

# **From Grand Visions to Grim Reality?**

*Changing Energy Consumption through Local Agenda 21*

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## List of Abbreviations

FAU:	Foreldrenes arbeidsutvalg (The Parents Work Committee)
KS:	Kommunenes Sentralforbund (Central Association of the Municipalities)
NGO:	Non-governmental organization
LA21:	Local Agenda 21
MIK:	Miljøvern i kommunene (environmental conservation in the municipalities)
GRIP:	Grønt i Praksis (Green in practice)
NVE:	Norges vassdrags- og energidirektorat (Norwegian Water Resources and Energy Directorate)
SFT:	Statens forurensningstilsyn (Norwegian Pollution Control Authority)
SSB:	Statistisk sentralbyrå (Statistics Norway)
UN:	United Nations
UNCED:	United Nations Conference on Environment and Development
UNGASS:	United Nations General Assembly Special Session

## 1.Introduction

Almost all blueprints for tackling global warming assume that energy efficiency will have a huge role to play. Nicholas Stern devoted a whole chapter to it in the report he wrote on climate change for the British government. In the greenest of futures mapped out by the International Energy Agency, a think-tank financed by rich countries, greater efficiency accounts for two-thirds of emissions averted. The McKinsey Global Institute (MGI), the research arm of the consultancy, thinks that energy efficiency could get the world half-way towards the goal of keeping the concentration of greenhouse gases in the atmosphere below 550 parts per million. (The Economist, 2008). The role energy efficiency will play in a transition to sustainable development was pointed out by the World Commission on Environment and Development in 1987. The Commission wrote the document for which the term “sustainable development” is best known; *Our Common Future*. The Commission (1987: 196) believes that “energy efficiency should be the cutting edge of national energy policies for sustainable development”, and points out that “the cost-effectiveness of ‘efficiency’ as the most environmentally benign ‘source’ of energy is well established”.

*Our Common Future* points out that there is a need to consolidate and extend relevant legal principles in a new charter to guide state behaviour in the transition to sustainable development (The World Commission on Environment and Development, 1987: 332). This suggestion results in the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, in Rio de Janeiro in 1992. The main document emerging from the conference is Agenda 21, which is a plan of action for the 21<sup>st</sup> century. Agenda 21 is split into four sections, with each section covering several different programme areas. The first part covers social and economic dimensions of sustainable development. (<http://www.prosus.uio.no/bu/agenda21/>). One of the

programme areas covered in this section is consumption patterns. Like *Our Common Future* before it, Agenda 21 encourages greater efficiency in the use of energy:

*Reducing the amount of energy and materials used per unit in the production of goods and services can contribute both to the alleviation of environmental stress and to greater economic and industrial productivity and competitiveness. Governments, in cooperation with industry, should therefore intensify efforts to use energy and resources in an economically efficient and environmentally sound manner. (Agenda 21, 4.18)*

The document does not only discuss the challenges we face, but presents a strategy for overcoming them. The programme areas that constitutes Agenda 21 are described in terms of the basis for action, objectives, activities and means of implementation. In all areas, the importance of participation and cooperation between actors are made clear, as cooperation between groups are seen as a key to effective implementation:

*Critical to the effective implementation of the objectives, policies and mechanisms agreed to by Governments in all programme areas of Agenda 21 will be the commitment and genuine involvement of all social groups. (Agenda 21, 23.1)*

The central recommendation in the document is to develop local Agenda 21 plans, a recommendation made in chapter 28. This chapter discusses the role of the local authorities, and is part of the section of the document dealing with



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strengthening the role of major groups. (Agenda 21). The process of making and implementing the local Agenda 21 plans is known as the LA21 process. The theory is that if all actors do their part in a shared effort, sustainable development may be achieved. This thesis wishes to explore the actual involvement and cooperation between actors in the LA21 process in two municipalities, and does so through a comparative case study.

## 1.1 Research Questions

A central part of the LA21 process is the *participation* of different actors in policy-making in a shared effort to achieve sustainable development. Although the LA21 process involves more than just participation, it is the participation of actors that will be the object of this study. The goal of this thesis is to investigate to which degree the pattern of actor involvement in decision making in the two municipalities can explain the municipalities' performance regarding sustainable development. Agenda 21 has a lot of programme areas, and it would be impossible to look at them all in this study. Thus the study will concentrate on one programme area in particular: energy consumption. The main research question will be:

- To what degree can differences in actor participation explain a municipality's performance concerning sustainable energy consumption?

To specify the study further, three sub-questions have been developed to guide

the study:

- a) To what degree are the municipalities focusing on sustainable energy consumption?
- b) To what degree and how is the issue of sustainable energy consumption addressed through the LA21 process?
- c) To what degree are different non-state actors addressed and included in the efforts to obtain sustainable energy consumption (eg. through the making of local and regional energy plans)?

As the study will be focusing on the issue of energy consumption, it is relevant to know the degree of focus each municipality puts on the issue. A lack of focus could make it difficult to find projects suitable for comparison. Sub-question (b) relates to the LA21 process in the municipality. According to Armann (1996: 14) Agenda 21 makes four suggestions for the LA21 process: a dialogue should be initiated; action plans should be composed; projects and initiatives should be started; and networks should be made to enable sharing of information. The analysis of actors involvement will be viewed in light of the suggestions made for the LA21 process. Both the dialogue, involvement in the making of plans, and the involvement in different initiatives will be looked at. It is therefore necessary to know to which degree these suggestions are followed. Sub-question (c) explores the the degree of actual participation by the different actors. Once I have explored to which degree different actors participate, and in which way, I have a background for answering the main question of their role in obtaining sustainable development.

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## 1.2 Relevance of the Study

Gard Lindseth (2002: 51) mentions in his discourse analysis on Lier and Åls work on LA21 that LA21 is often used as a revitalisation of local democracy. The important thing is to open up for people participation. That the process goes in a sustainable direction is only a secondary consideration. While LA21 may be good for the democracy, the question thus becomes whether it is good for the environment? Recognizing that the suggested strategy of involving all social actors may not reach the intended goal of sustainable development, this thesis takes a closer look at the actual benefits of different actor involvement. Agenda 21 (23.1) claims that effective implementation necessitates a commitment and genuine involvement of all social groups. This indicates that lack of involvement and commitment by some actors will lead to an inefficient process. It is not necessarily the case, however, that lack of commitment by some actors will affect the LA21 process the same way or to the same degree the lack of commitment by other actors will. Meadowcroft (2004: 184) downplays the role played by individual citizens, and claims that the organized groups (whether NGOs, business groups, or governmental bodies) are particularly important in the transition to sustainable development.

Involving different actors in the process of decision making takes resources. At the same time, the transition to sustainable development requires swift action and efficient implementation of initiatives. When resources and time is limited, priorities must be made, and it is essential to choose the best actors for cooperation in each instance. Different actors have different roles to play, and not all are essential in each part of the LA21 process. Different actors should be addressed and included in the LA21 process whenever they can make a real contribution. At the same time, it is important to know if certain actors play a critical role in certain parts of the LA21 process, as the lack of involvement from

such actors during these stages could make it difficult to reach the set targets. Local authorities should be aware of the role played by different actors during different parts of the LA21 process and make efforts to include the right actors at the right times and for the right purpose.

### 1.3 Selecting the cases

This thesis is a comparative case study of the municipalities Halden and Lier that explores how actor involvement in the LA21 process affects the performance of the municipality regarding the obtainment of sustainable energy consumption. The thesis uses Agenda 21 to frame the study, since participation is an important part of the strategy offered in the document. To explore the significance of the different actors in the process of obtaining sustainable energy consumption, I have selected two municipalities that have made a commitment to initiating a LA21 process by signing the Fredrikstad declaration. The two municipalities are thus committed to make a transition to sustainable development, and to do this by bringing different actors into the process of decision making. The two selected municipalities are Halden and Lier. Both municipalities lie in the south-eastern part of Norway. Lier is to the west of Oslo, in Buskerud County. Halden lies south-east of Oslo, in Østfold County. Lier was selected for study quite early as it has often been referred to as a municipality that has been quite successful in implementing LA21. Halden has come up as a candidate for comparison later on. The background for the selection has been partly because I originally come from Halden, but it also fits well for comparison with Lier because the work on LA21 in Halden is, according to local sources (Sørås, Granum, 2008), largely abandoned. Yet, the municipalities are quite similar in many ways. Halden and Lier have approximately the same number of inhabitants

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([www.ssb.no/kommuner](http://www.ssb.no/kommuner)), they are both located in the same part of Norway, and they both deal with industry as well as agriculture/forestry.

## 1.4 Outline of the Thesis

The thesis will spread out through six chapters from introduction to conclusion. Since the LA21 process is central to the study, the first chapters will be used to explain the suggestions made for the process in more detail, and to show how it frames the later analysis. The later chapters will be going through the empirical evidence in each of the two municipalities separately, before the comparison is made and a conclusion is reached.

The second chapter, “Background and Theory”, fills several purposes. First, it will give a background for the work on LA21 in Norway from the Rio Conference in 1992 to the release of the National Agenda 21 as part of the national budget in 2004. Second, it will look into sustainable development as a goal and LA21 as a strategy to reach that goal. The chapter will also discuss why participation may be important and which roles different participating actors may play.

The third chapter, “Methodology”, describes the method used in the thesis. I have chosen to place the chapter with the background and discussion of LA21 before the methodology chapter, as the analysis will be made in light of the suggestions made for the LA21 process. Thus it will be necessary to know what LA21 is all about before explaining how the analysis will be conducted. The chapter is split into one section explaining the method, and another describing the analytical

approach. This will be a comparative case study of two municipalities, using pattern matching to examine how differences in actor participation affects the municipalities' performance regarding sustainable energy consumption.

The fourth chapter, "Halden", discusses the actor involvement in the LA21 process in the case of Halden. The chapter gives a general description of the city as well as an account on the trends in energy consumption. The main part of the chapter is devoted to the involvement of actors in the LA21 process, split into a discussion of the dialogue between the local authorities and other actors; the involvement of different actors in the making of action plans; and the involvement of actors in the implementation of initiatives.

The fifth chapter, "Lier", will be similar to the fourth, except it will be concerned with the second case: Lier. Like the last chapter, this chapter will start by "placing Lier on the map" and give an account on the energy consumption in the city. It will then look into the participation of different actors in the same vein as chapter four.

The sixth chapter, "Comparing the Cases", will compare the two cases. It will first discuss the focus on energy consumption in the two municipalities. The chapter then discusses the participation of different actors in the LA21 process. Like chapter four and five, this part of the analysis discusses the dialogue, the making of action plans, and the implementation of initiatives separately. Last, a conclusion is reached and suggestions for continued work on the topic are made.

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## 1.5 About the Field of Choice

The field of choice in this study is energy consumption. The thesis will consider not only a municipality's effort to obtain energy efficiency, but also its effort to make a change towards renewable energy sources. In other words, a municipality's effort to move towards sustainable development with regards to energy consumption will consider both its effort to consume less energy (through energy efficiency) and to produce energy in a more sustainable way (through the use of renewable energy sources). When I later refer to a municipality's effort to move towards sustainable development with regards to energy through the chosen methods, I will be using the expression "sustainable energy consumption" as a catch-all phrase rather than "energy efficiency or renewable energy". Agenda 21 discusses a lot of programme areas regarding sustainable development. I have chosen to look at the field of energy consumption because of the attention devoted to it in *Our Common Future*, which later led to UNCED and the Agenda 21 document. The importance of reducing energy consumption and to find renewable alternatives to the sources most used today, make this a good choice for a study. Energy consumption has also been a personal field of interest for me for a while. This has influenced the kind of knowledge I have sought, including knowledge I have gained through the work on this thesis. It should be pointed out that "energy consumption" relates to many things. It relates to the generation and handling of waste; it relates to the area of transport and the energy sources used to fuel our vehicles; and it relates to the means we use to light and heat buildings. Energy consumption in this thesis will relate to the use of different energy sources for the purpose of lighting and heating..

It should be noted that this study is not meant as an attack on LA21 as a policy strategy. The call to bring in all actors in a joined effort in a transition to sustainable development seems sound, and it may be needed. It does, however,

put a lot of faith in the actor's willingness to cooperate. The study will be based on the assumption that LA21 is a sound strategy. That is, it should ideally – if correctly implemented – lead towards sustainable development.



## 2. Background and Theory

### 2.1 From “Our Common Future” to “National Agenda 21”

It was the conclusion of *Our Common Future* that development had to be sustainable. The national strategy to obtain sustainable development has developed since *Our Common Future*. Today several municipalities have committed to LA21 as a way to obtain sustainable development. This strategy is based on involvement from all social actors, and this thesis wish to explore the contribution made by the different actors in the implementation of the necessary policies to obtain sustainable development. This chapter will give some background on the work to obtain sustainable development from the release on *Our Common Future* in 1987 to the release of National Agenda 21 in 2004.

#### 2.1.1 Our Common Future

The general assembly of UN decided in 1982 to compose a document that analysed the problems related to the environment and development in a holistic way. The document would be a part of the UN-account *Environmental Perspective to the Year 2000 and Beyond*. The responsibility was given to the World Commission for Environment and Development. It published the end document *Our Common Future* in 1987. The main conclusion was that the development had to be *sustainable*. (Mugaas, 1997: 23-24). Sustainable development, according to the document, is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. (The World Commission on Environment and Development, 1987: 42). The high council decided to hold a conference to go through with the suggestion of the making of an universal declaration and convention about

environmental protection and sustainable development. The Conference (UNCED – United Nations Conference on Environment and Development) should form strategies and methods to stop and turn the effects of ecological degradation through increased national and international initiatives to promote sustainable and ecologically healthy development in all countries. (Mugaas, 1997: 24).

### **2.1.2 The Rio Conference**

UNCED, also known as the Earth Summit, was held in Rio de Janeiro in 1992. It was unprecedented for a UN conference. 178 countries were represented. 100 heads of state participated, together with hundreds of representatives from UN, members of local councils, private organisations, industry, indigenous people and other groups. UNCED was organised around the composition of three documents: *Agenda 21, the Rio-declaration on the Environment and Development* and *The Forest Principles*. In addition, attempts were made to organise a lot of the international initiatives which already dealt with environmental or development problems into UNCED, particularly the work on the Climate Convention and the Convention on Biodiversity. (Mugaas, 1997: 30-31).

Agenda 21 is the main document emerging from UNCED. Agenda 21 gives problem definitions and suggestions to make the development socially, economically and ecologically sustainable. The agenda contains forty chapters covering many problems. The agenda is split into four parts, covering different parts of the problems related to the environment and development. (Mugaas, 1997: 31).

Part 1 covers social and economical dimensions. It deals with poverty, consumption patterns, health, population, settlement, international cooperation

and decision making. It points out that poverty is one of the main barriers to a sustainable development. It also makes suggestions on how to reduce consumption in the industrialised world. The agenda draws out solutions on how to achieve a sustainable equilibrium between consumption, population and the ecological capacity of the Earth. (Mugaas, 1997: 32).

Part 2 deals with the conservation and management of resources. It covers how to conserve and manage resources like the atmosphere, land, biological diversity and the oceans. It also describes how to handle different types of waste. Agenda 21 declares that population, consumption and technology is prime drivers for ecological change. It describes some of the techniques and technology necessary to cover the human needs without degrading the natural resource base. (Mugaas, 1997: 32)

Part 3 covers the strengthening of central actors. This includes women; youth and children; indigenous people and farmers, as well as NGOs, local authorities, Trade Unions, business and industry. The role of science and technology is also covered. (Agenda 21)

Part 4 discusses the means to implement sustainable development, by the use of such means as financial resources, technology transfer, education and the use of legal instruments, among others. (Agenda 21).

After Rio in 1992, there were high expectations to Norway's follow up on the different juridical and moral commitments made at the conference. Norway has been active in the UNCED process that led to Agenda 21, and has a good

reputation as an environmentally conscious nation and flag-bearer for sustainable development. It would still take some time, however, before LA21 was given any serious thought by the Norwegian government. In “Stortingsmelding nr. 13 (1992-1993) – FN-konferansen om miljø og utvikling i Rio de Janeiro”, it is said that: “*The Norwegian system for local planning works well in relation to the suggestions made in Agenda 21*”. The message is thus that “LA21 is what we do already”. One of the reasons why LA21 was downplayed was that the national government at that time had started working on the MIK reform. (Bjørnæs & Lindseth, 2006: 66-67).

### **2.1.3 The MIK reform**

The program *Miljøvern I kommunene (MIK)* was initiated by the Ministry of the Environment in cooperation with KS as an experiment that included 90 Norwegian municipalities. The program lasted from 1988 to 1991. In 1992, the program was made into a reform that in principle included all norwegian municipalities. The reason for the project was a wish to strengthen the role of the municipalities in the environmental policy. Through “decentralization”, the program should mobilise the sense of local responsibility in administration, politicians, local organisations and the whole citizenry. Through the MIK reform, the Ministry of the Environment gave financial support to the municipalities for employing an environmental advisor in the municipality. Employing a consultant was voluntary. After 1997, the support was given as a part of the normal contributions given to the municipalities rather than as specific grants. The project phase also included attempts to transfer responsibility for certain environmental tasks from a national level to some of the included municipalities, something that has not been extended to a large degree. Lastly, the program included encouraging the municipalities to develop holistic environment and natural resource plans (environmental plans, environmental action plans, etc.) as

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a policy tool for the politicians and an action plan for the management of nature and environmental resources in the municipality. (Armann et al., 1995: 21).

The work on sustainable development was evaluated in 1995, in a report by “Prosjekt Alternativ Fremtid (now Prosus) in cooperation with Stiftelsen Idébanken. The evaluation uncovers that it is unfortunately very little work going on in the municipalities with regards to LA21:

*In Agenda 21, it is said that by 2006 it should exist local action plans for Agenda 21 for all citizens in all countries – so called “Local Agenda 21”. Local action plans are in other words a highly prioritized area within our most important consensus document about the environment and development. Because of this, it is in many ways an environmentally “cold shower” that this evaluation shows that no Norwegian municipalities per July 1995 have started the work on Local Agenda 21. (my translation; Armann et al., 1995: Forord).*

Until 1996, MIK was considered to satisfy the qualifications of LA21. For the UN conference following up on Rio in 1997 (UNGASS – United Nations General Assembly Special Session), it was thus reported that *all* Norwegian municipalities were working on LA21 when the fact was that only very few municipalities had started using the term LA21 in their environmental work. (Bjørnæs & Lindseth, 2006: 67).

#### **2.1.4 From MIK to LA21**

When the MIK reform approached its end in 1996, the government and the Environmental Department signaled a change from MIK to LA21. The change is commented in a letter from the Environmental Department and Kommunenes Sentralforbund (dated 9<sup>th</sup> of December 1996). Several points are seen as central in the transition to sustainable development. One point is that the global perspective in the local environmental work must be recognized and made clear. It is thus important to “think globally while acting locally”. It is also pointed out that Lokal Agenda 21 should be a process involving the whole local community, and that women and children in particular should be drawn into the process of decision making. The transition to sustainable development requires that all actors involves themselves in a joint effort towards a common goal. Furthermore, the work on LA21 should have a long-term perspective. Last, the goal of improved quality of life must be considered so that questions of health, as well as sustainable economic and social consequences of the transition to sustainable development is made clear. (Bjørnæs & Lindseth, 2006: 69).

In June 1997, the Environmental Department releases Stortingsmelding 58 (1996-1997) about “Miljøpolitikk for en bærekraftig utvikling”. LA21 is one of four main focus areas, energy and climate is another (the last two being protection of biodiversity and reduction in emissions of substances hazardous to health and the environment). Here, the government signals a change from MIK to LA21. The work on LA21 will be a natural continuation of the work all ready done through programs like the MIK reform. It is mentioned that the government in certain areas will set targets for wanted environmental development that the municipalities will be advised to consider in their planning. In some areas, the state may set minimum standards for environmental quality to make sure the performance between different municipalities does not become too great. It is also made a reference to the Buskerud Project, as a first step in making a system

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for environmental reporting in the municipalities. (St. meld. 58 (96-97), 3.4.2 Fra miljøvern i kommunene (MIK) til lokal Agenda 21).

A year later, in 1998, the Environmental Department starts forming a strategy for the implementation of LA21. It lists four environmental challenges that needs to be prioritized when LA21 takes over after MIK: Consumption and energy; development of a sustainable mobility; development of a sustainable industrial policy; and enhanced precision in area development especially with regards to biodiversity. (Bjørnæs & Lindseth, 2006: 69-70).

### **2.1.5 The Focus Falls**

The real ”take-off” for the work on LA21 was the national conference on LA21 – the Fredrikstad conference – in February 1998. (Bjørnæs & Lindseth, 2006: 72-73).

The Fredrikstad conference in February 1998 showed signs of an increasing interest for Local Agenda 21 in Norwegian municipalities. The conference gathered more than 700 participants with the goal of creating a plan of action for the municipalities. The conference was seen as a great success, and ended with the document «Fredrikstaderklæringen» (the Fredrikstad declaration).

From 2002, most of the national support to LA21 was terminated. Through changing governments, the national focus on LA21 has fallen, and the municipalities’ role in the environmental policy has changed. In the autumn 2003, the national action plan for sustainable development, “National Agenda 21” was released as part of the national budget for 2004. Here, only 2 of 120 pages

concerns LA21, and no expectations to the continued contributions from the municipalities are made. (Bjørnæs & Lindseth, 2006: 81-82). The situation at the start of the period my study covers is thus that the municipalities are largely left to themselves when considering whether or not to work on LA21.

## 2.2 Goals and strategies

### 2.2.1 Sustainable Development as a Goal

In *Our Common Future* (1987: 42) sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” It contains within it two key concepts:

The concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and

The idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

The starting point for the definition is not *the environment*, but *humans and human needs*. This was a deliberate choice from the commission, who did not want to concentrate the discussion only on the environmental problems. The commission argues that environment does not exist as a field separated from human actions, ambitions and needs. The two parts of “sustainable development” can be described by its two components: “sustainability” and “development”. While development primarily is tied to covering human needs, the demand or



condition of sustainability represents a restriction on the goal of development. These elements of the concept have been called “the goal of development” and “the proviso of sustainability”. Of the two elements, logically, the goal of development comes before the proviso of sustainability. (Lafferty & Langhelle, 1997: 56-59).

Does the report say anything about what needs to be done to make the development sustainable? According to Lafferty and Langhelle, it does. It is through a combination of changes in the social organization and technological development that sustainable development can be realized. The report is concrete in its suggestions particularly in two areas: biodiversity and energy. It suggests a decrease in energy consumption in the industrial countries of 50% during the next 50 years, saying that “there is no other realistic option open to the world for the 21<sup>st</sup> century.” (Lafferty & Langhelle, 1997: 63-65).

### **2.2.2 Local Agenda 21 as a strategy**

Five years after the release of *Our Common Future*, a strategy on how to achieve sustainable development is formed. The Agenda 21 document considers the local authorities one of the major actors that needs to be strengthened to achieve sustainable development:

*Because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives. [...] As the level of governance closest to the people, they play*

*a vital role in educating, mobilizing and responding to the public to promote sustainable development. (Agenda 21, 28.1).*

The theory is that many environmental problems, including those with global effects, spring out of local activities. Since local authorities best know the needs of their community and because it is the institution that handles the local planning, it will be an important institution in obtaining sustainable development. If each community takes care of its own environmental problems, and works towards sustainable development, global sustainable development will be reached through the cooperative effort. It is suggested that this promotion of sustainable development should be done through a dialogue:

*Each local authority should enter into a dialogue with its citizens, local organizations and private enterprises and adopt "a local Agenda 21". Through consultation and consensus-building, local authorities would learn from citizens and from local, civic, community, business and industrial organizations and would acquire the information needed for formulating the best strategies. (Agenda 21, 28.3).*

Local Agenda 21 is a plan/strategy involving the whole community. It includes a number of different initiatives that are planned and executed by all the actors within areas such as energy consumption, waste, and transport. The LA21 process is distinguished by the fact that initiatives from different actors are included as part of a whole, a strategy for a more sustainable community. It is this strategy with all its initiatives and different actors that is Local Agenda 21 for each community. Local Agenda 21 thus refers both to the plan or strategy being made to achieve sustainable development in a community, the actual initiatives being

done in the municipality, and the need to keep an overview of local challenges and options related to sustainable development. (GRIP, 2000: 8). Armann (1996: 14) summarises the suggestions made in chapter 28 of Agenda 21 as follows:

*Initiating a dialogue.* Agenda 21 emphasises participation and dialogue. A requirement for this is that everyone gain knowledge about the challenges that lies ahead. The purpose of the dialogue is to offer the actors a greater opportunity for participation.

*Composition of action plans.* The Local Agenda 21 plans have three parts. First, they are means to work out a common vision of how the municipalities can adapt to sustainable development in the long term. Second, strategies should be made on how to implement the initiatives needed to reach the goals. Third, one need to choose which first steps should be taken to start the necessary restructuring.

*Concrete projects and initiatives.* In some areas it is easy to find solutions, in other areas one has to use trial and error. It is important to start with initiatives where one has a greater chance of success. Early success has often been inspiration for more ambitious initiatives. It is vital that all sectors in the municipality are drawn into the process of realizing the plans and are given the opportunity to participate in projects within their area of expertise.

*Networks and information sharing.* Even though the local circumstances vary from municipality to municipality, experiences from other municipalities will be useful in developing initiatives and activities. Central authorities will be responsible for giving the municipalities the opportunity to share information.

The suggestions give a strategy for implementing LA21. In addition to this, the foundation Idébanken has put forth five principles the LA21 process should build on, and the guidelines have also been adopted by Kommunenes Sentralforbund

(KS). These principles puts LA21 apart from traditional environmental work, and are guidelines that needs to be taken into consideration during all parts of the LA21 process. According to these institutions, the LA21 process needs to build on:

*Global Responsibility.* A Local Agenda 21 must use the global environmental- and development problems as a point of departure. Traditional environmental planning has had a tendency to focus on local problems with local consequences. LA21 challenges municipalities and counties to adopt a much broader perspective in their work: a consciousness about the fact that it is the accumulated effect of everything that happens in all the world's local communities that creates the global problems.

*Long-term perspective.* Unlike the traditional municipality planning that usually have a perspective of four years, a Local Agenda 21 is meant to have a long-term perspective. If the society is going to be sustainable in 50 to 100 years, changes will have to be made today.

*Cross-sectorial thinking.* By having a long-term perspective, one can stop curing the symptoms and start concentrating on the fundamental problems with regards to lasting solutions. This work makes it important to have a holistic view and to think across sectors: Questions related to the environment and development cuts across different sectors and demands that we view nature, production, humans and the society in context.

*Knowledge.* To see everything in context requires knowledge. This is also an important element for motivating people to act.

*Participation.* Local Agenda 21 is meant to be a process that includes all of the local community, both when creating the agenda and in implementing it. The

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work with a LA21 can increase the understanding of those participating in the work or in some way take advantage of the knowledge that is produced.

It is also important to remember that Local Agenda 21 should not only deal with the environment, but also with development. Thus social and economical factors should be kept in mind, as well as the perspective on quality of life. (FIFI-rapport 8/99: 9). In the context of this thesis, this means that efforts to obtain sustainable energy consumption can not be justified in cases where this would give too high economic or social costs, or where peoples quality of life would be severely diminished.

### **2.2.3 Why participation?**

*Agenda 21* (23.2) describes “broad public participation in decision-making” as a “fundamental prerequisite for the achievement of sustainable development”. It is thus considered essential to mobilize the whole society and all nations in a joint effort to guide development in a sustainable direction. The case for increased public involvement in political decision-making and implementation is typically made in terms of: (1) functional gains to the political community (better decisions, more effective implementation, enhanced legitimacy and a more educated populace), as well as claims to; (2) fairness; and (3) increased opportunities for individual and collective fulfillment. These terms can be described as the «consequentialist», «entitlement» and «expressionist» justification for participation. With respect to deliberately orientating social change, participation can be understood as both a democratic imperative (as a guarantee that social actors will have some say in the direction of movement); and as a government strategy deployed to identify and affect necessary reforms. Participation can allow individuals and groups to reconcile and redefine relevant

interests, to contribute to shaping the future, and to adjust to impending change. It can contribute to building consensus and to identifying where consensus is impossible. Participation can promote the integration of knowledge, and the adaptation of governance to the diverse cross-cutting contexts relevant to sustainable development. (Meadowcroft, 2004: 165-166).

Meadowcroft (2004: 166-167) points out that a number of considerations are likely to prove critical if participatory processes are to contribute effectively to the social project of sustainable development. First, participation must be sufficiently broad to reflect a cross-section of concerned perspectives on the particular issue. Furthermore, the results of the process should be open to inspection by all interested parties. Without adequate representation of implicated interests, sustainable development policy-making will fail to take account of relevant problem dimensions and decisions will lack legitimacy. Second, movement towards sustainable development requires not just bargaining and compromise among existing interests, but the redefinition of interests and values to embrace a more environmentally stable approach. Third, scientific and technical understanding is essential to defining sound policies for sustainable development, but needs to be «converted» into a practical form suitable for political decision-making. Scientific knowledge must also be combined with other types of understanding, including those held by parties directly involved in a problem matrix, as well as the lay perspectives of ordinary citizens. Last, societies have to learn their way towards sustainable development, thus raising a need for factors that enhance learning potential.

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## 2.3 The Actors and their Roles

Agenda 21 suggests that “each local authority should enter into a dialogue with its citizens, local organizations and private enterprises and adopt ‘a local Agenda 21’.” The theory is that cooperation between actors will increase the potential to learn from each other, increase the awareness of sustainable development issues, and make it easier acquire the information needed to formulate the best strategies. (Agenda 21, 28.3). GRIP (2000: 8) mentions the following actors as part of the LA21 process:

- The municipality (politicians, administrative institutions, employees); the counties may be important actors in initiatives across county borders.
- Industry (suppliers, consumers, owners and employees)
- Organisations (members, “establishments” and networks)
- Citizens (inhabitants, consumers, and influential people)

Different actors may fill different roles, however. Meadowcroft (2004: 169) argues that there are three distinct strands woven into the discourse on participation in relation to environmental decision making: “the citizenship”, “the community-centered”, and “the stakeholder” participatory orientations. Each approach has its own focus, its own advantages and its own problems.

The *community-centered strand* emphasises *local communities*. Communities should be able to manage their own affairs; to contribute to environmental decision processes in the larger political units they are a part of; and to be involved in determining outcomes on issues that impact them directly. From the

community-centred perspective, it is enhanced participation within and by local communities that generates the functional benefits. Local communities frame individual lives, furnish an arena conducive to civic interaction, and provide an essential link to national policy-making. (Meadowcroft: 169-170). The community-centred approach focus on the local communities, which has implications on two distinct ‘levels’ of political interaction. Within such a community, both individuals and groups are drawn more actively into problem solving. With respect to the broader world, the community as a collective entity should be able to participate more fully in decisions that concern it; either through representation in the processes by which ‘higher’ jurisdictions take their decisions, or by acting in concert with other local communities. The community-centred approach relies on many of the participatory devices common for the stakeholder-approach and the citizen-approach, with the proviso that they operate at community level, or that they facilitate the community’s collective participation in more extensive decision-making. (Meadowcroft, 2004:177). Meadowcroft mentions the local visioning and planning exercises that are part of the LA21 processes as a promising way to mobilize local enthusiasm and to stimulate popular engagement in environment and development causes. (Meadowcroft, 2004: 183).

The *stakeholder strand* emphasises the common interests of groups bound together through social interaction, and the participation of all *social partners* in determining the best way forward. Stakeholders should work together to develop solutions to environmental problems in which they are enmeshed. From the stakeholder perspective, the inclusion of group representatives in the decision process underpins the functional gains. Taking the varied perspectives of organised groups into account improves the informational basis of decision-making, and can facilitate the reconciliation of diverse interests and perspectives. (Meadowcroft 169-170). Group-based processes start from an extensive



knowledge base because group representatives are already engaged in the issue area, and participants can more readily absorb new technical and scientific knowledge. Moreover, they have more time to invest in the process than do participants in citizen-based forums; thereby facilitating learning. Groups have a continuous existence above and beyond that of any individual representative. (Meadowcroft, 2004: 180-181).

According to GRIP (2000: 13), The municipality is given a central role in initiating, supporting and coordinating the LA21 process. This requires that the municipality has the necessary competence and resources to conduct the work. At the same time, the activities of the municipality should be conducted in a sustainable way. This includes running public buildings, working sustainability into the planning process, rules and regulations for business and other actors, and work on the infrastructure in the local community.

The foremost role of business and industry with regards to LA21 is to produce goods and services with as small environmental stress as possible. The industrial actors in a local community can cooperate to find common sustainable solutions, eg. joint transport, so that the total environmental stress is reduced. The industry also have a responsibility towards their employees, regarding the social and health, and towards the local society they are a part of. Business and industry can by themselves take initiative to start the work on LA21. (GRIP, 2000: 13).

The non-governmental organisations have been asked to make their own follow-up strategy of Agenda 21. The organisations can also bring in the necessary competence within specific disciplines in the work to achieve sustainable development, and as such be an important partner for cooperation for

municipalities and businesses. The NGOs are also expected to work on mobilizing the citizens in the work on LA21. (GRIP, 2000: 16).

The *citizenship strand* emphasises opportunities for each *individual citizen* to contribute to public life. Citizens should have access to environmental information, be able to participate in debate, and to take part in making and implementing environmental policy. From the vantage of the citizenship perspective, the benefits of participation result from the *direct* involvement of *ordinary* people in the process of environmental government. This breaks the policy monopoly of technical, business and political elites and introduces the perspectives, common sense and values of average folk into decision-making. Citizens are supposed to approach decision-making from the perspective of the good of the whole community (rather than their immediate concerns and personal interests). This is what generates improved decision-making, more effective implementation, enhanced legitimacy and a more educated populace. According to GRIP (2000: 17) the citizens of the municipality are all the actors, and therefore fill all the roles. They are consumers, owners, leaders and employees. They are members of organisations, politicians, and voters. As consumers of products and services, they are central actors in the shaping of an industry's environmental work.

Although participation by all actors may be important, Meadowcroft points out that it is not clear how engagement with these strands is to be combined, or indeed whether the participation of each is equally important in every context. (Meadowcroft, 2004: 171). Neither citizens, communities, nor stakeholders ought to be neglected in decision-making for sustainable development, but they may play different parts. It can be suggested that the appeal to citizenship participation is especially important to establish priorities and values that can orient decision

processes, and to settle contested issues on which compromise is impractical. The appeal to stakeholder participation is vital to facilitate the reconciliation and redefinition of group interests; the detailed elaboration of practical responses to particular problems; and the constitution of long-term interactive management bodies. The appeal to community-based participation is essential to involve local people in remaking their communities; to link national and international preoccupations with local circumstances; and to ensure that local concerns are incorporated in broader decision-making. (Meadowcroft, 2004: 179-180).

The substance of Meadowcroft's argument is that the stakeholder strand, with its group-based participatory processes, has the greatest potential in relation to participation in public decision-making for sustainable development. The community-centred strand is also significant, especially when it involves local stakeholders. The citizenship approach, with its emphasis on lay inputs, must be assigned a modest supporting role. The most fruitful avenues for enhanced participation in public decision-making for sustainable development depend on drawing together representatives of organised interests already entwined in the nexus of environmental problems rather than the noble 'citizens' or dynamic communities. He points out that some would argue that this is not genuine participation at all, but rather involvement by an elite group of representatives (from business, civil society organisations and central and local government) who are to some degree removed from the general public. He does emphasise, however, that there is an important distinction between a general contribution to the cause of governance for sustainable development and a direct involvement with public bodies in decision-making and implementation. While ordinary citizens may play only a limited additional role as direct participants in public decision-making, they may still play critical roles in the broader social transition to sustainable development. This can be done through electoral and party politics; civil society organisations and processes; by acting as responsible

consumers, employers, and employees; and through choices taken in the domestic sphere (living arrangements, 'lifestyle choices' and the raising of children).

(Meadowcroft, 2004: 184-185).

## 3. Methodology

### 3.1 Method

According to Yin (2003: 19), a research design is “the logic that links the data to be collected (and the conclusions to be drawn) to the initial questions of the study.” Among case study designs, four major types are relevant, following a 2x2 matrix. The first pair consists of single-case and multiple-case designs. The second pair, which can occur in combination with either of the first pair, is based on the unit or units of analysis to be covered – and distinguishes between holistic and embedded designs. Among these designs, most multiple case designs are likely to be stronger than single-case designs. Trying to use even a “two-case” design is therefore a worthy objective compared to doing a single-case study. (Yin, 2003: 19). Case study methods involve systematically gathering enough information about a particular person, social setting, event or group to permit the researcher to effectively understand how the subject operates and function. It is not actually a data-gathering technique but a methodological approach that incorporates a number of data-gathering measures. It may utilize a number of data-gathering technologies such as life histories, documents, oral histories, in-depth interviews, and participant observation. Case studies may be rather pointed in their focus or approach a broad view of life and society. The case study method tends to focus on holistic description and explanation. (Berg, 2004: 251).

Multiple-case designs have distinct advantages and disadvantages compared to single-case designs. The evidence from multiple cases is often considered more compelling, and the overall study is therefore considered more robust. On the other hand, the conduct of a multiple-case study can require extensive resources and time. Thus the decision to undertake multiple case studies should not be

taken lightly. Each case should serve a specific purpose within the overall scope of inquiry. One should consider multiple cases as one would consider multiple experiments. Each case must be carefully selected so that it either predicts similar results (a literal replication) or contrasting results for predictable reasons (a theoretical replication). If all the cases turn out as predicted, it will provide compelling support for the initial set of propositions. If the cases are in some way contradictory, the initial propositions must be revised and retested with another set of cases. (Yin, 2003: 46-47). Yin identifies five researcher skills associated with conducting good case studies. The first is an inquiring mind and the willingness to ask questions before, during, and after data are collected. The second is to listen, to include observation and sensing in general, and to assimilate large amounts of new information without bias. Third is adaptability and flexibility to handle unanticipated events and to change data-collection strategies if they do not seem to be functioning effectively and to use alternative sources of data that may be more fruitful. Fourth is a thorough understanding of the issues being studied in order not merely to record data but to interpret and react to these data once collected. The fifth quality is unbiased interpretation of the data. (Berg, 2004: 253).

In creating formal designs for case-study investigations, five component elements are recommended (Berg, 2004: 257):

*Study questions.* These are generally directed toward how and why considerations, and their articulations and definition are the first task of the researcher.

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*Study propositions or theoretical framework.* An exploratory study, rather than having propositions, may have a stated purpose or criteria that will provide guidance and a kind of operating framework for the case study to follow.

*Identification of the unit(s) of analysis.* The unit of analysis defines what the case study is focusing on.

*The logical linking of the data to the prepositions (or theory) and the criteria for interpreting the findings.* These are typically the least developed aspects of case studies.

The analysis of case study evidence is one of the least developed and most difficult aspects of doing case studies. Unlike statistical analysis, there are few fixed formulas or cookbook recipes to guide the novice. Instead, much depends on an investigator's own style of rigorous thinking, along with the sufficient presentation of evidence and careful consideration of alternative interpretations. (Yin, 2003:109-110). Having a general analytical strategy will help treating the evidence fairly, produce compelling analytic conclusions, and rule out alternative interpretations. Three such strategies are to rely on theoretical propositions; to think about rival explanations; and to develop a case description. The most preferred strategy is to follow the theoretical propositions that led to the case study. The original objectives and design of the case study were presumably based on such propositions, which in turn reflected a set of research questions, reviews of the literature, and new hypotheses or propositions. (Yin, 2003: 111-112). The general strategies underlie specific analytic techniques to be used as part of and along with the general strategies. The specific techniques described are pattern matching, explanation building, time-series analysis, logic models and

cross-case synthesis. The technique of pattern-matching compares an empirically based pattern with a predicted one (or with several alternative predictions). If the patterns coincide, the results can help a case study to strengthen its internal validity. (Yin, 2003: 116).

This research will be based on a comparative case study of the municipalities Halden and Lier. The study will compare the two municipalities with regards to the involvement of different actors in the political process, in order to explore how involvement of different actors in decision-making affect the municipalities' performance in the transition to sustainable energy consumption. The study is conducted by looking into the plans made for the LA21 process in the municipality, and by looking closer at a few energy-related initiatives going on in the two municipalities. This makes the study an embedded, multiple-case study, where each project is an embedded unit of analysis. By comparing the two municipalities and the actors involved in the process of obtaining energy efficiency in each of the municipalities, any difference in the way the cities focus on and use the different actors will be examined to uncover if and how actor involvement contributes to obtaining energy efficiency. The study use Local Agenda 21 as a frame, and the actors will be analysed with regards to the role they play as part of an ongoing LA21 strategy.



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## 3.2 Analytical Approach

### 3.2.1 Framing the Study

This study views the LA21 process as a strategy based on four suggestions: initiation of dialogue, making of action plans, initiation of projects, and creation of networks for information sharing. It also recognizes that the LA21 differ from traditional environmental work, by building on global, long-term, holistic thinking; and involving participation and different kinds of knowledge. The study will be focusing on participation as a part of LA21, and thus will not be looking into all the other aspects of LA21. The involvement of different actors will be analysed in relation to the dialogue between the local authorities and other actors, the participation in relation to making action plans, and the involvement of different actors in different initiatives. As the study focus on participation between actors *within* the municipalities, networks and information sharing between different cities and regions will not be considered. This also means the community-centered strand discussed by Meadowcroft above will suffer little attention in the analysis.

The suggestion made in Agenda 21 is that local authorities should initiate a dialogue with different local actors. Since the authorities are seen as the coordinator of the LA21 process, the study will use the local authorities as a starting point and explore how other actors – industry, NGOs and citizens – are included in the planning processes and implementation of projects to obtain sustainable energy consumption. It is not a requirement in the LA21 process that the local authorities are involved in all initiatives to obtain sustainable development, and it is possible that the municipalities have ongoing initiatives that doesn't involve the local authorities in any way. By framing the study the way I do, such initiatives will fall outside of my exploration. Since the point of

the study is to see how different actors are drawn into the process of decision-making, the role of the municipality will naturally play a part. Even though I only discuss three projects from each municipality, these projects have been selected from a collection of projects in the municipality because they illuminate some significant differences to the way the two municipalities involve different actors. The choice to showcase only a few projects from each municipality has been done for several reasons. One is simply that it was few projects to choose from. Another is that examining the different projects in depth would increase the time and space necessary to complete the study. I still feel the selected projects will give some insight into the contributions made and the role played by different actors in the transition to sustainable development.

### **3.2.2 Conducting the Study**

The study is conducted as a comparative case study of the municipalities Halden and Lier. It compares the two municipalities to explore how differences in actor involvement affects the degree of success in obtaining sustainable energy consumption. The study uses the pattern matching technique to analyse differences in actor participation both in different part of the LA21 process within the same municipality, and between the municipalities. A general account of the trends in energy consumption in the municipalities will be given, but the study will not be linked directly to the total energy consumption in the municipalities. Since the study takes a closer look at several parts of the LA21 process, and only looks at three projects in each municipality, it would be difficult to estimate the total contribution of each project towards the obtainment of sustainable energy consumption. The selected projects are chosen because they either has a large impact on the energy consumption of the municipality (in terms of changes in energy consumption, which may be due to the sheer size of the project), or because of the potential impact it could have on energy consumption.

The contribution of different actors will be analysed in relation to their participation in the dialogue in the municipality, their involvement in the making of action plans, and their participation in the initiation and implementation of different projects.

The study has been conducted mainly through document research, in combination with correspondance (in person, through e-mail, or by phone) with actors in both municipalities. The information gathering started out by visiting the municipalities to establish contacts within the local council, which helped me with access to political documents. Through the service center in the communities, I was able to find the people who would could best provide me with information on the LA21 work and the energy policy in the city as well as information on other sources to contact. In addition to the plans, I have been accessing the municipality archives to go through political documents and letters sent out in relation to the LA21 work, as well as documents regarding energy-related projects in both municipalities. More information, including local energy reports, have been gained by searching on each municipality's home page. I have also been in contact with other institutions like Enova and Statens Forurensningstilsyn to gain information related to specific projects or documents where these institutions have had a part to play.

Although the study originally was meant to span the period from the release of the Agenda 21 document in 1992 to the present day (2008), information on energy-related projects in the municipalities before year 2000 has been difficult to find. Therefore, the study concentrates on what has happened in the municipalities from year 2000 onwards. It is important to note that Local Agenda 21 did not suffer much attention in Norway until year 1997, partly because of the MIK program and reform. Lier got its first LA21 plan in 1998, and Halden

started its work on LA21 two years later, in 2000. Since LA21 didn't suffer much attention in the municipalities until 1998, I do not consider it too much of a problem starting my analysis from 2000 onwards.

### **3.2.3 Conducting the Analysis**

The analysis is conducted through a series of steps. Three sub-questions have been posed to guide the research. The sub-questions build on each other, and give an empirical framework for explaining to which degree different actor participation can explain a municipality's performance concerning sustainable energy consumption. The first sub-question is:

- a) To what degree are the municipalities focusing on sustainable energy consumption?

The purpose of asking this question is to explore whether an eventual lack of initiatives in a municipality is the result of a lack of attention on energy consumption in general, rather than a bad implementation of the LA21 process. Even if energy consumption is discussed in plans, it does not necessarily mean it results in the implementation of projects. The question is answered by going through municipality plans and other plans used to guide the political process in the municipalities, and by looking at different projects and initiatives that have been going on and are going on in the municipalities. A municipality will be considered to have a high focus on energy consumption if (1) energy consumption is being a topic in different action plans, complete with goals and strategies; (2) the plans are being followed up with concrete results. It will be a plus if the local council is the initiator of some projects, and not only a supporter,

since this shows an actual willingness to do something about the energy situation rather than leaving it up to other actors to take a lead. Once it is established if there is a focus on energy in the municipality, the next question will be:

- b) To what degree and how is the issue of sustainable energy consumption addressed through the LA21 process?

This and the next question will be analysed simultaneously. While the next question deals with the actors, this question deals with the participatory process itself. The interaction between the local council and the other actors is framed by the way the participatory process is conducted. Different parties must be given an opportunity for participation. Agenda 21 speaks of dialogue; the making of action plans with a shared vision; and the implementation of initiatives as a part of the LA21 process. This question intends to explore the opportunities the actors are given to participate. The next question will then follow up by looking for the “pattern of participation” among the actors:

- c) To what degree are different non-state actors addressed and included in the efforts to obtain sustainable energy consumption?

Having explored the opportunities for participation through the LA21 process in the municipality, this question follows up by looking at the differences in actor involvement in the two municipalities. This question is close connected to the last in that the exploration of the LA21 process will largely deal with the interaction of the different actors as well. It is a goal for the LA21 process that all actors, at all stages should be able to participate. If there is a difference between the actors

that takes part in the process, which part they take in the process, or to which degree they are part of the process, this will be explored now. Together, the three sub-questions will make it possible to answer the main question of the thesis:

- To what degree can differences in actor participation explain a municipality's performance concerning sustainable energy consumption?

### **3.2.4 Sources**

#### *Documents*

Several different sources has been consulted in the work on this thesis. The annual energy reports for both municipalities has been used to gather information on the energy consumption in both cities, including major energy users and the trends in energy consumption. Municipality plans and action plans has been used to find information on the focus given to the issue of energy consumption through the span of years this study covers. The documents has also been useful with regards to finding references to energy projects that has been initiated or planned in the municipalities. Political documents from the municipality archives has given further information about the different projects I have been looking into, as have digital documents about the projects found on the net. Regarding Halden, I was informed by my main contact that a lot of the documents regarding the work on LA21 has been lost, which is unfortunate. Still, I have been able to gain enough information to get an impression of the LA21 process in the municipality. I have also been looking into earlier research on LA21. Here, several books and reports from Prosus have been helpful. Last, I have been looking into reports

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made on behalf of the Norwegian government (Norges Offentlige Utredninger) and some laws of importance – especially Plan- og bygningsloven.

### *Informants*

I have had a main informant in both Halden and Lier, which have provided me with information and referred me to other sources of information as necessary. My main informant in Halden told me quite early that the work on LA21 in Halden had been abandoned soon after the work started. He was kind enough to search through the archives for me and found some information on the work between 2000 and 2004. I have also been given access to these documents myself. The documents show that plans had been made and work started, but after 2004 no new information was found. Although many of the people that originally had been working on LA21 between 2000 and 2004 no longer live in Halden, I have still been able to reach some of them through mail or phone. My main informant in Lier has, much like the one in Halden, provided me with names on other contacts and access to documents.

I have also been in contact with Enova. Through phone calls and mail, I was able to gain a list of energy-related projects in Halden and Lier that had applied for support through Enova, as well as some suggestions of other institutions to contact in relation to energy-related initiatives in both municipalities. SFT has provided me with LA21-related material from their archives, which has been of use when researching LA21 as a strategy.

### **3.2.5 Limitations of the study**

Although the study explores the participation by different actors in the LA21 process and the role they play in a transition towards sustainable energy consumption, the study will have some limitations in what the acquired knowledge can tell us about the actors and LA21 process in general. These limitations are important to be aware of. First, the study limits itself to the programme area of Agenda 21 that deals with changes in energy consumption, and any findings will relate to this programme area of Agenda 21. Different actors are meant to play the same role within all programme areas of Agenda 21, and so the contributions made in this area should be generalizable to other areas of Agenda 21 as well, but actors can in some cases play a significant role simply because of their relation to the field of energy. In those cases, the choice of issue may influence the contributions made by specific actors. Second, the study limits itself to a case study of two municipalities which are rather similar. It would be necessary to make further studies in other municipalities to test the generalizability of the findings. For short, the narrow focus, both in the choice of field and the number of municipalities studied narrows the immediate use of the findings.



## 4. Halden

This chapter explores the case of Halden. It starts by giving some general information about the municipality to make the reader more familiar with the place and some of the central actors and locations that will be referred to later. It then goes on to explain the energy situation in the municipality. The section on the energy situation is added to give a broad overview of how energy is produced and consumed in the city, as well as pointing out some of the opportunities the municipality has to change its energy consumption in a sustainable direction. The chapter continues by giving an account of how different actors are involved in obtaining sustainable energy consumption in the municipality. Three projects will be presented here. The first is a project at Fredriksten fortress, where the lightning illuminating the fortress at night is being changed. The second is the planning district heating in the municipality. The third is the building of a new city district.

### 4.1 About the Municipality

#### 4.1.1 General Information

Halden is a municipality with close to 28,000 inhabitants. It lies in Østfold county, on the Swedish border. Halden and Svinesund form the gateway to Norway. Oslo is situated just under two hours to the north, with Gothenburg about the same distance to the south. Today, Halden is a modern town with a central position in the country's history. It was therefore natural that Bjørnstjerne Bjørnson should mention it – Fredrikshald – in Norway's national anthem. Fredriksten fortress, Østfold's millenium site, and with a central role in the celebrations of the dissolution of the union with Sweden in 1905, stands as a monument to the Norwegian will to defend itself during times of unrest. Today

the fortress is one of the town's most important and much visited tourist attractions. Approximately 200000 tourists visit the fortress each summer. Halden is today home to a number of technology based companies. Co-operation between the council, business community, Østfold University College and the Institute for Energy Technology has contributed to a splendid development and led to Halden being an interesting and important site for the establishment of high technology business and research/learning based facilities. Halden's background is in the field of timber production, information technology, electronics, mechanical, chemical and production industries. (Halden kommune, 2008d). Norske Skog Saugbrugs was established in Halden in 1859. It is today part of Norske Skog, which is a global group operating in many countries. It produces paper for magazines, and has today 700 employees. (Hestmark & Sætermo, 2005). Halden was in the autumn 1996 awarded the first environmental city award in Norway, together with Harstad and Kristiansand. (Halden kommune, 2000a: 4).

#### **4.1.2 The Energy Situation in Halden**

Local energy reports are an injunction from the Norwegian Water Resources and Energy Directorate (NVE) meant to increase the knowledge about local energy supply, stationary energy consumption and alternative sources, leading to a social rational development of the energy system. The purpose of the local energy reports are to make way for environmentally friendly energy solutions that give short- and long-term socio-economic benefits. The report is not meant to be a plan or to make suggestions, but to be a starting point for actors wanting to realise possible solutions. (Fortum, 2004: 4).

The energy consumption in Halden has been split into four main sectors in the energy report: households, industry, the business sector, and primary industry.

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The pattern of energy consumption in Halden is special because so much of the energy is consumed by industry. This means that industry – with Norske Skog Saugbrugs as the main contributor – largely determine the changes in consumption patterns. Industry was responsible for 76% of the energy consumption in Halden in 1997, compared to 38% on a national basis. In 2005, it was responsible for more than 81% of the total energy use. Electricity is the main source of energy in the industry. The industry has had a strong increase in the consumption of electricity during the early 90s, while consumption from other sources varied. The increase in consumption may have been due to changes at Norske Skog Saugbrugs, but not necessarily. Between 1995 and 2003, the energy consumption in the industry was stable, before decreasing between 2003 and 2004, and then increasing again. The electricity use in the industry has been decreasing between 2000 and 2006. The energy use in the other sectors have been more stable. Households and the business sector has had a steady increase in the use of electricity between 1991 and 2006. The use of other energy sources has decreased between 1991 and 2001. The electricity consumption, which is the main part of the energy use for the primary industry, has decreased between 1991 and 2004. (Fortum, 2004: 17-20; Fortum, 2005: 19-22; Fortum, 2006: 12-14; Fortum, 2007: 12).

Total energy use in Halden was 2,244 GWh in 2005. Of this 1761 GWh was electricity, 84.1 GWh from petroleum products, 15.5 GWh from gas and 383 GWh from biofuel. It is assumed that the energy use will increase by about 78 GWh towards 2025. Most of the increase will be in the household and service sector, and it will mainly be the use of electricity and biofuel that increase. (Fortum, 2007: 12). Halden has a potential for use of biofuel and solar energy. The municipality has a large and two small hydropower plants today. There are plans to use district heating in Halden centrum, at Sørlifeltet and Remmen. Other

means to reduce the energy consumption is the building of energy-efficient apartments, use of heat pumps, and energy-efficiency in large buildings.

## 4.2 Obtaining Energy Efficiency in Halden

### 4.2.1 Dialogue

In 1999, the environmental advisor, Karin Fahlstrøm, is given the responsibility for working out a program for the work on LA21 in Halden. The work on LA21 in Halden is also designated “Miljøkommunen Halden 2020”. (Halden kommune, 1999). In April 2000, the environmental advisor gives a short orientation on how the work on LA21 will be conducted the coming six months. The purpose of the work being done in 2000 will mainly be to establish a working network for cooperation with the local population and to start education of public employees in Halden in relation to the environment. (Halden kommune, 2000e). A participatory plan related to area planning, agriculture, districts and the work on LA21 is sent out. The environmental advisor is at this time working on a suggestion for prioritized areas and initiatives for the LA21 work. It is mentioned that one prioritized initiative could be to start working on establishing good places to meet and networks by mapping out needs and options in relation to the most relevant LA21 themes through a participatory process.

The participatory process is meant to engage individuals (organised or not), schools (through student and parent representatives), different organizations and associations, and industry. Due to few resources, it seems most rational to establish a standard for meeting places and networks to be used in the coming years. The standard could be adjusted as necessary later.

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The suggested pattern is:

1. Møteplass Miljøbyen Halden 2020. A meeting space for all individuals, organisations, institutions and industry who wish to gain or give information about LA21 (Miljøkommunen Halden 2020) should be established. Invitations to the meetings will be sent out by letters (to the organizations) or newspaper advertisements whenever projects for “Miljøkommunen Halden 2020” has been accepted. Open meetings are assumed to be needed once or twice each year, and it is suggested that a workgroup with basis in the meeting place should be established to follow up on the work on LA21.

2. Lokalsamfunnsmøter Miljøbyen Halden 2020. The municipality will be split into local community districts, based on the elementary school districts. In relation to all work on municipality plans or LA21, individuals, organisations, institutions and industry within the affected areas will be invited to take part. (Halden kommune, 2000c).

Soon afterwards, the invitation to the first LA21 meeting is sent out. The work on LA21 in Halden starts the 5<sup>th</sup> of June 2000, with the first “Møteplass Miljøkommunen Halden 2020” meeting. The goal at that meeting is to make a vision for how Halden should develop towards year 2020 and afterwards. (Halden kommune, 2000b). The vision made is that Halden should be a good place to live, without risk of damaging body or soul. Six goals are formulated, one of which is to develop businesses and economy in a sustainable way. After the original meeting where the basic visions and goals are made, the municipality decides to commit itself to the Fredrikstad declaration. This happens the 22<sup>nd</sup> of June 2000. (Halden kommune, 2000d).

Individual action plans to achieve the goals and visions of the first LA21 meeting is made through district meetings in the autumn 2000 and spring 2001. The meetings are coordinated with participatory work on municipality plans and an energy- and climate plan that was ready in April 2001. Exactly one year after the first meeting; the 5<sup>th</sup> of May 2001, a new collective meeting is held. This time a collected document for LA21 – Miljøkommunen Halden 2020 – is made, based on the district meetings and action plans made during the last year. The goals of the first meeting is the point of departure, but now they are given sub-goals, including quantifiable goals, which provides some ideas for how to realize the main goals. Space has been provided in the document to include projects and activities that should be implemented, complete with a time span and which actors would be responsible for the implementation, but no activities has been added. The planned strategy at this point is to implement projects and initiatives suggested in the action plans, and to evaluate the LA21 process through annual meetings like the ones in 2000 and 2001. (Halden kommune, 2000d). After this second meeting, no records of more such meetings are found, and the LA21 plan has not been evaluated and revised. The environmental advisor quit around 2002, to be replaced by another for about six months. She was later offered another position. According to Granum, the transfer was likely a result of “the politicians not wanting to have an environmental advisor”. (Granum, 2008). Halden has not had an environmental advisor since, although they are currently looking for a new one at the moment. ([www.halden.kommune.no](http://www.halden.kommune.no)).

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## 4.2.2 The Action Plans

### *The Climate and Energy Plan*

Halden received support from Statens Forurensningstilsyn (SFT) in 2000 to develop an energy- and climate plan. The work is conducted between 2000 and 2001, which coincide with the start of the work on LA21, and the plan does point out that the work has been conducted as part of the LA21 process. The action plan has status as partial municipality plan, and is made in cooperation with several actors from industry and NGOs. Consultants from KanEnergi AS is hired to predict emissions and assess suitable initiatives. The action plan predicts the energy situation in Halden towards 2010. The development of Saugbrugs will, according to the plan, be significant with regards to the total energy consumption and emissions. In order to reduce the emissions, the plan notes, energy efficiency will be a very important factor, but also alternative energy sources will be important. In the plan it is suggested that Halden should join the national goal from Kyoto of maximum 1% increase in emissions between 2001 and 2010 compared to the level of emissions in 1990. This means Halden have to reduce its emissions in 2010 by 22,000 ton CO<sub>2</sub> equivalents compared to the predicted development. (Halden kommune, 2001a). The plan makes several suggestions on how to reduce the emissions. One of the central points in the energy- and climate plan was the suggestion to develop a system for district heating in cooperation with Saugbrugs. (Granum, 2008). It is suggested that areas that may benefit from district heating should be identified. The possibility of establishing a district heating system should be researched, and Saugbrugs is mentioned as a possible actor. The district heating system should be coordinated with new building plans, and one should avoid competition between district heating and other renewable energy sources when raising new buildings. (Halden kommune, 2001a).

### *The LA21 plan*

The climate- and energy plan is one of the documents that lays the basis for the LA21 plan that is made the 5th of June 2001. The plan includes six main goals, and adds a number of subgoals. One of the sub-goals deals with renewable energy and energy efficiency, and states that the total energy consumption should not increase and that one wishes to increase the use of renewable energy sources in the local energy supply. Specifically it is mentioned that:

- The energy consumption per person in Halden (exclusive industry) should be reduced by 10% from 23,700 kWh per year to 21,300 kWh per year.
- The part of energy coming from biofuel should be increased from 15% to 25%.
- Solar energy used for water heating should be at least 1 m<sup>2</sup> solar panel per citizen.
- The potential of wind energy in Halden should be researched.

The goal from the climate and energy plan to reduce greenhouse gas emissions by 22,000 ton CO<sub>2</sub>-equivalents before 2010, down to a maximum of 137,000 ton is a goal that is repeated in the LA21 plan. There are other references to energy use as well, especially with regards to the local energy supply. It is mentioned that local energy supply should be increased from currently 23%, but no target is specified. No specific demands have been placed on industry and organizations regarding energy use, although it is mentioned that the environment should be considered in the activities performed by organizations and industry. Furthermore, the public management, as well as industry and organizations should conduct their



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environmental work according to established systems (ISO 14001, EMAS, Miljøfyrtårn). (Miljøkommunen Halden; [www.halden.kommune.no/index.asp?SideID=403](http://www.halden.kommune.no/index.asp?SideID=403)).

### *The Industrial Strategy Plans*

In the industrial strategy plan for Halden 2002-2006, the work on LA21 (Miljøbyen Halden 2020), the energy- and climate plan, and the plans for environmental certification of industry is given attention. In the revised plan for 2006 to 2010, there is no mentioning of the energy- and climate plan. However, the plans for district heating is mentioned. Both plans are split into four parts. The first part deals with communication, relating both to transport, and to dialogue within the municipality and with other regions (including swedish regions). The second part deals with industry and business, the third deals with education and scientific work, and the fourth deals with culture and sport. The work on LA21 and energy is discussed under industry and business. The plan for 2001 mentions that a detailed program will be made during 2001 to realise visions and goals. (Halden kommune, 2001b, Halden kommune 2006). The program referred to could be the LA21 plan which was completed the 5<sup>th</sup> of June, but the goal is mentioned again in the plan for 2006-2010, and according to Sørås (2008), no detailed plan has been made.

### **4.2.3 Projects and Initiatives**

#### *Lighting Fredriksten Fortress*

Fredriksten fortress is declared “Millennium Site of Østfold” (Østfolds Tusenårssted) the 17<sup>th</sup> of November 1999 after an initiative from the Ministry of Culture in relation to the millenium change 1999/2000. The millennium sites is

also meant to be playing an important role in celebrating the decade since dissolving the union with Sweden. At the same time, important places of historical, cultural and environmental importance will be conserved. (Ericsson, 2006: ii). A committee is created, and makes its suggestion in the autumn 1999 that Fredriksten fortress should be the millenium site of Østfold. The committee informs the commander on Fredriksten fortress of their choice. Actors currently occupied with activities at the fortress is invited to a meeting to discuss eventual consequences and possible initiatives if the choice of Fredriksten as a millennium site is confirmed. The meeting is held the 28<sup>th</sup> of October with participants from Halden kommune, Halden historiske samlinger, Fredrikstens festnings venner, Halden turistkontor, and Hærens forvaltningsskole/Fredriksten kommandantskap. When the fortress is finally declared the millenium site of Østfold, the millennium site project is organised with a steering group, a planning group, and five smaller project groups. The five smaller projects are based on existing activities, but with the vision that “the fortress shall be a meeting place for cooperation, cultural experiences and activities, and that it should be open to inspiration from other cultures and represent futuristic values with perspectives beyond Østfold county’s and Norway’s borders.” The five smaller projects are named “Renewal”, “Information centre”, “Museums”, “Meeting Space”, and “Tourism”. The goal of the “Renewal” project is to make improvements to the fortress to make it more accessible and user friendly to visitors, and enhance their experience. This includes cleaning up and making repairs to different parts of the fortress, putting up signs with directions or information, and to expand the lighting of the fortress. The other small projects has as their goals to improve the access to information, both through a multimedia presentation and through expanding the information given in the museums. It also includes expanding on the use of the fortress as a cultural centre to be used for concerts, exhibitions, or other events. It is also a goal to draw more people from outside Halden to the fortress, and to make them stay longer in the city. (Ericsson, 2006: 9-21).

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Several actors have been involved in the “Renewal” project. Nasjonale Festningsverk, 1000-årsstedet and Fredriksten festnings venner has been responsible for replacing and expanding the lightning. Fredriksten festnings venner will also be responsible for the future handling of the lightning. (Nakken, 2005). The Museum director for Haldens Historiske Samlinger at the time, Ole Rømer Sandberg, suggested in the spring 2002 that the lightning at Fredriksten fortress should be renewed (Selmer, 2005), and the expansion of the fortress lightning did develop to become a large part of the “renewal” project. The original plan was simply to expand the lightning to include a larger part of the fortress, but it was soon apparent that the existing system needed to be replaced, and that it was also very energy demanding. (Ericsson, 2006: 15). The western side of Fredriksten fortress had then been illuminated for more than 20 years by lighting with an effect of 90 kW and an intensity of 4,000 lux, which is eight times more than needed. (Selmer, 2005; Ottersen, 2005a). A complete change of the lightning was not part of the budget for the Millennium site project, but six actors has shared the costs of the new lightning system. These actors are Fredriksten Festnings Venner, Mansbachs stiftelse, Tusenårsstedet, Halden kommune, Nasjonale Festningsverk and Halden Sparebank. (Ottersen, 2005b). Enova has supported the project with 100,000 kr. (Nakken, 2005). This is the first time Enova has given support to lightning for this purpose, but they feel this example shows it is important to put a focus on this use of lightning in the future. (Selmer, 2005).

The new lightning has been expanded to include a part of the fortress that lay in the dark earlier. With the expansion, the result is twice the amount of lightning for one third of the cost. While the earlier lightning had an effect of 90 kWh, the new lightning has an effect of 30 kWh. The new lightning has led to a different view of the fortress at night since it is a white light and not a yellow one as it was earlier. The fact that the new lightning was expanded to include the path from the city to the fortress also means it is no longer disconnected from the city by a

black belt, but tied to the city to a larger degree. (Ottersen, 2005b). The new lightning became a topic for debate among the citizens in Halden, soon after the change, and the citizens were split in their views. Many felt the new lightning was too weak, which is natural when comparing to an amount of lightning that has been too strong. Erik Selmer, who was hired in as a light designer and worked with the other actors responsible for the change of lightning on the fortress, has suggested that Halden should make a plan for the use of lightning in the city. This would make it easier to avoid “light pollution”, with strong lightning from other sources that may be disruptive to the view of the fortress. A plan for the use of lightning would also be economically sound, and would give reduced costs when light sources needs to be replaced. (Ottersen, 2005a).

### *District Heating*

District heating has been planned for Halden since the suggestion was made in the climate and energy plan in 2001. The plan points out that there is a great potential for district heating in the centrum of Halden through the use of waste heat from Saugbrugs. However, it is also pointed out that the conditions for immediate implementation of a district heating system are bad, because very few buildings are equipped with the systems needed to connect to a district heating grid. (Halden kommune, 2001a: 7).

Halden takes initiative to a further investigation of the potential for a district heating system after suggestions made in the energy- and climate plan. In 2003, a heat plan for the centrum of Halden is developed in cooperation between Halden and the ENØK center in Østfold (at that time called Demp AS). The investigation uncovers a potential for district heating, and points out that Norske Skog Saugbrugs will be an interesting partner. The plan mentions that there are currently several ongoing building projects, and thus the conditions are right for

an efficient heat distribution. The plan uncovers a potential for heat distribution of 13.8 GWh per year. It is recommended that concession for district heating is applied for as soon as possible, with a following resolution in the local council that new buildings must connect to the grid. This because the profitability of the project is vulnerable to the loss of customers. (Halden kommune & Demp, 2003: 2, 4). This suggestion is not acted upon by the local council. (Granum, 2008).

Three years later, in the autumn 2006, a report is prepared regarding the possibilities of building of a system for district heating. The report is also an update of the heat plan from 2003. The report is presented to the municipal executive committee, who decides that one should start working on establishing a plant for district heating. The committee mentions that the work should be viewed in light of the need for a new system for renovation. (Halden kommune, 2007). Since 2003, the potential for district heating has been reduced to 8 GWh. Dialogue with Saugbrugs has been reinitiated at this point, but it is found that it is also no longer profitable to use waste heat from them as the energy source. Because of this, a temporary solution based on biopellets are considered. The recommendation from the heat plan is repeated: there is a need to start the development of district heating as soon as possible to avoid a further loss of possible customers. At this time, the municipality signals that it does not wish to be responsible for the building and owning the district heating system, and it is a possibility that Østfold Energi may accept the task. (COWI, 2006: 3).

The 8<sup>th</sup> of May 2007, Østfold Energi applies for concession for district heating in Halden centrum. The temporary solution with biopellets as an energy source is planned established in 2008 and be replaced by a permanent heat pump fueled by waste heat from Saugbrugs after 5 years. (Østfold Energi, 2007a: 4). In addition to this application, two other applications for concession for district heating in

Halden are sent the 20<sup>th</sup> of September. One is for Sørlifeltet, the other for Remmen. The two districts has a potential for district heating of 4.5 GWh each. (Østfold Energi, 2007b: 3; Østfold Energi, 2008c: 3).

In the hearing to the applications for concession for district heating, Halden decides to warn against granting concession to Østfold Energi. At this point Halden signals that it wish to handle the building of the district heating system itself after all, in cooperation with other actors. It is argued that it would be easier for the municipality to coordinate the building of the district heating grid with renovation and upgrading of the sewer system. The local council wish to look into the potential for use of waste heat from Saugbrugs a second time. In the application from Østfold Energi, this was considered, but discarded due to economy. The municipality hopes to make the use of waste heat from Saugbrugs part of a larger environmental agreement with the company. Since the application from Østfold Energi, two more actors – Daimyo Varme AS and Hafslund Varme – have shown interest in the project, and the municipality wants to consider all on equal grounds. The municipality considers the best solution to be that the municipality applies for concession itself to later invite tenders on it. The local council recognize the necessity of acting soon to avoid losing customers, but mentions that an internal investigation has been started to examine the potential to instruct builders to use solutions that makes possible a later connection to the district heating system independent of given concessions. District heating and the possibility of an incineration plant has been brought to the fore now since deposition of combustible waste is likely to be prohibited from July 2009. This makes it necessary for the municipality to find other solutions for 15,000 ton waste, and an incineration plant has been considered. (Halden kommune, 2008b). This leads Halden to apply for a concession of its own in August 2008. (Halden kommune, 2008c).

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### *Building a New District*

One of the areas that would be interesting in relation to the planning of a district heating system has been the area near Halden harbour. Different property developers have been responsible for the construction of buildings at the site. The area has been subject to construction of new apartments since the start in 1992. Construction has happened in two phases. The first phase was between 1992 and 2000. (Bakke, 2008). This is during a period where LA21 did not suffer much attention in Norway or Halden (until near the end), and Halden did not have an environmental advisor at the time. All the apartments built in this phase use electricity for heating.

The next building phase is between 2005 and the present (2008), with more to come next year. This phase also includes the construction of a hotell, a culture centre, and nursing homes. Except for a small number of housings connected to the hotel part of the district, most of the apartments built in this phase also use electricity for heating. (Bakke, 2008). For the part of the district involving the hotel, the culture centre, and the nursing homes, a solution with a sea water heat pump has been made. (Haugen, 2008). This concept works well in areas with energy demanding buildings close to the sea. As long as the energy demand is above 700,000 kWh, the solution is economically viable. Compared to a heating system based on oil, gas, or electricity, a heat pump will reduce the energy consumption up to 80%. The heat pump gives a sustainable energy supply, and has the potential to be connected to an eventual district heating system at a later point. The sea water heat pump will be the first delivery of Teknotherm Energy's "investment free energy to heating and cooling , significantly cheaper than bought electricity. Teknotherm AS has been a leading industry within design, production and upkeep of cooling-, freezing, and heating systems since 1983. Teknotherm Industry was established in 1997, and Teknotherm Energy AS was established in 2007 as a development of the Industry unit. Teknotherm industry

produces the systems delivered by Teknotherm Energy AS. Teknotherm Energy's contracts usually lasts for 10 years, but can be cancelled before the period has run out. If that happens, a price to cover Teknotherm's costs for running and making upkeeps on the system will be demanded. This price decreases each year. (Teknotherm Energy AS, 2008).

It is interesting to notice that the municipality has not been taking initiative to energy efficient building construction. Neither the culture centre nor the nursing homes was planned with the the heat pump as an energy source. Only on the initiative from Teknotherm was that solution chosen. (Haugen, 2008). The last phase of building construction started at a point where nothing was happening regarding the plans for district heating, despite the fact that the municipality had been warned not waste time in developing the district heating plans since they might lose potential customers.



## 5. Lier

This chapter explores the case of Lier in the same vein Halden was explored in chapter four. It starts by giving some general information about the municipality, before it continues with an account of the energy situation. It then explores the focus of energy consumption and the involvement of the different actors in the effort to obtain sustainable energy consumption in the municipality. Three projects are presented here as well, as a way to illuminate the participation in the municipality. One is a project with the purpose of making public buildings more energy efficient, another is a community development project, and the last is the planning of district heating in a part of Lier.

### 5.1 About the municipality

#### 5.1.1 General Information

Lier municipality lies in Buskerud county. The municipality has 22,700 inhabitants (per 01/01/08), and covers an area of 301.3 km<sup>2</sup>. ([www.ssb.no/kommuner](http://www.ssb.no/kommuner)). It lies west of Oslo and north-east of Drammen. The municipality is viewed as “green” due to its large production of vegetables, apples and berries, but it also covers much industry. There is a lot of commuting to and from the municipality. Lier lies in the “battle zone” between Drammen and Oslo, and suffers pressure from both. The municipality can experience growth by giving room for Drammen and Oslo. At the same time, it possesses unique scenery and resources that may easily be lost with extensive growth. (Lindseth 2002: 39).

### 5.1.2 The Energy Situation in Lier

The use of energy in Lier today is typical for Norway with a large part coming from electricity and little use of local energy sources. Lier doesn't have any significant production of electricity within its borders, and is depending on "import" of energy. Local energy resources can be used to supply the municipality, but most of the available resources are more suited for production of heat rather than electricity. (Lier Everk, 2007: 29). The energy use in Lier in 2006 is split between greenhouse/agriculture, housing/cottages, service and industry. Greenhouses and agriculture use 23% of the electricity, housing and cottages use 36%, the service sector 25%, and industry use 18%. (Lier Everk, 2007: 17). Special for the municipality is the extensive use of greenhouses, which has a large impact on the total energy consumption in Lier. (Lier Everk, 2007: 29).

The consumption of electricity in Lier has been steadily increasing the last 10 years. In 1994, there was a decrease in the total consumption because of high prices, which caused a transfer to other energy sources in the greenhouse industry. In 2002, it was a decrease again, due to high prices. (Lier Everk, 2006: 15). It has been a growth in electricity use for housing, green houses, agriculture and service between 1994 and 2005. The growth has been lower for the service sector than the other sectors. Industry has had an annual decrease during the same period. Total energy consumption between 2000 and 2005 has decreased by 7.4 GWh annually. The decrease is mainly due to decreased energy consumption by agriculture, green houses and industry. Households and the service sector has increased the consumption somewhat during the same period. (Lier Everk, 2007: 36).

New expansion of buildings will give a significant growth in the energy consumption in the coming years, even with the use of low-consumption buildings. Energy efficiency measures in existing buildings will give a reduced growth, but it is difficult for the municipality to control such measures. Installation of heat pumps will make a significant contribution to reduced energy consumption. (Lier Everk, 2007: 38).

## 5.2 Obtaining Energy Efficiency in Lier

### 5.2.1 Dialogue

The dialogue between the municipality and other actors in Lier is quite different from the dialogue in Halden. While Halden gathered the community to form a common vision for the future, Lier did not. The action plan that forms the basis for the work on LA21 in Lier – Handlingsplan for bærekraftig utvikling for Lier kommune 1999-2002 – was based on the work of an ad-hoc workgroup, and not made after a community meeting. (Lindseth, 2002: 41, 43).

Unlike Halden, however, Lier does invite the community to participate in meetings from time to time during the planning process of new initiatives. Lier started “Project Lierstranda”, a community development project, in 2001. This project was meant to be a project involving a better dialogue with interested actors in the area. The reason for this was that the citizens felt neglected in the planning processes the last twenty to thirty years, and thus had little trust in the local authorities. (Lier kommune, 2004c: 2). These development projects with the dialogue between the local authorities and other actors has continued, and one of these projects – “project Lierbyen” – will be looked at below.

These development projects and community meetings have also resulted in the building of a vision for the future for the district in question, as sort of a “district Agenda 21”, but Lier does have a vision for the future that is part of the municipality plan, and which has been for a while. This is the concept of “Green Lier”. The idea of “Green Lier” is not something that has been created after LA21 became a theme in the municipality. It has been a concept used in several municipality plans already. At first, the concept was tied to the municipality dealing largely with agriculture with a lot of cultivated land. Today, it is a symbol both of caring for the cultivated land, the cultural values, and nature and environmental values. The concept has developed alongside the concept of sustainable development, and the municipality plan equals “green Lier” with sustainable development. (Lindseth, 2002: 45-46).

### **5.2.2 The Action Plans**

#### *The Action Plan for Sustainable Development*

The action plan «Lokal Agenda 21 i Lier – Handlingsplan for bærekraftig utvikling 1998-99» was agreed to in the local council in Lier in 1998, after the suggestions made by an ad-hoc work group. A year later, in 1999, a new plan is made for the years 1999-2002. (Lindseth, 2002: 41). This plan, Handlingsplan for bærekraftig utvikling i Lier kommune 1999-2002, use among other documents the Agenda 21 document, The Fredrikstad declaration, and the action plan from 1998 to 1999 as a point of departure. The plan lists three main challenges in regards to the work on sustainable development in Lier. One of the challenges is to make Lier a model for environmentally friendly action. The municipality needs to set a good example if it wish to encourage citizens, organizations and businesses to become more conscious about the environment. Energy

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consumption is mentioned as one of the important considerations in the environmental work in the municipality. (Lier kommune, 1999: 4-5).

The plan lists several goals for the period 1999 to 2002. One is to initiate a dialogue with the citizens of Lier, including industry, children and the young, and organisations in questions regarding environment and development. It is a goal to make municipal institutions an example to follow in the work to obtain sustainable development. Three areas are mentioned as particularly important: energy consumption, the handling of waste, and area useage and transport. Several quantifiable goals are set, including one related to energy use:

- The consumption of “dirty” energy and electricity should be stabilized at the level in 1998 through increased use of alternate energy sources, ENØK initiatives, and work to change attitudes.

It is noted that this is an ambitious goal, but one that can be reached through use of district heating or heat pumps among other things. The change towards renewable energy sources depends on an increase in the tax on oil and electricity to be profitable. (Lier kommune, 1999: 7-8). The achievement of the goal is not given a time frame until the goal is revisited in the municipality plan for 2002-2013:

- Consumption of energy and electricity (consumption per capita, household, area) shall be stabilized at the levels in 1998 before 2006 through increased focus on energy efficient buildings, ENØK initiatives and measures to change attitudes. The part of total energy consumption

coming from electricity should be reduced by 10% during the plan period by increased use of renewable energy sources. (Lier kommune, 2002: 7.1.6).

The action plan (1999: 8-9) also gives a list of different initiatives planned to be conducted by the end of 2002. Some of the planned initiatives are:

- An environmental conference in Lier in the autumn 1999. The goal for the conference is to make an environmental declaration.
- Efforts to obtain energy efficiency in existing municipal buildings should be conducted according to prepared energy efficiency plans. New buildings should be built with flexible energy solutions and use of renewable energy sources in mind.
- 50% of the employees in the public sector will go through the training program “Naturlig Vis” (Of course/Naturally Wise) by the end of 1999.

The planned environmental conference took place in the autumn 2000, and a Lier declaration (in the vein of the Fredrikstad declaration) was made in cooperation with the Lier community. This declaration invites organisations and individuals to sign it and work towards: (a) a sustainable community development that secures the quality of life and the basis for life both today and for future generations; and (b) that activities in the local community is conducted in a sustainable way, through reduced consumption of resources and environmental stress. (Hofstad, 2002: 45). Interestingly enough, it is not the Lier declaration that is the “local Agenda 21 plan” for Lier. The work to obtain sustainable development in Lier is still based on the action plan for 1999-2002, with a revision of the original goals through the municipality plans.

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### *The Municipality Plan*

The municipality plan 2002-2013 states that the municipality is not developing in a sustainable direction. It emphasises that the municipality will not first and foremost be able to influence the consumption and living habits of the citizens. What the municipality can do is to direct the area policy and the energy consumption by active use of the planning and building law, and work to influence attitudes among municipal employees and other citizens. The vision of “green Lier” is central. The vision is made for thirty to forty years, and involves the conservation of nature, and a safe community; the opportunity to experience beautiful nature and a community that involves everyone; and the use of resources in such a way that the municipality will continue to have varied agriculture, environmentally concerned industry, and engaged citizens. The plan refers back to the action plan for sustainable development when giving the guidelines for the continued work in the municipality. Three points are made, of which two are the environment and participation. In relation to the environment, the importance of reduced growth in the energy and resource consumption is mentioned. One of the main goals made in relation to the environment is the goal to stabilize energy consumption at the levels of 1998. As mentioned above, the goal is originally taken from the action plan, but given a time frame: the goal should be reached before 2006. (Lier kommune: 2002).

### **5.2.3 Projects and Initiatives**

#### *Energy Efficiency in Municipal Buildings*

Lier municipality decided in August 2003 to start a process for making an agreement with an external firm for financing and implementation of energy efficiency measures. The municipality did not feel it had the necessary economic resources or competence to handle the issue of energy satisfactory itself. (Lier kommune, 2003). The municipality owns about 30 buildings in total with a total

energy consumption of ca. 20 GWh annually. This energy consumption is shared between 12 GWh electricity and 8 GWh oil (including a small amount of district heating). In 2004 Lier declares its intent to strengthen its work on energy efficiency by starting an energy management project, and applies for partners. The goal of the project is to save 2 GWh annually, which is 10% of today's energy consumption in municipal buildings. (Lier kommune, 2004d). Several firms show interest, and in the end Lier selected Siemens AS as their partner. A contract is made stating the responsibilities of both parties. It is a "Performance Contracting" agreement.

Performance Contracting (PFC) is a concept for implementation of energy efficiency measures in existing buildings. The process is left to an external supplier through agreement with the building owner, which means the building owner need to contribute less and with less risk. The process includes analysing the current situation; planning and implementation of initiatives; and following up on the results. It includes a solution for financing the project, often through a third party. The supplier guarantees the expected results, concerning performance, savings, expenses and profitability. The owner of the buildings determines the range (which initiatives and where) of the project, and the size of the investment. This is an interesting concept for the municipality sector, who often have difficulties in distribute investments to energy efficiency initiatives or who may have reached an upper limit for loans. PFC makes it possible to implement the necessary initiatives without straining the economy. Since the project eventually will lead to savings, it is self-financing over time. The process will lead to reduced energy consumption, but net monetary savings will not be realised until the upgraded facilities are paid for. (Lier kommune, 2004b).



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According to the plans made in the contract, an analysis of the buildings would be conducted to be completed by July 2004, with the implementation of necessary initiatives to start immediately thereafter and be ended by January 2005. (Lier kommune & Siemens AS, 2004). Lier decides to finance the initiatives, even though the offers from the supplier give room for financing by external actors. Since the implementation of the project does not increase the total expenses of the municipality, Lier finances any loans with the reduced energy costs. Lier also applies for, and is granted, support from Enova to implement the project. The analysis shows that the municipal buildings in Lier is particularly well run. Several energy efficiency measures has been implemented since the nineties, but a potential for saving equal to 3,1 million kWh annually or 22% of the consumption is discovered. (Lier kommune, 2004a). A choice to implement initiatives that will save 1,37 million kWh annually is made. This equals 7.5% of the energy consumption. Siemens guarantees 90% of expected savings annually from 1<sup>st</sup> of January 2005 to 31<sup>st</sup> of December 2010. (Siemens AS, 2004). Monetary savings between 90 and 110% of the expectations will go to Lier, and any monetary savings above 110% will be shared equally between Lier and Siemens. Thus there is an incitement for both parties to save as much as possible. (Lier kommune, 2004b).

The project is implemented in 25 municipal buildings including schools, kindergarden, health centres and administrative buildings. The implemented physical initiatives includes everything from changing lightbulbs and insulation to heat capture in the ventilation system. In addition, energy monitoring, and education or information initiatives directed towards users and employees is part of the program. To motivate the employees of the municipal buildings, an annual competition between the different buildings is held. The municipality and Siemens shares the expenses for the prize of 20,000 kr which is given to the winner to spend freely. The result of the project has been savings of 2.45 GWh in

2005 and 2.35 GWh in 2006. Although a lot of the energy savings are due to the physical initiatives, the efforts towards behavioral change is thought to be contributing significantly to the fact that the expected goals so far have been surpassed.(Lier kommune, 2008b).

### *Lierbyen development project*

The local council decides to implement “Lierbyen development project” the 8<sup>th</sup> of February 2005. The project is organized after the template of “Project Lierstranda”. (Lier kommune, 2005a). “Project Lierstranda” was a development and participation project that was initiated in 2001, after the civil society rejected participating in normal municipality planning with work groups and hearings. They had little faith their interests would be taken into account more now than the last 20 to 30 years, when they felt they were being ignored. They gave the municipality a “last chance”, which resulted in the project “Lierstranda”, which emphasised participation to clarify the development of the area in a short and long-term perspective, and to implement initiatives to improve the living conditions. It led to the establishment of a forum to secure local influence (from citizens and industry) and political support, as well as professional competence and support from the municipal administration. (Lier kommune, 2004c).

Like the Lierstranda project, the focus of the Lierbyen development project is living conditions, as well as social and cultural conditions. It includes a cooperative forum with representatives from the local council, the citizens of Lier, the business/agricultural sector, and the youth, and a representative from “foreldrerådets arbeidsutvalg” (FAU), the central administration, and the council for the handicapped. Three of the representatives are part of a work group that prepares cases and performs tasks for the forum. A project group has been

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established as well, to aid the project with counseling, planning, research, and initiatives. (Lier kommune, 2005a).

The vision for the project is that Lierbyen shall be a vigorous and well organised municipality centre in “Green Lier” with access for all. “Green Lier” is the vision of the current municipality plan, and the principles of the vision is guiding the development of Lierbyen. (Lier kommune, 2008a: 3).

As part of the project, a meeting – “Cafédialgue” – takes place the 13<sup>th</sup> of June 2005. This way of organizing the dialogue is chosen because “informal meetings” are seen as a better way to have new conversations and thereby developing good ideas. At the same time, one can get through a number of different themes in a short span of time. Since this gathers a lot of people, it will also be easy to build networks between the participants. Around 40 citizens shows up to share visions and ideas. The meeting is split into three phases: brain storming, prioritization, and making of action plans. Nine themes are being discussed, and the meeting is split into three rounds to give everyone a chance to make suggestion to the three themes they find most important. Everyone can select theme freely from one round to the next. The nine themes are: Culture centre, a vision of the future, transport, meeting spaces, parks, energy, strengthening local businesses, Lierbyen as a place for learning and thriving, mixed citizenry. After the brain-storming on the different themes has been made, the participants are given the task of prioritizing which issues they felt was most important to do something about. The prioritization of the different themes places “energy” as a theme low on the list. The last part of the meeting involves the development of action plans. Since “energy” is not seen as a prioritization by the participants, no action plan is made. (Rapport fra Kafédialog, 2005b). The work done in this meeting is cooperated into the further development of the project.

The development project continues with a competition in 2006 to get ideas and perspectives for the development of Lierbyen. The competition is open to nordic and norwegian architects and landscape architects. This results in nine propositions that are considered by a jury led by the mayor, Ulla Nævestad. The competition results in many good suggestions to be considered in the continued work on the project. (Lier kommune, 2008a: 4-5).

The development project involves several initiatives. One is the development of a culture centre as part of a “cultural axis” in the district. Another are plans to develop streets that crosses through the district to become secure through initiatives that makes the drivers reduce their speed. A plan to change the grid of water and sewer pipes, the electrical cables, and the establishment of a district heating system is one of the initiatives that are considered as part of the development project. Currently (2008), most of the necessary analyses are done regarding the renewal of cords and cables for the water, sewer, and electrical systems. The coordinators of “Project Lierbyen” will be consulted regularly to coordinate the different initiatives, and funds have been granted for the continued work in 2009 and 2010. Regarding plans for district heating, concession has been given. The distribution network is being planned, and will be carried out in coordination with the project for water, sewer, and electricity projects. (Lier kommune, 2008a: 5-7).

The development project originally had a time frame of four years, from 2005 to 2008. It is now suggested to be continued until 2010, and has been granted the necessary funds. One of the reasons given for the suggested continuation of the project is the need to follow up and complete the planning and implementation of

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the renewal of the water and sewer system, the electricity grid, and the district heating system. (Lier kommune, 2008a: 13).

### *District Heating*

District heating is mentioned in the action plan for sustainable development in 1999, as a way to stabilize the energy consumption in Lier at the levels of 1998. It is mentioned that the viability of this solution will depend on an increase in the taxes for oil and electricity to make the transition to renewable energy sources profitable. (Lier kommune, 1999: 8).

The plans for district heating is not considered again until 2004, when a heat plan for Lierbyen is developed. The municipality wishes to research the potential for renewable energy solutions connected to existing and planned buildings. The project aims to show which solutions are technically possible, that is, the economical viability of different solutions. The plan can then be used for long-term planning of environmentally friendly energy solutions in the area. (Norsk Enøk og Energi AS, 2004: 2).

In 2005, district heating is incorporated into the community development project “Project Lierbyen”. The system for district heating is planned to be constructed in cooperation with a renewal of the water, sewer, and electricity system. Private actors are currently developing a district heating project for Lierbyen based on biomass. The project uses the Lierbyen development project’s report about biomass-based district heating as a point of departure. The project is supported by Lier, as the municipality considers this an important contribution in the development of “Green Lier” and the goals of the municipality plan to make a change towards a more environmentally friendly energy system. The Lier

municipality plan 2002-2013 has as a goal that 70% of new buildings should have water-transported heating, and the part of the total energy consumption coming from the use of electricity should be reduced by 10% by 2013. The potential for district heating in Lierbyen has been investigated as a part of the Lierbyen development project, and a potential of 5 GWh has been found. This includes expected building growth. Investigations have also uncovered that the profitability of a district heating system is low, but subsidies (eg. from Enova) could make it possible to realize the project. Several actors have considered the possibility of a district heating project, but most have discarded it due to low profitability. Bioenergi AS has, as the only actor, decided to make a development plan and initiate a dialogue with possible partners related to the production of fuel and a place for the incinerator. Frantz Hegg Gartneri AS is an actor that has shown interest, and which has a good placement and good conditions for keeping the incinerator. The cooperation between Bioenergi AS and Frantz Hegg Gartneri is seen as a key to success in this project. (Lier kommune, 2007).

The local authorities realize the project has a low profitability, but are happy to see serious actors thinking forward and taking initiative to development of a district heating system. Two factors makes this a good time to start building a district heating system. One is that large parts of Lierbyen will be subject to a planned upgrade of the sewer systems. By building the infrastructure for the district heating system and upgrading the sewer system simultaneously, one will reduce the costs and the need to dig up the ground a second time. Another reason why this is a good time to start building the district heating system, is that a lot of buildings (both municipal and private) will need to upgrade or replace their current heating systems, and so it could be a good investment to connect to a district heating system. It is considered vital not to lose momentum with the project, since losing time could lead the project not to be realized. (Lier kommune, 2007).

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Bioenergi AS applies for concession in 2007. (Bioenergi AS, 2007). Concession is not required for an installation of this size. When concession is applied for despite this, it gives the municipality opportunity to order new constructions of a certain size to be built to include systems for possible connection to the district heating system. It does not require the customer to use the heat if other energy sources are found to be preferred, but the concession is given on the condition that customers are offered heat to a price equal to or less than the price of electricity. (Lier kommune, 2007). Bioenergi AS is an energy company that develops, plans, builds, and runs biofuel-based heat centers and small district heating systems (2 to 10 GWh in size). The district heating system are built to be able to give a total effect of 6.8 MW, which includes a possibility for construction of many more buildings. The main heat central will be placed in connection to Franz Hegg Gartneri, which is greenhouse placed south of Lierbyen. It has a good placement with regards to distance to neighbours, emissions from the building, and delivery of fuel. Small, temporary heat central are considered different places on the grid to be connected to the main central at a later point. The potential customers in Lierbyen are both existing and new buildings. Existing buildings includes a rather small part of the energy needed (3 of 12 GWh). (Bioenergi AS, 2007: 3, 8, 11).

## 6. Comparing the cases

This chapter uses the empirical evidence from the two municipalities to analyze the contribution made by different actors to the achievement of sustainable energy consumption. The theory predicts a certain pattern of contributions made by different actors in the transition to sustainable development, and the first section will be used to describe this pattern of involvement. The focus the local authorities in a municipality puts on sustainable energy consumption will impact the amount of resources devoted to the issue, and so section 6.2 is devoted to sub-question (a):

- To what degree are the municipalities focusing on sustainable energy consumption?

Once the focus on energy consumption is discussed, section 6.3 through 6.5 will deal with sub-questions (b) and (c):

- To what degree and how is the issue of sustainable energy consumption addressed through the LA21 process?
- To what degree are different non-state actors addressed and included in the efforts to obtain sustainable energy consumption?

These two questions will be analyzed simultaneously as they look into different parts of the same events (the process and the players). The analyzation is split into three sections as each section will deal with different parts of the LA21



process: the dialogue, the plans, and the initiatives. Section 6.6 will answer the main question: To which degree can different actor participation explain a municipality's performance concerning sustainable energy consumption? The last section, 6.7, will make the conclusion and offer suggestions for continued work on the issue.

The analysis is done by using a pattern matching technique to compare the participation of different actors in the LA21 process taking place in the two municipalities. The study looks for differences in the pattern of participating actors. Are some actors participating to a larger degree in one municipality than the other? Are some actors used in different ways or during different parts of the LA21 process in one of the municipalities, and can this explain differences in the efforts to obtain energy efficiency in the two municipalities?

## 6.1 Expected Results

LA21 gives the local authorities a big responsibility in the transition to sustainable development. The local authorities are asked to "enter into a dialogue with its citizens, local organizations and private enterprises and adopt 'a local Agenda 21'." In the LA21 process, the local authorities are supposed to take the role as an initiator, supporter, and coordinator of the different initiatives that make up the LA21 process, which should help the municipality in the transition to sustainable development. Thus, the local authorities will be assumed to be an important actor in the LA21 process. According to theory, the most important actors are the organized groups – the stakeholders. This includes political groups, like the local authorities mentioned above, but also industry and different organizations. Individual citizens are only filling a supporting role.

When looking for a pattern of actor involvement, one would therefore expect that a municipality with greater involvement from the local authorities would be making more progress towards sustainable development than one with lesser involvement. LA21 does allow for individual actors to take initiative themselves and start projects that may not involve the local authorities, but without support such initiatives may be inefficient. By coordinating different projects, the municipality may also save expenses and gain opportunities to obtain sustainable energy consumption.

Business and industry are expected to use the most environmentally friendly solutions in their activities. They have a responsibility towards the society they are a part of, and can by themselves take initiative to start work on LA21. During the making of plans, industry should be offering its suggestions and solutions to problems. Industry can be important during the implementation of initiatives in cases through the resources they may possess, and in finding good solutions to environmental challenges they are enmeshed in..

NGOs bring the necessary competence within specific disciplines to the table. This would be important in making plans for the way forward, and in the implementation of projects. Organizations may bring valuable expertise in the implementation of projects, through the issues they focus on and the activities they do. Organizations would also be expected to mobilize the citizens in the work on LA21.

The individual citizens make a contribution through participating in meetings, and by the action they take in their daily lives towards the transition to sustainable

energy consumption. They are supposed to bring common sense and the values of ordinary people into the process. It would be expected that the largest contribution would be made in the planning stage of the process, assuming their suggestions are acted upon.

## 6.2 Focusing on Energy Consumption

Although this study focuses on the involvement of different actors, there is a need to account for the fact that energy consumption could be downprioritized in the municipality. If that is the case, the transition to sustainable energy consumption will be slow, no matter how well the different actors participate. The degree of focus is analyzed both by looking at the attention given to energy consumption in political plans and by looking at the initiatives and projects related to energy consumption in the municipality. This will tell me both whether energy consumption is being discussed and if something is done to implement any plans that may be made. I stated earlier that three criteria have been guiding my analysis with regards to the focus on energy consumption. First, energy must be referred to in the municipality's action plans, both the LA21 plan and other relevant plans. Second, strategies and initiatives suggested in the plan must be followed up on, as long as the condition for the suggestions doesn't change. It is no good talking if it doesn't lead to action. Third, the municipality must take initiative to at least some projects. If the local council is not actively trying to follow up its own suggestions, the will to do something about the energy consumption must be considered low.

### 6.2.1 Halden

I have been looking through four action plans for Halden: the climate and energy plan, the LA21 plan, and the industrial strategy plan for 2002-2006 and 2006-2010. The climate and energy plan was made at the start of the LA21 process, and is one of the documents the LA21 is built on. It naturally has a focus on energy, and makes suggestions for strategies to reach the target it sets. The plan lists one target, related to emission reductions, which is to commit to the National Kyoto target of maximum 1% increase in greenhouse gas emissions from 1990-levels between 2001 and 2010. Since the plan discusses reducing greenhouse gas emissions, it also makes suggestions for initiatives related to waste and transport, but it is pointed out that energy efficiency and renewable energy is important to reach the goal. Energy consumption gains attention in the LA21 plan as well. Renewable energy and energy efficiency is given a sub-heading under one of the main goals, with several sub-goals related to it. The target set in the energy- and climate plan is restated here. In the industrial strategy plans (2002-2006 and 2006 to 2010), energy suffers less attention. The focus is on the environment in general, with the exception of the energy- and climate plan being mentioned in the first plan and plans of district heating being mentioned in the second.

The action plans shows that energy consumption is being discussed in the municipality, which means there is at least some focus on the issue. The question now becomes whether this is just talk, or if this leads to action.

Three projects have been looked at in Halden. One is a project where the lights illuminating Fredriksten fortress at night is being replaced, while at the same time being expanded to cover a greater part of the fortress. This is part of the “Millenium Site” project initiated by Østfold County in celebration of the Millenium and the 100-year marking of the dissolution of the union with Sweden.

Another initiative is the planning of a district heating system in Halden centrum. Halden has several plans for district heating, with three different areas being focused on: Halden centrum, Remmen, and Sørlifeltet. The interest in the project is high at first, and it is concluded that the potential for district heating is good, but that potential customers may be lost if time is wasted. Still, the focus on the project drops around 2003, and the thread is not picked up until 2006. The third project is the creation of a new district. Here, private actors determines the energy sources being used. One private actor, Teknotherm Energy, has taken initiative to use of a heat pump for parts of the district. It is interesting to notice that the municipality did not consider the use of renewable energy for the culture centre and the nursing homes that are built, until Teknotherm offered the solution. It is also surprising that nothing was done in relation to the plans for district heating between 2003 and 2005, when the new buildings were constructed. The district would provide many customers for the district heating system, and earlier reports warned that customers could be lost in this way if the plans for district heating was not acted upon.

This leads me to the conclusion that energy consumption suffers little attention by the local council in Halden. It is not entirely forgotten, as the issue is given attention in action plans, and efforts are made to research the potential to make the energy consumption sustainable, through projects like district heating. However, the will to act upon the information is low, and the local council takes little initiative to actually implement projects. Dealing with energy consumption is left to other interested actors, with the municipality taking a supporting role whenever something is started up.

It is interesting to see that the plans for district heating, which can be said to be the most ambitious plans regarding energy consumption in Halden, disappears

from the political agenda in 2003, after the last environmental advisor quits. It is also interesting to notice that the plans for district heating seems to be of interest again now, for the reason that the national government is about to put a new law on the handling of waste is about come into effect. It may thus be a focus on waste handling that is the reasons for the renewed interest in the district heating plans. Waste is not the focus in this thesis, however, and so further reserch would be needed to confirm that hypothesis.

### **6.2.2 Lier**

In Lier, I have been looking through the plan for sustainable development and the municipality plan. Energy consumption is mentioned as an important issue in the plan for sustainable development, and several goals are set, and strategies suggested on how to reach the targets. One specific goal is to stabilize the consumption of electricity and energy from non-renewable sources at the levels they were in 1998 before 2006. The municipality plan puts a focus on energy too. The municipality plan for Lier specifies that renewable energy sources shall be considered in building expansion, and that renewable energy is preferred to traditional energy solutions. At least 70% of all new buildings, both for housing and industrial purposes, should be made suitable for district heating. The action plans shows that the local council has a focus on energy. Unlike Halden, Lier seems to have a clearer strategy for following up the plans. Regarding the different projects, it is clear that the local council in Lier is more active in the initiation and implementation of energy-related projects. Plans are being made and followed up, and initiatives are being implemented.

Three projects have been looked at in Lier too. The municipality has a performance contracting agreement with Siemens Technology to reduce the

energy consumption in municipal buildings. This is a project initiated by the municipality. Like Halden, they are also planning a district heating system. Lier started thinking seriously about district heating in 2004, when the heat plan was made, and private actors have by this time been granted a concession to build the heat central for the system. The plan for district heating is part of the Lierbyen development project, which is the third initiative to be considered. It should be noted that the development project does not focus specifically on energy, but on environment, as well as the cultural and social.

### **6.2.3 A Focus on Energy Consumption?**

The answer to the first research question: “To what degree are the municipalities focusing on renewable energy and energy efficiency?” must thus be that Lier has a high focus on renewable energy and energy consumption while Halden has a low focus. Lier gives energy special attention in plans, follows up strategies and goals from one plan to the next, and actively initiates projects. Halden has a low focus on energy consumption, are not good at following up the plans, and does not take much initiative to projects.

## **6.3 Dialogue**

### **6.3.1 Halden**

Halden started well at the start of the LA21 process in 2000 with a strategy for the LA21 process. The making of the LA21 plan was made in two stages. Interested parties were first called in for a meeting to agree on a general vision and some general goals. These goals are then the basis for district meetings,

participatory work on municipality plans, and the composition of a climate and energy plan. Then these plans are made the basis for a second meeting where sub-goals and quantifiable targets are added under the general goals of the first plan. Unfortunately, this is not followed up in later years. After the first meetings, the LA21 plan is “left in the drawer”. No new meetings are conducted, and the plan has not been updated and revised later.

In light of this, the good dialogue in Halden is can be considered to have been a result of some early interest in LA21 around year 2000, coupled with a devoted environmental advisor. The dialogue is silenced after the environmental advisor quits, never to be reignited. Despite the lack of district meetings and dialogue, and despite the lack of focus on sustainable energy consumption, projects and initiatives are started. The largest problem for Halden is the fact that different initiatives are not coordinated, and plans are not followed up by action. This leads the municipality to lose opportunities that could have been taken advantage of in the efforts to obtain sustainable development.

### **6.3.2 Lier**

Lier seems to go in the opposite direction of Halden. It is interesting to notice that Lier too had a meeting in 2000, where interested parties were invited to participate, and where a Lier declaration, in the vein of the Fredrikstad declaration, was made. However, this declaration is not what is the basis for the work on sustainable development in the municipality, and so Lier can not be said to have a “local Agenda 21” plan as such. That doesn’t mean the municipality doesn’t have a vision and a strategy, though. The action plan for sustainable development for Lier is not the result of a large meeting with many actors, but a political process with a plan made by a small group. It was decided upon in the



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local council in 1999, and this is still the plan that is being used. The municipality has not gathered actors the way Halden did to make a vision for the future, but the municipality do have a vision. This vision is “green Lier”, a vision that has been a part of the municipality even before LA21 became a topic, although the vision has changed somewhat during the later years. Today it is synonymous with sustainable development to the population in Lier. Even though the construction of the “local Agenda 21” and the vision has been the work of few actors, Lier does have a dialogue between actors in the planning of new projects. Dialogues has been held as part of the planning of community development, where all actors have the chance to voice their opinions.

### **6.3.3 The Purpose of Dialogue**

The dialogue between the actors are quite different in the two municipalities. It should be pointed out that both municipalities involves small groups of selected actors in the creation of different plans, hearings, and normal political processes. Large gatherings, however, are rare in Halden and rather common in Lier. Regarding dialogue as a part of the LA21 process, it is thus the case that dialogue in Halden is largely lacking, while it is a large part of the political process in Lier. Does this make a difference in the efforts to obtain sustainable energy consumption? Halden has brought in a lot of actors in the efforts to create an action plan and a vision for the future while Lier has not. On the other hand, Lier has a good dialogue through the community development projects, while Halden has nothing similar. Yet both municipalities are considering many of the same solutions to the problems they face. The dialogue in the municipalities may give the citizens a feeling that they have a say in decision-making, and may as such be a good for the democracy, but the municipalities does not necessarily gain much from the gatherings that they does not gain through normal political procedures as well.

## 6.4 Action Plans

Part of the suggestions made in Agenda 21 is to compose a local Agenda 21 plan that should be the basis for the LA21 process in the municipality. Both Halden and Lier has such a plan to base the political process on. The LA21 plan is supposed both to be a shared vision on how the municipality should develop into the future, it is supposed to lay out some strategies on how to reach the goal, and it should determine the first steps taken in order to achieve sustainable development. According to theory, the individual citizens may play a role in this part of the LA21 process. Citizens can contribute by voicing concerns and create priorities and values. NGOs and industrial groups will play a role by adding knowledge from their area of expertise.

### 6.4.1 Halden

Two documents are important in relation to the creation of a vision for the LA21 process in Halden. One is the climate and energy plan made between 2000 and 2001, the other is the local Agenda 21 document. The climate and energy plan was made during the start of the LA21 process, and is seen as being part of the LA21 work. The climate and energy plan has one goal, which is the same as the National goal agreed to through the Kyoto protocol. That is, a maximum of 1% increase in greenhouse gas emissions in the period 1990 to 2010. This means a emission reduction of 22,000 ton CO<sub>2</sub> equivalents by 2010, a goal that has become part of the local Agenda 21 plan. Unfortunately, not much else from the climate and energy plan has been making its way into the LA21 document. While the energy- and climate plan includes a strategy for reaching the goal, and includes suggestions for several initiatives to be implemented, the LA21 document does not. Many of the initiatives could be added to the LA21 document without difficulty, and it may have been a plan to do so, but it has not been done.

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It is interesting to notice that the climate and energy plan, which is made by the local authorities in cooperation with a small group of advisors, make a much better LA21 plan than the LA21 plan itself. This plan do not only offer a clear goal to be reached, but it also makes a prediction for future energy use and discusses different factors that are significant to the current and future energy use. Finally, it gives a clear strategy for reaching the goal, complete with a time frame and cost for suggested initiatives. The LA21 plan, however, has a series of goals written down and group into different themes, but no clear strategies and suggestion of initiatives. Space has been made to include suggested initiatives and a timed schedule to implement the initiatives, but it is not used. When it comes to “putting a name” on the vision for the LA21 process, Halden has decided to name the work on the LA21 process “Miljøbyen Halden 2020”. Unlike Lier, however, the expression does not seem to have become part of the collective consciousness in the city.

It is worth mentioning that the LA21 work in Halden largely seems to be seen as the responsibility of the municipality and the industry. In both strategic plans, it is discussed as a part of the initiatives related to the industry and business. The plans give the impressions that different sectors should enhance different aspects of Halden, which might be one of the reasons the LA21 process is left to the industry to deal with. While industry and business works on making Halden the “environmental city”, the schools try to make it the “IT city”, and cultural institutions work on Halden as the “cultural city”.

#### **6.4.2 Lier**

The action plan ”Handlingsplan for bærekraftig utvikling for Lier kommune 1999 to 2002” uses Agenda 21 and the Fredrikstad declaration as a point of reference,

and also manage to bring earlier and ongoing environmental work into the LA21 process. It has a focus on both environmental challenges and democratic participation. The plan is well structured with clear goals and suggestions for strategies. The plan also summarizes ongoing projects in the municipality. It is worth noticing that while the action plan is the basis for the current environmental work in Lier, it is the expression “Green Lier” that most resembles the LA21 vision. This vision was not made as part of the plan for sustainable development, since the municipality has had this vision to build on even before LA21 became a topic in the municipality. The action plan for sustainable development and the vision of “Green Lier” is made a part of the municipality plans, and referred to in other plans as well. Thus the “LA21 plan” and vision is well incorporated into the political process.

Unlike Halden, no large gatherings have been held during the construction of the action plan and development of the vision that is the basis for the LA21 process in Lier. Several actors have still been involved, but only through representatives in small work-groups. Large gatherings have become the method used during several community development projects. It is a good way to get opinions and ideas, but not much more. It was also interesting to see that energy was not prioritized by the participants of the community meeting in Lier. If energy consumption is not considered a priority among the participants, such meetings may thus not help in generating solutions related to the issue.

### **6.4.3 Participation and Planning**

Agenda 21 calls for the making of local Agenda 21 plans. These plans are supposed to be a cooperation between all actors to make a shared vision. The plans are meant to propose strategies on how to make a transition to sustainable

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development, and it is supposed to suggest which first steps must be taken. None of the two municipalities follow this strategy, but still manage to create plans that can guide the LA21 process. Halden starts well, with the gathering of actors to make the local Agenda 21 plan, but the plan only covers the vision and goals. It does not cover strategies, and does not advise on the first steps to be taken in the transition to sustainable development. Lier does not follow the strategy of gathering actors in the creation of a plan at all. Instead, the local Agenda 21 plan is made through a small group of actors. The vision for the local Agenda 21 is not made as part of the LA21 process. Instead, Lier uses a vision that has been a part of the community for a while, and changes the vision to fit the LA21 process. The action plan Halden has that most resembles an actual local Agenda 21 is the climate and energy plan. This plan offers strategies to reach the goals, and suggests different initiatives that can make the first steps. Considering the fact that the two plans were made almost simultaneously, and that the climate and energy plan is one of the basis documents for the local Agenda 21 plan, it is surprising that the resulting local Agenda 21 was not better. No set of actors (NGOs, business groups, individuals) have had a larger impact than others in the making of these plans.

## 6.5 Projects

Three projects have been the subject of study in each municipality. The planning of district heating give a good opportunity to compare the involvement of different actors in a similar project. Coupled with the new district in Halden and the community development project in Lier, this gives an insight into differences in actor involvement in the two municipalities. The lightning of Fredriksten fortress in Halden and the efforts to save energy in municipal buildings in Lier completes the exploration of projects in the municipality. According to theory,

individual citizens will have little to contribute during this part of the LA21 process. The initiatives and projects should be left to the municipality to coordinate and support, and to the NGOs and business groups to provide knowledge and means of implementation.

### **6.5.1 Halden**

It is quite clear that the local authorities in Halden fails in their task to initiate and coordinate the projects. Projects and initiatives are initiated and implemented as the result of NGOs or business actors. The expansion and replacement of the lightning on Fredriksten fortress came as a result of a national initiative during the change of the millenium. Local actors that all ready had ongoing projects at the fortress was brought into the process. The change of lightning was not originally meant to be a large part of the millennium site project, but was realized when the need for a change of lightning was considered to be needed. The municipality came in as a supporter by granting funds for the realization of the project. Representatives have also been part of the work group dealing with the lightning. Local organisations have been responsible for the actual expansion and changing of lightning due to their technical expertise. The development of a new district near the harbor has been another project largely left to private initiatives. The initiative to supply the new hotel, the culture centre, and new nursing homes with renewable energy through a heat pump has come from a private actor, Teknotherm. The project that suffers the most from the lack of attention devoted it from the local authorities is the plans for district heating. It was suggested in the climate and energy plan in 2001. Since then plans and reports have been made, but little action has been taken. This despite the fact that reports several times have emphasised the need to take action soon to avoid losing potential customers and thus have the profitability of the project drop.

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### **6.5.2 Lier**

Lier follows the suggestions of LA21 to a much larger degree. The municipality initiates and involves itself in different projects, and manages to coordinate different projects in the LA21 process. The municipality has initiated a project with a private actor to increase energy efficiency in municipal buildings. This project has had a large success so far. It should be noted in this regard that part of the project involves work to change attitudes among the employees, and this is said to be an important factor in exceeding the expected gains from the project. The municipality has also initiated a community development project which does not include only sustainable energy consumption, but where a lot of smaller projects are integrated in order to realize a goal. This can in many respects be seen as the creation and implementation of a “district Agenda 21” process, as citizens are involved in the planning stage of the process, which also includes making a vision for the district. Energy is not considered one of the prioritized areas among the citizens, although plans for district heating are taken care of by the local authorities and other actors. Unlike Halden, the plans for district heating has been acted upon fast in Lier. Thankfully local actors have taken interest in the project, even though the profitability is low. The municipality has left the implementation of the project to other actors, but gives its support. Guidelines are provided in the municipality plans to help the transition towards such initiatives.

### **6.5.3 Participation and Projects**

When it comes to participation in projects, there are several differences. One is the involvement in projects by the municipality itself. Halden is much less involved in the projects, and does not initiate project to any degree. Lier, on the other hand, is actively involved and initiates projects. This is a factor that explains the slow development of district heating in Halden and the fast development of district heating in Lier. Another difference is the involvement of

citizens in the planning stage of projects. Lier involves the citizens to a large degree through community meetings. The actual benefit of this, however – except for the generation of ideas – is small. Third, Lier is more adapt at coordinating the different projects to take advantage of opportunities that may arise. Halden, on the other hand, lets opportunities to advance the cause of sustainable energy consumption slip past because plans are not acted upon.

## 6.6 Key Actors in the LA21 process

When it comes to the involvement of actors in the two municipalities, the actors that differs most in the involvement in the LA21 process is the municipality itself and the citizens. Both actors have a much larger involvement in the transition to sustainable development in Lier. The question is then if this makes a difference in the way the municipality performs in relation to sustainable development? While both municipalities creates plans and implement projects, Lier performs better in many respects. First, the municipality acts swiftly when the decision to implement a project is taken. This is seen in the quick planning and start of the district heating project. In Halden, it takes a long time between making plans and acting upon them. Second, Lier is better at coordinating different projects. Through the community development project, the municipality is able to coordinate various smaller projects and as such save time and money. One example is the decision to coordinate the establishment of district heating with the renewal of the water, sewer, and electricity system. Halden, on the other hand does not coordinate the establishment of district heating with the building of a new district. Third, Lier is better at providing support for projects directed at sustainable energy consumption through guidelines and goals in the municipality plans. By requiering alternate energy sources to be considered whenever new buildings are



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constructed, property developers will be forced to take renewable energy into account as an option in construction.

Once it is established that Lier performs better, the question becomes if this is due to certain actors? The dialogue between the local authorities and citizens are better in Lier. The dialogue between the local authorities and NGOs or business groups are not much different in the two municipalities. It is however interesting that the best developed action plans in both municipalities are plans that have been made by a small group (admittedly with representatives from different actors) of people. Neither the citizens of Lier nor Halden seems to be overly concerned by energy consumption. This is shown by the downprioritization by the citizens of Lier in the meeting for “Project Lierbyen” and the discussion of the fortress lightning in Halden. The involvement of citizens in the planning process generates ideas, but not any better ideas than can be made by a small, representative group of actors. It is interesting, however, that the involvement of individuals were seen as an important factor in surpassing the expected targets for the energy efficiency project in Lier. NGOs does not play a large role in any of the municipalities, except as part of meetings or as reference groups for reports. In Halden, NGOs were involved in the changing of lightning at the fortress, because of the expertise that could be provided and by providing funds to realize the project. The NGOs had ongoing activities related to the goal of the millenium site project at the fortress, making them a natural participant. The task of NGOs to motivate people to taking action has not been seen in any of the municipalities. Industry seems to play the same role as other actors when it comes to voicing opinions and generating ideas for action plans. When it comes to implementing projects, however, they play an important role in bringing knowledge and resources to the table. They play their part by initiating projects, or by funding projects, or by providing resources needed for the project (like waste heat, or space). The greatest reason for the differences between the performance of

Halden and Lier, however, is the degree of involvement by the local authorities themselves. Other actors may contribute to the project of sustainable development, but it will be an inefficient process without the commitment of the municipality itself.

## 6.7 Conclusion and Suggestions

Agenda 21 gives the local authorities the responsibility for initiating a dialogue with “its citizens, local organizations and private enterprises” to “adopt ‘a local Agenda 21’.” This study shows that the main difference between Halden and Lier is the commitment of the local authorities to the process. The process started well in Halden, with the making of plans and forming of strategies, but the work was soon abandoned after they lost their environmental advisor. Although the municipality has been involved in energy-related projects, it has not been taking many initiatives itself. In Lier, the local authorities has been having a focus on the LA21 process, and been taking initiatives both towards energy efficiency in municipal buildings, and to community development projects. The lack of initiative in Halden, especially regarding the plans for district heating, has led the municipality to lose opportunities to integrate different ongoing building projects into the system for district heating. Next to the local authorities, the actor that makes the most contribution is business and industry. This through the production and sale of technology, or by providing fuel or space for renewable energy sources. NGOs offers knowledge and expertise that may be needed when judging the viability of projects and the implementation of projects. Citizens provides support mainly through generation of ideas in the making of action plans, and can not be said to offer much during the implementation of projects and initiatives.

A continuation of this study would be to look into other programme areas of Agenda 21, and other municipalities. It would be wise to expand the study to include more projects, and look more into how different actors become involved in the LA21 process independent of the cooperation from the municipality. The LA21 process also involves more than participation, and looking into how concepts like global thinking and long-term planning affects the way different actors involves themselves in the process, will expand the knowledge of the role the different actors play. The LA21 process involves many actors and activities, the transition to sustainable development requires resources to be used as efficient as possible. This includes involving different actors in the part of the process where they make a real difference.

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