

Summary of financial incentives and other control measures in Sweden and Malmö for creating a sustainable energy system at local level

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Malmö stad

Introduction and goal

Municipalities, the Swedish Government and the EU have access to a number of control measures to direct climate and energy policy in the desired direction. This report intends to provide a survey of the different control measures available and to indicate how local and national levels interact. The focus is on control measures at local level.

Different types of control measures, terms of reference

Control measures can be financial. This concept includes taxes and charges such as carbon dioxide tax, petrol tax, congestion charges, parking charges, subsidies and grants. There are also technical control measures which include development of environmentally friendly motor fuels, better and more comfortable buses, more cycle paths etc. Administrative control measures can include local rules such as a local time limit on engine idling, purchasing rules etc. Last but not least, communication is also a control measure, which can be used in campaigns, personal influence, training etc.

It is important to point out that these control measures must often collaborate to produce an effect. Communication by itself is a weak control measure, but on the other hand it can be the one that allows other measures to bear fruit. New research has shown that using the whip as a control measure (e.g. taxes and charges) is more effective than carrots (e.g. rewards).

This report focuses on using financial and administrative control measures in Sweden and in Malmö, where the focus is on the local level. As for control measures which exist as EU Directives etc., we refer to a summary made by the County Council in Scania province, which is available from their web site.

National control measures

Financial control measures at national level

The state has the strongest control measures in the climate field, due its role as the legislator. The most important control measures that the state has are taxes, charges and grants.

Taxes: Energy tax, carbon dioxide tax, including petrol and diesel tax, vehicle taxation

The present energy taxation system is based on a combination of carbon dioxide taxes, energy taxes on fuel, energy tax on nuclear power and consumption tax on electricity. Reduced taxation is levied on some companies and on combined heat/power generation. Carbon dioxide-neutral fuels have been exempt from both carbon dioxide tax and energy tax in Sweden since 2004, in order to improve the conditions for using alternative fuels. The annual vehicle tax for new private cars as from model year 2006 and cars in environmental class 2005, electric and hybrid powered vehicles, has been differentiated as from 1 October 2006 on the basis of the vehicle's carbon dioxide discharge.

Carbon dioxide tax was introduced in 1991 and has increased from 25 öre/kg carbon dioxide to 91 öre/kg carbon dioxide in 2005. Manufacturing industry, heat/power generation plants, agriculture, forestry and hydro-power pay a lower level than the general level. In addition, there are special rules for further reduction of the tax for industry that uses a large amount of electricity.

The Swedish Government proposed in 2005 that activities that are subject to the EU system for trading with discharge rights should be subject to special reduction rules/exemptions from carbon dioxide taxation.

Energy has been taxed in Sweden since the 1950s. The tax was originally levied on coal and oil. Taxation on petrol was first levied in the 1920s. The level of energy taxation has changed as time has passed, and also varies from one fuel to another. In 2005, the energy tax on natural gas was 2.2 öre / kWh, for coal it was 4.3 öre / kWh and for fuel oil it was 7.4 öre / kWh. Biofuel is completely exempt from energy taxation, however. Manufacturing industry and the use of fuel for production in heat/power generation plant is exempt from energy tax.

Fuel that is used for production of electricity is exempt from both energy tax and carbon dioxide tax.

Congestion charges

There was an experimental congestion charge scheme in Stockholm between 3 January and 31 July 2006, which was then made permanent in 2008. Even if it is referred to as a charge, it actually a tax that is paid.

The main goals of the Stockholm experiment were:

- to reduce traffic by 10-15 percent during peak hours into and out of the city centre
- increased mobility in Stockholm's traffic
- reduced discharge of carbon dioxide, particles and oxides of nitrogen.
- the inhabitants should perceive that the urban environment had been improved.

The trial period showed that the goal of reducing traffic was met, thereby also achieving the environmental goal. The situation for the urban environment goal is more difficult to interpret. The trial has reduced traffic flows, even more than expected. In addition, the effects have been noticeable further out from the tariff zone than would originally have been believed. This means that several of the feared "collateral effects" have not occurred. Mobility has increased. This has had a considerably positive effect on journey times and has also meant that people can now be confident that a journey will take a certain, expected time. The Stockholm experiment has reduced the discharge of both carbon dioxide and particles. The reduction is large, considering that it is due to one single cause. Since the traffic reduction has taken place where there is a high concentration of inhabitants, it is mainly the reduction in particles that has had a considerable effect on the health of the County in general. The health effect is about three times larger than would have occurred if the reduction had been due to an increase in the price of petrol.

The increase of public transport during the experiment did not reduce vehicle traffic to any measurable extent. On the other hand, correctly functioning public transport is necessary to absorb the increased number of passengers travelling by public transport.

The economy of the region has not been affected to any greater extent, and it is not probable that this would occur in the long term. A system of congestion charges shows a socio-economic profit after four years.

Congestion charges are automatically levied for every Swedish registered vehicle that passes a so-called payment station on Monday – Friday from 06.30-18.29. Every passage in or out of central Stockholm costs 10, 15 or 20 crowns, depending on the time of day. The maximum charge per vehicle per day is 60 crowns.

The tax is payable in arrears, and must be paid to the National Road Administration congestion charge account within 14 days after passage. It is not possible to pay at the payment stations. It is the vehicle owner who is responsible for ensuring that the tax is paid.

Electricity certificate

An electricity certificate scheme was introduced in Sweden on 1 May 2003. The electricity certificate system is intended to increase the production of electricity in Sweden from sustainable sources. The goal of the electricity certificate system is to increase annual electricity production from sustainable energy sources by 17 TWh in or before 2016, compared with the 2002 level.

The electricity certificate system when it was introduced, was a new form of support for the energy industry. The electricity certificate system is a market-based system involving trade between producers of sustainable electricity and those who are subject to quota obligation. The system aims to increase the production of sustainable electricity in a cost-effective manner. This takes place when competition occurs between different sources of sustainable energy. The income received by electricity producers when they sell energy certificates replaces the former investment grants and operation support. The electricity certificate system enhances the opportunities for sustainable energy to compete with non-sustainable energy sources.

The system has been constructed so that producers of sustainable electricity receive certificates for every MWh of electricity they produce. In order to create a demand for electricity certificates, the electricity distributors and certain, legally defined electricity users are obliged to purchase a certain quantity of electricity certificates in relation to their electricity deliveries/electricity use, the so-called quota obligation. When electricity certificates are sold, the producers receive an extra income over and above the income from selling electricity, which creates a better financial climate for environmentally friendly electricity production.

The energy sources that have the right to be allocated electricity certificates are:

- wind power
- some hydro power
- some biofuels
- solar energy
- geothermal energy
- wave energy
- peat in heat/power stations

Each installation has to apply to the Energy Authority to be allocated electricity certificates. The basic requirement for approving the installation for issuance of electricity certificates is that it uses one of the approved energy sources, is connected to the electricity mains and that it has time indication metering. An installation that was taken into service after the end of April 2003 can be allocated electricity certificates for a maximum of 15 years. New installations which enter the system after 2016 will be allocated electricity certificates that are valid until 2030.

Quota obligation

Demand for electricity certificates is created by introducing a quota obligation. The quota obligation means that electricity distributors and some electricity users must purchase electricity certificates in relation to their total electricity distribution/ electricity use. The quota obligation varies annually, in order to create a growing market for electricity certificates. The quota levels have been determined up to the year 2030, and are adjusted for the years 2007-2010.

Discharge right trading

Trading in carbon dioxide discharge rights encompasses more than 730 Swedish installations in industry and electricity production. A total of about 13,000 installations are affected in the whole of the EU, corresponding to about 40 percent of the total discharge of carbon dioxide in the Union. A number of initiatives have been taken at EU level to develop discharge trading so that more countries, sectors of society and greenhouse gases could be included. Discharge trading is based on setting a ceiling for the total discharge level. Every year, the discharge produced by the companies should be compensated by the requisite number of discharge rights.

Discharge trading in the EU is the world's first major trading system for greenhouse gases. The trading system was inaugurated on 1 January 2005 and encompasses about 12,000 installations in the industry and energy production fields in the EU. This affects a total of more than 40 percent of the Union's discharge of greenhouse gases. Discharge trading in the EU is regulated by a special Directive and covers all member countries of the Union.

Intense work is in progress in the EU to develop the trading system. The Commission presented a concrete proposal in January 2008, for the way that the trading system could be set up after 2012, when the first undertaking period of the Kyoto Protocol comes to an end. Air transport will probably be included as soon as 2012, but there are no concrete proposals for including sea and road transport.

Grants

State grants have paid in recent years to certain target groups, publicly-owned actors such as municipalities, companies and private actors.

The Local Investment Programme (LIP) and the Climate Investment Programme (Klimp)

The Local Investment Programme (LIP) is Sweden's largest single investment in the environment. The Diet allocated 6.2 milliard crowns to LIP during the years from 1998-2002, in order to increase ecological sustainability. A subsidiary goal has been to contribute to increased employment.

211 investment programmes were started in the period from 1998-2002 in 161 municipalities. The programmes have encompassed the entire environmental field – from increasing energy efficiency and energy conversion to projects for creating good residential environments, purify discharge to air and water, and to increase biodiversity. The 211 programmes to which grants were approved include 1,835 measures. Work on LIP has been in progress for 10 years and the last programme was implemented in 2007. The final grants were approved in 2008. Investment funds of almost 4.4 milliard crowns have been used.

A total of more than 16 milliard crowns was invested in environmental and climate projects in the programmes, which means that every crown granted has generated three crowns of investment funds. A summation of the results shows that discharge of greenhouse gases has been reduced by more than one million tonnes a year.

A type of continuation support of two milliard crowns (Klimp) was allocated by the Diet for 2003-2008, as support for climate investments that would reduce the greenhouse effect. This has resulted in 126 climate investment projects in 21 counties and a total investment volume of eight milliard crowns. Work on Klimp is based on collaboration between the national and local levels. The idea is that municipalities, companies and other actors should be stimulated to make long-term investments that would reduce environmental impact and encourage local motivation and local initiatives.

A climate investment programme consists of measures which are largely physical investments. By reducing the discharge of greenhouse gases, Klimp contributes to achieving Sweden's climate goal at the same time as it reinforces local climate work. The grants are administered by the Environmental Protection Agency and are decided by the Investment Support Board.

Support for energy efficiency boosting and conversion in publicly owned premises.

The building owners can receive grants for energy saving measures in premises used for public purposes.

The following measures can be supported:

- Energy surveys
- Conversion of heating systems or parts of systems, which means that electricity or fossil energy sources are replaced by sustainable energy sources, heat pumps or district heating.
- Connection to district cooling or installation of systems for free cooling
- Installation of low energy electric lighting systems
- Installation of low energy electric powered ventilation systems
- Installation of equipment for efficient control, measurement, monitoring, regulation and operation of motors or heating systems.
- Energy efficiency boosting measures which refer to a building's climate protection shell or which refer to improving heat retrieval in the premises.
- Installation of solar cell systems.

Support can be applied for as from 30 June 2008

Support for solar cell in public buildings

Support has been available since 15 May 2005 for increasing the use of solar cells in built-up areas. The grounds for granting support to solar cells are as follows: The grant is 70% and applies to the entire solar cell installation, both material and labour. The grant only applies to solar cells on buildings with publicly supported activities. The maximum grant is 5 million crowns per building used for public purposes. Grants are applied for at the county council in the council where the building is situated and are paid by crediting funds to the owner's tax account. The total amount allocated for the grant is 150 million crowns. The scheme was in action until 31 December 2008.

Support for installation of energy saving windows in existing private houses

Grants can be applied for by people who live in private houses, i.e. houses containing one or two residences, but also by housing cooperatives and other privately owned housing companies. Entire windows with window-frame and casement must be changed. The grant covers 30 percent of the material and labour costs which exceed 10,000 crowns. The maximum grant is 10,000 crowns. Work had to start before 1 January 2006. Work had to be completed not later than 31 December 2008. Grants were applied for at the county council in the council where the building is situated.

Conversion grants

Support is given for installation of biofuelled space heating systems in new private houses. The grant can be applied for by a person who is building a private house, i.e. a house containing one or two residences, but also by housing cooperatives and other privately owned housing companies. The grant covers 30 percent of the material and labour costs which exceed 10,000 crowns. The maximum grant is 15,000 crowns. Work had to start before 1 January 2006. Work had to be completed not later than 31 December 2008. Grants were applied for at the county council in the council where the building is situated.

Conversion support for direct acting electric heating in residential buildings

Support can be applied for by owners of private houses, apartment blocks and their associated premises, to replace direct acting electric radiators by a water-borne heating system that is heated by district heating, biofuel or a heat pump that uses earth, bedrock or aquatic heat. The grant is given for material and labour for radiators, meter installation, calorifiers, chimney and equipment for heat accumulation. No grant is given for the heat pump or biofuel furnace. If you also install solar heating at the same time as the conversion, you can also receive a grant for the solar heating installation. The grant covers 30 percent of the costs that are entitled to support. The maximum grant is 30,000 crowns per apartment / associated premises for conversion from direct-acting electric heating, 7,500 crowns per private house and 5,000 crowns per apartment / associated premises for installation of solar heating. Work had to start before 1 January 2006. Work had to be completed not later than 31 December 2008. Grants were applied for at the county council in the council where the building is situated.

Support for installation of solar heating installations in residential property

Can be applied for by: The person who installs solar heating in a private house, apartment block and their associated premises, such as pre-school premises and hobby premises adjacent to residential property. The maximum grant is , 7,500 crowns per private house and 5,000 crowns per apartment / associated premises. Work had to have started on or after 1 June 2000. Grants should be applied for at the county council in the council where the building is situated.

Environmental car grant

In 2007, the Swedish Government introduced a grant to private persons who bought an environmentally friendly car. The grant amounted to 10,000 crowns and is administered by the National Road Administration. Environmental cars must produce low discharge of carbon dioxide, be economical on fuel and produce low discharge of hazardous particles. Fuel consumption must be low, irrespective of whether the car is fuelled by alternative fuels or fossil fuel.

An alternative fuel car (commonly referred to as an ethanol, gas, hybrid or electric car) must have fuel consumption that corresponds to fuel consumption per 100 km of not more than:

- 9.2 litre of petrol (ethanol consumption is not registered centrally)
- 9.7 cubic metres of gas
- 37 kWh electricity

An alternative fuel car must also be principally refuelled by alternative fuel and not fossil fuel. A car which is fuelled by fossil fuel can also be deemed to be an environmental car if its carbon dioxide discharge does not exceed 120 g/km. Fuel consumption must not exceed 4.5 litre diesel or 5.0 litre petrol to manage this. Please note that it is the carbon dioxide requirement that governs this.

There is an additional requirement for diesel engines of not more than 5 mg particles/km. In practice, this means that cars with diesel engines must have a particle trap filter to be classified as environmental cars.

The environmental car grant only applies to new cars that have never been taken into service, either in Sweden or in any other country. The environmental car grant will only be paid to private persons who purchase a new car.

The Swedish Government has previously allocated 250 million crowns for paying environmental car grants. 50 million for 2007, 100 million for 2008 and 100 million for 2009. The Government has allocated a further 240 million crowns for 2008 in its supplementary budget, which brings the total sum for 2008 to 340 million crowns.

Financial control measures at national level

Planning and Construction Act, PBL

The Planning and Construction Act only allows a small amount of leeway to demand specific energy standards in buildings, or in heating systems for buildings. For example, it is possible to stipulate in a detailed plan that only a specific infrastructure for heating may be installed, e.g. district heating pipes, but it is not possible to force building owners to connect to the network once it is installed. Other control measures such as Building Regulations issued by the National Board of Housing, Building and Planning play a greater role in these matters.

Building Regulations issued by the National Board of Housing, Building and Planning, BBR

By issuing and tightening up the existing building regulations, the National Board of Housing, Building and Planning can control energy efficiency and other environmental aspects in new construction. The current rules came into force on 15 July 2008. In Southern Sweden, energy use in private houses must not exceed 110 kWh per m². In other premises, the value is 100 kWh per m² in Southern Sweden.

Communication control measures at national level

National Climate Campaign

The Environmental Protection Agency carried out a major climate campaign in 2003. The goal was to put climate change on the agenda. After this, they have done surveys on Swedish people's knowledge and attitude to climate change. These days, 100 percent of the respondents know about climate change, 80 percent believe that they can do something themselves to brake climate change and at least 50 percent believe that they could "definitely" think of implementing measures to reduce discharge such as buying low energy household appliances, driving their cars economically and taking the train instead of flying.

Become energy smart

The Energy Authority, the National Board of Housing, Building and Planning and the Environmental Protection Agency carried out an information campaign during 2008, using an energy smart demonstration building. In collaboration with municipal energy and climate consultants etc., the authorities informed people about how they could become energy smart in their homes. This covered everything from choosing a suitable space heating system to simple everyday tips such as not using energy unnecessarily. The campaign tour started in March and has visited exhibitions all over Sweden.

Sustainable Municipality

The Sustainable Municipality campaign was started by the Energy Authority in 2003 as a pilot project with five participating municipalities. The goal was to make energy and climate matters a natural part of municipal activities and thus to contribute to national and global climate work. Five municipalities contributed to the pilot phase. The municipalities had to use their own initiatives and efforts to develop an economical, ecological and socially sustainable society, using their own local energy use as the point of departure. The role of the Energy Authority was to serve as a support for the municipalities and also to contribute their own expertise, knowledge dissemination,

collaboration and network building. The pilot phase was terminated in 2007 and an evaluation that was done showed that the collaboration project had been highly successful. The results were then used in designing the stage from 2008–2012.

The Energy Authority's Sustainable Municipality programme for 2008-2011 is a unique collaborative effort between the Energy Authority and over 60 municipalities. It is based on the collaborating municipalities' own ambitions to make their local society more sustainable. The main goal of the Sustainable Municipality programme 2008-2011 is to contribute to sustainable energy use in an energy system that is secure, cost-effective and produces low impact on health, environment and climate.

The programme will lead to the following effects which contribute to the general goal:

- the participating municipalities, during the framework of the programme and in continuation after the end of the programme period will:
 - o carry out the measures needed for energy efficiency and frugal energy use in their activities, buildings etc. which are profitable,
 - o clarify, prioritise and implement energy aspects in the municipality's area of responsibility and action in accordance with the energy and climate strategy,
 - o stimulate citizens and companies to implement profitable measures for energy efficiency and frugal energy use. These effects are mainly achieved by means of the municipalities' established energy and climate counselling and business development;
- that the results and good examples from the programme will also reach and inspire actors who have not participated in the programme, to achieve equivalent results; and
- the results of the programme will be achieved in an energy efficient manner.

Municipal energy counselling

During the energy crisis, the state decided that private people needed help and support to manage their energy supply and to reduce energy consumption, since they feared a general lack of energy. The energy counsellors were the result of this. Municipalities were given financial grants to employ experts who the inhabitants could consult. In 2008, the energy counsellors' assignment was widened to include energy and climate advice. They were also given increased facilities for supporting energy efficiency increase in the municipality's own activities and among small companies, and to widen their advice to encompass sustainable transport. These days, there are energy counsellors in principle in all municipalities, but smaller municipalities often share a full-time person.

Local control measures in Malmö

Financial control measures at national level

Environmental car parking

On 15 October 2007, Malmö introduced a free hour's parking for all environmental cars with a permit. The idea was to give the environmental car market a further push forwards and to increase the percentage of environmental cars in Malmö. Malmö's system was based on the environmental car definition prepared by the National Road Administration, which was also used in Göteborg and Stockholm. Anybody who has an environmental car that is not older than three years can apply for a permit that costs 300 crowns. The permit holder can then park their environmental car free of charge on municipally owned land in Malmö for the first hour. They can then purchase further time if they want to park for longer.

Environmental zone

On 1 September 2007, Malmö city acquired a large so-called environmental zone for heavy transport. The municipality demands emission control on heavy vehicles that want to enter the central parts of the city, to achieve cleaner air. During the autumn, Malmö's environmental zone has been considerably enlarged. It has actually been more or less doubled from its former size. It now comprises all of central Malmö inside the Inner Ring Road. The environmental zones impose environmental demands on heavy vehicles which travel in the central parts of the city. The environmental zone leads to better air quality and reduced noise.

Malmö, Göteborg, Lund and Stockholm have introduced common rules, which makes it easier for carriers who are active in all of Sweden. All new, heavy diesel powered vehicles are allowed to travel inside the environmental zone for six years from the date of registration. Vehicles whose engines comply with Euro-5 criteria are allowed to enter until the year 2020.

Administrative control measures at national level

Municipal energy planning

Under the Municipal Energy Planning Act that came into force in 1977, all Swedish municipalities must have a valid energy plan. However, surveys have shown that many municipalities either do not have any plan at all, or that it has not been updated for a long time. In an energy plan, the municipality highlights its energy supply and can also promote reduced climate impact and efficient energy use. Malmö will adopt a new energy plan in 2009.

Municipal plans and programmes

There are other plans and programmes as well, where a municipality can promote a sustainable energy system. In Malmö, the Environmental Programme is the most important in this respect. Climate goals are posted here, and measures are suggested to reach these goals. The programme is prepared in consultation with other relevant administrations. The current environmental programme extends from 2003 to 2008, and the new Environmental Programme from 2009 to 2015 will be adopted next year.

In addition to the Environmental Programme, there is the Traffic Environment Programme 2005-2010, the waste management plan, the storm water strategy and the Environmental Construction Programme SOUTH, which leads Malmö City's work towards a sustainable energy system.

Land designation during sales

One of the clearest tools available to the municipality to affect the energy standard of a building is to insert clear requirements into the land designation, i.e. when the municipality has agreed to sell a site to a property development company. This is the method that the municipality has used successfully in development, above all in the West Harbour site and Hyllevång. A dialogue is generally held with the property developer, originating from the national Building-Living Dialogue project.

Local environmental regulations - engine idling

Malmö City adopted local environmental regulations in 2000. These include rules relating to leaving vehicle engines idling. This means that it is not permissible to let a vehicle engine idle for more than one minute, even if it is stuck in a traffic jam.

Communication

Climate campaign

Communication is a soft control measure that can not affect much, if used alone. At the same time, communication is essential in supporting other measures. What use are long, fine cycle paths if nobody knows about them?

Malmö City carried out a major climate campaign in 2006-2007, which was somewhat innovative since it used unusual channels such as cinema advertisements, and was also successful since subsequent measurements were able to establish that Malmö residents had noticed the campaign.

Web site.

Malmö City has an efficiently updated web site, containing concrete information about what private persons can do to reduce their carbon dioxide discharge. It contains tips about what to do at home, on a journey, food and other areas.

Mobility work

Changed travelling habits and sustainable transport systems are an area where intense work has been done in Malmö since 2005. Communication is often an important control measure here, but it has to be used in the correct manner. When one has believed for a long time that people would abandon an activity with heavy environmental impact if they just received information about the consequences, one has used the insight that it is more successful to change the behaviour first, by have-a-go activities, and then fill up with information. Among a long line of measures, Malmö had a "Silly Car Journey" campaign that attracted a lot of attention. The campaign is based on the fact that over half of all car journeys in Malmö are less than 5 km.

The "Silly Car Journey" campaign attempted to find the shortest and silliest car journey that people had done. Malmö residents latched onto the humorous tone and declared their own and other people's car habits.

Environmental inspection

Malmö City, like all other Swedish Municipalities, carries out environmental inspection of activities in the municipality. A quantity of working material was developed during 2006 and 2007, related to the way that energy use and transport could be taken up when an environmental inspection was done. This took place in the Environmental Collaboration in Scania project. The modus operandi were made permanent in Malmö, and are now being expanded so that all environmental inspectors regularly visit these matters.

Sources

Malmö City: <http://www.malmo.se>

Swedish National Board of Housing and Physical Planning: <http://www.boverket.se>

Environmental Protection Agency: <http://www.naturvardsverket.se>

Energy Authority: <http://www.energimyndigheten.se>

National Road Administration: <http://www.vv.se>

Scania County Council: <http://www.m.lst.se>