



STRATEGY FOR ENERGY EFFICIENCY THROUGH CLIMATE AGREEMENTS

THE FINAL REPORT

ECO-DRIVING
CLIMATE AGREEMENTS
CLIMATE & ENERGY STRATEGY



SEECA-project

Cooperation at the local and regional level is of great importance to achieve energy efficiency. This is recognized by the European Commission. Furthermore, the Committee of the Regions is working to facilitate interregional cooperation in this area. In addition, the Swedish government has promoted energy efficiency on the regional and local level by giving the assignment to all Swedish county administrative boards to elaborate climate and energy strategies for each county. The purpose of these climate and energy strategies was to reduce climate change by supporting energy transition, especially by promoting actions to increase the share of renewable energy, to improve energy-efficiency and to support a more efficient transport system.

The Uppsala region has an historic tradition of co-operation with the Malopolska region and with Estonia, both Tartu and the Tallinn region. The municipality of Niepolomice (Malopolska region) has a twinning relationship with the municipality of Enköping (Uppsala region) and intensive cooperation within several areas of expertise. The Uppsala region has previously signed a twinning agreement with the Malopolska region in the cultural, economic, social and scientific areas and considers this agreement to be one of its most important ones. Sweden, in general, and Uppsala region, especially, has developed and experienced a close relationship with the Tallinn region, not at least in the environmental area.

In the project “Strategy for Energy Efficiency through Climate Agreements”, SEECA, Uppsala County, Niepolomice Municipality and Tallinn City Government are working together to assure that cities and regions in these regions cooperate with key stakeholders to reach the ambitious climate and energy goals of the European Union.

The SEECA-project is aimed at key actors at local and regional level to get involved in a concerted action to foster a low carbon economy. The partners behind the project recognize the need to build a sustainable framework that will allow regions to integrate the low carbon economy into the every day life of our citizens.

One of the aims of this project is to improve energy efficiency for all strategy areas. The overall aim of the SEECA project is to create a sustainable, regional framework based on regional climate and energy strategies. The identification and development of existing climate and energy strategies has been one of the major parts of the project. An efficient implementation of these strategies is equally important. The project has, therefore, focused on various ways of implementing the regional climate and energy strategies, among others, by ‘Climate Agreements’ between the public sector and key stakeholders in the private and non-governmental (NGO) sectors. Another key area in implementing regional climate and energy strategies that has been studied during the course of the project is eco-driving and good planning when using heavy machines.

The project has been lead by the Administrative Board of Uppsala County and four regional conferences has been held – a kick off meeting in Uppsala, a second meeting in Tallinn, third meeting in Niepolomice and a fourth final meeting in Uppsala. At these meetings the SEECA team has discuss and decide on the activities planned and evaluated internally the achieved results, both from a quality and from a quantitative stand point.

2. Climate and Energy Strategy

In 2008, all County Administrative Boards in Sweden were given the assignment by the Government to elaborate regional climate and energy strategies. The climate and energy strategy of Uppsala County was drawn up with the purpose of reducing climate change, promoting energy transition, increasing the share of renewable energy and promoting energy-efficiency and a more efficient transport system.

During the course of work, the County Administrative Board of Uppsala made deliberations with representatives of regional bodies, municipalities, the business community and universities in the county. Companies and organisations in the affected sectors – transports, energy supply and agriculture and forestry – also contributed to the work of the strategy.

One of the main purposes of the climate and energy strategy of Uppsala County is to influence different parts of society to reduce greenhouse emissions and reducing energy use, in doing so, it may also have a positive effect on other environmental problems.

The County Administrative Board in Uppsala County was able to further develop and deepen the outputs of the strategy through the strategic work of the SEECA project, together with Tallinn and Niepolomice. The strategy was translated into English and our partners were given access to a document which otherwise would not have been accessible to them.

Together, the participating partners have deepened their knowledge of local and regional climate and energy policy through discussions on topics and policy implications that are relevant in an interregional context.

On January 14th, 2009, the Municipality of Niepolomice joined the Covenant of Mayors - European initiative for climate protection. In accordance with the application project SEECA, Niepolomice Municipality has begun work on creating an energy strategy. According to the plan, an energy strategy will be completed in September 2011 and an implementation plan of the energy strategy will be ready in May 2012. Niepolomice Municipality has also developed a climate strategy in collaboration with external experts as part of the Air Protection Programme for Niepolomice under SEECA project.

The Tallinn City Government has recognized the need for an energy strategy and such a policy has been elaborated. Tallinn has established one regional reference group for a climate and energy strategy. Totally, in the development of Tallinn Environment Strategy (energy strategy) about 10 specialists from Environment Department and other consultants from different departments are involved.

Tallinn has also established one internal reference group for the development of a climate and energy strategy. The internal reference group includes people working on the SEECA project, such as project manager and deputy head of department, who disseminate results of Tallinn Environment Strategy by year 2030.

3. Climate Agreements

Increasingly, the relevant actors are becoming aware of the fact that energy is not always used for the correct purpose. For example, electricity is versatile and can be used for different functions but it is expensive to use as a source of heating compared to other options such as district heating systems which rely heavily on the burning of waste. Therefore electricity should not be used for, e.g. heating buildings.

The SEECA team realised that there is a need for a project to coordinate a change towards energy efficiency. The objective of the SEECA work package 'Climate Agreements' was to investigate the possibility of voluntary signing of agreements with both public and private actors to reduce climate change by introducing energy-efficient measures. The 'Climate Agreements' project is aimed at public and private actors with the purpose of understanding the need - from both an economic and environmental perspective - to improve energy efficiency and reduce greenhouse emissions. In addition, it is believed that the actors involved in the project would benefit from having a greener image. Securing engagement of the local municipalities will ensure a successful implementation of the project.

The signing of 'Climate Agreements' could have a positive effect on business energy policies from an energy-efficiency perspective as it will reduce the costs of involved organization and companies.

The 'Climate Agreements' part of the project is unique as it focuses on energy savings and not just on carbon emission which is primarily the focus of other schemes. It makes clear the connection between the goal of emission reduction and economic gains.

From a competitive perspective, energy efficiency makes a positive contribution to industry, both from a cost, profitability and 'goodwill' point of view. This project could help to stimulate and encourage the introduction of new energy efficient technologies, thus, in turn it may assist industry to develop and gain a competitive advantage.

The energy service sector, consulting sector and companies that develop and provide new technology are positively affected by the ambitions of this project. It also benefits companies in the installation and maintenance sectors, as well as all the companies which introduce new, more efficient and profitable technologies in their operations. This project will result in positive impacts from the environmental perspective through the expected reduction in energy use.

By working together towards a common goal, the project creates a platform, positive activity and allows for the development of energy networks in the municipality / county. The 'Climate Agreements' information has been transferred to our partners in Tallinn City Government and Niepolomice Municipality who have translated this information and started to implement 'Climate Agreements'. 'Climate Agreements' are currently being developed in Uppsala County. They are also being developed in Tallinn and Niepolomice Municipality in Poland.

In Tallinn, implementation of Climate Agreements in the city has just started. The city of Tallinn recognizes the importance of reducing energy consumption and 'Climate Agreements' are one way of affecting and encouraging companies to act in a more sustainable way. Tallinn has produced an Estonian version of Uppsala County's Climate Agreement brochures on four

topics and will disseminate these brochures with energy saving information for different types of businesses during several events among citizens and businesses.

In Niepolomice, the task of encouraging business to sign up to energy saving measures, in this case through the 'Climate Agreements', has been difficult and time consuming. In some cases, businesses have implemented energy saving measures. However, in most cases businesses are not aware of how much they are really saving and if the measures implemented have saved them money. This is because they do not have a reference point e.g. a reference year in which they compare their data to.

Niepolomice Municipality has taken steps to encourage companies to join the climate agreements through meetings on the 21 October 2010 and 20 April 2011. Niepolomice has also created a webpage www.porozumieniaklimatyczne.pl.

The municipality of Niepolomice recognizes that businesses that pay a high price for energy are more inclined to reduce their energy consumption. This does not necessarily drive businesses to sign up to energy saving measures. One reason is that they are not confident that they will save energy, as they do not have figures as evidence.

4. Eco-driving and good planning when using heavy machines

Energy efficiency of heavy machinery is an area that has received little attention. Therefore, the SEECA team felt that this issue should be investigated further. Eco-driving is driving in a manner which helps to reduce fuel consumption, for example by not stopping suddenly or choosing the correct gear. The objective of the SEECA work package "Eco-driving and good planning when using heavy machines" was to provide information on research conducted into eco-driving techniques in heavy trucks how to applying eco-driving techniques to reduce petrol consumption and emission of CO₂.

The SEECA team commissioned The Swedish Institute of Agricultural and Environmental Engineering (JTI) to investigate energy efficient use of industrial machinery in Uppsala County. The project proposed how the County Administrative Board can be proactive and bring about a reduction in the fuel consumption of the County's industrial machinery. The report provided a list of the county's machinery and how they are used. It also provided an estimate of the number of machines and their annual fuel consumption. The report also contains a discussion on what alternative fuels may be available in the near future, and what the consequences are for industrial machinery. Finally, the condition for starting a project which deals with the energy-efficient use of industrial machinery in Uppsala County was discussed.

The report proposes that three sub-projects should be developed. These projects could be held together via a common project management which would also coordinate the dissemination of the results. The reasons for dividing up the project into three parts - agricultural, forestry and construction equipment/machinery - are that they must be funded through different channels and that operations, ownership and organization differ greatly within these areas.

In Niepolomice, eco-driving techniques in heavy trucks (MAN) and buses were tested with good results. This objective of this test was to provide information on research conducted into eco-driving techniques in heavy trucks (MAN truck) and buses and how it is possible to reduce petrol consumption and emission of CO₂ by applying eco-driving techniques.

Through discussions with the partners and regional experts, Niepolomice Municipality identified that the implementation of eco driving techniques was worthy of further exploration. The lead SEECA partner in Uppsala informed the Niepolomice partners of the research into eco-driving within Uppsala and the benefits of educating public transport drivers. The results from an eco-driving training programme implemented by Gamla Uppsala Buss AB was so encouraging that the Niepolomice Municipality commissioned "EKO-EXPERT" (environmental educational experts from Cracow University of Technology) to analyze whether fuel savings and reduction of carbon dioxide could be achieved in Niepolomice Municipality.

Niepolomice Municipality and "EKO-EXPERT" discussed the development of a pilot program aimed at establishing guidelines for implementation of the principles of eco-driving in companies with significant share of heavy vehicles. A meeting was held with companies with a large number of heavy machines who were operating in the Niepolomice Municipality. It was decided that the pilot program will be developed in collaboration with MAN trucks, acting within the special economic zone in Niepolomice and with Mobilis company (line 301 from Niepolomice to Krakow) was also chosen to be involved at certain stages of the pilot project. As a result, a meeting was set up with the purpose of implementing a pilot program

with the goal of developing guidelines for the introduction of driving technique that allows fuel savings. A further goal was to explore the impact of eco-driving as to raise interest in participating in the project.

In Tallinn, a research called ‘‘ A reduction of heavy machinery energy consumption and bad impacts on environment ’’ was conducted. The main objectives of the study were to:

- Overview of greenhouse gas emissions produced from Tallinn transport: 2000-2009 (heavy machines/trucks, busses, cars, communal service etc)
- Overview of methods and politics, which have reduced greenhouse gas emissions in other cities
- Analyze of Tallinn City transport politics
- Suggestions for implementation methods that could reduce greenhouse gas emissions in Tallinn city

This report was a good addition to Tallinn Energy Strategy and Tallinn Energy Action Plan. At the moment Tallinn City Government is collecting data on emissions and transport for the year 2007 and this report will enable the city to get data on emissions for the year 2009. In addition, this report will be based on the project’s previous activities, such as Eco-driving seminars, questionnaire/survey, Uppsala County’s research on heavy machines, energy strategies and others. This report will be very valuable in terms of identifying and finding solutions to reduce CO2 emissions produced from the transport sector in Tallinn city (concentrating on Heavy Machines).

Tallinn City Government, Environment Department, is also in the process of including additional requirement concerning eco-driving when making a public procurement for waste management transports in Tallinn.

5. Information and communication

The partners have been responsible for the communication of their part of the project. To coordinate the project's communication activities, the information/press officers (or corresponding) from the participating three countries have been involved. They have informed local, regional, national and international media about the project on a SEECA-website. Furthermore, they have been responsible for publishing newsletters and to take part in the agreed actions at regional conferences, seminars and presentations of the project during Open Days in Brussels and during Energy Week.

The information on the activities of the SEECA team has been transferred to both genders. The SEECA team has striven to include representatives from both genders in the working group.

The climate and energy strategies produced, descriptions of the 'Climate Agreements' and 'Eco-driving and good planning when driving heavy machines' have been disseminated nationally and internationally through existing networks. Handbooks concerning 'Climate Agreements' have been developed in Uppsala County as well as in Tallinn.

Niepolomice Municipality has created an Eco-calendar directed to the inhabitants. The Eco-calendar explains in detail how to be energy efficient, reduce pollutions in the immediate surrounding area and reduce emission of CO₂. The Eco-calendar had been produced to inspire. It was directed to a wide range of groups and provides useful information and also provided key tips.

Five thousand copies of the Eco-calendar were produced and distributed to households in Niepolomice Municipality. We assume that by publishing the Eco-calendars to encourage energy efficiency improvements, Niepolomice Municipality provided the information to 70% of the inhabitants of the municipality (approx. 3 people in one household).

Tallinn City Government and Niepolomice Municipality have also arranged seminars on Eco-Driving for transport companies. The SEECA team recognizes this type of dissemination of information to be a cost-efficient method and the impact is significant.

On the Open Days event in Brussels on the 6th of October 2010 - "The Swedish recipe for a carbon free environment", experts made presentations on energy efficiency topics, such as "Vertical Wind – Wind Power", "Turning Waste to Green Energy", "Electro engine – Electric Cars", "Sea based – Wave Energy", "Biogas – Uppsala case from research to business". As a result, one of the speakers was invited to Tallinn city to make a presentation on "Biogas – Uppsala case from research to business" to share experience and knowledge with Estonian interested parties - the biggest Estonian companies working in the field of gas supply and production, Tallinn City Government representatives, researches and universities, transport companies and environmental organizations.

On the Energy Week event in Brussels on the 12th of April 2011 – "Creating Low Carbon Economies", a dissemination of project results was held. SEECA project partners could, at this occasion, reach out to interested parties through an online-broadcast. It was decided to hold 3 separate events as part of a one day SEECA Information Day during the Energy week in Brussels.

The first event was titled 'Emission Reduction through voluntary Climate Agreements' and it was lead by Uppsala County Administrative Board. The event provided details of the Climate Agreements, their function and implementation. Two Climate Agreement signatory organisations presented their experiences of the process. In total, 27 people signed in to the first event. Although a number of people attended who did not sign in. This event was live streamed and an edited version of the event can be found at the following link:

<http://www.powerprogramme.eu/projects.php?project=SEECA>

The second event was titled 'Inspiring behavioural change to create a lower carbon economy'. This event was lead by Niepolomice Municipality. This event provided details about the Energy Strategy of Niepolomice, their function and implementation. During this event Niepolomice Municipality presented the Eco-calendar for 2011. In addition, Tallinn shared its experience in producing Tallinn Energy Strategy and best practices of sustainable transport in Estonia.

The third event organized during Energy Week in Brussels was lead by Tallinn and called 'Ecodriving for Heavy machinery'. During this event, The Swedish Institute of Agricultural and Environmental Engineering (JTI) presented the results of a pilot study, commissioned by the SEECA team, that investigated energy efficient use of industrial machinery in Uppsala county.

6. Best practice

6.1 District heating in Uppsala City

The heating plant is located in Uppsala city of Uppsala in Sweden. The purpose of this district heating plant is to minimize emissions of greenhouse gases and reduce air pollution in the town of Uppsala. The goal is to switch to renewable fuels in district heating plant in the town of Uppsala by 2020.

Uppsala city, with more than 100 000 inhabitants, receive 95% of their heating from the district heating system. The expansion began in the 1960s. The district heating system was to start with 100% oil, but soon household waste was incinerated as the head source. To begin with, the aim was to ensure the city's energy supply and to reduce air pollution. From the 1980s, coal and oil was phased out and replaced by waste and peat.

A few years ago, the company, Vattenfall AB, decided that by 2020 they would completely switch to renewable fuels. The company has decided to build a new district heating plant for biofuel. This will mean that fossil fuels will only come from plastics contained in the waste. As a consequence, total fossil fuels usage will amount to less than 10%. The responsible for the operation is Vattenfall AB. Fuel usage has change over the years. Fossil fuels have decreased while biofuels has increased (Fig 1).

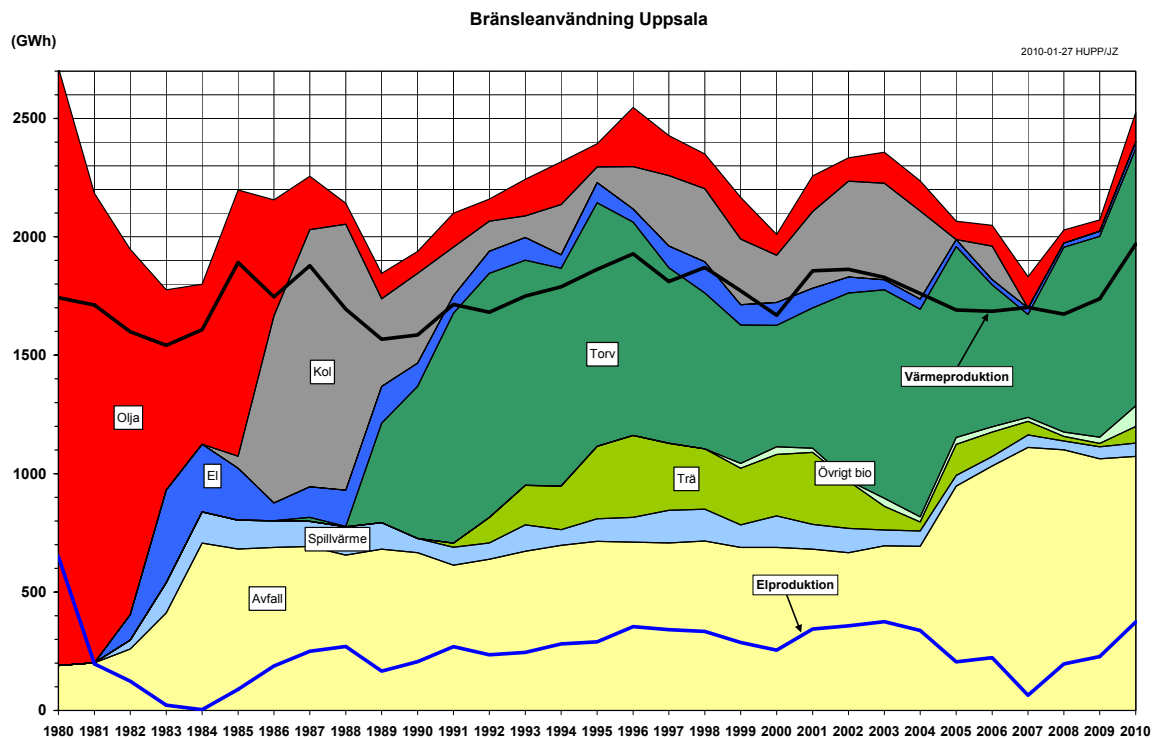
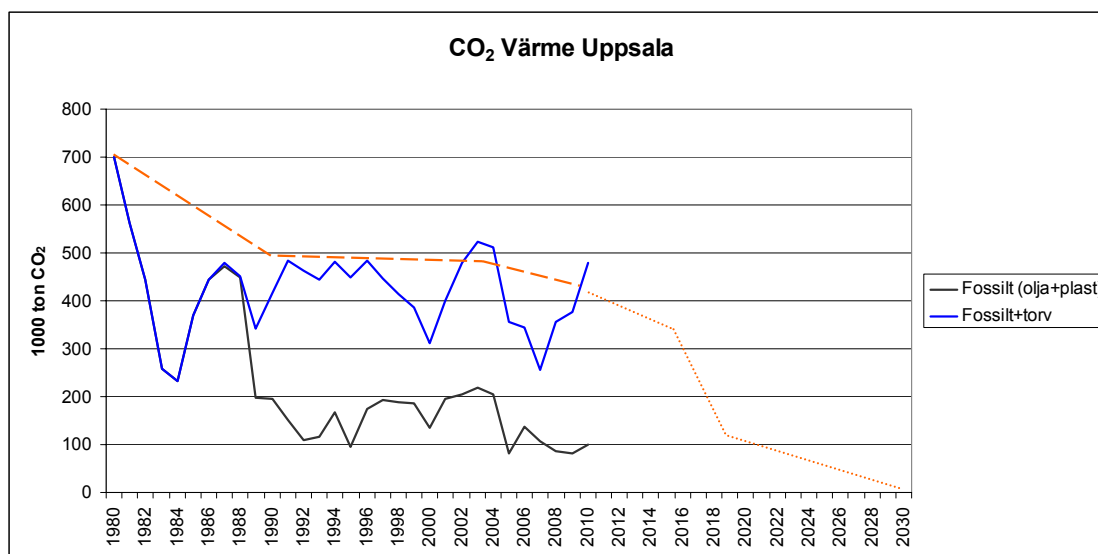


Figure 1

The CO₂ emissions from the plant have decreased since 1980 and are expected to continue to decrease even more until 2030 (Fig 2).



A success factor for the project is that the politicians in Uppsala decided on an early stage, as early as in the 1960s, to build a water-heating plant that would supply the entire Uppsala city with heat.

With this facility as a base, it has been relatively easy to adapt fuel usage. A large facility is much easier to maintain than having a large number of small plants.

In addition, Sweden had already in the EU legislation process pointed out the advantages of using unsorted waste as fuel. The advantages of waste combustion for heating purposes are twofold: it solves the disposal problem and it contribute to reduced CO₂ emissions.

The project encountered some difficulties. Technically, a transition to renewable fuels is relatively easy. The difficulties are mainly economic. Companies want, as long as possible, to use the old, working facilities. In Uppsala, the old plant will be worn-out by around 2020. To plan, obtain permits and build such a large facility takes almost 10 years, so the timing of the project is perfect.

The main lesson from the current project is that to achieve success on climate change, commitment from politicians and officials, businesses and staff is needed, as well as, facilitating laws and engaged residents.

6.2 ‘Climate Agreements’

‘Climate Agreements’ are currently being implemented in Uppsala County/Municipalities and they are also being developed in Tallinn and Niepolomice Municipality.

The purpose of the Climate Agreement is to encourage public organizations, enterprises and other actors in the county to implement voluntary emission reduction measures which will both strengthen their economic situation and their environmental efforts.

Initially an internal Climate Agreement working groups within the SEECA project team was established. This comprised staff from the County Administrative Board of Uppsala. The main focus was on the management structure and initiating meetings with municipalities within the county.

All municipalities within Uppsala Country were approached and invited to sign an agreement to share the work on the Climate Agreements, promote the project and also to set up municipal working groups. A communication strategy and project organisational strategy were developed to help implement the project.

Seven out of eight municipalities signed an agreement to work with this issue. So far, 5 municipalities have set up functional working groups to help implement the Climate Agreements. These working groups include personnel such as environmental strategist, enterprise developer, energy advisor and environmental inspector. The other municipalities are in the process of setting up similar working group. However, Uppsala municipality has a different approach as they are involved in an existing project which addresses energy saving actions.

The working groups have discussed the establishment of platforms for companies and organisations to use when applying to join the energy savings programmes. Municipalities also have a network of companies and regular meetings (called “breakfast meetings”) that have been used to inform businesses about energy saving actions.

Commitment to signing up to a ‘Climate Agreement’ contract is likely to be the most difficult step in the process. The contract is written to give the company/organisation:

- an impetus to start emission reduction,
- to gain control over their energy use,
- to use the correct energy for the right purpose,
- and, in the long run, to use even less energy and, thus, having an even better economic situation.

This project has added to the parameters requesting data on transport and business travel. The project website <http://www.klimatavtal-uppsalalan.se/> has been designed to allow ‘Climate Agreement’ signatories to log in and input their data. It provides information on upcoming events which may be of interest to participants.

The project has been set up by the County Administrative Board of Uppsala (regional government) with the cooperation of the municipalities within the county (who formed a working group). One municipality was identified as a test municipality to develop a process of working together and developed how to approach businesses. The ‘Climate Agreements’

project has been presented at breakfast meetings for businesses within municipalities and invited experts have made presentations on the need to implement energy saving measures.

Corporations, government organizations and other stakeholders in the county are invited to sign a Climate Agreement. It gives them the right to:

- use the name "Climate actor Uppsala county" in their marketing material,
- have their logo on the Climate Agreement project site
- receive promotion of their business through advertisements placed in local or regional newspapers.

The goals of the Climate Agreement will be disseminated by industry organizations, through business meetings in the municipalities and directly to the operator. A well-executed and successful project could result in the development of national and international projects.

Companies within the energy service sector and consulting sector as well as companies that develop and provide new technology could benefit from participating in the project. It also benefits companies in the installation and maintenance sectors, as well as all the companies which introduce new, more efficient and cost-saving technologies in their operations. The project will have a positive impact on the environment through the expected reduction in energy use. It may also bring health benefits as new technology often provides a better indoor climate.

Although the project does not impose any requirements on businesses or organizations to adopt policies which increase their energy efficiency, we know that some companies are at the forefront of developing them. The project could facilitate this process.

Of equally importance to the progress of the 'Climate Agreements' project in Sweden is that, under environmental laws in Sweden, municipalities are legally required to advise larger business to take energy savings measures. There is also the possibility for the advisors in the municipalities to guide smaller business in their efforts to save energy.

It is likely to take time to encourage participants to sign up to the agreement. Only 10 companies have signed up to the Climate Agreement. However, we are confident that we will achieve 100 signatories by the end of 2011. From communications with companies, the working group can confirm that there is an interest in the project and that the companies recognise the potential for energy savings.

The project has also experienced positive results from cooperation with the municipalities who have worked closely with this project. Having the regional and municipal governments working under the same umbrella has increased the capacity of this project.

Although we have not been able to generate results from the reporting system that has been built (website), this system has potential to enable business to keep track on their statistics and in a simple manner which will hopefully be an eye opener.

The challenge at present is to keep the companies who are participating in the project interested throughout the period. This can be done by organizing networking events through the municipalities, with support from the SEECA project team. At network meetings, we anticipate that the companies will share their experiences on energy efficiency and will also participate in, or listen to, lectures by companies who are involved in good practice. This

often requires that there are people who are strongly committed to energy efficiency in order to manage to keep these networks alive. Therefore, it is essential that local authorities are involved in driving the work. We have not yet had time to implement the strategic work in all municipalities, but all the knowledge gathered to date allows the implementation to be faster for the remaining municipalities.

A major hurdle is to get business interested and especially those who have not yet started to implement energy saving measures. Using established networks is a good start but there are always a number of questions which needs to be answered and that has not been possible to straighten out at these meetings.

This project has been presented at different trade fairs but we have concluded that these fairs are not the correct forum for this kind of project.

It is difficult to know why companies have a low level of interest in participating in the project. In some cases, companies reported that they had already implemented many energy efficiency measures and they believe that this project does not add anything. However, they rarely demonstrate how much they have saved through the energy efficiency measures they have implemented. The project provides the opportunity to monitor how much you save through the measures they choose to implement. Also, there are other eco-labels that you can participate in (the Nordic Swan, ISO, etc.) and these include energy conservation as a part. In cases where companies are already involved in these eco labels, there is less of an interest to participate in the Climate Agreement project.

In an initial phase, however, it is encouraging that companies with good environmental practices are involved and, in so doing, other companies are more inclined to participate. Some companies are resistant to participate even if they do not know what it is about. They are reluctant to take on additional work and believe that they will not save enough through efficiencies, ie, there are still many myths remaining about potential savings and how to react to different electrical / electronic equipment. There is also the notion that a Climate Agreement costs money which is a barrier to signing. The project management has been clear, however, that the Climate Agreements are free to join.

To increase interest in this climate change project, we believe in extending the website to some form of benchmarking, where companies can compare their work with other companies within the same industry. We cannot state whether, at this point, we are able to extend our information activities.

Other difficulties encountered in the process of implementing the 'Climate Agreements' are that businesses have a different timeframe for their equipment and, subsequently, it can take several years before these businesses can start to introduce energy saving measures.

Education is very important in this project. There is a need for better education of the business community with regards to the benefits of joining the Climate Agreement project.

The SEECA Climate Agreement team has also used pre-established networks to promote the project by promoting Climate Agreements to partnership with business associations, e.g. Företagarna and Relation. The SEECA team has also participated at 2 trade fares in order to promote the concept to businesses. The team is also working with one of the energy suppliers in the county to promote the concept.

The SEECA Climate Agreement team also developed brochures which provide advice on how to increase energy efficiency these are being promoted through the municipalities. The team will continue to work with the Municipalities beyond the timeframe of the SEECA project to organise breakfast meetings across the municipalities in the county. Key local business representatives will attend these meetings to encourage participants to sign up to climate agreements.

The project has a limited budget spanning 2.5 year. We believe that this is a good start and, hopefully, there will be a possibility to continue developing this project beyond this timeframe. There is a need to continue the project until the goals are fulfilled and therefore the project will apply for further funding.

This is a project with a small budget. To involve the municipalities to the extent that we have, with their access to local businesses and industry, provides a good foundation for the projects future.

There is also a flexibility which allows us to develop different solutions in different municipalities. For example, each municipality may work differently and have a different knowledge of their local business community. This project allows them to adopt the best approach for them.

Finally, the project has been positively acknowledged by the municipalities. The information materials produced through this project has been very well received as it provides a good introduction and summary to the issues. The information material will assist the involved parties to begin implementing energy saving measures.

Difficulties encountered:

- It has taken time for the project to properly get started and it is largely due to the fact that we are working with the eight municipalities in the county.
- It has also taken time to put together the municipal working group of environmental strategist, environmental inspector, business developers and energy advisors.
- Material (such as the Climate Agreements, information on the Climate Agreement and supporting documents) also needed to be developed before the project could be advanced.

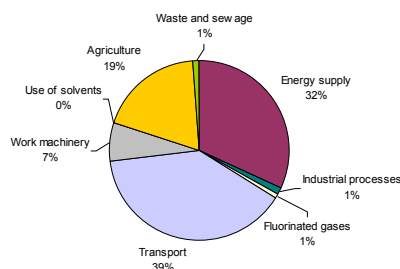
Lessons learned:

- There is a need for further development, education and outreach to encourage businesses to engage. A number of workshops have been conducted with municipalities with the aim to develop plans for how to reach out to businesses and get them to sign contracts. Though this method is time consuming, it is important that municipalities are involved in the work. A very important part of the success of this project is involving the municipalities as local support is important for companies. We do not believe that a government agency (such as Uppsala County Administrative Board) is as relevant to businesses as the municipality. Furthermore, municipalities have already created well established network to support entrepreneurship in the community.
- This project was very ambitious in terms of timescale, there was not enough time to develop all the relevant materials to develop the Climate Agreement and the website, disseminate this information, train and educate the municipalities, set up working

meetings, engage with potential signatories within 18 months. The Climate Agreement requires a much longer timeframe to become established.

6.3 Uppsala County - Heavy Machines

The fourth largest source of emissions of climate impact gases in Uppsala County, is heavy machinery with a share of almost 10%, after transportations, energy supply and agriculture. Through a change in behaviour it is relatively easy to reduce fuel consumption for heavy machinery by approximately 10%.



Emissions of greenhouse gases in Uppsala County in 2008. Source: SMED (Sveriges MiljöEmissionsData).

Energy efficiency of heavy machinery is an area that has received little attention. Therefore the SEECA team felt that this issue should be investigated. The SEECA team assigned The Swedish Institute of Agricultural and Environmental Engineering (JTI) to investigate Energy efficient use of industrial machinery in Uppsala county. The project proposed how the County Administrative Board can be proactive and bring about a reduction in the fuel consumption of the County's industrial machinery. This report provided a list of the county's machinery and how they are used. The report also provided an estimate of the number of machines and their annual fuel consumption. The report discusses what alternative fuels may be available in the near future, and what the consequences are for industrial machinery. Finally, the condition for starting a project which deals with the energy-efficient use of industrial machinery in Uppsala county was discussed. The report proposes that three sub-projects should be developed. The 3 projects could be held together via common project management which would also coordinate the dissemination of the results. The reason for dividing up the project into three parts (agricultural, forestry and construction equipment/machinery) is that they must be funded through different channels and that operations, ownership and organization differ greatly within these areas. The report summary can be found below.

Based on the findings of this initial study, the Country Administration Board of Uppsala worked with the Swedish Institute of Agricultural and Environmental Engineering (JTI), Energy Agency in Mälardalen AB (Energikontoret) and Swedish Agricultural University (SLU) developed a new research project. The aim of this project was to make Uppsala as a pilot county for the development and implementation of an education programme aimed at the promotion of efficient use of larger diesel driven working vehicles used in construction, agriculture and forestry. Increasing energy efficiency is a key priority of the Swedish government. The Swedish Government have give the Swedish National Road Association, the Swedish Board of Agriculture and the Swedish Forest Agency responsibility for this task as such they must prepare means of meeting this objective. This project will assist them in achieving this task. The work in the SEECA project to reduce fuel consumption for heavy

machinery is based on the invitation of the Swedish government to work with this issue. The new project will receive a funding package of 2,008,000 SEK and will be lead by the Country Administration Board of Uppsala.

6.4 Niepolomice Municipality - Eco-driving techniques

The implementation of the Eco-driving techniques in Niepolomice Municipality is one of our main goals because of significant CO₂ emissions from fuel consumption in transport. According to researches a 19.6 percent of the CO₂ emission (28 448 Mg) come from fuel consumption in transport in Niepolomice. To reduce the impact of transport on climate and improved efficiency of vehicles we decided to conduct the researches.

Through discussions with the partners and regional experts, Niepolomice municipality identified that the implementation of eco driving techniques was worthy of further exploration. The lead SEECA partner in Uppsala had informed them of research into eco-driving within Uppsala and the benefits of educating public transport drivers such as bus drivers. The results from an eco-driving training programme implemented by Gamla Uppsala Buss AB were so encouraging that the Niepolomice Municipality commissioned "EKO-EXPERT" (environmental educational experts from Cracow University of Technology) to analyze whether fuel savings and reduction of carbon dioxide could be achieved in Niepolomice Municipality.

Niepolomice Municipality and "EKO-EXPERT" discussed the development of a pilot program aimed at establishing guidelines for implementation of the principles of eco-driving in companies with significant share of heavy vehicles. A meeting was held with companies with a large number of heavy machines who were operating in the Niepolomice Municipality. It was decided that the pilot program will be developed in collaboration with MAN trucks, acting within the special economic zone in Niepolomice and with Mobilis company (line 301 from Niepolomice to Krakow) was also chosen to be involved at certain stages of the pilot project.

As a result, a meeting was set up with the purpose of implementing a pilot program with the goal developing guidelines for the introduction of driving technique that allows fuel savings. A further goal was to explore the impact of eco-driving so to raise interest in participating in the project.

The most important benefits of participation in the pilot project are the following:

- a) reduction of CO₂,
- b) significant fuel savings,
- c) lower costs of vehicles maintenance,
- d) lower insurance premiums,
- e) reducing the stress level of the driver,
- f) increasing the skills of the driver's handling of the vehicle,
- g) to increase job satisfaction,
- h) a higher level of road safety.

The results were as follows:

1. The test drive in accordance with general principles of testing vehicles used in MAN driving were made mainly in the areas which are not built up. Distance - 481 km, fuel consumption 130 liters of diesel, average fuel consumption 27,03 [l/100 km].
2. The test drive in accordance with the eco-driving techniques in built up areas. Distance 446 kilometers, fuel consumption 107,5 liters of diesel, average fuel consumption 24,10 [l/100 km].

The results of the pilot program realized in cooperation with MAN
Reducing fuel consumption: 10.8%, identical to the value of reducing CO2 emissions (further details can be found in the report)

The lower emission values may depend on two factors:

- Tests were performed on the factory-new vehicle,
- MAN TGX 18.400, with the most modern Exhaust gases cleaning systems, was selected as the test vehicle
- That the test conditions were different, one was in a build up area whereas the other was not

Conclusions to be taken into consideration:

- Develop an incentive scheme for drivers of eco-driving
- Driving standard and eco-driving should be performed on the same route.

The cost of the research in eco-driving techniques in heavy trucks (MAN truck) and buses (Mobilis) and how eco-driving reduces petrol consumption and emission of CO2 was approximately 3500 euro's.

The promising results obtained during this study, motivated the Niepolomice SEECA team to undertake further research into eco-driving techniques which are currently ongoing. However, the Niepolomice SEECA partners believe that the results of the eco-driving test will have a significant impact on policy. It is recommended that the,

- The Sustainable Energy Action Plan under the Covenant of Mayors should be amended by the municipal expert to reflect the results of the eco-driving research
- That the local plans and programs namely the Air Protection Program, Niepolomice Municipality Strategy and Energy Strategy which are currently being written will include eco-driving guidance policies which will help with the target to reduce CO2 and fuel consumption.
- Once the eco-driving guidelines are implemented within the local plans and programs, and hopefully are delivering positive results, there will be an opportunity to influence the implementation of regional policies. There is not an opportunity to do this at the minute.
- From our initial research on eco-driving techniques, we believe that the Mayor of Niepolomice should use internal regulations to oblige employees to use eco-driving techniques while traveling by car on municipal missions. Eco-driving rules should be available in the vehicle in a conspicuous place.
- Niepolomice Municipal Council should place aside funds for of approx. 3000 Euro's for the training program for inhabitants on eco-driving.

Training programs in the field of eco-driving are popular among residents. The training consists of theoretical and practical part. The practical part is composed of designated number of hours of driving with an instructor. Experience in other cities show that the effect achieved by reducing fuel consumption. Training for residents should be free of cost. The estimated effect of reducing CO2 emissions: 392 Mg

The concept of "green purchasing" comes from the possibility of identifying the conditions and specifications of products and services purchased by the buyer (eg. repair of the road with the use of eco-driving techniques). In practice, there are some possibilities to realize this concept by defining such criteria in tenders and purchases of "free-hand", which include targets for reducing greenhouse gas emissions by the municipality. In order to standardize requirements and facilitate the work of those who are responsible for procurement, it is proposed that internal procedures for procurement are created for the Municipal Council, with consideration given to 'green purchasing'.

Niepolomice Municipality is also using opportunities such as at a seminar on Eco-Driving for transport companies to spread the word about eco-driving. At this meeting, an official of the Niepolomice Municipality presents the results of studies showing the obvious fuel savings and positive impact on the environment. This type of dissemination of information cost the municipality very little but could make a significant impact.

6.5 Tallinn City Government – Eco-driving seminars

Tallinn city and nearest counties have organized two well-attended Eco-driving seminars for companies, who work with large number of vehicles (cars, heavy machines) and for policy makers.

The objectives of this best practice was to reduce CO₂ emission in Tallinn City by persuading big companies to use alternative types of fuels in their vehicles, such and CNG and Biogas.

On the 8th of December 2010 a seminar called ‘*Eco-driving: Gaseous Fuels*’ was held in Tallinn. The aim of this seminar was to raise awareness among transport companies and companies, who provide communal services in Tallinn city, on the alternative types of fuels, such as CNG, biogas and others: present best examples of using gaseous fuels in Sweden and Estonia, to show them a profitability of using gaseous fuels and its positive impact on saving the environment (CO₂).

During the seminar, experts and researches discussed also obstacles in coordination processes of biogas fuel production and usage. About 60 participants from different companies and public organizations took part in the seminar. It shows that a demand of such kind of dissemination events exists. In the same time, the organization of such event is very relevant in terms of making progress in the reductions of CO₂ emissions, as CNG emits up to 25% less of CO₂ than petrol and up to 12% less than diesel and biogas is emits up to 100% less of CO₂ than petrol or diesel.

After the seminar a few companies started negotiations on how to switch their agricultural machines: tractors, to the usage of CNG fuel which is a first step to the usage of biogas.

Lessons learnt from the best practice are that more such seminars should be organized and more politicians and key players should be invited to them, as it is one of the way how we can affect them. .

This best practice was transferred to SEECA project partners.

On the 17th of June 2011 a seminar called ‘*Sustainable way of driving – EcoDriving*’ was organised by Tallinn City Government. The aim of this seminar was to raise awareness and interest among waste management, road cleaning, -building and -maintenance companies for sustainable way of driving – EcoDriving.

During the seminar a possibility to save at least 10% of fuel using ‘EcoDriving’ driving techniques were introduced, which also results in less money spending on car maintenance and car accident sequential repair.

Scania Eesti AS driving instructor Margus Sillamaa – introduced: possibilities for drivers to gain new experience and to correct their driving skills; connections between driver and company business interests; drivers influence on machines, road safety and environment; sustainable way of driving training programme for Tallinn Bus Company drivers in frames of European project CIVITAS MIMOSA (objectives and results).

Niguliste Autokool driving instructor and ‘Peer Drive Clean’ project trainer Henry Arnhold gave an overview of: how through fuel and money economy is possible to keep safety on road and lesser pollute environment while driving; a method of sustainable way of driving and

sustainable way of operating vehicles – EcoDriving – method, which is developed and patented in Finland; ‘Heavy EcoDriving’ method; long-term and comprehensive project for companies with big car parks - method, which is developed by Swedish EcoDriving partners and that has already very good result, is known, as ‘Development training for sustainable way of driving’

14 representatives from biggest companies in Tallinn took part in the seminar: 2 biggest waste management companies, 3 biggest road-cleaning and repairing companies, 1 biggest park service company Scania Company and Tallinn City Buss Company. It shows that a demand of such kind of dissemination events exists. In the same time, the organization of such event is very relevant in terms of making progress in the reductions of CO2 emissions, as an implementation of EcoDriving techniques in companies helps to save at least 10% of fuel consumption and to reduce money spending on car maintenance and car accident sequential repair.

After the seminar some companies were very interested in training their drivers EcoDriving techniques and asked more information on it. We believe that some of them will implement these training in nearest future that will give a positive impact on reduction of CO2 emissions in Tallinn.

Lessons learnt from the best practice are that people and companies are not aware of existing Eco Driving techniques, so that why more such seminars should be organized in order to raise an interest among them.

SEECA project partners are aware of this seminar and the information in English of its result will be prepared.

Tallinn is in the process of discussion of the possibility to include an additional requirement into its procurement processes that any company applying for contracts has to make sure that all its drivers have undertaken a certified eco-driving course’

6.6 Niepolomice Municipality – Eco-calendar

Emissions inventory showed that in 2008 the overall CO₂ emissions in the municipality of Niepolomice reached 144 747 Mg. The 25.5 percent of these CO₂ emission (36 952 Mg) come from energy consumption in residential buildings. Further researches showed that 48.6 percent of CO₂ emissions come from burning coal in Niepolomice households.

In order to stop the prevailing tendency of reverting to fossil fuels (mainly coal) as a main source of energy and to improve energy efficiency in the Niepolomice households, Niepolomice Municipality as a partner of the Power Programme have created a Eco-calendar directed to the inhabitants.

The Eco-calendar explains in detail how to be energy efficient, reduce pollutions in the immediate surrounding area and reduce emission of CO₂. Each month, the Eco-calendar deals with a different topic, for instance, lighting, water consumption, waste, equipment and household appliances, transportation, heating and air-conditioning. The Eco calendar had been produced in an attractive format, the graphics and photo are designed to inspire and blend directly to the theme of the month. It was directed to a wide range of groups and provides useful information without being too technical and also provided key tips.

At the back of the Eco-calendar an energy calculator table is attached in which the inhabitants can compare financial savings made by using the energy tips of the calendar and results without using them. For example, it compares an energy efficient family using an A+ class refrigerator and freezer which results in 300 kWh/year to a standard family with use a C class appliance which uses double the energy, 600 kWh/year. It is very important that in addition to energy savings, it shows the amount of money saved.

Five thousand copies of the eco-calendar were produced and distributed to households in Niepolomice Municipality. We assume that by publishing the eco-calendars to encourage energy efficiency improvements, Niepolomice Municipality provided the information to 70% of our inhabitants (approx. 3 people in one household). Two hundred copies of the calendar were also published in English and disseminated to our partners. The calendar was divided into twelve months and consisted of 12 main topics on how to save energy.

A survey was conducted to find out if and how people use the calendar. The web-based questionnaire (www.niepolomice.com) showed a very positive result with 68 percent stating that they used the energy saving tips provided by the calendar. The results obtained during the preliminary research suggest that the chosen form of communication, the Eco-calendar, is working and worth investing in in the future. The calendar attracted much attention not only in the Municipality of Niepolomice, but also in other regions and countries (Estonia, Latvia, Sweden). The calendar was circulated at the meeting of PEA Baltic project in Niepolomice, at the SEECA Partners meeting also during the Energy Week in Brussels.

The Eco-calendar attracted much attention not only in the Municipality of Niepolomice, but also in other regions and countries (Estonia, Latvia, Sweden). The calendar was circulated at the meeting of PEA Baltic project in Niepolomice, at the SEECA Partners meeting and also during the Energy Week in Brussels.

Next edition of the eco-calendar (6000 copies) is planned on September 2011. In this issue there will be a short description of the Niepolomice Energy Strategy and information on how our inhabitants have used the guidelines from the previous edition of the eco-calendar to improve energy efficiency and what kind of savings they reached. Just as in the first edition, the form will be attractive with completely new photographs and accessible to a wide cross section of the population.

The best method of presenting the results of the Eco-calendar is a survey, it can be a direct survey or a survey posted on the website. Difficulties that can be encountered are: incorrect filling out the questionnaire or providing false information. Surveys can be so complex that will give us answers to such questions: Which month's recommendations do you find most useful in everyday life? Have you started using tips contained in the Eco-calendar? The positive reception of this form of education by our inhabitants has meant that this form of education has been transferred to other local plans and programs adopted by resolution (Sustainable Energy Action Plan for the Niepolomice Municipality, Air Protection Programme, Energy Strategy in the phase of creation).

From our initial research and research conducted by our partner Enköping Municipality and Twin Town, we believe that Niepolomice Municipal Council should put aside a budget for the 2013 calendar of approx. 8000 Euro', for the development and promotion of the eco-calendar, because we believe that only through regular issue of eco-calendar (every year) will we achieve long-term objective of a low carbon economy.

Due to the limited budget, Niepolomice Municipality may not be able to independently finance the 2013 Eco-calendar. In this case, it may be necessary to apply for finances from the external financial support. It is possible to apply for funds into energy efficiency and renewables through the following funds:

- Operational Programme Infrastructure and Environment - priorities: 9. Environmentally friendly energy infrastructure and energy efficiency, 10. Energy security, including diversification of energy sources
- Malopolska Regional Operational Programme - 7 priority Environmental infrastructure; action 7.2. Improving air quality and increase use of renewable energy

This best practice was identified through discussion between partners. The inspiration for the discussion on this practice was the calendar issued by Enköping Municipality in 2008 concerning environmental protection. We concluded that a calendar as a form of communication can be effective in transferring information on energy issues also.

Since the start of the project it was planned to publish a second edition of the calendar. The positive reception of this form of education by our inhabitants allows us to assert that it is a good practice that can be tested in other countries.

7. Policy recommendations

With regards to the development of climate and energy strategies, the SEECA team recognizes the need for a deepened dialogue.

Within the area of transports, the SEECA team recommends further development to create a good public transports. Especially, the SEECA team points out the necessity to rely on the procurement of clean vehicles in within the public sector as well as in corporate procurement of services involving vehicles and transportation. Also, the SEECA team would like to highlight the importance of promoting eco-driving public and private activities. Eco-driving licenses could also be included as a prerequisite in public procurement. In the transport area, the SEECA team would also like to propose a set of requirements for co-distribution of goods in larger urban areas as soon as possible. This should be done with cars powered by renewable fuels. It is equally important to develop terminals for transshipment between different modes of transport. The use of biogas or other renewable fuels for buses, and, possibly, for heavy machinery, should be promoted.

Regarding developments of climate and energy strategies, the SEECA team have recognized the importance of stimulating the development of renewable energy sources and the development of district and local heating.

In addition, when energy use is concerned, increase energy efficiency in existing and newly constructed buildings as well as increase energy efficiency in all types of businesses, households, public institutions and companies are crucial elements in climate an energy strategies at the local and regional level.

On the subject of Climate Agreements, the SEECA team has the following policy recommendation:

- Municipalities within Uppsala Country should continue implementing the Climate Agreement project alongside educational outreach to increase the number of Climate Agreement signatories and energy efficiency gains.
- A evaluation of the 3 pilot Climate Agreement countries is undertaken to establish the success of the Climate Agreements before the initiative is further developed.

Concerning heavy machinery, SEECA recommendations regarding constructions and service machinery are:

- At each construction site, all machine operators shall have an "eco-driving" course. This should be repeated regularly to maintain a high level of ambition.
- At every major constructions site shall all involved be informed about how they will work to reduce fuel use as much as possible, e.g. to perform the work in the most efficient manner.
- Regarding street cleaning, a route plan shall be drawn up for each area to reduce motor fuel use. Computer programs can be used with great success. It is important that a dialogue is ongoing with the staff.

SEECA recommendations to farmers regarding agricultural machinery:

- All farmers will have to undergo eco-driving training.

- Before work with agricultural machinery a plan should be drawn up for how work is performed in the most efficient way

SEECA recommendations to forestry companies and workers regarding agricultural machinery:

- All forestry machine drivers will have to undergo eco-driving training.
- Before work with forestry machinery a plan should be drawn up for how work is performed in the most efficient way

Finally, the SEECA team recognizes the need to stimulate a broad research and knowledge on climate and energy issues and to support businesses that are active in the climate and energy area.

The EcoDriving theme has been in focus in SEECA project and its necessity has been proven. One recommendation is to include an additional requirement into its procurement processes that any company applying for contracts has to make sure that all its drivers have undertaken a certified eco-driving course'. It will help to reduce fuel consumption at least 10%, which is a very good result. Tallinn City Government, Environment department is in process of including this additional requirement when making a public procurement for waste management in Tallinn City.

8. Conclusions

It is clear that the SEECA project contributed to local and regional climate and energy strategies in a positive way. The apparent advantages of the project are that it developed closer links between the regions concerned and that there was a transfer of knowledge and understanding in this subject area.

The work on local and regional climate and energy strategies were already undertaken in all participating countries when the SEECA project was initiated. However, the cooperation on developing energy and climate strategies has been mutually beneficiary. Uppsala County had already developed a strategy for climate and energy issues, on the assignment of the Swedish Government, when the project was started. This climate and energy strategy was translated into English and distributed to the partner countries. The municipality of Niepolomice is on the way of completing the work of its energy strategy and air protection programme where eco-driving guidelines will be included. Tallinn was on the way of producing an energy strategy when the cooperation began and has now completed this strategy.

Regarding the 'Climate Agreements' part of the project, it is difficult to know why companies have a low level of interest in participating in the 'Climate Agreements'. In some cases, companies reported that they had already implemented many energy efficiency measures and they believe that this project does not add anything. However, they rarely demonstrate how much they have saved through the energy efficiency measures they have implemented.

Other difficulties encountered under the 'Climate Agreement' part of the project are that businesses have a different timeframe for their equipment and subsequently it can take several years before these businesses can start to introduce energy saving measures.

Education is very important in 'Climate Agreement' part of the project. There is a need for better education of the business community with regards to the benefits of joining the 'Climate Agreement' project.

It has taken time for the 'Climate Agreement' part of the project to properly get started. It has also taken time to put together the municipal working group of environmental strategist, environmental inspector, business developers and energy advisors. Material (such as the Climate Agreements, information on the Climate Agreement and supporting documents) also needed to be developed before the project could be advanced.

There is a need for further development, education and outreach to encourage businesses to engage. A number of workshops have been conducted with municipalities in Uppsala County with the aim to develop plans for how to reach out to businesses and get them to sign contracts. Though this method is time consuming, it is important that municipalities are involved in the work. A very important part of the success of this project is to involve the municipalities as local support is important for companies. We do not believe that a government agency (such as Uppsala County Administrative Board) is as relevant to businesses as the municipality. Furthermore, municipalities have already created well established networks to support entrepreneurship in the community.

This project was very ambitious in terms of timescale, there was not enough time to develop all the relevant materials to develop the 'Climate Agreements' and the website, disseminate this information, train and educate the municipalities, set up working meetings, engage with

potential signatories within the timeframe of the project. The 'Climate Agreements' requires a much longer timeframe to become established.

Although we have encountered several difficulties in implementing the 'Climate Agreements' part of the project, we believe the 'Climate Agreement' has built a good structure in terms of the developing networks, the web-based system and materials developed.

With regard to the eco-driving part of the project, the seminars on eco-driving were unique in all the partner countries. Such a diverse range of individual had not been brought together before and the material that has been covered was new to the audience. The interactive nature of the events with a lively and open interactive discussion contributed to the success.

These types of events and the format were unique and will be repeated again. Unique element of carrying out these events is that they are addressed to small, but most important and problematic group of companies, whose impact on environment we want to change. The SEECA team recognizes this type of dissemination of information as a cost-efficient method and the impact is significant.

Regarding the information and dissemination part of the project, the Eco-calendar that was produced by the Municipality of Niepolomice has been successfully distributed to the wider public.