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Guidebook

How to develop a Sustainable Energy Action Plan (SEAP) in South Mediterranean Cities

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Abstract

This guidebook is adapted to the South Mediterranean context from the Joint Research Centre's (JRC) guidebook "How to develop a Sustainable Energy Action Plan", developed in 2010 to support the implementation of the Covenant of Mayors (CoM) initiative in European cities. Through the CES-MED project, the European Union has opened the CoM initiative to local authorities of ten southern Mediterranean countries (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia).

The purpose of this guidebook is to make energy efficiency and climate change mitigation measures relevant, achievable and compelling to local authorities in the southern Mediterranean context. Ultimately, it aims to enhance the competitiveness of municipalities and ensure their economic development while reducing dependence on energy imports and fossil fuels through the implementation of energy efficiency, renewable energy and other well-planned climate change mitigation actions at the local level. The guidebook provides detailed, step-by-step guidance to local authorities in southern Mediterranean countries to develop an effective Sustainable Energy Action Plan (SEAP). The process has four phases: initiation, planning, implementation, and monitoring and reporting. The choice and sequence of actions can vary according to the policies and measures already in place. This flexibility allows local authorities to develop a SEAP coherent with and effective for their local circumstances and objectives.

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Technical issues related to the development of the scenarios and the SEAP are described in the two following separate annexes:

- Technical annex I. *How to develop a sustainable energy action plan (SEAP) in the Southern Mediterranean Partner Countries: the baseline emission inventory*
https://ec.europa.eu/jrc/sites/default/files/com-south_bei_report_online_version.pdf
- Technical annex II. *Projection to 2020 for setting emission reduction targets in the Southern Mediterranean Partner Countries: an approach with a Business-as-Usual scenario*
http://edgar.jrc.ec.europa.eu/com/CoM-South_2013_BAU_Report_Online_version_3_06.pdf

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Further information and support

General

- CoM "[Frequently Asked Questions](http://www.covenantofmayors.eu/index_en.html)" available on the CoM website at: www.covenantofmayors.eu/index_en.html for the English version http://www.covenantofmayors.eu/index_fr.html for the French version and www.comarabic.com for the Arabic version.

CoM signatories

- CoM e-learning tool. Available via "My Covenant", a password-protected area of the CoM website. Available at: www.covenantofmayors.eu/sign-in_en.html.
- CoM help desk, set up to provide signatories with information and guidance to prepare and implement their Baseline Emission Inventory (BEI) and Sustainable Energy Action Plan (SEAP). E-mail inquiries to helpdesk.Mashreq@ces-me.eu for Mashreq countries and helpdesk.Maghreb@ces-med.eu for Maghreb countries.

Executive Summary

In the last decade, population and economic growth in the Middle East and North African (MENA) countries have driven increases in both energy demand and its related carbon dioxide (CO₂) emissions. In most of these countries, power outages are rising and reserve margins are dropping drastically, shifting some countries from energy exporters to net energy importers (ENPI, 2013). Domestic energy prices in MENA countries are highly subsidised compared to countries belonging to the Organisation for Economic Co-operation and Development (OECD), making the increased demand more acutely felt by those government budgets (IEA, 2013).

To address these challenges, MENA countries have embarked on a series of national and regional initiatives to design and implement sustainable energy and climate change mitigation policies. The aim for governments is to pursue economic development while curbing energy demand and its impacts.

This guidebook is adapted to the South Mediterranean context from the Joint Research Centre's (JRC) guidebook *How to develop a Sustainable Energy Action Plan*, developed in 2010 to support the implementation of the Covenant of Mayors (CoM) initiative in European cities. It provides guidance to local authorities in the design and implementation of their Sustainable Energy Action Plan (SEAP), the set of actions undertaken to reduce CO₂ emissions in their territories.

Key projects and initiatives

- | | |
|----------------|---|
| CES-MED | Cleaner Energy-saving Mediterranean Cities (CES-MED) project: an initiative to develop the capacities of local authorities in ENPI South Mediterranean Partner Countries to formulate and implement more sustainable local energy policies.
www.ces-med.eu |
| CoM | Covenant of Mayors: a mainstream European movement involving local and regional authorities that voluntarily commit to the European Union target of reducing CO ₂ emissions by 20% by the year 2020, primarily through energy efficiency and renewable energy measures.
www.covenantofmayors.eu/index_en.html |
| ENPI | European and Neighbouring Partnership Instrument: the main financial mechanism to assist European Neighbourhood Policy (ENP) countries.
http://ec.europa.eu/europeaid/where/neighbourhood/overview/index_en.htm |
| MENA | Middle East and North Africa (region/countries): a group of countries variously defined. This guidebook chiefly concerns the ten MENA countries invited to join the CoM initiative: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia. |
| SEAP | Sustainable Energy Action Plan: the defined process laid out in this guidebook for local authorities, especially CoM signatories, to plan and implement policies to reduce energy and CO ₂ emissions in their territories. |

The European Union, through ENPI and other financial instruments, provides support to MENA countries in the design and the implementation of sustainable energy and climate change mitigation measures. The Cleaner Energy-saving Mediterranean Cities (CES-MED) project is a European

Commission project that supports local authorities in the ENPI South Mediterranean Partner Countries to deepen their engagement in sustainable development policies and actions.

Through the CES-MED project, the European Union has opened the CoM initiative to local authorities of ten southern Mediterranean countries (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria and Tunisia). Within one year of signing, CoM signatories must submit their SEAP to the JRC for analysis and approval. The SEAP demonstrates, through quantified proposed actions, how the local authority will reach its signatory commitment to reduce its territory's CO₂ emissions by at least 20% by 2020.

A well-designed SEAP provides signatories and local authorities with political visibility. It helps improve the local authorities' image, reduce their energy bills and improve their citizens' well-being by reducing the health impact of energy consumption and its related CO₂ emissions. A well-designed SEAP also makes local authorities more attractive to international donors and investors.

This guidebook provides detailed, step-by-step guidance to local authorities in southern Mediterranean countries to develop an effective SEAP. The process has four phases: initiation, planning, implementation, and monitoring and reporting. Each phase includes steps and recommended actions for local authorities (Table ES1). The choice and sequence can vary according to the policies and measures already in place. This flexibility allows local authorities to develop a SEAP coherent with and effective for their local circumstances and objectives.

The purpose of this guidebook is to make energy efficiency and climate change mitigation measures relevant, achievable and compelling to local authorities in the southern Mediterranean context. Ultimately, it aims to enhance the competitiveness of municipalities and ensure their economic development while reducing dependence on energy imports and fossil fuels through the implementation of energy efficiency, renewable energy and other well-planned climate change mitigation actions at the local level.

Table ES1. Main steps and roles in the SEAP process

Phase	Steps	Roles of key actors		
		Municipal council or equivalent	Local authority	Stakeholders
Initiation	Establish political commitment.	<ul style="list-style-type: none"> - Sign the CoM commitment. - Provide the necessary impulse to the local administration to start the process. 	<ul style="list-style-type: none"> - Encourage local authorities to take action. - Inform local authorities of the benefits of the project. 	<ul style="list-style-type: none"> - Engage in stakeholder involvement, including with national authorities through National Coordination Groups (NCGs) or other forms of official affiliation.
	Establish appropriate governance structure.	<ul style="list-style-type: none"> - Create SEAP preparation team and make sure adequate administrative structures are in place and associated to the SEAP. 		
	Build stakeholder support.	<ul style="list-style-type: none"> - Provide the necessary impulse for stakeholder participation. - Demonstrate through public hearings the importance of stakeholder participation and support. 	<ul style="list-style-type: none"> - Identify key stakeholders. - Determine the best communication and/or participation channels. - Inform stakeholders about the process and their roles; collect their views. 	<ul style="list-style-type: none"> - Support local authorities to design and implement the SEAP. - Express views.
Planning	Assess current policy framework.	<ul style="list-style-type: none"> - Ensure the necessary resources are in place for the assessment. 	<ul style="list-style-type: none"> - Conduct existing policy framework assessment at national and local levels. 	
	Establish the Baseline Emission Inventory (BEI).		<ul style="list-style-type: none"> - Collect the necessary data to elaborate the BEI. - When necessary, involve relevant stakeholders. 	<ul style="list-style-type: none"> - Provide valuable inputs and data. - Share knowledge.
	Establish the vision: at least -20% of CO₂ emissions in or across required and/or selected sectors by 2020.	<ul style="list-style-type: none"> - Support the elaboration of the vision (goals/objectives and measures) with activities under municipal responsibility. - Approve the vision. 	<ul style="list-style-type: none"> - Establish objectives that support the vision. - Ensure the vision is shared by relevant stakeholders, including national authorities. 	<ul style="list-style-type: none"> - Participate in the definition of the vision. - Express views on the locality's future.
	Elaborate the plan.	<ul style="list-style-type: none"> - Support the elaboration of the plan with activities under municipal responsibility. - Contribute to defining priorities in line with the SEAP needs assessment and vision. 	<ul style="list-style-type: none"> - Elaborate the plan: define policies and measures in line with the vision; establish budget, timing, indicators, responsibilities. - Keep municipal actors informed and involve stakeholders. - Make partnerships with key stakeholders. 	<ul style="list-style-type: none"> - Participate in the elaboration of the plan. - Provide input and feedback.
	Secure sustainable financial resources.	<ul style="list-style-type: none"> - Budget for the development and implementation of the SEAP. 	<ul style="list-style-type: none"> - Secure financial resources to develop the SEAP - Allocate sufficient human resources to ensure the coordinated development of the SEAP. 	<ul style="list-style-type: none"> - Provide support for the development of the SEAP. - Finance the implementation of the SEAP measures and actions.

	Approve and submit the SEAP.	<ul style="list-style-type: none"> - Approve the SEAP and associated financial and human resources budgets. 	<ul style="list-style-type: none"> - Submit the SEAP via the CoM website. - Communicate the SEAP. - Share and discuss Joint Research Centre (JRC) analysis of the SEAP. 	<ul style="list-style-type: none"> - Ensure the SEAP is approved by relevant national authorities.
Implementation	Implement the SEAP.	<ul style="list-style-type: none"> - Provide long-term political support to the SEAP process. 	<ul style="list-style-type: none"> - Allocate sufficient human resources to lead and coordinate the implementation of the SEAP. - Ensure individual stakeholders are aware of their roles in implementation. 	<ul style="list-style-type: none"> - Execute SEAP-related actions under the local and national stakeholder's responsibility.
		<ul style="list-style-type: none"> - Ensure energy and climate change mitigation policies are integrated into local administration processes. 	<ul style="list-style-type: none"> - Implement measures under the responsibility of the local authority. - Lead by example. - Communicate about actions. 	<ul style="list-style-type: none"> - Support local authorities in the implementation of the SEAP.
		<ul style="list-style-type: none"> - Show interest in SEAP implementation. - Encourage stakeholders to act; lead by example. 	<ul style="list-style-type: none"> - Motivate stakeholders to act through information campaigns. - Inform stakeholders about the resources available for EE and RES. 	<ul style="list-style-type: none"> - Promote and instil requisite changes in behaviour, EE and RES action - Provide general support – human, financial, information-sharing, etc. – to SEAP implementation.
		<ul style="list-style-type: none"> - Network with other CoM signatories: exchange experience and best practices, establish synergies, encourage involvement in the CoM. 		<ul style="list-style-type: none"> - Encourage other stakeholders to support the SEAP.
Monitoring and reporting	Monitor SEAP actions.	<ul style="list-style-type: none"> - Request regular updates on the advancement of the SEAP. 	<ul style="list-style-type: none"> - Regularly monitor and evaluate progress in the implementation of SEAP actions and their impact. 	<ul style="list-style-type: none"> - Provide the necessary inputs, data and evaluation.
	Report and submit the Implementation Report.	<ul style="list-style-type: none"> - Approve CoM reports. 	<ul style="list-style-type: none"> - Periodically report implementation progress to stakeholders and authorities, including national bodies. - Report on and communicate results. Every second year, CoM signatories must submit an Implementation Report via the CoM website. 	<ul style="list-style-type: none"> - Provide comments on reports. - Report on the measures under the stakeholder's responsibility.
	Review and update the SEAP.	<ul style="list-style-type: none"> - Ensure the SEAP is regularly updated. 	<ul style="list-style-type: none"> - Periodically update the SEAP based on lessons learned and progress made. - Involve all stakeholders. 	<ul style="list-style-type: none"> - Participate in updating and amending the plan.

Introduction

The introduction outlines significant concepts, such as the Covenant of Mayors (CoM) initiative and a Sustainable Energy Action Plan (SEAP). It provides the main elements to consider when establishing a SEAP. These elements are then elaborated in the following section, which describes the four phases of the SEAP process.

What is the Covenant of Mayors (CoM)?

The CoM initiative is a voluntary commitment by local authorities (regions, cities, towns) to implement energy and climate change mitigation measures to reduce their overall CO₂ emissions by at least 20% by 2020. The implementation of the agreed measures should take place at the local level in the territory within the competence of the local authority and, where relevant, with the consultation and participation of national authorities. The political commitment undertaken by all CoM signatories is declared in the CoM core text, which must be approved by the municipal council (or equivalent body, including national authorities).

What is a Sustainable Energy Action Plan (SEAP)?

The SEAP document defines the concrete actions, responsibilities and timing to achieve the local authority's long-term energy consumption and CO₂ emissions reduction targets for their geographical area. The SEAP is the document by which CoM signatories demonstrate how they will reach the 20% CO₂ emissions reduction commitment by 2020.

The SEAP should not be thought of as an ironclad document. It may optimise reductions to revise the SEAP on a regular basis as localities gain experience, achieve results and incorporate new climate science and technologies. The SEAP should be formulated such that projects arising in the future are developed to support the SEAP objectives. Efficient use of energy, renewable energy sources and other reduction actions should inform decision-making for all new projects, even if the initial SEAP has been approved.

SEAP parameters

Scope

The SEAP covers the geographical area governed by the local authority (region, city, and town) and includes actions by both public and private sectors.

For CoM signatories, action in the following sectors is mandatory in the SEAP: buildings including municipal, residential and commercial buildings, transportation and municipal lighting. Other sectors that provide significant emissions reduction potential may also be included, such as waste and water treatment plants, local heat and electricity production, urban and land-use planning, and industry.

The SEAP's bottom-up approach focuses on actions within the competence of the local authority and, where relevant, the national authorities. For each sector, it considers actions and measures that will influence energy production and consumption in the long term, and encourage markets for energy-efficient products and services as well as changes in consumption patterns. To ensure effective implementation of the SEAP, actions proposed should be within the framework of national plans and actions such as the National Energy Efficiency Action Plans (NEEAPS) and the National Renewable Energy Action Plans (NREAPs).

The SEAP should be elaborated based on a sound knowledge of local energy consumption and greenhouse gas (GHG) emissions. For that purpose, local authorities will first need to undertake a

Baseline Emissions Inventory (BEI) to establish a realistic picture of their current situation in terms of energy production and consumption, and associated CO₂ emissions. The local authorities will use this information to establish a clear vision, set priorities for action, evaluate the impact of proposed actions and monitor progress in their implementation.

Timeframe

The timeframe for CoM signatories is 20% CO₂ emissions reduction by 2020. Local authorities may cover a longer period; in such cases, CoM signatory SEAPs must include a clear outline of the strategic actions intended, along with intermediate 2020 values and objectives, that will satisfy their CoM commitment.

Recognising that it is not always possible to plan in detail concrete actions and budgets for a long timeframe, local authorities may distinguish between a vision, with long-term strategy and goals in the sectors, and detailed actions in the next three to five years towards achieving it.

CoM signatories must submit their SEAPs to the JRC for evaluation and approval within one year of signing the commitment via “My Covenant”, a password-protected area of the CoM website. They also commit to regular Implementation Reports.

Human and financial resources

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

- Use internal resources (e.g. integrate tasks in an existing department involved in sustainable development).
- Set up a unit within the local administration (approximately 1 person/100 000 inhabitants) to develop the SEAP and monitor its implementation.
- Outsource to other competent bodies (e.g. private consultants, universities).
- Share one coordinator for several municipalities, in the case of small local authorities.
- Get support from regional and/or national energy agencies or other supporting structures.
- Partner with a city/municipality that has already developed a SEAP.
- Get support from the European Union (direct support is offered through the European CES-MED project at the time of preparing this guidebook).
- Get supports from international, regional and bilateral donors providing funding in energy efficiency (EE) and renewable energy sources (RES).

Submission

Under the CES-MED project, local authorities may submit their SEAPs to the JRC for analysis.¹ The JRC provides suggestions and recommendations for improvement when relevant.

Prior to submission, local authorities should seek approval by the municipal council (or equivalent body, including national authorities). For CoM signatories, prior formal approval by the municipal council is required.

At the time of on-line submission, CoM signatories will fill in an on-line SEAP template (Table 6),² which summarises the results of the BEI and the main elements of the SEAP. It is a valuable tool for visibility and assessment of implementation.

¹ Both SEAPs and SEAP templates can be uploaded in Arabic, English or French.

SEAPs with multiple partners: neighboring CoM local authorities may choose to elaborate a joint or group SEAP and BEI, and may choose between two approaches (Table 1).

Option 1: each signatory of the group individually commits to reducing its CO₂ emissions by at least 20% by 2020. In this case, the group can submit one joint SEAP document, but each must submit individual SEAP templates. The goal of reducing CO₂ emissions by at least 20% by 2020 is not a collective goal; it remains each signatory’s commitment within its jurisdiction. The idea is to share the benefits of a given measure among participating municipalities to assist each to reach its goal. Emissions reduction corresponding to the common measures proposed in the SEAP will be divided among the cities sharing these measures.

Option 2: the group of signatories collectively commits to reducing CO₂ emissions by at least 20% by 2020. In this case, the emissions reduction target is a collective goal achieved by the measures taken by the signatories combined. The group submits one joint SEAP and only one SEAP template. This option fosters inter-institutional cooperation by facilitating joint approaches with neighboring authorities. It is particularly recommended for small and medium-sized municipalities lacking human and/or financial resources. The group should include municipalities within the same territorial area (indicatively with less than 10 000 inhabitants each). The joint SEAP has to be approved by the municipal council (or equivalent body, including local authorities) of each signatory and uploaded by the group onto a shared profile via “My Covenant”.

Table 1. SEAP group submission options for CoM signatories

Covenant steps	Option 1	Option 2
20% CO ₂ reduction target	Individual target	Shared target
Submission of the SEAP template	Individual	1 for the group
Submission of the SEAP document	>> 1 joint SEAP <<	
Publication of the accepted SEAPs in the on-line catalogue	1 per signatory	1 for the group

Municipalities interested in joining the CoM as a group should contact the CoM office via the contact page of the CoM website: www.covenantofmayors.eu/about/contact_en.html .

Structure

Local authorities, especially CoM signatories, are advised to follow the recommended structure when preparing their SEAPs, with the following content:

1. SEAP executive summary
2. Overall strategy
 - a. Objective(s) and targets
 - b. Current framework and vision for the future
 - c. Organisational and financial aspects:
 - complementarity with national programmes, laws and local activity,
 - coordination, including with national authorities,
 - organisational structures created/assigned,
 - staff capacity allocated,

² Detailed information on how to fill in the SEAP template is available via “My Covenant”, a password-protected area of the CoM website; click on “Instructions”. The SEAP template and instructions document are publically available in the CoM website library at www.covenantofmayors.eu/Library,84.html

- stakeholder and citizen involvement,
 - budget allocated for each action,
 - foreseen financing sources for the investments within the action plan, and
 - planned measures for monitoring and follow-up.
3. BEI and related information, including data:
- planned actions and measures for the full duration of the long-term plan, and
 - short-/medium-term actions.
4. For each measure/action, please specify (whenever possible):
- description,
 - department, person and/or company in charge of the implementation,
 - timeline (start, end, major milestones),
 - cost estimation,
 - estimated energy savings and/or increased renewable energy production (MWh/year), and
 - estimated CO₂ reduction (tonnes/year).

SEAP elaboration: 10 elements

The local authority may decide the degree of detail required to satisfy the SEAP's three functions as a working instrument over the course of implementation; a communication tool towards stakeholders; and a document for municipal council assent and, where relevant, national authority involvement. It should be sufficient to avoid further discussion at the political level during the implementation and monitoring phases.

Ten key elements should be kept in mind when elaborating a SEAP:

1. Approval

Strong political support by municipal council or equivalent decision-making body is a prerequisite for the successful design, implementation and monitoring of a SEAP. Local authorities must ensure that the vision and actions proposed in the approved SEAP are aligned with and integrated into relevant national and/or regional plans (such as the National Energy Efficiency Action Plans [NEEAPS] and National Renewable Energy Action Plans [NREAPs]), strategic development plans or land-use plans. The SEAP should therefore be approved by the municipal council (or equivalent body, including national authorities).

2. Governance

An appropriate governance structure is fundamental to successful implementation. The SEAP should outline which structures are in place or how they will be organised to implement the proposed actions successfully. Local authorities should ensure that the SEAP is taken into account at different levels and by different departments, including those at a national level. The SEAP should also specify the human resources required and how they will be made available, as well as the implementation and monitoring strategy. The local authority should consider training and capacity-building to avoid delays in implementation. Municipalities with limited autonomy or opportunity for recruiting staff should draft recommendations to national authorities, including a request for suitable technicians and administrators to carry out some actions foreseen in the SEAP.

3. Stakeholders

The involvement of relevant stakeholders throughout drafting and implementing the SEAP is crucial. The SEAP should describe how each stakeholder will be involved or consulted during the preparation of the SEAP document, and how each will participate in the implementation and monitoring of the planned actions.

4. Financing

The SEAP should identify the financing resources for each step of its development, implementation and monitoring. It should take into consideration the financial resources needed to build capacity within the municipality and to compensate external stakeholders such as architects, consultants, banks, developers and facility management involved in elaborating the SEAP.

5. CO₂ reduction commitment

The principle behind the SEAP is a meaningful, actionable commitment by local authorities to reduce energy consumption and consequently CO₂ emissions in their jurisdictions. For CoM signatories, the SEAP must include the signatory's statement of commitment to reduce emissions by at least 20% by 2020 within the geographical area under its responsibility for the areas of activity, relevant to its mandate. The commitment should be based on the quantification of associated CO₂ emitted in the baseline year.

6. Baseline Emission Inventory (BEI)

The ideal baseline year to set energy and emissions reduction targets is 1990. A more recent baseline year – the closest to 1990 – could be considered if data are lacking. Municipalities with no such data can take the year they initiated data collection as their baseline year. Municipalities that set longer term targets (e.g. by 2030) must set an intermediary 2020 target that satisfies the -20% reduction commitment to allow for benchmarking and comparisons with other CoM signatories.

Targets should be based on a reference called the Business-as-Usual (BAU) scenario, as explained in the section, “Establish emission targets”.

The SEAP should be elaborated based on a sound knowledge of local energy consumption and greenhouse gas (GHG) emissions. The BEI and subsequent inventories are essential instruments that give local authorities a clear picture of current conditions and priorities for action, as well as a means of evaluating impact and monitoring progress. The BEI also sustains motivation as all parties see the result of their efforts. The BEI is a CoM requirement and an integral part of a SEAP.

7. Measures

The local authority should identify and prioritise the required and/or most effective sectors in which to implement reduction actions. The local authority should establish a long-term vision with clear objectives for each sector. The SEAP must include a coherent set of measures covering the selected sectors. Measures should be aligned with identified priorities and measurable in terms of energy consumption and CO₂ emissions reduction. Suggestions for measures and actions in various sectors are provided in the section, “Elaborate the plan”.

8. Actions

The SEAP must provide a clear outline of the specific actions the local authority intends to take to reach its targets. It should include:

Establish the BEI

Best practices

- ✓ The BEI should provide a reasonable picture of the reality of the municipality in terms of energy production and consumption, and associated CO₂ emissions, based on energy data (production, consumption, mobility, etc.) within the local authority's territory. Estimates based on national or regional averages may not capture SEAP results towards reduction targets.
- ✓ Data collection methodology and sources should be well documented (in the SEAP or the local authority's records) and remain consistent over time.
- ✓ The BEI should cover all sectors in which the local authority intends to take action to meet reduction targets (see mandatory sectors for CoM signatories, p. 9).

- long-term strategy and goals in selected and/or mandatory sectors, as well as public procurement;
- detailed actions for the next three to five years that will advance towards the long-term strategy and goals. For each action, include the department and persons in charge of implementation and monitoring, a timeline (start, end, and major milestones), a cost estimate and financing source(s), the estimated energy saving/increased renewable energy production, and the associated estimated CO₂ reduction.

9. Monitoring and reporting

Regular monitoring using relevant indicators allows local authorities to evaluate progress towards targets over time and adopt corrective measures if necessary. The SEAP should briefly outline how the local authority (or relevant decision-making body) intends to ensure monitoring throughout implementation of the planned actions. CoM signatories must submit an Implementation Report every second year following the submission of the SEAP.

10. Submitting SEAP templates

CoM signatories commit to submitting their SEAPs within the year following signing. The SEAP must be uploaded in the national language or in English via the CoM website. Signatories are also required at that time to fill in an on-line SEAP template in English summarising their BEI results and the key elements of their SEAP. Templates and instructions for filling them out are available on the CoM website.

Additional resources

- JRC (2010), *Existing Methodologies and Tools for the Development and Implementation of Sustainable Energy Action Plans (SEAP)*. Available at: http://re.jrc.ec.europa.eu/energyefficiency/pdf/CoM/Methodologies_and_tools_for_the_development_of_SEAP.pdf.
- Climate Alliance (2006), *The Climate Compass Compendium of Measures for local climate change policy* – provides actions/indicators of achievement in relevant fields of activity based on level of ambition, from getting started to taking the lead. Available at: www.climate-compass.net/fileadmin/cc/dokumente/Compendium/CC_compendium_of_measures_en.pdf.
- Case studies in different fields of activity relevant to the SEAP: Climate Policy, Urban Development, Energy, Transport, Agriculture, Green Public Procurement, North-South-Cooperation. Available at: www.climate-compass.net/cases.html.

The Sustainable Energy Action Plan (SEAP) process

The SEAP process includes four phases: initiation, planning, implementation, and monitoring and reporting. Outlined below are steps and recommended actions involved in each phase. Note that some steps repeat or overlap among phases and/or may already be established or underway in a municipality. Local authorities will select and sequence the steps as appropriate to their situations.

Initiation Phase

Secure political commitment

Sufficient empowerment and support for the municipal staff in charge of the SEAP from the highest political level is essential to its success.

Political commitment and leadership should be sought early, as they are driving forces of the overall process. The formal approval of the SEAP by the municipal council (or equivalent body, including national authorities), along with budgets for the first year(s) of implementation, are crucial to ensure successful implementation.

The local authority is best situated to know who to contact and how to raise the political commitment needed (mayor, municipal council, ministries, national agencies, future partners, specialised committees, etc.). Before seeking this political commitment and support, ensure proposed SEAP actions are aligned with, and even help to achieve, relevant approved regional and national plans (e.g. strategic development plans, land-use plans, NEEAPs/NREAPs, etc.). Doing so promotes buy-in and approval of the necessary resources from higher levels during implementation.

Establishing broad political consensus at all levels for SEAP actions is highly recommended. It provides long-term support and stability, regardless of changes in political leadership, especially in countries where local and regional authorities depend heavily on national policies and budget.

Rally political support

Best practices

- ✓ Provide the mayor and political leaders with an overview of the benefits and resource requirements of the SEAP. Brief all major political groups.
- ✓ Keep documents and presentations to political authorities short, comprehensive and understandable. Focus on actions on which agreement can be obtained.
- ✓ Strongly reference other municipal council decisions and partnerships to reduce energy consumption and CO₂ emissions.
- ✓ Provide information on the impact of CO₂ emissions to health, regional profile and municipal budget.
- ✓ Inform and involve citizens and other stakeholders. Keep the message simple, clear and tailored to the targeted audience.
- ✓ Communicate and promote the SEAP at/with allied organisations, initiatives and events.

Why do mayors join the Covenant of Mayors initiative?

"... The municipal council of Sfax is interested to join the Covenant of Mayors initiative in order to improve the image of the city and its attractiveness for national and international investors. It is also important for us to attract young executives by providing green modern facilities." M. Kamel Gargouri, Deputy Mayor of Sfax city (Tunisia)

Municipal support

The municipal council and local authority should further support the process by ensuring adequate human resources are in place to prepare and implement the SEAP (this may require identifying, engaging and allocating, or recommending and requesting support from other levels of government), including providing a clear mandate and sufficient time and budget. They should also involve relevant technical departments from the local authority in the SEAP elaboration process to gain their acceptance and backing.

Other support activities within the municipal council and local authority's purview include taking steps to:

- Integrate the SEAP vision with the actions and initiatives undertaken at the national and/or regional level.
- Make the SEAP a part of the municipality's overall planning.
- Solicit the long-term commitment of relevant authorities and departments to implementation and monitoring.
- Foster the participation of different stakeholders, including citizens.
- Reinforce the local authority and citizen "ownership" of the SEAP process.
- Network with other CoM signatories to share experiences and best practices.

As the responsible entity and authority, the municipal council must follow the implementation process especially closely. For CoM signatories, municipal council approval is required. CoM signatories must also submit an Implementation Report every second year for evaluation, monitoring and verification by the JRC. The SEAP should be updated as necessary and the updates circulated to relevant bodies for visibility and/or approval.

Additional resources

- Managing Urban Europe-25 (MUE-25) project, *Political Commitment* – provides suggestions on how to build political commitment in the European Union. Available at: http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&rep=file&fil=CHAMP_guide_4.pdf.
- Compston, H and I. Bailey (2009), Chapter 5: How can we build political support for action on climate change in western democracies?, *Building a Low-carbon Future: the Politics of Climate Change*, Policy Network – provides political strategies for strengthening climate policies. Available at: <http://politicsofclimatechange.files.wordpress.com/2009/06/building-a-low-carbon-future-pamphlet-chapter-05.pdf>.

Establish governance structure

Developing and implementing a SEAP is a challenging and time-consuming process. It requires well-planned and continuous collaboration and coordination among local and higher authorities and administrative departments, such as environmental protection, land use and urban planning, economics and social affairs, buildings and infrastructure management, mobility and transport, budget and finance, procurement, internal and external communications, etc. The SEAP process should be integrated in the everyday work of each department.

Local resource coordination

Having gained political commitment to the vision and approval of the planned actions, and ensured the allocation of required human and financial resources, local authorities should coordinate with the relevant authorities to adjust or develop a clear organisational structure and assignment of responsibilities to enable the smooth implementation and monitoring of the SEAP. If appropriate, they can use organisational structures established for related policies (e.g. energy management unit, local Agenda 21 coordination³) in the context of the SEAP's development and monitoring.

Sustainable energy management should be integrated into the other actions and initiatives of relevant municipal departments, and become part of the local authority's overall planning. Multi-departmental and cross-sector involvement is required, and their organisational targets need to be aligned with and integrated into the SEAP. A flow chart of interactions between the departments and actors designated in the recommended organisational structure (Figure 1) is useful to identify the necessary adjustments to the local authority's established organisation and the support needed from national authorities, starting with the members of a National Coordination Group (NCG) created by the Cleaner Energy-saving Mediterranean Cities (CES-MED) project.

Whenever required in the SEAP elaboration process, adequate training should be planned for and provided in different fields, including technical competencies (energy efficiency, renewable energies, energy management, etc.), project management, data management, financial management, investment project development, and communication (how to promote behavioral changes, etc.). Lack of skills in data management can be a particular barrier to SEAP elaboration.

SEAP Coordinator

Local authorities should appoint a SEAP Coordinator at the outset of the process. If this is not possible, they may seek equivalent support through an NCG. One or more NCG member could appoint a counsellor as focal point or SEAP Coordinator who is given the full support of local authorities and higher levels, as well as the necessary time and budget to carry out the role. In large cities, the role may require a dedicated unit of staff at its disposal (to be coordinated with the NCG).

SEAP organisational structure

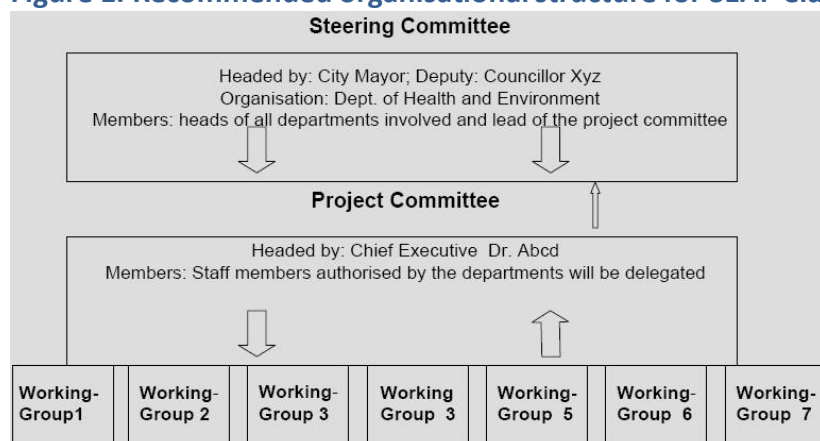
Past experience recommends establishing two SEAP groups (Figure 1):

- **A steering committee**, including politicians and senior managers at the city/municipality level if necessary, to provide strategic direction and the necessary political support to the process.

³ Agenda 21 is a comprehensive action plan to be taken globally, nationally, and locally by organisations of the United Nations (UN), governments and major groups in every area in which humans directly affect the environment. *Local Agenda 21 in territorial planning in energy and waste management* is available at www.enpicbmed.eu/sites/default/files/local_agenda_21.pdf.

- **A project committee**, comprising people from various municipal departments (e.g. energy planning managers), representatives of public agencies if relevant, etc. This committee undertakes the actual SEAP elaboration and follow-through to ensure stakeholder participation, organise monitoring, report progress, etc. Larger municipalities may need a core group member dedicated to data collection and BEI. The project committee may establish additional working groups, which non-municipal stakeholders directly involved in SEAP actions could be invited to join.

Figure 1. Recommended organisational structure for SEAP elaboration



Both the steering and project committees require distinct and specific objectives, functions and leaders, as well as a well-defined meeting schedule/agenda and a project-reporting strategy.

Principals

The project committee should assign responsibilities to important municipal actors to ensure strong ownership. A specific communication campaign may help to reach and convince municipal workers in different departments. The campaign should include a citizens' awareness promotion plan at the municipal and/or national level.

The project committee should approach government coordination bodies for further organisation/coordination assistance. Territorial coordinators are sub-national decentralised authorities, including provinces, regions and public groupings of municipalities. National coordinators are national public bodies, including national energy agencies and ministries of energy. Such organisations may be able to mobilise technical expertise for preparing the BEI and SEAP, provide strategic guidance on identifying appropriate financial support, train local officials on SEAP methodologies, link the SEAP to regional and national policies and initiatives, and facilitate approval when necessary.

Additional resources

- Moroccan National Agency for the Development of Renewable Energy and Energy Efficiency (ADEREE) (2013), *Sustainable Energy Development – an opportunity for cities to improve citizens' quality of life* available at: http://resilient-cities.iclei.org/fileadmin/sites/resilient-cities/files/Resilient_Cities_2013/Presentations/C4_Huwiler_RC2013.pdf .
- Sustainable Urban Energy (SURE) (2010), *Sustainable Urban Energy (SURE) in the European Neighbourhood and Partnership Instrument (ENPI) Region*. French available at: www.ciudad-programme.eu/images/grant_images/profile/pdf/SURE_Chahri2.pdf .
- Osman, N. (2012), *Tunisia: A National Energy Efficiency Policy*. French available at: www.global-chance.org/IMG/pdf/GC32p69-77.pdf .

Engage stakeholders

Citizens and other stakeholders should be invited to take part at important stages of the SEAP elaboration process: building the vision, defining the objectives and targets, setting the priorities and defining the necessary human and financial resources. Such stakeholder involvement constitutes a formal commitment by local actors to a future vision. Whenever possible, local authorities and significant actors should define together the paths to transform the vision into action.

Stakeholder participation is important for various reasons:

- transparency of decision-making;
- a decision taken with various stakeholders is usually based on more extensive knowledge;
- participation in planning and broad consensus on vision, strategies, goals and actions ensures their long-term acceptance, legitimacy, support, quality, viability and effectiveness;
- SEAPs may sometimes get stronger support from external stakeholders than from the internal management or staff of the local authority.

Seeking the highest level of participation by stakeholders and citizens in the process is therefore highly recommended. The degree of involvement may vary from “informing” to “empowering”.

Identify stakeholder partners

Identify the stakeholders to involve in the SEAP process itself, usually those whose interests are affected by the issue, whose activities affect the issue, who possess or control information, resources or expertise needed for strategy and/or implementation, and/or whose involvement is needed for successful implementation.

Consider involving stakeholders from the following divisions:

- local administration, relevant municipal departments and companies (e.g. municipal energy utilities, transport companies, etc.);
- relevant representatives of national or regional administrations and/or neighboring municipalities, to ensure coordination and consistency with plans and actions that take place at the regional and national level;
- institutional stakeholders such as chambers of commerce, professional organisations (e.g. architects, engineers), universities, professionals and research centres, observatories, experts;
- local and regional energy agencies, suppliers, utilities, facilities management companies, Energy Services Companies (ESCOs), supporting structures, national energy agencies;
- financial partners, banks, private funders (including international);
- transport/mobility actors (e.g. private/public transportation companies);
- construction sector (e.g. building companies, developers);
- businesses and industries, including tourism where it represents a large share of the local authority's CO₂ emissions;

Build support

Best practices

- ✓ Think beyond the network of usual contacts.
- ✓ Get decision makers on board; associate them through National Coordination Groups (NCGs).
- ✓ If stakeholders have conflicts of interest, organise separate workshops to understand the issues before bringing them together.
- ✓ Choose an appropriate facilitator/moderator for stakeholder meetings.
- ✓ Engage busy citizens with simple, visual information (e.g. geographic information system [GIS] maps of energy efficiency in the districts, aerial thermography of heat losses in individual buildings, other simple models that visually present relevant data).
- ✓ Attract media attention.

- NGOs and other civil society representatives, including students, trade unions and consumer associations.

Approaches and tools

Local authorities use various methods to involve different stakeholders (Table 2). Past experiences show that involving a neutral moderator during stakeholders meetings can be useful for reaching consensus.

Table 2. Approaches and tools for stakeholders involvement

Approach (least to greatest involvement)	Tools
1 – Provide information and education	brochures, newsletters, advertisement, exhibitions, site visits
2 – Provide information and elicit feedback	telephone hotline, website, public meetings, teleconferences, surveys and questionnaires, staffed exhibitions, deliberative polls
3 – Elicit involvement and consultation	workshops, focus groups, forums, open house
4 – Elicit extended involvement	community advisory committees

The roles of local authorities and potential stakeholders are summarised in Table ES1. Many indicate long-term partnerships and require ongoing communications about SEAP implementation to motivate and maintain the necessary stakeholder involvement. Such requirements should factor into a SEAP communications strategy.

Communications

Communication, both to expedite SEAP actions and promote their adoption, is an essential means of keeping external and internal stakeholders motivated and supportive. The SEAP should include a clear communication strategy that is feasible, efficient and adapted to local needs and cultural context.

Good communication is particularly essential during the implementation phase, both internally among different departments of the local authority, the associated public authorities and all those involved (e.g. local building managers), and externally with relevant stakeholders, including citizens. A good communication plan will promote visibility, investment, awareness, behavioral change and broad support throughout implementation.

Lack of communication channels at all levels can be a major challenge. Local authorities may need to invent the necessary strategy, channels and tools and/or enlist a dedicated communications officer or external partner (schools, private sector, NGOs, etc.). Consider creating a "Citizen Awareness Promotion Plan" as part of the SEAP communications strategy to ensure effective implementation.

Effective communications

Best practices

- ✓ Have a clear message to produce the desired outcome.
- ✓ Identify the audience for each message.
- ✓ Establish indicators to evaluate the impact of the communication (head count at a seminar, quantitative/qualitative surveys, hits on website, feedback via e-mails, etc.).
- ✓ Specify the most appropriate communication channel(s) (i.e. the most accessible and the easiest to implement and finance): face-to-face (most effective), advertising, mail, e-mail, internet, blogs, talks/meetings, brochures, posters, newsletters, printed publications, media releases, sponsorship, etc.
- ✓ Specify planning and budget.
- ✓ Set up internal communications to improve collaboration among departments.

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

Additional resources

- L'Agence Nationale pour la Promotion et la Rationalisation de l'Utilisation de l'Energie (APRUE), communication strategy on energy efficiency in Algeria. French available at: www.aprue.org.dz/sensibilisation-econom-energ.html .
- APRUE, consumer-facing energy efficiency guide. French available at: www.aprue.org.dz/documents/guide-conseils.pdf .
- Territorial Strategies in the Renewable Energies and Energy Efficiency Sector (JIHA TINOU) project in Morocco. French available at: http://cemagas.org/wp-content/uploads/2012/12/proramme-enr-maroc-Jiha-Tinou_Concept.pdf .
- Beirut Energy Forum - the largest energy event in Lebanon. Available at: www.beirutenergyforum.com .
- Strengthening municipal structures - Maghreb project. Available at: www.giz.de/en/worldwide/15881.html .
- Association Méditerranéenne des Agences Nationales de Maîtrise de l'Energie (MEDENER), *Energy Efficiency in Southern Countries and the Eastern Mediterranean: a survey of policies and good practices*. French available at: <http://bit.ly/1B3rHu> .

Planning Phase

Assess current policy framework

Early in the process, identify the municipal, regional and national policies, plans, procedures and regulations affecting energy consumption within the local authority. This mapping is also a good start towards any improved or required policy integration needed.

In the last decade, Middle East and North African (MENA) countries have developed different national policy instruments towards a sustainable energy map in the region (Table 3). These must be taking into account and form the basis of local SEAP design.

Table 3. Sustainable energy policies in MENA countries

Country	National Energy Efficiency Action Plan (NEEAP)	National Renewable Energy Action Plan (NREAP)	EE and RE targets	EE and RE law	Standards and labelling policies	Building energy codes	Communication
Algeria	- Under preparation	- Under preparation	- EE: NA - RE: 5% by 2015, 15% by 2020	- EE: 1999 - RE: 2004	- Voluntary (2009)	- Voluntary	- Limited
Egypt	- Under implementation (2012–15)	- Solar plan (2011)	- EE: 5% by 2015 - RE: 20% by 2020	- Draft electricity law with a chapter on EE - RE: Law No. 100 (1996)	- Voluntary for 5 appliances	- Voluntary	- Fragmented and limited
Israel	- New version of the Energy Master Plan (2014) - National EE plan to reduce electricity introduced (since 2011)	- 2011	- EE: 20% by 2020 - RE: 10% by 2020 - Solar installation (since 1979)	- Electricity law (1996) - Energy Resources Law (1989)	- Mandatory for 10 appliances for domestic uses, plus minimum energy performance for new chillers and annual check-up for steam boilers, furnaces and water pumping	- Mandatory	- Various
Jordan	- Issued and approved - Adopted (2013)	- Under approval	- EE: 20% by 2020 - RE: 10% by 2020 (primary energy)	- Electricity law No. 64 (2002) - EE & RE: Law No. 13 (2012)	- Under preparation	- Voluntary	- Limited
Lebanon	- Issued and under implementation (2011–13) - Update under	- Under preparation	- EE: 5% by 2015 - RE: 12% by 2020	- Electricity law (2002) - Draft law on European Commission (EC)	- Voluntary for 4 appliances	- Voluntary	- Targeted

	preparation (2014–16)			- RE: no complete policy			
Libya	- Under preparation	- Under approval	- EE: None to date - RE: 7% of power mix by 2020, 10% by 2025 (electricity generation)	- No policy under preparation	N/A	NA	- Fragmented and limited
Morocco	- Under preparation	- Solar Plan (2009) - National Energy Strategy (2012–20) - Adopted (2013)	- EE: 12% by 2030 - RE: 42% by 2020 (capacity)	- EE and RE: laws (2012) - EE: Law No.47-09 (2009) - RE: Law No. 13-09 (2009)	- Voluntary for 4 appliances	- Under approval	- Various
Palestine	- 2011 - Basic under implementation (2012–20)	- National Energy Strategy (2012–20) - Palestine Solar Initiative - Environmental building code under preparation	- EE: 5% by 2020 - RE: 5% by 2020	- General Electricity Law No. 13 (2009)	NA	- Voluntary standards are for buildings, offices and schools.	- Limited
Syria	- Under preparation	- Solar plan under implementation	- EE: 24% by 2016 - RE: 16% by 2016, 30% by 2030	- EE: Law No. 3 on (2009) - Law No. 32, Article 30 (2010)	- Voluntary for 4 appliances	- Voluntary	- Advanced and broad
Tunisia	- 2005–07 - Under implementation (2008–11) - Under preparation (2013–16)	- Solar Plan under implementation	- EE: 24% by 2016 - RE: 16% by 2016, 30% by 2030 (installed capacity)	- Various since 1985 - EE: Law No. 2004-72 (2004) - Further amended by Law No.7 (2009) - Law No. 1996-27 (1996) - Decree 1996-1125 (1996)	- Mandatory for 5 appliances	- Mandatory for multi-family buildings	- Advanced and broad

The next step is to compare the policy inventory to best practices with a view to improvement. The project committee should consider each policy instrument from a short-term perspective (proposed and realisable at the municipal decision-making level) and long-term perspective (accounting for potential interaction with higher level policies).

Where short-term changes or improvements fall outside municipal jurisprudence, the project committee could propose measures and initiate discussion with national authorities to reach agreement on the changes needed to update local policies and plans.

It is highly recommended to identify both the entity in charge of the changes and the timeline to ensure the effective implementation of the improved measure.

Additional resources

- Paving the Way for the Mediterranean Solar Plan (PWMSP) – a European Union-funded regional project. Reports available at: www.pavingtheway-msp.eu/index.php?option=com_downloads&task=category&cid=7&Itemid=56&limit=10&limit_start=0 .
- Arab Future Energy Index (AFEX) – 2013 renewable energy reports available at: www.rcreee.org/projects/2013/09/19/arab-future-energy-index-afex/ .
- AFEX Energy Efficiency –2013 publications available at: <http://www.rcreee.org/projects/arab-future-energy-index%E2%84%A2-afex> .

Establish the Baseline Emission Inventory (BEI)

The BEI quantifies the amount of CO₂ emitted due to energy production and consumption in the territory under the responsibility of the local authority in the baseline year (ideally 1990). It is required for CoM signatories to determine the 20% emissions reduction target relative to baseline year. The BEI will identify the principal human-caused (anthropogenic) sources of CO₂ emissions in the territory and indicate priorities to reduce them overall. If actions to reduce CO₂-equivalent⁴ greenhouse gases (GHGs) will be covered by the SEAP, the inventory should include methane (CH₄) and nitrous oxide (N₂O) emissions. These inventories are not only essential to develop SEAP targets, they are powerful motivators to all parties involved as evidence of the impacts of their efforts.

Local authorities can carry out the BEI as a self-assessment process or they can involve external peer review. Objective, third-party corroboration and recommendations bring valuable rigor to the results and credence to the proposed SEAP.

Step 1: Select sectors to include in the BEI

Local authorities may include all sectors relevant to their circumstances. CoM signatories are required to include all mandatory sectors (Table 4).

Table 4. Sectors to be included in the BEI

Sector	Mandatory for CoM signatories	Notes
Final energy consumption in buildings, equipment/facilities and industries		
Municipal buildings, equipment/facilities	YES	- All energy-consuming buildings, and equipment and facilities in the territory of the local authority that are not excluded below. For example, energy consumption in water and waste management facilities is included in this sector. - Municipal waste incineration plants could also be included here if they are not used to produce energy.
Commercial buildings, equipment/facilities	YES	
Residential buildings	YES	
Municipal public lighting	YES	
Industries and agriculture	YES if in SEAP	
Final energy consumption in transportation		
Urban road transportation: municipal fleet (e.g. municipal cars, waste transportation, police and emergency vehicles)	YES	- All road transportation on the street network that is in the competence of the local authority.
Urban road transportation: public transportation	YES	
Urban road transportation: private and commercial transportation	YES	
Other road transportation	YES if in SEAP	- All road transportation on roads in the territory of the local authority not under its competence, e.g. highways.

⁴ CO₂ -equivalent (CO₂ -eq) is the concentration of CO₂ that would cause the same level of radiative forcing as a given type and concentration of greenhouse gas (GHG), such as methane, fluorocarbons and nitrous oxide.

Urban rail transportation	YES	- Urban rail transportation in the territory of the local authority, such as tram, metro and local trains.
Other rail transportation	YES if in SEAP	- Long-distance, inter-city, regional and cargo rail transportation that occurs in the territory of the local authority, often serving both the territory of the local authority and a larger area.
Aviation	NO	- The energy consumption of airport and harbour buildings, equipment and facilities will be included as part of the buildings and facilities above, excluding mobile combustion.
Shipping/fluvial transport	NO	
Local ferries	YES if in SEAP	- Ferries that serve as urban public transportation in the territory of the local authority. These are not likely to be relevant for most of the CoM signatories.
Off-road transport (e.g. agricultural and construction machinery)	YES if in SEAP	
Other emission sources (not related to energy consumption)		
Fugitive emissions from production, transformation and distribution of fuels	NO	
Process emissions of industrial plants	YES if in SEAP	
Use of products and fluorinated gases (refrigeration, air conditioning, etc.)	NO	
Agriculture (e.g., enteric fermentation, manure management, rice cultivation, fertiliser application, open burning of agricultural waste) and fishing	YES if in SEAP	
Land use, land use change and forestry	NO	- Carbon stock changes, e.g. in urban forests.
Wastewater treatment	YES if in SEAP	- Emissions not related to energy, such as to CH ₄ and N ₂ O emissions from wastewater treatment. Energy consumption and related emissions from wastewater facilities is included in the “buildings, equipment/facilities” categories above.
Solid waste treatment	YES if in SEAP	- Emissions not related to energy, such as CH ₄ from landfills. Energy consumption and related emissions from waste treatment facilities are included in the “buildings, equipment/facilities” categories above.
Tourism related activities	YES if in SEAP	
Energy production		
Fuel consumption for electricity production	YES if in SEAP	- In general, only included in the case of plants, which are <20 MW _{fuel} .
Fuel consumption for heat/cold production	YES	- Only included if heat/cold is supplied as a commodity to end-users within the territory.

The aggregated BEI for the selected sectors gives the baseline-year emissions level before the implementation of SEAP actions in those sectors.

Step 2: Collect data

Specific data is required to establish the BEI (Table 5). The local authority should allocate adequate resources and involve relevant stakeholders to ensure peer review and accurate

data sets. Further advice and recommendation to establish the BEI are provided in the technical annex attached to this report and titled: *How to develop a sustainable energy action plan (SEAP) in the Southern Mediterranean Partner Countries: the baseline emission inventory* and available at: https://ec.europa.eu/jrc/sites/default/files/com-south_bei_report_online_version.pdf

Table 5. Data to establish the BEI

Scope	Key data
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.
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. - Energy efficiency of buildings and equipment using efficiency indexes of energy consumption (for example: kWh/m²/y user, kWh/m² hours of use). This allows identifying the buildings where there are more improvement potentialities. - Characteristics of the largest energy consumers among municipal buildings and equipment/facilities and commercial buildings. Analysis of key variables (for instance: type of construction, heating, cooling, ventilation, lighting, kitchen, maintenance, solar hot water, implementation of best practices, etc.). - Types of lamps, lighting and energy-related issues in public lighting. Assessment of energy efficiency using efficiency indexes of energy consumption (in some countries waiving taxes on importing efficient lamps could be an added value to reduce energy consumption and save government's money and resources). - 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. - 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"> - Composition of the municipal fleet (own vehicles and externalised services), annual energy consumption. - Composition of the urban public transport fleet, annual energy consumption. - Energy management of the municipal fleet and public transport. - Established initiatives for improving reducing energy consumption and results obtained to date. - Potentialities for improvement in energy efficiency.
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. - Potentialities for improvement in energy efficiency.

Scope	Key data
Buildings	<ul style="list-style-type: none"> - Typology of the existing building stock: usage (residential, commercial, services, leisure, social: educational and health, industrial), age, thermal insulation and other energy-related characteristics, energy consumption and trends (if available), protection status, rate of renovation, tenancy, etc. - Characteristics and energy performance of new constructions and major renovations. - Minimum legal energy requirements for new constructions and major renovations; whether they are met in practice. - Existence of initiatives for the promotion of energy efficiency and renewable energy in the various categories of buildings, existence of specific building codes and environmental building rules and bylaws. - Key results 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 SEAP? - 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? - Potentialities for energy saving and efficiency in industry.
Energy consumption in touristic areas	<ul style="list-style-type: none"> - Level and change in the energy consumption of the local administration by sector and by energy carrier (buildings and equipment, public lighting, waste management, waste water treatment, etc). - Energy efficiency of buildings and equipment using efficiency indexes of energy consumption (for example: kWh/m²/y user, kWh/m² hours of use). This allows identifying the buildings where there are more improvement potentialities.
Agriculture and fishing	<ul style="list-style-type: none"> - Importance of agriculture and fishing sectors in the energy balance and CO₂ emissions. - Existence of public and private initiatives to promote energy saving and efficiency in agriculture and fishing. Key results achieved. - Degree of integration of energy/carbon management in agriculture and fishing. - Potentialities for energy saving and efficiency in agriculture and fishing. - Existence of regulations for the management of agriculture waste.
Solid waste management	<ul style="list-style-type: none"> - Tons of solid waste generated per year. - Typology and share of separate waste collection. - Availability of a solid waste collection service (private/municipality/public). - Existence of solid waste treatment plants. Sectors in which treated solid wastes are reused.
Wastewater management	<ul style="list-style-type: none"> - Efficiency of the sewage system and existence of leakages. - Availability of a rainwater collection system. - Availability of wastewater treatment plants. Percentage of treated wastewaters. Sectors in which treated wastewaters are reused.
Transport and mobility	<ul style="list-style-type: none"> - Characteristics of the demand of mobility and modes of transport. Benchmarking and major trends. - Characteristics of the public transportation network; degree of development and adequacy. - Trends in the use of public transportation. - Congestion and/or air quality problems. - Adequacy of public space for pedestrians and bicycles. - Management initiatives and mobility planning. Initiatives to promote public transport, bicycle and pedestrian.

Scope	Key data
Urban planning	<ul style="list-style-type: none"> - Characteristics of existing and projected “urban spaces”, linked to mobility: urban density, diversity of uses (residential, economic activity, shopping, etc.) and building profiles; linked to networks (energy, telecommunication, water, waste, heat, etc.). - 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.
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 existing 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 SEAP 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, etc.), 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, etc.

Throughout SEAP implementation, local authorities will compile Monitoring Emission Inventories (MEIs) on the same sectors and by the same means as used for the BEI. MEIs quantify progress towards the reduction target and serve to assess the merit, efficacy and reduction projections of the actions evolved for the SEAP. Where MEIs show strong deviation between projected and actual emissions reduction, the SEAP may need to be revised, circulated for required input and approval, and the associated actions adjusted.

Step 3: SEAP template for data recording

Use the SEAP template tables to report data collected (Table 6). The templates are publically available on the CoM website at: www.eumayors.eu.

Table6. SEAP template tables for the BEI

My Emission Inventories

Baseline Emission Inventory

1) Inventory year

2) Number of inhabitants in the inventory year

4) Emission reporting unit

tonnes CO₂

tonnes CO₂ equivalent

5) Methodological notes and data sources

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Results of the Baseline Emission Inventory

A. Final energy consumption

Please select the sectors included in your emission inventory:

- Buildings, equipment facilities and industries
 - Municipal buildings, equipment/facilities
 - Tertiary (non municipal) buildings, equipment/facilities
 - Residential buildings
 - Public lighting
 - Industry
- Transport Municipal
 - fleet Public
 - transport
 - Private and commercial transport
- Agriculture, Forestry, Fisheries

Please note that for separating decimals dot [.] is used. No thousand separators are allowed.

Sector	FINAL ENERGY CONSUMPTION [MWh]															Total	
	Electricity	Heat/cold	Fossil fuels							Renewable energies							
			Natural gas	Liquid gas	Heating oil	Diesel	Gasoline	Lignite	Coal	Other fossil fuels	Plant oil	Biofuel	Other biomass	Solar thermal	Geothermal		
BUILDINGS, EQUIPMENT/FACILITIES AND INDUSTRIES																	
<u>Municipal buildings, equipment/facilities</u>																	
<u>Tertiary (non municipal) buildings, equipment/facilities</u>																	
<u>Residential buildings</u>																	
<u>Public lighting</u>																	
Industry																	
Subtotal																	
TRANSPORT																	
<u>Municipal fleet</u>																	
<u>Public transport</u>																	
<u>Private and commercial transport</u>																	
Subtotal																	
OTHER																	
<u>Agriculture, Forestry, Fisheries</u>																	
TOTAL																	

B. Energy supply

Please select when applicable:

- Municipal purchases of certified green electricity

Local/distributed electricity production:

- Wind
- Hydroelectric
- Photovoltaics
- Geothermal
- Combined Heat & Power
- Other

Local heat/cold production:

- Combined Heat & Power
- District heating (heat-only)
- Other

B1. Municipal purchases of certified green electricity

Certified green electricity purchased [MWh]

CO₂ emission factor [t/MWh]

B2. Local/distributed electricity production

Local renewable electricity plants (ETS and large-scale plants > 20 MWe not recommended)	Renewable electricity produced [MWh]	CO ₂ emission factor [t/MWh produced]	CO ₂ / CO ₂ eq. emissions [t]
Wind			
Hydroelectric			
Photovoltaics			
Geothermal			
TOTAL	0		

B3. Local/distributed electricity production

Local electricity production plants (ETS and large-scale plants > 20 MW not recommended)	Electricity produced [MWh]		Energy carrier input [MWh]										CO ₂ / CO ₂ eq. emissions [t]				
			Fossil fuels						Waste	Plant oil	Other biomass	Other renewable	Other	Fossil sources	Renewable sources		
	Total	from renewable sources	Natural gas	Liquid gas	Heating oil	Lignite	Coal										
Combined Heat and Power																	
Other																	
TOTAL																	

B4. Local heat/cold production

Local heat/cold production plants	Heat/cold produced [MWh]		Energy carrier input [MWh]										CO ₂ / CO ₂ eq. emissions [t]				
			Fossil fuels						Waste	Plant oil	Other biomass	Other renewable	Other	Fossil sources	Renewable sources		
	Total	from renewable sources	Natural gas	Liquid gas	Heating oil	Lignite	Coal										
Combined Heat and Power																	
District heating (heat-only)																	
Other																	
TOTAL																	

C. CO₂ emissions

C1. Please insert the CO₂ emission factors adopted [t/MWh]:

[Click here to visualise fuel emission factors](#)

Electricity		Heat/cold	Fossil fuels								Renewable energies				
National	Local		Natural gas	Liquid gas	Heating oil	Diesel	Gasoline	Lignite	Coal	Other fossil fuels	Biofuel	Plant oil	Other biomass	Solar thermal	Geothermal

C2. Please tick the box in case non-energy related sectors are included:

Non-energy related sectors	CO ₂ eq. emissions
Waste management	
Waste water management	
Other non-energy related	

Generate Emission Inventory

Your Baseline Emission Inventory

Sector	CO ₂ emissions [t]/ CO ₂ equivalent emissions [t]															Total
	Electricity	Heat/cold	Fossil fuels								Renewable energies					
			Natural gas	Liquid gas	Heating Oil	Diesel	Gasoline	Lignite	Coal	Other fossil fuels	Biofuel	Plant oil	Other biomass	Solar thermal	Geothermal	
BUILDINGS, EQUIPMENT/FACILITIES AND INDUSTRIES																
Municipal buildings, equipment/facilities																
Tertiary (non municipal) buildings, equipment/facilities																
Residential buildings																
Municipal public lighting																
Industries																
Subtotal																
TRANSPORT																
Municipal fleet																
Public transport																
Private and commercial transport																
Subtotal																
OTHER																
Agriculture, Forestry, Fisheries																
OTHER NON-ENERGY RELATED																
Waste management																
Waste water management																
Other non-energy related																
TOTAL																

Additional resources

- Cerutti, A.K. and G., Janssens-Maenhout (2014), How to develop a sustainable energy action plan (SEAP) in the Southern Mediterranean Partner Countries: the baseline emission inventory. Available at: https://ec.europa.eu/jrc/sites/default/files/com-south_bei_report_online_version.pdf
- 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories. Available at www.ipcc-nggip.iges.or.jp/public/2006gl/index.html
- “Step 4: Baseline Determination”, *Common Framework Methodology (CFM) for Municipal Energy Planning*, MODEL project (2010), Intelligent Energy Europe (IEE) – provides guidance on how to build different scenarios. Available at: www.energymodel.eu/IMG/pdf/IL_4_-_Baseline.pdf.
- Managing Urban Europe-25 (MUE-25) project, “Baseline Review” webpage – provides detailed instructions on how to prepare a baseline review based on sustainability management: www.localmanagement.eu/index.php/mue25:mue_baseline.

Establish emissions reduction targets

Local authorities should next develop a final emissions goal or vision for the timeframe. For CoM signatories, the target and timeframe is -20% CO₂ emissions by 2020, relative to baseline year across all mandatory sectors. Various ways exist to formulate target figures based on baseline year BEI.

The most appropriate approach for municipalities experiencing or expecting economic and population growth is to set a final CO₂ emissions reduction target assuming a Business-as-Usual (BAU) scenario, which factors in the increase in CO₂ emissions due to rate of development. The expectation and purpose, however, is to reduce any such increase as much as possible through adequate energy policies and climate protection measures.

Incorporating this approach, local authorities have two options to calculate their final emissions target in tones (t) of carbon dioxide (tCO₂) or of CO₂-equivalents (tCO₂-eq) from their baseline year BEI and anticipated emissions increase:

Option 1: develop their own means of incorporating growth expectations into target calculations. In this case, the SEAP and SEAP template should briefly describe and systematically apply the chosen methodology.

Option 2: use the coefficients in Tables 7 and 8 developed by the JRC for the ten CES-MED project countries. Starting with the baseline year BEI, these BAU scenario coefficients project energy and emissions levels to 2020 assuming an unchecked continuation of current trends in population, economy, technology and human behavior in each country.

To calculate their emissions by 2020, local authorities simply multiply their total baseline year BEI emissions by the national baseline year coefficient (Table 7 for CO₂ emissions; Table 8 for CO₂ emissions equivalents):

$$Emissions_{CO_2}^{2020} = Emissions_{CO_2}^{Baseline\ year} * K$$

where “K” is the national coefficient from Table 7 or Table 8 for their baseline year.

$Emissions_{CO_2}^{Baseline\ year}$ is their total baseline year BEI emissions.

$Emissions_{CO_2}^{2020}$ is their estimated final emissions for 2020.

Their emissions reduction target of at least 20% by 2020 is simply 20% of their

$$Emissions_{CO_2}^{2020}$$

Such calculations provide local authorities with a realistic vision of the desired future state of the city. Making the goals and means comprehensible encourages stakeholder support and bold new ideas – potentially a demand for even stronger actions than those proposed to achieve the vision more quickly and/or improve the image of their local authority. Such stakeholder investment not only ensures the necessary support but is a starting point for any desired behavioral change.

Table 7. BAU scenario CO₂ emission coefficients to calculate BEI for CoM-South countries*

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	1.94	1.77	1.61	1.44	1.38	1.32	1.27	1.21	1.16	1.14	1.13	1.11	1.10	1.08	1.07	1.05	1.03	1.02
Egypt	2.85	2.67	2.48	2.30	2.19	2.08	1.96	1.85	1.74	1.66	1.58	1.50	1.42	1.34	1.27	1.20	1.13	1.06
Israel	1.49	1.48	1.47	1.47	1.43	1.40	1.37	1.33	1.30	1.27	1.24	1.21	1.18	1.15	1.12	1.09	1.06	1.03
Jordan/Palestine	1.67	1.57	1.48	1.39	1.39	1.40	1.40	1.41	1.41	1.37	1.32	1.28	1.24	1.19	1.15	1.11	1.07	1.04
Lebanon	1.29	1.29	1.28	1.28	1.30	1.33	1.35	1.38	1.40	1.36	1.31	1.27	1.23	1.19	1.15	1.11	1.07	1.04
Libya	1.36	1.39	1.42	1.45	1.41	1.37	1.33	1.29	1.25	1.23	1.20	1.18	1.15	1.13	1.10	1.08	1.05	1.03
Morocco	2.26	2.16	2.07	1.98	1.90	1.83	1.75	1.68	1.60	1.53	1.46	1.40	1.34	1.27	1.22	1.16	1.10	1.05
Syrian Arab Republic	1.30	1.32	1.35	1.38	1.39	1.40	1.41	1.42	1.43	1.39	1.34	1.30	1.26	1.21	1.17	1.13	1.08	1.04
Tunisia	2.20	2.11	2.02	1.94	1.89	1.84	1.79	1.74	1.69	1.60	1.53	1.45	1.38	1.31	1.24	1.18	1.12	1.06

Table 8. BAU scenario GHG emission coefficients to calculate BEI for CoM-South countries (using CO₂-eq)*

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	1.97	1.81	1.66	1.50	1.45	1.39	1.33	1.27	1.21	1.19	1.17	1.15	1.13	1.11	1.09	1.06	1.04	1.02
Egypt	2.71	2.55	2.38	2.22	2.12	2.03	1.93	1.83	1.74	1.65	1.57	1.49	1.42	1.34	1.27	1.20	1.13	1.06
Israel	1.52	1.51	1.50	1.49	1.46	1.43	1.39	1.36	1.32	1.29	1.25	1.22	1.19	1.15	1.12	1.09	1.06	1.03
Jordan/Palestine	1.71	1.62	1.53	1.44	1.44	1.43	1.43	1.43	1.42	1.37	1.33	1.28	1.24	1.19	1.15	1.11	1.07	1.04
Lebanon	1.35	1.34	1.34	1.33	1.34	1.36	1.38	1.39	1.41	1.36	1.32	1.27	1.23	1.19	1.15	1.11	1.07	1.04
Libya	1.41	1.44	1.47	1.50	1.46	1.42	1.37	1.33	1.29	1.26	1.23	1.21	1.18	1.15	1.12	1.09	1.06	1.03
Morocco	2.25	2.16	2.07	1.97	1.90	1.83	1.76	1.68	1.61	1.54	1.47	1.40	1.34	1.28	1.22	1.16	1.10	1.05
Syrian Arab Republic	1.40	1.42	1.43	1.45	1.45	1.45	1.45	1.45	1.45	1.40	1.35	1.31	1.26	1.21	1.17	1.13	1.08	1.04
Tunisia	1.90	1.83	1.76	1.68	1.67	1.66	1.65	1.64	1.63	1.56	1.49	1.42	1.35	1.29	1.23	1.17	1.11	1.05

* The full methodology for calculation of the coefficients, including assumptions and limitations, is described in Cerutti A.K. and G. Janssens-Maenhout, 2013.

Additional resources

- European Sustainable Development Network (2007), *Objectives and Indicators of Sustainable Development in Europe: A Comparative Analysis of European Coherence* – a quarterly study concerning (SMART) objectives and indicators of sustainable development in Europe. Available at: www.sd-network.eu/?k=quarterly%20reports&report_id=7 .
- Cerutti, A.K. and G., Janssens-Maenhout (2013), Projection to 2020 for setting emission reduction targets in the Southern Mediterranean Partner Countries: an approach with a Business-as-Usual scenario, JRC. Available at: http://edgar.jrc.ec.europa.eu/com/CoM-South_2013_BAU_Report_Online_version_3_06.pdf

Elaborate the plan

Plan elaboration – that is, breaking the target down into actions the local authority will undertake in the sectors addressed – serves several functions. It outlines what the city will look like in the future in terms of energy production and consumption and CO₂ emissions while also communicating the plan to stakeholders. In addition to generating a roadmap of specific, scheduled, budgeted actions, roles and responsibilities, it serves as a reference during implementation and monitoring.

The following characteristics may be useful to develop sound SEAP actions:

- **Measurable:** design actions based on the indicators used for the BEI.
- **Thorough:** elucidate actions in depth to get a clear and realistic sense of requirements and results (resources, budget, timeframe, policy integration, etc.). All actions adopted in the SEAP should be carefully designed and properly described, including timing, budget, responsibilities and sources of financing.
- **Realistic:** assess action implementation requirements against available capacity and resources.
- **Appropriate:** actions depend on the specific context of each local authority and the quality of the assessment of the existing local, regional and national policy framework.

For each action explored, consider also where chief responsibility lies (whether or not they are addressed by the local administration and/or require coordination with higher or national authorities), what instruments will be used (regulation, financial support, communication and information, demonstration, etc.) and the impact on energy production and consumption patterns (energy efficiency of equipment, buildings, cars; behavioral change such as turning off lights, using public transportation; cleaner energy such as renewable energies, biofuels).

Most local authority activity concerns buildings and transport, the use of renewable energy sources to produce energy locally, urban and land-use policies, and public procurement. In most countries, however, these policies are decided at regional and national levels and local authorities are not always part of the decision-making: they may simply implement the policies locally. In assessing existing policies, concentrate on the local authorities' capacity to go beyond national policies in the territory under their responsibility and to ensure resources and financing for the proposed actions.

The following sections provide a short overview of the policies and measures usually implemented by local authorities to reduce their energy consumption and CO₂ emissions in the mandatory sectors. More detailed measures are available in the SEAP guidelines, available at: www.covenantofmayors.eu/IMG/pdf/seap_guidelines_en-2.pdf.

SEAP action plan

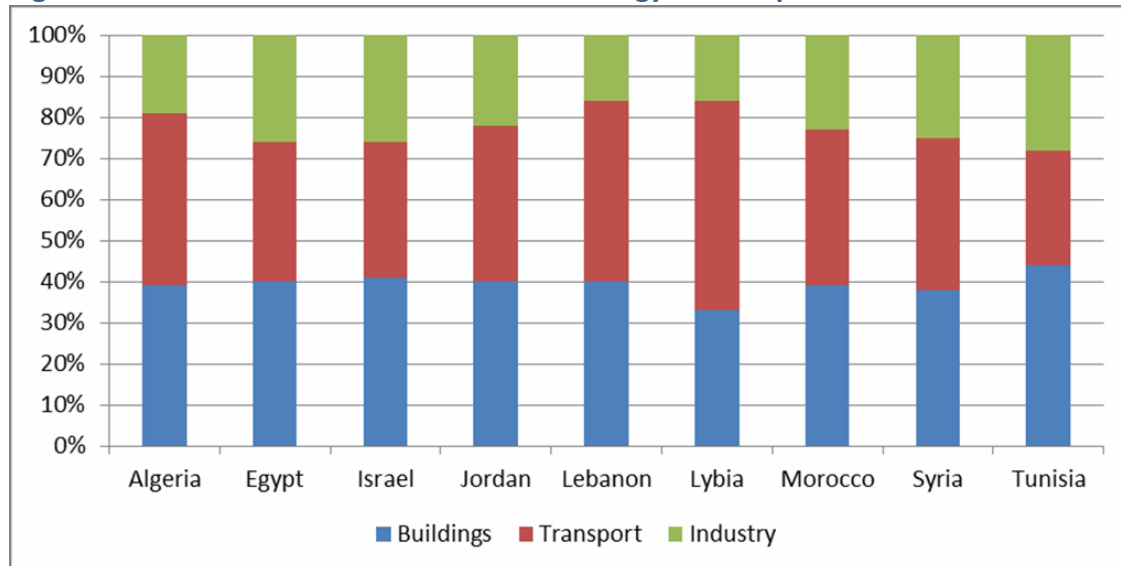
Best practices

- ✓ Catalogue existing activity/policy; analyse best practices.
- ✓ Set priorities based on the BEI; identify best actions to pursue.
- ✓ Carry out risk analysis.
- ✓ Draft an action plan.
- ✓ Specify timing, responsibilities, budget and financing.
- ✓ Seek approval and funding.
- ✓ Review/update and communicate the SEAP action plan regularly.

Buildings

The buildings sector (public, residential and commercial) accounts for more than one-third of the final energy consumption in MENA countries (IEA, 2013). Population and economic growth are the main drivers of energy consumption increase. Industry forecast for new residential and commercial construction is high – an average growth rate of 2% in the coming years – so energy efficiency in new buildings is of high importance.

Figure 2. Share of each sector in total final energy consumption in MENA countries



Source: IEA, 2013.

Existing buildings are renovated 30 to 50 years after first occupancy, so building design impacts energy performance for a long time. Ensuring the highest energy efficiency standards as early as possible in planning and design is essential to reduce energy consumption in the long term. This is particularly important in South Mediterranean countries, where construction is expected to expand rapidly; in fact, over half of the buildings projected for 2050 have yet to be built (IEA, 2012). Informal housing and unregulated building activity in the region are also important factors; efficiency approaches must address related needs. Creative awareness-raising campaigns that target the informal sector may be effective.

Policy instruments to reduce energy consumption of the buildings sector include building energy codes, energy performance certificates or labels for buildings, standards and labelling for appliances, lighting products and equipment, energy management strategies, financial incentives, etc. In most countries, these policy instruments are designed at the national level. The implementation and enforcement of policy instruments that regulate buildings energy consumption vary per type: building energy codes are usually implemented and enforced by local authorities while labelling programmes are enforced by national authorities.

In the last decade, MENA countries have made important progress in the design of policy instruments to reduce buildings energy consumption (Table 3). Implementation and enforcement is still lacking, however, in most South Mediterranean countries. Local authorities may consider actions both to ensure existing policy instruments are well implemented and to enforce them. They could also go beyond national requirements with exemplary municipal buildings that will serve as the basis for future policy revisions. This builds local capacity for the improvement of the building envelope/inertia and the use of natural shading and/or shading devices to reduce air-conditioning demand in summer.

Local authorities could also make energy audits and energy management mandatory for municipal buildings to better understand usage patterns and more easily monitor energy consumption. Internal awareness campaigns that target behavioral change could also generate savings; however, because the impact of behavioral changes is hard to estimate, those measures cannot be considered in the CO₂ emissions targets or, for CoM signatories, for the SEAP approval.

Transport

MENA countries have experienced rapid growth in energy consumption in the transport sector. In fact, the transport share of total final energy consumption ranges from 28% in Tunisia to over 45% in Morocco, Algeria and Lebanon (Figure 2). The growth rate of the transport sector energy consumption is mainly driven by the emergence of a middle class and the rapid increase in the number of vehicles (5% per year on average since 2000 in Morocco, Tunisia and Lebanon), in particular cars, due to lack of public transport.

Although transport policies are usually designed at the national level, local authorities could introduce Sustainable Urban Transport Planning (SUTP). They could propose to better manage municipal parking, reduce municipal vehicle fleet emissions, introduce public transportation where lacking, increase access to public transportation, or make public transportation more attractive by improving reliability, frequency and safety. They could also include measures (including subsidies) to encourage low-income families to use public transportation.

Information campaigns on public transportation and other, more energy-efficient local transportation (e.g. car-share, bike, walk) could also raise awareness of the energy costs of transport options and influence behavioral change.

Lighting

Lighting is responsible for about 19% of the total end-use electricity consumption in the MENA region (UNEP, 2011). Several MENA countries have therefore implemented measures to replace inefficient light bulbs (mainly incandescent) by efficient compact fluorescent lamps (CFLs). While policies to phase out inefficient light bulbs are usually a national prerogative, local authorities could play a major role in national initiatives by reducing the energy consumption of municipal buildings and street lighting. Countries such as Egypt have already implemented large programmes to replace inefficient lamps by CFLs. Lebanon has also reduced street lighting consumption and implemented monitoring, control and maintenance procedures to ensure the sustainability of the new lighting systems.

Ban bad bulbs

The Egyptian Ministry of Electricity and Energy has sold 9.5 million CFL lamps through state-owned electricity distribution companies. They distributed two lamps for the price of one and took payment by instalments on the electricity bill over a period of one year. The Lebanese government committed USD 7 million to replace 3 million incandescent bulbs by CFLs. Several countries, including Egypt, Tunisia, Morocco and Lebanon, announced they will ban incandescent sales by specific target years (en.lighten Global Efficient Lighting Partnership Programme, 2013).

The best lighting technologies, such as long-lasting light-emitting diodes (LEDs), are already available in some markets in the MENA region. Municipalities in Israel are replacing high-pressure sodium bulbs with LEDs to reduce both consumption and operation/maintenance costs. Brighter LED light also increases visibility in adverse conditions. Municipal applications for LED lighting include traffic lights and signals, street lights, public/municipal buildings (e.g. hospitals and schools), 24-hour

emergency lighting, shopping malls and offices, parking lots and underground parking, exteriors and employee access ways, etc. Traffic lights and signals can also be powered by solar energy with a backup battery for night.

Energy control systems offer additional potential savings. Manual and digital lighting control systems (dimmers, motion sensors, daylight sensors, timers) allow for regulation and can optimise (reduce) energy consumption.

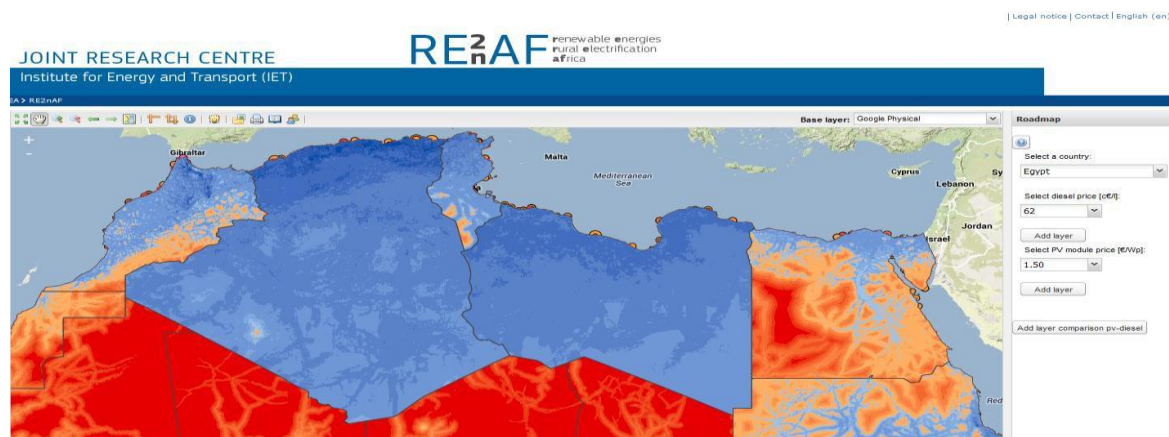
Additional resources

- *Environmental Housekeeping Handbook for Office Buildings in the Arab Countries*, Arab Forum for Environment and Development (AFED) (2012). www.med-enec.com/sites/default/files/user_files/downloads/EEHandbook_MED_ENEC_EN_R.pdf.
- *Energy Efficiency Building Code: A Roadmap for Implementation in the MENA Region*, MED-ENEC (2013), www.med-enec.com/sites/default/files/user_files/downloads/EEBuilding%20Code%20Roadmap_MED-ENEC_Sep%202013.pdf.
- *Modernising Building Energy Codes to Secure our Global Energy Future*, IEA-UNDP 2013. www.iea.org/publications/freepublications/publication/PolicyPathwaysModernisingBuildingEnergyCodes.pdf.
- Energy efficient buildings guidelines for MENA region, MED-ENC, 2013, http://www.med-enec.com/sites/default/files/user_files/downloads/EE%20Building_MED-ENEC_Nov2013.pdf
- *Energy Efficiency Trends in Mediterranean Countries*, MEDENER (2013). <http://medener-indicateurs.net/uk/documents-fourth-reunion.html>
- Information Society Thematic Portal, EC Digital Agenda for Europe – programmes and tools on urban mobility and clean and energy-efficient vehicles. <http://ec.europa.eu/transport/themes/urban/vehicles/>
- en.lighten Global Efficient Lighting Partnership Programme – provides technical assistance to governments and local authorities phasing out inefficient lighting products. www.enlighten-initiative.org.
- *Light's Labour Lost: policies for energy-efficient lighting*, IEA (2006). www.iea.org/Textbase/npsum/III.pdf.

Renewable energy

Although their actual share of total energy supply is still quite low, there has been an important increase in renewable energy sources in MENA countries over the last decade. Rising fossil fuels prices and the declining cost of solar and wind technologies have led to an increase in capacity and production in regions with modern renewable energy sources. Egypt is leading in wind generation with a capacity generation of 550 MW. Morocco is the leading country for photovoltaic (PV) electricity generation at 15 MW, followed by Algeria and Libya at 5 MW (REN 21, 2013).

Figure 3. Solar energy potential in MENA countries



Source: JRC, 2013

At the local level, solar water heating (SWH) has been a success story in most MENA countries. In 1979, Israel was the first country in the world to mandate SWH for new constructions and renovations, a success story since followed by several promotional programmes, such as Programme Solaire (PROSOL) in Tunisia and Development for the National Market for Solar Water-Heaters (PROMASOL) in Morocco. Jordan, Egypt and Syria have also successfully introduced SWH in their regulations.

Several regional and international initiatives work to boost the development and deployment of renewable energy technologies in MENA countries. The Mediterranean Solar Plan is one of the flagship initiatives that target the increase of renewable energy projects in the region. The SEAP elaboration offers local authorities an opportunity to assess their renewable energy potential, design viable projects and seek funding from national and international donors and investors.

Despite the progress, the MENA region is far from exploiting its full renewable energy potential (Figure 3), mainly due to government subsidies for fossil fuels (IEA, 2013).

Additional resources

- REN 21(2013), *Renewable Status Report* Available at: www.ren21.net/Portals/0/documents/activities/Regional%20Reports/MENA_2013_lowres.pdf
- Union for the Mediterranean (UfM), Paving the Way for the Mediterranean Solar Plan (PWMS) project. Available at: www.pavingtheway-msp.eu/.
- Euro-Mediterranean Cooperation on Research & Training in Sun Based Renewable Energies (EuroSunMed) project. Available at: www.eurosunmed.eu/.

Urban and land-use policies

Urban and land-use policies have a significant impact on energy consumption in the buildings and transport sectors (Table 9), as well as on renewable energy production. Compact urban environments may allow more cost-effective and energy-efficient public transportation. Mixed-use urban planning – a balance of business, residential and commercial – clearly influences citizen mobility patterns and energy consumption. Urban planning also influences energy efficiency requirements for buildings, especially new ones, as orientation and arrangement of buildings and built-over areas are based on urban and land-use policies. Trees and green roofs to shade building surfaces can substantially reduce energy consumption by air conditioning. When new urban developments are proposed, local authorities should analyse building width, length and height proportion in combination with both the orientation and amount of glazed surface and the use of cool roofs and white pavements.

Municipal urban and land-use policies need to match national land-use policies. Local authorities should consult and involve relevant national authorities if SEAP actions require amendments to existing policies.

Table 9. Impact of urban density on energy consumption

Parameters	Positive effects	Negative effects
Transport	- Population density promotes public transport, reducing the need and length of trips by private cars.	- Congestion in urban areas reduces vehicle fuel efficiency.
Infrastructure	- Density shortens the length of infrastructure facilities, such as water supply and sewage lines, reducing the energy needed for pumping.	
Vertical transportation		- Lifts (elevators) in high-rise buildings increase electricity demand.
Ventilation		- Concentration of high-rise and large buildings may impede urban ventilation.
Thermal performance	- Multi-unit buildings may reduce building envelope area, affecting heat loss in winter and heat gain in summer. - Shading among buildings may reduce solar exposure in summer and cool the surrounding air, reducing air-conditioning loads and CO ₂ emissions.	
Urban heat island		- Heat released and trapped in urban areas may increase air temperature, increasing air-conditioning loads. - High density may reduce natural light and increase both electric lighting load and air-conditioning load to remove lighting heat.
Energy systems	- Density makes feasible more efficient district cooling and heating systems.	
Use of solar energy		- Limited surfaces and opportunities to collect solar energy.
Ventilation energy	- Proper arrangement of high-rise buildings promotes energy-saving airflow patterns.	

Additional resources

- MED-ENEC (2013), *Energy Efficiency Urban Planning Guidelines for MENA region*. www.med-enec.com/sites/default/files/user_files/downloads/2013.12.10%20EE-%20EE%20Urban%20Planning%20brochure.pdf .

Information and communications technologies (ICTs)

Local authorities should take advantage of the large role ICTs can play in low-carbon communities and cities. ICT enables beneficial behaviors and technologies in many sectors under municipal influence. In non-residential buildings, teleworking provides the largest savings from a paperless strategy (doing more digitally). A carbon-conscious business culture may also inspire behavioral change in other spheres, although these impacts are less quantifiable. At minimum, dematerialisation alternatives let people directly control their carbon footprint. In residential buildings, ICT allows end-users to see their energy consumption and its related emissions in real time. SEAP actions in this sector would provide for and promote the optimisation of systems and processes towards improved energy efficiency. At the governance level, dedicated digital platforms can enable information-sharing, participation and decision-making with citizens.

Stakeholder engagement on multiple fronts: bringing together stakeholders in ICT, energy, transport and services can create synergies and new ways to collaborate. It can also stimulate open debate with relevant stakeholders in areas with high potential energy and emissions impact, such as smart homes and buildings, smart lighting, personalised public transportation, etc. For example, local authorities should liaise with the utilities company to promote smart meters that balance cost to customers with energy, heat or water savings. Promoting broadband infrastructure and collaborative technologies can help to ensure the widest and most efficient use of e-technologies.

Local authority leading by example: ensuring the city's ICT infrastructure and digital services have the smallest possible carbon footprint and promoting these practices to the private sector and wider community can be highly influential. Municipalities should develop and promote e-governance, telework, teleconferences, etc., and should integrate ICT to improve energy efficiency in public building, public lighting and transport control. They can also lead the way in transport by upgrading vehicle fleet management and supervision, implementing eco-driving and through real-time route optimisation. Local authorities should also monitor and make publically visible real-time GHG emissions and other environmental data, which also provides measures for emissions tracking and interventions.

It is, however, important for municipalities to keep in mind the dual energy effects of ICTs: while these technologies can reduce the environmental impact of various activities, they have an environmental footprint of their own. Many network-enabled devices draw power all the time, require infrastructure and support services, and are rapidly rendered obsolete. Standby power for network-connected devices is a growing energy challenge in an increasingly digital world. The International Telecommunication Union (ITU) is preparing methodologies to assess the environmental impact of ICT at the city level.

Additional resources

- International Telecommunication Union (ITU): "Green ICT standards and supplements" www.itu.int/en/ITU-T/climatechange/Pages/standards.aspx.
- SMART 2020: "Enabling the Low Carbon Economy in the Information Age": www.smart2020.org/assets/files/02_Smart2020Report.pdf.

Public procurement

Public procurement is one of the most powerful policy instruments at the disposal of local authorities. Green public procurement means that public contracting authorities take environmental considerations into account when procuring goods, services or works. Sustainable public procurement goes a step further in that the contracting authorities also take into account the three pillars of sustainable development: the effects on environment, society and economy.

Setting relevant criteria in tender and decision-making processes related to goods, services or works allows public procurement to play a lead role in improving energy efficiency. It can also help create markets for the best available technologies. Such criteria can be applied to building design, construction and management, energy-consuming equipment (e.g. heating systems), vehicles and electrical equipment, and direct energy purchases (e.g. electricity).

Local authorities should take action to use energy-efficient public procurement (Table 10). Where and when local authorities are not entitled to be a sole contracting authority, they should coordinate closely with relevant regional and national authorities.

Table 10. Examples of public procurement requirements

Product group	Examples
Public transport	<ul style="list-style-type: none">- Purchase low-emission buses and public fleet vehicles.- Equip buses with driving-style meters to monitor fuel usage and real-time traffic information system for optimised driving.
Electricity	<ul style="list-style-type: none">- Increase the share of electricity from renewable sources beyond national support schemes, including the purchase of energy-efficiency services through utilities or energy services companies where they exist.
ICT products	<ul style="list-style-type: none">- Purchase environmentally friendly ICT goods that meet the highest EU energy standards for energy performance.- Train users to save energy with their devices.
Building construction/renovation	<ul style="list-style-type: none">- Use localised renewable energy sources (RES).- Impose high efficiency standards that reduce building energy consumption.

Small local authorities could use joint energy-efficient procurement to combine procurement actions and publish only one tender on behalf of all participating contracting authorities. Joint procurement also lowers administrative costs and provides economies of scale for the contracted goods or services. This is particularly the case for renewable energy projects, whose costs may be higher than conventional projects. A joint model for public procurement requires agreement and collaboration among different contracting authorities; thus, it is vital to establish clear agreement on needs, capacities and responsibilities, as well as the common and individual legal framework of each party.

Additional references

1. "European Green Public Procurement" EC.
http://ec.europa.eu/environment/gpp/index_en.htm.
2. *Buying green! A handbook on green public procurement*, 2nd edition, EC GPP (2011).
<http://ec.europa.eu/environment/gpp/pdf/handbook.pdf>.
3. Criteria and practical instruments to implement Sustainable Procurement to incorporate sustainability in procurement processes and tendering procedures.
www.senternovem.nl/sustainableprocurement/index.asp.

Secure funding

SEAP implementation requires sufficient dedicated financing. Local authorities should identify available financial resources at the local, regional, national and international level, especially given the scarcity of resources in most MENA countries. It will likely be necessary to make continuous efforts to secure appropriate alternative sources of funding throughout implementation.

Successful implementation also requires firm, long-term funding commitments. Local authorities should allocate the necessary resources in their annual budgets. Scarcity of financial resource increases the risk of pursuing action only on the “low-hanging fruit” – i.e. actions with low costs and/or short pay-back time but with low reductions in energy consumption and CO₂ emissions. Local authorities should keep in mind that successful SEAP actions are those that reduce the long-term energy costs and impacts of the local authority, its population and industry. When considering the costs of SEAP actions, local authorities should also consider the gains, which have a financial value associated such as the co-benefits to health, quality of life, employment, attractiveness of the city, etc.

Funding mechanisms

The paragraphs below describe the most frequent general mechanisms used to fund renewable energy sources and energy efficiency actions.

Public-private partnerships (PPPs) are a concession mechanism whereby the local authority acquires financing from the private sector, with certain obligations. For instance, public administration promotes the construction of a zero-emission swimming pool, or a district heating and cooling installation, by allowing a private company to run the facility long enough to recuperate the profits on the initial investment. This kind of contract should be flexible to allow the private company to extend the contract in case of unexpected payback delays. Frequent due diligence is also recommended to follow up the evolution of incomes.

Third-party financing, which allows another party to provide the capital and take the financial risk, is perhaps the easiest way for municipalities to undertake comprehensive building energy retrofits. High financing costs may be expected to reflect the fact that the debt is registered on another entity's balance sheet. The interest rate is, however, only one factor among many that should be considered to determine the suitability of a third-party financing vehicle.

Energy services companies (ESCOs) are one of the most well-defined third-party financing mechanisms for energy-related initiatives. The ESCO usually finances the energy-saving projects without any up-front investment costs for the local authority. The energy savings achieved during the contract period recovers the investment costs and pays a profit. The contract guarantees the local authority a certain energy savings and saves the city investment in an unknown field. Once the contract has expired, the city owns a more efficient building.

ESCOs often offer a performance "guarantee", which can take several forms. The guarantee can revolve around the actual flow of energy savings from a retrofit project. Alternatively, the guarantee can stipulate that the energy savings will be sufficient to repay monthly debt service costs. The benefits to the building owner are no risk of project non-performance and affordable operating costs. However, ESCOs are still not well developed in MENA countries.

Revolving funds are intended to establish sustainable financing for a set of investment projects. Typically, several parties are involved and the owners can be public or private companies, organisations, institutions or authorities. The operator of the fund can either be its owner or an appointed authority. External donors and financiers provide contributions to the fund in the form of grants, subsidies, loans or other types of repayable contributions. The borrowers can either be the project owners or contractors. The fund should become self-sustainable after its first capitalisation. It can be established as a bank account of the owner or as a separate legal entity. The interest rate

generally applied in the capitalisation is lower than the market rate – or may even be 0%. Grace periods are also frequent for the periodic payment of revolving funds. According to the conditions of the revolving fund, project savings or earnings should be paid back to the fund at certain intervals within a fixed period of time.

Leasing describes arrangements in which the client (lessee) makes payments of principal and interest to the financial institution (lessor). The stream of income from the cost-savings covers the lease payment and the frequency of payments depends on the contract. Leasing can be an attractive alternative to borrowing because lease payments tend to be lower than loan payments. Leasing is commonly used for industrial equipment, under two primary types of leases. With capital leases, the lessee owns and depreciates the equipment and may benefit from associated tax benefits: a capital asset and associated liability appear on the lessee's balance sheet. With operating leases, the lessor owns the equipment and essentially rents it to the lessee for a fixed monthly fee. This is an off-balance sheet financing source that shifts the risk from the lessee to the lessor, but tends to be more expensive for the lessee.

Most existing funds target national authorities. Local authorities should coordinate with them to design bankable projects and secure the necessary funding to ensure successful implementation of their SEAP actions. This is especially important for municipalities with very limited resources that depend to a great extent on government subsidies.

European Union funding assistance

The European Union offers financing to local authorities in the MENA region via the European Neighbourhood Policy (ENP) and European Neighbourhood and Partnership Instrument (ENPI), its financial instrument. ENPI administers assistance through several kinds of programmes:

- bilateral programmes that cover support to one partner country;
- multi-country programmes that address challenges common to all or a number of partner countries, and also regional and sub-regional cooperation between two or more partner countries;
- cross-border cooperation programmes between EU member states and partner countries that share a border with the European Union (including Russia);
- specific initiatives, like the Neighbourhood Investment Facility (NIF), designed to finance capital-intensive infrastructure projects in partner countries.

The European Union-funded CES-MED project will provide information to local authorities on existing international and/or bilateral funds and will provide support in the identification of potential sources of funding for implementation of specific actions included in their SEAP. It will also help the local authorities in the design of bankable projects, including documentation of project feasibility and assessment of its components and management planning. Their role is to help local authorities assess the project's level of risk, including the commitment level of project partners.

The World Bank and the Global Environment Facility are also two of the most common sources of funding to the international community.

Additional resources

- Further information on European Commission funding programmes is available at http://ec.europa.eu/europeaid/work/funding/index_en.htm.
- Information on European Union programme for Sustainable Urban Demonstration Projects (SUDeP) is available at www.investineu.com/content/new-eu-support-sustainable-urban-development-european-neighbourhood-12c3.

Implementation Phase

The implementation phase takes the longest time, the most effort and largest portion of financial resources. Crucially, it requires the involvement of all stakeholders, including national authorities, industry and citizens.

Whether a thoughtful, effective SEAP is successfully implemented largely depends on the human factor. Staff involved in SEAP implementation need to be empowered with clear responsibilities, sufficient resources and good communications. Shortcomings and mistakes should be considered chances to learn, improve and expedite results. Local authorities should consider pilot and/or demonstration projects to test innovative ideas on a small scale.

Monitoring and communicating progress on energy and CO₂ emissions reductions are integral components of SEAP implementation. The local authority should decide on indicators for monitoring progress (Table 11) such as percentage of compliance with deadlines, percentage of budget deviations, and percentage of emissions reduction with the actions already implemented. It is also helpful to establish a score-card system to track and monitor the SEAP. Frequently informing the municipal council (or equivalent body) and other stakeholders is a good way to involve them in the success of the project, as is establishing a calendar of information-sharing meetings to follow up with stakeholders.

Additional resources

- ISO(2012), *Guidance on project management* available at: www.iso.org/iso/catalogue_detail.htm?csnumber=50003.

Manage implementation

Best practices

- ✓ Adopt a Project Management approach with deadlines and regular assessment of the progress and the expenses (e.g. International Organisation for Standardisation (ISO) 21500:2012, *Guidance on project management*).
- ✓ Consider quality management procedures.
- ✓ Assign tasks and responsibilities to each department.
- ✓ Propose, approve and put into operation a training programme, at least for those persons directly involved in the implementation.
- ✓ Motivate the SEAP team by sharing the vision and the progress made in its implementation.
- ✓ Anticipate future events and take into account necessary negotiation and administrative steps prior to starting a new project.

Monitoring and Reporting Phase

Monitor energy and emissions results and update the Sustainable Energy Action Plan (SEAP) regularly to ensure continuous improvement in the process (Table 11). CoM signatories must submit an Implementation Report every second year following the submission of the SEAP for evaluation, monitoring and verification by the JRC. A specific monitoring template and instruction document will be available on the CoM website in 2014.

Table 11. Indicators to monitor SEAP implementation

Sector	Indicators	Data collection difficulty (least to greatest) ⁵	Data collection source	Trend
Transport	- Number of public transport passengers per year	1	- Agreement with a public transport company. Select representative lines to monitor.	↑
	- Km bike ways	1	- City Council	↑
	- Km pedestrians streets/Km municipal roads and streets	1	- City Council	↑
	- Number of vehicles past a fixed point per month/year (set a representative point/street)	2	- Car counter installed in representative roads/streets	↓
	- Total energy consumption and cost in public administration fleets	1	- Data extracted from fuel supplier's bills. Convert to energy.	↓
	- Total energy consumption of renewable fuels used for public fleets	1	- Data extracted from biofuels suppliers' bills. Convert to energy. Sum this indicator with the previous one and compare values.	↓
	- % of population who live within 400 m of public transport service	3	- Surveys in selected areas of the municipality	↑
	- Average Kms of traffic jams	2	- Analysis of traffic fluidity in specific areas	↓
Buildings	- Diffusion rate (%) of efficient appliances	2/3/4	- City council, national/regional energy agency, etc.	↑
	- Total energy consumption of public buildings	1	- City council	↓
	- Total surface of solar collectors	2/3 possible	- City council, national/regional public	↑

⁵ 1 = easy, 2 = medium, 3 = difficult.

			administrations (from grants) and door-to-door surveys in selected areas	
	- Total energy consumption, including electricity, of households	2	- Door-to-door surveys in selected areas	↓
	- Total gas and renewable energy consumption of households	2	- Door-to-door surveys in selected areas	↓
Local Energy Production	- Energy, including electricity, produced by local installations	½	- National/regional public administrations (feed-in tariffs of certificates)	↑
Private sector involvement	- Number of companies involved in energy services, energy efficiency and renewable energies business - Number of employees in these businesses and turnover	½	- City council and national/regional public administrations	↑
Citizens involvement	- Number of citizens who attend energy efficiency/renewable energies events	½	- City council and consumers associations	↑
Green Public Procurement (GPP)	- Establish indicators for each category and compare with the typical value before implementing GPP. For example, compare kg CO ₂ /kWh of green electricity with the previous value. Use the data collected from all purchases to produce a single indicator.	2	- City council	↑

Implementation reports should include an updated CO₂ emission inventory called a Monitoring Emission Inventory (MEI). Ideally, local authorities compile CO₂ emission inventories on an annual basis. If that frequency over-burdens human or financial resources, local authorities may carry out inventories after longer intervals and/or with simpler methodologies.

Local authorities should compile and report on an MEI at least every fourth year. Every two years, they may alternatively submit an Action Report without MEI (years 2, 6, 10, 14...) and an Implementation Report with MEI (years 4, 8, 12, 16...). The Implementation Report should include qualitative and quantitative information on actions implemented in terms of energy consumption and CO₂ emissions. Analysis of the SEAP implementation process, including corrective and preventive steps, should also be included in the Implementation Report. The JRC provides a specific template for the Implementation Report.

Glossary

Baseline year: the year (ideally 1990) used to establish the BEI emissions levels against which SEAP emission reductions – 20% by 2020 – are set and compared.

Baseline Emission Inventory (BEI): the amount of CO₂ emitted due to energy consumption in the local authority's territory in the baseline year.

Business-as-Usual scenario (BAU): the reference scenario for which energy consumption and CO₂ emissions are projected to 2020 under the assumption of continuing population and economic trends in the absence of SEAP actions.

CoM signatory: local authority that has signed the Covenant of Mayors (CoM) commitment.

Monitoring Emission Inventory (MEI): CO₂ emission inventory based on the same criteria and means as the BEI to measure progress towards targets.

Territory of the local authority: geographical area under the administrative jurisdiction of the local authority.

Abbreviations and Acronyms

ADEREE	Moroccan National Agency for the Development of Renewable Energy and Energy Efficiency
AFED	Arab Forum for Environment and Development
AFEX	Arab Future Energy Index
APRUE	L'Agence nationale pour la promotion et la rationalisation de l'utilisation de l'énergie
BAU	Business-as-Usual scenario
BEI	Baseline Emission Inventory
BTC	Belgian Development Agency
CH ₄	methane
CES-MED	Cleaner Energy-saving Mediterranean Cities project
CFL	compact fluorescent lamp
CO ₂	carbon dioxide
CO ₂ -eq	CO ₂ -equivalents
CoM	Covenant of Mayors
DG-DEVCO	Director General for Development and Cooperation of the European Commission
EC	European Commission
EE	energy efficiency
ENP	European Neighbourhood Policy
ENPI	European Neighbourhood and Partnership Instrument
ESCO	Energy Services Company
EuroSunMed	Euro-Mediterranean Cooperation on Research & Training in Sun Based Renewable Energies of the European Commission
GHG	greenhouse gas
GIS	geographic information system
IEA	International Energy Agency
ICT	information and communication technologies
IEE	Intelligent Energy Europe of the European Commission
IPCC	Intergovernmental Panel on Climate Change
ITU	International Telecommunication Union
Jiha TINOU	Territorial Strategies in the Renewable Energies and Energy Efficiency Sector of ADEREE
JRC	Joint Research Centre of the European Commission
LED	light-emitting diode
MED-ENEC	Energy Efficiency in the Construction Sector in the Mediterranean project
MEDENER	<i>Association méditerranéenne des agences nationales de maîtrise de l'énergie</i>
MEI	Monitoring Emission Inventory
MENA	Middle East and North African countries
MoE	Ministry of Education (Palestine)
MUE-25	Managing Urban Europe-25 project of the European Commission
MW	megawatt
MWh	megawatt-hour
N ₂ O	nitrous oxide
NCG	National Coordination Group
NEEAP	National Energy Efficiency Action Plan of the European Commission
NREAP	National Renewable Energy Action Plan of the European Commission
NIF	Neighbourhood Investment Facility
OECD	Organisation for Economic Co-operation and Development
PPP	Public-private partnership
PROSOL	<i>Programme solaire</i>
PROMASOL	Development for the National Market for Solar Water-Heaters

PV	photovoltaic
PWMSP	Paving the Way for the Mediterranean Solar Plan
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
RES	renewable energy sources
SEAP	Sustainable Energy Action Plan
SURE	Sustainable Urban Energy
SUTP	Sustainable Urban Transport Planning
SWH	solar water heating
UfM	Union for the Mediterranean
UN	United Nations
UNDP	United Nations Development Programme

References

JRC (2013), *Projection to 2020 for setting emission reduction targets in the Southern Mediterranean Partner Countries: an approach with a Business-as-Usual scenario*, Publications Office of the European Union, Luxembourg, http://edgar.jrc.ec.europa.eu/com/CoM-South_2013_BAU_Report_Online_version_3_06.pdf.

IEA (2013), *World Energy Outlook 2013*, OECD Publishing/IEA, Paris <http://www.worldenergyoutlook.org/publications/weo-2013/>.

IEA (2012) *Energy Technology Perspectives: Scenarios and strategies to 2050*, OECD Publishing/IEA, Paris, www.iea.org/publications/freepublications/publication/etp2010.pdf.

IEA (2011), "Middle East: Balances for 2011", website, OECD Publishing/IEA, Paris, <http://www.iea.org/statistics/statisticssearch/report/?country=MIDDLEEAST&product=balances&year=2011>.

JRC (2010), *How to develop a Sustainable Energy Action Plan*, Guidebook, JRC, Ispra, <http://publications.jrc.ec.europa.eu/repository/bitstream/111111111/14204/1/com%20guidebook%20jrc%20format.pdf>.

REN 21 (2013), *MENA Renewables Status Report*, REN 21 Secretariat, Paris, www.ren21.net/Portals/0/documents/activities/Regional%20Reports/MENA_2013_lowres.pdf

UNEP (2011), *Regional report on efficient lighting in the Middle East and North Africa*, en.lighten initiative, Paris, www.enlighten-initiative.org/portals/0/documents/country-support/regional-workshops/Regional%20Report%20MENA%20Final.pdf

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