

Towards Sustainability: Four Models for Implementing Sustainable Strategies in the Swedish Energy Sector¹

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The Social Context of Energy Systems

When compared to many other western countries the development of the Swedish energy system has been characterized by a strong interrelation between the development and organization of the public sector and the development and organization of the energy sector. Since the social goods that the energy system has contributed with have been of great importance for the development of society, this interrelation has also been characterized by ideological interpretations about the desired direction and content of this societal development. (Kaijser, 1994:21). Because of changed economic circumstances and an increased environmental awareness during recent years these interpretations have been characterized by a market orientation as well as a discourse concerning sustainable development in society.

The orientation towards a *market-oriented public sector* began within the Swedish state and then diffused to the municipalities. This reinterpretation has expressed itself through a transition from a production orientation, bureaucracy and monopolies to a customer orientation, privatization and competition. The path has been via decentralization, customer-choice models, better planning routines and development of entrepreneurship (Hansson & Lind, 1998:16f). The drive towards a market-oriented public sector has resulted in great changes in the development of the energy system and, in turn, a massive reformulation of the institutional structures of the system.

The debate about a sustainable development first entered Swedish energy policy/politics during the spring of 1997 when the Swedish Parliament decided on new guidelines. Energy issues were linked to the government's overarching program of environmental policies. The goal of energy policies and the role of the public sector in the energy sector was reformulated (Lindquist, 2000:11). This can be seen in the efforts

¹ Summary of Ling, Mårtensson & Westerberg, 2002, Mot ett hållbart energisystem – Fyra förändringsmodeller (Towards Sustainability: Four Models for Implementing Sustainable Strategies in the Swedish Energy sector), Teknik och samhälle, Rapport i flervetenskap 1, Malmö Högskola (In Swedish)

being expended to change existing patterns of production and consumption through the use of investment support, energy advisory programs and support to research. The Swedish government also takes upon a different role: from direct control to the establishment of "the rules of the game". The public sector's influence over the development of the energy system has been divided between additional groups of which the municipalities and the newly established Swedish National Energy Administration are important actors.

To be able to change the energy system toward the direction of the goals of Swedish Parliament technical developments and a change of traditional ideas and conceptions in society will be required. These conceptualizations emerge from parts of a social context in which political and economic standpoints play an important role. Therefore it is important to study this context since this provides the preconditions for an evaluation of how steering mechanisms can be used and what effect they can achieve. In our opinion an understanding of the forces and mechanisms for change such as taxes, advice and lifestyles and an understanding of the context in which these forces and mechanisms act - - and will be acting -- in is required to lead and manage the changes in the energy system. When a process of change will be initiated and further developed it is therefore important to focus on how traditional conceptualizations and patterns of thought can be altered.

Purpose

The public sector in Sweden has changed its institutional structures with a new goal for societal development under the rubric "The Sustainable Sweden". This has been the result of international agreements that Sweden has entered into and domestic debates concerning the need for a sustainable development. The interaction between the public sector and the development of the energy system has entered a new phase. At the same time market reorientation has radically changed the public sector's possibilities to directly control the implementation of the sustainability goals in the energy system. Influence through ownership and the direct political control that this entailed has more or less been voluntarily phased out during recent years by governmental and municipal organizations. The desire for a change towards sustainable development has, however, meant that the public sector needs new ways to initiate, push for or support processes of change within the energy system in its new, multifaceted shape.

Therefore in this study we focus on the energy sector and the possibilities to development steering methods for a sustainable energy system by:

- Studying processes of change in different parts of the energy system with the purpose of identifying different forms for strategic change,
- Describing the pressures, barriers and possibilities which are made visible in these processes,
- Discussing and developing methods for managing and steering the processes of change.

Strategies for change processes in the public sector

In the understanding and analysis of change processes we use three types of strategy: *strategy as plan*, *strategy as pattern* and *strategy as perspective* (Mintzberg 1988;199). These ideal categories help us to understand and describe a complex reality. In actual, observable change processes it is rare to find strategies that exactly fit these categories. Instead the three types of strategy may coincide or serve as a complement to one another during the different steps of a process.

Actors who are engaged using a plan typology (strategy as plan) see strategies as a means to in advance and from rational foundations create guidelines and criteria for decision making to achieve a specific goal. The formulation of a strategy is perceived as a conscious and premeditated process in which formal documents are used to steer the actions of various actors towards a predetermined goal. There are many examples in Sweden where planning tools and a planning mentality have been used in the construction of modern society. During the construction of the energy sector these planning tools and mentality have had a strong position in Swedish law such as *Plan- och bygglagen* (SFS, 1987:10) and *Lagen om kommunal energiplanering* (SFS, 1977:432/1991:738).²

Strategy as pattern means a focus on the result of the various processes in which organizations or groups meet everyday reality and where such meetings tend to develop into lasting patterns of behavior. For actors using strategy as pattern the process of strategy is evolutionary. The strategy grows out of experimentation, development, implementation and evaluation. Those who use strategy as pattern thus strive to keep themselves open to a complex process. An open attitude and continuous feedback between the emerging way to work and new possibilities for change is therefore more important than a fixed plan of action.

Actors which use strategy as perspective focus on the importance that institutional structures have for strategic work (Bengtsson, 1993). These structures are a product of the history of the organization and the sub-systems that the organization consists of. The structures are made up of the common rules, norms and patterns of thinking which have grown from the common experiences of the organization as well as those supporting structures that have been at work within the organization. Institutional structures are supported by reward systems, recruitment policy, myths, organizational systems, systems of power and accepted descriptions of reality. With the perspective on change it becomes important to focus on the role of institutions in the efforts by organizations to be successful as well as how institutional structures could be used to carry and support strategies.

Patterns of strategy in change processes

² In English translation these laws could be called The Plan and Building Act, Law concerning municipal energy planning (translator's note).

By studying four process of change in three southern Swedish municipalities we have tried to map in which ways the three ideal strategies created patterns in and have been operationalized there. The municipalities -- Laholm, Växjö and Ängelholm -- all have different physical and institutional preconditions. Three of these change processes have been reconstructed written sources and interviews of key people involved during the changes. One of the processes, in Hjärnarp, has been studied from within during an on-going change process in which our project was directly involved.

The energy system in Laholm has undergone successive change through two efforts conducted in parallel: the construction of a biogas facility and an extensive promotion and development of wind power. The biogas project took its point of departure from the problems with eutrophication in Laholm Bay at the end of the 1980s and through a process of seeking and learning this problem and its solution could be connected with an energy project. The wind power development began when the energy company raised two wind power plants that then functioned as a model for private investments in wind power. Many different forms of partnerships and kinds of actors have been actively involved in the resulting developments and the significant emphasis on wind power in Laholm.

In both of these projects we find evidence of strategy as pattern. Parallel search and learning processes have been central driving forces that have successively lead towards new solutions in the whole system. The change processes can be characterized by flexibility, a spirit of entrepreneurship and openness towards various actors both within and outside the municipal public sector. Municipal resources have been mobilized to make the possibilities for change more visible -- for example by the active use of the municipal planning process and through a broad pattern of collaboration in various networks.

In Växjö the change process started with investments to solve the energy supply problems which became visible during the oil crises of the 1970s. After a time a municipal development project concerning energy from biomass grew out of the initial investments. Through the transition from oil to biomass, which took place in a number of small steps, a bioenergy culture arose and this culture's value for the development of the municipality and its surroundings became a unifying and powerful force. With an ever increasingly strong bioenergy culture as a base, the development of supporting systems for bioenergy began. Such support systems included the establishment of a local biofuel market, development of new knowledge of the sub-systems involved in bioenergy, and an active, local pricing policy and procurement. Through this work a broad-based and effective cooperation arose around clusters between different actors and a political vision with widespread and deep support.

In Ängelholm as well the changes in the energy system began with the energy crises. After two changes in fuel sources, a changed price

structure and a supply agreement between the Ängelholm energy company and a supplier of natural gas the result was a physically and mentally locked situation. A management culture developed where the main purpose was to administer and maintain that which had been achieved with an eye to what was best for the citizens. The ability for the municipality to manage the situation in the best possible way and take responsibility for the continued welfare of its citizens has been the principle consideration and considerable weight has been attached to this. An important part of the municipal responsibility has contained and required a political legitimacy for the different projects and programs. In this management culture we find a good deal of strategy as plan where the planning has insured a political insight and influence over the change process.

The case in Hjärnarp was different since the authors of this study took active part in the process. The change process was formed with the goal to create meetings between the various interests and their needs for problem identification and knowledge concerning the local energy system. The purpose of the meetings was to create a locally based understanding of the system and different actors' relations to it as well as create a common perspective about the development of the system. There were a series of search and learning processes focussed on technical solutions and common values about the local energy system. All of this lead to the founding of an association "Green Heat in Hjärnarp" and a pre-study which was carried out by the energy consultant ÅF. In this case we can see clear evidence of strategy as pattern and strategy as a perspective.

Tools for the implementation of change processes within local energy systems

From the study of these four change processes in local energy systems we have identified three central processes. One process is how problems are understood and connected to a solution in an active *problem understanding*. A second process is how actors, sub-systems and systems are *mobilized*. Third, how and to which people, groups and organizations these changes are *communicated*. We posit that these are central processes in a change process and one can view problem understanding, mobilization and communication as tools for implementation if we conceptualize tools for implementation as the way in which change are implemented and strategic patterns arise. These dimensions in a change process are therefore important management and steering tools in change processes in the context of the public sector.

Problem understanding is the process in which the surroundings, one's own situation and relations between these structures are linked to locally formulated possibilities for change in the energy system. These possibilities for change contain an identification of the problem as well as an idea about a concrete project that could solve the problem. Through problem understanding the agenda is set for the continuing change process and for the future appearance of the energy system.

Actors, networks, supporting systems as well as ownership structures and systems of knowledge are activated through *mobilization*. Another aspect of mobilization is how the change process is organized in networks, working groups or new companies. *Communication* includes those activities where changes are made visible, given meaning, diffused and integrated with the active actors, potential stakeholders and other relevant groups. With this definition, communication includes the message itself and the channels or media that is used for these transmissions in the form of calculations, plans or visionary documents, meetings or networks.

Towards the sustainable energy system -- models for change

In situations where actors within an organization are faced with sweeping changes one cannot be sure that accepted ways are sufficient to uncover new solutions and activate possible interests and supporting systems. In these situations new steering and management tools can help to implement and carry out the desired changes. We have seen how problem understanding, mobilization and communication create the central sub-processes in a viable change process. With the help of four models for change developed through the analysis of the case studies we will show how these sub-processes can be used as management and steering tools in very different contexts.

Change through networking

Even if one has limited resources, it is possible to contribute towards change in an energy system by building networks with important actors. This model demonstrates that ownership does not need to be the only way to manage flows and steer developments in a municipal energy system. Instead the focus is on the possibilities to work through others: to make visible problems and/or solutions, to support and be open for other actors' participation in the process of change. Changes stemming from this model are often characterized by a system perspective where one tries to uncover new and previously unused connections between different interests and systems. A basic tenant of this model is openness, continuous feedback between sub-goals and continuous search and learning processes, as well as the retention and combination of several possible problems and solutions in one and the same process.

Problem understanding in this model leads to a search and learning process where system thinking has a dominant position. Via a process of search and learning several possible problems or possibilities for change can be connected to many possible solutions. In a chain of problems and solutions one can connect sub-systems and diverse interests in such a way that new possibilities and system solutions become visible.

Mobilization in this model is oriented towards the activation of diverse interests to participate in the changes as well as support their work in the network. An example of this activation is network constructions where interests are introduced to one another and then connected. In this kind of work it is important to take an open position with regard to the diverse points of departure and strengths that these interests bring together. When cooperation within a network is initiated it then becomes a question of using one's own various resources to support the work that the network has taken upon itself.

The most important task for *communication* in this model is to make visible the whole chain of problems and solutions that will be worked with in the network as well as suggest which possibilities there are for various interests. Making things visible can be done in several ways

including via the network itself, working groups or partnerships, with the help of the media or through inexpensive pilot facilities.

In a change process of this kind who is an expert will shift between different actors and organizations as the process continues to unfold. Thus it becomes very important that the individual actors can communicate with each other since they both create change and carry out the change process to its fulfillment. The role of a process leader here is something of that of a spider in a web: structure-builder, coordinator and the one with the overview over processes and actors.

Change through value formulation

Value and norm systems can be used in several ways to realize change. An active interest can use an existing or establish a new normative and regulating system from which internal and external interests can act. A shared set of values can also be useful when actors discover that they share values and this can itself be a driver for change and thus lead to cooperation with the shared values as the unifying perspective. An additional way to approach is that interests cooperate to develop a common set of values which, in turn, leads to actions which are beneficial for all interests as well as the development and sustainability of the system.

Problem understanding in changes of this type focuses on making values apparent and seeing how these can be connected to the development of the energy system as well as the operationalization of them as a force for the development of the energy system. It is important to identify the actors which already have the desired values as well as actors that are located at strategic points in the system and who could become bearers of the desired values. Therefore problem understanding includes the identification, or development, of values and the identification of actors who are or could be bearers of certain values.

Mobilization means a direct implementation and operationalization of the problem understanding. Through mobilization values and actors must be activated and brought together in circumstances which favor the development of shared change processes. During the mobilization phase the developing set of values, which are shared by those involved, must be increasingly accepted by the various actors in their own situation. Further these values must be seen as important and possible to base actions on. To create those circumstances which are needed it is important to mobilize those sub-systems within the energy system in which the shared values can be operationalized.

Communication is of great importance in a process that is steered by the capacity to operationalize shared values and get diverse actors to cooperate with these values as the point of departure. Therefore communication is concentrated on two matters: on the one hand the diffusion of values and their potentials for change and on the other hand the creation of communication possibilities between various bearers. The media for communication can often be vision documents, conferences,

models, information centers and so forth. A crucial matter is the ability to anchor values within and outside the municipality and in the various levels of organization in the municipality. In such change processes a core set of values may often be developed to a shared identity on the part of the participating actors, an identity which can also be of strategic importance to market to a wider audience or other communities.

In shared values as a model for change the process leader starts with the rule and norm systems which are available or which have the potential to develop. The task is to make the values visible and create foundations around them so that the rule and norm systems, their foundations and the development of technical systems support one another. It is important to observe differences in perspectives and changing perspectives during the process so that the development of a unifying culture does not keep out important interests or create some form of tunnel vision so that new possibilities are not missed.

Change through management culture

The center of this model is the responsibility of the public sector in the municipality to weigh diverse citizens' interests and thus provide a good supply of services and goods. The common position is that the actors in the public sector work to administer public funds in such a way that as many as possible find their needs satisfied. This kind of process is supported by a centralized administration where the active individuals are in the system and where the formal tools and decision-making processes are well established. A precondition for this is often ownership or at least partial ownership, which permits direct control.

Formal tools and decision-making processes are thus important aspects of this work since this makes it easier to present the process of change and in this way create confidence and legitimacy among the citizens. For this reason the goals are established as far in advance of their realization as possible. This kind of change model best fits changes in activities where the changes can be carried out essentially internally and through investments using one's existing resources. An organization of this kind often has good access to internal technical or other relevant competence, which makes it easier to implement common goals.

The creation of guidelines and goal formulation is central to the *problem understanding* in this model. The guidelines and goals are to be implemented internally in the organization at several different levels. Frequently a few people with experience can take care of the problem understanding (guidelines and goals) and insight in the organization's various activities. Since legitimacy in the eyes of the citizens is an absolute requirement an important part of problem understanding involves politicians and political bodies. Formal tools such as spreadsheets, municipal planning documents etc, can be used in this process and for the understanding of the goal of the solution.

Mobilization is primarily internal; that is to say that the point of departure is internal activities and systems as well as those actors that work within

this framework. Investments are an important part of the mobilization and work is often organized around activity and development plans.

Communication is also mostly internal and describes which parts of the goals that must be implemented in which units so that the primary goal can be realized. This communication is often formal via such media as activity plans, calculations, and budgets as well as in personnel and management meetings.

It is clear that process management in this model is active but formalized with a small group responsible for goal formulation and implementation. Internal experts are important and equally important are established channels of communication: within the upper management and between management, leading politicians, experts, and other actors. Through this formalized process which builds upon established divisions of work and responsibility, the on-going work is less dependent on particular individuals. Yet, at the same time, it is very important that all parts of the organization are activated even if implementation is within each unit in isolation. Clarity in communication and the possibility to return to the goal formulation during the entire process is a very important aspect of this model. What is decisive is whether the possibilities or the need for change can be motivated and made legitimate in the various parts of the organization and that an openness that the different organizations can carry out changes in its own way. It is first then that the various units and actors in the organization can be given responsibility for and the possibility to actively participate in the process.

Change through local participation

If change is driven by local participation then developments will be less dependent on the municipal administration or the resources of the public sector. Instead cooperation between sectors and the establishment of good communication is the focus. The goal is to actively involve citizens in the work and let the needs, problems and solutions -- which people formulate based on their daily experiences -- steer change. To establish this externally-oriented method of working requires that the political system, the municipal energy company and municipal administration is see the active participation of citizens as positive and a necessary part of the change process. Participation must be seen as a guarantee for effectiveness but also as necessary if the municipality is to fulfill the goal of establishing forum in which the democratic rights of citizens are safeguarded and then transformed into practical action. In this kind of organization it becomes important to establish and support an attitude that the advantages of citizen participation outweigh the possible disadvantages such as the additional coordination, more negotiation and public hearings and the additional time that this work can entail.

Problem understanding in this model is primarily about how citizens can become involved in the process and how the diverse perspectives that arise in this process can be made clear, be addressed and integrated. The process itself is thus the focus of problem understanding and this often leads to testing, combining and the creation of participatory forms of

working and meeting. As the process continues to develop the focus will shift towards specific chains of problems-needs-solutions and this means that problem understanding in this model can be similar to problem understanding in those processes where the goal is to work through others.

Mobilization here involves two parallel activities: mobilization of the actors and the mobilization of the knowledge and perspectives that the actors carry into the process. This mobilization occurs during the chosen forms of meeting and work where the actors and their perspectives are brought together and reconciled.

Communication plays a decisive role for several reasons. First, it is important to be able to communicate the value and orientation of the work for the actors that one wants to participate so that participation is understood as both important and legitimate. Second, it is absolutely necessary for the success of the process to be able to communicate the chosen work forms, their basic structures and purposes. Third, the entire process is driven by communication between actors and the perspectives that they bring into the process. The democratic project is thus in the first instance a communicative model.

In a democracy project of this kind, process management takes center stage. The task of the process manager is to develop meeting places and forms that support the meeting of expert and layman knowledge between different groups and actors. The process manager does not need to contribute with technical or other expertise concerning the special system or the organization that is to be changed. Instead the key is the communicative and mediating role of the process manager and her knowledge about group dynamics, which factors influence need, problem and solution formulations (age, gender, ethnicity) and the different forms of participatory work. An important step in change in this model is to also to create contact networks within the municipality and its administration as well as outward towards companies, associations and other groupings. The organizational base for such processes may already exist in the municipality such as Agenda 21 or Citizens offices. For those municipalities that choose democracy project as the change model it should be natural but also of great importance to use these already existing offices given their past and on-going efforts to function as coordination and participatory centers.

The models in market processes

Our opinion is that the power of competition is created in market processes where actors interpret and understand their surroundings and their situation. Various alternatives for change are created with this interpretation as the point of departure. Based on this perspective one can say that the market process is determined by how the problem is understood and then connected to solutions as well as how actors, systems and sub-systems are activated and how the possibilities for change are made visible and communicated. The three types of strategies

point to different ways to create the possibilities for change and then carry them out.

Competition in the energy sector is characterized by increasingly complexity: greater numbers of actors and increased deregulation. At the same time the actors in the energy sector are covered by the political directives about the desirability for change in the direction of sustainable energy systems. In this context it is not enough to have competitive prices and products or find competitive niches. Instead it is important to have a method to manage changes. With this method one has the capacity to meet changes as well as initiate change. With this kind of perspective the future is not given. The future is uncertain and open for various paths for development. The models that were presented should be seen as different ways to manage and implement changes in the new situation.

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Material from the studied municipals

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- Interview: Co-ordinator local Agenda 21, Municipal of Laholm. 1999.
- Interview: Town architect, Municipal of Laholm. 2000.
- Interview: Local business managers in Laholm. 1999.
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Växjö

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Ängelholm och Hjärnarp

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