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The Covenant of Mayors: overall analysis and detailed evaluation of city Sustainable Energy Action Plans in the MENA Region

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Abstract

Launched in Europe in 2008, the Covenant of Mayors initiative came into being to support the efforts of local authorities in tackling climate change. Upon its wide endorsement in the region, the model was expanded to others, including the Southern Mediterranean. This report is a part of series of papers that analyse and highlight best practices in the Covenant Community and reviews Sustainable Energy Action Plans (SEAPs) from 7 countries – Algeria, Israel, Jordan, Lebanon, Morocco, the Palestinian Territories and Tunisia. The main findings are organised around the 10 principles of the Covenant of Mayors of the JRC Guidebook “How to develop a Sustainable Energy Action Plan (SEAP) in South Mediterranean Cities”. The analysis shows a good compliance with the mentioned principles and highlights the challenges linked to technical capacities at the local level, the insufficient financing and the sustainability of the action. The report concludes with a selection of best practices made from the planned actions and governance models of the selected SEAPs.

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Executive summary

The Covenant of Mayors (CoM) Community¹ offers countless possibilities for peer learning and exchange on key opportunities and challenges in local energy and climate action planning. Since the start of the CoM initiative, the Joint Research Centre (JRC) of the European Commission (EC) has not only been in charge of technical support to the signatories but has also taken the lead in analysing and highlighting best practices in the Covenant Community. These include: [Covenant of Mayors in figures: 8-year assessment \(2017\)](#), [The Covenant of Mayors: Evaluation of Sustainable Energy Action Plans from Eastern Partnership and Central Asian countries \(2017\)](#), [The Covenant of Mayors: In-depth Analysis of Sustainable Energy Actions Plans \(2015\)](#).

The present report summarizes the findings from the detailed assessment of a subset of 11 Sustainable Energy Action Plans (SEAPs) from the Southern Partnership States (CoM South countries) in relation to the ten key principles described in the guidebook "How to develop a SEAP in the South Mediterranean Cities" (Saheb, Kona, Maschio, & Szabo, 2014). The total population of the Southern Partnership States covered by the CoM is 211,783,000 and the population covered by the sample plans equals to 2,824,131 inhabitants.

In addition, a particular attention is given to:

- Identifying SEAP exemplary elements, focusing on the SEAP process. These elements include, among other things, effective stakeholder involvement and inclusion, establishment of suitable governance structures, elaboration of an appropriate monitoring and reporting structure (M & R).
- Extracting good practices, focusing on policy measures and, where relevant, pilot studies. There is an emphasis on the sectors mandatory for the SEAPs: buildings (including municipal, residential and commercial buildings), transport and municipal lighting. Cross-sectorial measures such as awareness raising, networking and training are not left behind either.

Policy context

In 2018 the Covenant of Mayors (CoM) initiative turns 10 years since its launch which underpins the growing role of local authorities (LAs) in tackling climate change. While the initiative started with the goal of supporting European LAs to curb CO₂ emissions in their territories through the development and implementation of sustainable energy action plans (SEAPs), it is today one of the world's largest urban climate and energy initiatives with more ambitious goals, addressing three pillars of action – climate change mitigation, climate change adaptation and access to energy.

2018 also marks five years since the initiative's expansion to ten Southern Neighbourhood Policy countries (ENP-South): Algeria, Egypt, Israel, Jordan², Lebanon, Libya³, Morocco, the Palestinian Territories, Syria⁴ and Tunisia. Moreover, at the last meeting of the Union for the Mediterranean (UfM) in Barcelona in January 2018, both the European Union (EU) representatives and the beneficiary countries recognised the crucial role that the local energy and climate action planning will play for the successful decarbonisation of the region and the achievement of the Intended Nationally Determined Contributions (INDCs)⁵.

Since 2013, the initiative has been implemented through the assistance of the EU-funded project: "ENPI – cleaner energy-saving Mediterranean cities" (EuropeAid/132630/C/SER/Multi) while starting this year (2018), it will fall under the "EU

¹ Expression used to describe the Community of stakeholders involved in the Covenant of Mayors; i.e. Signatories, Coordinators, Supporters and Associated Partners

² IAASA Policy Brief, 17 July 2018 on envisioning participatory governance of energy transition in Jordan

³ Activities have been re-launched.

⁴ Activities have been re-launched.

⁵ Not all countries have presented their Nationally Determined Contributions.

for Climate Action in the **European Neighbourhood Instrument** ENI Southern Neighbourhood” (EuropeAid/139067/DH/SER/Multi). While the initial SEAP model required cities and municipalities to commit to reduce at least 20% of their CO2 emissions, the new Sustainable Energy Access and Climate Action Plan (SEACAP) is to equally integrate climate change adaptation (through a vulnerability assessment) and access to energy and shall aim for 40% reductions of CO2 emissions by 2030.

In the context of this evaluation it is important to note that up to 1st February 2018, 22 SEAPs were submitted to Covenant of Mayors team. Out of the 22, 3 were of non-signatories and 19 of CoM Signatories.

Key conclusions and main findings

The key conclusions of the in-depth assessment are as follows:

- Technical expertise and capacity for SEAP development and implementation is scarce at the local level and more resources dedicated to training of municipal staff are needed.
- The municipal budget is often insufficient to cover the implementation of the SEAPs and innovative financing mechanisms are sought to complement the existing finance. Nevertheless, the LAs face further difficulties in planning and accessing such alternative sources. With no proper financial mechanisms and instruments, SEAP implementation will be difficult and timely solutions are needed.
- The initiative in this region is to further be strengthened since its sustainability is at risk. Although the governance structure of all signatories has been adapted, it is uncertain whether it will last in the absence of technical assistance and without a dedicated financing. The coming years will also serve as a test on the progress on SEAP implementation and the monitoring and reporting.
- Nevertheless, cities recognize the importance and the benefits of being a signatory of the initiative. The CoM is seen as a lever for transfer of know-how, a platform where the signatories can benefit from the experiences and lessons learned of other municipalities in sustainable local energy planning.

Related and future JRC work

Given that the CoM initiative is still relatively new to the region and no monitoring reports from the first signatories are yet available, it is suggested for JRC to track and analyse the first and subsequent monitoring reports of the selected municipalities. Such an analysis will reveal the factors for successful implementation and will allow drawing conclusions on the long-term commitment and capacities within the LAs. It is further recommended to conduct a qualitative analysis based on interviews with the key project teams (from the CES-MED and/or the subsequent EU for Climate Action in the ENI Southern Neighbourhood) and the LAs to better understand the challenges linked to SEAP development.

Quick guide

The presented report is organised in four chapters where Chapter 1 is to introduce the CoM initiative and the countries subject to this report. Chapter 2 is to present the selection process of the analysed SEAPs. The results of the evaluation and details about good practices of local measures and policies are presented in Chapter 3. Chapter 4 will close the report with drawing lessons and recommendations for the future, and presenting the key findings.

1 Introduction

1.1 The Covenant of Mayors initiative

The Covenant of Mayors initiative was launched in 2008 with the support of the EC to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies. The two distinct features of the initiative included the acceptance of a voluntary political commitment by the municipal council and the preparation of a SEAP and its subsequent monitoring and reporting reports. The specific carbon reduction target for each signatory of the political commitment was set to 20 % by 2020.

In 2013 the CoM framework expanded to 10 new countries in the Southern Mediterranean: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, the Palestinian Territories, Syria and Tunisia. Since then several municipalities successfully prepared and submitted their SEAPs and it was not until 2015, that the initiative took on new objectives to step up the initial CO₂-reduction commitment (a 40% emission reduction target by 2030 for signatories in EU countries and 30% emission reduction target by 2030 for the Southern Mediterranean) and to include adaptation to climate change and access to energy. Hence, starting 2018 the new signatories from the Southern Mediterranean will need to commit to actions for three pillars:

- Climate Change Mitigation (setting an emission reduction target beyond their NDCs by 2030)
- Climate Change Adaptation
- Access to secure, sustainable and affordable energy

Figure 1 CoM South 3 Pillars



Together with the signature of the Paris Agreement in 2015, Covenant of Mayors announced the merger with the Compact of Mayors initiative into the Global Covenant of Mayors for Climate & Energy that is an international alliance of cities and local governments with a shared long-term vision of promoting and supporting voluntary action to combat climate change and move to a low emission, resilient society⁶. The Global Covenant is to provide a common ground for the Regional Covenants all over the world whereas the Regional Covenants remain independent and context-specific in terms of targets, reporting and monitoring.

⁶ <https://www.globalcovenantofmayors.org/about/>

1.2 Countries of European Neighbourhood Policy - South

Challenges

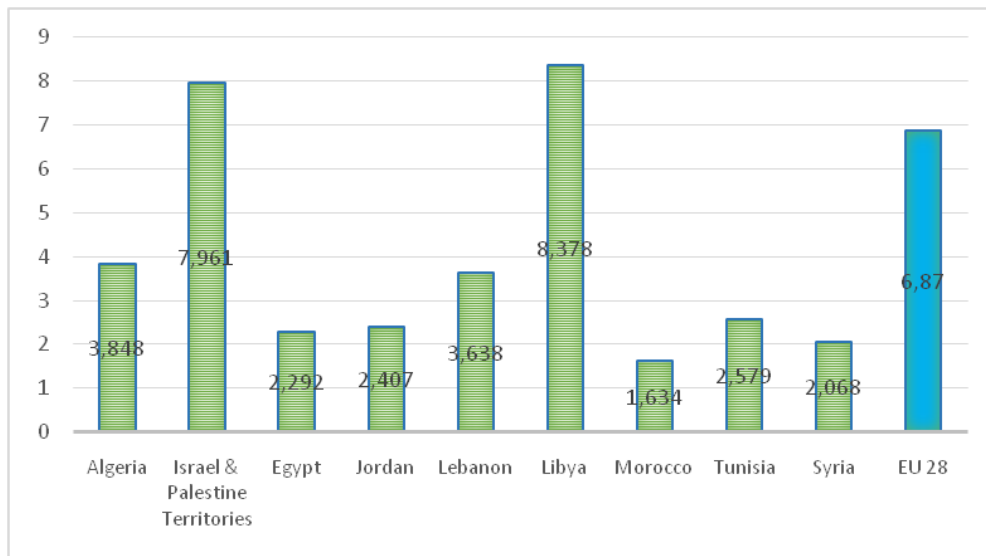
The challenges faced by the Southern Mediterranean region are specific to its geographic and demographic context. The situation in the Southern Mediterranean states is described by a need for a sustainable energy development that can match the population and industry growth while simultaneously satisfying the economic needs and addressing the energy security of the region. What is more, at present the energy sector is witnessing fundamental changes and strives to balance out production, consumption and export revenue in the midst of turbulent economic conditions following political changes. In addition, climate change adaptation remains a pending priority for the Southern Mediterranean countries where two third of the total population live in urban areas concentrated in coastal zones (CES-MED, 2018), the most vulnerable ones to climate change impacts.

Furthermore, energy access is often challenging in countries in a fragile or crisis situation where regeneration of livelihoods or creation of new services linked to energy, transport and water is critical. Countries such as Syria, Libya and Palestine face different levels of fragility linked to conflicts and they impact neighbouring countries such as Egypt, Lebanon and Jordan as refugees settle in these countries. In the context of migration, it is common that countries and communities lack the capacity and the means to recover and/or meet the energy needs of the population. At the local level, due to the political context in areas of conflict, data collection, monitoring and reporting as well as SEAP implementation might be difficult. It was noted that the impact of the existing laws and regulations was limited due to inconsistent enforcement in the region.

Next, naturally, there are differences and similarities in the challenges for local authorities in the Middle East and North Africa (MENA) region compared to the European, ENP East or Sub-Saharan African countries. The MENA cities differ from their neighbours in the level of decentralisation that is lower to the existing one in Europe. There is currently no common framework for action that can ensure an integrated approach for tackling the shared energy and climate challenges. In view of this, the task of the CoM is even more important in order to provide a framework for local, regional and international collaboration. From this perspective, the region is also among one of the most promising ones where challenges can be turned into opportunities.

The increase in energy demand in the South Mediterranean is unavoidable and necessary, even with energy efficiency and renewable added to the mix, as the actual per capita energy demand is very low in the South compared to the North Mediterranean according to the "*Observatoire Mediterranéen de l'Energie*" (2016). When comparing with the other regional Covenants, it is observed that the emission levels in the Southern Mediterranean are higher than the ones from the ENPI East but are still lower compared to the EU-28 average (Figure 2). The average CO₂ emissions/cap/year from the MENA region (3,867) are 44% lower than the average of the European Union (6,87).

Figure 2 CO2 emissions/cap/year per country (2016)



Source: Janssens-Maenhout, 2017

Interestingly, the emissions from Libya are disproportionately high in comparison to other countries (with exception of Israel and the Palestinian data, presented aggregated) and show a steady increase in CO2 emissions per capita starting 2013. A possible explanation for these numbers could also lay in the reliability of data for the country where the number of inhabitants might have declined while the data on CO2 was not changed. In addition, it is not to ignore that Libya is the only country with a fully closed electricity sector in the Middle East and North Africa (RCREEE, 2016), the second biggest North African country (1,76 km²) and an oil producer.

The lowest emissions are recorded in Morocco (1,634 t CO2/cap/year), Lebanon (3,638 t CO2/cap/yr) and Egypt (2,292 t CO2/cap/yr). However, it is useful to interpret the data within the existing policy frameworks. According to the latest ranking of the Arab Future Energy Index (AFEX) on Energy Efficiency (EE) (RCREEE, 2017), Tunisia, Jordan and Morocco lead the MENA region in terms of enacting EE measures based on four evaluation categories: energy pricing, policy framework, institutional capacity, and utility. Further to this in 2011, the new Constitution of Morocco enshrined sustainable development as a right to a healthy environment for all citizens. And while the CO2 emissions in Algeria come the highest after Israel and Palestine and Libya, AFEX on Renewable energy (RE) (RCREEE U. , 2016) highlights that the recently adopted feed-in tariff in the country already paved the way for several small and medium sized PV plants.

Finally, according to the analysed SEAPs, the challenges for the quickly growing Southern Mediterranean cities are linked to the development and refurbishment of neighbourhoods, to the maximisation of the coverage and increase in the efficiency of the transport system. The existent climatic conditions (high temperatures and humidity) make air conditioning (A/C) one of the most significant energy consumers in buildings, with contribution percentages reaching up to 40% of the total office building energy consumption in certain countries.

Covenant of Mayors framework : origin

The Covenant Framework for South Mediterranean Cities was inspired by the framework developed for the EU signatories (Bertoldi, Bornás Cayuela, Monni , & Piers de Raveschoot, 2010) and shared the same target of reducing its territory's CO₂ emissions by at least 20% by 2020. On a wider level, the two frameworks followed the same four phases for developing a SEAP as presented in **Table 1** Main steps and roles in the SEAP process.

Table 1 Main steps and roles in the SEAP process.

Phase	Step
Initiation	Establish a political commitment
	Establish an appropriate governance structure
	Build a stakeholder support
Planning	Assess current policy framework
	Establish the Baseline Emission Inventory (BEI)
	Establish the vision: at least -20% of CO ₂ emissions in or across required and/or selected sectors by 2020
	Elaborate the plan
	Secure sustainable financial resources
	Approve and submit the SEAP
Implementation	Implement the SEAP
Monitoring and reporting	Monitor SEAP actions
	Report and submit the Implementation Report
	Review and update the SEAP

Source: Bertoldi, Bornás Cayuela, Monni, & Piers de Raveschoot, 2010

Furthermore, the following key elements are shared between the EU and Southern Mediterranean signatories:

- **Suggested Actions** are to cover the same sectors: municipal, residential and tertiary buildings, industry, transport, public lighting, local electricity production, local heat cold production and other. Mandatory sectors are: buildings including municipal, residential and commercial buildings, transport and municipal lighting.
- **Submission of the SEAP by the Local Authority** is to take place one year after the signature of the political commitment.
- **Submission of the implementation reports** is scheduled for every second year to indicate the progress on the actions.

Peculiarities of the Covenant of Mayors South framework

To better understand the approach to SEAP development in Southern Mediterranean cities, it is equally relevant to pay attention to the peculiarities of the CoM South framework. First, to give flexibility to signatories outside of Europe, the Joint Research Centre of the EC produced guidelines for the Eastern Partnership and Central Asian countries and the Southern Mediterranean ones that allow the possibility to set a CO₂ emission reduction target based on a reference scenario (Business-as Usual) versus the one based on the emissions levels in the baseline year (either on an absolute or on a per capita basis) in the EU model. This means that the South signatories can pick the option that is suitable for them while still fully adhering to the CoM Framework. The reasoning

behind was to allow emerging economies to pursue their RE & EE targets while on track for delivering the growth and employment to their growing populations. It is, however, expected that LAs will aim to reduce such an increase “as much as possible through adequate energy policies and climate protection measures” (Saheb, Kona, Maschio, & Szabo, 2014).

Second, the CoM South Guidebook highlights the National Coordination Groups (NCG) created by the Cleaner Energy-Saving Mediterranean Cities (CES-MED) project, particular to the region, as recommended organisational structures (Saheb, Kona, Maschio, & Szabo, 2014). The NCGs were formed of key national authorities in each partner country, presided by the country’s Focal Point, to ensure support of the actions at both levels as well as alignment with the national programmes and regulations. The alliance of the NCGs with the cities can be seen as a “de facto a national-local partnership in support of decentralization and sustainable local planning” (Amin, 2018).

Thirdly, the frequency of the submission of the Monitoring Emission Inventory (MEI) in the Southern Mediterranean is lower compared to the one in Europe. The MEI of LAs in the MENA is requested every four years while in Europe the requirement is every second year. While no particular justification for this was presented in the Guidebook, it might be plausible to say that this is linked to the complexity of the activity relative to the existing technical capacities at the local level.

1.3 Involvement of CoM South cities

On 1st February 2018, 22 SEAPs from cities located in the Southern Mediterranean were submitted. It is important to note that to that date 26 cities/municipalities in total together with 2 Egyptian Governorates⁷ have expressed interest or have been affiliated to the CoM Movement in the MENA ([CES-MED Project Progress, 2017](#)).

The first SEAP was submitted as early as 2012 while 2016 was the year when the majority of cities submitted their SEAPs. The highest number of signatories come from Morocco (5), followed by the Palestinian Territories (4) with Algeria, Israel, Lebanon and Tunisia with 3 each.

1.4 The role of the JRC and the aim of the present report

The EC's Joint Research Centre (JRC) provides scientific, methodological and technical support to the Covenant of Mayors initiative. The Centre has been charged with developing the methodologies for all Regional Covenants in collaboration with city networks, practitioners from local and regional authorities, energy agencies, academia and project leaders in the spirit of the bottom-up approach of the CoM that aims to create a city-led and city-sustained initiative. The aim of the present report is to support the European Commission in drawing lessons and conclusions for future actions not only in the MENA region but also worldwide. The study can help to improve the way information about the CoM is designed and communicated and further serve as peer-learning material for local and regional authorities.

⁷ Equivalent to regions as per CoM classification

2 Overall Assessment of the CoM in the MENA region

2.1 Differentiation of Commitments by Signatories of the Covenant of Mayors

Given the evolving nature of the Covenant of Mayors movement, it is important to differentiate different types of commitments by signatories. Under the original model focused on climate change mitigation, local authorities had to define and submit a target of at least a 20% reduction of CO₂ emissions by 2020, within one year of adhering to the CoM. The reduction targets were to be based on the results of their BEI and the projections of expected emissions in the year 2020 based on a “business as usual scenario”. In addition, a SEAP needed to be formally approved by the local authority and submitted to the CoM for review and approval. In addition to submitting their SEAP, signatories need to report specific information and data from their BEI and their SEAP via the on-line template provided on the restricted area of the CoM portal, including but not limited to:

- energy consumption by sector (in MWh/year) in the reference year of the BEI;
- emissions by sector (expressed in tCO₂-eq/year) in the reference year of the BEI;
- estimated emissions in the year 2020 based on a “business as usual scenario”;
- description of actions to be implemented and their respective quantitative indicators (costs, energy savings, energy from local and renewable sources, emissions reductions);
- estimated energy savings by 2020 (expressed in MWh/year);
- estimated energy from renewable sources by 2020 (expressed in MWh/year); and finally
- estimated total emissions reduction by 2020 (expressed in tCO₂-eq/year).

The SEAP is the principal document through which a signatory presents its vision, targets, and the measures and actions to be implemented. For the actions described in their SEAP, signatories are expected to report data for different sectors and subsectors of intervention (e.g. energy efficiency in buildings, equipment and facilities, transportation, adoption of renewable energy sources, urban planning, among others), as well as the relevant policy instrument applied and the body responsible for implementation. Subsequently, signatories are required to submit a monitoring report on implementation of the SEAP every second year from submission of the SEAP, and to complement it with a Monitoring Emission Inventory (MEI) at least every fourth year.

Under the new *Covenant of Mayors for Climate and Energy* model, however, this has changed. Signatories joining the initiative after October 2015 must also submit a *Climate Change Risk and Vulnerability Assessment* and adopt an integrated approach to climate adaptation into their respective SECAP. Signatories must develop and submit their SECAP within two years of adhering and the horizon for planning is extended to 2030 for their adaptation and mitigation measures. The differentiation of commitments and timeframes for submission is particularly important for the CoM-South signatories given the date of the current assessment (March to May 2018) and the resulting availability of information and data from signatories.

2.2 Methodological approach for the assessment

Compared with the total number of CoM signatories considered in previous assessments conducted by the JRC (e.g. 6 201 signatories considered in the 2017 assessment in Kona *et al.*, 2017), the total number of CoM-South signatories is limited.. As a result, the same approach for statistical analysis as previously applied by the JRC cannot be applied, particularly the identification and removal of outliers based on the Generalised Extreme

Studentised Deviate.⁸ The limited number of CoM-South signatories, however, represents an opportunity to conduct an in-depth review of available information and data from signatories, as a group and individually.

The assessment of the CoM initiative in the Southern Mediterranean partner countries thus involved an extensive review and analysis of the official communication and data submitted by signatories from these countries. Signatories submit their information via different documents to the secure portal of the Covenant of Mayors for Climate and Energy Website (<http://mycovenant.eumayors.eu/>). The primary sources of signatory information for the assessment are the following:

- Signatory **profiles** registered online when a signatory joins the CoM;
- The **SEAP/SECAP documents** submitted by signatories, which normally include results from the BEI;
- The filled online **templates** (based on Excel tables) that serve primarily to quantify the key data and information from the SEAPs (e.g. final energy consumption, emissions factors adopted, CO₂eq emissions, and a summary table of key actions with expected energy savings, energy from renewable sources and target emissions reductions);
- **Formal documents** showing adhesion to the CoM and approval by local authorities of the SEAP/SECAP; and
- **Feedback reports** prepared by the JRC based on the SEAP/SECAP documents as well as a review of the filled-out SEAP/SECAP templates.

When possible, review and analysis of signatory metadata was performed using statistical software on exported data files.⁹ In addition, the JRC provided a consolidated dataset of the information provided by signatories via the online reporting templates (dataset 26 March 2018).

As discussed in the next section, there are multiple points where information and data from a signatory may present minor discrepancies, inconsistencies and/or be incomplete, given the different sources and types of information and data required, as well as the process of transferring data/information from SEAP/SECAP/BEI document to the online templates. The approach taken for the assessment, therefore, included a review of the existing information for a particular signatory from different sources, identifying points of discrepancies and inconsistencies, if any, and where possible, correcting for these in the overall quantitative aggregated analysis of the whole group of CoM-South signatories. In addition, whenever possible a comparative review and analysis of signatories from the same country was performed to identify salient points for review and vigilance. This was especially useful in the case of Morocco – the country with the most signatories at the time of the assessment. This approach serves a two-fold purpose: (i) to integrate a treated dataset of CoM-South signatories where corrections have been applied to generate global descriptive statistics, where possible; and (ii) to identify key points of vigilance and subsequent recommendations to support signatories and the work of the JRC and partners moving forward.

2.3 Scope of the assessment

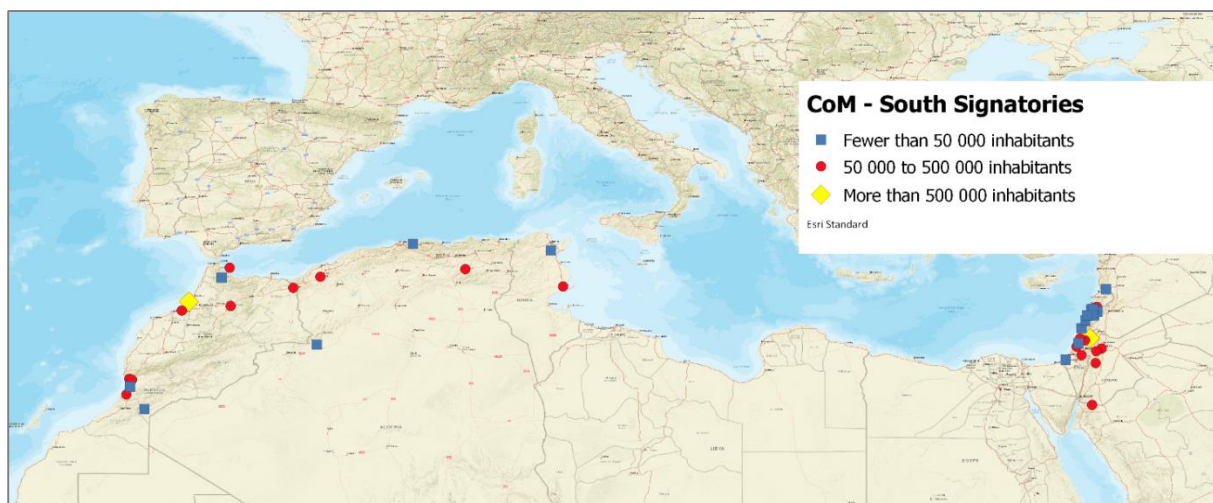
Based on the signatory registration profiles and submitted documents as of 15 March 2018, there are a total of 40 active signatories from seven countries: Algeria, Israel, Jordan, Lebanon, Morocco, Palestine and Tunisia. Of the 40 active signatories, 19 adhered to the CoM on or before October 2015, with the earliest signatory adhering in 2011. All but two of these signatories (Albasan Al-Kabira, Palestine and Menjez, Lebanon) have committed to 2020 targets under the original CoM model. Of the 21 signatories that adhered after October 2015, all but two (Chefchaouen, Morocco and Kab Elias – Wadi El

⁸ Referenced in Kona *et al.*, 2016

⁹ For the review and analysis of metadata available, IBM® SPSS® Statistics 23 was used.

Delm, Lebanon) have assumed mitigation and adaptation commitments to 2030 under the more recent CoM model. The deadline for submission by these signatories of their respective SECAP documents is thus November 2018 or later. The number of signatories therefore that have submitted SEAP/SECAP documents (Figure 3) and data at the time of the assessment is reduced to **22 signatories**. Figure 4 presents an overview of the geographical distribution of CoM-South signatories considered in the assessment.

Figure 3 Covenant of Mayors – South Signatories (March 2018)



Source: Active Covenant of Mayors-South profile data, 15 March 2018

The global results presented in section 3 of the report are thus based on two groups: (i) the group of 40 active signatories of the CoM-South countries; and (ii) the group of 22 active signatories that have submitted SEAP/SECAP documents and data. The first group is used to report general descriptive information (e.g. population) of the signatories while the second group is used to report on the findings from the submitted SEAP/SECAP/BEI documents and dataset. It should be noted that thirteen additional signatories had their CoM adhesion placed "on hold"¹⁰ and are not therefore included in the assessment. Two additional cities, Sousse and Kairouan from Tunisia, have submitted SEAPs to the CoM-South but they are not formally signatories so they are not included in the assessment. The following Table 2 presents an overview of the signatories considered in the assessment.

¹⁰ A signatory could be voluntary "On hold" (when updating, improving their documentation and asking the JRC to be in that status), or can be on hold after JRC starts the evaluation and encounter issues preventing the total evaluation. In this last case, JRC contacts the municipality asking for action addressing the issues.

Table 2 Overview of CoM-South signatories considered for the assessment

Country	Signatory	Population	Adhesion	Commitments	Type
Algeria	Batna	350 000	Feb 2014	2020	City
	Sidi Bel Abbes	300 000	Mar 2014	2020	City
	Boumerdès	42 500	Nov 2014	2020	City
Israel	Ramla	75 000	Feb 2014	2020	City
	Shfar'Am	40 000	Mar 2014	2020	City
	Rosh Ha'Ayin		Apr 2014	2020	City
<i>our signatories are not included as their registrations were put on hold: Eilat City (SUDEP), Ma'a lot-arshiha, Mi'ilya and Netanya.</i>					
Jordan	Sahab	160000	Jun 2015	2020	City
	Irbid	1000000	Jan 2018	2030 Adapt	City
	Karak	130000	Jan 2018	2030 Adapt	City
	Madaba	150000	Dec 2017	2030 Adapt	City
	Aqaba Sp. Econ. Z.	118000	Nov 2017	2030 Adapt	City
Lebanon	Menjez	800	Sep 2014	2020/2030/Adapt	City
	Khreibi	3200	Nov 2017	2030 Adapt	Borough
	Moukhtara	950	Nov 2017	2030 Adapt	Borough
	Kawkaba	2500	Mar 2017	2030 Adapt	Borough
	Kherbet Rouha	24800	Feb 2017	2030 Adapt	Borough
	Hasbaya	19000	Dec 2016	2030 Adapt	Borough
	Jezzine	10000	Dec 2016	2030 Adapt	City
	Batloun Shouf	3650	Nov 2016	2030 Adapt	Borough
	Kab Elias – Wadi El				
	Delm	50000	Nov 2016	2020	Borough
	Baakline	17000	Apr 2014	2020	City
	Kabrikha	5000	Oct 2015	2020	City
<i>Four signatories are not included as their registrations were put on hold: FMHC (CES-MED), Ardeh, Kousba and Bechmezzine.</i>					
Morocco	Salé	903 485	May 2011	2020	City
	Benslimane	58 194	Oct 2014	2020	City
	Agadir	450000	Feb 2014	2020	Urban C.
	Oujda	477100	Mar 2014	2020	City
	Chefchaouen	43000	Dec 2015	2020	City
	Tiznit	76000	Jul 2017	2030/Adapt	City
	Fam El Hisn	6353	Aug 2017	2030/Adapt	City
	Figuig	10872	Aug 2017	2030/Adapt	City
	M'diq	56130	Oct 2017	2030/Adapt	City
	Sefrou	79887	Oct 2017	2030/Adapt	City
	Belfaâ	27592	Sep 2017	2030/Adapt	City
	Drarga	70793	Feb 2018	2030/Adapt	City
<i>Kénitra (SUDEP) is not included as their registration was put on hold.</i>					
Palestine	Abasan Al-Kabira	30 000	Nov 2013	2020/2030/Adapt	City
	Hebron	163 146	Oct 2014	2020	City
	Nablus	190 000	May 2015	2020	City
	Tulkarm	101 000	Feb 2014	2020	City
<i>Three signatories are not included as their registration was put on hold: Gaza, Salfeet and Ramallah.</i>					
Tunisia	Sfax	320 000	Feb 2014	2020	Town
	Hammam-Lif	42 518	Dec 2016	2030/Adapt	City
<i>One signatory is not included as their registration was put on hold: La Marsa.¹¹</i>					

Source: Compiled from submitted and registered signatory profiles as of 15 March 2018 (www.mycovenant.eumayors.eu).

¹¹ In Tunisia, Kairouan participated in the EU-funded CES-MED project and although it is not formally a CoM signatory, it submitted a SEAP to the CoM. Their registration, however, was put on hold so they are not included in the assessment review and analysis.

2.4 Main Findings and considerations

This section presents the main findings from the review and analysis of the active Covenant of Mayors-South signatories. Section 2.4.1 presents a general description of the 40 active CoM-South signatories. Section 2.4.2 focuses on the analysis of the active CoM-South signatories that have submitted SEAP/SECAP documents (22), including an overview of the final energy consumption (global and by sectors) and of the GHG emissions for the reference years of the baseline emissions inventories (BEI). For this group of 22 signatories, the GHG emissions reductions estimated for the respective target years are also presented.

Signatories and commitments

The 40 active CoM-South signatories represent a total population of 5,650,470 inhabitants (comparable to the population of Denmark), with an average signatory size of just over 104 thousand inhabitants.¹² Using the same classification as previous JRC reports¹³, 75% of signatories can be considered urban areas (with a population density of at least 300 inhabitants per km² and a minimum population of 5 000 inhabitants), and 25% can be considered rural. Of the seven CoM-South partner countries, Morocco presents 12 active signatories, Lebanon has 11, followed by Jordan and Palestine with five each, Algeria and Israel with three signatories each, and Tunisia with one active signatory. An overview of the 40 active CoM-South signatories (as of March 2018) is presented in Annex I.

As discussed previously, more than half of the 40 signatories (22) adhered to the CoM-South on or after October 2015, which accounts for the reduced number of signatories with submitted SEAP/SECAP documents at the time of the assessment. It is important to note that half of the signatories (20) have participated (or participate in) one of the projects funded by the EU to support local authorities: Sustainable Urban Demonstration Projects-South (SUDEP-South) and Cleaner Energy-Saving Mediterranean Cities (CES-MED). The relevance of this is discussed further in Section 4 of the report.

Sustainable Energy Action Plans / Sustainable Energy and Climate Action Plans

This section focuses on the 22 active signatories that have submitted SEAP/SECAP documents and online templates. Two of the signatories, Karak and Aqaba Special Economic Zone from Jordan, have already submitted SECAP documents, despite having adhered to the CoM recently, in January 2018 and November 2017, respectively. The other 20 signatories have submitted SEAP and BEI documents.

2.4.1.1 Final energy consumptions in baseline emissions inventories

After correcting for inconsistencies in the original dataset, total final energy consumption reported by the 22 signatories is **23.217 TWh/year**. This value represents less than 1% of the total energy consumption reported by 5403 signatories considered in the JRC 2017 assessment.¹⁴ As discussed in Section 2.4.2.5 of the report, this aggregated total takes into account the treated/corrected dataset for energy consumption that is presented in Annex III.

The primary sources of energy reported by the CoM-Signatories in their inventories are automotive fuels, representing a combined percentage of 43.8% (30.7% for diesel and 13.1% for gasoline), followed by electricity (22.4%), natural gas (16.6%), liquid gas (12.8%), heating oil (2.6%) and solar thermal (1.2%). Energy consumption from other sources such as coal, other fossil fuels, biomass or non-allocated sources represented

¹² This excludes the two largest cities with populations close to 1 million inhabitants and two signatories with fewer than 1000 inhabitants.

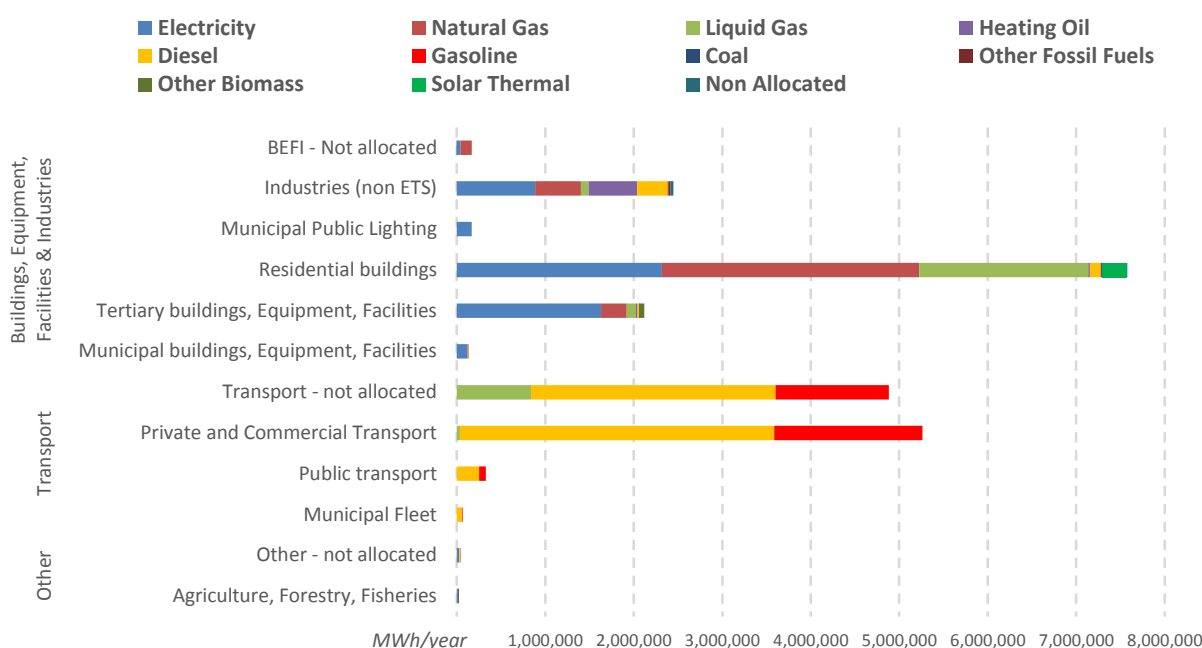
¹³ Kona *et al.*, 2017

¹⁴ Ibid.

less than 1% for each source. None of the CoM-South signatories reported energy consumption from lignite, plant oil, biofuel or geothermal sources (Annex III).

Significantly, the transportation macro-sector that includes the sub-sectors of *Municipal Fleet*, *Public*, *Private* and *Commercial Transport*, as well as *Not allocated*, represents 45.4% of total energy consumption of CoM-South signatories. The *Residential buildings* sub-sector alone represents 32.7% of total energy consumption, followed by non-ETS industries with 10.5%. A breakdown of the final energy consumption by sectors is presented in the following Figure 5:

Figure 4 Final energy consumption in CoM-South signatories by sectors and energy sources



Source: Annex IV; processed dataset.

2.4.1.2 Greenhouse gas emissions reported by the CoM-South Signatories

To assess the emissions reported by CoM-South signatories, an extensive review of the different sources available (SEAP/SECAP/BEI documents, dataset) was conducted. A detailed description of the inconsistencies identified is presented in Section 2.4.2.5. Based on this review and the inconsistencies identified, corrections were applied to the dataset to produce a coherent set of GHG emissions values for the CoM-South signatories (Annex V).

Based on the treated dataset, total GHG emissions reported by the 22 CoM-South signatories reach **8,857.33** kilotons **CO₂-eq/year**¹⁵, with the *Buildings, Equipment, Facilities & Industries* macro-sector contributing 59.0%, followed by *Transport* with 31.3%. This is similar to the findings from the 2017 assessment of all CoM signatories conducted by the JRC, with contributions of 67% and 26% from these sectors, respectively (Kona et al, 2017). When looking at sub-sectors, *Residential buildings* alone accounts for nearly a third of total emissions (31.1%), followed by *Private and Commercial Transport* (19.6%) and *Tertiary Buildings, Equipment & Facilities* (13.7%). Table 3 presents aggregated GHG emissions per macro-sector and sub-sector.

¹⁵ 17 of the CoM-South signatories report emissions in CO₂eq units.

Table 3 Aggregated GHG emissions reported by CoM-South signatories (processed dataset)

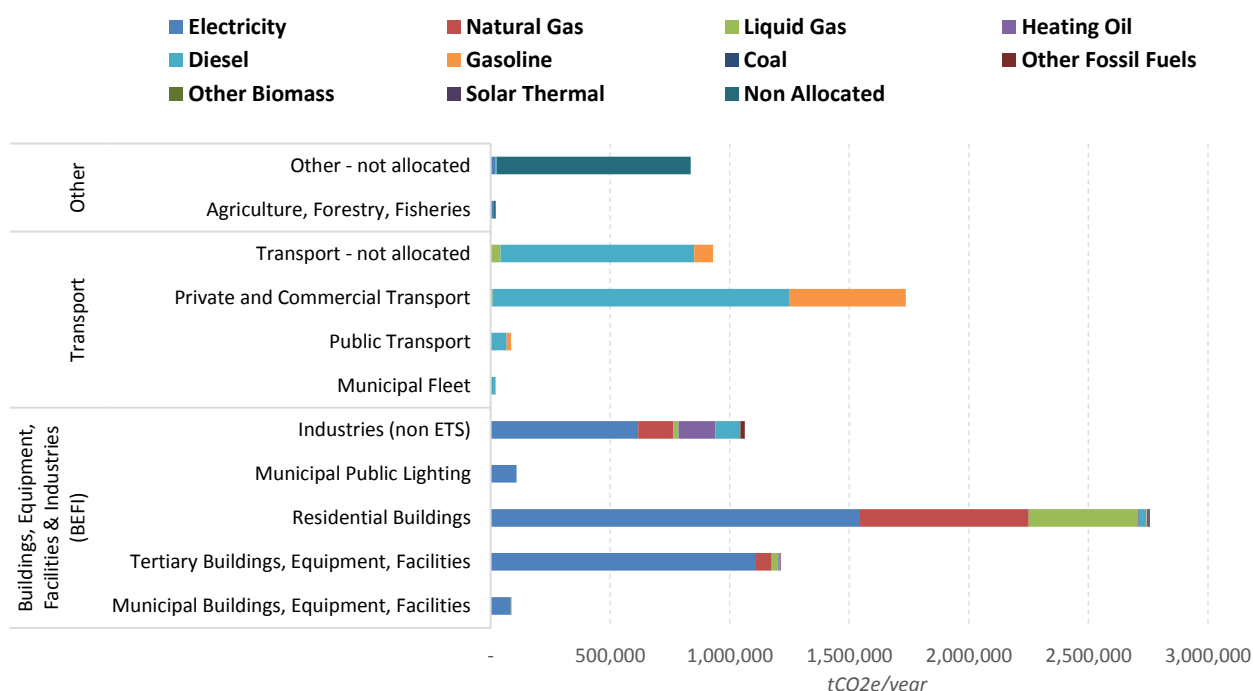
		tCO ₂ e/year	
Total Emissions:		8,857,330.37	
1. Buildings, Equipment, Facilities & Industries (BEFI)	Municipal Buildings, Equipment, Facilities	85,808.52	1.0%
	Tertiary Buildings, Equipment, Facilities	1,210,930.08	13.7%
	Residential Buildings	2,755,804.79	31.1%
	Municipal Public Lighting	108,473.00	1.2%
	Industries (non ETS)	1,063,642.30	12.0%
		5,224,658.69	59.0%
2. Transport	Municipal Fleet	21,010.72	0.2%
	Public Transport	86,071.69	1.0%
	Private and Commercial Transport	1,736,101.45	19.6%
	Transport - not allocated	930,452.80	10.5%
		2,773,636.65	31.3%
3. Other	Agriculture, Forestry, Fisheries	22,189.57	0.3%
	Other - not allocated	836,845.47	9.4%
		859,035.04	9.7%

Source: Annex V; treated CoM-South dataset (May 2018)

With regards to energy sources, electricity represents 39.4% of aggregated emissions, followed by 32.5% from diesel and gasoline, and 10.4% from natural gas. As expected based on the energy consumption values reported, signatories do not report any emissions from heat/cold production¹⁶, lignite, plant oil, or biofuels. Figure 6 presents global emissions reported by CoM-South signatories by sub-sectors and energy sources:

¹⁶ The dataset (26 March 2018) showed energy supply from heat/cold for Tulkarm/Palestine, although this was not substantiated in the SEAP/BEI document and it is likely due to an issue with the not processed dataset.

Figure 5 Aggregated emissions reported by the CoM-South Signatories by sectors and energy sources (*tCO₂e/year, corrected values*)



Source: Annex VI; processed CoM-South dataset (May 2018)

2.4.1.3 Local electricity production from renewable energy sources

Only three CoM-South signatories report local electricity production from renewable energy sources (RES) – all three from PV installations: Karak/Jordan (153 MWh/year), Aqaba Special Economic Zone Authority/Jordan (26,520 MWh/year) and Salé/Morocco (300 MWh/year). Significantly, these signatories from Jordan are two of the most recent adhesions and they have already provided SECAP documents with their 2030 commitments, while Salé was the first CoM-South signatory.

2.4.1.4 Committed emissions reductions by 2020 and 2030

20 of the 22 CoM-South signatories have established emissions reductions targets in their SEAP documents of at least 20% compared to the business as usual scenario for 2020. Two signatories, Aqaba Special Economic Zone Authority and Karak in Jordan have established SECAP documents with respective emissions reductions commitments to 2030. In an innovative approach, these two signatories have established different emissions reductions commitments to 2030: 14% that is in line with Jordan's Intended Nationally Determined Contribution (INDC), and 40% that is contingent on funding availability. The aggregated emissions reductions for the CoM-South signatories to 2020 are thus **2,435.6 kilotons CO₂eq/year**, with an additional 144.1 or 411.8 kilotons for 2030, totalling **2,991.5 kilotons for 2030** (Annex VII). Table 4 presents an overview of the emissions-reduction commitments by CoM-South signatories:

Table 4 Emissions-reduction commitments by CoM-South signatories

Country	Signatory	Adhesion	Commitments	SEAP/ SECAP	Emissions Reduction (tCO ₂ -tCO ₂ eq/yr)	Additional Reductions	Target	Notes
1 Morocco	Salé	May-11	2020	SEAP	547,767.2		20.0% on 2020 BAU projection	
2 Palestine	Abasan Al-Kabira	Nov-13; Jul-	2020/2030/Adap	SEAP	8,511.3		30.0% on 2020 BAU projection	
3 Tunisia	Sfax	Feb-14	2020	SEAP	257,129.0		20.0% on 2020 BAU projection	
4 Israel	Rosh Ha'Ayin	Apr-14	2020	SEAP	73,963.7		20.0% on 2020 BAU projection	
5 Israel	Ramla	Feb-14	2020	SEAP	231,954.3		20.0% on 2020 BAU projection	
6 Morocco	Agadir	Feb-14	2020	SEAP	234,116.0		20.8% on 2020 BAU projection	
7 Israel	Shefa-Amer	Mar-14	2020	SEAP	27,966.7		20.0% on 2020 BAU projection	
8 Morocco	Oujda	Mar-14	2020	SEAP	155,956.0		20.3% on 2020 BAU projection	
9 Algeria	Batna	Feb-14	2020	SEAP	347,422.0		20.3% on 2020 BAU projection	
10 Lebanon	Menjeh	Sep-14	2020	SEAP	375.0		25.0% on 2020 BAU projection	
11 Lebanon	Baakline	Apr-14	2020	SEAP	8,139.0		25.0% on 2020 BAU projection	
12 Palestine	Hebron	Oct-14	2020	SEAP	113,040.0		20.0% on 2020 BAU projection	
13 Algeria	Sidi Bel Abbès	Mar-14	2020	SEAP	170,753.0		20.1% on 2020 BAU projection	
14 Morocco	Benslimane	Oct-14	2020	SEAP	20,278.0		20.0% on 2020 BAU projection	
15 Palestine	Nablus	May-15	2020	SEAP	100,171.0		20.0% on 2020 BAU projection	
16 Jordan	Sahab	Jun-15	2020	SEAP	18,411.0	53,791.0	5%/14% on 2020/2030 BAU projection:	
17 Algeria	Boumerdès	Nov-14	2020	SEAP	36,075.0		20.1% on 2020 BAU projection	
18 Morocco	Chefchaouen	Dec-15	2020	SEAP	18,863.4		21.0% on 2020 BAU projection	
19 Palestine	Tulkarm	Feb-14	2020	SEAP	47,419.0		20.0% on 2020 BAU projection	
20 Lebanon	Kab Elias – Wadi El Delm	Nov-16	2020	SEAP	17,272.0		26.0% on 2020 BAU projection	
					2,435,582.6			
21 Jordan	Aqaba Special Economic	Nov-17	2030 Adapt	SECAP	85,122.9	243,208.2	14%/40% to 2030, INDC and contingent	
22 Jordan	Karak	Jan-18	2030 Adapt	SECAP	59,009.8	168,599.3	14%/40% to 2030, INDC and contingent	
					144,132.6	411,807.5		
					2,579,715.2	2,991,522.7		

Source: Annex VII; SEAP/SECAP documents

Based on the quantification of actions and measures presented by CoM-South signatories in their SEAP/SECAP documents, the *Buildings, Equipment, Facilities & Industries* (BEFI) macro-sector accounts for half (49.5%) of all of the expected emissions reductions followed by the *Transport* sector with 23.8% of expected reductions. Not surprisingly, the actions focusing on the *Residential Buildings* sub-sector account for 22.1% of all expected emissions reductions, followed by the *Tertiary Buildings, Equipment & Facilities* sub-sector with 11.3%. It is important to note that although assets controlled directly by local authorities (i.e. Municipal Buildings, Equipment & Facilities, Municipal Fleet and Municipal Public Lighting) account for only **2.4%** of global emissions, signatories have committed to actions that will account for **7.8%** of their total emissions targets. As discussed further in Section 4 of this report, this is coherent with a strategy by the local authorities to “lead by example” in the energy management of their assets.

With regards to expected energy savings, CoM-South signatories report that more than two thirds (68.6%) of total energy savings will come from measures in the BEFI macro-sector, followed by energy savings of 30.9% in the *Transport* sector (Annex VIII). Significantly, expected energy savings in the *Residential Buildings* sub-sector account for 40.3%, while savings in the Tertiary Building, Equipment & Facilities sub-sector account for only 12.9%. Energy savings provided by measures focused on the Industries sub-sector account for only 10.3% of total savings, which is commensurate with the economic profiles of CoM-South signatories, as well as more limits on their direct influence in this sub-sector. The following Table 5 presents an overview of the shares of estimated GHG emission reductions, by macro-sectors and sub-sectors, as well as estimated costs (EUR), energy savings targets:

Table 5 Emissions-reduction and energy-savings commitments by CoM-South signatories

	Estimated Cost (EUR)	Energy Savings Target (MWh/year)	Reduction Target* (tCO ₂ /tCO ₂ eq/year)	
Totals:	2,477,851,333.00	3,443,758.20	2,980,078.71	
1. Buildings, Equipment, Facilities & Industries (BEFI)	1,723,308,235.00	2,361,864.63	1,475,752.68	49.5%
Municipal Buildings, Equipment, Facilities	157,826,658.00	104,120.07	231,221.07	
Tertiary Buildings, Equipment, Facilities	555,123,859.00	443,005.67	335,522.72	
Residential Buildings	840,243,680.00	1,389,062.46	658,301.68	
Municipal Public Lighting	39,731,754.00	70,754.75	49,894.53	
Industries (non ETS)	130,382,284.00	354,921.68	200,812.67	
2. Transport	677,349,250.00	1,063,813.82	709,163.17	23.8%
3. Other	16,991,396.00	7,952.75	640,033.59	21.5%
4. Local Electricity Production	59,202,452.00	127.00	155,029.27	5.2%
5. Local Heat/Cold Production	1,000,000.00	10,000.00	100.00	< 1%

*This aggregated total includes the commitments by all CoM-South signatories to 2020 and 2030. The total differs slightly (11.4 kt, 0.4%) from figures reported globally as not all actions have been specifically quantified by signatories in their SEAP/SECAP documents.

Source: Annex VIII; CoM-South dataset (26 March 2018)

For the sake of clarity, it is important to note differences in figures reported by CoM-South signatories found in the dataset (26 March 2018). This is largely due to (a) not all actions reported have specific emission reduction targets and (b) omissions during the online reporting process by CoM-South signatories. Nevertheless, as Table 6 shows, differences are not significant:

Table 6 Comparative overview of emissions reductions values reported by CoM-Signatories

Emissions Reduction (tCO ₂ -tCO ₂ eq/yr)		
Aggregated total to 2020 from SEAP Documents:	2,435,582.6	
2030 target (14%) and contingent target (40%):	85,122.9	243,208.2
2030 target (14%) and contingent target (40%):	59,009.8	168,599.3
	144,132.6	411,807.5
A. Aggregated total with 2030 targets from SEAP/SECAP Documents:	2,579,715.2	2,991,522.7
		Reference value
B. Aggregated total from sectors and sub-sectors: (Annex 8; data set 26 March 2018):	2,980,078.7	Difference with reference value 0.38%
C. Aggregated total of values reported from "Key Actions": (data set 26 March 2018):	2,395,987.3	19.91%

Source: Annex IX

As discussed previously, CoM-South signatories have committed to a global reduction of GHG emissions totalling 2,991.5 kilotons (with 2020 and 2030 targets). The dataset (26 March 2018) includes specific reductions values for sectors and sub-sectors totalling 2,980.1 kilotons CO₂eq, accounting for nearly all of the expected reduction. With further detail, CoM-South signatories have quantified the expected emissions reductions for "Key Actions" that together amount to **2,396.0 kilotons CO₂eq**, accounting for 80.1% of their total expected GHG reductions.

Estimated budget reported by CoM-South signatories

The 22 CoM-South signatories report that for the implementation of the measures defined in their SEAP/SECAP documents, a budget of 3 billion EUR will be needed. Of this amount, only 11.1% is presented as investment to be realised directly by the local authority, with 88.8% needed from other actors. The average budget estimated by the CoM-South signatories is over 136 million EUR, with a little over 15 million EUR budgeted as investment to be realised directly by the local authority. As discussed further in Section 2.4.3 of the report, funding SEAP/SECAP actions results in one of the principal aspects to be addressed by CoM-South signatories. Given the amount of GHG emissions that CoM-South signatories have committed to reduce for their target years (2,992 kilotons CO₂-eq), this results in an approximate average budgeted cost of a little over 1,000 EUR per tonne of reduced emissions (Annex X). Table 7 presents an overview of estimated budgets for CoM-South signatories:

Table 7 Estimated budget reported by CoM-South Signatories

Country	Signatory	Local Authority - Investment	Local Authority - non investment	Other Actors - Investment	Other Actors - non investment	Subtotal EUR
1 Morocco	Salé	23,996,115	-	335,526,025	-	359,522,140
2 Palestine	Abasan Al-Kabira	360,000	210,000	2,200,000	910,000	3,680,000
3 Tunisia	Sfax	17,000,000	-	192,000,000	-	209,000,000
4 Israel	Rosh Ha'Ayin	2,490,000	-	129,654,000	-	132,144,000
5 Israel	Ramla	1,676,666	-	153,851,904	-	155,528,570
6 Morocco	Agadir	33,176,500	-	589,029,312	-	622,205,812
7 Israel	Shefa-Amer	1,166,667	-	28,240,500	-	29,407,167
8 Morocco	Oujda	128,800,000	-	273,609,984	-	402,409,984
9 Algeria	Batna	2,000,000	-	-	-	2,000,000
10 Lebanon	Menjez	50,000	100,000	1,000,000	-	1,150,000
11 Lebanon	Baakline	1,910,000	-	17,190,000	-	19,100,000
12 Palestine	Hebron	2,097,300	-	137,722,704	-	139,820,004
13 Algeria	Sidi Bel Abbes	3,000,000	-	-	-	3,000,000
14 Morocco	Benslimane	23,036,760	-	6,881,110	-	29,917,870
15 Palestine	Nablus	698,000	-	47,000,000	-	47,698,000
16 Jordan	Sahab	35,000	-	560,000	105,000	700,000
17 Algeria	Boumerdès	1,000,000	-	-	-	1,000,000
18 Morocco	Chefchaouen	200,000	-	-	-	200,000
19 Palestine	Tulkarm	600,000	-	42,000,000	-	42,600,000
20 Lebanon	Kab Elias – Wadi El Delm	7,562,350	-	-	-	7,562,350
21 Jordan	Aqaba Special Economic Zone	49,019,000	-	461,972,992	-	510,991,992
22 Jordan	Karak	33,604,096	-	243,198,208	-	276,802,304
		333,478,454	310,000	2,661,636,739	1,015,000	2,996,440,193
		11.1%	< 1%	88.8%	< 1%	

Aggregated Committed Emissions Reduction: **2,991,523** tCO₂-tCO₂eq/year (Annex 7)

Average budgeted cost per ton of emissions reductions: **1,002** EUR

Source: Annex X; Dataset (26 March 2018)

2.4.1.4.1 Monitoring and implementation

As of the date of the assessment, none of the CoM-South signatories had submitted monitoring reports on implementation. As discussed previously, given the relatively recent time of adhesion for many of the signatories, monitoring and updated emissions reports from signatories are expected later in 2018 and 2019.

2.4.1.4.2 Performance indicators

Of the 22 CoM-South signatories, three choose an emissions per capita reductions target. Unfortunately, however, an overview of this indicator for all of the CoM-South signatories is not possible due to missing or inconsistent values in the dataset (26 March 2018). Of the 22 signatories, the estimated target year population is missing for eight of the signatories and is inaccurate (i.e. the same population as in BEI reference year) for six others. Nevertheless, an overview of per capita energy consumption and GHG emissions

is available for the BEI reference years, giving an average of 5.31 MWh/capita and 2.18 tCO₂-eq/capita per year for the CoM-South signatories (Annex XI)¹⁷.

Table 8 presents key figures for the CoM-South signatories:

Table 8 Overview of key values and indicators reported by Com-South signatories

OID	Country	Signatory	Population	BEI Reference Years			
				Energy Consumption (GWh/year)	Emissions (tCO ₂ eq/year)	Per capita energy consumption (MWh/cap/year)	Per capita GHG Emissions (tCO ₂ eq/cap/year)
1	3304 Morocco	Salé	903,485	2,147.8980	875,361.91	2.38	0.97
2	6492 Palestine	Abasan Al-Kabira	25,211	76.9150	30,273.11	3.05	1.20
3	6958 Tunisia	Sfax	291,563	2,449.4720	759,066.28	8.40	2.60
4	6959 Israel	Rosh Ha'Ayin	39,900	416.6442	236,005.73	10.44	5.91
5	6960 Israel	Ramla	76,000	1,701.9123	912,953.37	22.39	12.01
6	7016 Morocco	Agadir	414,102	2,155.5560	806,090.92	5.21	1.95
7	7042 Israel	Shefa-Amer	40,000	214.9240	114,061.62	5.37	2.85
8	7266 Morocco	Oujda	484,901	1,600.3040	549,323.38	3.30	1.13
9	7320 Algeria	Batna	386,846	4,693.4000	1,512,900.00	12.13	3.91
10	7364 Lebanon	Menjez	1,410	2.1237	1,588.80	1.51	1.13
11	7480 Lebanon	Baakline	17,000	76.2686	25,635.37	4.49	1.51
12	7494 Palestine	Hebron	202,172	838.5590	450,548.13	4.15	2.23
13	7632 Algeria	Sidi Bel Abbes	295,000	2,706.4400	747,440.00	9.17	2.53
14	7798 Morocco	Benslimane	55,910	191.8030	74,326.38	3.43	1.33
15	7933 Palestine	Nablus	192,000	705.4110	398,783.08	3.67	2.08
16	8004 Jordan	Sahab*	160,000	968.5780	284,184.00	6.05	1.78
17	8202 Algeria	Boumerdès	54,556	404.0000	160,700.00	7.41	2.95
18	8339 Morocco	Chefchaouen	47,694	235.8390	83,909.77	4.94	1.76
19	8380 Palestine	Tulkarm	101,000	314.3460	190,622.49	3.11	1.89
20	9020 Lebanon	Kab Elias – Wadi El Delm	50,000	165.8946	52,987.99	3.32	1.06
21	9404 Jordan	Aqaba Special Economic	118,000	740.2925	339,676.27	6.27	2.88
22	9437 Jordan	Karak	114,000	410.3677	250,891.78	3.60	2.20
			4,070,750.00	23,216.9484	8,857,330.37	5.31	2.18

Source: Annex XI; Treated and corrected dataset

2.4.1.5 Review of consistency in energy consumption and emissions values reported

2.4.1.5.1 Consistency in Population Figures

The population of a signatory is particularly important given the relevance for comparative purposes of the *per capita emissions* indicator (tCO₂/inhabitant/year) of a signatory. Ensuring the consistency of this data point for signatories proves more challenging than might be expected. This is primarily due to the differences in population figures depending on sources and year, including the population reported in the BEI which is different from the year the SEAP/SECAP is drafted and information is submitted to the initiative. Among the 22 CoM-South signatories analysed, population figures were consistent for six of the 22 signatories. Population figures reported for the other signatories differed by as much as 22.1% (Boumerdes/Algeria), while most differed by less than 10%¹⁸. Discrepancies in the population figures appears to be due primarily to inconsistencies between population figures reported in the signatory "profile" online, figures reported in the SEAP/SECAP documents and figures reported in the BEI. Although, BEI population figures would be expected to be lower (i.e. for prior reference years), this was not the case for eight of the signatories.

2.4.1.5.2 Consistency in Energy Consumption Figures

To assess the internal consistency of the energy consumption figures reported by the CoM-South signatories, three values were compared: (i) the global energy consumption figures reported in the SEAP/SECAP documents; (ii) the sum of the energy consumption

¹⁷ Ramla/Israel is not included in the average given that it is an outlier with a per capita emissions indicator of 12.01 t CO₂-eq/per capita per year.

¹⁸ Due to its relatively small size, the differences in the population figures reported for for Menjez/Lebanon (i.e. 1,410 and 800) are not considered in this comparison.

figures reported for individual sectors and subsectors in the SEAP/SECAP documents; and (iii) the data reported in the online table formats for which the primary source was the 26 March 2018 dataset. The results of the comparative review of these values for CoM-South signatories are presented in Annex XII and can be summarised as follows:

- Minor inconsistencies were found in specific SEAP/SECAP documents with regards to the global energy consumption values compared with the sum of individual sectors and subsectors (in the same documents) for five of the signatories: Salé/Morocco (difference of 7.7%), Sfax/Tunisia (0.1%), Menjez/Lebanon (10.6%), and Boumerdès/Algeria (0.2%)¹⁹. In all five cases, global energy consumption figures reported were higher than the sum of values for individual sectors and subsectors.
- Taken as a group, the inconsistencies become insignificant: the difference in the total energy consumption figures is 168.1 GWh/year with a total of 22,526 GWh/year reported in global figures for all 22 CoM-South signatories, compared with 22,357.9 GWh/year calculated as the sum of figures for individual sectors/subsectors. Globally, the discrepancy represents less than 1% of total energy consumptions figures for all 22 CoM-South signatories. Nevertheless, in cases where the difference is greater than 5% for an individual signatory, the discrepancies should be addressed by the signatories.
- Comparing energy consumption figures for individual sectors/subsectors in the SEAP/SECAP documents with those reported in the online templates (i.e. 26 March 2018 dataset), discrepancies were identified for the following signatories: Batna/Algeria (0.4%), Menjez/Lebanon (14.2%), Sidi Bel Abbes/Algeria (24.5%), Boumerdès/Algeria (1.0%) and Sahab/Jordan (3,757.5%).

2.4.1.5.3 Signatory-specific review of energy consumption figures and examples of corrections in treated dataset

Jordan

- **Sahab:** Energy consumption values reported in the dataset for this signatory (OID 8004) differ significantly from the values reported in the SEAP/BEI document submitted. The sum of values reported in the dataset represent only 2.6% of the values total values reported in the SEAP/BEI document. This is likely due to the negative values recorded in the Sahab/Jordan dataset and to an overall issue with the inputting of the data into the CoM online format. There are also values reported for "Industry (ETS)" although this is not present in the SEAP/BEI document. It would be useful to have the signatory re-input their values online and to ensure coherence with the SEAP/BEI document. Given the large discrepancy in energy consumption figures for Sahab/Jordan, a comparative review of values from the SEAP/BEI documents and the dataset (26 March 2018) is presented in Annexe XIII.
- Another issue in the energy consumption values reported by this signatory is the lack of specific values for assets controlled directly by the municipality, besides public lighting, such as municipal buildings, water management installations and the municipal vehicle fleet. These values, which according to the SEAP/BEI document are 1,811 MWh/year, appear to be included in the tertiary and transport sector values. In order to include the correct energy consumption values of Sahab/Jordan in the global assessment, the values reported in the SEAP/BEI documents are used in the treated dataset (Annex III).

¹⁹ Differences smaller than 0.01% are not considered as significant.

Algeria

- **Batna:** The untreated dataset for this signatory presented a total energy consumption of **4,676 GWh/year** based on "Not allocated" values for two macro-sectors (*Buildings, Equipment, Facilities & Industries* and *Transport*), although specific values for sub-sectors and energy sources are presented in the SEAP/BEI document. Energy consumption values presented in the SEAP/BEI document total **4,695 GWh/year** (cf. SEAP/BEI document, p. 46). After cross-checking values for specific sub-sectors, avoiding "double accounting" of municipal assets, and correcting the dataset for this signatory, total energy consumption is adjusted to **4,693.4 GWh/year** (Annex III). It is important to note, however, that these differences represent only 0.4% of the baseline dataset value.
- As similar issues were found with values for the other signatories from Algeria (Sidi Bel Abbes and Boumerdès), it is useful to illustrate the case of Batna as an example of the discrepancies in energy consumption values depending on the sources. For illustrative purposes as to the treatment conducted on the dataset, the corrected values are also presented in the following table:

Table 9 Batna/Algeria: Example of different energy consumption values presented in different sources

Processed Dataset (26 March 2018)	MWh/year
Buildings, Equipment, Facilities & Industries - Not allocated	3,317,000.
Transport - Not allocated	1,359,00
	4,676,000
SEAP/BEI Document	GWh/year
Housing	2595
Tertiary Buildings	189
Public Lighting	11
Industries	524
Transport	1,359
Water	6
Waste	8
Agriculture	2
	4,695*

*Actual sum is 4694 but rounded value is presented.

Processed Dataset (May 2018)	MWh/year
Municipal buildings, Equipment, Facilities	2,300
Tertiary buildings, Equipment, Facilities	186,700

Residential buildings	2,594,000
Processed Dataset (26 March 2018)	MWh/year
Municipal Public Lighting	11,400
Industries (non ETS)	524,000
Industries (ETS)	-
BEFI - Not allocated	-
Municipal Fleet	2,600
Public transport	-
Private and Commercial Transport	-
Transport - not allocated	1,356,400.
Agriculture, Forestry, Fisheries	2,000
Other - not allocated	14,000
	4,693,400

- Sidi Bel Abbes:** In the untreated dataset, the global energy consumption for this signatory is 2,671 GWh/year based on values included for only two sub-sectors: *Buildings, Equipment, Facilities & Industries – Not allocated* and *Transport – Not allocated* (Annex XIV). A comparison with the SEAP/BEI document shows that energy consumption values are available for specific sub-sectors. In the SEAP/BEI document, a significant inconsistency appears in the values presented for the *Transport* sector in the energy consumption summary table (p. 45): a total of 774 GWh/year is presented instead of 1,461.4 GWh/year. This discrepancy also appears in the summary energy consumption graph (p. 44). In the treated dataset, energy consumption values are included for specific sub-sectors, taking care to avoid double accounting of values for municipal assets (e.g. municipal fleet and public lighting). The total energy consumption value for this signatory after treatment/correction is **2,706.44 GWh/year**, representing a difference of only 1.3% with the untreated values.
- Boumerdès:** Energy consumption values were only presented for three subsectors in the original dataset, although specific values (e.g. municipal buildings, municipal fleet) are provided in the SEAP/BEI document. A minor yet relevant aspect illustrated by this signatory relates to the precision of presented values (i.e. decimal places and rounding of values). Without sufficient precision, values may appear to be inconsistent by as much as 2 GWh/year due to rounding issues, as is the case with the summary table presented in the SEAP/BEI document (p. 44). These issues have been corrected in the treated dataset for this signatory with total energy consumption of **404 GWh/year**.

Lebanon

- **Menjez:** A close review of the SEAP/BEI document found that there are inconsistencies in the figures reported for energy consumption for tertiary buildings (p. 25) and for the residential buildings sector (p.26). The summary table presenting BEI results (p. 33) shows inconsistencies in the figures presented and the total energy consumption figure of **2,016 MWh/year** is not substantiated.
- The 358.7 MWh/year of consumption from local electricity production (p. 35) was not included in the dataset. Energy consumptions from diesel (clearly shown in the SEAP/BEI document) were included in the "electricity" value in the dataset. After correcting for these issues in the treated dataset (Annex III), total energy consumption for Menjez is **2.1237 GWh/year**.

2.4.1.5.4 Discrepancies contained within the SEAP/BEI documents for emissions

A review of emissions values reported by CoM-Signatories was conducted based on the SEAP/BEI documents (global values and cross-checking with the sum of sub-sector values). Based on this review, inconsistencies were found with four of the CoM-South signatories, representing an aggregated total difference of 0.7% (60,075 tCO₂) for all four signatories (see Annex XVI)²⁰:

- **Salé/Morocco:** In the SEAP/BEI document for this signatory, a global emissions value of 875,361.891 tCO₂ is reported (cf. SEAP/BEI document, p. 30) while the sum of values for subsectors equals 820,823.126 tCO₂, representing a difference of **6.6%** with respect to the lower figure (i.e. sum of subsectors).
- **Ramla/Israel:** In the emissions summary table in the SEAP/BEI document (Table 1, p. 13), total emissions are reported as 912,953.07 t CO₂ while the sum of the values for subsectors in the same table is 907,895.37 tCO₂, representing a difference of 0.6% (5,057.7 tCO₂).
- **Menjez/Lebanon:** In the Executive Summary of the SEAP/BEI document (p. 2), total emissions are reported as 1,180 tCO₂-eq while in the descriptive emissions tables (pp. 34-36), the emissions values reported for sub-sectors amount to 1,589.3 t CO₂, representing a difference of 29.7% (471.3 t CO₂eq).
- **Boumerdès/Algeria:** A minor inconsistency was identified between the global emissions value reported in the SEAP/BEI document and the sum of values for individual sub-sectors, 159,000 t CO₂ compared with 157,000 tCO₂, representing a difference of only 1.3%.

2.4.1.5.5 Discrepancies between SEAP/BEI documents and the dataset for emissions

Significant differences were identified for all but five²¹ of the CoM-South signatories when comparing the emissions values reported in their SEAP/BEI documents and the dataset (26 March 2018) produced from the online reporting templates. Overall, a difference of 1,206.56 kilotons CO₂/CO₂eq was identified between the emissions values in the dataset and the reported values in the SEAP/BEI documents, representing a global difference of 13.6%. Whilst **7,649.97 kt** CO₂/CO₂eq of emissions are reported in the dataset, the SEAP/BEI documents report a total of **8,856.52 kt** CO₂/CO₂eq (see Annex XVII).

²⁰ Cases where the rounding of figures resulted in minor differences (i.e. smaller than 0.5% as in the case of Sidi Bel Abbes/Algeria) are not presented.

²¹ Differences equal to or less than 0.1% are not considered significant.

When comparing values of GHG emissions reported by CoM-South signatories depending on the sources, a total discrepancy of 13.6% was found between global emissions reported in the SEAP/SECAP/BEI documents and the untreated dataset (26 March 2018). Only four of the signatories had the same values reported in their documents as in the dataset (Annex XVII). Whilst some of the differences were relatively minor for individual signatories (i.e. less than 5%), values for 11 of the signatories – half of the CoM-South Signatories – presented differences larger than 10%. Based on this review and a detailed cross-checking with SEAP/SECAP/BEI documents, the treated/corrected dataset with emissions values was produced (Annex V) that is congruent with the SEAP/SECAP/BEI documents. Table 1 presents a comparative overview of the differences in emissions values reported.

Table 10 Comparison of GHG emissions values reported by the CoM-South signatories

OID	Country	Signatory	SEAP/BEI Documents	kilotonnes CO ₂ /year or kilotonnes CO ₂ e/year		Dataset - Untreated	Difference between sources		Dataset - Treated
			Global Emissions (A)	Difference between sources A - B		Global Emissions (B)	Difference between sources A - C		(C)
1 3304	Morocco	Salé	875.3619	19.1%	167.0849	708.2770	0.0%	(0.00)	875.3619
2 6492	Palestine	Abasan Al-Kabira	30.2731	0.0%	0.0000	30.2731	0.0%	0.00	30.2731
3 6958	Tunisia	Sfax	759.0540	0.0%	(0.0123)	759.0663	0.0%	(0.01)	759.0663
4 6959	Israel	Rosh Ha'Ayin	236.0057	3.8%	9.0090	226.9967	0.0%	(0.00)	236.0057
5 6960	Israel	Ramla	912.9531	2.9%	26.7647	886.1884	0.0%	(0.00)	912.9534
6 7016	Morocco	Agadir	806.0900	4.4%	35.1112	770.9788	0.0%	(0.00)	806.0909
7 7042	Israel	Shefa-Amer	114.0616	16.0%	18.3000	95.7616	0.0%	(0.00)	114.0616
8 7266	Morocco	Oujda	549.3230	0.0%	(0.0004)	549.3234	0.0%	(0.00)	549.3234
9 7320	Algeria	Batna	1,513.0000	21.2%	321.1110	1,191.8890	0.0%	0.10	1,512.9000
10 7364	Lebanon	Menjez	1.5888	17.7%	0.2815	1.3073	0.0%	-	1.5888
11 7480	Lebanon	Baakline	25.6350	0.0%	(0.0004)	25.6354	0.0%	(0.00)	25.6354
12 7494	Palestine	Hebron	448.1330	16.8%	75.2180	372.9150	-0.5%	(2.42)	450.5481
13 7632	Algeria	Sidi Bel Abbes	751.0000	9.0%	67.8720	683.1280	0.5%	3.56	747.4400
14 7798	Morocco	Benslimane	74.3260	8.6%	6.3876	67.9384	0.0%	(0.00)	74.3264
15 7933	Palestine	Nablus	398.2360	22.5%	89.7761	308.4599	-0.1%	(0.55)	398.7831
16 8004	Jordan	Sahab	283.7500	100.0%	283.7500	-	-0.2%	(0.43)	284.1840
17 8202	Algeria	Boumerdès	159.0000	-40.8%	(64.8190)	223.8190	-1.1%	(1.70)	160.7000
18 8339	Morocco	Chefchaouen	84.1610	31.5%	26.5124	57.6486	0.3%	0.25	83.9098
19 8380	Palestine	Tulkarm	191.5190	26.5%	50.7137	140.8053	0.5%	0.90	190.6225
20 9020	Lebanon	Kab Elias – Wadi El Delm	52.9540	-0.1%	(0.0340)	52.9880	-0.1%	(0.03)	52.9880
21 9404	Jordan	Aqaba Special Economic Zone	339.6763	9.1%	30.8203	308.8560	0.0%	(0.00)	339.6763
22 9437	Jordan	Karak	250.8920	25.2%	63.1817	187.7103	0.0%	0.00	250.8918
			8,856.99	13.6%	1,207.03	7,649.97	0.00%	(0.34)	8,857.3304

Sources:

- A SEAP/SECAP documents with BEI results.
- B Dataset compiled from the CoM online reporting portal (26 March 2018).
- C Treated/ processed dataset completed/corrected by crosschecking SEAP/SECAP documents.

Given the inconsistencies in the emissions values from different sources, the dataset was processed using the SEAP/BEI documents to complete/correct data, where possible, for 17 signatories. Many of the inconsistencies found were the result of missing values for sub-sectors, particularly for waste and water management (e.g. Rosh Ha'Ayin, Shfar'am and Ramla in Israel, and Agadir/Morocco). The resulting dataset is consistent with the values presented in the SEAP/BEI documents (differences of 1% or smaller), and provides a breakdown of emissions by sub-sectors and energy sources. As discussed previously, the processed and corrected dataset for emissions values is presented in Annex V.

3 Detailed evaluation of Sustainable Energy Action Plans

3.1 Selection of sustainable Energy Action Plans for detailed evaluation

This section presents the approach for selecting a number of SEAPs for an in-depth assessment. The objective was to conduct an analysis of SEAPs that are representative of the CoM South in terms of LA size and geographical location. The specific criteria are further explained in the next sections.

Number of SEAPs per country

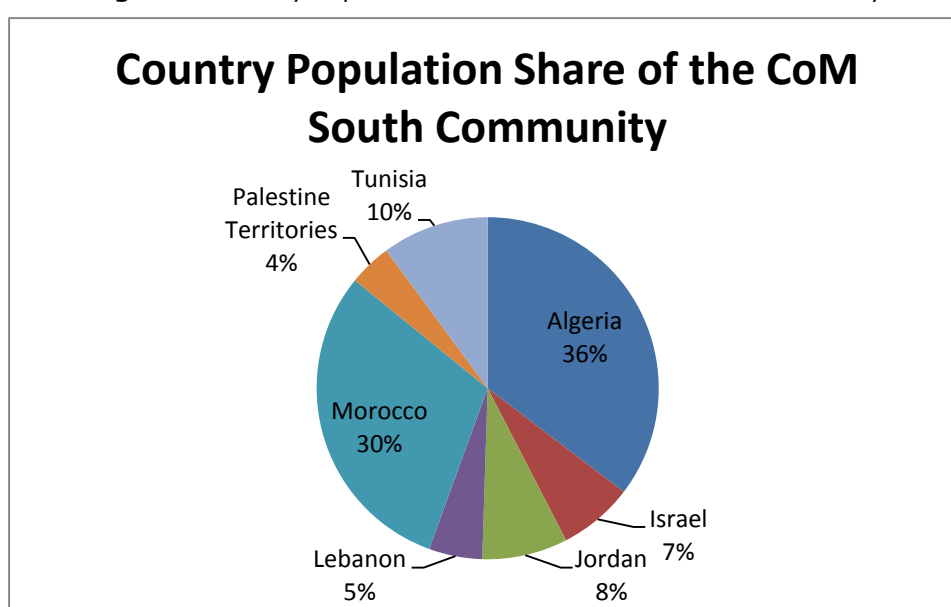
Table 11. Number of SEAPs considered for detailed evaluation and total number of submitted SEAPs per country

Name of the city	Country	Total cities	No. of selected SEAPs per country	City Population *	Country Population **	Year of SEAP Submission
Batna	Algeria	3	3	350,000	40,606,000	2015
Boumerdès	Algeria			42,500	40,606,000	2015
Sidi Bel Abbès	Algeria			300,000	40,606,000	2015
Ramla	Israel	3	1	75,000	8,547,000	2016
Rosh HaAyn	Israel			42,000	8,547,000	2017
Shfar'Am	Israel			40,000	8,547,000	2016
Sahab	Jordan	1	1	160.000	9,456,000	2017
Baakline	Lebanon	3	1	17.000	6,007,000	2016
Kab Elias – Wadi El Delm	Lebanon			50.000	6.007.000	2017
Menjez	Lebanon			800	6.007.000	2016
Agadir	Morocco	5	3	450.000	35,277,000	2016
Benslimane	Morocco			58.194	35.277.000	2016
Chefchaouen	Morocco			43.000	35.277.000	2017
Oujda	Morocco			477.100	35.277.000	2016
Sale	Morocco			903.485	35.277.000	2012
Abasan-Al Kabira ***	Palestine Territories	4	1	30.000	4,797,000	2015
Hebron	Palestine Territories			163.146	4.797.000	2016
Nablus	Palestine Territories			190.000	4.797.000	2016
Tulkarm	Palestine Territories			101.000	4.797.000	2016
Kairouan (non-signatory)	Tunisia	3	1	160.000	11,403,000	TBC
Sfax	Tunisia			320.000	11.403.000	2017
Sousse (non-signatory)**	Tunisia			223.235	11.403.000	TBC

As mentioned before, 22 SEAPs were available for an in-depth analysis (refer to Table 11). The primary objective for the selection was to pick at least one signatory per country. In addition, countries were rated in terms of their total population reflecting opportunities for the achievement of a higher impact of the initiative. Hence, the total size of the potential Covenant Community in the Southern Region was calculated on the basis of the total population of the 7 countries where signatories were available ²²

With this in mind, countries were divided in 2 sub-groups: countries with a population share of the total above 30% (Algeria, Morocco) and countries with a share less than 30% (Israel, Jordan, Lebanon, Palestine Territories, Tunisia). Since Algeria and Morocco have the highest population share in the CoM South Community it was decided to analyse 3 SEAPs from each country in order to keep the proportions visualised in the pie chart "Country Share of the CoM South Community". One LA per country will be analysed for the rest of the countries.

Figure 6 Country Population Share of the CoM South Community



Criteria for selecting SEAPs

As mentioned in the In-depth Analysis of Sustainable Energy Actions Plans (Silvia Rivas, 2015), most of the Covenant of Mayors signatories (89 %) are small- and medium-sized towns. For this to be reflected, the team took into consideration the size of the signatories in each country. A secondary factor was the typology of the signatory i.e. city/borough/urban community.

Criteria for selection: **size of the LAs and the typology of the LA.**

The details for the individual selection are presented below.

Selected signatories

Based on the criteria previously described, 11 signatories were selected and listed in table below.

²² At the time of the evaluation no SEAP from Egypt was available and the total population of the country was not included in the calculations.

Table 12 List of the 11 Signatories selected for a detailed evaluation of their SEAP

Country	Name of City	Type of Signatory	Population	Year of SEAP submission
Algeria	Batna	City	350 000	2015
	Boumerdès	City	42 500	2015
	Sidi Bel Abbès	City	300 000	2015
Israel	Rosh Ha'Ayin	City	42 000	2017
Jordan	Sahab	City	160 000	2017
Lebanon	Kab Elias – Wadi El Delm	Borough	50 000	2017
Morocco	Agadir	Urban Community	450 000	2016
	Chefchaouen	City	43 000	2017
	Sale	City	903 485	2012
Palestine Territories	Hebron	City	163 146	2016
Tunisia	Sfax	Town	320 000	2017

The selection of each signatory is described as follows:

Algeria: Based on the suggested methodology, 3 signatories were to be selected from the country which was the exact number of available action plans at the Covenant Directory. Hence, SEAPs from Batna, Boumerdès (a coastal city) and Sidi Bel Abbès were reviewed.

Israel: With a country share of the CoM South Community of 7%, one SEAP from Israel was selected - Rosh Ha'Ayin. On one hand, as explained above, a priority was given to smaller cities since they comprise the largest part of the CoM Community. In population comparative terms Rosh Ha'Ayin (42 000) was in between Ramla (75 000) and Shfar'Am (40 000) and after a brief analysis Rosh Ha'Ayin was selected over Shfar'Am due to its participation in twinning programs and its more developed industrial sector. These features were found particularly promising for the present in-depth analysis.

Jordan: Similarly to Algeria, no further selection criteria needed to be attributed for the city of Sahab having the only submitted and approved SEAP at the time of this assessment.

Lebanon: In the case of Lebanon, the selected cities were Kab Elias – Wadi El Delm. The selected population size (50 000) corresponded best to the needs of the assessment and also presented a case to review a borough. Nevertheless, best cases from Baakline (17 000) was considered in order to highlight a (unique) case from a city with significantly lower populations.

Morocco: Morocco was the country with the highest number of signatories and submitted SEAPs. Agadir was selected because of its signatory typology as an urban community and as a key tourist and fishery centre of Morocco. Second, Chefchaouen was selected for an in-depth evaluation based on its efforts in the climate change sector.

Third, the Sale SEAP was sought as worth investigating given the fact that it was the earliest submitted plan for the Southern Mediterranean (2012).

Palestine Territories: The choice among the Palestinian municipalities included Abasan-Al Kabira (30 000), Hebron (163 146), Nablus (190 000) and Tulkarm (101 000). Hebron was selected due to its population size and because of its signatory typology ('a town').

Tunisia: The SEAP of Sfax (a coastal city) was the only official CoM Signatory from the country for the time being. The municipalities of Kairouan and Sousse, although having the approval of their SEAPs, were not signatories of the CoM yet.

3.2 Results of the evaluation: how cities addressed the ten key principles of the Covenant of Mayors

1st Principle: SEAP approval by Municipal Council

The CoM South Guidebook underlines the establishment of the political commitment and the appropriate governance structures supported by the relevant local stakeholders as the cornerstones for the initiation of the initiative within the LAs. It is worthwhile noting that the links between national and sub-national governments are very strong in the countries from the analysed region, although this element was rarely described in detail in the 11 SEAPs. What was rather noted was the reliance of sub-national authorities to the national endorsement, technical and financial support in the development and implementation of the SEAPs (refer to Principle 8th: Financing).

As seen in Table 13, the authority in charge of approval of the SEAP was a single one – the Municipal Council although, due to the particular administrative division of Algeria, specific consultation with another administrative collectivity unit (the 'Wilaya') was sought to ensure coherence in the local planning. The 'Wilaya' was again mentioned in the plan of Chefchaouen (Morocco) as a key party for the implementation of large projects that might exceed the municipal perimeter.

No difficulties for LAs in meeting Principle 1 were found during the analysis.

Table 13. SEAP approval by Municipal Council or equivalent body

Country	Authority approving the SEAP
Algeria	Communal People's Assembly of the Commune with the approval and participation of the Wilaya ²³
Israel	Municipal Council
Jordan	Municipal Council
Lebanon	Municipal Council
Morocco	Council of the urban municipality or Municipal Council ²⁴
Palestine Territories	Municipal Council
Tunisia	Municipal Council

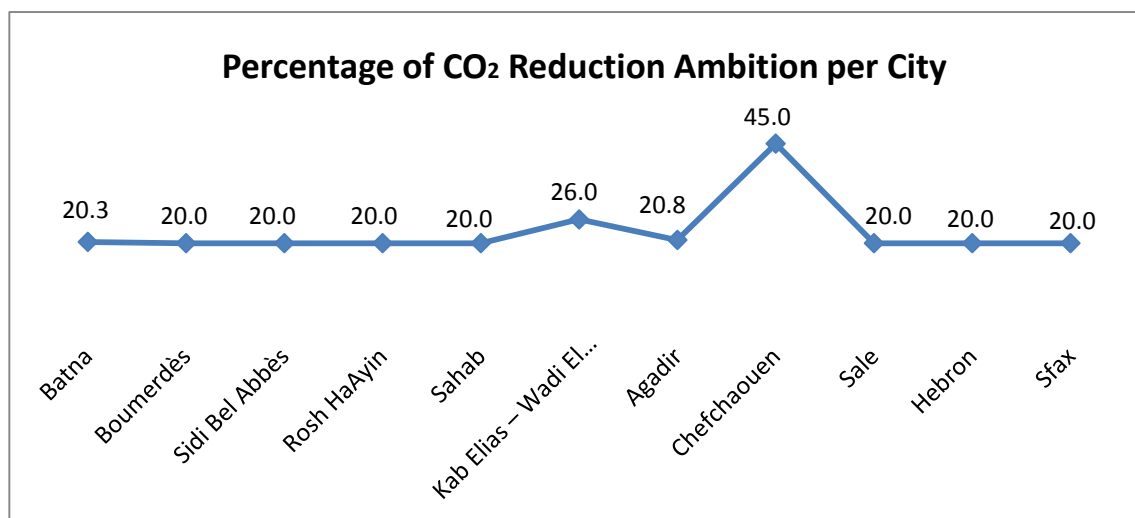
²³ The Algerian wilaya is a constitutional institution and is a decentralized territorial collectivity. The local authorities of the state are the municipality and the province. Information from the Ministry of the Interior and Local Authorities of Algeria is accessible here: <http://www.interieur.gov.dz/index.php/fr/elect/41-organisation-des-collectivites-locales/92-la-wilaya.html>

²⁴ According to the administrative division in Morocco there are 2 types of territorial units in urban areas – municipalities (FR: commune) and urban municipalities (FR: commune urbaine). Agadir and Sale are urban municipalities while Chefchaouen is a municipality.

2nd Principle: Commitment to GHG reduction by at least 20% by 2020

In principle and in accordance with the CoM South Guidelines, the LAs subject to the present analysis all committed to the required target of 20 % reduction by 2020. However, in their actual SEAPs, the authorities often suggested higher numbers reflecting their ambition to further decrease the CO₂ emissions. At times the Feedback reports to the cities noted that the CO₂ reductions were ambitious and the LAs needed to make sure they were realistic. Figure 8 below presents the reduction percentages included in the SEAPs where Chefchaouen is planning the highest reductions of - 45 %.

Figure 7 Percentage of CO₂ Reduction Ambition per City



No difficulty was found in the compliance with Principle 2. However, the first monitoring report will verify the feasibility of the targets within the set timeframe. It is recommended that the estimations are accurate and realistic.

3rd Principle: Baseline Emission Inventory

The signatories from CoM South countries can choose between two approaches when developing their BEI:

- The (standard) Intergovernmental Panel on Climate Change (IPCC) approach: It covers all the CO₂ emissions that occur due to energy consumption within the territory of the local authority, either directly due to fuel combustion within the local authority or indirectly via fuel combustion associated with electricity and heat/ cold usage within their area and accounts CO₂ as the most important greenhouse gas whereas CH₄ and N₂O emissions are not calculated.
- The Life Cycle Assessment (LCA) approach: It takes into consideration the overall life cycle of the energy carrier and includes emissions of the supply chain along with the final combustion. Given the fact that emissions from exploitation, transport and processing are included, this approach traces emissions also outside of the location of the LA.

Furthermore, thanks to the flexibility of the initiative signatories are allowed to set their reduction types differently (in absolute or per capita terms) and measure the reduction of emissions in different units (tons CO₂ equivalent or tons CO₂). As mentioned in section 1.3.2, one of the peculiarities of the CoM South framework is the possibility to set the goals based on a BAU scenario. However, in the case of Rosh Ha'ayin the use of the national coefficient for Israel ($k=1.27$) for the selected baseline year (2011) under the BAU was not considered appropriate to cover the foreseen magnitude of population increase. Instead, two alternative scenarios were studied:

- Development of a no-actions scenario, as a modified BAU scenario, in an effort to estimate the municipality's consumptions in 2020, in case that no measure to curtail the energy consumption growth is taken.
- Setting per capita reduction targets.

The present study shows that the majority of signatories chose to use absolute reduction targets with two Moroccan municipalities looking at per capita reduction type. In addition, the IPCC factor as a coefficient to quantify the emission per unit of activity was the most often used one. Finally, 8 cities used CO₂ equivalent as a reporting unit and 3 chose to go for tonnes CO₂ (See table 14).

Table 14 Data on reduction types, emission factors and reporting units

Name of the city	Country	Reduction Type	Emission factor	Reporting Unit
Batna	Algeria	Absolute	IPCC	CO ₂ equivalent
Boumerdès	Algeria	Absolute	IPCC	CO ₂ equivalent
Sidi Bel Abbès	Algeria	Absolute	IPCC	CO ₂ equivalent
Rosh HaAyin	Israel	Absolute	IPCC (LEF is used for electricity)	CO ₂ equivalent
Sahab	Jordan	Absolute	LCA	tonnes CO ₂
Kab Elias – Wadi El Delm	Lebanon	Absolute	IPCC	tonnes CO ₂
Agadir	Morocco	Absolute	IPCC	CO ₂ equivalent
Chefchaouen	Morocco	Per Capita	IPCC	CO ₂ equivalent
Sale	Morocco	Per Capita	IPCC	tonnes CO ₂
Hebron	Palestine Territories	Absolute	IPCC	CO ₂ equivalent
Sfax	Tunisia	Absolute	IPCC	CO ₂ equivalent

As seen from Table 15, data for building the BEI for the key sectors was provided by the majority of the signatories. In addition, they further submitted data on the voluntary sectors of public lighting, agriculture, forestry, fisheries.

Table 15 Sectors included in Baseline Emission Inventory (BEI) and sectors where signatories plan most measures

Name of City	Buildings			Transport			Other sectors	Notes on Methodology
	MUNC	RESD	TERT	MUNC	PUBL	PRIV		
Batna	-	-	-	-	-	-	-	Data was presented for the general buildings and transport sector but no reporting was done on sub-sectors
Boumerdès	-	-	-	-	-	-	-	Data was presented for the general buildings and transport sector but no reporting was done on sub-sectors
Sidi Bel Abbès	-	-	-	-	-	-	-	Data was presented for the general buildings and transport sector but no reporting was done on sub-sectors
Rosh HaAyin	x	x	x	x	x	x	PL, Indst (Non-ETS) & Agri	BEI calculations were presented for the majority of sub-sectors
Sahab	x	x	x	-	x	x	PL, Indst & AGR	Calculations for building BEI presented for the majority of sub-sectors
Kab Elias – Wadi El Delm	x	x	x	x	x	x	PL, Local RE Production	Calculations for the BEI were presented for all sub-sectors
Agadir	x	x	x	x	x	x	Indst(Non-ETS) PL	Data was reported for all compulsory sub-sectors and for several non-compulsory ones
Chefchaouen	x	x	x	x	-	x	PL, Indst, AGR	Information on the public transport was not included although data was reported beyond the compulsory sectors but
Sale	x	x	x	-	-	-	PL, Indst (Non-ETS)	Data on municipal fleet, public transport and private and commercial transport was not provided. Data was given for transport in general
Hebron	x	x	x	x	x	x	Indst (Non-ETS), PL, AGR	Calculations for the BEI were presented for all as well as information on waste management
Sfax	x	x	x	x	x	x	Indst (Non-ETS), PL, AGR	Data was provided for all the sectors

Where:

- measures are not planned in this sector / x measures are planned in this sector / Indst – Industry PL – Public Lighting AGR - agriculture, forestry, fisheries

The main difficulties came from estimating the emissions from the transport sector and the tertiary buildings. In addition, most of the SEAPs included non-compulsory sectors and also, included actions on water and waste water management.

Overall, signatories did not seem to face significant difficulties in relation to the baseline emission inventory. However, the uniform format developed by the CES-MED project and used for majority of the SEAP hints that even if certain calculations were hindering the SEAP development, they were resolved with assistance outside of the municipality – with the external experts of the team.

4th and 5th Principles: Measures covering key sectors & Long and short-term actions

Principles four and five look at the measures and actions under the SEAPs. In any Regional CoM, the local authority should identify and prioritise the required and/or most effective sectors in which to implement emission reduction actions. The local authority is also meant to establish a long-term vision with clear objectives for each sector.

All plans under the study presented short and long-term actions and measures. Annex I of this report presents a selection of best practices while a snapshot of some general findings is presented below.

Residential and commercial buildings

The suggested actions and measures in the MENA region covered a wide range of sectors (buildings, transport, public lighting, industry, agriculture) and cross-sectorial measures as well. In the feedback reports, the JRC recommended for LAs to focus on residential and tertiary buildings which were often highly emitting in the urban environment and were to be targeted in the SEAPs. This recommendation is also linked to the urge for municipalities in the South to work on the development and refurbishment of various buildings, included the residential, the tertiary and the municipal. Examples were provided for commercial buildings and facilities. Kab Elias (Lebanon) planned to undertake promotion of solar water heaters in commercial buildings in order to reduce electricity consumed from the grid and take advantage of the high solar potential the southern cities have.

Municipal buildings and street lighting

The studied SEAPs presented a wide range of solutions for municipal buildings and street lighting. Photovoltaics (PV) on building rooftops for lighting and heating (Sfax, Rosh Ha'Ayin) were often present and considered as a "low hanging fruit". In addition, LED lighting solutions were seen as the natural solution for increasing EE and the phase out of the of old light bulbs. As highlighted in the case study of Rosh Ha'Ayin (Israel) on "Refurbishment of municipal buildings" (Section 3.5- Examples of measures from Sustainable Energy Action Plans) initiatives driven by the municipalities can turn them into an exemplary role model and attract public attention and interest on available solutions.

Tourism

What is characteristic for municipalities with a developed touristic sector is variation in the energy consumption and GHG emissions as a result of population flows (Sahab, Agadir, Bourmedes). The analysed municipalities often spoke of their heritage areas and archaeological sites. Bourmedes specifically look at working on information and awareness rising of the stakeholders in the sector where the awareness of the staff of the hotel industry was seen as an essential action to mobilize tourists and disseminate messages in favour of EE and RE. Chefchaouen on its turn suggested an action linked to an integration of energy efficiency measures in the rehabilitation of one of the city's museums.

Municipal Staff

Incentives and dis(incentives) for the municipal employees to reduce their energy consumptions were often noted, sometimes in the form of competition between employees (Sahab, Hebron), others in implementation of energy saving instructions for employees to fulfill (Kab Elias). Simple monitoring mechanisms in the municipality buildings in Kab Elias were suggested to measure the extent of compliance with the rules related to mitigation of electricity consumption whereas in Hebron gratification for the efforts was suggested.

Transport

Transport plays a crucial role in emissions in the Southern Mediterranean region which is evident from its ranking among top three highest GHG emitting sectors in the analysed SEAPs. Hence, measures for promotion of eco-driving were mentioned in the plans of Kab Elias, Agadir and Sale. Cities as Sidi Bel Abbes saw the promotion of the use of less polluting vehicles in public transport as a long-term action and Chefchaouen chose to suggest an action on the acquisition of a hybrid car for long-distance journeys out of the city, promotion of electric mobility and consultation with stakeholders in the public and commercial transport sectors.

6th Principle: Adaptation of city administrative structure

Each SEAP needs to outline the administrative structure(s) necessary for its successful implementation. It is the responsibility of the LAs that the SEAP is taken into account at different levels and by different departments, including those at a national level.

All the analysed LAs submitted a planning for the adaptation of the relevant administrative structures. However, only a few did present the graphic visualisation of its place in the municipal organigram. It is of interest to understand whether and how these structures were put in place after the submission of the SEAPs and the monitoring report from the signatories will be a valuable source for verification.

Apart from the signatories from Morocco, all other municipalities had to employ new staff and/or establish new structures within their institutional set up to accommodate a unit to be responsible for the Covenant of Mayors and the SEAP preparation and implementation, including update of the emission inventory and the coordination of the various actions. The SEAPs specifically and repeatedly underlined the lack of existing technical expertise ranging from knowledge in EE, RE and efficient transport to project management (data management, financial forecasting and investment planning, communication skills, green public procurement).

Interestingly, although NGOs were highlighted as recommended organisational structures for the MENA cities, they were not explicitly mentioned in the SEAPs. With a lack of reference of the groups it is questionable to what extent these groups have been integrated in the national structures, what is the level of awareness about their role and function and whether they can remain sustainable in the future despite the importance they are given by the CES-MED project.

Table 16 Adaptation of the municipal structures

Country	Name of City	General Comments	Graphical representation
Algeria	Batna	The setup of the structure is planned - a coordination unit - map provided	Yes, tailored
	Boumerdès	A cell responsible for the Covenant of Mayors has been integrated in the administrative structure to respond to the elected official for energy and the general secretariat of the municipality	Yes, tailored
	Sidi Bel Abbès	Same as in Boumerdès	Yes, tailored
Israel	Rosh Ha'Ayin	An adapted administrative structure is implemented and an Energy Manager is to be appointed	Yes, tailored
Jordan	Sahab	It was planned to create a sustainable energy activity unit. Appointment of the elected official tasked with energy	No
Lebanon	Kab Elias – Wadi El Delm	It was planned to set up a SEAP Unit (comprised by energy engineers) inside the municipality, Setup a Website for the SEAP implementation, use facebook and other social media	No
Morocco	Agadir	The coordination and organizational structures have been created and the respective municipal team has been assigned. It is planned to expand the existing team "energy" founded under the initiative Jiha Tinou and comprised by permanent staff and elected officials	No
	Chefchaouen	No new staff allocation was made - the technical staff of the municipality was trained on BEI and prepared the SEAP. In 2017, the Municipality had just approved the creation of a new service within the municipal structure: the Environment, Climate, Sustainable Development and Cooperation Department (SECDDC) that is also responsible for the follow up of the SEAP implementation	No
	Salé	The SEAP will be coordinated by the city council of Salé. It will define and assign the responsibility of execution to one or several city council services and other stakeholders once the SEAP is approved. It is planned that a min. of 2 staff members is needed to coordinate the execution of the measures stipulated in the SEAP	No
Palestine Territories	Hebron	In order to implement the SEAP, the municipality will create a sustainable energy activity unit. The unit will be in charge of all municipal energy related questions	No

Country	Name of City	General Comments	Graphical representation
Tunisia	Sfax	An environmental engineer is being recruited within the Municipality to work full-time on the SEAP implementation. Other engineers are and will be associated with this initiative, as required	No

7th Principle: Mobilisation of civil society

The mobilisation of the civil society was always mentioned in the analysed SEAPs. On one hand, this was done in relation to the development phase of the SEAPs where consultations were sought with various actors, including national ministries, private sector, civil society, mosques, entrepreneurs, youth and academia. On the other hand, the involvement of citizens in the actual implementation of the SEAPs was seen as equally important. Several promotion plans for raising awareness were presented.

It is recommended to promote decentralised cooperation between cities and regions where possible. The plans often emphasised on city-to-city cooperation on a national scale but examples of decentralised cooperation partnerships were lacking. While in Europe the cooperation of local authorities and regions with partners from other countries is quite common (Valmorbida, 2016), it seems this is not the common case yet in all the countries covered by CoM South.

Agadir presented extensive information on its activities and communication with various stakeholders. The city is also an active member of the Moroccan Networks of Energy Management, the Urban Waste Management and the Moroccan Network of Public Transport and is working under decentralised cooperation principle with Nantes Métropole-France.

Further comments can be found in **Table 17**.

Table 17 Stakeholders' involvement in the SEAP development and implementation

Country	Name of City	General Comments
Algeria	Batna	A Promotion plan for raising awareness among citizens and civil society is foreseen
	Boumerdès	Information and awareness of professionals and citizens & cooperation with the university to optimize energy consumption in the university buildings are within the foreseen short-term actions/ Communication plan for information and awareness
	Sidi Bel Abbès	Short-term actions include: Citizen Awareness Campaign; Organization of a green entrepreneurship fair in partnership with the Chamber of Commerce; Training young craftsmen and helping to create local businesses; Promotion of entrepreneurial training by the Chamber of Commerce/ Communication plan for information and awareness
Israel	Rosh Ha'Ayin	A Citizens Awareness Promotion Plan and collaboration with other Israeli Municipalities members of the CoM are planned

Country	Name of City	General Comments
Jordan	Sahab	The municipality has adopted a participative approach during the elaboration phase of the SEAP and conducted surveys of Sahab residents so that municipality members, local residents, and other key stakeholders can provide input to the Plan/ Citizen awareness promotion plan
Lebanon	Kab Elias – Wadi El Delm	Short-term actions have been indentified together with mosques/churches & local NGOs. Public awareness campaign on how citizen can save money in houses and with reward. The city did public consultations on the SEAP with with the different civic society associations. For the implementation of the SEAP, a workshop with the participation of all the local community members is foreseen
Morocco	Agadir	The citizens and stakeholders were present during the discussion and presentation of the BEI and the actions identified, before their finalization and adoption by the municipal council
	Chefchaouen	Consultations for the SEAP development were made with civil society, the Participatory Council of the Environment, the Energy Information Center (CIE) and others. For several years, the municipality of Chefchaouen has adopted a participatory approach to its territorial planning, including actions promoting sustainable development and good energy management
	Sale	The city council will set up an Internal Energy Committee made up of the Heads of the departments of the city. As to the External Energy Committee, it will host institutional stakeholders and civil society associations. The Mayor or a person representing him will sit in this committee together with institutional stakeholders from the national government, academia, transport operators, the Chamber of Trade and Commerce and the private sector
Palestine Territories	Hebron	The municipality adopted a participative approach during the elaboration phase of the SEAP. In addition, its implementation phase engages all of the stakeholders, including: institutions, agencies and organizations, professional organizations, socio-economic actors, NGOs, local councils, etc./ Citizen awareness plan
Tunisia	Sfax	Sfax already involves various stakeholders and citizens through the communication and awareness-raising actions that are mentioned in the action plan

8th Principle: Financing

The CoM Southern Mediterranean guidebook does not set strict requirements for the section on financing but rather asks for an identification of the financing resources for each step of the SEAP development, implementation and monitoring. In overall, this section is perceived as a difficult one for the signatories and this region makes no exception.

As shown in Table 18, municipalities strongly rely on the national budgets and lack the means for SEAP implementation which is due to their limited annual budgets. Therefore,

they seek a complementary funding at the national and international level. Unfortunately, the financing topic was not developed to a satisfactory detail in any of the mentioned plans. Satisfactory here is defined as either:

- Proposing a specific strategy or tool for liaising with parties interested in financing the SEAP
- Mapping municipality-specific opportunities for financing SEAPs (i.e organization of events and specific meetings)
- Using the communication and/or promotion activities to attract external funding and financing.

Little reference was made to existing or planned initiatives where synergies could be sought. An interesting example came from Morocco where specific links were planned with *Jiha 'Tinou*, the territorial strategy of the Moroccan Agency for Development of Renewable Energy and Energy Efficiency (in Fr: "*L'Agence nationale pour le développement des énergies renouvelables et de l'efficacité énergétique*").

It is further noted that certain sections of the financing part of the various SEAPs were identical to each other, especially on the call for innovative financing mechanisms where the justification for their need was always the same. The conclusion is that due to the external support in the preparation of the plans, certain sections were repeated without further contextual analysis and/or reflection.

Table 18 Main financial resources for implementing SEAPs

Country	Name of City	General Comments
Algeria	Batna	National and international resources are necessary for the SEAP implementation. It is recommended to look for innovative financing mechanisms needed for the implementation of RE and EE actions and measures
	Boumerdès	Apart from the main fund for financing EE energy in Algeria (the fund for the management of energy), other national funds on environment and pollution, local governance and development of the different regions have been identified. It is further suggested to work on innovative financing mechanisms mixing loans, grants, third-party financing, cooperative solutions, funds and others
	Sidi Bel Abbès	Will use CES-Med synthesis of the existing funds at national level and for which the municipalities are eligible. Confirms the need for innovative finance
Israel	Rosh Ha'Ayin	Rosh Ha'Ayin relies on EU Funding schemes, the Israeli Government and the Ministries of Finance and Environment

Jordan	Sahab	Sahab shall rely on national (national agencies, the Municipal Development Fund, the Lending Fund) and international aid for the SEAP implementation. The Municipality looks for a 50 K€ financial support to feed in a revolving fund dedicated to old lamps replacement. An underlined need for an innovative financing
Lebanon	Kab Elias – Wadi El Delm	Although the Ministry of Interior and Municipalities in Lebanon is mentioned as instrumental in supporting municipalities in their carbon reduction targets, no specific financial resources have been identified for the implementation of the SEAP. The CES-MED project and GT & VH consortium will be assisting the municipality in meeting its climate and energy pledges
Morocco	Agadir	In the absence of a mention of specific financing schemes in the SEAP, it is assumed that the municipal budget will serve the implementation of the plan. Potential partnerships with Delegation of urbanism and regional planning, the Urban Agency, the Wilaya were mentioned
	Chefchaouen	The sources of financing include the municipality's own resources, the ones of the national government (Ministry of Interior through the Directorate General of Territorial Communities, Ministry of the Environment, Moroccan Agency for EE, the National Agency for Promotion and Development of the Northern provinces) as well as local and foreign foundations and partners
	Salé	The financing of the actions is foreseen through the city council funds, the national renewable energy and energy efficiency Moroccan programme, and in case of big infrastructure(s) through concession-operated schemes
Palestine Territories	Hebron	Support is given from the Ministry of the Local Government and the Local Government Development Fund for municipalities to develop their SEAPs. Will use the CES-Med synthesis of the existing funds at national level and for which the municipalities are eligible. SEAP implementation will be financed by the National Palestinian Authority and the international community. New and innovative finance mechanisms will be needed. It will be necessary to innovate by mixing loans, subsidies, third party financing, cooperative solutions and funds, etc.

Tunisia	Sfax	The main sources of funding were divided over three categories – national, local, donor-funded and international mechanisms. The identified sources at the national level included the Fund for loans and support to LAs (Fr: Caisse des prêts et de soutien aux collectivités locales (CPSCL)), the Fund for Energy Transition and the Alliance of Municipalities for Energy Transition
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9th Principle: Monitoring and reporting

When it comes to monitoring and reporting, certain SEAPs presented Key Performance Indicators (KPI) for the specific actions. All cities in Algeria, as well as Hebron, are to follow-up within a year on the basis of the summary table aggregating the data concerning greenhouse gas emissions, energy consumption and the growth of renewable energies. It is foreseen that a simplified Excel tool will be provided to the municipalities so that each of the actions and users can conduct the evaluation work. Using the same approach towards the monitoring and reporting is either an indication of contextual similarities or might be the result of the external consultation (i.e CES-MED) provided to the municipalities.

Rosh Ha'Ayin and Kab Elias – Wadi El Delm provided KPIs for each action. Kab Elias – Wadi El Delm (see Section 3.5.7 "Other examples") included various measurement units as the number of feedback from citizens, KWh saving in %, number of A/C replaced. For Water supply and waste water treatment KPIs included average water consumption per user number of houses who have water saving faucet, number of the installed meters and number of new constructions which include new polices for standalone water treatment plant.

10th Principle: SEAP submission

All the selected SEAPs have been officially submitted to the Covenant of Mayors. For five of them the period from adhesion to SEAP submission took one year (Batna, Boumerdès, Sidi Bel Abbès, Kab Elias – Wadi El Delm, Sale) and for six (Rosh HaAyin, Sahab, Agadir, Chefchaouen, Hebron and Sfax) it took a longer period varying from two to three years. The major observation is that in the MENA region the process of SEAP preparation still greatly varies between LAs. The reasons for the difference require a more in-depth study where interviews with the LAs can highlight the individual peculiarities.

Table 19 SEAP Adhesion and submission

Name of the city	Submission of the Adhesion Form	Year of SEAP Submission
Batna	2014	2015
Boumerdès	2015	2015
Sidi Bel Abbès	2014	2015
Rosh HaAyin	2014	2017
Sahab	2015	2017
Kab Elias – Wadi El Delm	2016	2017

Name of the city	Submission of the Adhesion Form	Year of SEAP Submission
Agadir	2014	2016
Chefchaouen	2015	2017
Sale	2011	2012
Hebron	2014	2016
Sfax	2014	2017

3.3 Examples of measures From Sustainable Energy Action Plans

Buildings sector


Rosh Ha'Ayin (Israel) Refurbishment of municipal buildings		Sector: Municipal buildings
Description:	<p>In Israel exists the green buildings standard 5281/5282, which is not mandatory for any kind of building, including the public ones. However, the role of the municipal authorities, as of all public authorities, is to lead by example. The specific action focuses on the energy refurbishment of selected municipal buildings with significant visual impact on the residents (e.g. municipal hall, administrative buildings etc.), in order not only to significantly reduce the energy cost of these establishments for the municipality, but more importantly to demonstrate to the citizens the different available energy efficient technologies in Israel and their results.</p> <p>This energy refurbishment is suggested to include actions such as insulation of external walls, double glazing, installation of external shading, roof insulation, installation of simple automations such as thermostats and timers, etc. For the selected buildings, part of these actions will also be the upgrading of the lighting systems and the A/C, as described in the action 1.2 above. A significant part of the action will also be the display of explanatory labels on the realised actions in plain sight, accessible to all the passing by citizens, as well as digital signs showing the current energy consumption.</p> <p>The energy refurbishment will be realised in at least 3 municipal buildings, among which one school, with an overall estimated energy savings of 30%.</p>	Key features: <ul style="list-style-type: none"> • Duration: 2016- 2020 • Total Implementation Cost (NIS): 3 500 000 • Annual Energy Savings (MWh): 180 000 MWh • Annual Emission Reduction (tn CO₂): 108.00 t CO₂ • Funding Source: EU+ Gov. (Min. of Energy, Environment, Building) • Net Present Value (NPV): < 0

Table 20 Total energy consumption in Rosh HaAyin

Sector of energy consumption	Electricity	LPG	Diesel	Gasoline	Solar Thermal
	MWh				
Agriculture	769.45	-	-	-	-
Municipal Buildings/Equipment/Facilities	4,550.54	-	-	-	-
Public Lighting	4,409.71	-	-	-	-
Residential Buildings	96,685.80	11,311.43	-	-	20,588.40
Commercial Buildings/Equipment/Facilities	136,408.89	-	-	-	-
Industry	21,109.28	-	-	-	-
Municipal Transport	-	-	95.07	814.91	-
Public Transport	-	-	13,845.50	-	-
Private transport	-	-	35,159.30	70,895.89	-
TOTAL	263,933.67	11,311.43	49,099.87	71,710.80	20,588.40

Source: Rosh HaAyin SEAP

Batna (Algeria) Pilot operation on two existing mosques	Sector: Municipal buildings
<p>Description:</p> <p>There are 78 Mosques in the Batna Region and they are significant energy consumers for the regions given that the invoices are paid by the municipality. Mosques are further seen as ideal structures for implementing energy control experimentation projects (more efficient heating and lighting), renewable energies (such as photovoltaic panels) and awareness on these topics. Not only can religious dignitaries and associations be influential to the citizens but the municipality of Batna has to mobilize and sensitize the mosques, their dignitaries and religious associations in the promotion of sustainable energy in order to optimize the impacts of proposed measures in the field of energy recovery.</p> <p>Implementation Plan:</p> <ul style="list-style-type: none"> ▪ Identification of the 2 pilot establishments ▪ Renovation and equipment for energy efficiency on pilot mosques ▪ Installation of solar water heaters in pilot mosques ▪ Equipment of the pilot mosques of photovoltaic panels to ensure lighting ▪ Establishment of an awareness program for the religious (dignitaries, associations) 	<ul style="list-style-type: none"> • Start: 2016 • Duration: 4 years • Cost: 188.000 € • Status of the action: New • Points of contact at LAs level: Sustainable Energy Focal Point, Town Planning service, Religious Service • Annual savings expected for the budget of the Municipality: 5000 € / year • Return on investment (avec 50% support) – 15 years • Electricity savings (MWh/year): 278 • Renewable energy production: MWh/year 32 MWh/year • CO₂ reduction in t CO₂ / year by 2020: 80

Baakline (Lebanon) Increase the initiatives for solar water heater for low-income homes	Sector: Residential buildings
<p>Description:</p> <ul style="list-style-type: none"> • The municipality could play a good role in increasing the replacement of electrical water heater with solar heaters. This is accomplished through updating their internal laws to offer \$200, deduction from the local taxes for each replacement of electrical water by solar water heaters. Following this programme has its advantages. • The municipality of Baakline has issued a local decision No.70 to exempt the local citizen for five years from water fees if they install Photovoltaic solar system (\$ 700) and for one year if they install solar water heater which counts for \$ 140. The incentives will be increased from only \$200 which the Banque du Liban (BDL) offers to \$340 which the municipality could propose. The replacement program will enhance the smooth implementation of solar water heaters in the city. The program can be enhanced with the support of local banks which can offer short loans offer. The municipality council can search for finance through local or international donors and payment can be deducted from the local taxes for the citizen with defined legal part with the internal laws. This brings the cost down by \$500 for Water Solar Heater and the remaining amount can be supported by the bank with an almost zero interest, for two years. The monthly payment would be \$20 to \$30 per month and this amount is affordable for low income homes. • The estimated cost for this action will be in range of € 200,000. The programme could cover around 1000 houses with most low income. 	 <p>Solar Water Heaters in Lebanon. Picture: Phoenix Energy</p>

Transport Sector


Sahab (Jordan) Designing a Sustainable Urban Mobility Plan	Sector: Transport
<p>Description:</p> <p>Ideally, a city is committed to reduce energy consumption and GHG emission would design and implement a sustainable urban mobility plan (SUMP), which could entail the following:</p> <ul style="list-style-type: none"> - Integrating transport and city planning policies, while prioritizing public transportation and active modes of mobility for people and low emission modes for goods. - Supporting the development and improvement of integrated public transport systems to make them more attractive to local inhabitants. - Developing incentives as well as regulation measures in order to control the use of private motor vehicles and to make other modes a more attractive choice. - Developing communication and participation strategies involving the public, with the aim of facilitating behavioural changes. - Promoting active modes of transport, especially walking and cycling, in particular by providing safer conditions for the users. - Implementing a common methodology to estimate GHG emissions, report on them and monitor all other benefits deriving from the development of sustainable urban mobility. - Long-term transformation of the transport system will also require additional investment: - To improve roads quality in the city. - To implement a more efficient management of the overall traffic, while promoting more collective transports. - To promote the replacement of fleet and switch to more efficient vehicles. 	
Agadir (Morocco) Developing a continuous urban cycling network of 75 km	Sector: Transport
<p>Description:</p> <p>According to the SEAP of Agadir, transportation (of people and goods) alone accounts for more than 36% of the municipality's greenhouse gas emissions. In this sense, the recent adoption of an Urban Travel Plan (UTP) for Greater Agadir is positive and several actions targeting the sector have been presented in the SEAP.</p> <p>One particular measure consists of developing a cycling network at the scale of the most important urban centers for short-distance travel. It meets the dual objective of creating, in each of the identified perimeters, a continuous cycle network accompanied by measures to protect cyclists. In order to facilitate the lane redevelopment, the work will be synchronized with that of the buses with a high level of service (BHLS) since the alignment coincides (2016-2017), next will be concentrated on the urban centers (2018-2019). Finally, it will be necessary to link the perimeters between them (2020-2022). At the end of these three phases, the cycle network will accumulate 74 linear km.</p>	<ul style="list-style-type: none"> • Objective: Build 74 km of cycle lanes • Project Lead: Urban Community of Agadir, Greater Agadir Agglomeration Group • Partner (s) of the project: Ministry of Equipment and Transport • Financing: Urban Community of Agadir, Ministry of the Interior • Costs of implementation • Feasibility study: 400 000 MAD • Works: 76 215 000 MAD on the basis of a cost 1.1 MMAD / km for the development of bicycle lanes • Implementation indicator: Number of km of bike lanes developed <p>Calendar</p> <ul style="list-style-type: none"> • 2016-2017: Detailed feasibility study concerning the adjustments to be applied in each perimeter and along each axis; • 2018-2019: Implementation of recommendations and of work in 5 urban areas, i.e. 19 km of cycle network

Municipal Lighting

Agadir (Morocco) Modernisation of public lighting management in the urban community of Agadir	Sector: Municipal lighting
<p>Description:</p> <p>Taking into consideration that public lighting is the first item on the bill of the urban agglomeration of Agadir (nearly 35 million annual dirhams), the Commune has for several years now been implementing actions to improve the efficiency of its network while expanding and improving its service for the users. This planned action will consist in the following steps:</p> <ol style="list-style-type: none"> (1) a complete diagnosis of the network (including a review of the current management mode, an inventory of the network components, and the costs associated with the maintenance and the operation of the network); (2) establishment of a sustainable and computerized management system; (3) development of future management mode accompanied by a Performance Contract Energy (CPE); and (4) the priority planning of renewal and modernization of public lighting by 5 and 10 years. 	<ul style="list-style-type: none"> • Start: 2016 • Duration: 4 years • Cost: 188.000 € • Status of the action: New • Points of contact at LAs level: Sustainable Energy Focal Point, Town Planning service, Religious Service • Annual savings expected for the budget of the Municipality: 5000 € / year • Return on investment (avec 50% support) – 15 years • Electricity savings MWh/year: 278 MWh/an • Renewable energy production: MWh/an 32 MWh/year • CO₂ reduction in t CO₂/ year by 2020: 80

Sahab (Jordan) Installing motion sensors for lighting consumption reduction	Sector: Lighting in municipal buildings																				
<p>Description:</p> <p>To help reducing energy consumption at the municipality building, it is possible to install motion sensors in offices to turn the lights off during the un-occupied periods. This will reduce the lighting consumption by around 20% in key areas, with an overall cost of less than JOD 7,555 and a return on investment of two years, as cost saving will reach JOD 3,652 / year. On the other hand, it is worth mentioning that the saving achieved from implementing lighting retrofitting for municipality buildings has reached 30.8 MWh per year, which represents a saving of 10.9% of the total electrical municipality building consumptions that can be added to the other energy savings.</p>	<p>Key features:</p> <p>Measure Target:</p> <p>Reducing the energy consumption in the municipal buildings by 5.0%</p> <table> <tr> <td>Energy Saving (kWh/year)</td><td>14,100</td></tr> <tr> <td>Period of implementation (Years)</td><td>5 Years</td></tr> <tr> <td>Cost of energy unit reduction (€/kWh)</td><td>0.6870</td></tr> <tr> <td>Total Investment Cost (€)</td><td>9,686</td></tr> <tr> <td>Investment Cost (€/Year) [2017-2021]</td><td>1,937</td></tr> </table> <p>Description the mechanism of monitoring and evaluation :</p> <p>Periodic verification and monitoring for the desired energy saving by special committees</p> <p>CO2 reduction t CO2/year</p> <table> <tr> <td>- Reference Year</td><td>2.014</td></tr> <tr> <td>- Target Year</td><td>2.030</td></tr> <tr> <td>- Percentage of net reduction on the territory</td><td>0</td></tr> <tr> <td>-Reduction as related to BAU scenario</td><td>7900 tCO2 eq/year</td></tr> <tr> <td>- Per capita calculated reduction</td><td>0.104 TCO2 equivalent</td></tr> </table>	Energy Saving (kWh/year)	14,100	Period of implementation (Years)	5 Years	Cost of energy unit reduction (€/kWh)	0.6870	Total Investment Cost (€)	9,686	Investment Cost (€/Year) [2017-2021]	1,937	- Reference Year	2.014	- Target Year	2.030	- Percentage of net reduction on the territory	0	-Reduction as related to BAU scenario	7900 tCO2 eq/year	- Per capita calculated reduction	0.104 TCO2 equivalent
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Other sectors

Kab Elias - Wadi El Delm (Lebanon) Renewable Energy Production for the main vegetable market	Sector: Local Renewable Energy Production/ Tertiary sector
<p>Description:</p> <p>The main drivers that contribute to the economy growth in Kab Elias are agriculture, in which the city holds the largest vegetable market, in addition to tourism, construction and industry. The city suffers from permanent power cut-off, 12 hours a day and at different periods of time. However, the success of the investment in sustainable energy projects must ensure the availability of electricity from the main provider of electricity which is Electricité Du Liban (EDL).</p> <p>The municipality would like to build a canopy of solar panels on top of the vegetable market building. The system would transform solar energy into electrical energy to contribute to the generation of electricity .This project would be able to provide 20% on the city demand for electricity, generate a minimum of 3 GWh per year and mitigate the emission by – 2,074 t CO₂/year.</p> <p>The main obstacle facing the municipality is not being allowed to produce and sell electricity, as EDL is the sole agent that produces and sells electrical power in Lebanon. Also the internal policy for EDL does not allow purchasing electricity from a third party. In order to overcome these obstacles, the municipality can come up with an agreement with EDL to execute this action and then handover the project to EDL, in return EDL will ensure providing the city with 24/24 hour of electricity.</p> <p>The project's budget falls within 6 million Euro which needs funding. Since funds are not available, the municipality has to look for international donors.</p>	<p>Key features:</p> <ul style="list-style-type: none"> • Timeframe: 2018-2020 • Bank Loan: 100% • Loan (principal) capital: € 4,000,000 • Reduction in consumptions in MWh/a: 2,074 • Mitigation in %: 3.084 • Payback time in years: 15 <div data-bbox="1082 797 1311 1068">  </div> <p>The main vegetable market</p>

Hebron (Palestinian Territories) Restructuration of Water Distribution	Sector: Water supply and sewerage
<p>Description:</p> <p>Water delivery is particularly complex in Hebron, as the city has no direct access to water (no wells, no natural springs) and has to buy all its water from Israel. The city faces difficulties due to the allocation of quantities. The Municipality is allowed to distribute 20.000 cubic meters per day. However, it is estimated this capacity should be 40.000 m³ to take into account leakages on the network to ensure more or less final delivery of 100 litres/capita.</p> <p>Parallel to the water shortage, a black market of water tends to develop. The Municipality alone consumes 1,012 MWh/year for water distribution, representing a cost of 134K€.</p> <p>The water delivery system needs to be restructured. The new model must be based on big reservoirs placed on the heights of the city, using gravity to distribute water to all buildings. Energy consumption of both Municipality and residents would be then reduced. Hebron geography allows such a set up.</p> <p>Ideally, the pumping station attached to the two or three reservoirs that would be installed must be surrounded with solar PV, to cover, at least part of, the electricity needs of the pumping stations.</p> <p>Necessary actions:</p> <ul style="list-style-type: none"> • Draw the detailed remits of a detailed feasibility study • Identify appropriate expert team to run the study • Monitor progress and analyse the study outcome • Negotiate funding to implement the study recommendations 	<p>Key features:</p> <ul style="list-style-type: none"> • Start Date: 2016 • End Date: 2026 • Project lifetime: 10 years • Estimated cost: 150.000 € <p>Energy savings MWh/y:</p> <p>Impossible to assess at this stage as most of the saving will come from the establishment of a distribution process per gravity. One can estimate a 15% gain in electricity consumption for pumping. This would mean saving around 152MWh/year</p>

Multi-sector

Sfax (Tunisia) Development of the Taparura site	Sector: buildings, public lighting, transport, local production of electricity and heat, and soil management at the level of urban planning
<p>Description:</p> <p>The Taparura project in Sfax aims at the rehabilitation of an old industrial zone, the development of an urban extension and the construction an eco-neighbourhood on the north coast of the city. This project foresees the construction of residential housing, a shopping centre, a zone dedicated to services, entertainment and recreation as well as community facilities.</p> <p>The project was initiated in 1985 with the creation of the Society of Studies and Development of the North Coast of the City of Sfax and the rehabilitation and extension of the Taparura site have been launched in 2006.</p> <p>The construction work is still under development. A technical assistance team with funding from the French Agency for Development and the European Investment Bank is looking at the environmental aspects of the project. Its goal is to improve the urban plan to allow alignment with the environmental objectives of the donors and the Tunisian laws on the protection of the environment.</p> <p>Beyond compliance with environmental standards, the project has the ambition to create a real eco-city that responds to climate change adaptation objectives, efficiency and mitigation of greenhouse gas (GHG) emissions and finally, to achieve a reduction in local pollution.</p>	<p>Key features:</p> <ul style="list-style-type: none"> • Investment Costs: The cost of the rehabilitation and decontamination work in the area was amounted to 140.5 million dinars (86.86 million euros) • Indicative Calendar: Construction will not begin (or soon) before 2020. The development of the area should take place between 2020 and 2030 or even 2035

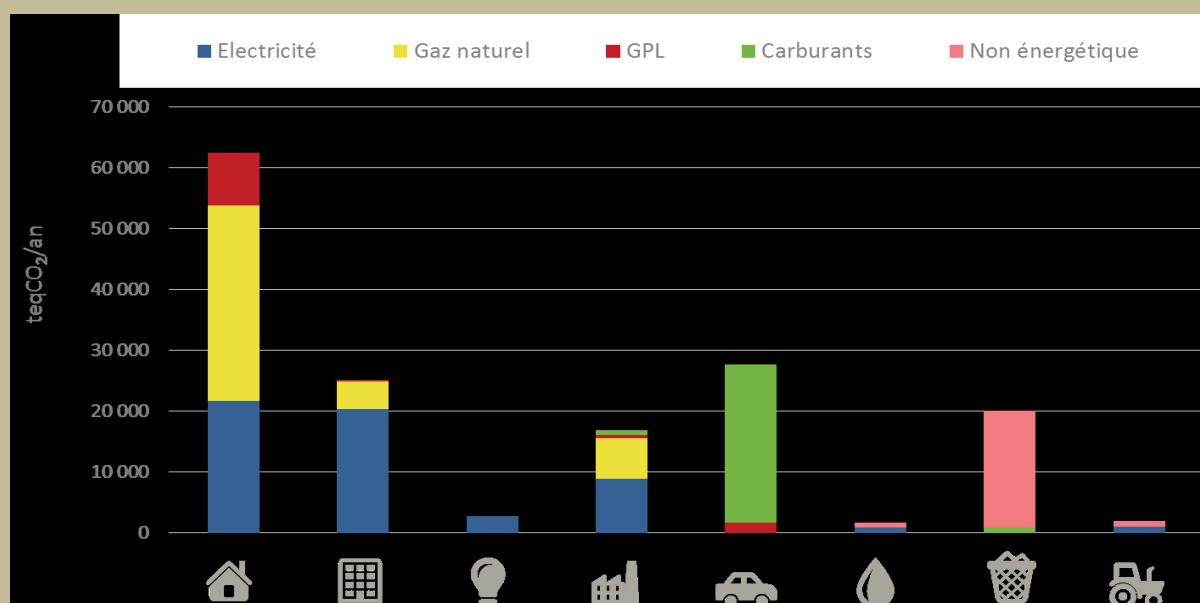
Other Examples

3.3.1.1 Cooperation strategy with tourism stakeholders from Boumerdès (Algeria)

Boumerdès (Algeria) Priority Action for a Cooperation strategy with tourism stakeholders

Description:

The municipality is planning to set up a platform for discussion with tourism stakeholders to integrate them into the SEAP implementation. Even though the sector is not included in the baseline emission inventory, the municipality identifies as essential to convince private sector companies and actors in the tourism sector to engage in sustainable energy generation and reduction of greenhouse gas emissions. It is foreseen that contributions can be made specifically through the tertiary sector, transport and waste.



Graph of GHG emissions by sector and energy in Boumerdès (2014). Boumerdès SEAP.

- Information and awareness of tourism stakeholders: Awareness of the staff of the hotel industry is an essential action to mobilize tourists (summer tourists in particular) and disseminate messages in favor of energy efficiency and renewable energy. For this, the municipality must set up a platform for discussion with tourism stakeholders to engage the dynamics (and reach out to 500 actors). A mini-customer guide for saving energy for the guest rooms (lighting, heating, air conditioning) may be offered to hotel managers.
- Development of an "environment / energy / cleanliness" label: for institutions who promote responsible tourism practices the following can be introduced:
 - Reduction of energy consumption following the completion of an energy audit, provision of bicycles for tourists, etc. The Communal People's Assembly (CAP) will try to convince 10 hotels of Boumerdès to get involved in the process by 2020 and reach the goal of 5000 m2 tourist buildings working with the label.
 - Waste management project related to tourists (sorting), etc. The CAP will attempt to convince 10 Boumerdès hotels to get involved in the process by 2020 and to reach the target of 50 tons of sorted waste for the concerned establishments.
 - - Awareness campaign for raising tourists' awareness of energy and climate issues: hotels are a key instrument of the CAP and must participate in the communication effort undertaken by the municipality to make sustainable energy a shared for all people enjoying the seaside resort.

3.3.1.2 Twelve Considerations for the effective implementation of the SEAP in Morocco

(taken from the SEAP of Chefchaouen)

General

1. **Importance of the commitment of prefectures and regions:** In the context of the process of advanced regionalization (and the promulgation in July 2015 of the three laws relating to municipalities, prefectures and regions), it is recommended that a process of multidimensional engagement is initiated between the region, the province / prefecture and the municipality, especially in order to promote financial support to the region for the actions carried out by the municipality.

2. **Certain administrative instruments (such as communal decrees, granting of derogations, transfer or reassignment of State land, etc.) established and managed at the level of municipalities, prefectures, provinces and regions / wilayas, may be linked to the requirement to use EE and RE technologies.** Similarly, public procurement of public buildings (renovations and new construction), vehicular fleets, public lighting and other public works should systematically refer to energy criteria and standards. Clauses (or options) to favor local suppliers can further promote the use of local expertise and stimulate local development.

3. **Integration of the SEAP in the next mid-term evaluation of the municipal action plan in 2019** It is recommended that a next generation of SEAPs is integrated, from the territorial diagnosis phase, into the mid-term evaluation and update process municipal action plan, to ensure the political carrying of energy actions and to increase their chances of public funding. Such a specification of skills and competences should be based on a consultation process with technicians, engineers and professionals already working in this field.

For international cooperation partners

4. The structuring of an investment project requires a certain number of obligatory stages: (a) the identification and formulation of the project; (b) technical, legal and institutional assistance as well as prior consultations to evaluate the prefeasibility of the project and to decide on the nature of the legal arrangement envisaged; (c) feasibility studies, financial engineering and preparation of tenders and (d) implementation of the project / financial transaction. Generally, international Financial Institutions (IFIs) only come into play from step (c), sometimes from step (b). The previous steps are generally accompanied by the state or donors / bilateral cooperation agencies. It is recommended to **coordinate in an optimal manner during the "pre-investment" phase between IFIs, the State and donors** to facilitate the optimal preparation of projects, according to the due diligence criteria expected by the IFI and taking into account priorities and interests from the community.

5. The use of bank credit through the Municipal Equipment Fund is the main, if not the only, possibility for a municipality to access a concessional loan. However, interest rates remain high depending on the nature of the project or the level of solvency of a municipality. No distinction is made between the nature of projects submitted for funding. It is conceivable and recommended for the Municipal Equipment Fund MEF to provide the means to **grant credits at reduced / subsidized interest rates to favor projects with "high added value on climate or energy"**.

6. For support to small and medium-sized municipalities and / or for the financing of small investment projects and structuring actions without immediate return on investment (eg municipal energy accounting, demonstrative RE production facilities, Info Energy Center, etc.), the financing is often difficult: considered too small by the IFIs, the required investments exceed however the financial possibilities of a small or average commune. It is conceivable that the State, with the support of international cooperation, could establish a **support fund for sustainable territorial energy development** to support the financing of small projects "with high added value on climate or education".

For Moroccan public institutions

7. In recent years, Morocco has sought to ensure the quality, sustainability and access to relevant training in RE and EE. An important step was the recent creation of the Vocational Training Institute of RE and EE (Fr: Instituts de Formation aux Métiers des Energies Renouvelables et de l'Efficacité Energétique) with branches in Oujda, Tangier and Ouarzazate. In this context, ***the qualification requirements related to the profession of "specialized technician" in technologies such as CES, PV systems (sizing, installation, maintenance and repair, and replacement / recycling) or energy auditing, must be specified***, taking into account international best practices and the specific Moroccan context.

8. Beyond the strict financing of "projects", it is recommended that the State institutions (with the support of the IFIs and donors) put in place a real national ***support system for the control of projects and sustainable environmental management at the level of local governments***, allowing to finance the national governance process required to adequately support local initiatives and policies.

9. It is recommended to set up a ***platform (e.g. under a form of a commission) at national level to collect, on a regular and systematic basis***, information on funds and funding mechanisms that can be mobilized in support of local energy management.

10. This information should be next ***directly addressed to the main beneficiaries, in particular municipalities, through communication and information tools*** in the form of electronic platforms, guides or other instruments for presenting (and updating regularly) available support mechanisms and access procedures to these platforms. Such communication efforts should ideally include the international and regional financial mechanisms and instruments already presented in this report. In addition, the Energy Information Centers, which could be established in different cities of Morocco, particularly in other municipalities of the Tangier-Tetouan-Al Hoceima Region and the provinces of Tata and Midelt, could provide information to the general public and strategic business sectors.

11. It is conceivable that the body responsible for the future coordination of the CoM process in Morocco, in coordination with the Ministry of Energy, Mines and Sustainable Development and the Directorate General of Local Government - Ministry of the Interior, could play a key role in (a) supporting the Moroccan State in the development of a ***national financial support mechanism for energy and climate actions***; (b) the collection, update, systematization, comparative analysis and dissemination of information on available financial instruments; and (c) the awareness raising and dissemination of information thus collected in different forms.

12. Beyond these attributes, which are essentially related to the coordination and provision of information to the targeted beneficiary groups, this same body could offer ***technical assistance to municipal project holders on their project files***, facilitating the reinforcement of their capacities to carry out the necessary steps to the financial development of their projects.

4 Conclusions

"Innovative municipalities can serve as laboratories to develop and test the solutions to climate change."²⁵

IPCC Chair, Opening statement
Cities and Climate Change Science Conference
5 March 2018, Edmonton, Canada

As discussed in the introductory section of the report, cities and local governments have an important role in addressing climate change and its impacts on local populations. As reflected in the *2030 Agenda for Sustainable Development* adopted by the United Nations Assembly in September 2015 and the Paris Agreement on Climate Change signed in April 2016, the transition towards sustainable energy management is at the forefront of policy agendas. The seventh of the 17 Sustainable Development Goals calls on governments to "Ensure access to affordable, reliable, sustainable and modern energy for all". Countries will be reviewing progress on this goal in July 2018 at the UN High Level Political Forum. In this context, the continued development and expansion of the Covenant of Mayors initiative – including across the Southern Mediterranean countries – is timely.

This section presents summary conclusions emanating from the assessment of the information and data of the CoM-South signatories. It sets forth certain considerations aimed at informing the continued development and expansion of the CoM in the southern Mediterranean countries. It also aims to inform the continued support provided by the JRC and its international and national partners to local authorities engaging with the CoM-South initiative.

Regarding the pertinence of the CoM-South initiative

- ***There is increasing uptake of the CoM-South initiative across southern Mediterranean countries.*** As reflected by the increasing number of recent adhesions by local authorities in 2017 and 2018, particularly in Lebanon and Morocco, and Northern Africa more broadly. This clearly demonstrates the relevance for local authorities of the initiative.
- ***The increasing numbers of participating local authorities in the CoM-South countries represent an opportunity for the CoM-South initiative*** – through the JRC and its partners – to facilitate "South-South" exchanges between signatories and to leverage the technical assistance provided to local authorities.
- At the same time, ***the relatively limited number of CoM-South signatories (40 active signatories at the time of the assessment) also provides an opportunity to focus on the challenges faced by CoM-South signatories to date***, in order to improve access for potential new signatories and to ensure the continued engagement of active signatories.

Regarding the facility of access to the CoM-South initiative

- Based on the high proportion of active CoM-South signatories that participate in EU-funded projects (e.g. CES-MED, SUDEP-South), it is clear that this additional support remains important for local authorities to adhere and to fulfil their obligations/commitments. As demonstrated by the SEAP/SECAP/BEI documents of active CoM-South signatories, external funding and technical assistance were necessary for the BEI and/or the SEAP/SECAP documents.
- As explained further, the development of the BEI constitutes the first of three main challenges for a local authority to fulfil their commitments and remain actively engaged. The challenge represented by the BEI for a local authority in the

²⁵ CitiesIPCC, 2018

southern Mediterranean countries has to do with (a) the source of funding for the BEI as they are – up to now – *always* contracted out to a specialised contractor; (b) the technical “know-how” and familiarity required for the BEI, particularly with regards to energy data sources, collection, treatment and analysis; and (c) the degree of ownership of the BEI and its results as a *process*, beyond a mere set of tables and figures in a document.

- The second challenge for a local authority is to ensure that the SEAP/SECAP document is a pertinent part of its municipal planning and of the execution of actions and measures. This relates back to the issue of ownership of the SEAP/SECAP documents. Beyond the formal approval of the SEAP/SECAP by the appropriate local governing body (e.g. municipal council), the challenge remains for the elected officials and staff of the local authorities to leverage the drafting of the SEAP/SECAP document to ensure the adoptions of a “municipal energy policy”.
- The third main challenge for a local authority relates to securing the funding necessary to implement the measures and actions developed and planned for by the SEAP/SECAP documents. With nearly 90% of funding needed from “Other actors” to ensure implementation of the SEAP/SECAP, this is clearly where the whole process will face its biggest challenge – particularly for CoM-South signatories that may not have the public funding and grants available (e.g. for “green projects”) that are available to local authorities in Europe.
- The JRC and its partners – particularly national counterparts – could develop and distribute technical reference materials to local authorities, such as a «**Reference Guide for BEI of local authorities in ((country))**» that would include key emissions (national emission factor for electricity) and conversion factors to be used in BEI. The need for this is clearly shown, for example, by Morocco and Lebanon with increasing numbers of signatories. This becomes especially relevant for CoM-South signatories for which local energy data may be limited or non-existent. In these cases, suggested “best methods” for estimating local values from national references would be very helpful to local authorities.

Regarding the development and reporting of the SEAP/SECAP/BEI

- It is important to ensure that the SEAP/SECAP documents are primarily “policy” documents, which have technical annexes. The SEAP/SECAP/BEI documents submitted by the signatories are of high quality documents. The density of information they contain and the sheer length of the documents (+170 pages in some cases) may limit their relevance/use as actual policy documents to guide implementation. One possible way to address this is to have the main body of the SEAP/SECAP present summary results of the BEI while focusing on the municipal energy policy to be implemented, the main measures to be taken and the degree of funding needed. Technical annexes with the details of the BEI and operational aspects can increase a reader’s “access” to the main messages of the SEAP/SECAP while highlighting the key challenges to be addressed.
- Cross-checking within SEAP/SECAP documents is important to ensure coherence of key data points and values. This is particularly true of data points that are necessary for key performance indicators, such as:
 - Clearly differentiating population figures for (a) BEI reference year; (b) SEAP/SECAP year; and (c) estimated target year population. These data points are vital for comparative per capita indicators.
 - Ensuring consistency and coherence of energy consumption values (e.g. MWh/year) for individual sub-sectors and aggregated totals.
 - Ensuring consistency and coherence of GHG emissions values reported for the baseline year for individual sub-sectors and aggregated totals, as well as for the target year. This also pertains to reported values of expected energy savings and emissions reductions.

- Signatories should be invited to cross-check and confirm key values of their SEAP/SECAP before recording these on the online CoM-South reporting platform.

Regarding technical aspects of the signatory reporting process and CoM-South data management

- As shown by this assessment, accurate reporting using the online templates remains a challenge for CoM-South signatories. This could partly be addressed by developing a “**Coding Guide**” or “**Guide de Codage**” to accompany the online data input fields. This “Coding Guide” would assist local authorities while also increasing the quality of the data management aspect for the CoM-South (e.g. JRC). For local authorities, a coding guide would help illustrate the exact values that are expected in any given field and for all variables. This guide would also increase the quality of constructed responses and facilitate the post-input coding of constructed responses to be done on the dataset by the CoM-South.
- Clearer guidelines should be provided regarding the reporting of energy consumption and emissions values for municipality-controlled assets. As it currently stands, the Buildings, Equipment, Facilities and Industries macro-sector is very broad and this has been shown to cause imprecisions/confusion with regards to posts such as waste management, wastewater management and the municipal fleet. One possibility is to separate out ALL of the municipal assets into one category (e.g. “macro-sector”) to increase transparency and accountability.

Regarding the support mechanisms of the EU for local authorities

- To continue supporting the adhesion of local authorities to the CoM-South initiative, it would be relevant for EU assistance to focus on (at least) the following aspects:
 - a) Funding support to local authorities for capacity-building and technical assistance targeted at allowing local authorities to develop their own BEI **for and by themselves**, as opposed to having the BEI conducted by contractors for local authorities.
 - b) Funding support for “model” actions that can provide a “quick win” for the local authority in the execution of the SEAP/SECAP immediately upon its approval. This funding support could be modest – approximately 40 000 to 50 000 EUR for a “demonstration project” (1 or 2 projects per local authority). The expedited execution of these actions would allow the local authority to mobilise further to ensure funding for other actions described in their SEAP/SECAP.
 - c) The most important assistance, however, that the EU could provide local authorities for their energy transition would be for the EU to insist with national counterparts on the need for a mechanism *sine qua non* of public funding for municipal energy actions (e.g. “a green fund for municipalities”), and for technical assistance provided by public institutions.

Regarding the detailed evaluation of 11 cities

The in depth analysed SEAPs show a good compliance with the key commitments of the Covenant of Mayors. They confirm that the challenges faced by the Southern Mediterranean region are linked to decoupling economic growth and development from carbon emissions. They also show that there is not only a political will in the region to reduce CO2 emissions but also a level of ambition that can potentially be spread across countries. An enabling factor for meeting the energy and climate pledges of LAs is the support of their respective national governments in terms of political backing, human resources and funding.

The signatories made full use of the flexibility of the initiative through the use of different type of reporting units, baseline calculation approaches, reduction types and timeframe of actions. ‘No size fits all’ proves to be the backbone of the success of CoM in the MENA.

The reviewed SEAPs serve as an example for effective stakeholder involvement and inclusion. The different levels of government actively participated in the consultations with a recorded participation from civil society, technical networks, academia and private sector. It is conceivable that cities and regions initiate and strengthen decentralized cooperation that may develop skills and enhance capacities of the involved parties.

An important characteristic of the Southern Mediterranean cities is the increased pressure on sub national expenditure due to the surge of refugees as identified in section 1. The flow of refugees affects urban planning through the increase in the demand of public services and the presence of refugee settlements. Although reflected in the contextual analysis of the SEAPs, no specific measures or actions have been directed to this issue. One way to ensure that the topic gets a greater attention in the next SEAPs would be to communicate its relevance in relation to local urban planning during upcoming workshops in the region. If for the moment no best practices can be extracted from the MENA, it would be useful to highlight stories from the other newly launched Regional Covenants.

Although a number of the analysed SEAPS mention their heritage areas and archaeological sites, these are few suggested actions in this area. As above, a solution would be to raise attention to the matter when organising capacity building activities in the region.

Key points

The four central conclusions of the report are as follows:

K.1. The absence of sufficient technical skills and expertise in the fields of energy efficiency, renewable energies, efficient transport and others at the local level is a challenge in the Southern Mediterranean cities. Furthermore, project management skills (data management, financial forecasting and investment planning, communication skills, green public procurement, etc.) are needed at the LA level. In addition, although the LAs submitted a planning for the adaptation of their relevant administrative structures (which often included recruitment of new staff), the success of this adaptation will only be confirmed during the monitoring phase.

K.2. The LAs strong reliance on national budgets is characteristic to the region. Despite an increased interest in innovative financing, there is a lack of actual suggestions and solutions. While most of the actors agree on the need of new models, no suggestions for similar projects are made within the SEAPs. With no proper financial mechanisms and instruments, SEAP implementation will be difficult. Conclusion 1 and 2 are closely linked and appeal for capacity building in project financing and funding at the various governance levels.

K.3. As mentioned under CoM key principles 3, 6, 8 and 9, sections under the various SEAPs were identical to each other despite the fact they were to address different countries and cities. This was attributed to the intervention of external consultants in the preparation of the plans. It further questions whether the spread of the initiative (the preparation of new plans) and its sustainability within the existing signatories with limited financial and technical capacities are sustainable.

It is recommended to conduct a qualitative analysis based on in-depth interviews with the key project team (from the CES-MED and/or the subsequent EU for Climate Action in the ENI Southern Neighbourhood) and the LAs to better understand the challenges linked to SEAP development.

K.4. The signatories demonstrated their commitment to participate in the initiative and its utility for the share of know-how between municipalities of the same and different countries. Such comments remain encouraging for the continuation of the work with the region.

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List of abbreviations and definitions

BEI	Baseline Emission Inventory
BHLS	Buses with a high level of service
CAP	Communal People's Assembly
CoM	Covenant of Mayors
EDL	Electricité Du Liban
EC	European Commission
EU	European Union
IPCC	Intergovernmental Panel on Climate Change
JRC	Joint Research Centre
KPI	Key Performance Indicators
LCA	Life Cycle Assessment
LED	Light-Emitting Diode
LA	Local Authority
MENA	Middle East and North Africa
M & R	Monitoring and Reporting
MEI	Monitoring Emission Inventory
MEF	Municipal Equipment Fund
PV	Photovoltaics
ENP- South	Southern European Neighbourhood Policy
SEAP	Sustainable Energy Action Plan
SUMP	Sustainable Urban Mobility Plan
UfM	Union for the for the Mediterranean
UTP	Urban Travel Plan

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Annex I. Overview of active CoM-South signatories (40) included in the assessment (March 2018)

	Country and Signatory	Population	Adhesion	Commitments	Type	Project Affiliation /	Lat	Long	Area (km ²)	Inhab/km ²	SEAP/SECAP
Algeria											
1	Batna	350,000	Feb-14	2020	City	CES-MED	35.56102	6.17391	116.40	3006.9	SEAP
2	Sidi Bel Abbès	300,000	Mar-14	2020	City	CES-MED	35.20222	-0.62989	70.00	4285.7	SEAP
3	Boumerdès	42,500	Nov-14	2020	City	CES-MED	36.73911	3.71754	19.08	2227.5	SEAP
Israel											
4	Ramla	75,000	Feb-14	2020	City	CES-MED	31.93150	34.86858	48.50	1546.4	SEAP
5	Shefa-Amer	40,000	Mar-14	2020	City	CES-MED	32.80000	35.10000	19.70	2030.5	SEAP
6	Rosh Ha'Ayin	42,000	Apr-14	2020	City	CES-MED	32.09292	34.95704	30.50	1377.0	SEAP
Jordan											
7	Sahab	160,000	Jun-15	2020	City	SUDEP	31.84362	36.04537	48.60	3292.2	SEAP
8	Irbid	1,000,000	Jan-18	2030 Adapt	City		32.33250	35.50520	400.00	2500.0	na
9	Karak	130,000	Jan-18	2030 Adapt	City	CES-MED	31.16368	35.76204	420.00	309.5	SECAP
10	Madaba	150,000	Dec-17	2030 Adapt	City		31.71828	35.79389	90.00	1666.7	na
11	Aqaba Special Economic Zone	118,000	Nov-17	2030 Adapt	City	CES-MED	29.20358	35.59570	375.00	314.7	SECAP
Lebanon											
12	Menjéz	800	Sep-14	2020/2030/Adapt	City	CES-MED	34.61952	36.24527	5.25	152.4	SEAP
13	Khreibi	3,200	Nov-17	2030 Adapt	Borough		33.38000	35.38000	740.00	4.3	na

14	Moukhtara	950	Nov-17	2030 Adapt	Borough		33.39000	35.36000	3.00	316.7	na
15	Kawkaba	2,500	Mar-17	2030 Adapt	Borough		33.39259	35.64596	11.00	227.3	na
16	Kherbet Rouha	24,800	Feb-17	2030 Adapt	Borough		33.57179	35.85314	14.37	1725.8	na
17	Hasbaya	19,000	Dec-16	2030 Adapt	Borough		33.39791	35.68515	22.00	863.6	na
18	Jezzine	10,000	Dec-16	2030 Adapt	City		33.54459	35.58305	30.00	333.3	na
19	Batloun Shouf	3,650	Nov-16	2030 Adapt	Borough		33.69642	35.64817	9.00	405.6	na
20	Kab Elias – Wadi El Delm	50,000	Nov-16	2020	Borough	CES-MED	33.79361	35.82250	41.00	1219.5	SEAP
21	Baakline	17,000	Apr-14	2020	City	CES-MED	33.68011	35.55818	14.00	1214.3	SEAP
22	Kabrikha	5,000	Oct-15	2020	City	Under evaluation	33.15800	35.27580	561.00	8.9	na
Morocco											
23	Salè	903,485	May-11	2020	City		34.03333	-6.80000	95.00	9510.4	SEAP
24	Benslimane	58,194	Oct-14	2020	City	CES-MED	33.61897	-7.13055	2400.00	24.2	SEAP
25	Agadir	450,000	Feb-14	2020	Urban Comm.	CES-MED	30.42776	-9.59811	110.00	4090.9	SEAP
26	Oujda	477,100	Mar-14	2020	City	CES-MED	34.68667	-1.90016	86.00	5547.7	SEAP
27	Chefchaouen	43,000	Dec-15	2020	City	SUDEP, AMEV	35.16122	-5.26322	10.00	4300.0	SEAP
28	Tiznit	76,000	Jul-17	2030/Adapt	City	AMEV	29.69339	-9.73216	34.00	2235.3	na
29	Fam El Hisn	6,353	Aug-17	2030/Adapt	City	AMEV	29.01017	-8.88867	96.00	66.2	na

30	Figuig	10,872	Aug-17	2030/Adapt	City	AMEV	32.03250	-0.79380	36.00	302.0	<i>na</i>
31	M'diq	56,130	Oct-17	2030/Adapt	City	AMEV	35.62270	-4.88620	70.00	801.9	<i>na</i>
32	Sefrou	79,887	Oct-17	2030/Adapt	City	AMEV	33.82895	-4.84016	133.43	598.7	<i>na</i>
33	Belfaa	27,592	Sep-17	2030/Adapt	City	AMEV	30.05824	-9.56179	259.00	106.5	<i>na</i>
34	Drarga	70,793	Feb-18	2030/Adapt	City	AMEV	30.38179	-9.47560	111.00	637.8	<i>na</i>
Palestine											
35	Abasan Al-Kabira	30,000	Nov-13	2020/2030/Adapt	City		31.32000	34.35000	18.00	1666.7	SEAP
36	Hebron	163,146	Oct-14	2020	City	CES-MED	31.53276	35.09949	74.10	2201.6	SEAP
37	Nablus	190,000	May-15	2020	City	CES-MED	32.22504	35.26097	29.00	6551.7	SEAP
38	Tulkarm	101,000	Feb-14	2020	City	CES-MED	32.31170	35.02720	13790.00	7.3	SEAP
Tunisia											
39	Sfax	320,000	Feb-14	2020	Town	CES-MED	34.74785	10.76616	56.00	5714.3	SEAP
40	Hammam-Lif	42,518	Dec-16	2030/Adapt	City		36.44000	10.19000	9.36	4542.5	<i>na</i>

Annex II. Overview of 22 active CoM-South signatories with submitted SEAP/SECAP/BEI documents (March 2018)

OID	SEAP ID	Cou ntry	Sign.	Pop. (tho usands)	Adh.	Com mit.	Type	Project affiliation	Lat	Long	Area km ²	SEAP/ SECAP	EM CO2 Red. (tCO2eq/yr)	Unit	?	Target %	?
7320	3248	DZ	Batna	350	Feb-14	2020	City	CES-MED	35.56102	6.17391	116.4	SEAP	347,422.00	teqCO2/yr		20.3	on 2020 BAU proj.
8202	3291	DZ	Boumerdès	42,5	Nov-14	2020	City	CES-MED	36.73911	3.71754	19.08	SEAP	36,075.00	teqCO2/yr		20.1	on 2020 BAU proj.
7632	3285	DZ	Sidi Bel Abbes	300	Mar-14	2020	City	CES-MED	35.20222	-0.62989	70.00	SEAP	170,753.00	teqCO2/yr		20.1	on 2020 BAU proj.
6960	3443	IL	Ramla	75	Feb-14	2020	City	CES-MED	31.93150	34.86858	48.50	SEAP	231,954.30	tCO2		20.0	on 2020 BAU proj.
6959	3439	IL	Rosh Ha'Ayin	42	Apr-14	2020	City	CES-MED	32.09292	34.95704	30.50	SEAP	73,963.66	tCO2/		20.0	on 2020 BAU proj.
7042	3442	IL	Shefa-Amer	40	Mar-14	2020	City	CES-MED	32.80000	35.10000	19.70	SEAP	27,966.67	tCO2/		20.0	on 2020 BAU proj.
9404	5324	JO	Aqaba Sp. Econ. Zone	118	Nov-17	2030 Adapt	City	CES-MED	29.20358	35.59570	375.0	SECAP	85,122.87/243,208.21	tCO2	14% and 40% if coop	14.0	To 2030, INDC
9437	5360	JO	Karak	130	Jan-18	2030 Adapt	City	CES-MED	31.16368	35.76204	420.0	SECAP	59,009.75/168,599.28	tCO2	14% and 40% if coop	14.0	To 2030, INDC
8004	4195	JO	Sahab	160	Jun-15	2020	City	SUDEP	31.84362	36.04537	48.60	SEAP	18,411.00	teqCO2/yr	Issues with data	6.5	on 2020 and 2030 BAU proj.
7480	4304	LB	Baakline	17	Apr-14	2020	City	CES-MED	33.68011	35.55818	14.00	SEAP	8,139.00	tCO2/yr		25.0	on 2020 BAU proj.
9020	4429	LB	Kab Elias – Wadi El Delm	50	Nov-16	2020	Borough	CES-MED	33.79361	35.82250	41.00	SEAP	17,272.03	tCO2/yr		26.0	on 2020 BAU proj.
7364	3657	LB	Menjez	800	Sep-14	2020/2030/Adapt	City	CES-MED	34.61952	36.24527	5.25	SEAP	375.00	tCO2eq/yr		25.0	on 2020 BAU proj.
7016	3441	MA	Agadir	450	Feb-14	2020	Urban Comm.	CES-MED	30.42776	-9.59811	110.0	SEAP	234,116.00	tCO2eq/yr		20.8	on 2020 BAU proj.
7798	4151	MA	Benslimane	58	Oct-14	2020	City	CES-MED	33.61897	-7.13055	2400	SEAP	20,278.00	tCO2eq/yr		20.0	on 2020 BAU proj.
8339	5011	MA	Chefchaouen	43	Dec-15	2020	City	SUDEP, AMEV	35.16122	-5.26322	10.00	SEAP	18,863.40	?		21.0	on 2020 BAU proj.
7266	3397	MA	Oujda	477	Mar-14	2020	City	CES-MED	34.68667	-1.90016	86.00	SEAP	155,956.00	tCO2eq/yr		20.3	on 2020 BAU proj.
3304	7960	MA	Salè	903	May-11	2020	City		34.03333	-6.80000	95.00	SEAP	547,767.20	tCO2/yr		20.0	on 2020 BAU proj.

6492	1880	PS	Abasan Al-Kabira	30	Nov-13	2020/2030/Adapt	City		31.32000	34.35000	18.00	SEAP (08/2015)	8,511.32	tCO ₂ eq/yr		30.0	compared to BAU 2020
8380	3859	PS	Hebron	163	Oct-14	2020	City	CES-MED	31.53276	35.09949	74.10	SEAP	113,040.00	tCO ₂ eq/yr		20.0	compared to BAU 2021
7933	3858	PS	Nablus	190	May-15	2020	City	CES-MED	32.22504	35.26097	29.00	SEAP	100,171.00	tCO ₂ eq/yr		20.0	compared to BAU 2022
8380	3729	PS	Tulkarm	101	Feb-14	2020	City	CES-MED	32.31170	35.02720	246.0	SEAP	47,419.00	tCO ₂ eq/yr		20.0	compared to BAU 2023
6958	4824	TN	Sfax	320	Feb-14	2020	Town	CES-MED	34.74785	10.76616	56.00	SEAP	257,129.00	tCO ₂		20.0	on 2020 BAU proj.

Annex III. Energy consumption values reported in the CoM-South dataset – Processed

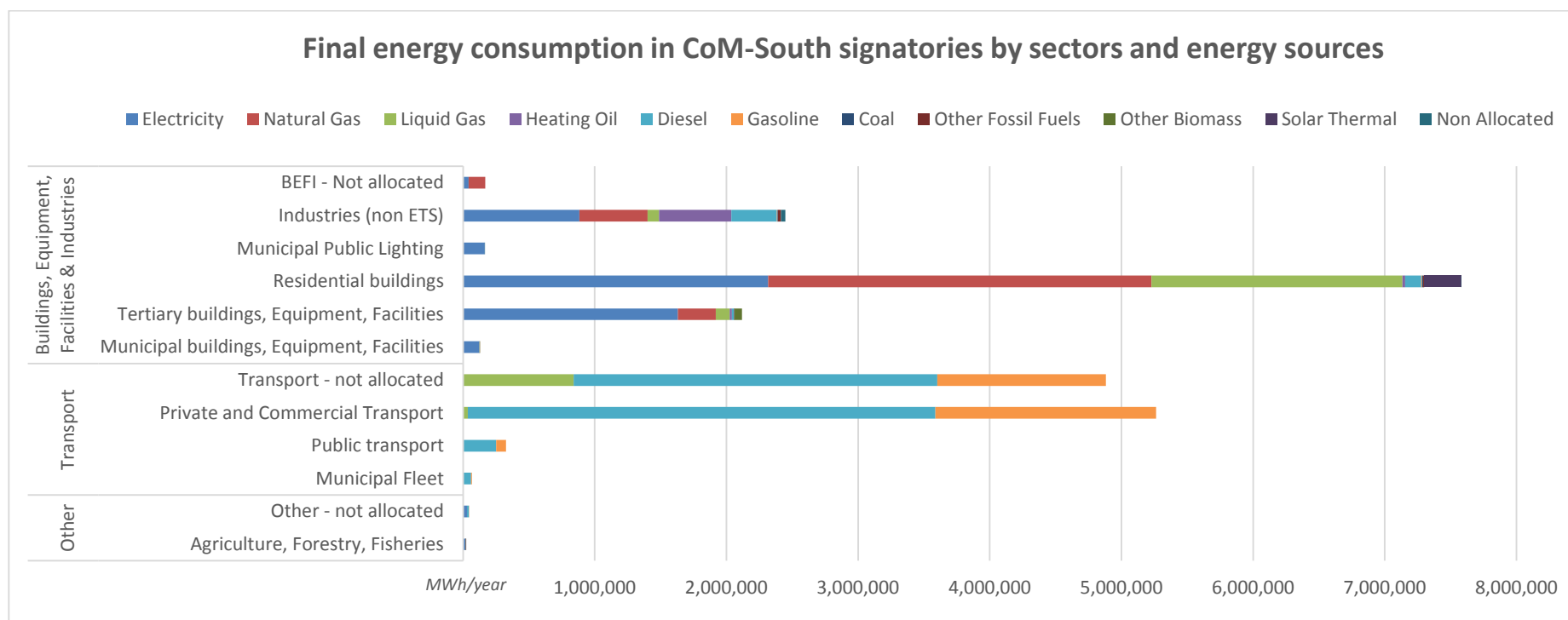
				Electricit Y	Natural Gas	Liquid Gas	Heating Oil	Diesel	Gasoline	Coal	Other Fossil Fuels	Other Biomas s	Solar Thermal	Non Allocat ed
GWh/year														
Total Energy Consumption:		23,216.94 84176		5,210.616 2	3,843.03 14	2,975.065 8	587.324 8	7,131.71 81	3,052.76 04	12.936 1	30.396 9	58.428 5	279.789 4	34.8808
MWh/year				22.4%	16.6%	12.8%	2.5%	30.7%	13.1%	0.1%	0.1%	0.3%	1.2%	0.2%
1. Buildings, Equipment, Facilities & Industries	Municipal buildings, Equipment, Facilities	128,813.5 601	123,248.0 401	1,464.00 00	155.5900	-	3,810.33 00	135.6000	-	-	-	-	-	-
	Tertiary buildings, Equipment, Facilities	2,118,561. 1118	1,631,912 .7017	286,901. 0000	105,760.2 100	17,421.6 001	17,675.9 000	960.9500	441.60 00	418.15 00	57,069. 0000	-	-	-
	Residential buildings	7,581,819. 7441	2,316,288 .1302	2,911,12 0.0000	1,907,475 .5566	20,191.1 702	121,114. 9800	6,246.00 00	9,833.5 000	5,810.7 800	1,359.4 500	279,789 .4276	2,590.74 95	-
	Municipal Public Lighting	166,457.9 609	163,839.0 930	-	-	-	-	-	-	-	-	-	-	2,618.86 79
	Industries (non ETS)	2,447,201. 9994	884,357.4 495	516,592. 0000	87,344.44 00	549,712. 0000	346,367. 4199	3,779.67 00	2,604.0 300	24,154. 9900	-	-	-	32,290.0 000
	BEFI - Not allocated	165,738.1 203	41,402.58 98	126,954. 3984	-	-	-	-	-	-	-	-	-	(2,618.86 79)
2. Transport	Municipal Fleet	66,929.51 00	-	-	-	-	61,104.5 400	5,824.97 00	-	-	-	-	-	-
	Public transport	326,790.5	-	-	-	-	252,007.	74,782.6	-	-	-	-	-	-

		364				8702	662						
	Private and Commercial Transport	5,263,642.8312	-	-	35,241.0000	-	3,552,134.1123	1,676,267.7189	-	-	-	-	-
	Transport allocated - not	4,882,672.8434	-	-	839,000.0000	-	2,761,929.9875	1,281,742.7969	-	-	-	-	0.0590
3. Other	Agriculture, Forestry, Fisheries	21,171.5000	20,419.5000	-	89.0000	-	573.0000	20.0000	57.0000	13.0000	-	-	-
	Other - not allocated	47,148.7000	29,148.7000	-	-	-	15,000.0000	3,000.0000	-	-	-	-	-
		MWh/year											

Annex IV. Final energy consumption in CoM-South signatories by sectors and energy sources

			Electricity	Natural Gas	Liquid Gas	Heating Oil	Diesel	Gasoline	Coal	Other Fossil Fuels	Other Biomass	Solar Thermal	Non Allocated
Other	Agriculture, Fisheries	Forestry,	20,419.50	-	89.00	-	573.00	20.00	57.00	13.00	-	-	-
	Other - not allocated		29,148.70	-	-	-	15,000.00	3,000.00	-	-	-	-	-
Transport	Municipal Fleet		-	-	-	-	61,104.54	5,824.97	-	-	-	-	-
	Public transport		-	-	-	-	252,007.87	74,782.67	-	-	-	-	-
	Private and Commercial Transport		-	-	35,241.00	-	3,552,134.11	1,676,267.72	-	-	-	-	-
	Transport - not allocated		-	-	839,000.00	-	2,761,929.99	1,281,742.80	-	-	-	-	0.06
Buildings, Facilities & Industries	Equipment, Municipal buildings, Equipment, Facilities		123,248.04	1,464.00	155.59	-	3,810.33	135.60	-	-	-	-	-
	Tertiary buildings, Equipment, Facilities		1,631,912.70	286,901.00	105,760.21	17,421.6001	17,675.90	960.95	441.60	418.15	57,069.00	-	-
	Residential buildings		2,316,288.13	2,911,120.00	1,907,475.56	20,191.1702	121,114.98	6,246.00	9,833.50	5,810.78	1,359.45	279,789.43	2,590.75
	Municipal Public Lighting		163,839.09	-	-	-	-	-	-	-	-	-	2,618.87
	Industries (non ETS)		884,357.45	516,592.00	87,344.44	549,712.0	346,367.42	3,779.67	2,604.03	24,154.9	-	-	32,290.00

				000				9				
BEFI - Not allocated	41,402.59	126,954.40	-	-	-	-	-	-	-	-	(2,618.87)	
	5,210,616.2043	3,843,031.40	2,975,065.7966	587,324.7703	7,131,718.1399	3,052,760.37	12,936.13	30,396.92	58,428.45	279,789.43	34,880.81	



Annex V. Emission values reported in the CoM-South dataset – Treated

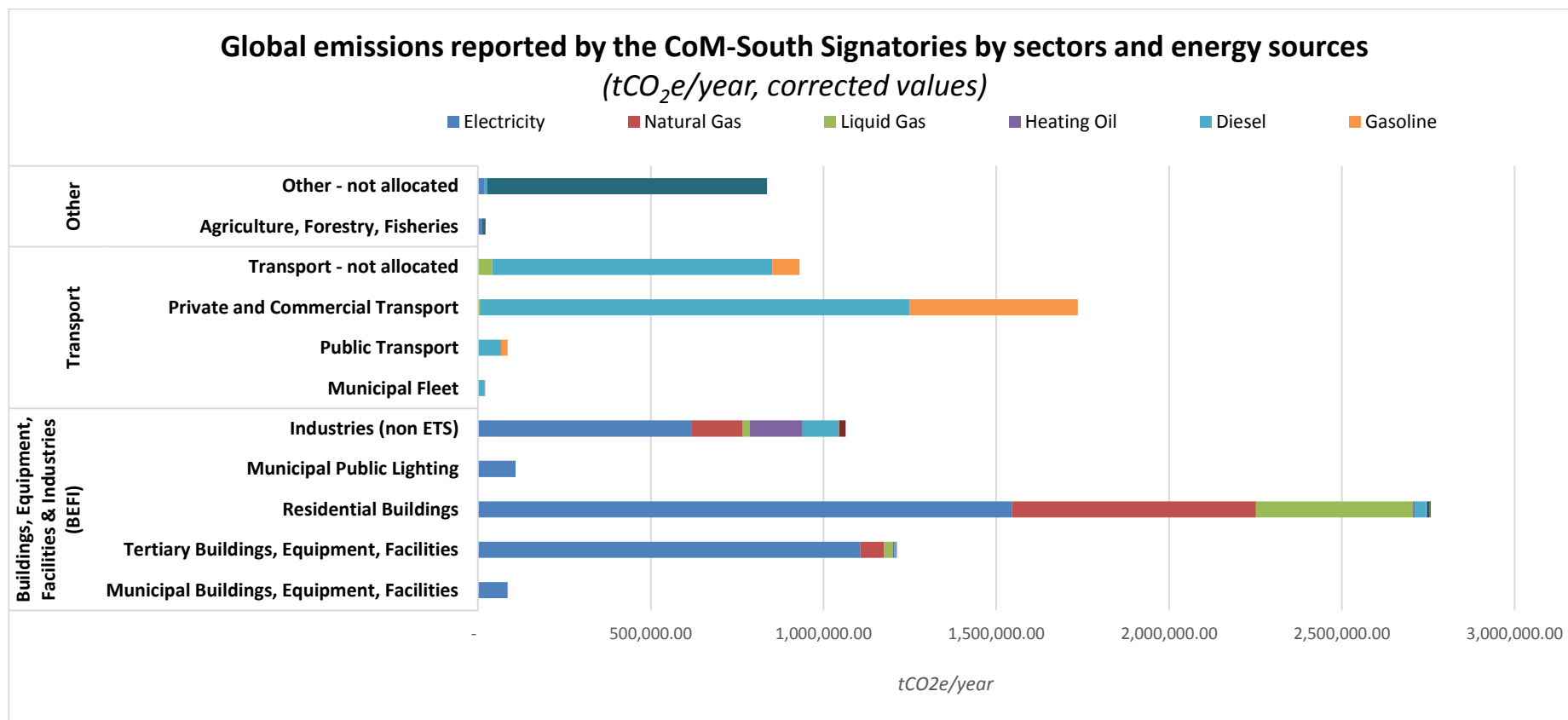
tCO2e/year			Electricity	Natural Gas	Liquid Gas	Heating Oil	Diesel	Gasoline	Coal	Other Fossil Fuels	Other Biomass	Solar Thermal	Non Allocated
Total Emissions:		8,857,330.37	3,493,422.78	923,427.95	550,308.33	163,431.63	2,287,663.22	590,622.39	8,505.02	20,011.64	514.15	-	819,423.28
			39.4%	10.4%	6.2%	1.8%	25.8%	6.7%	0.1%	0.2%	0.0%	0.0%	9.3%
1. Buildings, Equipment, Facilities & Industries (BEFI)	Municipal Buildings, Equipment, Facilities	85,808.52	84,294.40	295.73	36.92	-	1,147.58	33.90	-	-	-	-	-
	Tertiary Buildings, Equipment, Facilities	1,210,930.08	1,105,719.99	69,788.00	25,193.70	4,670.94	4,930.68	279.45	209.24	138.10	-	-	-
	Residential Buildings	2,755,804.79	1,545,104.32	706,256.24	454,358.88	5,391.04	32,672.92	1,979.98	7,308.91	2,218.35	514.15	-	-
	Municipal Public Lighting	108,473.00	108,473.00	-	-	-	-	-	-	-	-	-	-
	Industries (non ETS)	1,063,642.30	617,447.40	147,087.98	21,697.56	153,369.65	104,239.77	1,183.77	964.67	17,651.49	-	-	-
2. Transport													
	Municipal Fleet	21,010.72	-	-	-	-	19,538.05	1,472.67	-	-	-	-	-
	Public Transport	86,071.69	-	-	-	-	67,286.10	18,785.58	-	-	-	-	-
	Private and Commercial Transport	1,736,101.45	-	-	7,999.71	-	1,239,830.42	488,271.32	-	-	-	-	-
	Transport - not allocated	930,452.80	-	-	41,000.00	-	810,842.80	78,610.0	-	-	-	-	-

													0
3. Other	Agriculture, Forestry, Fisheries	22,189.57	13,141.68	-	21.57	-	174.90	5.71	22.20	3.71	-	-	8,819.81
	Other - not allocated	836,845.47	19,242.00	-	-	-	7,000.00	-	-	-	-	-	810,603.47

Annex VI. Aggregated emissions reported by the CoM-South Signatories by sectors and energy sources (tCO2e/year, corrected values)

				Electricity	Natural Gas	Liquid Gas	Heating Oil	Diesel	Gasoline	Coal	Other Fossil Fuels	Other Biomass	Solar Thermal	Non Allocated
Buildings, Equipment, Facilities & Industries (BEFI)	Municipal Facilities	Buildings, Equipment,		84,294.40	295.73	36.92	-	1,147.58	33.90	-	-	-	-	-
	Tertiary Facilities	Buildings, Equipment,		1,105,719.99	69,788.00	25,193.70	4,670.94	4,930.68	279.45	209.24	138.10	-	-	-
	Residential Buildings			1,545,104.32	706,256.24	454,358.88	5,391.04	32,672.92	1,979.98	7,308.91	2,218.35	514.15	-	-
	Municipal Public Lighting			108,473.00	-	-	-	-	-	-	-	-	-	-
	Industries (non ETS)			617,447.40	147,087.98	21,697.56	153,369.65	104,239.77	1,183.77	964.67	17,651.49	-	-	-
Transport	Municipal Fleet			-	-	-	-	19,538.05	1,472.67	-	-	-	-	-
	Public Transport			-	-	-	-	67,286.10	18,785.58	-	-	-	-	-
	Private and Commercial Transport			-	-	7,999.71	-	1,239,830.42	488,271.32	-	-	-	-	-
	Transport - not allocated			-	-	41,000.00	-	810,842.80	78,610.00	-	-	-	-	-
Other														
	Agriculture, Forestry, Fisheries			13,141.68	-	21.57	-	174.90	5.71	22.20	3.71	-	-	8,819.81

Other - not allocated	19,242.00	-	-	-	7,000.00	-	-	-	-	-	810,603.47
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Annex VII. Emissions reduction commitments of CoM-South Signatories

	Country	Signatory	Adhesion	Commitments	SEAP/ SECAP	Emissions Reduction (tCO ₂ -tCO ₂ eq/yr)	Additional Reductions	Target	Notes
1	Morocco	Salé	May-11	2020	SEAP	547,767.2		20.0%	on 2020 BAU projection
2	Palestine	Abasan Al-Kabira	Nov-13; Jul-16	2020/2030/Adapt	SEAP	8,511.3		30.0%	on 2020 BAU projection
3	Tunisia	Sfax	Feb-14	2020	SEAP	257,129.0		20.0%	on 2020 BAU projection
4	Israel	Rosh Ha'Ayin	Apr-14	2020	SEAP	73,963.7		20.0%	on 2020 BAU projection
5	Israel	Ramla	Feb-14	2020	SEAP	231,954.3		20.0%	on 2020 BAU projection
6	Morocco	Agadir	Feb-14	2020	SEAP	234,116.0		20.8%	on 2020 BAU projection
7	Israel	Shefa-Amer	Mar-14	2020	SEAP	27,966.7		20.0%	on 2020 BAU projection
8	Morocco	Oujda	Mar-14	2020	SEAP	155,956.0		20.3%	on 2020 BAU projection
9	Algeria	Batna	Feb-14	2020	SEAP	347,422.0		20.3%	on 2020 BAU projection
10	Lebanon	Menjez	Sep-14	2020	SEAP	375.0		25.0%	on 2020 BAU projection
11	Lebanon	Baakline	Apr-14	2020	SEAP	8,139.0		25.0%	on 2020 BAU projection
12	Palestine	Hebron	Oct-14	2020	SEAP	113,040.0		20.0%	on 2020 BAU projection
13	Algeria	Sidi Bel Abbes	Mar-14	2020	SEAP	170,753.0		20.1%	on 2020 BAU projection
14	Morocco	Benslimane	Oct-14	2020	SEAP	20,278.0		20.0%	on 2020 BAU projection
15	Palestine	Nablus	May-15	2020	SEAP	100,171.0		20.0%	on 2020 BAU projection
16	Jordan	Sahab	Jun-15	2020	SEAP	18,411.0	53,791.0	5%/14%	on 2020/2030 BAU projections
17	Algeria	Boumerdès	Nov-14	2020	SEAP	36,075.0		20.1%	on 2020 BAU projection
18	Morocco	Chefchaouen	Dec-15	2020	SEAP	18,863.4		21.0%	on 2020 BAU projection

19	Palestine	Tulkarm	Feb-14	2020	SEAP	47,419.0		20.0%	on 2020 BAU projection
20	Lebanon	Kab Elias – Wadi El Delm	Nov-16	2020	SEAP	17,272.0		26.0%	on 2020 BAU projection
						2,435,582.6			
21	Jordan	Aqaba Special Economic Zone	Nov-17	2030 Adapt	SECAP	85,122.9	243,208.2	14%/40%	to 2030, INDC and contingent
22	Jordan	Karak	Jan-18	2030 Adapt	SECAP	59,009.8	168,599.3	14%/40%	to 2030, INDC and contingent
						144,132.6	411,807.5		
						2,579,715.2	2,991,522.7		

Annex VIII. Implementation estimates by Sectors and Subsectors

	Estimated Cost (EUR)	Energy Savings Target (MWh/year)	Reduction Target* (tCO ₂ /tCO ₂ eq/year)	
Totals:	2,477,851,333.00	3,443,758.20	2,980,078.71	
1. Buildings, Equipment, Facilities & Industries (BEFI)	1,723,308,235.00	2,361,864.63	1,475,752.68	49.5%
Municipal Buildings, Equipment, Facilities	157,826,658.00	104,120.07	231,221.07	
Tertiary Buildings, Equipment, Facilities	555,123,859.00	443,005.67	335,522.72	
Residential Buildings	840,243,680.00	1,389,062.46	658,301.68	
Municipal Public Lighting	39,731,754.00	70,754.75	49,894.53	
Industries (non ETS)	130,382,284.00	354,921.68	200,812.67	
2. Transport	677,349,250.00	1,063,813.82	709,163.17	23.8%
3. Other	16,991,396.00	7,952.75	640,033.59	21.5%
4. Local Electricity Production	59,202,452.00	127.00	155,029.27	5.2%
5. Local Heat/Cold Production	1,000,000.00	10,000.00	100.00	< 1%

* This aggregated total includes the commitments by all CoM-South signatories to 2020 and 2030. The total differs slightly (11.4 kt) from figures reported globally as not all actions have been specifically quantified by signatories in their SEAP/SECAP documents.

Annex IX. Emissions reduction commitments of CoM-South Signatories

Emissions Reduction (tCO ₂ -tCO ₂ eq/yr)			
Aggregated total to 2020 from SEAP Documents:	2,435,582.6		
2030 target (14%) and contingent target (40%):	85,122.9	243,208.2	
2030 target (14%) and contingent target (40%):	59,009.8	168,599.3	
	144,132.6	411,807.5	
A. Aggregated total with 2030 targets from SEAP/SECAP Documents:	2,579,715.2	2,991,522.7	Reference value
B. Aggregated total from sectors and sub-sectors: (Annex VIII; data set 26 March 2018):	2,980,078.7		Difference with reference value 0.38%
C. Aggregated total of values reported from "Key Actions": (data set 26 March 2018):	2,395,987.3		19.91%

Annex X. Estimated budget reported by CoM-South signatories

	Country	Signatory	Local Authority - Investment	Local Authority – non investment	Other Actors – Investment	Other Actors – non investment	Subtotal EUR
1	Morocco	Salé	23,996,115	-	335,526,025	-	359,522,140
2	Palestine	Abasan Al-Kabira	360,000	210,000	2,200,000	910,000	3,680,000
3	Tunisia	Sfax	17,000,000	-	192,000,000	-	209,000,000
4	Israel	Rosh Ha'Ayin	2,490,000	-	129,654,000	-	132,144,000
5	Israel	Ramla	1,676,666	-	153,851,904	-	155,528,570
6	Morocco	Agadir	33,176,500	-	589,029,312	-	622,205,812
7	Israel	Shefa-Amer	1,166,667	-	28,240,500	-	29,407,167
8	Morocco	Oujda	128,800,000	-	273,609,984	-	402,409,984
9	Algeria	Batna	2,000,000	-	-	-	2,000,000
10	Lebanon	Menjez	50,000	100,000	1,000,000	-	1,150,000
11	Lebanon	Baakline	1,910,000	-	17,190,000	-	19,100,000
12	Palestine	Hebron	2,097,300	-	137,722,704	-	139,820,004
13	Algeria	Sidi Bel Abbes	3,000,000	-	-	-	3,000,000
14	Morocco	Benslimane	23,036,760	-	6,881,110	-	29,917,870
15	Palestine	Nablus	698,000	-	47,000,000	-	47,698,000
16	Jordan	Sahab	35,000	-	560,000	105,000	700,000
17	Algeria	Boumerdès	1,000,000	-	-	-	1,000,000
18	Morocco	Chefchaouen	200,000	-	-	-	200,000
19	Palestine	Tulkarm	600,000	-	42,000,000	-	42,600,000
20	Lebanon	Kab Elias – Wadi El Delm	7,562,350	-	-	-	7,562,350
		Aqaba Special Economic Zone	49,019,000	-	461,972,992	-	510,991,992
22	Jordan	Karak	33,604,096	-	243,198,208	-	276,802,304
			333,478,454	310,000	2,661,636,739	1,015,000	2,996,440,193
			11.1%	< 1%	88.8%	< 1%	

Aggregated Committed
Emissions Reduction:

2,991,523

tCO₂-
tCO₂eq/year
(Annex VII)

Average budgeted cost per
ton of emissions reductions:

1,002

EUR

Annex XI. Overview of key values and indicators reported by CoM-South signatories

BEI Reference Years							
OID	Country	Signatory	Population	Energy Consumption (GWh/year)	Emissions (tCO ₂ eq/year)	Per capita energy consumption (MWh/cap/year)	Per capita GHG Emissions (tCO ₂ eq/cap/yea)
3304	Morocco	Salé	903,485	2,147.8980	875,361.91	2.38	0.97
6492	Palestine	Abasan Al-Kabira	25,211	76.9150	30,273.11	3.05	1.20
6958	Tunisia	Sfax	291,563	2,449.4720	759,066.28	8.40	2.60
6959	Israel	Rosh Ha'Ayin	39,900	416.6442	236,005.73	10.44	5.91
6960	Israel	Ramla	76,000	1,701.9123	912,953.37	22.39	12.01
7016	Morocco	Agadir	414,102	2,155.5560	806,090.92	5.21	1.95
7042	Israel	Shefa-Amer	40,000	214.9240	114,061.62	5.37	2.85
7266	Morocco	Oujda	484,901	1,600.3040	549,323.38	3.30	1.13
7320	Algeria	Batna	386,846	4,693.4000	1,512,900.00	12.13	3.91
7364	Lebanon	Menjez	1,410	2.1237	1,588.80	1.51	1.13
7480	Lebanon	Baakline	17,000	76.2686	25,635.37	4.49	1.51
7494	Palestine	Hebron	202,172	838.5590	450,548.13	4.15	2.23
7632	Algeria	Sidi Bel Abbes	295,000	2,706.4400	747,440.00	9.17	2.53
7798	Morocco	Benslimane	55,910	191.8030	74,326.38	3.43	1.33
7933	Palestine	Nablus	192,000	705.4110	398,783.08	3.67	2.08
8004	Jordan	Sahab*	160,000	968.5780	284,184.00	6.05	1.78

8202	Algeria	Boumerdès	54,556	404.0000	160,700.00	7.41	2.95
8339	Morocco	Chefchaouen	47,694	235.8390	83,909.77	4.94	1.76
8380	Palestine	Tulkarm	101,000	314.3460	190,622.49	3.11	1.89
9020	Lebanon	Kab Elias – Wadi El Delm	50,000	165.8946	52,987.99	3.32	1.06
9404	Jordan	Aqaba Special Economic Zone	118,000	740.2925	339,676.27	6.27	2.88
9437	Jordan	Karak	114,000	410.3677	250,891.78	3.60	2.20
			4,070,750	23,216.94	8,857,330.37	5.31	2.18

Annex XII. Comparison of energy consumption values reported by CoM-South Signatories

			Energy consumption values reported in SEAP/SECAP documents (GWh/year)															
OID	Country	Signatory	Total consumption (A)	Difference between figures A - B	Sum of sectors (B)			Mpal Bldgs, Equip, Facil	Res Bldgs	Tertiary	Mpal Public Lighting	Industries (non ETS)	Mpal Fleet	Transport - Not allocated	Water	Waste	Agriculture, Forestry, Fisheries	Others
1	3304	Morocco	Salé	2147.89	165.74	7.7%	1982.16	0.69	678.3	42.87	26.00	0.00	0.00	1234.29	-	-	-	-
2	6492	Palestine	Abasan Al-Kabira	76.914	0.00	0.0%	76.91	0.48	39.54	4.28	0.72	5.35	0.00	26.54	-	-	-	-
3	6958	Tunisia	Sfax	2449.47	3.09	0.1%	2446.38	10.10	416.9	9	126.41	9.63	689.34	0.00	1193.92	-	-	-
4	6959	Israel	Rosh Ha'Ayin	416.64	0.00	0.0%	416.64	4.55	128.5	9	136.41	4.41	21.11	0.00	120.81	-	-	0.77
5	6960	Israel	Ramla	1701.91	0.00	0.0%	1701.91	9.14	368.4	8	343.74	5.39	279.40	0.00	688.86	-	-	6.90
6	7016	Morocco	Agadir	2155.55	0.00	0.0%	2155.56	10.61	425.5	3	280.23	21.98	262.79	0.00	1154.43	-	-	-
7	7042	Israel	Shefa-Amer	214.92	0.00	0.0%	214.92	1.96	95.17	31.21	1.88	4.51	0.00	80.17	-	-	0.03	-
8	7266	Morocco	Oujda	1600.30	0.00	0.0%	1600.31	18.62	446.4	4	104.78	21.85	106.61	0.00	902.01	-	-	-
9	7320	Algeria	Batna	4694.0	-0.40	0.0%	4694.40	2.30	2595.00	186.70	11.40	524.00	2.60	1356.40	6.00	8.00	2.00	-
10	7364	Lebanon	Menjez	2.37	0.25	10.6%	2.12	0.07	0.50	0.30	0.09	0.00	0.00	0.81	-	-	-	0.36
11	7480	Lebanon	Baakline	76.26	0.00	0.0%	76.27	0.45	35.38	6.35	1.87	0.00	0.00	32.22	-	-	-	-
12	7494	Palestine	Hebron	838.55	0.00	0.0%	838.56	2.27	275.9	0	81.28	5.86	135.61	0.00	334.85	1.01	1.43	0.35
13	7632	Algeria	Sidi Bel Abbes	2017.00	0.00	0.0%	2017.00		859.0	0	199.00	14.00	136.00	0.00	774.00	20.00	7.00	8.00
14	7798	Morocco	Benslimane	191.80	0.00	0.0%	191.80	0.93	43.61	15.97	3.04	35.01	0.00	93.24	-	-	-	-
15	7933	Palestine	Nablus	705.41	0.00	0.0%	705.41	11.10	237.2	4	81.06	6.78	59.08	0.00	278.34	30.22	1.43	0.15
16	8004	Jordan	Sahab*	968.58	0.00	0.0%	968.58		71.63	25.74	0.32	120.81	0.00	748.83	4			
17	8202	Algeria	Boumerdès	402.00	-1.00	-0.2%	403.00		204.0	0	56.00	5.00	48.00	0.00	83.00	0.79	-	0.46
18	8339	Morocco	Chefchaouen	235.83	0.00	0.0%	235.84	0.32	49.03	22.97	1.90	0.88	0.00	160.74				-
19	8380	Palestine	Tulkarm	314.3470	0	0.0%	314.35	2.93	139.0	0	19.26	4.46	18.72	0.00	125.38	4.23	-	0.38

20	9020	Lebanon	Kab Elias – Wadi El Delm Aqaba Special Economic Zone Karak	165.8950 0	0.00	0.0%	165.90	1.05	105.6 7	10.13	1.07	0.00	0.00	47.98	-	-	-	-
21	9404	Jordan		740.2924 7	0.00	0.0%	740.29	12.80	192.6 1	237.97	12.63	0.00	0.00	284.2 7	-	-	-	-
22	9437	Jordan		410.3690 0	0.00	0.0%	410.37	5.22	175.2 0	108.16	5.87	0.00	0.00	115.9 1	-	-	-	-
				22,526.4			22,358.7	96	7,583	2,121	166	2,447	3	9,837	64	21	21	0

O I D	Country	Sign ator y	Difference with SEAP/BEI Documents A - C		Total Energy Consum ption (C)	Mpal Bldgs, Equip, Facil	EC- BEFI			Indus tries (non ETS)	BEFI not allocated	EC- Transpo rt		Private & Commerci al	Transp - Not allocated	EC-Other consumpti ons			
							Res Bldg s	Tert iary	Mpal Public Lighting			Mpal fleet	Publ ic tran spor t			Wat er	W ast e	Agric, Fisherie s, Forest	Other s
1304	Morocco	Salé	0.00	0.00	2147.90	0.69	678.32	42.87	26.00	0.00	165.74	0.00	0.00	0.00	1234.29	0.00	0	0.00	0.00
292	Palestine	Abasan Al-Kabira	0.00	0.00	76.91	0.48	39.54	4.28	0.72	5.35	0.00	0.05	0.00	26.49	0.00	0.00	0	0.00	0.00
3958	Tunisia	Sfax	0.00	0.00	2449.47	2.77	416.99	126.41	9.63	689.34	0.00	7.33	46.52	1150.49	0.00	0.00	0	0.00	0.00
4959	Israel	Rosh Ha'Ayin	0.00	0.00	416.64	4.55	128.59	136.41	4.41	21.11	0.00	0.91	13.85	106.06	0.00	0.00	0	0.77	0.00
5960	Israel	Ramla	0.00	0.00	1701.91	9.14	368.48	343.74	5.39	279.40	0.00	0.94	8.60	679.32	0.00	0.00	0	6.90	0.00
6016	Morocco	Agadir	0.00	0.00	2155.56	10.61	425.53	280.23	21.98	262.78	0.00	10.14	96.16	1048.13	0.00	0.00	0	0.00	0.00
7042	Israel	Shefa-Amerr	0.00	0.00	214.92	1.96	95.17	31.21	1.88	4.51	0.00	0.00	2.41	77.76	0.00	0.00	0	0.03	0.00
8266	Morocco	Oujda	0.00	0.00	1600.30	18.62	446.44	104.78	21.85	106.60	0.00	8.98	76.79	816.25	0.00	0.00	0	0.00	0.00

9	7 3 2 0 7	Algeria	Batna	0.0 0	-0.60	4693.40	2.30	259 4.00	186. 70	11.40	524.0 0	0.00	2.60	0.00	0.00	1356.4	6.00	8	2.00	0.00
1 0	7 3 6 4	Lebanon	Menz	- 0.1 2	-0.25	2.12	0.07	0.50	0.30	0.09	0.00	0.00	0.09	0.00	0.66	0.05	0.00	0	0.00	0.36
1 1	7 4 8 0	Lebanon	Baakline	0.0 0	0.00	76.27	0.45	35.3 8	6.35	1.87	0.00	0.00	0.23	0.00	31.99	0.00	0.00	0	0.00	0.00
1 2	7 4 9	Palestine	Hebron	0.0 0	0.00	838.56	4.71	275. 90	81.2 8	5.86	135.6 1	0.00	2.35	0.00	332.51	0.00	0.00	0	0.35	0.00
1 3	7 6 3 2 7	Algeria	Sidi Bel Abbès	0.2 5	689. 44	2706.44	1.59	859. 00	196. 41	14.30	136.0 0	0.00	2.60	0.00	0.00	1461.4	20.0 0	7	8.14	0.00
1 4	7 9 8	Morocco	Ben Slimane	0.0 0	0.00	191.80	0.93	43.6 1	15.9 7	3.04	35.01	0.00	1.16	2.12	89.97	0.00	0.00	0	0.00	0.00
1 5	7 9 3 8	Palestine	Nablus	0.0 0	0.00	705.41	42.75	237. 24	81.0 6	6.78	59.08	0.00	4.13	0.00	274.22	0.00	0.00	0	0.15	0.00
1 6	8 0 4	Jordan	Sahab*	0.0 0	0.00	968.58	0.00	71.6 3	25.7 4	0.32	120.8 1	0.00	0.00	0.00	0.00	748.8	0.00	0	0.46	0.79
1 7	8 2 0	Algeria	Boumerdès	0.0 0	2.00	404.00	0.65	204. 00	56.3 5	5.00	48.00	0.00	1.30	0.00	0.00	81.7	0.00	0	2.00	5.00
1 8	8 3 9	Morocco	Chefchaouen	0.0 0	0.00	235.84	0.32	49.0 3	22.9 7	1.90	0.88	0.00	0.52	0.00	160.22	0.00	0.00	0	0.00	0.00
1	8	Palestine	Tulk	0.0	0.00	314.35	7.15	139.	19.2	4.46	18.72	0.00	2.18	0.00	123.20	0.00	0.00	0	0.38	0.00

9	3		arm	0				00	5											
	8																			
	0																			
	9		Kab																	
2	0	Lebanon	Elias	0.0	0.00	165.89	1.05	105.	10.1	1.07	0.00	0.00	0.87	0.00	47.11	0.00	0.00	0	0.00	0.00
0	2		–	0				67	3											
	0		Wad																	
			i El																	
			Del																	
			m																	
	9		Aqa	0.0	0.00	740.29	12.80	192.	237.	12.63	0.00	0.00	11.45	74.3	198.51	0.00	0.00	0	0.00	0.00
2	4	Jordan	ba	0				61	97					1						
1	0		Sp.E																	
	4		con.																	
			Z																	
	9																			
2	4	Jordan	Kara	0.0	0.00	410.37	5.22	175.	108.	5.87	0.00	0.00	9.10	6.04	100.78	0.00	0.00	0	0.00	0.00
2	3		k	0				20	16											
	7																			
					GWh	23216.9		758	211	166.46	2447	165.74	66.93	326.	5263.64	4882.67	26.0	15	21.17	6.15
				/year		5	128.81	1.82	8.					79			0			

Annex XIII. Sahab/Jordan: Review of energy consumption and emissions values reported in SEAP/BEI documents and dataset

OID - 8004		SEAP /BEI Documents	Datas et														
Macro-sectors	Sub-sectors	Energy Consumption (MWh/year)	Energy Consumption (MWh/year)	Electricity	Electricity	LGP	Natural Gas	Liquid Gas	Heating Oil	Diesel	Diesel	Gasoline	Gasoline	Solar Thermal	Solar Thermal	Kerosene, Heavy Fuel Oil	Other Non Allocated
1. Buildings, Equipment, Facilities & Industries	Municipal Buildings, Equipment & Facilities	-	240	-	1,811	-	10	10	-	-	100	-	-	-	-	-	(1,691)
1. Buildings, Equipment, Facilities & Industries	Tertiary Buildings, Equipment & Facilities	25,740	338	11,820	10,007	8,070	10	8,074	-	5,850	5,750	-	-	-	-	-	(23,503)
1. Buildings, Equipment, Facilities & Industries	Residential Buildings	71,630	1,214	24,860	24,856	43,490	10	43,494	-	-	-	-	-	750	750	2,530	(67,896)
1. Buildings, Equipment, Facilities & Industries	Municipal Public Lighting	320	463	320	323		10	-	-	-	-	-	-	-	-		130
1. Buildings, Equipment, Facilities & Industries	Industry (non ETS)	120,808	-	37,500	37,500	2,149	-	2,149	32,289	48,869	48,869	-	-	-	-	32,290	(120,807)
1. Buildings, Equipment, Facilities & Industries	Industry (ETS)	-	263		-		10	-	-	-	-	-	-	-	-		253
1. Buildings, Equipment, Facilities & Industries	BEFI - Not allocated	-	21,111		(73,474)		-	(53,677)	(32,239)		(54,669)		-		40		235,130
2. Transport	Public Transport	-	43,750		-		-	-	-		434,383		314,446		-		(705,079)
2. Transport	Private and																

	Commercial Transport	-	-		-		-	-	-		-		-		-		-
2. Transport	Transport - Not allocated	748,830	(42,870)		-		-	-	-	434,380	(433,948)	314,450	(314,131)		-		705,209
3. Other	Agriculture, Forestry & Fisheries	460	600	460	460		-	-	-		-		-		-		140
3. Other	Other - Not allocated	790	-	790	-		-	-	-		-		-		-		-
		968,578	25,109	75,750	1,483	53,709	50	50	50	489,099	485	314,450	315	750	790	34,820	21,886

Annex XIV. Energy consumptions values reported in the CoM-South dataset (not treated)

		GWh/year	Electric	Heat/ Cold	Natural Gas	Liquid Gas	Heatin g Oil	Diesel	Gasoline	Lignite	Coal	Other Fossil Fuels	Plant Oil	Bio- Fuel	Other Bioma ss	Solar Therm al	Geoth ermal	Non Allocat ed
MWh/y ear	Total Energy Consumption:	22,222.28 07	5,095.6 492	-	3,843.0 814	2,929.36 68	587.37 48	6,581 .6914	2,735.6254	-	12.9 361	30.3969	-	-	58.42 8450	279.82 94276	-	67.9008
1. Buildings, Equipment, Facilities & Industries (BEFI)	Municipal buildings, Equipment, Facilities	124,513.5 601	120,55 6.2401	-	1,474.0 000	165.590 0	-	3,873 .1300	135.6000	-	-	-	-	-	-	-	-	(1,691.0 000)
	Tertiary buildings, Equipment, Facilities	1,653,699 .1118	1,481,7 47.401	-	3,911.0 000	97,764.2 100	17,421. 6001	8.200 0	960.9500	-	441. 600	418.150 0	-	-	57,06 9.000	-	-	(23,503. 0000)
	Residential buildings	3,854,403 .7441	1,894,4 97.930	-	16,130. 0000	1,567,47 9.5566	20,191. 1702	120,9 01.18	6,246.0000	-	9,83 3.50	5,810.7 800	-	-	1,359. 4500	279,78 9.4276	-	(67,835. 2505)
	Municipal Public Lighting	135,900.9 609	133,14 2.0930	-	10.0000	-	-	-	-	-	-	-	-	-	-	-	-	2,748.8 679
	Industries (non ETS)	1,618,393 .9994	708,35 7.4495	-	101,592 .0000	61,344.4 400	582,00 1.0000	255,3 67.41	3,779.6700	-	2,60 4.03	24,154. 9900	-	-	-	-	-	(120,80 7.0000)
	Industries (ETS)	263.0000	-	-	10.0000	-	-	-	-	-	-	-	-	-	-	-	-	253.000 0
	BEFI - Not allocated	5,033,849 .1203	748,92 8.5898	-	3,719,9 54.3984	328,323. 0000	(32,23 9.0000)	(9,62 3.000 0)	-	-	-	-	-	-	-	40.000 0	-	278,465 .1321
2. Transport																		
	Municipal Fleet	60,429.51 00	-	-	-	-	-	54,60 4.540	5,824.9700	-	-	-	-	-	-	-	-	-
	Public transport	371,199.3 364	-	-	-	-	-	686,3 90.87	389,887.466 2	-	-	-	-	-	-	-	-	(705,07 9.0000)

			02														
	Private and Commercial Transport	5,263,037.3312				35,241.0000	3,552,187.4123	1,675,608.9189									
			-	-	-		-		-	-	-	-	-	-	-	-	-
	Transport - not allocated	4,097,419.5434				839,000.0000	1,900,048.6875	653,161.7969									705,209.0590
			-	-	-		-		-	-	-	-	-	-	-	-	
3. Other	Agriculture, Forestry, Fisheries	9,171.5000	8,419.5000			- 49.0000	473.0000			57.0000	13.0000						140.0000
																	0

Annex XV. Emissions values reported in the CoM-South dataset - not treated

	tCO2e/y ear	Electric ity	Heat/ Cold	Natura l Gas	Liquid Gas	Heatin g Oil	Diesel	Gasoli ne	Lignit e	Coal	Other Fossil Fuels	Plant Oil	Bio Fuels	Other Bioma ss	Solar Therm al	Geoth ermal	Non Allocat ed
Total Emissions:	7,649,96 5.44	3,419,1 00.02	-	779,81 8.00	675,24 9.44	163,44 5.88	1,787,26 0.54	698,60 0.17	-	8,508. 13	10,15 2.31	-	-	6,867. 40	79.00	-	100,884 .54

1.																	
Buildings, Equipment, Facilities	84,866.23	84,260.27	-	297.94	39.22	-	1,282.78	33.90	-	-	-	-	-	-	-	-	(1,047.87)
Tertiary Buildings, Equipment, Facilities	1,046,009.52	1,014,590.09	-	790.21	23,090.72	4,670.94	5,029.68	279.45	-	209.24	138.10	-	-	6,353.25	-	-	(9,142.15)
Residential Buildings	1,702,329.43	1,310,208.31	-	3,258.45	363,362.50	5,391.04	32,672.92	1,979.98	-	7,308.91	1,558.35	-	-	514.15	75.00	-	(24,000.19)
Municipal Public Lighting	91,233.06	91,413.94	-	2.21	-	-	-	-	-	-	-	-	-	-	-	-	(183.09)
Industries (non ETS)	727,223.53	490,424.18	-	20,572.43	14,701.83	162,572.02	73,319.52	1,183.77	-	964.67	8,451.49	-	-	-	-	-	(44,966.38)
Industries (ETS)	54,538.77	29,023.22	-	25,517.76	-	-	-	-	-	-	-	-	-	-	-	-	(2.21)
BEFI - Not allocated	1,262,828.00	393,090.56	-	729,379.00	74,750.29	(9,188.12)	(3,845.97)	-	-	-	-	-	-	-	4.00	-	78,638.24
2.																	
Transport	16,694.89	-	-	-	-	-	15,222.24	1,472.65	-	-	-	-	-	-	-	-	-
Municipal Fleet	86,071.69	-	-	-	-	-	194,125.94	112,804.94	-	-	-	-	-	-	-	-	#####
Public Transport	1,736,115.73	-	-	-	7,999.71	-	1,239,844.70	488,271.32	-	-	-	-	-	-	-	-	-
Private and Commercial Transport	836,008.	-	-	-	191,29	-	229,443.	92,567	-	-	-	-	-	-	-	-	322,704
Transport - not allocated																	

		00				2.00		19	.83									.98
3.																		
Other	Agriculture, Forestry, Fisheries	6,046.60	6,089.4 4	-	-	13.18	-	165.55	6.34	-	25.31	4.38	-	-	-	-	-	(257.60)
Other - not allocated		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex XVI. Comparison of GHG emissions values reported in SEAP/SECAP documents

OI D	Countr y	Signat ory	Emissions values reported in SEAP/SECAP documents (kt CO2/year or kt CO2eq/year)														Not treated		
			Global Emissio ns Reporte d	Difference between values (kilotons CO ₂ /year)		Total Emissi ons (sum of sector s)	EM - Res Bldg	EM - Mpal Bldgs, Equip, Facil	EM - Tertiary	EM - Mpal Public Lighting	EM - Industri es (non ETS)	EM - Transpo rtation	EM - Water	EM - Waste	EM - Agric, Forestr y, Fisherie s	EM - Oth ers	Difference with SEAP/BEI Documents (kilotons CO ₂)		Data set (26/03/2018)
33 04	Morocc o	Salé	875.36	6.6 %	54.538	820.82	284.76	0.48	30.05	16.39	-	322.06	71.37	95.71	-	-	19.1%	167.08	708.28
64 92	Palesti ne	Abasa n Al-Kabira	30.27	-	-	30.27	18.32	0.14	2.29	0.45	2.18	6.91	-	-	-	-	0.0%	0.00	30.27
69 58	Tunisia	Sfax	759.05	-	-	759.05	141.29	1.07	73.03	5.72	226.61	311.33	-	-	-	-	0.0%	(0.01)	759.07
69 59	Israel	Rosh Ha'Ayi n	236.01	-	-	236.01	73.44	3.34	99.99	3.23	15.47	30.97	-	9.01	0.56	-	3.8%	9.01	227.00
69 60	Israel	Ramla	912.95	0.6 %	5.0577	907.90	235.16	6.70	251.96	3.95	204.80	178.56	-	26.77	-	-	2.9%	26.76	886.19
70 16	Morocc o	Agadir	806.09	-	-	806.09	181.07	7.20	174.28	15.50	87.72	307.17	33.16	-	-	-	4.4%	35.11	770.98
70 42	Israel	Shefa-Amer	114.06	-	-	114.06	47.72	1.37	21.85	1.32	3.15	20.33	-	18.30	0.02	-	16.0%	18.30	95.76
72 66	Morocc o	Oujda	549.32	-	-	549.32	189.97	13.13	48.18	15.41	44.51	238.12	-	-	-	-	0.0%	(0.00)	549.32
73 20	Algeria	Batna	1,513.00	-	-	1,513.00	-	715.00	63.00	6.00	171.00	452.00	11.00	91.00	4.00	-	21.2%	321.11	1,191.89
73 64	Lebano n	Menje z	1.12	- 29.7 %	(0.471)	1.59	0.43	0.07	0.25	0.06	-	0.21	-	-	0.16	0.41	16.9%	(0.19)	1.31
74 80	Lebano n	Baakli ne	25.64	-	-	25.64	12.80	0.27	3.31	1.22	-	8.04	-	-	-	-	0.0%	(0.00)	25.64
74 94	Palesti ne	Hebro n	448.13	-	-	448.13	113.09	1.59	54.47	4.26	83.79	114.16	0.74	73.97	2.08	-	16.8%	75.22	372.92

76		Sidi Bel																	
32	Algeria	Abbes	751.00	(1.000	752.0	-	252.00	68.00	8.00	50.00	260.00	16.00	90.00	8.00	-		9.0	67.87	683.13
77	Morocco	Bensli		0)	0												%		
98		mane	74.33	-	74.33	18.56	0.66	6.46	2.14	15.45	24.67	6.39	-	-	-		8.6	6.39	67.94
79	Palestine	Nablus															%		
33			398.24	-	398.24	92.31	8.07	54.00	4.93	32.04	94.57	21.97	89.56	0.79	-		22.5%	89.78	308.46
80	Jordan	Sahab		(0.050	283.8														
04			283.75)	0	24.58	-	10.05	0.18	43.89	195.90	0.44	8.50	0.26	-		100.0%	283.75	(0.00)
82	Algeria	Boumerdes	159.00	1.3 %	157.00	-	60.00	25.00	3.00	17.00	28.00	2.00	20.00	2.00	-		-	40.8%	(64.82)
83	Morocco	Chefchaouen	84.16	-	84.16	18.32	0.24	11.98	1.41	0.51	26.02	-	25.69	-	-		31.5%	26.51	57.65
83	Palestine	Tulkarm	191.52	-	191.52	66.53	2.13	12.52	3.25	10.62	42.51	3.07	49.79	1.10	-		26.5%	50.71	140.81
90	Lebanon	Kab Elias – Wadi El Delm	52.95	-	52.95	35.00	0.72	4.30	0.74	-	12.20	-	-	-	-		-	0.1%	(0.03)
		Aqaba Special Economic Zone	339.68	(0.0003)	339.68	89.54	7.43	131.11	7.33	-	73.55	-	30.72	-	-		9.1%	30.82	308.86
94	Jordan	Karak	250.89	0.0002	250.89	83.89	3.39	66.58	3.87	-	29.98	-	63.18	-	-		25.2%	63.18	187.71
			8,856.52	0.7 %	8,796.45	1,726.78	1,084.97	1,212.66	108.34	1,008.75	2,777.23	166.14	692.20	18.98	0.41		13.6%	1,206.56	7,649.97

Annex XVII. Comparison of GHG emissions values reported by the CoM-South signatories

OID	Country	Signatory	SEAP/BEI Documents		kilotons CO ₂ /year or kilotons CO ₂ eq/year		Dataset Untreated		-	
			Global (A)	Emissions	Difference between sources A - B		Global (B)	Emissions	Difference between sources A - C	
1	3304	Morocco	Salé	875.3619	19.1%	167.0849	708.2770	0.0%	(0.00)	875.3619
2	6492	Palestine	Abasan Al-Kabira	30.2731	0.0%	0.0000	30.2731	0.0%	0.00	30.2731
3	6958	Tunisia	Sfax	759.0540	0.0%	(0.0123)	759.0663	0.0%	(0.01)	759.0663
4	6959	Israel	Rosh Ha'Ayin	236.0057	3.8%	9.0090	226.9967	0.0%	(0.00)	236.0057
5	6960	Israel	Ramla	912.9531	2.9%	26.7647	886.1884	0.0%	(0.00)	912.9534
6	7016	Morocco	Agadir	806.0900	4.4%	35.1112	770.9788	0.0%	(0.00)	806.0909
7	7042	Israel	Shefa-Amer	114.0616	16.0%	18.3000	95.7616	0.0%	(0.00)	114.0616
8	7266	Morocco	Oujda	549.3230	0.0%	(0.0004)	549.3234	0.0%	(0.00)	549.3234
9	7320	Algeria	Batna	1,513.0000	21.2%	321.1110	1,191.8890	0.0%	0.10	1,512.9000
10	7364	Lebanon	Menjez	1.5888	17.7%	0.2815	1.3073	0.0%	-	1.5888
11	7480	Lebanon	Baakline	25.6350	0.0%	(0.0004)	25.6354	0.0%	(0.00)	25.6354
12	7494	Palestine	Hebron	448.1330	16.8%	75.2180	372.9150	-0.5%	(2.42)	450.5481
13	7632	Algeria	Sidi Bel Abbes	751.0000	9.0%	67.8720	683.1280	0.5%	3.56	747.4400
14	7798	Morocco	Benslimane	74.3260	8.6%	6.3876	67.9384	0.0%	(0.00)	74.3264
15	7933	Palestine	Nablus	398.2360	22.5%	89.7761	308.4599	-0.1%	(0.55)	398.7831

16	8004	Jordan	Sahab	283.7500	100.0%	283.7500	-	-0.2%	(0.43)	284.1840
17	8202	Algeria	Boumerdès	159.0000	-40.8%	(64.8190)	223.8190	-1.1%	(1.70)	160.7000
18	8339	Morocco	Chefchaouen	84.1610	31.5%	26.5124	57.6486	0.3%	0.25	83.9098
19	8380	Palestine	Tulkarm	191.5190	26.5%	50.7137	140.8053	0.5%	0.90	190.6225
20	9020	Lebanon	Kab Elias – Wadi El Delm	52.9540	-0.1%	(0.0340)	52.9880	-0.1%	(0.03)	52.9880
21	9404	Jordan	Aqaba Special Economic Zone	339.6763	9.1%	30.8203	308.8560	0.0%	(0.00)	339.6763
22	9437	Jordan	Karak	250.8920	25.2%	63.1817	187.7103	0.0%	0.00	250.8918
				8,856.99	13.6%	1,207.03	7,649.97	0.00%	(0.34)	8,857.3304

Sources:

- A SEAP/SECAP documents with BEI results.
- B Dataset compiled from the CoM online reporting portal (26 March 2018).
- C Treated dataset completed/corrected by crosschecking SEAP/SECAP documents.

Annex XVIII. Preparation of Community Awareness Promotional Plan (CAPP) by Hebron (Palestine): Situation analysis

Aim

The questions in the attached templates cover various areas of actions and levels of awareness linked to behavioural change. They have been used to conduct a quick investigation on the awareness situation and level of perception of the citizens in the city concerning renewable energy and energy saving.

The exercise of filling the templates has identified and assessed the conditions in the municipalities prior to preparing a CAPP and to answer a number of questions, including:

- 1) Who are the target audience of a CAPP?
- 2) What are the priority issues to be addressed by the CAPP (that also could be identified by the SEAP as priority actions)?
- 3) What is the level of awareness of key energy problems? And what are the first issues to raise awareness about?
- 4) What are previous awareness raising actions, so that the CAPP can build on them?
- 5) What is the situation as related to public consultation, based on which a public consultation is to be designed?

The exercise of filling the templates helped pointing out how raising awareness can be utilized as a tool for improved energy policy to facilitate implementation of its actions; it has allowed initiating discussions in the Communication Workshop and helped identifying appropriate campaigns and actions.

Specific objectives

- (i) Provide the necessary information about the current conditions and the situation regarding awareness on energy saving and renewable energy,
- (ii) Help to identify the most appropriate a) **awareness raising campaigns** that would accompany the SEAP vision/strategy and b) the **awareness raising actions** that would accompany the priority actions determined in the SEAP.

Steps to follow

- (i) The SEAP team of the municipality has filled the templates based on their understanding and perception of the city's inhabitants. They were free to seek the opinion of a limited number of persons for help in filling in the answers.
- (ii) The filled templates were discussed in the "CES-MED Communication Workshops", which were led by the CES-MED Communication Expert and attended by the SEAP consultant and the SEAP municipal team. In parallel, the vision/strategy of the city and the proposed pilot actions in the SEAP were reviewed as part of the workshop exercise.

The outcome guided the selection of the most appropriate awareness raising campaigns and actions of the SEAPs including the ones related to priority projects.

Results

Identification of the target audience and the importance they give to Sustainable Energy (audience targeted by the awareness raising campaigns and actions)			
Women/ Men Age group	Very important	Important	Not Important
Youth	X		
Middle Age	X		
Seniors		X	
Other: school kids under 18	X		
Identification of priority issues to be addressed by a sustainable energy action and their level of importance			
Issue	Level of importance		
	Very important	Important	Not Important
High price of energy	X		
Availability/lack of energy		X	
Availability of transport		X	
Waste management	X		
Clean environment	X		
Other			
Identification of level of awareness (energy problems) and education of energy related issues			
	Very aware (through media or research)	Aware but not convinced	Not aware
Impact on environment		X	
Cost of energy		X	
Waste of energy	X		
Climate change			X
Ways to reduce energy consumption	X		
Existence of renewable energy		X	

Previous awareness actions conducted by the city/municipality or by other actors	
Has the city or local authority done previous actions	The municipality did not go through any procedures but carried out certain activities
If yes, who conducted the actions (the city/ municipality, NGO, national authority...)	Hebron Municipality
If yes, describe the action	The municipality has repeatedly sent messages via radio stations and Internet sites related to the citizens concerning actions and directives preceding the weather depression or heat waves
If yes, what was the budget and how did you fund it	The funding was very modest
If yes, outcome, impact and feedback	Outcome was positive and the impact was a real-time effect on consumer energy consumption during cold or heat waves
Public Consultation	
Does the city practice public consultation?	Yes, to a certain extent
Has the city done public consultations for SEAP?	No
Is it part of the legislative process?	
Foreseen consultation(s)	There were community consultation sessions regarding the strategic plan involving various city institutions
Does the city liaise with national institutions, stakeholders?	Yes, it does

Situation analysis

From this study concerning the target profile, it appears that the groups that are aware and informed about energy challenges are the middle age and young population and the ones open to any information and behaving accordingly are the children. It would be recommended to carry out the communication with them and get easily their involvement as they could function as opinion sharing people to disseminate ideas and new behaviour.

The oldest respondents, probably taken by other top social concerns, are the group that needs more persuasion means to address those barriers as their environmental deeds are deeply rooted in cultural norms and habits.

The template shows that the important leverages that we can use and base our communication upon are: The price of energy, the cleanliness of the environment and the waste management issues. The ambiguity lays in the fact that the citizens of Hebron in general are aware about some energy issues such as the waste energy and the

availability of energy efficient products but do not feel convinced about their link to cost of energy and the impact that overconsumption may have on the environment. Evenly, they don't seem to be aware of the climate change issue.

Nevertheless, the municipality of Hebron has conducted awareness raising actions and campaigns that are related to sustainable energy towards the civil society, punctually, before the heat wave. Despite the modest funding of these actions, it was able to assess their positive and immediate impact on alerting the population about energy consumption and the importance of energy saving.

The means of communication, and the tools that were used were messages via radio stations and Internet sites related to the citizens.

Finally, regarding public consultations, the municipality does liaise with the citizens to a certain extent; there has been a community consultation session conducted regarding the strategic plan with the city institutions.

Annex XIX. Key performance and indicators for the SEAP Actions by Kab Elias – Wadi El Delm (Lebanon): sections on municipal buildings, equipment/facilities; Water supply and waste water treatment; Solid Waste Management

Action No.	Actions	Key Performance Indicators	Measurement Units
Municipal buildings, equipment/facilities			
1	SEAP Unit	<ul style="list-style-type: none"> • Develop SEAP unit in the Municipality • Appointing SEAP manager in the municipality • The number of buildings and facilities covered by this work 	<ul style="list-style-type: none"> • Formal announcement by the municipality council for developing the SEAP • Number of year for the contract with the SEAP manager • The percentage of municipality facilities supervised by the SEAP manager
2	Setup a Website or/and other social media	<ul style="list-style-type: none"> • Develop a Website or page on the original municipality web site for the SEAP of the municipality 	<ul style="list-style-type: none"> • Launching the Website or a page on the existing web site
3	Announce on the local media like local TV channel on the SEAP	<ul style="list-style-type: none"> • Publish the announcement on local TV channel 	<ul style="list-style-type: none"> • Number of Feedback from citizens
4	Energy Saving Instructions	<ul style="list-style-type: none"> • Publish the energy saving instructions in the municipality building 	<ul style="list-style-type: none"> • Energy consumptions measures in KWh and saving in %
5	Monitoring Mechanism	<ul style="list-style-type: none"> • Install the monitoring mechanism 	<ul style="list-style-type: none"> • KWh saving in %
6	Awareness and Training Campaign	<ul style="list-style-type: none"> • Conduct training for the municipality staff 	<ul style="list-style-type: none"> • Number of campaigns • Number of attendances
7	Start replacing the FCL lamps with LED lamps	<ul style="list-style-type: none"> • Number of lamps replaced with LED lamps 	<ul style="list-style-type: none"> • Number of lamps replaced with LED • Amount of watt reduced
8	Replace the Water pumping driver with VFD driver for Central heating system	<ul style="list-style-type: none"> • Implementation of VFD driver 	<ul style="list-style-type: none"> • Successfully operated

9	Replace the Air Condition with A+++ Inverter type	<ul style="list-style-type: none"> • Replacing the A/C 	<ul style="list-style-type: none"> • Number of A/C replaced
10	Install lighting motion sensors in building	<ul style="list-style-type: none"> • Area covered with motion sensors 	m ²
11	Renewable Energy	<ul style="list-style-type: none"> • Installation of the PV system on the VSM • System installed capacity 	<ul style="list-style-type: none"> • KWp • KWh/a
12	Green Public Procurement	<ul style="list-style-type: none"> • Update public procurement polices • Training for the municipality procurement staff • The number of Devices brought with green procurement procedures 	<ul style="list-style-type: none"> • Public procurement polices • Number of municipality staff trained • Device number
Water supply and waste water treatment			
13	Conduct awareness campaign	<ul style="list-style-type: none"> • Conduct awareness campaign for water conservation and regulate water consumptions with tools for citizen 	<ul style="list-style-type: none"> • Number of attendances
14	Distribute water saving tools for the faucet (tap)	<ul style="list-style-type: none"> • Statistical count for the types of faucets in homes • Purchase the most famous Faucet (tap) type used in houses • Distribute the water saving faucets to the houses 	<ul style="list-style-type: none"> • Count the number of houses that have water saving faucet
15	Encourage citizens to collect rain water in the winter season	<ul style="list-style-type: none"> • Print and distribute leaflet, which shows the importance of using rain water with instruction how to collect it 	<ul style="list-style-type: none"> • Number of houses that received the leaflet for rain water collection
16	Conduct routine maintenance and check the water leak in main feeder piping and fix the leaks	<ul style="list-style-type: none"> • Prepare water distribution drawing for the water network • Define the main feeders and sub feeders • Maintain main feeders leak 	<ul style="list-style-type: none"> • Number of leaks fixed in the main feeders • Number of leaks fixed in the sub feeders • Number of feedbacks and complains from

		<ul style="list-style-type: none"> • Maintain sub feeders leak • Compare water consumptions 	citizens after fixing leaks
17	Update the municipality policy to include a standalone water treatment plant in every new construction	<ul style="list-style-type: none"> • Update the police through municipality council 	<ul style="list-style-type: none"> • Number of new constructions which implemented new policies for standalone water treatment plant
18	Install water meters on the main water supply and main branches to monitor water consumptions	<ul style="list-style-type: none"> • Install & Fix water meters on main feeders and sub feeders • Count the number of users on each sub feeders and compare average consumptions per user • Maintain feeders • Compare water consumptions 	<ul style="list-style-type: none"> • Water consumptions on main feeders • Water consumptions on sub feeders • Average water consumption per user • Water consumptions on main feeders after maintenance • Average water consumption per user after maintenance • Number of the installed Meters
19	Include in new construction the reuse of treated water to feed the flush water supply in separate piping	<ul style="list-style-type: none"> • Update the policy through the municipality council 	<ul style="list-style-type: none"> • Number of new constructions that implemented these policies
20	Prepare strategic plan for waste water treatment	<ul style="list-style-type: none"> • Assign consultants for preparation of waste water strategy 	<ul style="list-style-type: none"> • Deliver the output of the strategic plan for water treatment
21	Install water treatment plant (finance to be defined)	<ul style="list-style-type: none"> • According to the strategic plan for waste water, location and capacity of the treatment plant to be defined • Assign consultant to design the treatment plant and prepare the budget line for the project • Resource the finance 	<ul style="list-style-type: none"> • Design completed • Finance resourced • Execute the work
22	Install PV solar station on one of the water pumping stations	<ul style="list-style-type: none"> • Get finance for PV installation 	<ul style="list-style-type: none"> • Execute the job

Solid waste Management			
23	Ensuring capacity development and enhancing public awareness	<ul style="list-style-type: none"> • Conduct workshop for municipality staff and NGO's for solid waste management 	<ul style="list-style-type: none"> • Number of staff attended the workshop
24	Preparation of marketing materials for the sorting process	<ul style="list-style-type: none"> • Design the leaflet and the marketing materials for solid waste sorting 	<ul style="list-style-type: none"> • Print the marketing materials
25	Dividing the city into different sectors and selecting volunteers for each sector willing to support the municipality plan in sorting the solid wastes	<ul style="list-style-type: none"> • Sectors defined • Volunteers selected 	<ul style="list-style-type: none"> • Number of sectors & volunteers • Feedbacks & Complaints
26	Conducting seminars to volunteer groups training them on methods of sorting solid wastes. The volunteers, supported with instructional leaflets, will then work out the steps in educating the citizens on the proper way for sorting	<ul style="list-style-type: none"> • Conduct training seminars with the help of specialists • Design objective and instructional leaflets 	<ul style="list-style-type: none"> • Number of attendances • Print the leaflets
27	Distributing different coloured dustbins with clear sign on each one, which indicate the type of garbage (organic or nonorganic)	<ul style="list-style-type: none"> • Purchase & Distribute the coloured dustbins • Define to the citizens - the organic & nonorganic garbage 	<ul style="list-style-type: none"> • Number of signed & coloured dustbins
28	Developing and implementing plans for sorting solid waste at source	<ul style="list-style-type: none"> • Apply Plans 	<ul style="list-style-type: none"> • Feedbacks from the volunteers & solid waste workers
29	Developing waste strategy plan with waste management plan in order to overcome the high cost in collection and transportation, and look for a solution to the landfill either by converting it to sanitary landfill or utilising another one near the city	<ul style="list-style-type: none"> • Assign consultants for preparation & developing such strategy 	<ul style="list-style-type: none"> • Deliver the output of the strategic plan
30	Implementing waste power generation from solid waste to feed energy to the future solid waste plant	<ul style="list-style-type: none"> • Electric generation from solid wastes 	<ul style="list-style-type: none"> • Capacity of generated power

31	Purchasing new 4 fuel saving trucks with recommended spare parts	<ul style="list-style-type: none"> • Get funding & purchase trucks & Spare parts 	<ul style="list-style-type: none"> • Fuel consumption reduction
32	Evaluating the rehabilitation of the existing landfill and converting it to sanitary landfill which complies with ecosystem standard and protects the underground water (cost to be defined)	<ul style="list-style-type: none"> • Assign consultants for evaluation & development 	<ul style="list-style-type: none"> • Work completed
33	Conducting feasibility study to build new solid waste treatment plant to serve the local city	<ul style="list-style-type: none"> • Conduct the feasibility study 	<ul style="list-style-type: none"> • Work completed
34	Executing the result from the above study; the new landfill and solid waste treatment plant	<ul style="list-style-type: none"> • Get funding for executing the result • Determine the location of the new landfill & the solid waste treatment plant 	<ul style="list-style-type: none"> • Capacity of the landfill • Capacity of the solid waste treatment plant

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