP represents the combined effect of the differing times these gases remain in the atmosphere and their relative effectiveness in causing radiative forcing. The Kyoto Protocol is based on GWPs from pulse emissions over a 100-year time frame.

Governance

A comprehensive and inclusive concept of the full range of means for deciding, managing, and implementing policies and measures. The concept of governance

recognizes the contributions of various levels of government (global, international, regional, local) and the contributing roles of the private sector, of nongovernmental actors, and of civil society to addressing the many types of issues facing the global community.

Greenhouse Gas (GHG)

Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and ozone (O₃) are the primary GHGs in the earth's atmosphere. Moreover, there are a number of entirely human-made GHGs in the atmosphere, such as the halocarbons and other chlorine- and bromine containing substances, dealt with under the Montreal Protocol. Beside CO₂, N₂O and CH₄, the Kyoto Protocol deals with the GHGs sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Hazard

The potential occurrence of a natural or human-induced physical event or 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.

Heat Island

The heat island effect is the phenomenon whereby atmospheric and surface temperatures are higher in urban areas than in the surrounding rural areas associated with the change in runoff, effects on heat retention and changes in surface albedo.

Impacts

Effects on natural and human systems. In this report, the term impacts is used primarily to refer to the effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services, and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period and the vulnerability of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, including floods, droughts, and sea level rise, are a subset of impacts called physical impacts.

Lifecycle assessment

A widely used technique defined by ISO 14040 as a "compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle". The results of LCA studies are strongly dependent on the system boundaries within which they are conducted. The technique is intended for relative comparison of two similar means to complete a product.

The approach considers the overall life cycle of the fuels/electricity. This includes all emissions of the energy chain that also take place outside the territory (such as transport losses, refinery emissions or energy conversion losses).

Maladaptation

Interventions and investments in a specific location or sector that could increase the vulnerability of another location or sector, or increase the vulnerability of the target group to future climate change. Maladaptation arises not only from inadvertent badly planned actions, but also from deliberate decisions focused on short-term benefits ahead of longer-term threats, or that fail to consider the full range of interactions, feedbacks and trade-offs between systems and sectors arising from planned actions.

Mitigation

Human interventions to reduce the sources or enhance the sinks of greenhouse gases (GHGs) and of other substances which may contribute directly or indirectly to limiting climate change.

Primary energy

It is defined in several alternative ways. Primary energy is the energy stored in natural resources (e. g., coal, crude oil, natural gas, uranium, and renewable sources). According to the International Energy Agency (IEA) definition, "primary energy is the energy that has not undergone any anthropogenic conversion". Primary energy is transformed into secondary energy by cleaning (natural gas), refining (crude oil to oil products) or by conversion into electricity or heat. When the secondary energy is delivered at the end-use facilities it is called final energy.

Renewable energy (RE)

Renewable energy sources, also called renewables, are energy sources that are replenished by natural processes at a rate that equals or exceeds its rate of use. Renewable energy sources include the following:

Hydropower: the electricity generated from the potential and kinetic energy of water in hydroelectric plants;

Geothermal energy: the energy available as heat from within the earth's crust, usually in the form of hot water or steam;

Wind energy: the kinetic energy of wind converted into electricity in wind turbines;

Solar energy: solar thermal energy (radiation exploited for solar heat) and solar photovoltaic for electricity production.

Rebound effect

Phenomena whereby the reduction in energy consumption or emissions (relative to a baseline) associated with the implementation of mitigation measures in a jurisdiction is offset to some degree through induced changes in consumption, production, and prices within the same jurisdiction.

Resilience

The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.

Risk

The potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. Risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. Risk results from the interaction of vulnerability, exposure, and hazard. In this report, the term risk is used primarily to refer to the risks of climate-change impacts.

Risk and vulnerability assessment (RVA)

The Risk and Vulnerability Assessment is an analysis that determines the nature and extent of risk, by analysing potential hazards and assessing vulnerability that could pose a potential threat or harm to people, property, livelihoods and the environment on which they depend. It allows the identification of areas of critical concern and therefore provides information for decision-making. The Risk and Vulnerability Assessment serves, along with the Baseline Emission Inventory, as the point of departure for the development of the Sustainable Energy and Climate Action Plan (SECAP).

Sustainable Development

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987).

Transit Oriented Development

Urban development within walking distance of a transit station, usually dense and mixed with the character of a walkable environment.

Vulnerability

The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Resources and websites:

IPCC (Intergovernmental Panel on Climate Change) (2014). Working Group III - AR5 - Climate Change 2014: Mitigation of Climate Change.

IPCC (Intergovernmental Panel on Climate Change) (2014). Working Group II - AR5 - Climate Change 2014: Impacts, Adaptation, and Vulnerability.

http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Renewable_energy_sources

List of abbreviations and definitions

BEI	Baseline Emission Inventory
CHP	Combined heat and power
CNC	Covenant National Coordinators
CO ₂	Carbon Dioxide
CTC	Covenant Territorial Coordinators
EC	European Commission
ETS	Emission Trading Scheme
GHG	Greenhouse gas
MEI	Monitoring Emission Inventories
RVA	Risk and Vulnerability Assessment
SEAP	Sustainable Energy Action Plan
SECAP	Sustainable Energy and Climate Action Plan
UNFCCC	United Nations Framework Convention on Climate Change

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