

## Follow-up of local energy and climate strategies – A study of six small Swedish municipalities

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**Abstract:** Local authorities are important actors in the transition of energy systems towards renewable energy resources and efficient energy use. One mean to manage and develop local energy systems is using energy and climate strategies. Sweden has a long history of energy-planning, which effectiveness has been debated. However, in the light of climate change, many Swedish local authorities have adopted energy and/or climate strategies in recent years. These strategies are intended to clarify, prioritize and suggest measures for achieving energy and climate related goals. To be able to assess the strategies' effectiveness it is important to identify progress and goal achievement. There is little knowledge whether and how local authorities do this kind of follow-up.

The aim of this paper is to explore approaches to energy strategy follow-up in six small and medium-sized local authorities in Sweden. Based on interviews with representatives from six Swedish municipalities, this paper discusses prerequisites for energy and climate strategy follow-up. Challenges for the follow-up, such as methodological descriptions, organization and lack of high quality data are identified and discussed. A conceptual model for a systematic approach to follow-up is presented. Conclusions on how a systematic approach to follow-up could facilitate organizational learning and a more strategic approach to energy issues are drawn. It is also discussed how a developed practice could be beneficial in terms of common methodologies and possibilities to request better statistical data from the national level.

**Keywords:** Energy and climate strategies, local authorities, evaluation, follow-up

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### 1. Introduction

The local level is important when it comes to developing sustainable energy systems. Arguments for this is for example the proximity to citizens, but also the diverse roles of local authorities such as responsibilities for planning, maintenance of infrastructure and as educators are important when it comes to forming and implementing energy strategies [1, 2]. Another important role of the local level is that there is greater emphasis on hands-on projects and what can actually be affected [3]. This means that local authorities have an important role in the transition of energy systems towards renewable energy resources and energy efficiency. To support local authorities in these issues there are a number of initiatives to provide networks, information sharing and knowledge transfer. For example, in the EU a large number of cities and communities participate in initiatives such as ManagEnergy Programme and the Covenant of Mayors. In Sweden there are several programs supporting local authorities in their work with energy and climate related issues, for example Sustainable Municipalities initialized by the Swedish Energy Agency and the Climate Municipalities funded by the Swedish Environmental Protection Agency. One important component in all of these programmes is the formulation of local energy and/or climate strategies or plans [4-7]. Such strategic documents are used to clarify, prioritise and suggest measures connected to the local authority's fields of responsibility and activity within the energy system. There is also a legal requirement in Sweden that all municipalities should adopt a municipal energy-plan.

The potential of local energy strategies have been highlighted in a number of studies [8-10]. Historically there have however been debates about the effectiveness of producing such documents, for example because many of the factors influencing the energy system lie beyond the reach of local authorities [11, 12]. To what extent energy strategies have been

implemented is however not known, partly because follow-up has been paid little attention. Follow-up is central to long-term overall effectiveness of a plan or an effort as it facilitates continuity and taking experiences from the past into the present. There is no formal requirement for follow-up of energy-plans in Swedish legislation and follow-up is often neglected in planning practice [13].

However, energy-plans should be subject for environmental assessments and environmental assessment of programs and plans according to the EU directive 2001/42 should include follow-up [14]. Follow-up in environmental assessments is advocated in literature for example as a means for controlling plan implementation and, if necessary, formulating adaptive management actions. Follow-up may also enhance organizational learning and process development [15]. This means that there is a powerful potential for improved energy-planning practice as follow-up processes generate information that can be used in different ways for improving the actual environmental situation and for improving working procedures and processes [16].

### 1.1. Aim of this paper

The aim of this paper is to explore approaches to energy strategy follow-up in six small and medium-sized local authorities in Sweden and discuss the possibilities for developed practice.

## 2. Methodology

Initially it was decided to choose municipalities for this study based on two criteria: they should be small in a Swedish context, which means less than 25,000 inhabitants and the energy-plan should be recently adopted. The first criterion was chosen because two thirds (192 of 290) of Swedish municipalities have 25,000 inhabitants or less [17]. The latter criterion, that the energy-plan should be recently adopted, was chosen as it was regarded more likely that the persons involved during the energy-planning process would still be working at the local authority and thus available to answer questions about how the issue of follow-up was treated in the planning process. These criteria however proved hard to fulfill as only six small in municipalities that possess such recent energy-plans were identified. Three of these declined to take part of the study for different reasons, for example since the person who had been responsible for the planning process changed jobs. In order to get a more information on how follow-up of energy plans is undertaken additionally three (in a Swedish context, 30,000-45,000 inhabitants) medium-sized municipalities were chosen. The final set of municipalities in the study is presented in, table 1.

Table 1. Empirical basis in the study: six small (<25,000 inhabitants) and medium sized (<45,000 inhabitants) Swedish municipalities.

Municipality	Size	Energy-plan adopted	Responsible for planning process	Follow-up	No of Respondents
A	Small	2008	Workgroup and external support	Yes	2 (Public official, energy advisor)
B	Small	2009	Workgroup and external support	No	2 (Public official, energy advisor)
C	Small	2003	Workgroup	Yes	1 (Energy advisor)
D	Medium	2008	Consultant	No	2 (Public official, consultant)
E	Medium	2010	Workgroup	Yes	2 (Public officials)
F	Medium	2003	Consultant	No	1 (Public official)

For all municipalities the energy-plan was analyzed regarding how follow-up were supposed to be handled. In those cases where a person was stated as responsible he or she was interviewed about how follow-up had been conducted in practice. The named authors of the energy plan were interviewed about whether follow-up was regarded during the planning process. All interviews were conducted by telephone in a semi-structured form.

### **3. Results**

This section presents the intentions for follow-up in the energy-planning process, how this was manifested in the energy-plans, and how follow-up has been conducted in practice in the six studied municipalities.

#### **3.1. Municipality A**

According to the energy-plan the progress should be monitored yearly in an annual “energy account”. Regional monitoring of environmental goals by the County Administrative Board will also be used as indicators of goal effectiveness. The municipal government is utmost responsible for this account, which is then presented to the municipal parliament. Two persons are involved in the practical work compiling the energy account. One was part of the planning process and one is new in the organisation. This new person has experienced difficulties in interpreting how the baseline values were calculated. This means that some parts of the energy-plan have not been followed up. This respondent also comments that the indicators chosen for goal achievement are not necessarily suitable for the purpose. For example, whether district heating leads to less emission depends on the fuel mix in the incinerator and what is substituted. An experienced obstacle for the follow-up is the quality of the available national statistics. The respondent means that local data is preferable to national statistics but in practice a mix is used. However the mix of different data sources is a problem since methodology descriptions from the baseline calculations during the planning process are missing.

#### **3.2. Municipality B**

Two persons are working with strategic energy issues in municipality B. One person has the main administrative responsibility and functions as contact person to the politicians. The other person’s main responsibility is to make sure that actions proposed by the energy-plan are implemented. The intended methodology for follow-up is to produce an environmental account where progress in implementing actions from the energy-plan is described. Focus in the follow-up will thus be on actions and whether they are implemented or not. The next step is to analyse to what extent this action has contributed to fulfilling goals in terms of decreased energy use and lowered emissions. This analysis is regarded as important since it sends a distinct message to the politicians. Exactly how the follow-up will be performed is not yet decided. However, the respondents emphasise the importance of this follow-up to become part of ordinary working procedures to avoid that the work becomes yet another burden for the public officials. Also in this case the low quality of available statistics is regarded as an obstacle to follow-up; therefore indicators based on local data will be used instead.

#### **3.3. Municipality C**

The energy and climate plan does not include any description on follow-up. The respondent in Municipality C has a supportive and advisory role in the energy-planning process; however he/she has not been involved in the follow-up. The energy-plan was followed up annually between 2004 and 2006, but since then no follow-ups have been performed. The respondent experiences that there has been a lack of continuity in the follow-up process during the last

few years and that the work with the energy and climate plan has been very dependent on one specific person. According to the respondent, there are no clear directives on how to proceed with the energy-plan. Follow-up was not an issue during the energy-planning process. Few of the goals stated in the energy-plan are quantifiable, which would complicate the follow-up process. Some follow-up has however been performed since the implementation of actions suggested in the energy-plan has been monitored.

### **3.4. Municipality D**

According to the energy-plan, follow-up will be part of the local authority's annual economical account. The energy-plan presents a follow-up system based on forms to be filled out by each part of the municipal administration and that compilation of the results will be made by the environmental coordinator. In addition to this, the energy-plan states that a number of indicators to monitor progress towards local environmental goals shall be designed.

The environmental coordinator has the overall responsibility for the follow-up. This person was not employed at the local authority during the energy-planning process and the energy-plan for the municipality was produced by a consultant. This consultant means that they did not only produce an energy-plan for the municipality, they also designed a strategic and continuous energy-planning process for the local authority to "inherit". Even though the process was meant to be easily adopted into the local authority's organisation, the environmental coordinator has experienced difficulties in understanding methods used and origins of data. Since a method description is missing, also the consultant has difficulties in explaining how data was obtained and how calculations were made in retrospect. The environmental coordinator does not think that there will be any problems in following up whether actions are accomplished or not, since they are very "hands-on". But when it comes to evaluating whether actions lead to any actual decrease of carbon dioxide emissions this person thinks there will be difficulties. In the energy-planning process there was little attention paid to how to follow-up whether measures contribute to the overall goal for the plan. Instead efforts were laid on how to monitor whether actions are implemented. Also in this case the low quality of available statistics is mentioned as an obstacle to the follow-up.

### **3.5. Municipality E**

Municipality E has a long tradition of producing and monitoring energy-plans and follow-up is a part of the administrative routines in the local authority. Results from the annual follow-up are presented in the municipality's annual environmental account. All goals stated in the energy-plan are connected to indicators for monitoring whether goals are fulfilled or not. Also actions will be followed up in the environmental account as they are implemented in the environmental action program. The environmental coordinator has main responsibility for this and leads a group of public officials that work with the follow-up.

As the last energy-plan was produced an extra human resource was employed. Both this official and the environmental coordinator tell that the goals and indicators for the energy-plan were carefully chosen to suit available data and the (poor) quality of the national statistics. Describing the baseline year and methods for calculations have also been important parts of the work. Feasibility for follow-up has therefore been a precondition in the energy-planning process. When it comes to actions in the energy-plan, focus is to follow-up their implementation. To what extent different actions contribute to overall goals are currently not followed up as it proved complicated to perform such calculations.

### **3.6. Municipality F**

In municipality F the local climate strategy also functions as energy-plan. According to this climate strategy follow-up should be conducted annually by monitoring the development in the energy field. If there are any significant changes in practice compared to what is stated in the plan, the plan should be revised. However, there are no concrete instructions for follow-up in the climate strategy, nor are there any time plans or responsibilities designated for implementing proposed actions.

The respondent in Municipality F has no formal role in the follow-up of the climate strategy. However, this person was active in the design process since one of the local environmental goals is connected to energy issues. According to the strategy a steering group and a reference group should be formed to take responsibility for energy issues. Also a local energy group with stakeholders should be initialized. However, none of these supportive structures have been formed. The goals in the climate strategy have instead been integrated in the local environmental goals where they also are followed up. The respondent means that one reason for the lack of follow-up of the climate strategy is that there is no organization for this task and that this work would have been facilitated if follow-up had been regarded during the climate strategy design.

## **4. Analysis**

The results from this study indicate that follow-up has not been particularly prioritized in the energy-planning process, at least when it comes to defining working procedures for this follow-up. In one of the six studied municipalities with recent energy-plans follow-up is not mentioned in the energy-plan at all. Some kind of Follow-up activities have been undertaken in three of the six. Only in one case are there both structured documentation and organization for energy-planning follow-up (municipality 4). This municipality has long traditions and continuity in their strategic energy work and also resources allocated for these tasks.

One reason for not doing follow-ups is, according to the respondents, lack of resources. Another reason is that there were no thought about follow-up in the active planning phase and that it has taken time to build up structures for the follow up. When follow-up is conducted these activities are limited to monitoring whether or not actions are implemented. To follow-up whether these actions lead towards desired goals is however regarded too complicated. One of the obstacles towards calculating contribution to overall goals is lack of high quality data. Several of the respondents are frustrated with the low usefulness of the statistics produced at the national level. Since this data is unreliable there is a need to complement with local data. This in turn leads to methodological challenges as data origin from different years and sources. If the methods for data collection and baseline calculations are not very carefully reported follow-up will be almost impossible. In one case where the energy-plan was produced by consultants (municipality 2) this situation is evident. There were no methodological descriptions for calculating baseline values in the energy-plan, which has lead to that the public official needs to recalculate everything and invent own indicators for follow-up.

## **5. Discussion - How may follow-up be facilitated?**

Municipalities produce a wide range of plans, programs and policies and what is common for all, is that that in order to be effective, follow-up and evaluation is needed. Planning is often seen as a linear process where follow-up is little discussed [16]. Evaluating the plan's implementation by analyzing the development after the adoption is of course important not

only in order to decide whether revision is needed but also to explore the effectiveness of the plan and to learn from that; If the plan did not lead to the desired changes, how should the plan and planning process be designed to be more effective?

When adopting such continuous approach to energy-planning it is important to remember that municipal plans exist in a context. This context includes various institutional aspects and practices. Experience has shown that a success factor for energy-planning is taking the existing working procedures into account [18, 19]. Many local authorities have implemented environmental management systems [20] and in these, making use of the already implemented systematic approach and continual improvements may be a way forward to improving follow-up practice in energy-planning [16, 21]. Standardized Environmental management systems (EMS) approach is organizational oriented and aims at continual improvements. This means that follow-up has a key role [22]. Adopting the systematic approach and continuity of EMS to planning could help overcoming the shortcomings in energy-planning follow-up, for example by providing annual follow-ups of goals and actions. Opportunities of connecting environmental management systems (EMS) to the planning processes have been discussed by for example Hjelm et al [16], where it is argued that EMS could contribute with continuity, routines and improvements of plans and planning. Connecting EMS processes and knowledge to energy-planning could also lead to other benefits as professionals from traditionally different fields meet and exchange knowledge and ideas. Figure 1 presents a conceptual model for the connections between energy-planning and EMS in the local authority.

However, EMSs are more often used in larger local authorities so in the case of the municipalities in this study such an approach may be overkill. Several of the municipalities in this study have instead related their energy-plans to either their environmental account or budget system. This is to some extent analog to the EMS connection to the planning, since it implies continuity. The annual reports in accounts or budget systems could contribute to a systematic gathering of information for follow-up and revision of energy-plans.

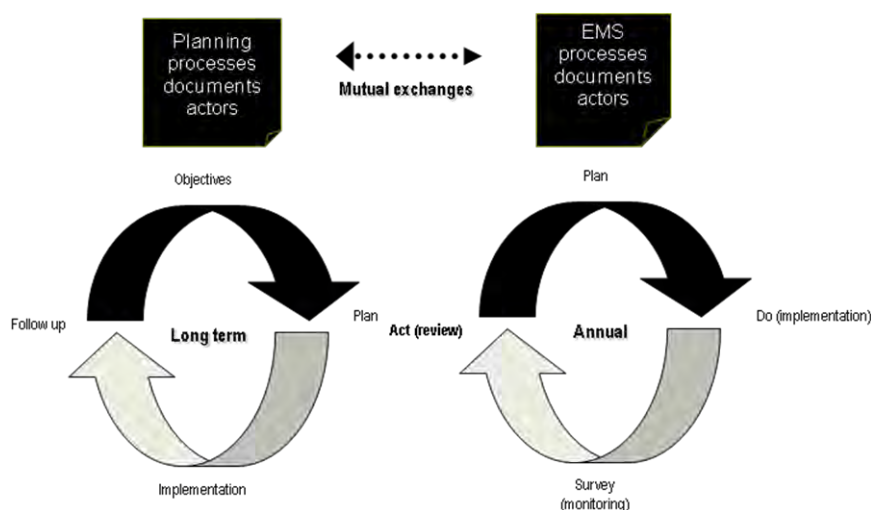


Figure 1. Conceptual framework for a continuous approach to planning and to link planning activities to organizational management such as EMS. The picture is inspired by Hjelm et al [16].

Based on the findings in this study, the municipalities seem to mainly follow-up whether or not actions have been taken rather than evaluating if the actions have led to e.g. reduced emissions of greenhouse gases. There is a challenge to find a methodology or approach, including this latter type of follow-up or evaluation. Also in this case a systematic approach

with a clear organizational setting with settled responsibilities could facilitate to make the energy-plan integrated in the daily work. Only when energy issues are a natural part of the daily work will it be possible to take the step further to strategic goals rather than implementing separate actions. If an EMS-approach is adopted, several advantages would be achieved: there are existing guidelines and vast practical experience from the EMS-field. The guidance in ISO 14004 stresses the importance of planning for the follow-up in terms of methods, indicators for activities and processes that give the most useful information [23]. The guidance also points out the importance of documented routines for follow-up. It would also be natural to lead experiences from implementation and monitoring back into the policy and planning processes for organizational learning and to formulate new actions as implied by for example Partidario [15].

Another aspect on the adaption of an EMS-inspired approach to energy-planning follow-up related to the identified obstacles identified in this study is that it can facilitate the development of a common working practice and methodology. This would not only benefit the public officials who would recognize working procedures even if they change working places. Also, if many local authorities (and also consultants) adopt a similar working approach it would be easier to enquire better quality on specific statistical data from the Swedish Energy Agency.

## **6. Conclusions and recommendations**

The aim of this paper was to explore approaches to energy strategy follow-up in six small and medium-sized local authorities in Sweden and discuss the possibilities for developed practice. It was found that in these cases follow-up is limited. Sometimes follow-up is neglected already in the planning phase and sometimes it is limited due to lack of resources. Those who manage to conduct their follow-up have related their energy-plans to either their environmental account or budget system. This is one way to include the follow-up in a continuous process.

If energy-planning follow-up is included in processes of continual improvement there are several possible gains: the working procedures in EMS are well-known and can facilitate the development of working practice and also the standardization of data use and methodology. This systematic work could also lead to well-defined organizational settings for energy issues which can both contribute to putting strategic energy issues on the municipal agenda and to organizational learning and adaptive local energy policies.

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