

Approaches to Sustainable Development

- A Study of two Nordic Countries



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Sammenfatning

Tilnærminger mot Bærekraftig Utvikling - en Studie av to Nordiske Land

Målet med denne studien er å sammenligne den bærekraftige utviklingen i Sverige og Norge. Videre er det en målsetning å identifisere aktiviteter initiert av myndighetene, som har vært suksessfulle eller har et potensial for å bli det i arbeidet med bærekraftig utvikling.

Det internasjonale samfunnet begynte å fokusere på miljøproblemene etter FN konferansen i Stockholm i 1972. Begrepet bærekraftig utvikling ble introdusert på den internasjonale agendaen i 1987 ved lanseringen av Brundtlandrapporten *Vår Felles Framtid* (WCED 1987). Fokuset på bærekraftig utvikling har økt og blitt en del av den internasjonale, nasjonale og lokale agendaen etter FN sitt toppmøte i Rio de Janeiro i 1992.

En av de største utfordringene ved bærekraftighet er verdens forbruk. Verdenssamfunnet forbruker mer av naturressursene enn det forskere og politikere er enige om er holdbart. Agenda 21 er et verktøy for å få en utvikling som er mer holdbar internasjonalt, basert på handling initiert fra nasjonalt plan for å minske den menneskelige påvirkningen på miljøet. Lokal Agenda 21 er verktøyet for lokale handlinger. Politiske dokumenter er essensielle i disse prosessene og implementeringen av dem. Forholdet mellom lokale og nasjonale myndigheter er viktig i prosessen. NGOs og andre organisasjoner så vel som myndighetene og forskere kan bidra til utviklingen.

Norge og Sverige presenterte strategier for bærekraftig utvikling i Johannesburg 2002. Den svenske strategien har fokusert mer på oppnåelse av bærekraftighet enn den norske, som manglet konkrete tiltak. Både Sverige og Norge har signert Kyotoprotokollen med forpliktelser til å begrense utslippene av drivhusgasser.

På lokalt nivå har både Stockholm og Oslo et handlingsprogram og en strategi for å minske påvirkningen på klima forandringene.

NGOs og andre organisasjoner har deltatt og påvirket den politiske prosessen med tanke på utviklingen.

Min studie viser at Sverige konsumerer mindre energi per innbygger sammenliknet med Norge. Sverige har også lavere utslipp av karbondioksid. Aktiviteter for å minske utslippene krever mer politisk vilje og økonomisk innsats for å bli suksessfylt.

Nøkkelord: Miljø, Energi, Bærekraftig Utvikling, CO₂-emisjoner.

Abstract

Approaches to Sustainable Development - a Study of two Nordic Countries

The purpose of this study is to compare the process regarding sustainable development in Sweden and Norway. Furthermore the study aims to identify successful or potentially successful activities that have been initiated by public authorities.

At the UN conference which took place in Stockholm in 1972, the international society started to focus on environmental problems. The expression sustainable development was introduced on the international agenda in 1987, when the Brundtland Commission launched the report *Our Common Future*. The focus on sustainability has increased and became a part of the international, national and local agenda after the UN top meeting in Rio de Janeiro 1992.

One of the main challenges regarding sustainability is world consumption. The world community consumes more natural resources than what most scientists and politicians agree is sustainable. Agenda 21 is a tool to make the development more sustainable on an international level, based on actions initiated at the national level to decrease the human influence on the environment. Local Agenda 21 is the tool for local actions. Policy documents are essential in these processes and their implementations. The relationship between local and national authorities is of importance in this process. NGOs and other organizations as well as authorities and scientists may contribute to the development.

Norway and Sweden presented strategies for sustainable development in Johannesburg in 2002. The Swedish strategy was much more focused on obtaining a sustainable development than the Norwegian, which lacked concrete suggestions. Both Sweden and Norway signed the Kyoto Protocol with commitments to decrease emissions of greenhouse gasses.

At the local level both Oslo and Stockholm have an action program and strategy to decrease the impact on climate change.

NGOs and other organization have participated and influenced the political process within the development.

My study shows that Sweden consumes less energy per capita compared to Norway. Sweden also has a lower emissions level of carbon dioxide. Actions to decrease the emissions demand more political will and economic support in order to be more successful.

Keywords: Environment, Energy, Sustainable Development, emissions of carbon dioxide.

Preface

The background for this report is the final thesis at the master program “environmental strategy” at Lunds University, Campus Helsingborg.

Before you read this thesis I have to acknowledge those who have been helping me to realize the project:

Torleif Bramryd, docent at Lunds University, campus Helsingborg my supervisor, who is the director of studies at this master program.

Dr. Gisbert Glaser, senior advisor on sustainable development, ICSU. Glaser has been my secondary supervisor. He helped me to keep the focus and contributed with valuable ideas and views.

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Jon Möller, Agenda 21 coordinator, Stockholm City. Jon provided me with information and literature.

Guttorm Grundt, coordinator for Environmental Affairs and Transport for the City of Oslo, who gave me an interview and discussed my project in addition to providing me with literature.

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Lisa Dessborn, for reading through and editing the language of this thesis.

Finally I have to thank Leonora, Kari, Espen and Christian for help and support in the process of writing this work.

Acronyms and abbreviations

DN	The Directorate for Nature Management (N)
DNT	The Norwegian Mountain Touring Association
DoES	The Department of Environmental Affairs and Transport
EEA	European Environment Agency
EMAS	Eco-Management and Audit Scheme
EMS	Environmental Management System
FoES	Friends of the Earth Sweden
ForUM	Forum for Environment and Development
GDP	Gross Domestic Product
GRIP	Norwegian foundation for Sustainable Consumption and Production
GWh	Giga Watt hours
ICLEI	International Council for Local Environmental Initiatives
IEH	Swedish Institute for Ecological Sustainability
ISO	International Standard Organization
KLIMP	Climate Investment Programme
KS	The Norwegian Association of Local and Regional Authorities
LA 21	Local Agenda 21
LIP	Local Investment Program
MIK	Environmental Work within the Municipalities
MoE	Ministry of Environment (N)
MoF	Ministry of Finance (N)
MoFA	Ministry of Foreign Affairs (N)
MoJP	Ministry of Justice
MoSD	Ministry of Sustainable Development (S)
MW	Mega Watt
NEPA	The National Environment Protection Agency
NGO	Non Governmental Organizations
NOK	Norwegian Krone; Local currency.
NSCN	The Norwegian Society for Conservation of Nature
OECD	Organisation for Economic Co-operation and Development
OS	Oslo Sporveier AS
SEK	Swedish Krone; Local currency
SFT	The Norwegian Pollution Control Authority
SL	Stockholm Lokaltrafik AB
SOL	Stor Oslo Lokaltrafikk AS
SSNC	The Swedish Society for Nature Conservation
TOE	Ton Oil Equivalent
TWh	Terra Watt hour
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climate Change
UNGASS	United Nations General Assembly

WCED World Commission on Environment and Development
WSS D World Summit on Sustainable Development

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1 Introduction

In this chapter I will first give an account for the background of this thesis. I will also present the research questions and purpose of the investigations and line up delimitations and definitions. Finally the disposition of the paper is to be presented. Emissions released by human activities increase the concentration of green house gasses in the atmosphere. The increase of these gasses is likely to lead to an increase in global temperatures, normally referred to as the green house effect. The increase in temperature will affect the world's ecosystems. The melting of the polar ice will raise the level of the worlds' oceans, the expansion of desert areas and changes in the climate zones may have a serious effect on the agricultural industry which in turn will affect our living conditions.

1.1 Background

During the last decades the concern about the environment has increased and has been placed on the international agenda, partly because of the following:

Carbon dioxide has been gathered from the atmosphere during millions of years through the photosynthesis of plants. The carbon has been tied up in peat, coal, oil and natural gas with no or limited release through decomposition. Fossil fuels, including oil and coal have stored carbon for millions of years. The combustion of oil therefore causes emission of carbon dioxide and other gasses that affect the global environment (Persson et al. 2003:90).

The industrialized countries consume much more energy per capita than developing countries. If we look at the developing countries, several hundred millions of people seem to reach a higher standard of living. This may most likely imply higher consumption of energy in the developing countries. One of the major energy sources in the world is fossil fuel. It is therefore necessary to focus on this consumption.

The international society, through UN, has put a focus on sustainability. As we shall see, UN leaves the responsibility for sustainable development to each nation. Therefore each nation has the possibility to contribute with actions to reduce consumption of energy and emissions through political decisions.

All people do not have the same opinions of what sustainable development is, however, many of them seem to agree that it implies that a major part of the worlds population have to make some changes in their life style.

The emissions of green house gasses in Norway and Sweden consist of approximately 80 percent carbon dioxide (www: SFT a; www: SCB a). A major task to deal with environmental problems and the green house effect in these countries will therefore be to reduce the emissions of carbon dioxide.

Therefore, activities that decrease the use of energy and emissions of greenhouse gasses are some of the major tasks within the environmental dimension of sustainable development. My goal is to identify aspects of the processes and activities to decrease human impact on the environment regarding emission of carbon dioxide and consumption of energy.

1.2 Theoretical background

Several definitions of sustainable development are easy to find. A search on the World Wide Web easily show this, where over 100 definitions are estimated (www: Article13). The meaning of the term is widely described in many contexts. As I chose to use the definition from the Brundtland commission (WCED 1987), this is due to the fact that this definition is quite general, and therefore can be used in any kind of society. Since this definition is general, this makes it easy to use; on the other hand this may also be considered a weakness. The weakness I address is the fact that the term is not concrete, which means it has to be adapted to each society to make sense and to have a practical meaning. This means that each society has to establish areas within the society that are important factors to work on in order to move towards a more sustainable development. First after doing so, by addressing the concrete challenges within the society, the society has a concretisation of the meaning of sustainable development, which is valid for the work in this society.

Quite a few have tried to give the term sustainable development more substance by defining more concrete definitions. The European Environment Agency (EEA 1997:22) brings up several definitions inside the UN organizations. These definitions show that not even the organization within the UN had the same interpretation of sustainable development. This shows us the difficulties we are facing when making theoretical and practical use of the concept sustainable development.

In an article, Jahnke & Nutzinger (2003) distinguish the concept of sustainability as a general regulative idea from sustainable development as a more concrete concept that leads to practical actions. This distinction is what I have based my paper on, in order to look at how the concept of sustainable development is shaped by the authorities (the regulative idea) and then how it is implemented (the practical actions). I am using these terms, referred to as regulative and practical aspects of sustainable development.

Agenda 21 is the Rio conferences' (UNCED 1992) action program for the 21st century. The document describes actions that could lead towards a more sustainable development in a broad spectre of areas within the society. The dimension of sustainable development has, according to

the agenda, three dimensions of development in the society, which have to be included to obtain a more sustainable development. These three dimensions are the economical, ecological and social development. The agreements made by the nations that agreed on the Agenda 21 document are not legal commitments. The national authorities are responsible for the implementation of Agenda 21 within the nation, in cooperation with local authorities and other actors, such as enterprises, Non Governmental Organizations (NGOs and) other organizations.

The United Nations Framework Convention on Climate Change (UNFCCC 1992) is the base for the international work on climate change. The aim of the convention is to stabilize the concentration of green house gasses in the atmosphere at a level that will not lead to major changes to the climate system. This means that the human activities have to change in order to decrease emissions of green house gasses. The Kyoto protocol (UNFCCC 1997) contains the specified demands for each nation's emissions of green house gasses due to this climate convention.

Norway and Sweden has signed both the Agenda 21 document (UNCED 1992) and the Kyoto protocol (UNFCCC 1997), which commits the countries to work towards a more sustainable development, and decreasing the emissions of green house gasses, is part of this development.

Research on the process implementing AGENDA 21 and Local Agenda 21 (LA 21), policy documents regarding sustainable development and emissions of carbon dioxide are used as the base for this thesis. All these will not be mentioned here; however I choose to present the research on Agenda 21 and the main policy document regarding sustainable development.

The national support in the form of campaigns, finance and co-ordination will be a major factor that affects how the work within sustainable development will be carried out. Eckerberg (1999) wrote an article about the Swedish implementation of Agenda 21 and the development with base line conditions for the process, and factors that may explain the progress in the Swedish Local Agenda 21 work. Eckerberg (Ibid) mentions in this article that the national support is one of the factors contributing to the progress in the Swedish LA 21 work. Therefore I will look at this factor, and compare the differences between Norway and Sweden, and eventually shed some light on the reasons for these variations.

Edström and Eckerberg (2002) did a survey that gives an account for the development of the local Agenda 21 work in Sweden. The survey questionnaire was aimed at municipal employees that are involved in Agenda 21 related work. I will use results of this survey in my presentation of the development within the LA 21 work in Sweden.

Bjørnæs and Lafferty (2000) focus on the environmental work in the municipalities. The result of this survey is used in my thesis to show the development and actions taken with regards to the process on LA 21 work in Norway.

1.3 Purpose and research questions

The purpose of this study is to compare the progress in the field of sustainable development in Sweden and Norway.

Furthermore the study aims to identify activities initiated by the public authorities, that have been successful or that may become successful in the future and gradually lead to a more sustainable society. My research questions are:

- How have the countries performed in the process in the areas set up for reaching a more sustainable development?
- What do the governments say they want to achieve regarding emissions and energy consumption?
- How would they like to reach these goals?
- Which activities have been initiated to implement these goals?
- What are the results of these actions?
- How can these findings be explained?

1.4 Definitions

Sustainable development can be interpreted and defined in a number of different ways. In this thesis I will use the following definitions:

Sustainable development is defined in the Brundtland Report (WCSD 1987) as “a development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. I like to divide the concept of sustainable development in two parts, the *regulative and the practical aspect*. Regulative is the policy document that are made to create the theoretical meaning of the concept, where as the practical aspect is the implementation and instructions for this. To get a full view, there has to be a link between the regulative and practical aspect. There is also a need of indicators that tell something about the development, to monitor whether the present is more or less sustainable than the past.

Sustainable and sustainability will refer to the progress of the process implementing sustainable development.

Progress will be used for movement forward in time with an advancement implied in the development.

Process on sustainable development will be used for the specific methods of implementing Agenda 21 and Local Agenda 21.

Development refers to movement forward in time and the procedures in the society, both past and ongoing. Advancement is not implied in this development.

Policy documents are the documents created by the politicians with regards to sustainable development.

Emissions will in this context, when not specified, refer to emissions of carbon dioxide.

National Authorities and *national level* is the Government.

Local Authorities and *local level* is the municipal council.

1.5 Delimitations

Sustainable development is often seen divided in three dimensions: the environmental, the economic and the social. My study will mainly focus on the environmental sustainability with regards to the results from my investigation on energy and emissions of carbon dioxide. In my study I will look at the development within energy and emissions of carbon dioxide. An increase in the measures will be a less sustainable development, while a decrease will be interpreted as a movement towards a more sustainable development.

My objects of investigation are Sweden and Norway. To examine the effort carried out on a local level the investigation has to be delimited and I choose the capitals Oslo and Stockholm as my main focus. With regards to public traffic and district heating I had to include the regions around Oslo and Stockholm to get comparable information.

Activities initiated at the national level to obtain a decrease in the energy usage and emission of carbon dioxide will be delimited to renewable energy, alternative fuel and energy saving. Taxes and flexible mechanism due to the Kyoto protocol will not be investigated within the limits of this work.

I will briefly go through the history of both countries to get a basic understanding of the way the societies have developed during the last century. My study focuses mainly on what happened after 1987 when *Our Common Future* (WCED 1987) was released. With regards to what actions have been implemented I will focus on the activities initiated after 1998. The energy consumption and emissions will be compared with figures from the beginning of the 1980s to get a view of the development.

1.6 Disposition of the paper

In chapter two I give an account of the methodology for this thesis and subsequent choices made that resulted in how the work was carried out.

Chapter three is a history section which gives a basis for understanding the historical conditions and the development in Norway and Sweden. Last in this chapter I have some reflections on the historical events that have shaped the countries.

In chapter four I first investigate the policy documents and their implementations at the national level for each country separately. The results are presented along with a discussion concerning both countries' policy documents and implementation.

Examination of the policy documents and their implementations at the local level is presented separately for each country in chapter five. Then I present the results and the chapter ends with a discussion.

In chapter six I go through some of the major organizations that work for sustainable development at the national level in both countries, with reflections at the end.

In chapters 7 I finally gather the discussions and reflections from earlier chapters and bring us back to the questions of research, and the results of the investigation with a conclusion.

2 Method

It was not difficult to choose a topic for the present research. Most of the politicians and general public would know which actions would be best for the environment, even though they might not act based on this knowledge. This is the reason why sustainable development has caught my attention as an interesting subject for this thesis. I will in this section like to explain my methodology of investigation, how I arranged the work with the literature for this project, and how I gathered the information I needed. The objects of investigation were selected due to the fact that I am Norwegian and have done my master's studies in Sweden. During my studies in Sweden I acquired new knowledge of the Swedish society with regards to environmental matters. This information made me curious to investigate the processes within this subject in both Norway and Sweden.

2.1 Choosing the method

As I was interested in comparing the process of implementing sustainable development in Norway and Sweden I contacted The Ministry of Environment in Norway to ask if they would aid me in developing my thesis, they were positive and we started a dialogue. After doing so, I was given policy documents which I started reading.

I had to choose a method that would be the most valid and reliable in relation to the research questions. I therefore had to define the research questions. There are several ways to do this. I decided to start with reading literature and policy documents concerning the subject to prepare myself for the research. My intention with the study of literature was to obtain knowledge about sustainable development, energy, emissions and the historical background.

I then worked out some possible approaches for my thesis. I made a model to illustrate causal connections and identify areas to investigate. This is how my research questions were developed. After developing my research questions I contacted The Ministry of Sustainable Development in Sweden, which supplied me with more policy documents and information. I also contacted The City of Oslo and The City of Stockholm. I wanted to do an interview with representatives from both the local level and the ministries.

My themes for the interview were too political to be answered by the representative in the Ministry of Environment (MoE) in Oslo. The representative in MoE asked me to talk to other people in the research community, which I did. This led me to Prosus, a research programme on sustainable development under The University of Oslo. The representative from the Ministry of Sustainable Development (MoSD) in Stockholm answered my questions, as well did the representative from the local level in Stockholm. My representative for the local level in

Oslo also answered to my questions. My interviews gave me information about the processes and actions of interest in both countries. I made 12 questions that I wanted to focus on in the interviews, the same questions for all representatives.

Later I came in contact with my second supervisor, Gisbert Glacer, who inspired me and gave me ideas on how to proceed. At this point I had to start delimiting and defining the frameworks of the project. I made a new model with focus on the areas I decided to investigate. At this point I started to write about the literature and different activities initiated to decrease emissions of carbon dioxide and the consumption of energy.

The results of the actions taken to decrease emissions and consumption of energy are difficult to measure for me within the limit of this paper. Therefore I had to look at the development through investigating statistical data based on national data over time, to see if changes can be detected. I present the figures from reports that have been produced on local projects. These results I use as a base for evaluating the process implementing sustainable development. To compare the process of implementing sustainable development, I choose to use three policy documents and compare what year these documents are implemented.

In the end of my work I decided to take a look at the situation in the regional area around Oslo and Stockholm to get information that was comparable with regards to public transport. I also had to investigate other activities than those initiated by the projects described in chapter four regarding the area concerning district heating and public transport, to get comparable information.

2.2 Literature search

To find the literature I have used several methods. Electronically I have used the database Louisa and Elin@ in Sweden, and Bibsys in Norway. These databases are both common used databases at the universities in Sweden and Norway. I then searched for the words "Agenda 21", "LA 21", "energy", "history", "environment", "sustainable development", "sustainability", "Enova", "LIP", "KLIMP". I have also been talking to people in the ministries, municipalities and some other organizations which have supplied me with literature within the subject of my study.

I have used the Internet to gather information. This information is mainly related to public information web sites such as the ministries, local and national governments. I consider these sources for my information as reliable and valid.

I have used the search engine Google at the World Wide Web.

At the World Wide Web references I mark the references like this: (www:ref), where ref refers to the listing under references, World Wide Web.

2.3 Literature and other sources

The study of the historical literature gave me a contextual frame to understand the premises for the development in Sweden and Norway, which is a base for the development that is ongoing at present.

My work **examined the process** of working towards a more sustainable development in each country by studying past research. In addition to this, the policy documents gave details of the actual process.

Reading the policy documents concerning energy and sustainable development gave me an overview of **the political initiatives and what each respective country wanted to achieve (goals)**.

How do the governments like to achieve the goals? This question was investigated through policy documents.

Which activities have been initiated to reach these goals? The answer to this I got from the interviews, policy document, reports and the World Wide Web.

The results of the actions initiated have been gathered from a collection of sources, but mainly from project reports and from the World Wide Web.

I consider this information reliable and valid.

3 History

Under this section I will present some historic details from Sweden and Norway in one section, up to 1987, when *Our Common Future* (WCED 1987) was released. This will give an idea of the history of the two countries as a framework to understand the situation and development during the last century. I choose to present the history for both countries in one section since some of the processes happened at the same time in both countries and describing it separately would make the information more fragmented and harder to interpret. What happens after 1987 will mainly be presented later under the sections for national level and local level. After the presentation I will reflect upon the historical processes.

3.1 Historical progress

Sweden and Norway were in a union from 1814. The union dissolved in 1905 through peaceful negotiations (Hadenius 1985:16). Quite a lot of privileges were granted Norway from the Swedish king, and Norway remained self governed with its own political system within the union, apart from the area of foreign affair which was the same for the two countries (www:National Library of Norway). The relationship between the two countries has been relatively close, with cooperation at several levels, for example during the First World War, when the king of Norway, Sweden and Denmark met in Malmö to discuss how to deal with the war (Hadenius 1985:21; Furre 1992:51). Since the union between Sweden and Norway dissolved the societies in both countries have been through a major turnover. The industrialization was already going on before the dissolution of the union, and was still accelerating (Hadenius 1985:25; Furre 1992:17-20). The economy had an enormous growth until the First World War. After this war an economic crisis came, which affected the whole world. However this economic growth went on after the crisis was over around 1925 (Hadenius 1985:25; Furre 1992:80-102).

The Swedish society got a new approach to the protection of nature and scenery around 1900. The new approach was based on a new insight related to the possibilities the nature and scenery might give for tourism and recreation, and the threat from the industrialization. This insight was inspired by the culture of sports and recreation in Norway. The Swedish Tourist Association was founded in 1885 and were promoting this new approach to nature, scenery and recreation around 1900 (Nordlund 2000:27). The Swedish Society for Nature Conservation, SSNC (Svenska Naturskyddsföreningen) was established in 1909 by a group of scientists that were concerned about the increased degradation of nature and wildlife in Sweden due to the high speed of industrialization (SSNS). The Act on Conservation of Nature came the same year, 1909, and gave the first legal base for national parks, nature conservation and natural monuments (Persson et al. 2003:230).

Nature conservation was a key issue in the 20th century environmental debate in Norway. Den Norske Turistforeningen (The Norwegian Mountain Touring Association, DNT) was already in 1904 starting to argue for the establishment of national parks. Already in 1910 the Nature Preservation Act was adopted. This Act gave the legal basis for preserving species, restricted areas or specific objects of nature if these were of scientific or historical significance (www:DNT). The first power plant based on water energy came in the late 19th century (Furre 1992: 20).

The industrialization caused people to move to the cities. People were moving from the countryside and to the cities where the possibilities of finding employment was greater. The industrialization in Norway started already at the end of the 19th century, accelerated greatly after 1905 (Furre 1992:17). Sweden had the same development and high grade of urbanisation after 1905 (Hadenius 1985:25).

During the Second World War, Sweden became neutral, while Norway got occupied by the German troops. Since Sweden was neutral during the Second World War, the society was better prepared for developing, the infrastructure was not bombed and the industry was intact. While occupied countries such as Norway had to rebuild the damages from the war, Sweden had good conditions to expand the industry because of political, social and economic stability as well as not having any damages due to the war (Ibid: 51). In Norway it took a couple of years before the industry recovered (Furre 1992:202). From 1948 to 1952 Norway received 425 million US\$ from the Marshall help, which made it possible to raise the country faster than what would have been the case without this economic support (Ibid: 217-218). 1952 the reconstruction of Norway was mostly fulfilled (Ibid: 248). During the fifties and sixties the overall picture was economic growth (Hadenius 1985:63, 87; Furre 1992: 254, 297-298).

In 1952 the Nordic Council was formed. This is an inter-parliamentary organization between the five countries and three autonomous territories (www: nordiccouncil).

During the 1950s and 1960s new technologies were adopted and the industries grew. As a result of this, the energy demanding industry was establishing. In 1945 the production from power plants based on water energy in Norway was 10 billion Twh. In 1955 this increased to 22 Twh and in 1980 it was almost 100 Twh (Nøttestad 2002).

Rachel Carson's book *Silent Spring* came 1962 and started the discussions about the use of pesticides. Environmental movements got a broader support and the growing industry on top of pesticides was some of the main forces that initiated this support. Environmental concern became politics in the late 60s (Nøttestad 2002:24-25).

Norway claimed full right of ownership to the Norwegian continental shelf and the expropriation of the shelf was done in 1965. The first oil came to the Norwegian mainland in

1971 and from 1975 to 1981 oil and gas production raised from 2 to 50 millions tonnes. By then the oil industry contributed with 1/6 of GDP in Norway (Furre 1992:353).

In 1967 The National Environmental Protection Agency (Naturvårdsverket, NEPA) was established in Sweden and has since then been the prime motor in developing environmental legislations and policy changes (Eckerberg 1999:14). The agency's responsibility is defined as the following:

“The agency fall under the Swedish Government and the main tasks are to co-ordinate and promote environmental work on both a national and international level” (www: NEPA a).

Two years after the founding of NEPA a new legal environmental regulation came in Sweden, regulating air, noise and water pollution (MoSD 1969). Norway had three acts that correspond to this, one adopted in 1961, and the other two adopted in 1970, which was later incorporated in new legislation in 1981 (MoJP 1970; MoE 1981).

During the 1960s and 1970s environmental movements in Sweden was formed as socialistic organizations (Jamison 2003:54). In Sweden the question about nuclear power production is to be considered as a factor that might have played a role in the discussion about environmental protection and care. Politically, nuclear power production was on the agenda in the 1970s. At the end of the 70s this changed and caused the environmental groups to divide (Ibid: 60). Norwegian politicians did believe that nuclear power production was something they should give priority to in the late 60s. This did not happen since the opinion in Norway turned down nuclear power production as an alternative and the politicians followed suite, deciding that hydro electric power plants was the way to go (Furre 1992: 397-399). The Norwegian expansion of hydro electrical power production caused large demonstrations with support from much of the eller the whole country and even other countries. There was a conflict between the police and the protesters in 1980 and a force of 620 police and military vehicles were used to end the protests (Ibid: 399).

In June 1972 the first UN conference on environment was held in Stockholm. This may have been an inspiration for further work on the environment in Sweden, apart from being the start of an international focus on environmentally related issues. This is not the only reasons why environmental work became more important; however it may have played an important role in affecting opinion. “The green Party of Sweden” (“Miljöpartiet de gröna”) was founded in 1981 as a protest against the other political parties and they demanded a greater focus on the environment. The political party joined the Parliament in 1988 (www: Miljöpartiet). This change in public opinion can be considered a major factor in forcing politicians to focus on environmental issues. However, the public opinion does not change greatly, but clearly it is a sign of raised environmental awareness. The splitting of the environmental organizations and

the Stockholm UN conference together are likely to have influenced the environmental movements in Sweden.

The Norwegian Ministry of Environment (MoE) was established in 1972 (www: MoE a). The new ministry was given the responsibility for coordinating the national pollution control policy and to be a coordinative body for the other ministries (www: MoE b). Norway's natural resources, means that there is a high potential for hydroelectric power, which resulted in a large exploitation of waterfalls and the impact this caused on the environment gave environmental movements something to fight for, which really took off in the 1970s. At the end of the 70s the Alta River was granted for hydroelectric exploitation. This led to demonstrations, also related to other exploitation projects (Furre: 1992). It is worth to note that when this happened, Norway did have a big future in its expanding oil industry.

The Norwegian Pollution Control Authority (SFT) was established in 1974 and generally has monitoring and measuring as the major means for preventing pollution (www: SFT b). The rapidly growing economy and the increasing impact at on environment was one of the main forces that caused the establishment. Further on, the book "Silent Spring" (Carson) that focused on the effects of the indiscriminate use of chemicals also raised the interest for environmental care and preservation. In addition to this the view that economic growth was the most important political priority, and the reaction to this, was an important factor contributing to the founding of SFT (Nøttestad 2002:5, 13).

Sweden did go through a change-over in the energy politics during the 1970s and 1980s. The oil crisis in 1973 and 1979 clarified the Swedish dependence on fossil fuel. The political goal was now to make Sweden less dependent on oil as an energy source (Wärnaryd, Hallin and Hultman 2002:103). Up to 1971 the Swedish politicians agreed to build nuclear power plants. In 1973 this changed and two political parties did not agree on nuclear power. However, in 1975 a plan for energy was passed in the Parliament, which included nuclear power plants. In 1979 an accident at the nuclear reactor in Harisburg woke the politicians who decided to phase out nuclear power (Hadenius 1985:118-125).

The Norwegian commitment to Rio begins in 1983 when Gro Harlem Brundtland became the Chair of the World Commission on Sustainable Development. The activities of the Brundtland commission had been closely monitored by the media in Norway until the presentation of *Our Common Future* 1987 (www: PROSUS a).

In 1985 The Directorate for Nature Management (DN) was established. The directorate fall under The Ministry of Environment. DN has the scientific responsibility to manage the Norwegian nature and scenery. Acts and regulations are the platform for the authority which is given DN for managing the natural resources. The primary objective for DN is to preserve biological diversity and strengthen the common right of access to the nature (www: DN).

3.2 Reflection

In the history chapter I illustrate the shared past of Norway and Sweden during the time of the union. Through this illustration I show that the countries had political cooperating both during and after the union was dissolved. In 1952 the Nordic Council was formed which increased the political cooperation between the Nordic countries which secured further political progress between the nations.

Both Sweden and Norway experienced an expansion of the industry and a strong urbanization trend from the late 19th century (betyder 1700tal – är det det du menar?). Nature conservation became a matter of concern in both countries in the beginning of the 20th century. It was the scientists who voiced the concern about nature conservation in Sweden. In Norway the hikers were the group that expressed their concern. The increased interest in nature conservation is documented by the creation of the legal protection of natural habitats. In 1909 and 1910 the adoption of the legal framework came in each respective country, which means there is no real time difference between the initiations of nature conservation in the two countries.

With the Second World War we can see the first major differences between the countries. Sweden, which was neutral, had an industry and infrastructure that remained intact. This was not the case for Norway, which was occupied. This caused better conditions for progress in the Swedish society, and led to a faster expansion of the industry. Norway did however recover quickly after the war with economic support from the Marshall help. After the Second World War both countries experienced a period of a rapidly growing economy which led to an expansion of the industry and the use of cars in addition to a general growing consumption. Rachel Carson released Silent Spring 1962 with focus on pesticides. The support for environmental movements increased, and environmental matters became politics in both countries in the late 60s, and the movements formed as social movements

Sweden established The National Environmental Protection Agency 1967. Two years later a legal framework regulating pollution was introduced. 1974, The Norwegian Pollution Control Authority was created. It was a natural step to create authorities that control the pollution through measuring and monitoring the environment, environmental matters were in focus in both countries while the industry expanded and the oil industry was growing in Norway.

Norway had some legal framework from 1961, and in 1970 these were supplemented with two new acts. The legal framework for pollution became similar for Sweden and Norway in 1970. The legal framework can be considered equivalent for the two countries since the frameworks were presented for the same concerns at the same time. The establishment of these organizations is a sign that the governments in both countries take the public environmental concerns seriously. Norway claimed ownership to the continental shelf and started the oil

extraction. The first oil came to the mainland in 1971. The oil and the economic income it created was a turning point in the Norwegian history.

In June 1972 the UN conference in Stockholm was arranged. This put a greater focus on environmental issues on the international political agenda. All the changes through the years with increased industrialization, economic growth and increased consumption, and the effects of these changes, became a new challenge for the society.

The same year, 1972, The Norwegian Ministry of Environment was established. This shows that environmental issues were in greater focus even at the national level in Norway. The new ministry in Norway shows greater focus on environment. The hydro electric power production greatly influenced the river system, which became a matter for concern. The society started to form groups to fight for the environment, which happened in both Norway and Sweden. In Sweden opinion was mainly against nuclear weapons and power plants, but also for the expropriation of waterfalls. In Norway the fight against nuclear weapon and power plants was short. The politicians were influenced by the public opinion and the plan for nuclear weapons and power plants was turned down on the political agenda. The fight against the expropriation of the water falls did however turn out to be the main area environmental activists were concerned about in Norway. This shows us that the societies in both countries fight for the preservation of the nature, even though different issues are being prioritised. The major difference between the countries is that Sweden put efforts in nuclear energy production, and Norway did not. In both countries, environmental concerns now became a political issue of importance.

The Swedish decision to be less dependent on oil and external energy sources was taken during the 70s and 80s. This caused a search for alternative sources of energy, which I will come back to under the policy documents later.

Going through the history shows us that Sweden and Norway have a lot in common. The processes in both countries are similar in several areas. The first major difference occurred during the Second World War, when Sweden became neutral and therefore keeps the infrastructure and industry intact. The Marshall help was given to Norway which helped fund the reconstructions. Then Norway discovered oil, and this was the basis for further economic expansion.

4 Policy documents and their implementation at the national level

Political documents are the main guidelines for the countries' work with sustainability. Therefore I will go through the process that has been going on at the national levels with regards to sustainable development since 1987 when the report *Our Common Future* (WCED 1987) was released. I will also go through some of the main policy documents, and present some major activities that have been initiated at the national level for a more sustainable energy development. The implementation of some of these activities will be presented under the section that presents the local level in chapter five.

4.1 Policy documents and progress concerning the national level in Sweden

After the United Nations Conference on Environment and Development agreements made in Rio de Janeiro, the Swedish Government responded to the challenges of working with LA 21. This resulted in a small guide; "Our post tasks Rio" (SOU 1992:104). In 1995, the government set up a National Committee for Agenda 21 with people from the government, NGOs, the academic community and the corporate sector. The purpose of this committee was to work with the implementation of Agenda 21 in Sweden, collect and summarise the Agenda 21 activities in Sweden and report to the United Nation General Assembly (UNGASS). The committee was replaced by a national coordinator in the spring of 1998, since the purpose of the committee reporting to UNGASS was fulfilled. However, in November 1998 a new Agenda 21 forum was founded as a forum for exchanging experiences with people from state agencies, municipalities, industries and NGOs (Eckerberg 1999).

4.1.1 The environmental objectives

In 1998, The Government of Sweden presented a Government Bill where they introduced the National Environment Objectives (Government Bill 1998). These objectives were interpreted in April 1999 which led to the establishment of 15 different objectives closely linked to the environmental strategy. With regards to each objective there are different areas with different authorities responsible for each objective at the national level. The Government of Sweden had the overall responsibility for the objectives and created a separate council, "The Environmental Objective Council" which monitor and report on environmental status and give information on further needed actions for the objectives to be achieved. This rapport is presented to the Parliament each year and every fourth year the council makes a more advanced rapport. The objectives then had to be worked through by the counties to add what challenges there are in each county and goals for reaching the national objectives. The counties then gave the objectives over to the municipalities, which had to work out a plan on how to manage a sustainable strategy in order to achieve and maintain good results at each objective pointed out

by the county. The counties then define and monitor the regional goals towards the municipalities which have responsibility for the local adoption of the national objectives. Listing these objectives and the implementation of them, I consider as a process towards a more sustainable development. In Sweden the objectives was made into concepts and they were announced out to the public and made known through campaigns and brochures (www: Miljömål).

4.1.2 Sustainable indicators and the strategy for sustainable development

Sweden presented a set of Sustainable Development Indicators for Sweden in 2001(SCB/NEPA: 2001). These 30 indicators are supposed to be a tool for measuring the progress within sustainable development and the development during a longer period of monitoring the process, according to the national strategy for sustainable development. The Ministry of Sustainability commissioned Statistics of Sweden to make these indicators.

In 2002, The Government presented the National Strategy for Sustainable Development (Government report 2002). The background for this document was to present a national strategy for sustainable development at the WSSD in Johannesburg 2002. In 2003 the strategy was revised, now named “A Swedish Strategy for Sustainable Development – Economical, Social and Environmental” (Government rapport 2004). A Swedish action plan for sustainable development is not yet presented with this name. However, the environmental objectives could in practice be called an action plan, and the task of implementing these objectives described earlier can indeed be considered as a kind of action plan for sustainable development, even though it is not officially called an action plan.

There are four issues of strategic importance for the future identified by the government within the strategy. These four issues are:

1. “Environmentally driven growth and welfare”, which means to have environmental concern in focus for economic growth and welfare. This includes concerns for the global climate, ecosystems and peoples health. International networks are important in promoting environmentally driven growth and welfare. Energy is a key area within environmentally driven growth, and energy efficiency and saving are the tasks that are given priority (Ibid: 32-33).
2. “Good health”, which is the second issue and implies control of toxic substances and ambient noise. Greater public participation and empowerment, economic and social security, good lifestyles and favourable conditions for children to grow up in are important when estimating and improving social health status (Ibid: 33-34).
3. “Coherent policies for sustainable community planning”, which is the third issue, focus on demographics. Sustainable community planning deals with urbanization, social segregation, housing and planning of infrastructure as well as securing environmental sustainability, which is done through implementing policies (Ibid:34-35).

4. “Child and youth policies for an ageing society”, which deals with issues that concern the ageing population and fewer economically active people to support the increasing number of pensioners and children (taxes to support the welfare system). The unemployment and dependency on social security benefits as well as the integration of poor people and immigrants into society are two of the important tasks. (Ibid: 35-37).

4.1.3 Energy and climate objectives

“The Swedish Government’s goal is to reduce the emissions of green house gasses for the period 2008-2012 to be at least 4 percent lower compared to the emissions for 1990.”(Government Bill 2001:33).

The Swedish energy policy goal is to ensure the access of electricity and other forms of energy at internationally competitive conditions. The energy policy is supposed to create the conditions for efficient and cost effective use of energy which has a low impact on the environment, health and climate, and to facilitate a transformation into an ecologically sustainable society. The Parliament passed a program for a change-over in the energy policy that includes the termination of nuclear power production at Barsebäck (Ibid: 44).

4.2 Policy documents and progress concerning the national level in Norway

The Parliament in Norway took the first big step towards creating a strategy for sustainable development in White Paper 46 (Ministry of Environment 1989), “Environment and development”. This was the first step for developing a strategy for sustainable development, with the purpose of following up the report *Our Common Future* from the World Commission on Environment and Development (WCED 1987). This White Paper describes how each ministry is to be responsible for making policies within each field that will lead to an improved environment. White Paper 46 also clarifies specific areas of importance that should be used as a base for further focus. An example of these specific areas are; deforestation, loss of natural habitat, the international economy, global climate, ozone layer, world oceans and the relations with developing countries. It also specifies the need of international cooperation. The demand for moving towards an international approach is specifically mentioned in several places as a base for making the development more sustainable. In 1989 a commission for sustainable development was established, however this commission no longer exists (www: PROSUS b).

Norway followed up the UNCED conference in Rio with an own White Paper (MoE 1992). Because of the MIK reform (Environmental Work within the Municipalities, see local action) the MoE argued that there was no reason to start a Local Agenda 21 plan since the MIK reform covered the necessary changes with regards to the LA 21 plan (Ministry of Environment 1992:80) The MIK reform built up an administrative network with a focus on the environment within the municipalities. Therefore it can be argued this was in line with LA 21.

However, the results from a survey (Bjørnæs and Lafferty 2000:7) showed that this administrative network with a focus on the environment did not last after the reform ended, and no more money was allocated to this work. The decision not to work with LA 21 might therefore be considered as a failure of the MoE, since the municipalities stopped their work on the MIK-reform. Alternatively the allocation of money could have been continued to maintain the expertise on environmental matters that had been built up within the municipalities.

With the White Paper “Environmental Politics for Sustainable Development” (Ministry of Environment 1997) the Government of Norway, however, put new focus on the LA 21. The municipalities should from now on use money out of the general allocations from the State. This White Paper (Ibid) was of special interest regarding sustainable development. The paper has a focus on consumption and economic growth in relation to energy use. This paper also wanted to replace the previously used term MIK with LA 21. This is when Norway really starts focusing on the LA 21 process, mentioned in the White Paper.

This means that Norway started the LA 21 process in 1997. This does not mean there were no efforts involved with environmental work in Norway prior to this, as I just had a look at the MIK reform, which indeed was groundwork for sustainable development in Norway. One of the main challenges with one approach (LA 21) replacing another (MIK) is to keep the focus on moving from the old perspective to the new one, and transferring the knowledge. At this point the economic resources were cut by the MoE.

MoE established a coordinating unit, “LA 21 knutepunkt” (“LA 21 network node”) for all the projects involving LA 21 in 1997 and in cooperation with Kommunenes Sentralforbund (KS, The Norwegian Association of Local and Regional Authorities) started the project in 1998. The aim of this project was to create a network of support for the municipalities’ LA 21 efforts through the regional governments. The areas covered by the project were energy, climate, environmental certification, environmental consumption, cleaner production and transport. The project established a node in every county in Norway and the project went on until 2002, when it was terminated (KS 2003). Although the project ended 2002 it was a good initiative which inspired the local authorities, but as the MoE did not go on funding this activity, not all municipalities paid much attention to the LA 21 after the economic grants ceased (Interview:Grundt).

4.2.1 National Strategy for Sustainable Development

A national strategy for sustainable development came in 2002 and was presented for the WSSD in Johannesburg 2002 (MoFA: 2002). The following statement was made about the overriding objective (Ibid: 7)

”The overriding objective for Norway and the international community is to make development ecologically, economically and socially sustainable. The basis for continued

utilization of nature and natural resources must be maintained. Within these constraints we will promote stable, healthy economic development and a society with a high quality of life, and we will play a part in helping the poor people of the world to achieve material welfare and a higher quality of life.”

Four areas are identified and given priority for long term development. These are:

1. “New knowledge”, which is the first area in the Norwegian Strategy for Sustainable Development. This means putting a greater effort in research and development in general to reach at least the average level of the Organisation for Economic Co-operation and Development (OECD). Developing environmentally friendly technologies, as well as research on sustainable production and consumption are mentioned within this area (Ibid: 35).
2. “Building on people’s skills and knowledge” is the next area. This means ensuring the right to higher education of high standard and life-long learning for anyone who wishes. This also implies cooperation with businesses and industry (Ibid: 35-36).
3. “Increasing value creation without reducing the long-term production capacity and value of the natural environment” is the third area. This put decoupling on the agenda. Decoupling means to create more value in relation to the amount of pollution generated, and less consumption of energy and raw materials compared to the value produced. Planning of logistics is included in this area. This means producing goods based on local resources which will reduce the amount of transportation of goods and focus on processing raw materials instead of exporting them. Making consumers more informed about their behaviour and the impact this has on the environment will be prioritised in order to change the patterns of consumers. An economic instrument to stimulate behaviour that reduces impact on the environment is the last subject within this area (Ibid: 36-37).
4. “A good life in a healthy environment” focuses on social security and leads to a higher degree of inclusiveness in the society and better integration policies for the urban areas. Fighting sickness and encouraging physical activities are ways of improving health and securing the social welfare system (Ibid: 37-38).

National environmental objectives are presented for nine areas. Each of these areas has its own objectives. All these objectives will not be listed here, they are too many. The areas and objectives do however cover the same priorities as the Swedish national environmental objectives (4.1.1). Each area and objective has concrete goals, and most of the objectives have a set deadline when goals should be achieved (Ministry of Environment 2003b). At a national

website, that presents the national environmental objectives, there are 13 areas set up, each area represented with several objectives (www: Miljøstatus). The national environmental objectives are not presented a separate concept but as an integrated part of the national policy document.

4.2.2 National Action Plan for Sustainable Development

The Parliament (by The Ministry of Finance, MoF) presented the National Action Plan for Sustainable Development – as a part of the national budget, for the financial year 2004 (MoF 2003, chapter 6). This was first presented as a hearing in June 2003. The document is a follow up of the document presented at the Johannesburg summit in September 2002, and presents more specific information on implementation than the previous document. This document was criticized at the hearing by several NGOs for being relatively general and lacking specific guidelines to what actions should be taken. There are attachments following the document illustrating public views and concerns about the practical implementations and follow up. The part of the document with specific guidelines was criticised at the National Agenda 21 hearing from some of the groups present. This was particularly true for the areas related to the mechanisms for monitoring and coordinating the process on sustainable development (www: MoF).

It is worth noting that the national action plan is to a large extent a repetition of the demands in the White Paper 46 (Ministry of Environment 1989). It took fourteen years to make an action plan for NA 21 after the WSSD and *Our common future*, and eleven years after the Rio Conference which demanded such a strategy through the Agenda 21 plan. The plan focuses on seven main areas;

- international cooperation on sustainable development and the struggle against poverty
- climate, the ozone layer and the transportation of air pollution
- biodiversity and cultural heritage,
- natural resources,
- health and chemicals,
- sustainable economical development
- the perspectives of the Sámi people in the management of environment and resources (Ministry of Finance 2003:173).

4.2.3 National Indicators for Sustainable Development

In 2005 a Government Bill was presented regarding national indicators for sustainable development (Ministry of Finance 2005). In this proposition the idea was that the indicators are supposed to be used by the politicians as a tool when working towards making the development more sustainable (page 19). There are 16 indicators proposed by the commission that is behind the proposal. The indicators are supposed to be a natural step in implementing and monitoring the national action plan for sustainable development. This may be a great tool for measuring and following up the development. It remains to see what kind of actions will be

initiated to steer the development towards greater sustainability, if the development does not reach the set goals.

4.2.4 Energy and climate objectives

The Norwegian Government's goal is that the emissions of green house gasses for the period 2008-2012 should not be greater than 1 % of the 1990 emission level (Ministry of Environment 2003b:99). The Norwegian electricity production is based 100 % on hydro electrical energy. Thus the energy policy focuses on a reduction of oil distillates as an energy source. The Norwegian energy policy aims to convert from oil based energy to renewable energy sources. Power plants based on natural gas are planned for the future. The energy policy aims to strengthen the research on power plants based on natural gas, which have a carbon dioxide handling (Ministry of Environment 2003b; 2001).

4.3 Actions initiated at the national level in Sweden

Under this section I will present some major initiatives from the national governments to make the development more sustainable related to energy. The initiative also includes information and research on sustainable development. First I go through information from Sweden, then Norway.

4.3.1 Environmental management

The Swedish Government decided in 1996 to introduce Environmental Management Systems (EMS) in the organization of public administration. Since 1997 over 270 units have done so (www: Government info). The aim of this introduction is to focus on sustainability within the public administration. A part of the EMS is to focus on the amount of energy that is consumed. The system also implies that you are supposed to put pressure on your suppliers, which means that suppliers that have systems for managing the environmental concerns will be favoured over those that do not. An Internet site for supporting the people that work with Local Agenda 21 is administrated by NEPA. This site is an interactive resource where the administrations may find practical solutions on how to implement EMS.

4.3.2 The Local Investments Program

The Government of Sweden introduced The Local Investment Program (LIP) with the decree about Governmental grants for LIP to improve the biodiversity in the municipalities. The aim was to make the society more sustainable through a decrease in the impact on the environment, increase efficiency in consuming energy and other natural resources, give priority to renewable

energy resources and increase recycling and re-utilization. LIP should also contribute to preserving and strengthening biodiversity and cultural heritages. Projects involving improved cycling of fertilisers in the biological system and improved indoor environment could also receive grants. LIP should also contribute to increase local employment as mentioned in this decree. The Parliament allocated 6,2 billions Swedish kroner (SEK) to the LIP in the period 1998 to 2002. I will come back to LIP under local actions with more specific information and examples from society (Ministry of Sustainable Development 1998).

4.3.3 KLIMP

Local climate investment program, KLIMP, is a program to stimulate local actions that will decrease emissions leading to climate change and contribute to energy savings. The program grants money to municipalities, enterprises and other actors that are supporting long term projects which aim to decrease the green house effect. NEPA administers the program. The government decided to start this project based on the proposition “Swedish climate strategy” and it is a tool to achieve the Swedish climate goal (Ministry of Sustainable Development 2001). More information about the program with examples will be presented under local level.

4.3.4 The Institute for Ecological Sustainability

1999 the Institute for Ecological Sustainability (IEH) was established. This establishment is an initiative from the Swedish government and its purpose is to report the effects on the environment, examples of success, movements within the scientific community and to improve the cooperation between public affairs, scientists and private companies. IEH also had the responsibility to report the development of the Local Investments Program (LIP), and The Climate Investments Program (KLIMP). IEH focuses on the following fields (IEH):

- Agenda 21 and education of the people in society
- Energy and climate
- Cycles
- Nature resources and care
- Transport and planning of the society

From January the 1st 2005 the IEH was replaced by Hållbarhetsrådet (The Swedish Council for Sustainable Development). The aim of the new council is to further develop the effort of IEH, which is stimulating cooperation and progress while realizing the Swedish strategy for sustainable development (Hållbarhetsrådet). Most of the employees from IEH now work in the new council which is an important factor in maintaining the competence and strengthen the process in making the development more sustainable.

4.4 Actions initiated at the national level in Norway

4.4.1 GRIP

GRIP, (the Norwegian foundation for Sustainable Consumption and Production) was established by the Norwegian Ministry of the Environment in 1995. GRIP promotes and supports sustainable production and consumption patterns for Norwegian enterprises. GRIP work with the industries and their realistic ability to cooperate with private and public organizations in implementing sustainable consumption and production. The Ministry of the Environment provides basic financing of GRIP while participating companies finance many of the projects. The foundation is a resource for public and private organizations that want to reduce their impact on the environment, and market themselves as an environmentally responsible.

4.4.2 Prosus

Prosus is a research programme established in 1996 by The Research Council of Norway. The principal goal for Prosus is to produce knowledge for the realisation of a sustainable society.

Main objectives are (www: Prosus):

- to monitor Norway's follow up of the Rio Declaration, Agenda 21 and the guidelines of the United Nations Commission on Sustainable Development (UNCSD).
- to conduct strategic research and documentation for the realisation of a sustainable society at the local, national and global levels.
- to disseminate information on future research directed towards sustainable development and global ethics.

4.4.3 Grønn stat

Grønn stat (Green national government in Norway) is a project that brings up environmentally related issues within governmental organizations by introducing EMS. The idea is that the governmental organizations, as a big actor within the Norwegian market, shall focus on energy, transport, waste and other environmental issues. As consumer, producer, and constructor, and as owner of a huge amount of properties, governmental institutions have the opportunity to put pressure on the suppliers and co-operators. Doing this with the focus on sustainable development is the projects consensus. There is a special guide published on how to implement the EMS within the governmental organizations, which brings the subject of sustainable development into focus (MoE: 2003a). The project started as a pilot project 1998 and has now been transferred to all national governments in Norway. The project aims to have all the

national government institutions introduce EMS in their organizations by 2005. A web site has been created by GRIP, requested by MoE as a resource for the people involved in the national government's work with EMS(www:Grønn stat). The MoE announced that they were the first ministry in Norway to be ISO14001 certificated the 19th of October 2005 (www: MoE c).

4.4.4 Enova

Enova is a state owned enterprise that is managing all public funding for activities related to energy saving and renewable energy resources. The enterprise is not supposed to operate the activities related to the money they grant to the projects. Instead external actors are to be responsible for this. Mapping and measuring environmental effects are carried out by Enova (Enova 2005:4). More information about Enova with examples will be under local level, Norway.

4.5 Results

Figure 1 shows primary energy consumption per capita during 1980-2001 in Norway and Sweden, the total primary energy consumed per capita in both countries measured by ton oil equivalent (TOE). The consumption of energy may reflect several factors. One is the economic condition in the society. My focus here is to look at the tendencies over the years. The tendency is clear and shows that Norway consumes more energy per capita compared to Sweden. Further is it an increasing gap since 1980, when Norway started increasing its energy consumption.

Total primary energy consumption per capita during 1980-2001 in Sweden and Norway

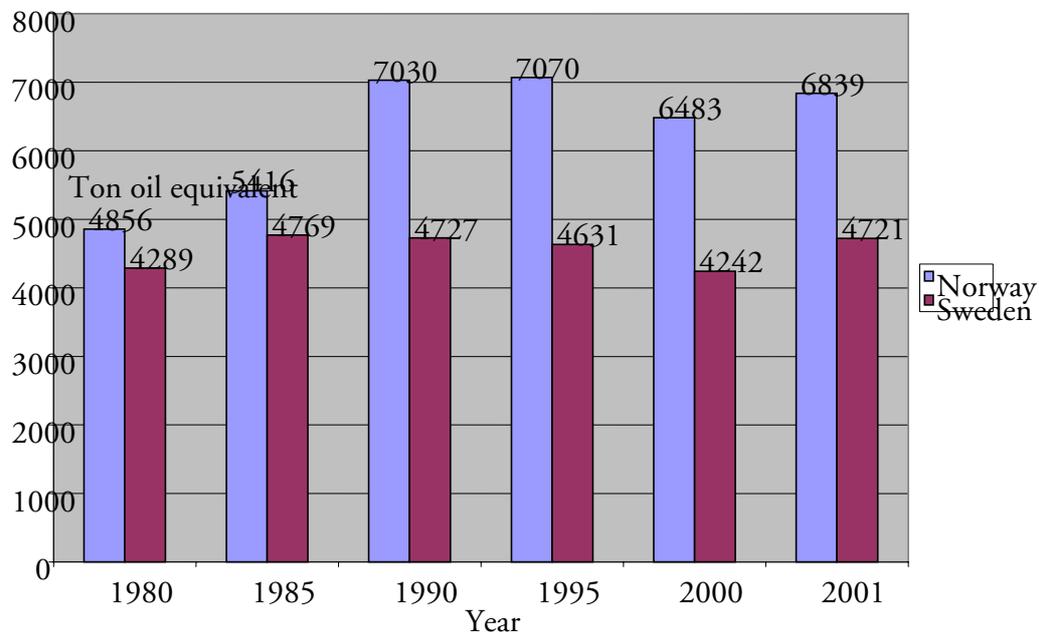


Figure 1. Total primary energy consumption per capita during 1980-2001 in Sweden and Norway¹.

Source: Figures made from statistic, www: Globalis a.

Table 1. Per capita consumption of energy in Sweden and Norway during 1980-2001, and the differences in percentage between them. As shown in the diagram, Norway has a higher consumption compared to Sweden. In 1980 the difference was 13,4 %, and 2001 Norway consumed 44,9 % more energy than Sweden. This shows that the energy consumption in

¹ Energy included in this indicator is yearly consumption of commercial primary energy: coal, brown coal, crude petroleum, nature gas, hydroelectric-, nuclear- and ground heat power.

Norway is increasing. The consumption in Sweden does not increase as much as in Norway. The general consumption was in fact lower in 2000 (4242 TOE) than in 1980(4289TOE). The overall picture is that Norway has a tendency to increase the consumption of energy per capita within investigated period. Sweden has a more unclear tendency, but does not seem to increase much.

Year	1980	1985	1990	1995	2000	2001
Norway	4865	5416	7030	7070	6483	6839
Sweden	4289	4769	4727	4631	4242	4721
Difference	13,43%	13,78%	48,72%	52,66%	52,83%	44,86%

Table 1. Per capita consumption of energy in Sweden and Norway during 1980-2001, and the differences in percentage between them.

Figure 2 shows the consumption of electricity in Norway and Sweden during 1995-2004 per capita. Norway has a consumption which is stabile, with a small decrease in the period 2000-2004. Compared to Sweden, Norway consumes more electricity per capita. The figure also shows that Sweden has an increasing tendency in the consumption of electricity for the period, apart from 2004 where we see a reduction compared to 2002.

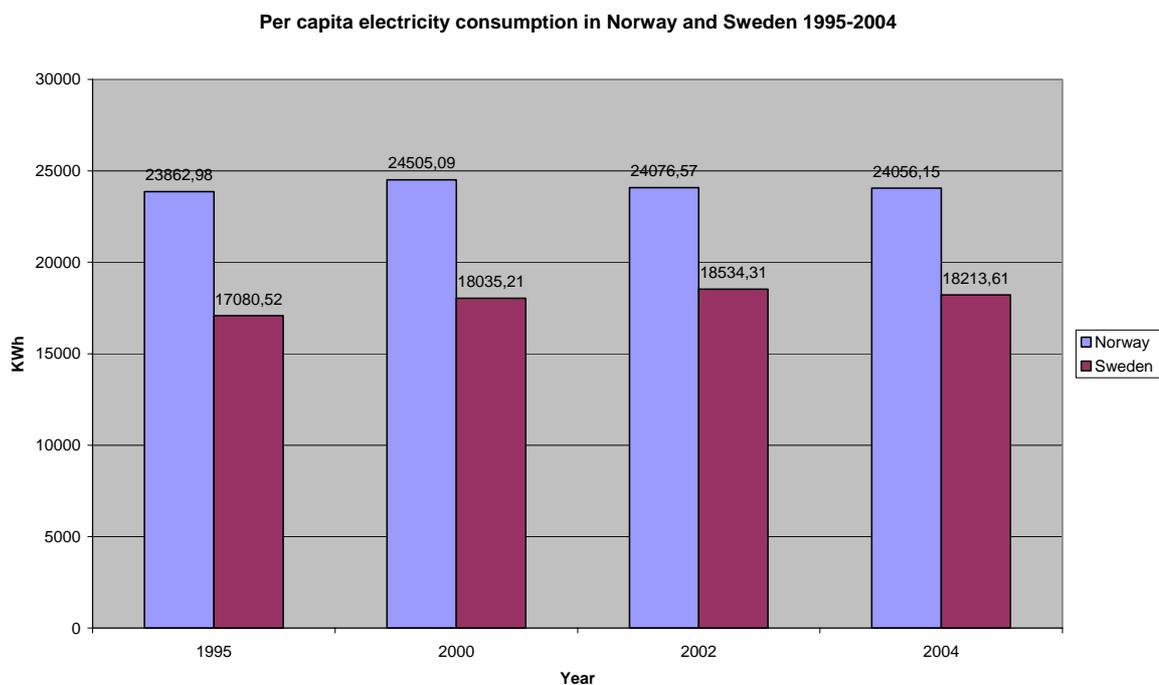


Figure 2. Per capita electricity consumption in Norway and Sweden 1995-2004.

Source: figures made from statistic, www: SSB a; b, and SCB b; c.

In figure 3, the emissions of carbon dioxide per capita in Norway and Sweden are illustrated in ton carbon dioxide emissions per capita. As the figure shows, Norway has the same tendency here as with energy consumption. The gap in difference between the countries is increasing, even though the tendency is not as clear as with the consumption of energy. The numbers for 1990 and 2002 show that Norway has twice as much emissions compared to Sweden. The main reason for this is the oil production in Norway and emissions from this (www: SFT a).

Emissions of carbon dioxide in Norway and Sweden during 1980-2002 in tonnes per capita.

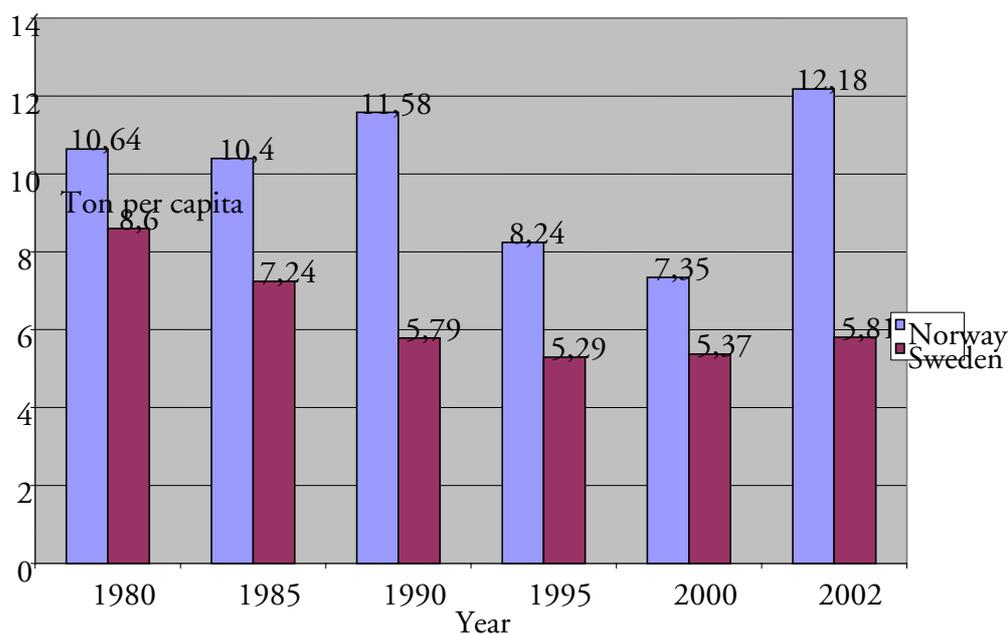


Figure 3. Emissions of carbon dioxide per capita in Norway and Sweden during 1980-2002 in tonnes per capita.

Source: Figures made from statistic, www: Globalis b.

Table 2. Total emissions of carbon dioxide per capita in Norway and Sweden during 1980-2002 and the differences between the countries in percentage. Norway has a higher emissionlevel every year between 1980 and 2002 compared to Sweden. The numbers illustrate that there are variations between the annual values. These variations may be explained by variations in oil production in Norway and, for Sweden, prices of oil may be of importance.

Since Sweden does not produce oil like Norway, this may explain the decreasing tendency in Sweden. The overall tendency is, however, that Norway has a much higher level of emission of carbon dioxide than Sweden.

Year	1980	1985	1990	1995	2000	2002
Norway	10,64	10,4	11,68	8,24	7,35	12,18
Sweden	8,6	7,24	5,79	5,29	5,37	5,81
Difference	23,72%	43,65%	101,73%	55,77%	36,87%	109,64%

Table 2. Total emissions of carbon dioxide per capita in Norway and Sweden during 1980-2002 in tonnes, and the differences between the countries in percentage.

Total emissions of carbon dioxide in Norway and Sweden during 1980-2002 expressed in tonnes.

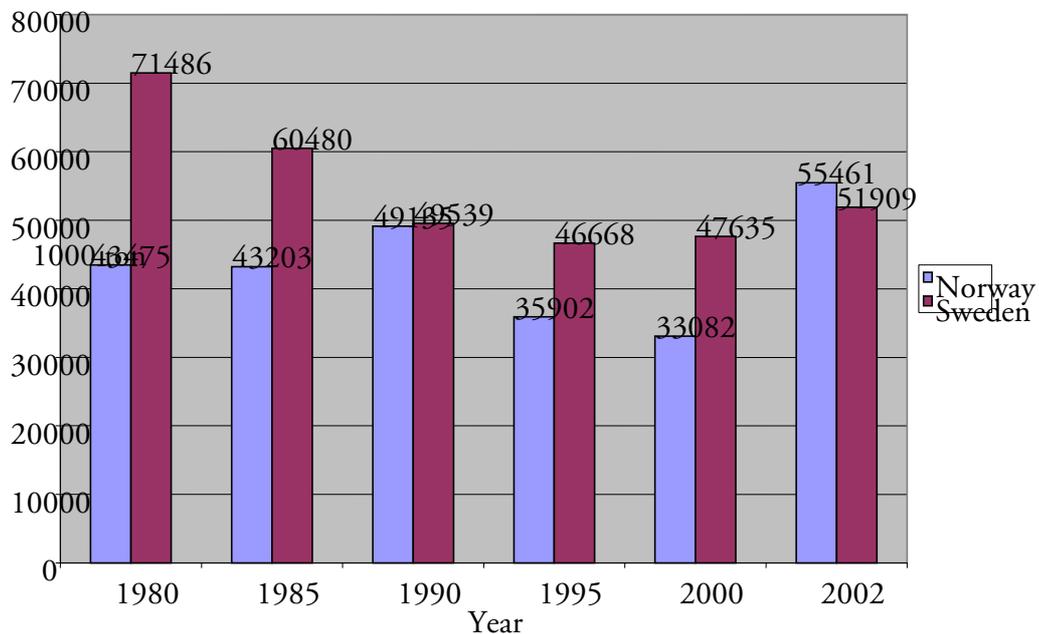


Figure 4. Total emissions of carbon dioxide in Norway and Sweden during 1980-2002 expressed in 1000 tonnes.

Source: Figures made from statistic, [www: Globalis c.](http://www.globalis.c)

Figure 4 shows emissions measured in 1000 tonnes of carbon dioxide. As the figure shows, Norway has increased their emissions from 1980 to 2002, while Sweden has decreased theirs.

To relate the emissions to the Kyoto protocol commitments, I made **Table 3. The development for total emissions of carbon dioxide in Norway and Sweden in 1990 and 2002 in tonnes, and the differences between the years in percentage.**

Earlier in this chapter I showed that Norway is allowed to have emissions of green house gasses that may be 1 % higher than 1990 level. In 1990 the emissions of carbon dioxide was 43 475 measured in 1000 tonnes. Through adding 1 % to this, the average emissions for 2008-2012 have to be a maximum of 43 910. In 2002 the emission of carbon dioxide was 12.9 % higher compared to 1990 as table 3 shows.

Due to the Kyoto protocol Sweden has to decrease the emissions of green house gasses by 4 % compared to the level of emissions in 1990. In 2002 the emission of carbon dioxide was 4,8% higher than 1990, see table 3.

Year	1990	2002	Difference
Norway	49135	55461	12.9 %
Sweden	49539	51909	4.8 %

Table 3. The development for total emissions of carbon dioxide in Norway and Sweden in 1990 and 2002 in tonnes, and the differences between the years in percentage.

Emissions and consumption of energy are in focus at actions initiated at the national level, such as LIP, KLIMP and Enova. I will come back to the results of these actions in chapter **5 Policy documents and their implementation at the local level.** The environmental certification of governmental organisations may affect the private enterprises to become certified. In table 4 I show the total enterprises in Norway and Sweden that are certified and the differences in percentage between them.

Year	December 1998	December 2000	December 2002 ²	December 2003 ³
Norway	61	227	278(715)	350(802)

² The numbers in parentheses are included Eco-lighthouse certificated enterprises.

³ The numbers in parentheses are included Eco-lighthouse and EMAS certificated enterprises.

Sweden	304	1370	2730	3404(3504)
Difference	498%	603%	982%(381.8%)	972%(436%)

Table 4. Total enterprises certified with ISO14001, EMAS and Eco-lighthouse in Norway and Sweden, and the difference in percentage between them during 1998-2003.

Source: www: ISO; Ecolight a; EMAS.

In 1998 Norway had 61 enterprises certified through ISO 14001, when Sweden had 304. This means that Sweden has 498% more certified companies. The trend is that the gap is increasing up till 2002 when the difference between the countries is 982%. For 2003 the trend is slightly decreasing, but it is still a gap of 972% between the countries, Norway has 350 enterprises certificated, while Sweden has 3404. The numbers in brackets include Eco-lighthouse and EMAS certifications. The tendency is still the same, but Norway has strengthened its position compared to Sweden, and the difference in percentage is reduced. To illustrate this on a per capita basis, I made table 5 that shows the same numbers related to citizens in each country and the difference between the countries. In 2002, 437 enterprises were certificated by Eco-lighthouse. This does not affect the trend much, even though it changes the results. The trend is still the same. Sweden has more certificated enterprises compared to Norway, but the corrections for citizens tell us that Norway has strengthened its position compared to Sweden significant from 1998 to 2003.

Year	December 1998	December 2000	December 2002 ⁴	December 2003 ⁵
Norway	1.38	5.07	6.14(15.8)	7.69 (17.62)
Sweden	3.43	15.42	30.53	38 (39.19)
Difference	248.64	304.28	496.90 (193%)	495.19% (220%)

Table 5. ISO 14001, EMAS and Eco-lighthouse certified enterprises per 100 000 citizens in Norway and Sweden during 1998-2003^{6, 7}, and the difference between them in percentage.

⁴ The numbers for 2002 includes EMAS and Eco-lighthouse certifications, which are showed in brackets.

⁵ The numbers for 2003 includes EMAS and Eco-lighthouse certifications, which are showed in brackets.

⁶ The total numbers of enterprises certified are divided by the number of citizenspr 31.12. respective year for Sweden, and 1.1. respective year for Norway.

⁷ Numbers for 1998 and 2000 do not include EMAS and Eco-lighthouse certifications.

⁹ Other fuels include hot water, renewable fuel including electricity, heat pumps and waste heat, and biological fuel include bio gas, peat, wood and rest products from wood.

Source: www: SSB b; SCB c; Ecolight; EMAS and ISO.

As table 5 shows, the trend from table 4 is still valid, even though the differences in percentage are not as high, the differences are still remarkable. There is one factor that may explain some of the differences and this is the number of large enterprises in Norway compared to Sweden.

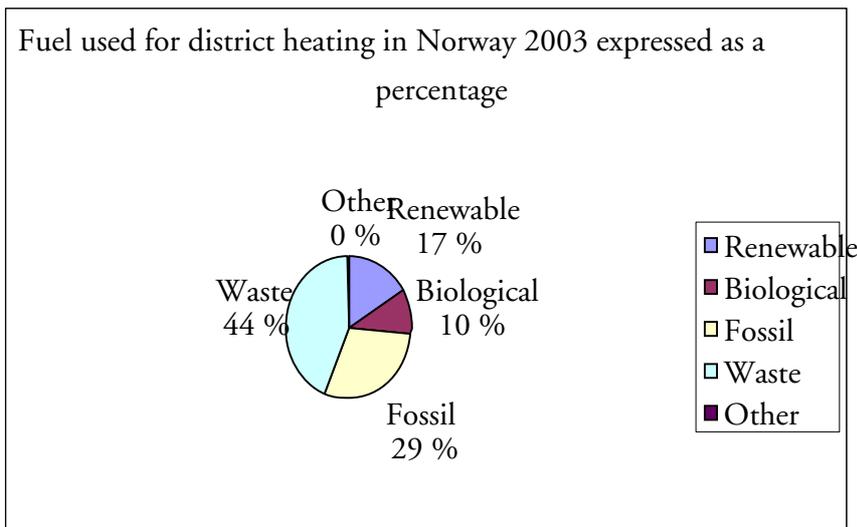


Figure 5. Fuel used for district heating in Norway in 2003 expressed as percentage⁹

Source: www: SSB c.

Figure 5 shows what kind of fuel is used for district heating in Norway expressed in percent.

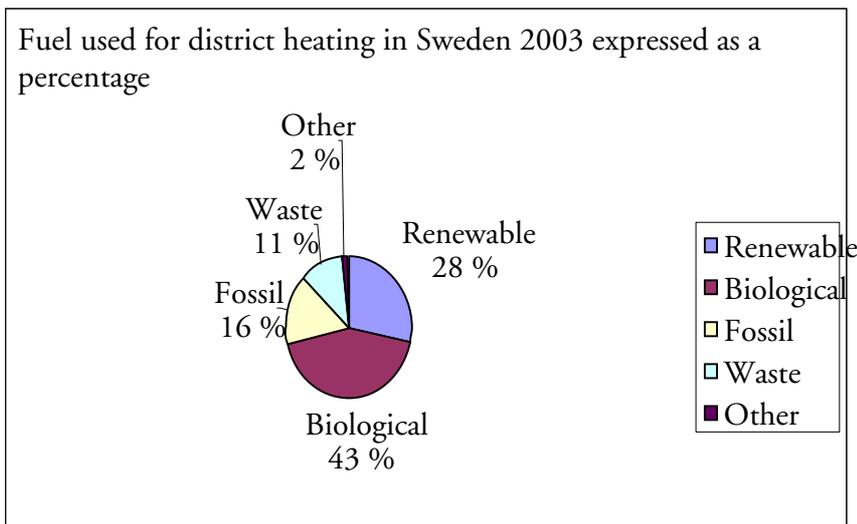


Figure 6. Fuel used for district heating in Sweden in 2003 expressed as a percentage⁹

Source: www: Svenskfjärrvärme.

To compare and make the differences clearer, I made table 6. In table 6 we see that there are large differences between Norway and Sweden in the different fuel sources used in district heating. As the table shows the most frequently used fuel is waste in Norway, whereas it is biological fuel in Sweden. Waste is almost half of the fuel (44%) used in Norway, while waste only represents 11% in Sweden. Renewable fuel in Norway represents 17% of the total use, and for Sweden this is 28%. The large differences are difficult to explain. The LIP in Sweden may however, explain why the Swedish district heating plants use more renewable and biological fuel, since the activities within this project to a large extent concerns the use of renewable energy and efforts to expand district heating. Similar efforts are not used on district heating in Norway.

Fuel	Norway	Sweden
Fossil	29%	16%
Waste	44%	11%
Other	0%	2%
Renewable	17%	28%
Biological	10%	43%
Sum	100%	100%

Table 6 Fuel used for district heating in Norway and Sweden in 2003 expressed as a percentage⁸

Action	Sweden	Norway
National environmental objectives	1998	x
Indicators for sustainable development	2001	2005
National strategy for sustainable development	2002	2002

Table 7 Actions initiated at the national level in Sweden and Norway, and time of initiation.

⁸ Other fuels include hot water, renewable fuel include electricity, heat pumps and waste heat, and biological fuel including bio gas, peat, wood and rest products from wood.

In table 7 I have gathered three actions to indicate development on the process of integrating sustainable development. The first action is national environmental objectives. Sweden introduced this as a concept in 1998. Norway has not put much efforts in presenting the objectives as a concept, they are integrated in the main policy documents and not as an own concept introduced for the public, as Sweden has done. This is the reason that I have marked this action with an x for Norway. In my opinion, the Norwegian national objectives are still only on a regulative level of sustainable development, while the Swedish objectives are implemented on a more practical level down to the municipal level.

Sweden introduced indicators for sustainable development in 2001, while Norway did it 4 years later. This is again an indication that Norway slower than Sweden in the process of implementing sustainable development. Finally, national strategies for sustainable development were presented from both countries at the Johannesburg convention in 2002.

As these results show, Norway has been later and slower with integrating sustainable development compared to Sweden. I argue that Norway has only performed well at the regulative level of sustainable development, while the practical part has not performed well. The regulative level does not seem to be well represented by the practical level if you use the above information as an indicator

4.6 Discussion

When I look at the progress at the national level it is clear that the international focus on sustainability and environment has had an influence. Environment and sustainability became a matter not just for the policy document, but also caused changes for the political organization in both Norway and Sweden. Without the international focus on sustainable development, the efforts made by the national authorities would not have achieved the results we see today.

The Ministry of Environment in Sweden was created in 1987, and may be seen as a change in the direction and importance of environmental focus in Sweden. This does not mean that environmental issues were not of importance before. What we see here is a separate ministry being founded in the same year as *Our Common Future* was released. This may be considered a quick reaction to the rapport by the politicians in Sweden; however, the Norwegians were even earlier in establishing a separate ministry for the environment. Norway founded a separate ministry for the environment in 1972, as mentioned in the history chapter.

Norway founded a commission for sustainable development in 1989, which was early. This may not be surprising since Gro Harlem Brundtland, who was the chair person of the WCED at that time, was the prime minister of Norway. However the commission in Norway no longer exists. This is an example of how processes like these sometimes lack continuous support

from the national government, which I consider a mistake. There is no doubt that it is important to have a clear focus that continues over time where knowledge is accumulated through trial and error in order to succeed. A commission for sustainable development was introduced in Sweden in 1995. This commission was replaced by a national coordinator which in turn was replaced by an Agenda 21 forum. This is, compared to the situation in Norway, a continuous work with a focus on sustainable development. In this matter it is clear that Sweden has supported the policy documents and followed up with actions in a more consistent manner than what is the case in Norway.

One of the obligations made after the conference in Rio was to create national policy documents on how to work with LA 21. A national strategy for sustainable development had to be created and presented at the next UNCED conference in Johannesburg 2002.

After the UNCED in Rio, both countries created policy documents as a way to follow up the process of the sustainable development. Sweden continued to use the terms Agenda 21 and LA 21. Norway, however, decided not to work with Agenda 21 and LA 21 because they already had a reform with regards to environmental matters within the municipalities (The MIK reform). In 1997 Norway changed its focus on the White Paper and started to focus on environmental politics for sustainable development where LA 21 is mentioned as a separate area, and they formed the network for LA 21. This network shows that the desire to focus on LA 21 was more than a political document. The project did however end 2002, when no more money was allocated from the MoE to the municipalities. This, again, shows how the political priority areas change and how this may affect the processes that are initiated. Each municipality had an own coordinator to work with environment and sustainability, and after the reform ended, the work ends. To keep up the work, money for the environmental actions could be allocated directly to the projects (As done during the MIK reform).

The challenge of the Norwegian Government was that there already existed a reform regarding environmental matters. The decision not to focus on LA 21, and go on with the existing reform slowed down the process of the international priority program (Agenda 21). However, as they changed this in 1997, they are, now back to focusing on the Agenda 21 program. I will not conclude that this alone means that Norway was weaker in their work towards a more sustainable development, but it did put Norway on the side line in comparison to Sweden for a while, with regards to the Agenda 21. The importance of local work towards sustainability is most important. The sum of the results of each contribution at the local level is as significant. Aggregated to the national level this contribution will be a great move towards a more sustainable development.

In 1998 Sweden developed their environmental objectives. These were worked through and implemented gradually throughout the municipalities. This resulted in solid plans made by the local authorities on how to monitor and adopt the actions needed to reach the national objectives. This line of progress shows how the work may be brought forward to the local level from the national level through the regional counties. It also shows that the national authorities

have the will to take the consequences of the policy documents created at an earlier stage. The implementation of these objectives secured a base for further progress at the local level. This process was taken very seriously at the regional and local level, which resulted in a specified plan on how to work with the environment and sustainability. The municipalities worked out plans for reaching their set environmental goals. Such concrete objectives to obtain a more sustainable development are in general not present at the local level in Norway.

Monitoring and measuring the development and the grade of sustainability is a major tool in analysing the results of implemented actions and mapping the grade of improvement. In relation to this, Sweden presented a set of sustainable indicators in 2001. Such indicators were presented in 2005 by the Norwegian Government. These indicators will now contribute to the monitoring of the process and secure constant measurable indicator units that may be comparable over time. The indicators may then be a great tool for the governments and scientists to monitor the process. Sweden made the indicators four years earlier than Norway, which strengthens the impression that Norway was delayed in the process of working towards a more sustainable development.

In 2002 the UNCED conference was held in Johannesburg. Both countries presented their national strategy for sustainable development as planned. The Norwegian national strategy is very general and does not specify detailed plans. The Swedish strategy is more focused on goals and how these should be reached. The framework that the countries have to work within is mentioned, but there is no action plan or methods of reaching the goals. The solution to this is an action plan for reaching a more sustainable development. Norway came with this document in 2005. This plan is more specific and mentions quite a lot of areas that have to be evaluated in order to achieve the goals. A national document like this has to be worked through and implemented at the different levels of governance. After this it needs to be implemented at the local level.

It takes some time to adapt a local implementation from international policy documents (The Agenda 21 documents). This can be compared to the process Sweden experienced with the environmental objectives and adopting these to local actions needed to fulfil or try to fulfil the set goals. A national initiative to the municipalities on how to work out a plan to deal with sustainability at the local level is therefore recommended. This plan has to be concrete with goals and tools to reach the established goals. As I have showed, such initiatives were done by both countries. LIP and KLIMP are two projects initiated at the national level in Sweden to reduce the society's impact on climate change. Norway has Enova, which is comparable to the Swedish initiatives, but with less focus at emissions, especially related to traffic and alternative fuel. Scientifically we see that both countries have established an institution to follow the process of implementing sustainable development. Sweden has Hållbarhetsrådet and Norway Prosus. These are the main institutions in both countries that are following the process.

Hållbarhetsrådet is an administrative unit, while Prosus is a research program. Further efforts to build up capacity and knowledge, and further activities to increase the impact on the environment have to be implemented to keep the focus on, and to obtain a more sustainable development. One important factor to consider is the importance of having the focus on sustainable development clear, and to continue the efforts over time. Sweden seems to have performed better within this than Norway. This is mainly due to the decision not to go for Agenda 21 in Norway, which delayed the process.

The regulative concept of sustainable development is given by the Agenda 21 document, but this document also has a more specific priority area that might be looked at as a guide to the practical implementation. In my understanding of the concepts of regulative and practical sustainability, it will be different at each level, for example at the international, national and local level. Different parts of the world have different areas they may prioritise in order to reach a more sustainable development. Nationally; the politicians have to make concrete objectives to reach a more sustainable development. As I have detected, this has been done in Sweden, and activities have been implemented at the local level (LIP), which result in lower emissions of carbon dioxide on a national level. In Norway, these objectives are present, but there seems to be a lack of implemented activities to reduce the emissions. While the project initiated in Sweden has a relatively broad approach, the Norwegian projects (ENOVA) seem to be more rigid, and not focus directly on decreasing emissions of carbon dioxide. In other words, Norway has not succeeded in the practical aspect of sustainability, as much as Sweden has.

Environmental management has become an important focal point for both countries. By introducing a system that aims to reduce the impact on the environment, the public administrations state a responsibility for the environment. Through this management system the administration have the possibility to put pressure on suppliers to concern more about environmental issues. This may eventually lead to the implementation of environmental management systems in the private sectors that are often suppliers to the public administration. Sweden started the implementation of environmental management systems in 1996, while Norway started a project in 1998, which resulted in a decision of full implementations by the end of 2005. Sweden was earlier than Norway in introducing environmental systems in governmental organizations. From the numbers of certified enterprises in my result it can be stated that Sweden has more enterprises certified compared to Norway. This may be a result of the earlier introduction of the management systems in Sweden than what was the case in Norway. As Norway now is implementing management system regarding environment in public sector this should increase the certifications in Norway. For both countries' public sector it will be most important to put the pressure on customers to certify and focus on environmental concerns, to get results towards a greater sustainability.

In the climate policy we see a major difference in the goals set by each respective country, based on the Kyoto Protocol. Sweden has as a goal to reduce the emissions of green house gasses for the period 2008-2012 by at least 4 percent compared to the emission levels of 1990. The Norwegian Government's goal is that the emissions of green house gasses for the period 2008-

2012 should not be more than 1 % higher compared to the 1990 level. The oil industry in Norway is the main reason for Norway's increasing emissions of carbon dioxide. With regards to the energy policy, the main objectives are the same, apart from one major difference. The Norwegians chose the possibility to start energy production from power plants based on natural gas, while Sweden is going to phase out the nuclear electricity production. Both countries search to build out renewable energy sources. It is difficult to see the link between renewable resources and power plants based on gas, which Norway wants to build out. Nationally this will not be a development in the direction of more sustainability. Compared to for example coal based power plant, it could be argued that natural gas is a more sustainable option. This is not considered as an aspect in this paper, but is an argument that has to be considered from an international point of view.

The statistic material shows a clear difference in consumption of energy. The primary goals for both countries are to move to renewable sources. District heating is one action that both countries push for, and this might be developed further to ensure a more sustainable use of resources. While Norway has the electricity production based on hydro electric power, Sweden has nuclear power still remaining. The goal is to phase this nuclear power out, and replace the need for power with renewable sources. While the LIP in Sweden focus on a diversity of activities of different scales to reduce energy consumption and use of fossil fuel, Enova in Norway is more rigid and focus on larger projects limited to electricity and energy usage in buildings, but no projects are related to traffic and emissions from the traffic. Both kinds of projects are effective with regards to sustainable energy consumption and production. It remain to see the final results regarding energy consumption in the future, to see if these actions will reduce the energy consume per capita.

Nationally I have documented that both countries have contributed to support the process on integrating sustainable development. Norway has been later in this process, much based on the MIK reform. Lack of continuity of the progress may also have caused less progress in Norway, while Sweden seems to have performed better here. The continuity in the processes has been maintained, which has given the process in Sweden a broader and earlier implementation.

With regards to emissions Norway seems to be far from reaching the objective set through the Kyoto protocol, which was not to increase the total emissions by more than 1% compared to the level in 1990. As illustrated, this is not reachable when we look at the case for carbon dioxide. Sweden is closer to the objective. It is difficult to argue whether the countries are going to reach the objectives set, in the future, which will depend on further efforts. However, there is no doubt that Sweden has a development that seems to be closer to reach the objective, compared to Norway. Norway is a producer of oil, which has a great impact on the environment (in this context emissions and fossil fuel). Because of this it could seem natural that the country should put a great effort in actions to reduce consumption of energy and

reduce emissions. This study has not detected any evidence that this is the case, and the process so far, shows that Norway has to initiate activities to reach the goal set through the Kyoto protocol fast and with great efforts.

From my investigation I discovered a major difference when I look at how the national authorities like to reach goals set regarding emissions. The main difference regarding emissions is that no major projects are initiated at the national level in Norway to reduce emissions at the local level, while the Swedish authorities introduced the large scale project LIP, among other things, to reduce emissions with funding from the national authorities. When it comes to energy consumption, Sweden has given support through LIP as well. This includes both energy saving, and renewable energy. Norway has this through Enova. The investigation further discovered that Sweden has gone for bio fuel to replace fossil fuel, both in vehicles and for heating. In Norway, the efforts mainly aim at reducing energy consumption through heating for houses, and the efforts on bio fuel related to actions initiated with regards to vehicles seem absent.

The results at the national level clarify that Sweden has a development that is more sustainable compared to the development in Norway, with regards to energy consumption and emissions of carbon dioxide. Both countries have as an objective to reduce the use of fossil fuel, and focus on renewable energy. The electricity in Norway is based 100% on hydro electric power, which means that the efforts to reduce emissions of carbon dioxide have to be focused on traffic and oil production. Sweden has, through LIP already introduced alternative fuel, while Norway, at present, has no efforts on this aspect.

5 Policy documents and their implementation at the local level

The directions given by the national government are carried out and implemented by the local governments. These implementations show how the political decisions work in reality and are therefore important to study in order to follow the development. First I will go through the process on sustainable development based on research, then I will go through policy documents that concern environment, and finally I will present some activities at the local level within the energy area and information regarding sustainable development.

Both Norway and Sweden have, in relative terms, strong municipal leadership in relation to an international level. This is a principal of how the countries work (Nordic Council of Ministers 2005:27). However, the report shows there are certain differences between the Nordic countries. For Sweden and Norway this is apparent in the sizes of the municipalities. In Norway, the average number of citizens in municipalities are approximately 10 000, while the same average for Sweden is around 30 000 (Ibid 32). The organization of the national, regional and local level in the countries is, however, comparable. When it comes to the national control over the municipalities, Norway have less economic autonomy than Sweden, since the taxes the municipalities are allowed to take out of its citizens are controlled by the Government (Ibid 38). This means that even though self governance is strong in both countries, Swedish municipalities have greater freedom in setting their own taxes as a result of differences in governmental control. First I will present the Swedish documents and projects, then the Norwegian.

5.1 Progress and political objectives concerning the local level in Sweden

5.1.1 Progress on Local Agenda 21

Sweden has a strong municipal autonomy, which allows the creation of local policies regarding local taxes within most sector areas (Gustafsson 1988:52). This means that the local government has the ability to develop its own strategies within the frames given by the national government. However, there are certain goals that the local authority has to work towards, for example the environmental objectives. There have been several studies focusing on the LA 21 process in the municipalities in Sweden. I will briefly go through the major development of the progress within sustainable development based on studies of research and literature.

In the beginning of 1996 all municipalities in Sweden had decided to start working on their own LA 21 process (Government Bill 1998:105). In 1998 56 % of these municipalities had made an own Agenda 21 action plan. In 2001 70 % had an own Agenda 21 action plan (Edström and Eckerberg 2002:8). As this report also mentions, an adopted plan does not

necessarily mean that the work with Agenda 21 is active within each municipality. In as many as 25 % of the municipalities, the respondents give the answer that the document is irrelevant since it needs to be updated or changed. On the other hand, in about 33 % of the cases, the plan has been adopted and is taken into account in decision making according to the survey. The survey also shows the trend in what the Agenda 21 work consists of. Renewable energy, environmental work at schools and nursery schools, biodiversity and green key figures are dominant fields both in 1998 and 2001 (p. 12). It is interesting to note that the national environment objectives are a field that is included in 49 % of the municipalities for 2001. The introduction of the 15 environmental objectives in 1999 might be the reasons why the percentage would rise from 1998 (56%) to 2001 (70%). The objectives are an integrated part of the documentation and implementation of Agenda 21. Another field that seems to be in greater focus in this survey is eco efficiency. This may be a result of the Local Investments Program (LIP) that puts some of its focus on effective use of energy and improving ecological sustainability (LIP is presented in chapter 4.4.3 and 5.3.6). The survey (Edström and Eckerberg 2002) concludes that there are two different pictures of the development of LA 21 in Sweden for the period the survey concerns. One is that more municipalities than ever have adopted plans for LA 21 and still allocate funding for LA 21 activities in the budget. The other picture is that one fourth of the municipalities does not have implemented LA 21 plans, and two out of five claim that their resources for LA 21 have diminished.

Further the survey (Ibid) finds that LIP has helped to maintain the profile of LA 21 to some extent. A growing gap between LIP-supported and not-supported municipalities is stated.

Fields that are incorporated in the municipals Agenda 21 work in percent, Sweden

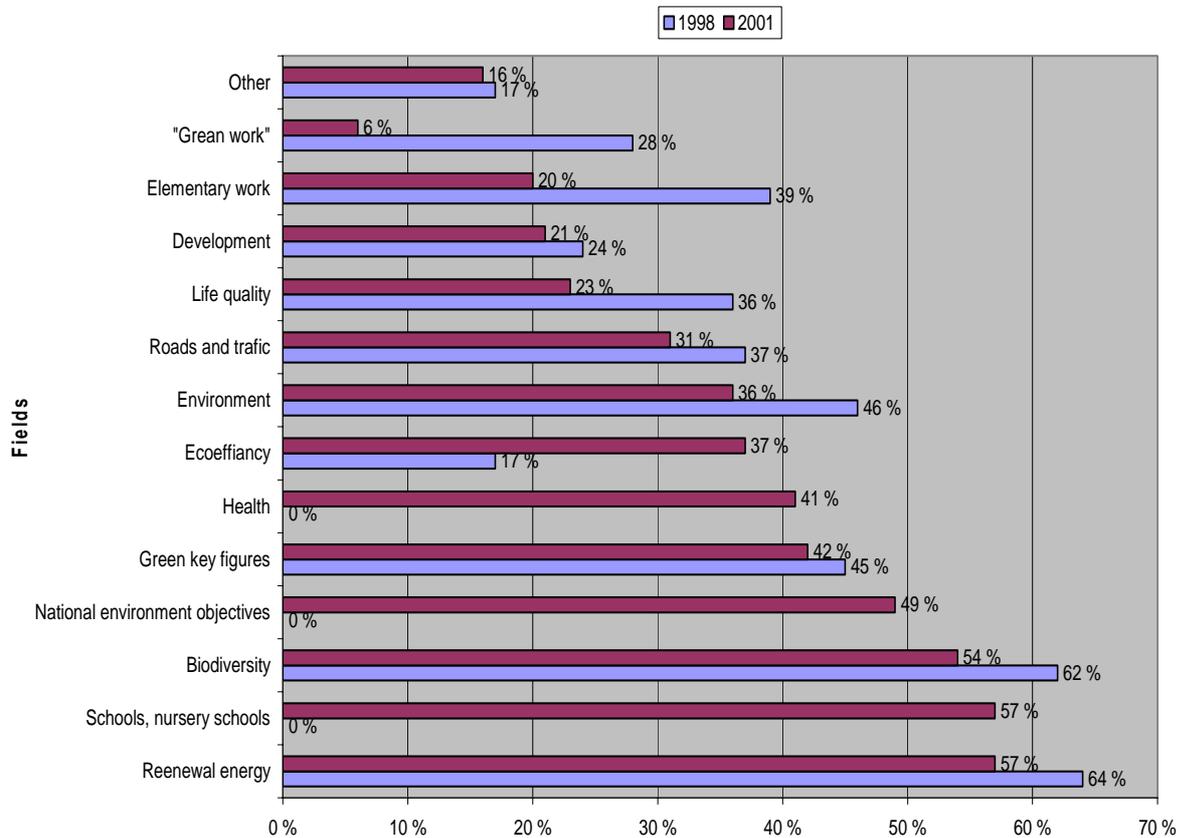


Figure 7. Fields that are incorporated in the municipalities Agenda 21 program, Sweden in 1998 and 2001, expressed as a percentage.

Source: Reproduced from Edström and Eckerberg 2002:11

5.1.2 Political objectives, Stockholm

Stockholm has one main program that focuses on environmental matters for the period 2003-2006. This program is divided into two parts; one that describes the present situation in Stockholm (Stockholm Stad 2003b), and one that contains the objectives (Stockholm Stad 2003a). The overall aim of these documents is to lead Stockholm towards a more sustainable development. The document that contains the objectives (Stockholm Stad 2003a) includes 6 main goals. I will focus on two of these that concern energy and emissions of carbon dioxide. These two objectives primarily cover transport and energy. Aspects in bold typing will be

investigated later in this paper.

Objective one deals with the environmental efficiency of transportation. This area has ten specific aspects. Seven of these relate to emissions and energy in some way. These are (Ibid):

To increase the relative part of citizens' that use public transport or cycle.

Renewable fuel used in vehicles shall increase by at least 5 percent.

The surface used for traffic systems in Stockholm shall not increase in relation to surface per capita.

The city has to act and follow up the rules for the environmental zones (Heavy diesel operated vehicles with high emissions are not allowed in the inner city).

Stockholm shall give priority to entrepreneurs that use machinery with low environmental impact. When the municipalities purchase machines the same aspect has to be given priority (consumption of fuel and emissions).

Through invitations to tenders on transport, environmental impact shall be a major concern in the evaluation of the bid.

Boats that regularly dock in the Stockholm_harbour shall have exhaust emission control and use fuel that has low sulphur content.

Objective three concerns sustainable use of energy. The objective has specified aspects. These are (Ibid):

Consumption of fossil fuel used for heating shall be reduced, and district heating shall increase by 20 percent through connecting more households to district heating.

No less than 80 percent of the district heating shall be based on energy from renewable sources.

The consumption of energy for electricity and heating within Stockholm City's own activities has to be decreased by 10 percent per capita. The share of consumed electricity that is environmentally certified has to increase.

At least a 5 percent increase of the amount of enterprises and households that consume environmentally friendly energy alternatives should be reached.

5.1.3 Local Agenda 21 Stockholm

Stockholm initiated the Agenda 21 project, after a decision made in 1994. From 1995 to 2000 the work was coordinated and prepared through a separate Agenda 21 office. A group to manage the project was formed. This group was represented by the public administration and general managers of enterprises, and a reference group from the local participants. In 1997 the city administration was split into local administrative authorities that dealt with the local parts of the city (Stockholm City 2004).

In 1999 Stockholm decided to phase out the project and start up Agenda 21 as a regular activity. At this point the local administration got the full responsibility for Local Agenda 21. Focus is on encouraging a dialogue and co-operation on environmental concerns between the citizens. A network for exchanging experiences and coordinating the efforts is formed. The city administration of environmental affairs (Miljöförvaltningen) gives support to the local coordinators of the Local Agenda 21. The program for environmental concerns in Stockholm is connected to the Agenda 21 efforts to establish dialogue and increase knowledge and participation from the citizens in the process of reaching the goals (Ibid).

The political focus on Local Agenda 21 was low from 1998-2002, but the politicians are now more cooperative and Local Agenda 21 is now back on the political agenda. Through the program on environmental concern in Stockholm (Stockholm City: 2003a, 2003b), the responsibility for LA 21 was clarified. LIP has contributed to activities within Local Agenda 21 in Stockholm (Interview: Möller).

5.2 Progress and political objectives concerning the local level in Norway

5.2.1 Progress on Local Agenda 21

In Norway the Government decides the taxes for the municipalities. From 1991 to 1997 almost every municipality could receive allocated money from the state to work with environmental issues as a result of the MIK reform (environmental work within the municipalities' reform). The intension was to build up local competence with regards to environmental issues within the municipalities. This reform resulted in most of the municipalities (96%) appointing a separate coordinator for the purpose of working on environmental matters (Bjørnæs 2002:5). However, these coordinators did not last after the reform ended. During the period of the reform the municipalities received money from the state for developing competence on environmental issues. Kommunenes Sentralforbund (KS, The Norwegian Association of Local and Regional Authorities) was actively cooperating with the MoE in transforming the municipalities' work. KS pushed for a change in the way the money was allocated to environmental issues and through these changes the municipalities got the freedom to spend the money as they wished (KS 2003). Three years after the money was

allocated in the general transaction pot to the municipalities, 58 % of the municipalities had a reduction in the coordinators environmental work, or did not have a coordinator left at all according to the result from the survey (Bjørnæs and Lafferty 2000).

A project called "bærekraftige lokalsamfunn" (sustainable local communities) was carried out from 1996 to 1998. The project was initiated by The Norwegian Pollution Control Authority (SFT) and the purpose was to identify a pattern of how sustainable development would be obtained. Seven municipalities participated in the project including a total of twenty separate schemes (Ohm). An independent environmental certification system, called "environmental lighthouse" (www: Ecolight b) was introduced after this project. This certification is a special edition made for Norway, a less complicated and smaller system than for example the ISO14001 standard (www: ISO b).

In 2000, 69% of the municipalities in Norway had some municipal activity related to Local Agenda 21 according to a survey (Bjørnæs and Lafferty 2000), while 31% did not. 71% had issues on biodiversity and 43% on renewal energy. According to the same survey 49%, of the municipalities had a political discussion on Local Agenda 21, while 51% did not. This shows that there are activities within the municipalities due to Local Agenda 21. What these activities are was also included in the survey. 48% of the municipalities had an integration of LA 21 in policy documents, 34% of the municipalities had not. 6% would make an own LA 21 plan, 5% already had such a plan, and 7% would integrate the LA 21 process in other plans (Ibid).

5.2.2 Political objectives, Oslo

Oslo has one main document for environmental matters. This program is a strategy for sustainable development (Oslo City Council 2003). Six main objectives are identified in the strategy. I will focus on two of these that concern energy and emissions of carbon dioxide. These two concerns transport and energy. Aspects in bold typing will be investigated later in this paper.

One of the objectives concerns environmentally efficient transport, and the use of renewable energy sources. The objective has been divided into five specified aspects. These are related to emissions and energy in some way. They are (Ibid):

Oslo shall aim to decrease the demand for transport, and coordinate the transport system in order to cover the need for travelling at the same time as it reduces the impact on the environment.

The increased demand for transport in Oslo should be solved by extended use of public transport in order to reduce the pollution and prevent the formation of queues during rush hour.

Cycling or walking shall be the most common way to travel inside the city.

Oslo is seeking to reduce transportation by car and to replace fossil fuel with alternative fuels, in order to reduce the impact on climate and to prevent pollution within their own activities. The set objective set is to increase the use of private cars with low emission or no emission at all by 50% by 2008: they also work towards that 50% of the cars in Oslo shall also have low or no use of fossil fuel.

Reducing the emissions of green house gasses and air pollution from the housing estates in the city through increasing the use of district heating and focusing on energy efficiency.

Objective four: The municipality has to make an independent effort to reduce emissions through environmental efficiency. The objective has three specific aspects. These are (Ibid):

Oslo city has to ensure an efficient communication and administration of Oslo's Strategy for Sustainable Development and Ecological Program.

The city is going to introduce environmental management with auditing and reporting. This includes putting pressure on the suppliers to deliver goods which cause modest impact on the environment.

Oslo has to secure good information and overview of the environmental work they do, results, condition and challenges.

5.2.3 Local Agenda 21 Oslo

Oslo started to work with Local Agenda 21 in 1995 (Interview: Grundt). The work intensity increased in 1998, when the MoE funded this activity. This funding finished in 2002 and then Oslo had to finance the activity through the ordinary budget. The ecological program for Oslo, which is a part of The Strategy for Sustainable Development (Oslo City Council 2003), is a

base for all divisions' activities within Oslo. Local Agenda 21 in Oslo is incorporated into other environmental projects in the local administrative authorities (Interview: Grundt).

The unit the MoE established to coordinate the Local Agenda 21 work was a good source of inspiration and this unit also supported municipalities with money, Oslo received NoK 600 000⁹ over a period of three years from 1997. However, the amount money raised for this program can be considered as low and the three years too short to get some kind of continuity. There were not any actions taken to follow up this project. The money Oslo received was split and allocated to the local city administration units and for the project called "Green daily life" ("Grønn hverdag"). The city of Oslo every year allocates NoK 1, 5 million to the local city administration units to use on LA 21 efforts. This money is raised through the ordinary budget and there is no money to be given from the Government specifically allocated to LA 21 work. Each administrative part of the city has its own LA 21 coordinator (Interview: Grundt).

The city of Oslo cooperates with different organizations in the work with LA 21 knutepunkt (LA 21 network node). One of these organizations is Idebanken (The Ideas Bank) which purpose is to work for changes in the society where social goals, environment and resource responsibility are a priority rather than material and economical gains (The Ideas Bank). The work is mainly based on running courses for the local city administration to increase (alt) knowledge and competence on LA 21 related issues. The Ideas Bank is presented further under the section NGOs. Oslo has established a LA 21 forum with LA 21 contacts from the local administrative authorities, and an environmental forum with contacts from the major relevant departments and agencies (Interview: Grundt).

5.3. Actions initiated at the local level in Sweden

The Local Investment Program (LIP) aims to make improvements in energy sources by replacing fossil fuel by renewable fuels. Energy saving in buildings, lighting and other energy related issues are also a part of the programs actions. Waste is primarily incorporated into programs of recovery, recycling and composting of waste. A reduction in car traffic has been initiated by investments in cycle tracks and public transport. The treatment of rainwater and sewage has also been important in order to reduce the environmental impact made by humans, and improve the sustainability.

⁹ 100 Norwegian Kroner (NOK) is approximately 12.80.

LIP was introduced to increase the ecological sustainability in Sweden, and the aim of the program was to contribute to environmental improvements and to create employment. Other desirable effects of the LIP were to create new technologies and working routines that could be of benefit to the environment. The Swedish Ministry of Environment was responsible for LIP in the beginning. However, 2002 NEPA took over the responsibility administrating the project. The Parliament allocated 6,2 billion SEK to the LIP in the period 1998 to 2002. The total investments for this program so far has resulted in investments for about 27 billion SEK, 20 billions are related to environmental improvements. This means that about 30 % of the invested amount in environmentally related initiatives comes from the program. LIP resulted in 211 single investments in 161 municipalities (NEPA 2005:12).

The general terms the Swedish Government set for receiving a grant from LIP were:

- The project has to be completed in three years (1998-2000).
- Grants will only cover a limited part of the projects total cost.
- Payment will be done yearly with 80 percent of the granted amount.
- The remaining amount will be paid when the project period is over (2001).
- Projects that are not initiated have to refund granted amount.

5.3.1 Local Investment Program Stockholm

Stockholm is the capital of Sweden and the municipality has 760 000 citizens (www: Stockholm a). From 1998 to 2004 Stockholm had over 200 projects that were supported by LIP. The programs were supposed to end 2002, but after applying for an extension, the period was extended to 2004 for some projects. The total investment cost in Stockholm for these projects was 3,6 billion SEK of which 416 million was funded by LIP. A separate secretariat, the LIP secretariat, was established to administrate and implement the projects (Stockholm Stad 2004:4). In the following list I will identify the areas covered by projects and give some examples of projects relating to emissions and energy.

Projects were going on within these 15 fields (www: Stockholm b):

- Waste management
- Sewage and water management
- Lighting
- Calculation for environmental impact and energy savings
- Fuel cells and solar energy
- Surface water
- Vehicles and fuel
- Kitchen, bathroom, sanitation and laundry

- Life style and education
- Reconstructions of buildings and surroundings
- New building developments
- Restoring of soil and water
- Small enterprises
- Transport and roads
- Heating and ventilation

There were five categories of projects:

- Purchasing of new environmentally friendly technical equipment through consortiums. This category may give better economical deals through large orders. The purpose here is to urge introduction of new technology through making it available for less money.
- Technology contests were initiated. The aim was to urge development of new technologies. The producers will then hopefully see a potential for developing such kind of technology.
- Grants for actions leading to a decrease in the use of energy in buildings are given by a maximum of 30 % of the total amount invested on environmental projects.
- Developing the knowledge about procedures that decrease environmental impact within other LIP projects. These were actions such as seminars, study tours and rappers.
- Developing tools to analyze and compare the effects that the LIP has achieved with regards to impact on the environment.

5.3.2 Project “Alternative vehicles and fuel”

There was a project called "alternative vehicles and fuel" initiated through LIP. This project was initiated to increase the relative part of cars that do not cause as much impact on the environment as conventional cars run by fossil fuel. 300 such unconventional vehicles were procured for Stockholm city's own activities (LIP council 1998). These were:

258 cars, powered by electricity (42), electric hybrid (15), ethanol (9) and biogas (192)
 31 mopeds
 5 bikes
 6 trucks

In addition to these vehicles used within the municipality's own activities, the city also procured unconventional vehicles that private companies could borrow. The idea behind this was to influence these companies so that they would be inspired to invest in such vehicles at a later stage. During the period these vehicles were used, 70 companies tried them out and 39

vehicles were then purchased by companies after this testing period. Stockholm city will carry on prioritising environmentally friendly vehicles after this project.

Vehicles	Reduction in litres fossil fuel/year
42 cars powered by electricity	29 400
15 electric hybrid cars	9 000
192 cars powered by biogas	115 000
9 cars powered by ethanol	6 500
Sum 258 unconventional cars	160 000

Table 5. Decreased use of fossil fuel (litres/year) - 258 unconventional vehicles as a result of LIP.

Source: LIP council 1998:4

Action	Result of action, decrease in respective emission category			
	Fossil fuel (litres/year)	Carbon dioxide (ton/year)	Nitrogen dioxide (kg/year)	Hydrocarbons (kg/year)
Unconventional vehicles (300)	202 000	470	600	80
Vehicles for borrowing	30 000	70	-	-
Project "Ethanol car"	4 800 000	11 300	0	0
Ethanol mixed gasoline	40 000 000	93 600	0	30 000
Sum	45 032 000	105 440	600	34 580
Initiated goal	17 100 000	40 800	3 700	2 600

Table 6. Summarizing the results of both projects' actions in Stockholm

Source: LIP council 1998:6

The owners of cars with less impact on the environment¹⁰ are granted free parking within Stockholm city.

5.3.3 Project “Ethanol car”

This project was initiated by a group made up of several municipalities and private enterprises through LIP. The goal of this group was to involve organizations and the general public in a project including at least 3 000 cars for delivery. Then the car industry should give a bid on fuel flexible cars. The producer with the cheapest fuel flexible car could produce and deliver a product that was 5000SEK less than the price for the same car run by conventional fuel. At the end of 2003, 8 000 vehicles were delivered, which on their own represented a decrease in carbon dioxide emissions by about 12 200 tonnes per year (The LIP council 2000). During 2004 more than 1 200 vehicles were delivered and the prediction for 2005 is about three times that amount (www: Stockholm c).

5.3.4 The use of diodes in traffic lighting instead of traditional light bulbs.

The traffic signal system in Stockholm earlier was based on traditional light bulbs for traffic lights. These bulbs consumed a lot of energy and had to be replaced after quite a short period. This system was replaced with a new one. The new system was based on light diodes that consume less energy and last longer before they have to be replaced compared to the traditional light bulbs. In addition to energy saving the new system also contribute to no waste of lead and the new lighting fittings are made of plastic that can be recycled. Because the diodes last longer than the bulbs this action also means a reduction of required service with the new system. This will lead to less driving for servicing the system (Gatukontoret 2002). This activity was initiated through LIP.

Energy use with conventional light bulbs	6 440 MWh/year
Energy use with diodes	640 MWh/year
Energy saving	5 800 MWh/year

Table 7. Amount of energy saved when replacing conventional light bulbs with diodes as a result of LIP within Stockholm.

¹⁰ Defined by the city of Stockholm as vehicles with total max weight 3 500 kg, powered by electricity, hybrid cars powered by electricity/gasoline (model year from 2000), vehicles approved in environmental class 2005 that are powered mainly by biogas or ethanol mixed fuel. Owners have to be a citizen of Stockholm.

Source: Gatukontoret 2002:5

5.3.5 Park and street lighting

The LIP council in Stockholm invited to tender which should widen the choice of lightening alternatives for parks and street lightning. The alternatives should decrease the energy use by 40 - 50 %. Then a group of several municipalities would make a consortium to buy the alternative.¹¹ This initiative's aim was to urge introduction of new technology through making it available at a lesser cost and to aid the introduction to the market through an early establishment of new technology (LIP council 2000). 2004, 10 000 old lamps were replaced with new energy saving lamps. This resulted in energy savings of 2,12 GWh/year (LIP council 2000:3).

¹¹ This consortium included the cities of Stockholm, Malmö and Västerås, the municipals Sundsvall, Örebro, Forshaga, Hagfors, Munkfors and Torsby. The five last municipals did not join purchasing the equipment (LIP council 2000: 7).

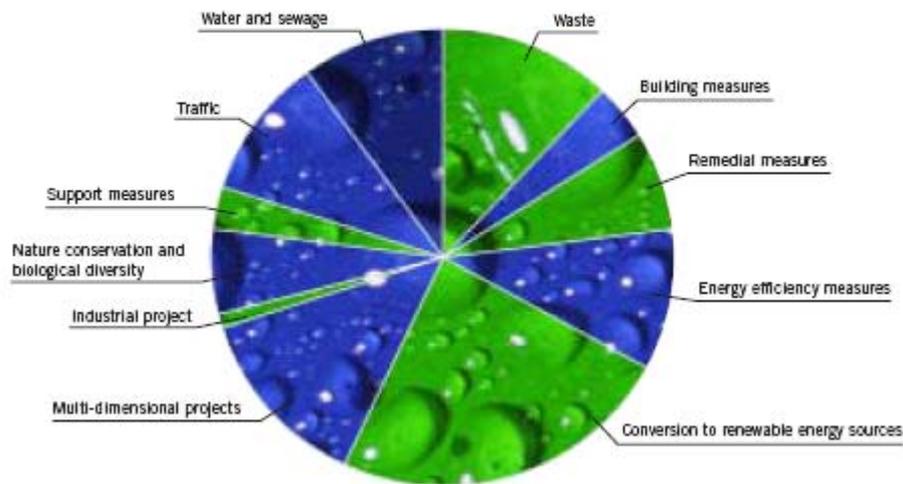


Figure 8. Types of schemes that are granted money from LIP.

Source: Ministry of Sustainable Development 2000

Almost 800 million SEK were allocated to this KLIMP and granted for the projects. KLIMP is a continuation of LIP. KLIMP granted money for 134 projects in 2003. These projects are calculated to give a reduction in climate gasses of 114 000 tonnes of carbon dioxide equivalents each year, energy saving with 263 000 MWh each year and decrease in sulphur dioxide with 3 tonnes a year. On top of this it contributes to a decrease of nitrogen dioxide emissions with 196 tonnes a year (www: Stockholm d).

5.3.6 KLIMP in Stockholm

Stockholm was granted economic support for 11 projects from KLIMP, with a total of 42.8 millions SEK. These projects were (www: Stockholm e):

- Storage of cold sea water for production of district cooling.
- Environmental adoption for energy use in nursery schools.
- Campaign on climate for property and real estate owners.
- Tanking stations for biogas.
- Increasing the amount of environmentally friendly cars in Stockholm.
- Decreasing emissions through use of intelligent traffic signals.
- User support for environmentally friendly and healthy choice of transport.
- Bicycling in Stockholm, information.

- Economic support to car pools.
- Quality assurance of transport in enterprises.
- Scientific follow-up of KLIMP.

The projects are at the moment being implementing and the results from these are not yet presented. I will therefore not go into details any further than listing the projects as done; to show what kinds of projects are ongoing at present.

5.3.7 Public transport in Stockholm

Stockholm Lokaltrafik (SL) is the main provider of public transport in Stockholm. It is a company owned by the Stockholm County Council. Approximately 600 000 people travel with the company each day. SL has a share of transport within Stockholm which is 48% (www: SL). SL is joining a project named CUTE, Clean Urban Transport in Europe (www: CUTE) which aims to test fuel cells in three busses within Stockholm. The project is in cooperation with other cities in Europe. Since the busses uses hydrogen gas and oxygen as fuel, the emissions are clean. The busses are used as regular busses, and the project is going to be evaluated in 2006. In 2004 SL started to use biogas as fuel for busses. The gas is provided by a local purifying plant and can produce gas which may provide fuel for up to 130 busses. The long term objective is to have bio fuel busses replacing conventional busses. 250 busses that are in use by SL use ethanol as fuel, by the end of 2006 another 130 are to be purchased according to present plans. SL has approximately 1800 busses and around 1500 of these busses use diesel as fuel. SL has train, trams and metro lines, which use electricity as energy source. This electricity is from renewable energy sources based on wind and hydroelectric production (www: SL).

5.3.8 District heating

Stockholm County has several providers of district heating. In total the consumption of district heating produced by members of the Swedish branch organisation for district heating inside the municipal Stockholm was 7,18 GWh¹² during 2003 (www: Svensk fjärrvärme). The district

¹² The members of the Swedish branch organisation for district heating represent 99% of the delivered district heating in Sweden.

heating system in Stockholm is the largest in the Nordic countries and one company, Fortum, cover 70% of the need for district heating within Stockholm city (www: Fortum). Fortum also produce electricity from the production through combined power and heating stations. This combination makes great use of resources, since the district heating is a bi-product of the electricity production, which produces heat.

5.4 Actions initiated at the local level in Oslo

5.4.1 Enova

Enova was established in 2001 and started up the work from 2002. Enova administrates the energy fund for establishing environmentally friendly energy solutions and the economic support for the infrastructure for natural gas. The energy fund receive their money from a tax that everyone who produce energy for distribution have to pay, measured after how much energy they produce. On top of this, funding from the state budget is granted yearly. Enova is a governmental organization owned by the Ministry of Oil and Energy. The aim of Enova is to strengthen the use of energy and production that has less impact on the environment. Enova shall function as a pioneer in the market, supporting marginally profitable projects and creating competition among different technologies through the energy fund. The political objectives for activities initiated grants from Enova are:

- To greatly reduce the use of energy, more than the market would do without interventions.
- To increase annual use of water-based central heating from new renewable energy sources, heat pumps and waste heat of 4 TWh by the year 2010.
- By the year 2010, wind power capacity should have reached 3 TWh.
- To increase land based environmentally friendly use of natural gas.
- By 2010 have initiated projects, which have contributed to a capacity of 12 TWh in total. This means energy saving or energy production based on renewal energy and the use of natural gas in an environmentally friendly way.

Enova is responsible for these political goals regarding energy being reached all the way through the different stages of the work supported by the organization (Enova). The organisation has six main areas they support. I will now go through these briefly:

- Heat distribution, infrastructure and heat generation based on renewable energy sources. Enova may contribute up to 15 % of the total project cost.
- Information, advising and campaigns.
- Training and education.
- Wind energy, Enova may support up to 25% of the projects total cost.
- Renewal energy (Other than wind).
- Energy end use:

- Energy-saving and -efficiency improvements in the industry.
- Energy management in large commercial buildings.
- Energy management in small commercial buildings.
- Retrofitting of street lighting.
- Residential buildings.

5.4.1.2 Norway's largest district heating system

Viken Fjernvarme AS owns and operates the largest district heating system in Norway, which produce almost 1 000 GWh each year. More than half of this energy is produced from burning waste and bio fuel. This correspond to a yearly saving in fossil fuel of about 45 000 litres a year. Enova granted this project 17 million NOK, total cost was 90 million. Most of the customers that are connected to the heating system are industrial buildings and larger housing cooperative. Most of these have traditionally been existing buildings with old oil powered heating systems, and find it more favourable connecting to the central heating system than renovate the old system. In Norway it is required for new buildings that are located within the area that the company has concession, to use the central heating system (Stavik 2003). This is manifested in the Plan and building act §66a (MoE 1986). It has been initiated to install 2 new heating pumps that use the heat from the cloak system to produce energy. This initiative is supported by Enova under the program "Heating". The heating pumps will, according to estimates produce 90GWh annually. Approximately 60 GWh of these 90 GWh comes from renewable energy produced by the heating pumps from the cloak system. The remaining 30 GWh comes from an engine that uses fossil fuel as energy source. The effect from the heating pumps is 18 MW (Telephone interview: Bakken).

When the pumps are operating at full effect it should be 157 GWh each year, based on renewable energy. Due to service of the system and other operational issues the system is not in operation all the time. This means that it would be quite interesting to increase the total operating time for the system, to increase the production of energy. Both economically and with regards to sustainability this must be a goal for all such kinds of installations.

5.4.1.3 Pynten housing cooperative

The housing cooperative Pynten in Oslo, was the first housing cooperative in Norway that initiated an energy system powered by pellets to heat the water. The cooperative includes 15 separate buildings, 567 unique housing units that are heated by renewable energy sources, as a result of support by Enova and the municipality (City of Oslo, Department of energy saving). This system was mainly based on economic argument, but environmental factors were also an important consideration. With a yearly consumption around four kWh, 3-3,5 now comes from pellets. As a result of this the cooperative can save 200 000 NOK each year compared to

electrical power of the system. The pellets heated system totally reduce the costs with an annual amount of 500 000 compared to both a combination of oil and electrical heating (2004). On top of this, the investment for the system will be transcribed after five years use, which contributes to a good economy in the cooperative.

Pynten started energy saving actions in 1998 such as energy saving bulbs and sensors that switched off light in the basement after six minutes. Calculations by the cooperative, shows annual reductions of expenses by 100 000 NOK (Stavik 2004).

5.5 The City of Oslo, Department for energy saving (Enøketaten).

The city of Oslo established, together with an energy company, a trust for stimulating energy saving activities. First the energy company administrated this trust. Then the Department for Energy Saving (DoES) was established 1997 as a municipal company and was reorganized to be included in the municipal services as an own department from 2004. Stationary energy consumed in Oslo is a main focus for the department. The aim is to stimulate a reduction in energy use or more effective energy consumption. To achieve this, the following instruments are used (www: Enøk):

- Grants and loan for real estate owners when this may contribute to energy saving activities
- Campaigns to change attitudes
- Information

Grants are the main tools in achieving activities and have been initiated mainly for traditional energy saving activities such as changing windows and insulation. Apart from these installations of temperature control, improvements in ventilation systems and other energy saving actions have been supported. Activities based on renewable energy sources such as heating pumps and district heating also get support. These activities replace other polluting energy sources and therefore can be granted an environmental share contribution in addition to themoney saved as a result of reducing energy costs.

8 000 homes in Oslo got new clean wood burning stoves from 1998-2002. 1/6 of the wood used in stoves in Oslo is now used in such stoves (www: Enøk). Campaigns initiated the following year:

- 1996: Free water saving showers.
- 1997: Free thermometers and cheap energy saving light bulbs.
- 1998: Grants on NOK 4 000 for replacing old fire burning stoves with new stoves.
- 1999: Free weather stripping and grant for replacing stoves (NOK 4000).
- 2000: Grants for controlling direct electricity heating.
- 2001: Grants for controlling direct electricity heating.

- 2004: Grants for installing pellets stoves (NOK 5000), replacing old fire burning stoves (NOK 3000).
- 2005: Grants for replacing old wood based stoves with new or to install pellets stove (NOK 3000).

The department got economic funding from an annual disposition of the profit from the energy company “Oslo Lysverker” with NOK 60 million from 1981 to 1992. Economic support for energy saving actions is the aim of the fund.

In total these activities have contributed to an energy reduction of 684 GWh from 1981 to 2000. (Source for this information is (Oslo City Council 2001)).

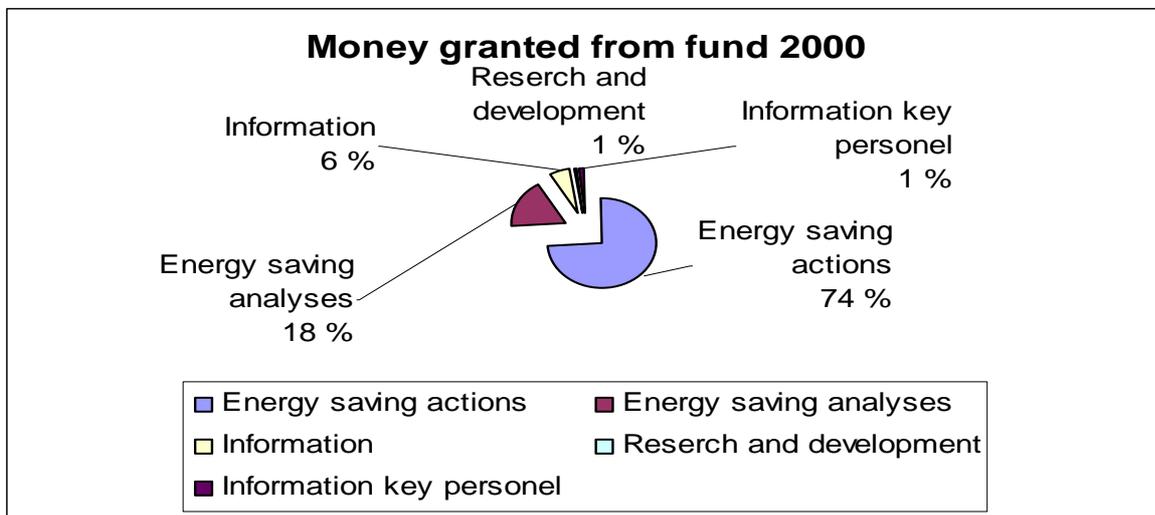


Figure 9. Money granted from the energy fund in 2000 expressed as a percentage.

Source: Oslo City Council 2001

5.6 Fuel efficient cars

A project involving electric cars was carried out in Oslo City, which did not succeed because of practical reasons related to the batteries’ capacity. When this project ended, Oslo decided to focus at fuel efficient cars and hybrids instead of electric cars. An agreement has been done with car deliverers, which aim to result in about 100 cars delivered each year in two years. The goal is to reach 400 fuel efficient cars. Specific demands are set for the cars attributes such as emission levels, safety and fuel consumption rates (Interview: Grundt). These cars will

contribute to lower emissions and the investment is in line with the strategy for Sustainable Development (Oslo City Council 2003).

5.7 Public transport in Oslo

Oslo Sporveier (OS) is the main provider of public transport within Oslo and are owned by the municipality Oslo (Oslo City). OS has busses, trams, ferries and metro lines. The trams and metro lines use electricity as energy source. 257 busses use diesel as fuel. Approximately 438 000 people travel with OS every day, and public transport represent 27% of the total transportation (www: OS a). In autumn 2004, OS had one bus for testing the use of natural gas as fuel. This project was successful and there were no problems related to the use of natural gas as fuel. The travellers, media and politicians all agreed that this project performed well. However, no decision is made to invest in increasing the number of busses that use natural gas as fuel in SL so far. The busses that are in use are conventional busses with diesel, but they have one of the lowest emission levels in European cities at present (www: OS b). The transport in OS that use electricity created from hydro electric power plants represents approximately 66% of the total public transportation of people within Oslo, which means it is renewable (Oslo City Council 2003).

Stor-Oslo Lokaltrafikk AS (SOL) has the responsibility for public transport within Akershus County, which is surrounding Oslo, and between Oslo and Akershus. SOL has 803 busses in total and the company transport approximately 154 000 people every day. The busses use diesel as fuel. A project is started to try hydrogen busses. If the project will follow the time table, SOL will start introducing the first hydrogen busses 2007. The long term objective is that 20% of the busses should use hydrogen by 2012, and by 2020 all busses should use hydrogen (www: SOL; Hynor).

5.8 Results

When I look at the process of integrating sustainable development at the local level in general for both countries, the tendency is the same as on a national level. Sweden tends to be earlier in introducing the term sustainable development and creating policy documents regarding sustainable development and LA 21. This may not be surprising, since Norway took the decision not to focus on LA 21 but the MIK reform. In specific, for Stockholm and Oslo, this is also the case, even though Oslo seems to be among the municipalities in Norway that are ahead when it comes to the process of integrating sustainable development.

In LIP approximately 33 % of the initiatives taken were related to energy (NEPA 2005:15). Recently these results were released in a rapport (NEPA 2005). I present a table that shows reduction in emissions directly related to LIP. The reductions are remarkable, in Sweden the reductions in total emission are as following: carbon dioxide and sulphur dioxide are both reduced with 1 percent and for nitrogen dioxide the reduction is 0,4 percent a year. The

rapport also illustrates that nitrogen dioxide in 2002 has been reduced by 25 percent from 1990, CO₂ with 2 percent from 1990 and SO₂ with 45 percent from the level in 1990.

Substance	Reduction from LIP tonnes/year	Total emissions tonnes/year (2002)	Reduction in percent
CO ₂	545 000	55 000 000	1,0
NO _x	980	242 500	0,4
SO ₂	590	58 500	1,0

Table 8. Reduction in emissions from completed LIP in Sweden expressed as a percentage in relation to total emissions.

Source: NEPA 2005: 35¹³

I have focused on the results concerning emissions since these effects are most easily comparable and presented with regards to energy and traffic, and the use of fossil fuel. The result of LIP has quite naturally also caused a lot of knowledge about work with regards to sustainable development in Sweden. The value of this knowledge must be considered as very important in future development of the sustainable development effort. For the period 2001 to 2004 Enova contracted an energy result about 5,5 TWh. The result for the respective program is presented in table 11 (Enova 2005). The table shows that in total, energy usage, heat energy and wind energy are the three largest fields that Enova supports, measured in effect. I have not found any calculation that tells something about these results' effect regarding emissions. This means that I can not use the emission levels as an indicator of how effective the LIP projects have been in Sweden, but the total emissions at the national level are illustrated in chapter 4.5.

¹³ These results are based on the 101 projects that are already implemented. There are several projects that are not yet completed, which means that the final effects will improve with regards to the reduction of total emissions.

Year	2001	2002 ¹⁴	2003	2004	TOTAL
Program					
Energy usage	372	394 ¹⁵	412	646	1 824
Wind energy	120	80	450	1 023	1 623
Transitional arrangements				430	430
Heat energy	328	289	862	518	1 997
Other renewable energy ¹⁶	0	1	0	35	36
Total	820	764	1 724	2 223	5 530

Table 9. Aggregated and contractual energy in GWh for 2001 2004 ENOVA.

Source: Enova 2005

5.9 Discussion

I have now gone through and presented the main lines in the process within sustainable development in Sweden and Norway at the local level. The municipalities work after the guidelines given by the national authorities. This is the base for the work within the municipalities.

Since the national authorities in Norway had the MIK reform, the Local Agenda 21 was not in focus as it was in Sweden. The MIK reform builds up an administrative competence to work with environmental issues within the Norwegian municipalities. My study of research on the MIK reform showed that these administrative positions disappeared when the funding allocated to the projects from MoE ended. What we see here is that the practical implementation of sustainable development (MIK reform) is taken away, and most of the positions that were established within the reform were not continued when the reform ended. These positions have to be replaced to get sustainable development back on the agenda at the local level in Norway, and it is important to continue the work in Sweden.

¹⁴ Energy result for 2002 and 2003 was audited by Ernst & Young spring 2004. The results are adjusted according to this.

¹⁵ The numbers includes 152 GWh that are not contracted.

¹⁶ The variations from year to year are based on variation of applications from year to year. The increase in 2004 is based on a new strategy which implies more support to non profit projects.

The municipalities in Sweden started to work on their own Local Agenda 21 processes in 1996. In 1998 56% of the Swedish municipalities had an own Agenda 21 plan which rose to 70% in 2001. Compared to Norway this can be viewed as a high degree of integrating Local Agenda 21 in the municipal work. In Norway only 5% of municipalities had an own plan for Local Agenda 21 in 2000. From this it seems clear that the focus on Local Agenda 21 is more present in Sweden than what is the case in Norway. The result from the survey in Norway shows that 69% of the municipalities had some activities related to sustainable development, which does not correlate to the fact that only 5% had a specific plan made for Local Agenda 21. An explanation to this difference can be the LIP, which ensured funding for the work with sustainable development in Swedish municipalities. Such projects are not initiated in Norway and I argue that this is one explanation.

A project including seven municipalities in Norway was initiated 1996 to create a pattern of how to obtain sustainable development, and the result of this was an environmental certification. The Swedish focused broader and included more than just the environmental issues in their work. This is a major difference if we compare the local level in both countries, as well as the fact that the Swedish municipalities started to work with Local Agenda 21 earlier than the Norwegians did.

My objects of investigation at the local level are Oslo and Stockholm. Stockholm started their Local Agenda 21 work in 1995 as a project, which went on until 1999. Local Agenda 21 became a part of the regular activity in 1999 after ending the project. Since then the work is continued and implemented at the local administration units in the city. Oslo started to focus on Local Agenda 21 in 1995, but the work intensity rose in 1998 after direct funding from MoE. The work was initiated at the same time, but the intensity of the works seems to be higher for Stockholm at this time. At present Local Agenda 21 work is integrated at the local administration units within the city in both Stockholm and Oslo.

Environmental efficiency of transportation is the first aspect presented for Stockholm. For Oslo the use of renewable energy sources are also included in the first aspect I present. Renewable fuel used in vehicles is mentioned in both documents. Stockholm aims to increase the relative use of renewable fuel by 5% in 2006, while Oslo aims to increase the use of private cars with low emission or no emission at all with 50% by 2008. Oslo also works towards having 50% of the cars in Oslo with low or no use of fossil fuel by 2014. At this aspect it seems like Oslo is one step in front Stockholm, but as the Oslo program is valid until 2014, while the program for Stockholm ends 2006, such conclusion can not be made.

The activities initiated at the local level, which is the practical level of sustainable development, shows that Stockholm has done a lot more on this aspect. LIP contributed to projects to stimulate purchasing of alternative vehicles, which causes less impact on the environment.

Other projects that were going on were the purchasing of cars that used ethanol and a mix of ethanol and petrol as fuel. These projects contributed to a reduction in the total emission of carbon dioxide with 105 440 tonnes/year. Such projects were not going on in Oslo. Oslo did however have a project regarding electric cars, which was not successful. At present Oslo focuses on purchasing cars for their own activities that consume a limited quantity of fuel, which will lower the emissions of carbon dioxide marginally.

Both cities focus on increasing the relative part of the citizens that cycle or walk in the city, and to increase the use of public transport. This aspect is not investigated. Both Stockholm and Oslo have public transportation that uses both fossil and renewable energy sources. The companies in both cities are owned by the authorities. Trams and metro lines are based on hydro electricity in both cases, which is not causing much impact with regards to emissions. When I look at the busses, SL has got around 1800 busses in total. Of these busses 250 use ethanol as fuel, 130 use biogas and 3 of them use hydrogen as part of a project. In Oslo, 1060 busses use diesel as fuel. A project was carried out to test natural gas, but no decision is taken to purchase such busses, even though the project was successful. A project is however going on with hydrogen busses, but the first buss is estimated for use in 2007. SL has a clearer focus on environmental issues if we look at the busses at present. With regards to trams and metro lines both cities use electricity from renewable sources, which does not cause any emissions of importance, with regards to carbon dioxide.

When I look at the public transportations relative share of total transports within the cities this is 48% in Stockholm. In Oslo 27% of the transportations is done by public transport. This shows that the public transport system does not have the same support in Oslo as in Sweden and that this is a major area that can be improved.

Stockholm does not want the surface used for traffic systems to increase per capita in relative terms. Oslo has not mentioned this in their program, but it may be covered by other aspects such as the seeking to reduce transportation by cars, and in the aspect that brings up decreasing the demand for transport, and to coordinate the transport system to cause less impact on the environment. The difference in the practical planning may therefore not be present, but the focus in the documents shows another approach of the topic. No activities have been investigated for this aspect.

Stockholm has got environmental zones within the city which do not allow heavy diesel operated vehicles in the inner city. Such zones are not made in Oslo. This is an aspect in which Stockholm clearly performs better than Oslo.

On the aspect to of encouraging entrepreneurs that use machinery with low environmental impacts both cities does so. Stockholm identifies this as a separate specific aspect, while Oslo indirectly does so through the environmental management systems. Again, the approaches in the document are different, but cover the same aspects. Stockholm identifies an own aspect due

to invitations to tenders on transport, that also will be covered by the environmental management system in Oslo.

The next aspect in the program for Stockholm is that boats that regularly dock in the harbour shall have exhaust emission control and use fuel that has a low content of sulphur. Such aspects are not mentioned in the program for Oslo, which also has a harbour. This shows that Stockholm performs better than Oslo on this aspect¹⁷.

When it comes to sustainable use of energy the first aspect in the Swedish program aims to reduce fossil fuel used for heating and to increase the use of district heating. The next aspect is that no less than 80 % of the district heating shall come from renewable energy sources. These will match the aspect regarding reduction of the emissions of green house gasses from the housing estates in Oslo through increasing the use of district heating and focus on energy efficiency.

In my presentation of the political objectives I have focused on the main policy document in Stockholm and Oslo that concern environment, and the objectives that are related to energy and emissions. This is the regulative level of sustainable development, which both countries have performed well. The actions taken I use to represent the practical aspect of sustainable development. As the result show, Norway has to increase the efforts to reach a more sustainable development. Sweden tends to reach closer to the objectives set, compared to Norway.

¹⁷ Oslo does have a voluntary agreement with nine companies which regularly visit the harbour. This agreement implies that the companies use fuel containing low sulphur;
http://www.ohv.oslo.no/data/f/0/06/16/2_2401_0/Miljorapport2000.pdf.

6 Organizations that work for sustainable development and energy solutions

Several organizations work with sustainable development and actions that are related to energy and emissions. Some of them are typical Non Governmental Organizations (NGOs), others are not. I will now go through some of the organizations in both Sweden and Norway and look at their major activity areas related to sustainability within the respective countries. It is not easy to choose between all the organizations. I will therefore not mention organizations that mainly have activities directed against results on an international level, since I focus on what have happened in Norway and Sweden. The differences between NGOs and other organizations may in some cases be vague. Looking at how the organizations operate and what goals they work towards will sometimes make some organisations appear similar to NGOs. In this context I will use the term NGO as a way of describing organizations that work with regards to the environment, sustainability and energy matters, and do not have economic profit as a goal in their articles of association and that are politically and religiously independent organizations. All other organizations will be presented under section 6.2, other organization.

6.1 NGOs

NGOs participate in the debate and often work on lobbying politicians. Environmental NGOs therefore have quite a lot of possibilities to affect the politicians and make the picture of the cases more balanced, compared to what the politicians would have managed without NGOs. The history chapter showed that the environmental movements had quite a lot of influence with the argument for creating a legal frame for preserving the natural environment in the early 20th century. I will now go through some of the NGOs and present their activities that concern sustainable development, emissions and energy.

6.1.1 The Swedish Society for Conservation of the nature

The Swedish Society for Conservation of the Nature (Svenska naturskyddsföreningen, SSNC) is politically and religiously independent organization. SSNC is the largest and oldest environmental NGO in Sweden. When it comes to energy related topics SSNC work with energy saving actions and towards renewable energy sources, including traffic as well as energy production. There are four elements with regards to traffic that they point out as important areas. These areas are decreasing the need of transport through decreasing the distances humans need to move within, make the transport system more effective, increasing the amount of transport on railways and renewable energy used in transport. SSNC put pressure on politicians and affect the opinion through their work with lobbyism and information (www: SSNC a). SSNC is also inquired when the politicians have hearings. Eckerberg (1999) state SSNC as most likely to be the single most important factor behind the LA 21 development in Sweden, within NGOs.

6.1.2 Friends of the Earth, Sweden

Friends of the Earth, Sweden (Jordens vänner, FoES) is a non-partisan organization that works on the local, national, and international levels to promote ecological sustainability and solidarity. FoES is the Swedish branch of Friends of the Earth International. In Sweden they work on energy and climate related issues among other things. This means that they work against nuclear power in Sweden, and to phase this out. Furthermore they inform about energy saving and renewable energy technology to strengthen the position of such technology in Sweden. A separate department work for issues related to traffic and emissions (www: FoES).

6.1.3 Q2000

Q2000 is a network of young people that was founded in Sweden after the Rio conference in 1992. The network consists of youths from all over the country that are engaged in environmental matters. The aim of the organization is to put a pressure on the municipalities to fulfil the agreement done at the conference, the Agenda 21 documents (www: Q2000). This organization has attracted attention because of a successful lobbying activity towards municipalities and public authorities. The method they use is to create dialogue instead of confrontation (Interview Hagmann; www: SSNC b). Eckerberg (1999) also mention the importance Q2000 has, through reminding the politicians about their statement made in Rio de Janeiro.

6.1.4 Greenpeace

Greenpeace have a Nordic division that has offices in both Norway and Sweden. Greenpeace work on issues related to energy and climate and focus on renewable energy sources and decreasing the use of oil based distillates. In addition the focus is on energy saving and they are against all nuclear activity. Greenpeace have activities that are known to be more radical, like protest actions and demonstrations, but they also work towards politicians through lobbying (www: Greenpeace, a; b).

6.1.5 The Norwegian Forum for Environment and Development

The Norwegian Forum for Environment and Development (ForUM) was established in 1992 to follow the work with sustainability after the Rio summit. It is a network of more than 50 NGOs engaged in work regarding the environment and development. ForUM has an own group working directly on energy related topics. The mission statement for the organization is to work to strengthen the efforts on sustainability both on a national and an international level. The work contain the following main areas: Skapa pubkter being a meeting point for both national and international NGOs in Norway, lobbying political decision makers is the organizations main method to obtain concrete political results, follow up international agreements and to make sure Norwegian NGOs get the possibility to participate in

international forum. Since ForUM is an organization that consists of several NGOs their work is very broad (www: ForUM).

6.1.6 The Norwegian Society for Conservation of Nature

The Norwegian Society for Conservation of Nature (NSCN) was founded in 1914 and is the oldest and largest environmental NGO in Norway. NSCN is the Norwegian branch of Friends of the Earth International. The organization has offices in each county in Norway. The mission statement for NSCN is to preserve the nature and secure the basis of existence for man and animals in a way that human activities do not use resources or add substances to a greater extent than what can be regenerated or neutralised by the natural environment. This is built on the philosophy that humans should live in harmony with nature and create a society where the diversity is secured for future generations. NSCN also has an own division for young people. The organization works on the following main areas with regards to energy: Punkterenergy and climate, waste, consumption and public transport. Lobbyism towards politicians and the authorities are common procedures in their work (www: NSCN). Through ForUM, NSCN cooperate with other organizations, among others The Norwegian Mountain Touring Association which was mentioned in the history chapter. Aall (1999) mentions, that NSCN initially was sceptical to the idea of giving more responsibility the local authorities. However, later this changed and NSCN made a handbook to its members on how they might work with LA 21 (Ibib).

6.2 Other organizations

Organizations presented here will be organizations that are not typically NGOs. These organizations are presented since their existences have had a substantial impact on sustainable development and energy solutions that can be considered as sustainable. Their members may be state, county or municipal employees.

6.2.1 Regional competence centre for sustainable development

Information about sustainability and environmental matters for the industry and commercial sector are main objectives for the regional competence centres for sustainable development (RHU). There are 25 centres in Sweden throughout the country. Years of practical experience are gathered within these centres that consist of people that have been engaged with sustainability in areas such as transport, management, behaviour and energy. IEH support RHU through spreading information about the centres, and to form a network between them (www: IEH).

6.2.2 The Environmental Home Guard

The Environmental Home Guard (EHG) was formed in Norway in 1991 after an initiative by The Society for the Conservation of Nature and ForUM. In the beginning EHG was financed directly by funding from the MoE, but now it is more and more financed through a partnership with the industry, that work together to reduce the impact on the environment. MoE is still the main source of financing for the organization. Each sponsor (eller partner) makes an agreement with the organization, but EHG remains an independent actor, which us

important. There are four main offices in Norway and to get closer to the different districts, there are twelve offices in total. Traffic and its influence on the environment is the area they work most on with regards to energy in addition to material saving (paper). However, they do have other areas such as food and environment, environmental labelling of products etcetera. Most of the activities are based on spreading information (www: Gronn hverdag). In an article (Aall 1999) EHG is addressed as an important factor in the efforts to put LA 21 on the Agenda. This is through encouraging members to challenge the municipalities, and through direct cooperation with municipalities according to Aall (Ibid).

6.2.3 The Ideas Bank

The Ideas Bank (Idebanken) is a private foundation that was established in 1992. The purpose of the foundation is to work for changes in the society where social, environmental and resource responsibility should be given higher priority instead of only material and economic development. To do this the foundation focuses on examples with good results. Building up a network and a base of research and acting as coordinator between private and public institutions are the main areas the foundation base its work on. 1994 they started to focus on LA 21 and promoting this within the municipalities to increase the LA 21 efforts, according to the agreements signed at the Rio conference. This work was done by using media, writing articles, creating publications and contacting with organizations and politicians (www: Ideas bank). 1995 The Ideas bank published a rapport about the Norwegian municipalities' action with regards to the commitments made in Rio (Armann, Hille and Kasin 1995). The rapport concluded that the Norwegian community was far from meeting the required actions in the work with LA 21.

The Ideas Bank has actively participated and promoted the LA 21 process in Norway through courses in the municipalities. 1998 the "Fredrikstad conference" was held where 700 people representing municipalities and regional governments met. This conference resulted in an agreement and all who signed made commitments to focus on sustainable development through the LA 21 concept (www: Agenda21). Aall (1999) state that The Ideas Bank to a certain extent should get most of the credit for putting LA 21 on the agenda in Norway.

6.2.4 ICLEI

Local Governments for Sustainability was founded in 1990 by local governments at the United Nations Headquarters in New York and so was the International Council for Local Environmental Initiatives (ICLEI). ICLEI is a democratically governed membership association of cities, towns, counties, metropolitan governments, and local government associations. ICLEI's mission is to build and serve a worldwide movement of local governments to achieve tangible improvements in global sustainability with special focus on environmental conditions through cumulative local actions.

Both Norway and Sweden have members in ICLEI. Norway has 15 members, Sweden 9¹⁸. Oslo and Stockholm are both members. Through this membership, networks are established where information can be exchanged. The organization also provides the members with training and assistance to make improvements and changes, creating a more sustainable society (www: ICLEI).

6.3 Discussion

The history chapter illustrates that SSNC already at the start of the 18th century was engaged in the preservation of the nature. Nowadays the organisation works on a shift towards renewable energy sources and issues related to reducing impact on the natural environment through need of less transport. I have found out that SSNC is one of the most active NGOs in Sweden with regards to my subject in this paper.

Q2000 lobby the authorities directly and their actions aim to reach a more sustainable development. ForUM can be compared to the Q2000 network, even though Q2000 is an organisation for young members. It is a coalition of individuals with different background that cooperate in order to influence the authorities to implement actions aimed at increasing sustainability. Q 2000 is also identified as a NGO that has affected the process of sustainable development in Sweden.

In Norway the history chapter illustrates how The Norwegian Mountain Touring Association was arguing for the establishments of National parks at the beginning of the 18th century. The NSCN now cooperate with The Norwegian Mountain Touring Association to put pressure at the authorities regarding environmental issues. The regional competence centres and Idebanken are organizations that include the industrial and commercial sectors in their work for sustainability. These sectors are important parts of the society to include in order obtaining a more sustainable development. The main tasks they deal with are to provide networks for sharing information about sustainable development between different groups, and to highlight positive results of implemented actions.

Through ICLEI both countries are engaged in following up the international process regarding sustainable development. Norway has more member groups than Sweden. If that says something about interest for the international process it would mean that Norwegians have a

¹⁸ This information is cross checked and updated September, 8th 2005.

higher interest for following up their commitments. Whether this can count as a measure of general interest is hard to speculate. I will however say that it shows that there are more members in Norway and not go into what reasons are behind it. Both countries have members in ICLEI. There is not much information of what these members actually are gaining from participating in this organization. I believe the reason for this lack of information can be that the members use ideas and information from ICLEI in the daily work, which means the source of the information, can be hidden. This means that the work in the municipalities may be based on ideas from ICLEI, even though this is not detectable.

When I look at the process of sustainable development it is not easy to say how much of the progress can be contributed NGOs. Much of the work consists of lobbying and making statements in public hearings. When it comes to affecting public opinion, the role of the NGOs may be an effective part in influencing the public and therefore also the politicians. In Sweden the organization Q2000 has been monitoring the political process and reminding the politicians about making clear statements and policies to implement sustainable development. Such activities have not been found from any NGOs in Norway. The Norwegian NGOs seem to play a more passive role when it comes to the concept of LA 21, compared to what is the case in Sweden. With regards to energy and emissions of carbon dioxide, no major difference is detected between the two countries. A more in depth investigation of the NGOs would perhaps discover aspects that I have not found in my work.

When I investigate other organizations, it seems like the process of sustainable development has been more in focus which has resulted in organizations building up information data bases on sustainable development. These data bases are providing people and companies with information on practical solutions that may be implemented in order to achieve a more sustainable development. RHU, EHG and The Ideas Bank are examples of such organizations.

By going through the different organizations I detected that there is a far greater focus on the north-south aspect, and not that much focus on following up the situation inside the countries with regards to emissions and energy consumption. Having said that, it is important to note that the north-south focus is of a major importance internationally, but each country has to focus on national and local activities as well.

7 Conclusion

I have now presented the historic background, the national and the local level initiatives and organizations that work towards a more sustainable development. In this chapter the major findings from the discussions about the empirical material will be evaluated and general conclusions will be made, based on this information. The research questions will be answered in the general conclusions, and finally the chapter will present fields for further research.

7.1 General Conclusions

Through the presentation and reflection of the historical development I have illustrated that Sweden and Norway have been cooperating politically the last two hundreds years. The development has been quite similar, and through the Nordic council, formed in 1952, the cooperation was formalized between the two countries as well as the other Nordic territories. This chapter has been written with the purpose of showing that Norway and Sweden has a shared past, and to compare the development, and this development is the basis for the rest of this paper. When comparing the development in the two countries in this chapter, it appears to have been parallel, with some small differences in time regarding when the different processes were started and how long they went on for.

By presenting and discussing the policy documents and their implementation at the national level I compare the development since 1987. The policy documents exhibit no major differences between the countries. I have demonstrated that the international focus on sustainable development contributed to putting pressure on both countries to make policy document and integrate sustainability in these documents and in the political organization. Indicators for evaluating the development are defined in both countries, which may contribute to good governance, especially if concrete objectives are set, and actions to progress towards achieving these objectives are initiated.

The differences between the countries appear when I look at the process of integrating sustainable development in the organization. I have used the term regulative and practical to differentiate between the policy documents and the implementation of the contents in the documents. This is where I discovered a major difference. Sweden made a concept of environmental objectives, used as a tool to reach a more sustainable development, while Norway did not do so. Norway did not want to integrate sustainable development since they had an already ongoing reform, and argued this was enough, until 1997 when they started integrating sustainable development. Sweden put more efforts in initiating projects in a broader perspective compared to Norway. Norway put efforts on renewable energy for electricity production, saving electricity and heating, while Sweden also focused on alternative vehicles

and fuel. The results from the statistical analyses show that Sweden perform clearly better compared to Norway, both in level of energy consumption and with regards to emissions, over the period I have studied. The general objective with regards to emissions and energy are comparable, but actions taken to prevent emissions and energy consumption do not seem to have the same effect in Norway and Sweden, as I have showed through the national statistical information.

At the local level, policy documents regarding sustainable development are investigated, and the national level documents tend to be transferred to the local level. Policy document are well developed, but actions initiated seem more frequent in Stockholm, compared to Oslo. The process of integrating LA 21 as a concept of sustainable development was introduced later in Norway, which was a result of the MIK reform that was in focus instead.

Bio gas and ethanol is already in use as fuel in Stockholm, both in public transport and by privately owned cars. With regards to public transport, both cities have companies owned by public authorities. In Stockholm, as in Sweden in general, bio fuel is in use as fuel for busses. In Oslo no busses use bio fuel, but a project is ongoing, using hydrogen busses. Both cities have trams and metro lines that use 100% renewable electricity as fuel. The main reason for this may be the funding. Norway has not earmarked allocated funding to the municipalities in the same degree that large scale projects in Sweden has. This means that the municipalities in Norway give less priority to environment and the practical sustainability aspect compared to the Swedish municipalities, based on lack of funding from the national level. More project oriented funding, like in Sweden, may be a solution to help new actions to be taken, and to achieve better results than detected for Norway in this paper.

In chapter 6 I have gathered information on different organizations that work on matters concerning emissions and consumption of energy. As this presentation show, there are several such organizations in both countries. In the history section, I found that these organizations put pressure to ensure the preservation of the natural environment.

Sweden has Q2000, which is following the politicians directly and the efforts put on the process of LA 21 and sustainability. I detected no such organization in Norway that specifically follows up on this aspect. NGOs and other organizations have many activities based on gathering and spreading information, which is an important aspect of reaching a more sustainable development. These organizations are also involved in hearings, and through this they are active in affecting the sustainability in the different processes. A further focus on sustainable development in each country by NGOs and other organizations would be an effective way of putting more pressure on the political decisions, which determine what activities will be initiated in the society. This is important also regarding the evaluation of the link between the regulative and practical aspect of sustainable development. Here, the organizations may be guarding how the authorities attempt to reach the objectives and put pressure on the authorities to get closer to the set objectives, if they do not reach them.

7.2 Answer to the research question

I will under this section like to answer the questions presented in section 1.3. The answers are not fully adequate as they do not throw light on all aspects connected to each question. Instead, the answers will be based on my most important findings.

1. How have the countries performed in the process of achieving their goals of reaching a more sustainable development?

It is clear that Sweden has reached further in introducing the sustainable development concept by starting work on LA 21 earlier and with a broader approach compared to Norway. Through the international focus, both countries have responded to the challenges and developed policy documents with regards to sustainable development at the national level. On the local level, where I have been looking at Oslo and Stockholm, the tendency is the same, in other words that Stockholm incorporated LA 21 in the traditional municipal work earlier than Oslo.

2. What do the governments say they want to achieve regarding emissions and energy consumption?

With regards to emissions I have used the Kyoto protocol and the objectives set through this agreement as the national authorities' goal. For Sweden this implies a reduction of green house gasses of 4 % for the period 2008-2012 compared to the level of emissions in 1990. The goal in Norway is that the emissions of green house gasses for the period 2008-2012 should not be greater than 1 % of the 1990 emission level. At the energy area, both countries have objectives to shift the energy consumption over to renewable sources. Both Oslo and Stockholm have the same focus in the policy document as the national level, to decrease emissions and consumption of energy.

3. How would they like to reach these goals?

Reaching the goals imply phasing out nuclear power plants in Sweden, while Norway, want to start electricity production based on natural gas power plants. Projects to fund activities are detected in both countries.

4. Which activities have been initiated to implement these goals?

Sweden has used large scale projects, initiated at the national level to start funding activities directly at the local level to decrease emissions and consumption of energy. Such projects are also initiated in Norway, but these are limited mostly to heating in housing, and electricity saving. Environmental management systems are introduced within the Swedish authorities, and similar systems are being introduced at the moment in Norway. At the local level, Oslo has an own project, Enøk, that have initiated actions at the macro level, where citizens may apply for funding for energy saving projects. Such activities are not detected in Stockholm.

Stockholm has, however, through projects, initiated energy saving actions concerning both public and private sector in a larger scale. Both cities have organized information channels, to

help guide citizens with concrete solutions to improve the sustainability in the daily life. Projects on alternative vehicles and fuel have been initiated both in Stockholm and Oslo, both for public and private transport. District heating plants are established both in Stockholm and Oslo.

5. *What are the results of these actions?*

Nationally bio fuel has become an alternative in Sweden, while Norway does not have this as a real alternative at present. Both countries have district heating, which contribute to a more efficient use of energy. The results from the statistic material show that Sweden performs clearly better compared to Norway with regards to emissions, consumption of primary energy and consumption of electricity. Numbers of enterprises certified according to the environmental management systems are significantly higher in Sweden than in Norway.

At the local level, the projects in both cities have contributed to more efficiency in the use of energy. For Stockholm I have also detected a sufficient reduction in emissions from the time the projects were initiated. Bio fuel is a real alternative in the area around Stockholm, while for Oslo this is not present as an alternative. The implication of this is that no vehicles of importance use bio fuel in Oslo; while Stockholm has such vehicles both for public and private transport. In both cities all the public transport powered by electricity use renewable energy. In addition to this, both cities have ongoing projects with hydrogen as fuel in busses, may reduce emissions in the future.

6. *How can these findings be explained?*

I have presented the term regulative and practical to differentiate sustainability in two aspects. The regulative aspect is the idea of what has to be done to reach a more sustainable development, while the practical aspect concerns how to implement this through actions. From my findings I will argue that both countries and both cities have performed well with regards to the regulative aspects of sustainable development. It is when the actions are investigated that I argue a major difference is detected. Sweden has managed to implement actions that compared to Norway; Sweden has significantly greater sustainability with regards to emissions and energy. A major difference is also that Norway was later in the process of implementing LA 21, based on a decision taken by the MoE. Sweden also seems to be able to keep the focus on sustainability over time, which Norway has not. I can therefore conclude that Sweden has managed to have a better link between the regulative and practical aspects of sustainable development.

7.3 Further research

This paper gives a broad presentation of the aspects to sustainable development. It has given me a broad insight of the subject. I have used some delimitations in this paper by not including taxes. Taxes are the most common way of regulating consumption of energy, and emissions. This may be an area that could be investigated further, but within the limits for this paper I did not find that possible. I would have also liked to further investigate my distinction of the

regulative and practical aspects of sustainable development. From my findings it seems like the connection between these aspects, and indicators to measure the sustainability of the development are of importance, and have raised my interest. Research on sustainable governance and the link between social systems in public as mostly investigated in this paper, but also in private organizations, from management to implementation would be more specific areas of interest.

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