Regional Action Plan

Kalmar County, Sweden

December 2019

Energy Agency for Southeast Sweden

When EMPOWER started we endorsed the project as energy efficiency in public buildings is an important target group. As regional energy coordinators, all 21 county administrative boards were given the task in 2018, by the Swedish Energy Agency, to establish regional energy action plans. Therefore, it combined perfectly with the mission of EMPOWER. With excellent collaboration and cooperation, we participated in the EMPOWER regional stakeholder group which gave us the possibility to reach the key players and to develop and set new energy targets for energy efficiency in public buildings as a part of the overall Regional Sustainable Energy Action Plan. When finalized later it will contain targets, strategies, priorities and recommendations, but not detailed actions as developed by EMPOWER. It has been a very interesting journey to follow all the good practices from European partners which has broadened the perspective of our own work. We are therefore confident that these targets and actions of the EMPOWER regional action plan will be fully implemented in the revised version of the policy document, environmental targets for Kalmar county.

Ted Sjödahl, Regional Energy Coordinator
Administrative Board of Kalmar County

Action Plan – PP6 ESS Sweden

Part I – General information

Project: More carbon reduction by dynamically monitoring energy efficiency (EMPOWER)

Partner organisation: Project partner 6 Energy Agency for Southeast Sweden

Other partner organisations involved (if relevant): no

Country: Sweden SE

NUTS2 SE21: NUTS 213 Kalmar County

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Part II – Policy context

The Action Plan aims to impact: Other regional development policy instrument

Name of the policy instrument addressed: Action plan for regional environment objectives in the County of Kalmar 2014-2020, thematic area – Climate and Energy

We will improve the policy document together with other regional players by establishing a regional network for sustainable buildings, and therefore improve governance. The *action plan for regional environmental targets* consists of actions developed by different entities with the purpose to contribute to the national and regional goals. The use of ICT and energy monitoring in buildings is overlooked in the regional policy document and we see this as a very useful tool for achieving a reduction of CO_2 emissions in buildings. To reach a wide use of ICT for energy monitoring, two actions must first be implemented described in this regional action plan; to monitoring energy data by open platform and to visualize energy efficiency. By addressing these actions into the policy document, we are convinced to get the regional stakeholders support for their implementation.

The regional stakeholder group will be the hub for coordinating the energy efficient for buildings in the region, especially as new targets for 2030 have been set. The regional group will also involve the private sector in the network and aims to implement several trainings, study visits and know-how exchange conferences. There is a national decision to invest more in residential constructions and EMPOWER will support the region to fulfil this. The policy instrument addressed will be improved by equipping the local and regional authorities with knowledge of how to implement the chosen actions.

The making of a Action Plan – an overview

Energy data background

The public building stock in the county has been neglected for a long time, except for the municipality of Kalmar and some scarce initiatives. The work on energy efficiency had a momentum between 2010-2014 when national funding was available, and the energy directive was rather new. Then, in 2015, everything came to a halt. Up to 2014 an early data collection was mandatory, and it was easy to compare and start projects. The situation in 2014 was as follows.

Energy use in public buildings including electricity (kWh/m²)	Year 2009	Year 2014	*Local targets for year 2020*	Regional target year 2020
Total local authorities in Kalmar County	191	174	152	159

In the case of a rural small municipality a saving rate could reach up to 200.000 euros a year if there are resources for a systematic approach and with political support for investments in new technology for energy efficiency. In the same municipality, two or three persons in need of 24h healthcare would cost the same amount. So, without national support for contracting energy efficiency staff they went back to maintenance mode.

Even before starting up a stakeholder group it was easy to identify the lack of energy data as one big piece of the puzzle.

The overall energy- and emission data are centralized in Sweden by national authorities. Energy production and consumption are reported by the industry, electric companies and regional and local supervising authorities. All energy data are collected and processed by the national agency of statistics. After quality review the data are released on national and regional levels. Emission data are collected by the national environmental agency. All data are available public on the agency's homepages but lacks details on local level.

Most energy utility companies can provide energy data for each building along with the local authorities' own data. So, the data is available, but resources and a methodology for collection, evaluation and monitoring of results are lacking.

Stakeholder composition and influence

In Kalmar County there is a Climate Commission consisting of the County Administrative Board as secretary and with the County Governor as chairman. Members are regional politicians and energy managers from the most important industries. They propose new targets for the regional energy action plan and promotes actions implemented by awarding a yearly energy- and climate award for SMEs, NGOs and private persons. The other is the local authorities' network of strategists and coordinators and have several meetings during the year where they discuss implementation and future common projects. Unfortunately, very few energy- and building managers are members of this group. The implementation and monitoring of energy efficiency actions have lacked coordination. This is one of the

key-actions that must be considered. The County Administrative Board work on a new regional sustainable action plan during 2018-2019 and are developing clear goals for energy efficiency where the regional members of the EMPOWER has participated in the progress. Later 2019 the work will begin on our main policy document that is the action plan for regional environmental targets. There we will have an opportunity to include all the actions in the regional action plan developed in EMPOWER.

Developing the actions

With regional energy building data available, the regional stakeholder group identified key elements that needs to be considered in developing the actions.

1. Design of new energy efficiency targets for the region with target year 2030 based upon energy data from 2008.
2. Common methodology of data collection
3. Designing common energy data portal
4. Need of common educations
5. Need of agreements and cooperation for energy services and energy audits.
6. Need of information system regarding finance opportunities and projects
7. Need of a regional network to exchange experience

Therefore, stakeholders and project staff has discussed the necessary actions to enhance the regional work on energy efficiency. Keeping the above in mind, together with the findings at the interregional workshops, staff exchange, and Interreg good practice learning platform, has led to the needs of regional organization, targets and education.

Finally, the actions are therefore developed to meet the regional demand for a clear and structured progress work on energy efficiency and will provide improved possibilities for funding.

Action plan

Part III – Details of the actions envisaged

Action: Methodology of energy monitoring and visualization of energy savings.

Action 1A Monitoring energy data by open platform.

The action will demonstrate the methodology on how to collect energy performance data in buildings in order to give a good overview of the energy and water consumption.

There is a shortage in the society when energy efficiency is not considered to be an energy resource. A saved kWh in one part of the organization, caused by efficient actions, can replace a non-renewable kWh somewhere else. Hence, the energy efficiency is an energy source. That is why there is a need for a tool for building managers that will not only monitor the energy performance, but also visualize energy efficiency as a resource since energy efficiency can be invisible. The lack of knowledge sub-optimizes the efforts made at local and regional level and makes it more difficult to raise funding for further energy efficiency projects.

The idea of how to monitor the energy usage was influenced by the EMPOWER study visit in Lorient 15-16 of November 2017 organized by Municipality of Lorient, Environment Department. They demonstrated an open source solution (in this case Raspberry Pi) which gives them the opportunity to develop a tailormade monitoring system for the municipalities. This enabled them to monitor energy use in real time in public buildings with IOT where a rather straight forward method of monitored energy consumption was demonstrated. The market for energy monitoring today is very much only offered by a handful of international energy service providers. This becomes a big obstacle for a small municipality as they must understand, allocate resources and funding to use these energy services. By using an open source, they have more freedom to adapt the monitoring to their systems and needs. That will give them a common platform and knowledge to combine energy data and properly calculate and visualize energy savings together with setting the right requirements into a procurement. Also, the study visit in Magdeburg 28 march 2018 organized by the Development Bank of Saxony – Anhalt to the secondary

school in Haldensleben gave ideas of how to communicate the energy system for public buildings by studying the example of a handbook for staff in the passive house school, so they understand how the building energy systems works and how the staff can support the systems.

Implementation: The action will demonstrate how to monitor the energy usage on building level in order to give a good overview of the energy and water consumption. It will monitor the electricity for operating the building such as pumps, ventilation, elevators, heaters, boilers, outdoor light as well the electricity consumption for the users of the building such as office equipment, laundry, kitchen, indoor lighting etc.

One local authority will develop the methodology for one chosen building. In order to effectively monitor energy data, it requires an implementation strategy. Therefore, a local working group will be identified who will oversee the set up. The participants of the local working group will be the persons from the local authority, like building managers, technical staff, IT-technicians, measuring and software suppliers. This will result in a clear overview of available energy data that needs to be collected. The group will then identify in what format it could be presented and the relevance for energy efficiency. If more data is required, the local group must have knowledge in what way this data could be obtained through utility companies or smart measuring by sensors. Once the format of the energy data has been clarified next step is to find suitable ways of collecting it. This could be done by monitoring visual readings, breaking down utility companies' statistics, direct sensor readings, loggers of energy data etc. Each of the values must find its way by open protocol into a digital platform where the building manager easily can overview the building energy performance. The methodology can be implemented to other buildings within the building stock of the local authority as well-being disseminated in the region.

Next step is to procure and install the system according to the identified needs. After a test and evaluation period the results and recommendations will be published and disseminated within the region.

Action 1B   Visualize energy efficiency

The action will demonstrate how to visualize the monitored energy data in a useful way targeting different users, such as building management, financial department and decision makers.

The need for a common tool to plan and estimate financial effects of energy efficiency actions has been mentioned many times during the regional stakeholder meetings.

The aim is to develop a method for local authorities to monitor energy usage and visualize the energy efficiency as an alternative energy source. The study visit to Magdeburg on the 28th of march 2018 and the secondary school in Haldensleben demonstrated how they also monitored and visualized the energy use at the schools entrance on an constantly updated screen, which was a pedagogic way to demonstrate energy savings and renewable energy production. Another study visit to Santander by Santander City Council, Innovation Area on the 7th and 8th of March 2018 at the Smart city demonstration center at Pronillo, also gave insights and thoughts of how to deal with big data and the importance of how to visualize the results to the citizens for improved behavior. The smart city concept platform with transparency and open data are considered for the action. First step for the action is to collect energy data and energy savings from planned actions from the municipalities to set regional references and from there create the tool. The final study visit to Durham December 3rd 2019 gave a very broad insight of how the system was introduced and how they then monitor and collect energy data. Once the data is collected it has all possibilities to be used for different purposes, such as maintain the buildings to use as drivers in internal energy saving campaigns etc.

This will be an easy to use tool for real estate managers for local authorities that demonstrates energy savings and financial effects for planned actions. This will increase the knowledge about energy efficiency and improve understanding of the financial mechanisms as a result of energy efficiency actions in buildings. Built upon sensors measuring energy and water use it goes into a common platform by open protocol where all energy data will be synchronized to identify the efficiency and to easily follow-up any actions. This will build a solid base for wiser decision making and a method to follow-up of the actual results of the decisions taken. The tool will be a significant contribution for any action regarding energy efficiency in the upcoming version of the policy document. It will be presented at several dissemination events and in related projects.

Implementation: The action will demonstrate how to visualize the monitored energy data in a useful way targeting different users by demonstrating desired indicators, such as building management, financial department and decision makers.

The same local authority as in action 1A will develop the methodology for the chosen building. Once energy data is available through the monitoring system (action 1A) the basis are set to visualize the energy performance and follow up on efficiency actions. The local authority will determine what energy data are crucial for the performance and for operating the building. To create a common understanding and identify technical specifications a task force of technicians, building managers, financial managers and decision makers from the local authority will identify key indicators for their monitoring. As this would be a set of different parameters it is important that this is developed jointly so that the procurement of an energy software can provide and visualize the necessary indicators.

Next step will be to procure and visualize the energy data according to the identified indicators. After a test and evaluation period the results and recommendations will be published and disseminated within the region.

Players involved

Energy Agency for Southeast Sweden as influencer, action coordination and funding investigator. Several local authorities have participated in international exchange of experience with has been important input to the regional stakeholder meetings, one of these local authorities will implement the action. Regional Administrative Board of Kalmar county, owner of policy document and general coordinator of network. All local authorities within the region for the implementation when methodology has been published.

Timeframe

03/2019-09/2019 Finalization of required structure and project development.
03/2020-12/2020 benchmarking and preparation of tool and method
01/2021-06/2022 launching of method and local implementation
07/2022-12/2022 evaluation and publishing of tool

Costs (if relevant)

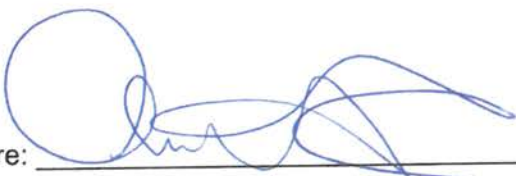|	
Staff	35.000 €
External expertise and services	50.000 €

The actions are funded by:

Local authority's (Municipality of Hultsfred) own budget

ESS own budget

Endorsement

The Energy Agency for Southeast Sweden agrees to support and promote the implementation of the actions detailed in this document.

Date: February 10th, 2020.

Signature: _____

Christel Liljegren

Managing director of Energy Agency for Southeast Sweden