C4S TEAM UP FOR ENERGY

Compete4SECAP Sustainability Strategy

The way forward for municipalities with an energy management system in place

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Summary

The Compete4SECAP project (C4S) set out to address the challenges faced by European municipalities in implementing their ambitions to improve energy efficiency and reduce emissions: supporting 31 municipalities from eight different countries to systematically improve their energy management practices. The project focused on three key areas of action: standardised energy management system (EnMS) in accordance with ISO 50001:2018 (European Energy Award in Germany), energy-saving competitions, and Sustainable Energy and Climate Action Plans (SECAP).

This document sets out a way forward for the 31 C4S municipalities who have developed an EnMS, as well as other municipalities with an EnMS in place. After a brief introduction in Chapter 1, Chapter 2 outlines the concept behind the project and the key project results. Chapter 3 looks at what to do next once the EnMS has been established, providing general tips on meeting the ISO requirements in terms of improvement, as well as recommendations (at local and national government levels) specific to each of the eight countries where C4S was active for strengthening EnMS implementation, and for rolling out and certifying EnMS more widely. Chapter 4 reviews the benefits of running an energy-saving competition to support behavioural change among energy users, offers tips on setting up a new competition round, and suggests resources for expanding the competition concept from public buildings to businesses or private households. Chapter 5 reflects on the need to align the EnMS with a broader plan for climate action (e.g. Sustainable Energy and Climate Action Plan). Here the value of applying the Plan-Do-Check-Act approach endorsed by the ISO standard to implementation of both energy saving measures, and actions for adapting to the impacts of climate change, is described.

The C4S team wishes all participating municipalities well in continuing to sustain the work to date, and their ongoing transformation of local energy management!

Table of Contents

1. Introduction

Many local governments across Europe are well on their way to reducing their greenhouse gas emissions and taking steps to mitigate climate change. Among 880 European urban areas analysed in 2018, approximately 66% had some form of climate mitigation plan[1], while in the same year the 8,800 Signatories of the EU-Covenant of Mayors for Climate and Energy[2] had already developed 5,900 action plans – containing over 232,000 mitigation actions. However, putting these plans into practice is often easier said than done, for a range of reasons: whether changes in political leadership, funding shortages, stretched staff capacity, or lack of training for the staff expected to implement.

The Compete4SECAP project (C4S) set out to address these challenges: supporting 31 municipalities from eight different countries across Europe to reduce greenhouse gas (GHG) emissions by systematically improving their energy management practices in three key areas: standardised energy management systems (EnMS), energy-saving competitions, and Sustainable Energy and Climate Action Plans (SECAP).

The following pages provide an overview of the key results, as well as advice to support ongoing action in the 31 C4S municipalities after the project ends. This content may also be useful to staff in other municipalities with an EnMS in place, who are seeking guidance on how to improve it - and in tandem with other measures.

For a more detailed account of the project methodology, and a deeper reflection on the lessons learnt (including country-specific achievements, barriers, enablers - and broader recommendations to support implementation of the three project pillars), see *A guide to transforming energy management at local level: with standardised energy management systems, energy-saving competitions and Sustainable Energy and Climate Action Plans*.

[1] Reckien, D., Salvia, M., et al. (2018). How are cities planning to respond to climate change? Assessment of local climate plans from 885 cities in the EU-28. *Journal of Cleaner Production*, 191, 207–219. https://doi.org/10.1016/J.JCLEPRO.2018.03.220

[2] The Covenant of Mayors is a global framework for strategic climate action at municipal level. (insert link)

2. The C4S approach: three gears in motion!

"Integrate the SE[C]AP into the day-to-day life and management of the municipality: it should not be just another nice document, but part of the corporate culture!"[3]

This recommendation from the Covenant of Mayors dates from 2010, but it's one that still resonates today - and that the C4S team can fully endorse! The three pillars of action that define C4S - energy saving competition, EnMS and SECAP - are intended to work together to ensure that local climate plans don't just stay on the shelf, but are actively implemented.

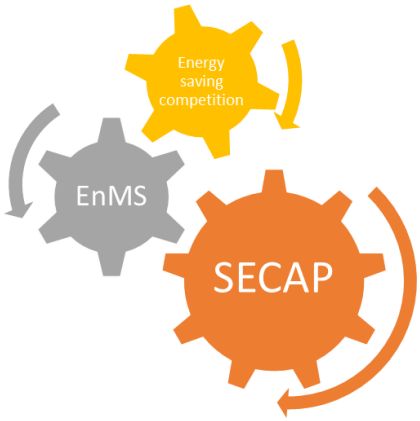

Figure 1: The C4S three gear approach

Each of the 31 C4S municipalities designated a local Energy Management Team to design and implement an **EnMS in public buildings and other municipal operations**, according to ISO 50001 (and in Germany, the European Energy Award). At the same time, staff from 92 public buildings worked together over a 12 month period to run an energy saving campaign aimed at changing energy-use behaviour. In addition, municipal staff were supported by C4S project partners in 'upgrading' an existing Sustainable Energy Action Plan (SEAP) to a Sustainable Energy and Climate Action Plan - addressing climate adaptation, and targeting more ambitious emissions reductions, in line with the latest Covenant of Mayors requirements[4]. **EnMS and competitions, when combined, can trigger significant benefits for municipalities to transform energy management and usage** - especially when a SECAP is in place to provide a strategic framework for climate action. These three areas of action have formed the basis of the C4S approach to transforming energy management at local level.

[3] Source: http://www.pilsetumerupakts.eu/IMG/pdf/SEAP_guidebook_Part_I.pdf (page 12)

[4] CoM Signatory cities in Europe are required since 2015 to develop a SECAP, committing to reduce CO_2 and other greenhouse gas (GHG) emissions by at least 40% by 2030, and to adapt to the impacts of climate change. Many of those who signed up prior to that had already developed a SEAP, which outlined actions up to 2020 for emissions reduction, according to less ambitious targets, and did not address climate adaptation.

Key results overall

- 28 municipalities in Croatia, Cyprus, France, Hungary, Italy, Latvia and Spain have developed and are now implementing an EnMS according to the ISO 50001:2018 'Energy Management Systems' standard.
- 22 of the above have already been certified according to ISO 50001:2018.
- 3 municipalities in Germany have introduced the European Energy Award (eea)[5]; one of which was certified, and one of which was successfully audited during the project
- 31 municipalities developed corresponding operational plans.

Results of EnMS implementation after just one year

- More than 28,000 MWh saved.
- At least € 800,000 saved.
- More than 120 actions implemented.
- At least 5000 tonnes CO_2 emissions avoided.

Results of changing energy use behaviour though the year-long competition

- 92 buildings took part in the energy-saving competition.
- 6800 employees have been trained so far through the competition.
- 1717.6 MWh saved.
- 512.6 tonnes CO_2 emissions avoided.
- Average energy reduction of 6.44%.
- €176,433 saved.

Results of providing support upgrading SEAPs to SECAPs

- 27 municipalities upgraded SEAPs to SECAPs (or similar plan) with new CO_2 reduction targets and measures planned till 2030, while two created a brand new SECAP without a pre-existing plan.
- 2.3 million population influenced.
- 8.2 million MWh/year total estimated energy savings.
- More than 200,000 MWh/year of energy savings triggered by the C4S project.
- Around 33,000 MWh/year from renewable energy sources triggered by the C4S project.

[5] The European Energy Award is a quality management and awarding system for municipalities and regions. It supports local authorities in establishing interdisciplinary planning approaches and implementing effective energy and climate policy measures.

3. Implementing an energy management system

3.1. What's next?

Congratulations! By developing - and certifying - an EnMS, your municipality has taken a big step forward in improving local energy management. Now it's crucial to make sure you keep the EnMS operating effectively.

So, what does the standard require from you next?

Unfortunately, there is no specific chapter in ISO 50001:2018 to tell you exactly how to proceed after certification. However, as the standard is based on the Plan-Do-Check-Act (PDCA) cycle, the certified authority is expected to 1) keep the system operational and 2) ensure continual improvement of energy performance. To check on both, annual surveillance audits will be required by an accredited certification body.

During the next surveillance audit, the certification body will assess if the EnMS is **functional and has been operating** according to all the established procedures in the local authority.

Continual improvement means that improvement is demonstrated over a specified period of time - usually a period of one year. The standard requires each local authority to define a methodology, including targets, actions and timelines. But it does not prescribe these, or how to achieve them. Improvement can be demonstrated in at least two ways:

1. reduction of the normalised energy consumption of the assets within the boundaries of the EnMS;
2. progress toward defined energy targets and management of significant energy uses (SEU).

3.2. How to meet the ISO requirements in practice

The requirements of ISO 50001:2018 are one thing, but putting them into practice in real life is another. In principle, each local authority is free to define its own approach and methods for operating an EnMS, however it may be helpful to follow a few general rules too. These are outlined below - in accordance with particular sections of the ISO standard.

Context of organisation (section 4)

Through the operation of the EnMS, a local authority can learn to understand the needs and expectations of the involved and interested parties. These include building occupants (and energy users), e.g., teachers, pupils, administrative staff of the local authority etc., as well as companies working with the local authority, e.g. designers, builders, maintenance companies and others. To address their needs and expectations, these first need to be identified as part of the EnMS development. However, doing this just once is not enough - since users (and their needs) are likely to change over time. Many needs arise from different legal and other requirements. Therefore, it is

important to regularly **update the list of legal and other requirements** that need to be addressed or adhered to while addressing energy efficiency, energy use and energy consumption, and to ensure that these requirements are fully considered. The list should be updated at least once in six months. An EnMS is a kind of living organism. Changes to the EnMS are inevitable and should be embraced! The whole idea of the EnMS is to find the most efficient way to be effective without investing a lot of resources. Only by trying out different possibilities, will you be able to find the most appropriate solution for your local authority.

Change is in fact sometimes crucial, e.g. if the EnMS began operating with very small boundaries that are unlikely to make a big impact on overall energy consumption. During the operation of the EnMS, the **scope and boundaries can be revised and extended**. If your local authority started out with small boundaries, e.g. only with three buildings, there is nothing to stop it adding more in future, or introducing other assets e.g. public lighting or the municipal fleet. Just remember, new additions should be recorded in the EnMS documentation.

Leadership (section 5)

The standard requires the top management of your local authority to **demonstrate leadership and commit to a set of prerequisites**. This is often easier said than done, as an EnMS in many cases is not the top priority of management. However, they have committed, and should be reminded of this commitment. The energy manager, or a member of the energy team (working group) should undertake to remind top management at least once a year, and ideally at formal council and/or committee meetings, especially when the budget for the EnMS actions is being decided. This means it's important that the team includes someone either with a top management role (e.g. executive director), or close relationship with top management.

EnMS implementation will be most effective if supported by - and cross-referenced with - other strategic documents. Check if your municipal **energy policy** needs updating to align it with more recent objectives and strategies defined elsewhere, (e.g. in a new SECAP or other climate plan) and to replace outdated references.

Once implementation starts, change to the EnMS procedures can be expected (see 3.2.1 Context of organisation above) - and the same may apply to **roles and responsibilities**. To this end, it's a good idea to maintain regular communication with employees assigned tasks for implementing the EnMS - e.g. monthly collection and reporting of data - and some oversight of task completion (which can be part of the energy manager's role). If it emerges that tasks are not being completed satisfactorily, or at all, efforts should be made to find out what the problem is, and to take steps to address it - e.g. providing additional training or simply a better explanation of the value of this task. Regular energy team meetings are a good way of making sure that individuals are aware of how their tasks relate to a bigger picture, and maintaining the sense of a shared goal, which may foster motivation!

Planning (section 6)

Your local authority will have defined its own method for conducting the energy review, setting new targets and planning corresponding actions as part of the EnMS documentation initially prepared. Some of this documentation may remain valid year after year, but key parts should be reviewed and **annually updated**, i.e. the **energy review**, energy **performance indicators**, energy **baseline**, new

objectives and **energy targets** and **action plans** to achieve them. Don't forget to also have a look at the **risks and opportunities** and revise them if necessary.

Support (section 7)

In order to ensure maintenance and continual improvement of the EnMS and associated energy performance, **resources** will be needed, including personnel, funding and also technical equipment (primarily for monitoring e.g. energy meters, thermometers, air quality meters). It is therefore important to 1) have a clear understanding of the needs and expectations of the involved parties, 2) continuously assess roles and responsibilities and 3) prepare detailed action plans. Once these three main elements are made clear and communicated to decision-makers, there is a much higher chance to secure the necessary resources.

Don't forget to follow up on **competences, awareness and communication**! Refer to your strategy for how to address and check competences, how often to organise training, how often to send reminder emails to involved parties and/or how to use any other communication channels - and make sure new staff do the same.

Make sure to **regularly and clearly document** the EnMS procedures, e.g. any deviations from the norm, achievement or failure to achieve energy performance indicators, corrective actions, training etc. This is essential to avoid loss of knowledge through staff changes.

Operation (section 8)

In developing its EnMS, your municipality will have defined procedures to **plan, implement and control energy use** throughout the year in the public assets that are part of the EnMS boundaries. It might seem obvious, but don't forget to follow them! This happens surprisingly often. If it becomes apparent that the rules are not being followed, then some investigation is needed to understand why and address the issue.

In addition to following these procedures, your local authority will have its own rules for **procurement** and **design** with provisions for energy efficiency performance when procuring energy-consuming products, equipment and services as well as when considering energy performance improvement opportunities and operational control in the design of new, modified and renovated facilities, equipment, systems and energy-using processes. Once the EnMS is in place, it's important to open up a communication channel with the team responsible for procurement - as a step towards better integrating energy efficiency performance into procured goods and services and exploring more ambitious provisions in tendering procedures.

Performance evaluation (section 9)

Performance evaluation is a backbone of the EnMS to assess its efficiency and results. There are three main elements: 1) monitoring, 2) internal audit and 3) management review.

Monitoring procedures will have been established by your local authority, i.e., what, how often, who etc. is to monitor, measure, analyse and evaluate energy performance of the public buildings, street lighting and municipal fleet within the EnMS boundaries. Based on its own methodology, your local authority should ensure that monitoring is in place and functional, and data are obtained and

analysed as planned. Remember though that the quality and frequency of your data matters! The more frequent and reliable your data, the better you will be able to influence energy consumption in a targeted way. Often local authorities receive bills every two, three or four months - which is not sufficient to understand the patterns and take targeted action. The aim should be to work towards monthly, daily or even hourly monitoring of energy consumption in public buildings and street lighting.

The internal audit and **management review** are annual activities that your local authority should not forget to complete. Again, rules will have been defined according to your municipality's own EnMS - so don't forget to consult these! Although the audit is 'internal', the purpose here is to obtain an independent view on how to improve your EnMS. You might consider inviting an energy manager from another municipality to conduct this audit. It's not about presenting perfect results – in fact, this is a crucial opportunity to pick up mistakes and make improvements! The outcomes of the 'internal' audit are included in the management review which is particularly important to keep the EnMS alive and operational, and requires top management (and usually the mayor) to approve a summary evaluation document where the assessment/results of the EnMS in the previous year are given, and new targets and actions set.

Improvement (section 10)

Your EnMS will already include a defined procedure on corrective action steps to take once a **nonconformity** is identified. These occasions are great opportunities to test the effectiveness of your defined procedures: e.g. it could be that the requirements are too rigid, or the limit for deviations too low. Remember changing procedures can be positive!

Last (but not least), your local authority is required to demonstrate **continual energy performance improvement** on an annual basis. If the EnMS is maintained appropriately and all targets reached (or failures justified) and energy performance indicators achieved, well done to you and your team! If not, it's a chance to review your targets, procedures, roles and resources - to try to identify weak points and look at what needs to change. It's all part of continually improving your EnMS!

3.3. Country-specific recommendations

The C4S project supported 31 municipalities in eight countries to establish an EnMS according to ISO 50001 in Croatia, Cyprus, France, Hungary, Italy, Latvia, Spain, and the eea in Germany. In several of these countries, many other local authorities have also developed an EnMS now needing implementation. Because each national context differs, the following implementation tips for authorities are provided country-by-country.

Country	No. of local authorities with an EnMS in country	Recommendations
Croatia	4	Local government: - Continue to invest in building capacities under their authority to use nationwide tool for energy monitoring in public buildings (ISGE). - Continue to invest in information and training for public employees to broaden the EnMS implementation. - Continue to invest in information and education activities for citizens on EnMS. - Expand the boundaries of the certified EnMS to include energy use from public lighting and municipal fleet. National government: - Amend current energy efficiency legislation to have a stronger focus on implementation of EnMS in public buildings. - Introduce incentives for local authorities contributing to higher energy savings in the public sector. - Develop a funding scheme to support local authorities in initiating the development and certification of an EnMS - Align national legal obligations for energy efficiency with EU obligations (or voluntary frameworks such as the Covenant of Mayors) to reduce policy overlap (or conflict) and to better channel resources.
Cyprus	4	Local government: - Make sure the high level commitment (including assigning staff and funding) taken by top management to establish the EnMS continues throughout implementation! - Appoint an energy manager (with both energy efficiency and management expertise) with sufficient time to spend on implementing the system. National government: - Establish a reward scheme to incentivise municipalities to certify their EnMS, e.g. covering the cost of ISO 50001 certification for those that are implementing SECAP actions (or similar).

Country	No. of local authorities with an EnMS in country	Recommendations
France	10[6]	Local government: - Once the EnMS is established, the management must continue to communicate the importance of the EnMS to the community through strong messages (participation in meetings, communication on the website, etc.). - Appoint a dynamic and competent energy manager (if one is not already in place) who is persuasive and knows how to get others on board. National government: - Raise awareness among local authorities of the value of the ISO 50001 standard (e.g. to meet the obligation to carry out GHG balances every three years and a new "tertiary" decree that obliges LAs to rehabilitate their assets) to address low levels of EnMS development and certification. In France, despite several regulations setting ambitious energy saving targets, and despite financial aid for implementation and certification, few local authorities have certified their EnMS. - Create a transparent nationwide monitoring system where municipalities report annually quantitative data on energy management. Several laws and regulations set stringent energy-saving targets for local authorities and/or require action plans to be established (for local authorities with more than 20,000 inhabitants), but monitoring has so far been rather scarce. From 2021, the energy consumption of tertiary buildings of more than 1,000 m2 will have to be recorded in a national database. But this represents only a small part of total consumption, excluding public lighting, vehicles, etc. - Put in place an exchange group so that certified local authorities and those wishing to implement the approach can share their good practices and questions. - Provide a national regulatory database on energy-related legislation for use by all local authorities. Currently, each local authority has to do this work on its own, although it is more than 90% the same for all of them.

[6] There is no website in France that lists certified local authorities. According to our research there are about 10 that have been certified since 2012, including those of the project.

Country	No. of local authorities with an EnMS in country	Recommendations
Germany	eea: 313[7]	Local government: - Promote the full value of implementing the EnMS to the wider community. E.g. the quantified energy savings and reduced emissions can be promoted publicly, allowing the municipality to demonstrate its climate action leadership and the resulting improvements in quality of life - a competitive edge that may in turn attract businesses, residents and other opportunities. - Recognise and exploit the internal benefits of the quality management and awarding system within the administration. The eea should be clearly communicated to staff as an instrument for establishing interdisciplinary planning approaches and implementing effective energy and climate policy measures. National and regional governments: - Maintain existing (or introduce new) financial support schemes for the implementation of the EnMS and corresponding measures, to motivate municipalities and regions to introduce such a system. Examples of existing funding schemes can be found under: https://www.european-energy-award.de/teilnahme/foerderung
Hungary	4	Local government: - Smaller municipalities, that might in particular lack financial and/or human resources, should consider joining forces to be able to fulfil their aims in energy saving and energy efficiency, e.g. by hiring together an energy manager. National government: - Offer incentives to local authorities for introducing and certifying an EnMS, to boost uptake. - Prioritise energy efficiency in national regulations, in order to encourage or mandate action by local authorities.

[7] No data on ISO certification was available, although authors' own research located only one ISO-certified municipal EnMS in Germany.

Country	No. of local authorities with an EnMS in country	Recommendations
Italy	20[8]	Local government: - Set up a training plan for the EnMS staff that aims to constantly improve the energy management of the municipal assets in compliance with energy improvements and current regulations on energy efficiency and operative control. - Appoint an energy manager - even if your municipality is small. In Italy, this role is only mandatory for municipalities with consumption greater than/equal to 1,000 TOE (tonne of oil equivalent). But this figure could also be of great importance for municipalities below this consumption threshold. If resources are scarce, it may be an option to join up with other interested municipalities to share the services of one energy manager. For example, the Federation of Municipalities of Camposampierese (composed of 11 municipalities, approximately 100,000 inhabitants) has employed the services of one company as an external consultant in this way. National and regional governments: - Introduce ISO 50001 certification as an award criterion for regional or national public tenders for municipalities applying for funding intended for environmental or energy performance improvement of their assets.
Latvia	19[9]	National government: - Expand the legal requirement for only certain municipalities to implement and certify an EnMS to include all municipalities. - Provide clear guidance on minimum requirements for an EnMS, including suitable boundaries. - Introduce an annual, nation-wide reward system for municipalities for implementation and operation of an EnMS. - Create a transparent, nationwide monitoring system where municipalities are required to annually report quantitative and qualitative data on energy management. This would serve to identify achievements, failures and gain quantitative and qualitative data of energy management at the local level - in the interest of continuous improvement.

[8] Estimated figure based on partners' own research and experience.

[9] Source: Ministry of Economics of Latvia

Country	No. of local authorities with an EnMS in country	Recommendations
Spain	6[10]	Local government: - Political commitment and support do not end with the successful establishment of the EnMS. It is highly important that the mayor and councillors of each municipality continue to lead the process, establishing priorities, allocating the necessary economic and human resources, and checking that the work is aligned with their political lines of action. Without it, the actual implementation of planned activities is unlikely to succeed. - Appointing an energy manager and energy team with clearly defined roles and responsibilities is crucial. - Dedicate time and effort for the follow up of the system continuously. E.g. the energy manager and energy team members should meet monthly to discuss the actions carried out and the next steps to be followed. Just one hour per month can solve lots of problems in the future! - Provide ongoing training and awareness-raising for municipal staff. All staff should be trained, as the success of the EnMS will be a shared mission. However, in particular, the people responsible for buildings within the EnMS boundaries will have to be trained in a more specific way, in order to disseminate the information among the building staff and other occupants. Posters, annual seminars and ongoing emails will be key for this purpose.

3.4. Resources

- C4S Energy Management System Guidebook for Local Authorities (and Appendix reflecting the new Standard ISO 50001:2018)
- C4S Evaluation of EnMS choices
- C4S Template for internal audits
- C4S Guidelines for use of Energy Monitoring Platform
- Report on implemented EnMS measures
- Short stories about certified local authorities:
  - Daugavpils, Latvia: case study (in English)
  - Montecchio Maggiore, Italy: case study (in English)
  - Sovizzo, Italy: case study (in English)
  - Saint-Raphaël and Tours (Plus), France (in French)
  - Muretain Agglo, France (in French)

[10] Apart from the 4 local authorities of the C4S project, in principle there are two more who have certified their EnMS with ISO 50001 Palma de Mallorca y A Coruña. This was done before 2018.

4. Energy saving competition

4.1. Benefits of competitions

As part of the C4S project, staff from 92 public buildings worked together over a 12 month period to run an energy saving campaign aimed at changing energy-use behaviour. In total they achieved an average 6.44% reduction in energy use - just by changing the energy use behaviour of public building occupants - highlighting that tackling behavioural change for energy reduction is well worth doing!

Other benefits are:

- Energy cost savings with little or no investments compared to technological energy efficiency measures;
- Increased level of awareness in connection to energy use and its consequences among public employees;
- Local authorities can acquire new allies to reach the energy efficiency objectives set in their EnMS and SECAPs;
- Energy use-related behavioural change requires a relatively long period of time and an extended competition can be just the right means to achieve it;
- Public employees participating in a competition can be good role models for their colleagues;
- The energy saving practices of public employees at their workplace may be directly transferred to their home environments.

During the C4S project municipalities involved at least 3 public buildings, however there are plenty more and energy saving competition can be extended also to them.

Based on the experience gained in the C4S project and the preceding save@work[11] project the following are some tips to conduct a successful energy saving competition.

[11] The save@work project (H2020) focused on overcoming barriers to energy saving practices in public office buildings and changing the behaviour of public sector employees at work. The project was coordinated by C4S consortium member BSU, and included other members of the C4S team Ekodoma and GreenDependent.

4.2. General tips

- **Integrate and make it the norm** - behavioural change-related activities work best if they are naturally and gradually integrated as much as possible into everyday processes, tasks, job descriptions and strategies
- **Build cohesive and engaged teams of employees** - both research and practice, but also the C4S team's experience, underline the importance of small groups and communities for changing, supporting and maintaining more sustainable (energy use) behaviour and practices.
- **Change - and learning new things - can be enjoyable** - Resource efficiency needs to be fun! Avoid the impression that changing habits may lead to a loss in comfort. Instead make it a source of enjoyment, fun and learning by integrating creative and playful elements.
- **Create narratives** which underline the positive effects of energy positive behaviour.
- **Know what you want to change** - in order to be able to know whether efforts to change energy use behaviour and to reduce consumption are successful, we need access to historical and current energy consumption data.
- **Secure the necessary financial support** for motivating staff of the participating public buildings.
- **Maintain your support to the local teams throughout the entire process** in formal and informal ways so they will feel safe when conducting the competition activities in the respective buildings/institutions.

4.3. Tips for successful teamwork

- **Use several communication channels** for communicating the same message: people prefer and respond to different channels, and you DO need to repeat even the simplest message. Be creative!
- It is much better to **have a local team** to implement a behavioural change campaign than just a single responsible person.
- **Encourage the local teams** to organise various local events: lunches for employees, talks, quizzes, plant swaps, baking and writing contests, bike to work events, Christmas parties, etc.
- **Provide tools and materials** to help the work of teams - measuring devices (e.g. energy meter, thermometer), promotional materials (e.g. flyers, stickers, chocolates, textile bags, mugs, etc.), sample quizzes.
- **Reward your local teams** - e.g. if possible, by keeping costs saved in the building budget.

A more detailed evaluation and recommendation list can be found in the paper 'Top Energy Saver of the Year: Results of an Energy Saving Competition in Public Buildings' written by members of the C4S team.

Also see C4S Strategic Handbook for Competition Teams and the save@work Evaluation Report: Lessons learnt for future sustainable energy projects looking at changing everyday behaviours.

4.4. Tips for kick-starting a new competition round

So, you want to run an energy saving competition for municipal buildings? Here are some things to keep in mind:

- **Assure high level support!** Prepare a proposal for approval by the Mayor or Council and define the main rules and rewards for competing buildings.
- Make sure that historical as well as actual **energy consumption data** are available for the foreseen buildings in order to calculate the energy savings. You will need monthly data to create the baseline and actual data against which to measure saved energy.
- **Set the right time frame.** Your competition should run for at least six months, and include the winter and/or summer period depending on your climate zone and where most energy consumption occurs.
- **Widely publicise the competition.**
- **Encourage the formation of local teams** (e.g. energy team of at least three employees) in the participating buildings and help them to develop a simple action plan for the competition period.
- **Guarantee a continuous communication** with and support to the energy teams and provide a regular dissemination activity in the city throughout the campaign (e.g. short, monthly report on achieved results).
- **Conduct an evaluation** at the end and make sure the best performing buildings receive some kind of a reward. E.g. 50% of the energy saving costs have to be used best in the building for energy efficiency measures, and 50% as a financial reward for the employees - approved by the local government.

4.5. Ingredients for a successful competition

Naturally, every competition is different, but here are some estimated resources needed for organising an energy saving competition:

- Planning of campaign is around 12 - 24 hours,
- Implementation on behalf of management requires around 8 hours/month. The time required for the energy team members can vary between 0.5-4 hours/month.

Based on this information, every local authority can calculate the cost-benefits. In the experience of previously participating municipalities the payback time can be around half a year considering all costs, but as expressed above, it may vary significantly.

4.6. Expanding from public buildings to households and businesses

Recently, energy saving competitions have been tested not only in public buildings but also for households or companies. As a playful and direct involvement in realising the SECAP objectives, your municipality can also extend it to households and even organise a competition between public buildings, households and/or companies, which can also facilitate a sense of joint responsibility.

4.7. Resources

There are plenty of tools available to organize energy saving competitions for different target groups of energy users. Here are some of the most valuable once:

For public buildings

- C4S Strategic Handbook for Competition Teams
- C4S Energy Saving Tips
- C4S Visual and Technical materials in eight languages
- Easy to use Energy Audit template from the save@work (H2020) project

For households

- Tools and materials of the Energy Neighbourhoods project partners from 16 EU countries
- European Citizens Climate Cup (ECCC) project

For companies

- European Enterprises' Climate Cup (EECC) project

5. Implementing a SECAP

5.1. Energy management as part of a SECAP: the PCDA approach

If your local authority has a SEAP, SECAP (or any other type of energy and/or climate action plan) in addition to its EnMS, then the continuous improvement of energy management needs to be coordinated with the planned timeline (and measures) of this wider plan. If SECAP targets are set for 2030, the continuous implementation of the energy management should be seen as a strategic and systemic, operational instrument to progress towards these targets.

Earlier in Chapter 3, we covered tips to keep your EnMS running smoothly. In this chapter, we look at how to implement measures defined in a SECAP or similar plan by using the PCDA approach[12].

SECAP measures are required to cover a wide range of activities across various energy consumption sectors, as well as an implementation period up to several years (at the time of writing, actions up until 2030 need to be defined). This can make it challenging to systematically monitor all of them – and evaluate success.

In terms of the **time frame**, it can be a good idea to break down the longer term plan into a series of actions with shorter term targets, e.g. 2-3 years. In terms of taking a systematic approach, one solution could be to apply the basic principles of running an EnMS to the **implementation of other SECAP measures**, applying the Plan-Do-Check-Act (PDCA) cycle (see Figure 2) employed for the ISO 50001:2018 standard not only to public infrastructure and assets, but also to planned SECAP measures in tertiary, household, transport and other sectors.

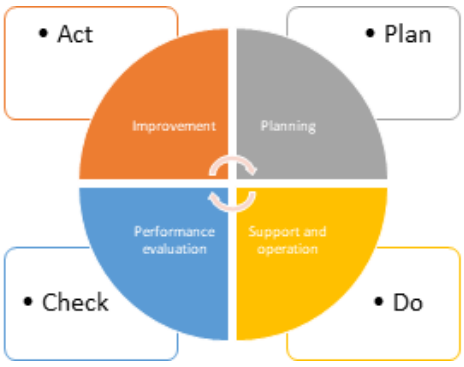

Figure 2: The approach of ISO 50001 standard with PDCA cycle.

[12] Although the guidance in this chapter refers specifically to EnMS and its structure, it is in principle also applicable for municipalities certified with the European Energy Award (eea). The eea signed a Memorandum of Understanding with the Covenant of Mayors in 2019, in which the eea is recognised as an excellent implementation tool for CoM initiatives, including SECAPs. In this sense, the eea, if available in your country, can also help to achieve the goals, stipulated in the SECAP, including establishing interdisciplinary planning approaches and implementing effective energy and climate policy measures in your municipality or region.

Doing so can enable a shift:

- ***From general to concrete actions*** in analysing, controlling and monitoring energy and/or climate or any other performance.
- ***From quantitative to qualitative measurement*** of the energy performance (i.e. getting at the story behind the data: identifying where problems lie and making interventions more targeted).
- ***From a general territory baseline to multiple baselines*** *for each energy use*.
- ***From general Action Plans to specific and measurable annual Action Plans*.**
- ***From general and estimated energy, GHG emission savings to actual and real numbers.***

In practice, this would mean that the implementation of each measure planned in the SECAP (if possible) can be organised in the following manner:

PLAN: planning of the measure based on the description in the SECAP and its further development, including assessment of different options, assigning roles and responsibilities, setting baseline, performance indicators and monitoring procedure, preparing a short action plan with the main steps and timeline etc. **Main question to answer in this step: has everything been foreseen for successful implementation?**

DO: implementation of the measure according to the action plan. **Has the measure been implemented according to the plan? Have there been any deviations from the plan? If so, how were they overcome?**

CHECK: once the measure has been finalised, monitoring and evaluation of the performance of the measure shall be done. **Have you reached expected results? Did the measure deliver planned performance indicators? What went well and what did not?**

ACT: based on the performance evaluation results, decide if any corrective actions should be taken. **Should the action be repeated or changes introduced?**

Example: Local authority X has planned as a measure in its local SECAP to provide financial support to households for building renovation. Here is one option how to plan implementation of this measure:

Step 1: get familiar with the description of the measure in the SECAP.

Step 2*:* learn from previous experience: if a similar measure has been introduced in your or in another local authority, find out what have been the lessons learnt. Confirm with the working group, if the measure is still on the agenda and will be implemented. If yes, discuss the main criteria for support with the working group and agree on next steps.

Step 3: plan the measure by preparing a short action plan with the main tasks to be performed, assign roles and responsibilities, set performance indicators, monitoring procedure and timeline. Performance indicators could be the number of households applying for support, households afterwards renovating buildings etc.

Prepare all the necessary documents, including the local decision on how support will be given, amount, criteria for applicants etc.

Step 4: discuss the action plan with the working group and get necessary approval, including also for any financial, technical, and personnel resources if needed.

Step 5: implement the measure based on the action plan.

Step 6: based on the monitoring plan, assess the performance of the measure, i.e. if the expected performance indicators have been reached. Inform the working group and council about the results. If the measure is long term, ensure that monitoring is done annually.

Step 7: once the measure has been completed, inform the council about the results for a decision as to whether to repeat the action or not.

This approach can be applied to any SECAP measure, including the ones for support of households, building renovation programmes, introduction of renewable energy sources (RES) or any other measure.

5.2. The PDCA approach for adaptation actions

The PDCA approach, typical of ISO 50001 EnMS, can also be used for the "adaptation" part of the SECAP – not just for implementation, but in order to carry out a detailed analysis. Starting with the standard Plan, Do, Check, Act steps, and adding a fifth one 'Improve'.

Starting from the objectives (assess the vulnerabilities affecting sectors in the city boundaries), the following criteria and steps shall be considered and implemented:

PLAN: definition of a city adaptation policy and strategy;
DO: assessment of hazards and vulnerable sectors of the city;
CHECK: definition of a set of quantitative and qualitative socio-economic and physical indicators;
ACT: include adaptation measures in city planning activities and define an adaptation action plan;
IMPROVE: definition of an improvement plan in order to collect additional information to assess additional climate vulnerabilities in the future.

For alternative frameworks and tips to consider in planning adaptation actions, and integrating them with strategies for climate mitigation, see *C4S Upgrading from SEAP to SECAP for Integrated Climate Action: A Quick Access Guide.*

5.3. Introducing SECAP monitoring and reporting as a procedure

EU-CoM Signatories commit to reporting to the CoM every two years after submitting their SECAPs. But even if a local authority has not committed to the Covenant of Mayors initiative, regular

monitoring of your energy and climate plan at least every two years (or even better annually) is recommended. Monitoring enables you to[13]:

- **Compare predicted impacts** from the planning stage to what is actually achieved, in terms of energy savings, renewable energy production, GHG emissions reduction, and efforts to adapt to climate change, as well as other co-benefits to air quality, noise, health, risk reduction, environmental protection, economic/social added-value etc.;
- **Recognise the need for, and facilitate the identification of, any corrective measures** to be implemented, in case certain actions are not delivering their expected impacts;
- **Help determine the cause(s) of failure** to implement specific measures, and hence understand and overcome barriers preventing their achievement;
- **Identify new opportunities for action**, whether follow-up or innovative measures;
- **Discover and document (replicable) success stories**, including co-benefits arising from your actions, to be shared with your local community and other cities to encourage their adoption in other contexts.

Still, monitoring is often easier said than done. This section offers some guidance on monitoring a SECAP or similar plan.

Most local authorities that are monitoring the implementation of their SECAPs will have their own, unwritten procedures of how they do it, i.e. how they collect energy data, prepare the calculations and present them. To make SECAP monitoring more systematic, consider introducing a separate procedure that will allow local authority clearly define how often and in what way the SECAP should be monitored – and who is responsible. If your local authority has already introduced an energy management system, this procedure can be part of the EnMS.

While preparing the SECAP, historical data on energy consumption and CO_2 emissions for your local authority will have been collected to form a baseline – usually in an Excel file. It is advisable to use the same Excel file for monitoring purposes, to make sure identical energy uses and sectors are monitored while the actions are implemented.

Importantly, defining a clear procedure with the main persons, departments and institutions will make implementation easier and more transparent – as well as making it more likely that the SECAP will really be implemented – and not gather dust on the shelf! – that any additional measures needed to achieve the SECAP targets are identified. Below is an example of how a SECAP monitoring procedure could look. Feel free to adapt it for your own needs – good luck!

[13] List adapted from Covenant of Mayors for Climate and Energy Office. (2014). *Quick Reference Guide - Monitoring SEAP implementation.*

Example of how the SECAP monitoring procedure could look for municipality Y.

Track your revisions

For ensuring a continuous improvement and learning as well as to avoid loss of knowledge due to staff changes, keep track of all revisions and its reasons (see Table 1 below).

Determine purpose and scope

Local authorities with SECAPs in place have usually committed to ensure its monitoring annually or once in two years. The purpose of this procedure is to introduce a clear SECAP monitoring scheme in the local authority. This procedure defines the criteria and responsibilities for the monitoring of the SECAP to ensure its implementation. Monitoring data are compared against the baseline defined in your SECAP.

Define terms to speak the same language

Energy: electricity, fuels, steam, heat, compressed air, gasoline, diesel and other similar means.
Energy consumption: amount of energy used.
Energy efficiency: relationship or other quantitative relationship between performance, services, goods or energy performance and energy input.
Energy performance: measurable results related to energy efficiency and energy use and energy consumption.
Energy Performance Indicator (EnPI): The value or quantitative measure of energy performance as defined by the organization.
Use of energy: mode or type of use of energy.
Sectors: municipal, transport, tertiary, industry, waste management, etc.

List and use regulatory references (e.g. Covenant of Mayors for Climate and Energy Office (2014). Quick Reference Guide – Monitoring SEAP implementation).

Take care and assign different responsibilities (see Table 2 below)

Operational methodology for preparing SECAP monitoring report

- The energy manager annually collects the energy consumption data for the sectors identified in the SECAP baseline (i.e. from the responsible institutions indicated above).
- Based on the collected data the energy manager inserts, analyses and updated graphs in an Excel file, saving it e.g. as *"Baseline_monitoring_SECAP_v5.xls"*.
- The energy manager prepares the annual SECAP monitoring report in a PowerPoint presentation in order to communicate the main results to relevant staff and decision-makers involved.
- The energy manager presents the monitoring results to the working group. Decisions on the further steps and improving actions for the next year are made with the working group.
- The working group presents results to the Council.
- Once approved, the energy manager uploads the data to the Covenant of Mayors platform.

Linked documents

- Energy management system documentation of the local authority Y.
- SECAP of the local authority Y.

Revision	Date	Reason for review
0	01/12/2020	First issue

Table 1: Example to include at the start of your procedure template to record revisions.

Task	Responsible
Preparation of the annual SECAP monitoring report	Energy manager
Provision of the heat (and cooling) consumption data from the district heating company	District heating company
Provision of the annual electricity consumption data for all territory	Distribution system operator
Collection of the transport data	Public transport operator / Energy manager
Collection of the energy consumption for public buildings	Energy manager
Collection of the electricity consumption for public street lighting	Maintenance company

Table 2: Example of defined responsibilities to include in your procedure template.

5.4. Tips on funding SECAP actions

SECAP actions can of course be funded through a municipal budget, whether via budget-lines devoted to a specific action or as part of broader work programmes, but it is not the only option available. In fact, certain measures may be more effectively implemented by other (local) stakeholders and/or funded through their own budgets (e.g. expansion of district heating and cooling networks by a city utility, creation of green spaces and corridors together with farmers and forestry). Other options range from the somewhat traditional (e.g. preferential bank loans), to the more innovative (e.g. energy saving measures funded through consumers' utility bills, community energy projects initiated by crowd-funding).

A good starting point for cities wishing to investigate (new) financing opportunities is the EU-CoM's Interactive Funding Guide.

It's also worth exploring opportunities beyond financing at the local level. Many countries have relevant regional and/or national funding mechanisms which support climate/energy action either in general, or aimed at specific measures. At the European level, consider programmes such as the European City Facility (EUCF) or the European Local ENergy Assistance (ELENA).

On the C4S website you'll find a series of **Fact Sheets on Funding Opportunities** highlighting specific (municipal) cases which have successfully applied relevant and innovative financing mechanisms to implement measures for reducing energy consumption and emissions, including:

1. Soft loans
2. European Investment Bank Funds
3. European Union grant schemes and special funds
4. LIFE and Horizon2020 funding programmes
5. Energy performance contracting
6. Corporate social responsibility
7. Energy cooperatives
8. Crowd-funding and micro-loans
9. On-bill financing
10. Revolving loans

These are available in Croatian, French, German, Greek, Hungarian, Italian, Latvian and Spanish in addition to English.

5.5. Resources

- C4S Upgrading from SEAP to SECAP for Integrated Climate Action: A Quick Access Guide
- C4S fact sheets on financing opportunities
- Guidebook 'How to develop a Sustainable Energy and Climate Action Plan (SECAP)' – Parts 1,2 and 3
- The Covenant of Mayors for Climate and Energy Reporting Guidelines
- Urban Adaptation Support Tool

6. Closing words

Congratulations to the C4S local authorities, and to all of you who have taken a step towards transforming local energy management - by introducing an energy management system!

We hope the guidance here will help you move forward on your journey, to implement your EnMS and actively incorporate it into the culture of your organisation.

Good luck!