

Solar urban planning

The Local state of the art

MALMÖ

Entity:

Skåne Energy Agency

Developers:

Anna Cornander

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1. Political, Legal and economic framework

1.1. Is there a local energy plan or energy strategy in your city? What are the main objectives and targets towards energy efficiency and renewable energies?

The City of Malmö aims to be a world-leading climate city. Broad-based efforts cover traffic, energy and city planning, and also consumption, education and lifestyles.

The local Energy plan from year 2000 is now being revised, and a new plan is going to be approved by the City Council in December 2009. This information will therefore be supplemented after the approval of the new plan. Glancing at the draft of the new energy strategy, the long term vision seems to be to have the energy system in Malmö supplied exclusively by renewable energy sources by the year 2030. To reach the vision, an important milestone is to reduce energy use by at least 20 % per capita by the year 2020, compared to the average use between 2001 and 2005, and to have at least 50 % if the general energy mix from renewable energy sources. The City of Malmö itself will serve as a good example and has higher ambitions. The energy use in municipal departments and companies will, during the same period, reduce energy use by at least 30 % and use 100 % renewable energy.

The City of Malmö also has an Environmental plan, valid from 2003-2009, that is being revised. The new plan has been developed parallel with a new Traffic Environment plan, and they are both going to be approved by the City Council in December 2009. More information about those plans can be supplemented after the approval. According to the draft, of the Environmental plan has the same targets regarding reduction of the energy use as the Energy strategy draft; that by the year 2030, the municipal buildings and activities should be climate neutral, and by 2040 the whole city should be supplied by 100 % renewable energy. Emissions of green house gases in Malmö will decrease by at least 40 % by 2020, compared to 1990. More renewable energy (solar, wind, water and biomass) will be phased in and fossil fuels will be phased out. Transport systems and travelling habits will change, electric trams will be introduced and bicycle roads will create new possibilities for travelling. Malmö will be prepared for increased temperatures, sea level and precipitation that come with climate change and make actions that are cost efficient and beneficial to the environment.

The City of Malmö has also signed the Covenant of Mayors, a commitment by signatory towns and cities to go beyond the objectives of EU energy policy in terms of reduction in CO₂ emissions through enhanced energy efficiency and cleaner energy production and use. The commitment includes to reduce CO₂ emissions by 20 % or more, to create an action plan for the work with renewable energy, to arrange energy days and to attend the yearly conference of mayors and spread the message of the initiative.

The municipal Solar Energy initiatives in Malmö have mainly been driven by the Department of Internal Service. It has been a voluntary work, in order to use the solar energy more. The target is that 1 % of the heat and 1 % of the electricity used in the real estate of the department should come from solar energy. At the moment, the installed capacity from solar energy plants equals approximately 0,7 % of the heat and 0,3 % of the electricity.

1.2. Local thermal building regulations and/or building energy certification

In the area of The Western Harbour in Malmö, there is a new development area, established in 2001, that is supplied by 100% renewable energy – wind, solar and geothermal energy. Houses have a total energy demand of maximum 105 kWh/m². The planning process had a Quality programme as steering document.

In the Western Harbour, the steering documents required solar energy installations. As a result, there are 1200 m² of solar thermal collectors and 120 m² of PV in the area. The concept in the Western Harbour has inspired to sustainable city planning and policy documents, but has not led to any general local obligation.

The new guideline; “Environmental Building Program South” (see 2.1) contains energy classifications of buildings; A, B and C, where C is the minimum demand. In Malmö, the performance demand of new buildings is a maximum energy use of 85 kWh/m² year.

1.3. Existing local solar photovoltaics/thermal/renewable obligations.

A similar concept as in the Western Harbour has been and is still being used in restoration of

existing districts in the City of Malmö, for example the districts of Augustenborg and Sege Park. Augustenborg is a socially, economically and environmentally sustainable neighbourhood in Malmö and one of Sweden's largest urban sustainability projects. It has a 450 m² solar thermal plant producing hot water for the district heating system and 100m² of PV is producing electricity.

The new guideline; "Environmental Building Program South" (see 2.1), will contain obligations regarding local solar energy and other renewable energy obligations.

1.4. Financing mechanisms and available subsidies at local level for adopting solar technologies?

There are no local financing mechanisms or subsidies. See national regulations.

2. Urban practices framework

2.1. Describe briefly the main criteria on the current urban practices, e.g. guidelines for urban plans development and requirements on solar urban planning if these exist.

A new guideline; "Environmental Building Program South" (Miljöbyggprogram SYD) is being developed in cooperation between the City of Malmö, the City of Lund and Lund University. It will replace the previous programs "Ecologically sustainable building in Malmö" and "Sustainable building and management" in Lund, and function as guideline, support and incitement to a sustainable development. The program has been approved politically in the City Council and applies to new buildings on land of the City of Malmö, through land assignment contract.

The guideline initially focuses on four main areas for a sustainable construction; energy, indoor climate, moisture protection and urban biodiversity, but the target is to add more areas gradually. The program will change continuously to follow the development of sustainable construction. Solar Energy will fall under the energy area, but the guidelines are not yet developed. Renewable energy will be introduced in later editions of the guidelines. There is a good chance to incorporate results and suggestions from the POLIS project in the Environmental Building Program South.

If there are no guidelines on solar urban planning, explain the political process for developing the legal bounding framework. At what administrative level would a solar urban planning obligation be decided and managed? How much time would/can such a process last?

Did you have tentative start-ups of similar experience in the past?

2.2. Do you or would you face problems with large exemption categories, e.g. historical buildings or landscape protected areas?

The exemption categories are probably not large enough to cause problems. Possible obstacles to large scale PV installations would rather be lack of subsidies or grid issues, and, to thermal installations, the well developed and advantageous district heating system.

2.3. How is the solar urban planning obligation monitored, or by which means would be adequate to monitor/control the effective implementation of the solar urban planning requisites?

Applications for subsidies for solar installations (thermal as well as photovoltaic) are sent to and registered at the County Administration. Installations with subsidies can hence be monitored. Solar installations on buildings can also be identified through the required building permits.

2.4. Which are the local stakeholders involved in promoting solar urban planning and what is their attitude towards renewables obligation (e.g. are building companies used to renewables)?

So far, the Solar Energy initiatives have mainly been driven as a voluntary work by the City of Malmö's own departments. Solar City Malmö/Solar Region Skåne also plays an important role in the promotion of solar energy.

2.5. Which local networks are available to promote and disseminate solar urban planning?

City Planning Office, Environmental Department, Department of Internal services and the Real estate Department within the City of Malmö and the Solar City Malmö/Solar Region Skåne association, within the Skåne Energy Agency. There is also the Energy Advisers of Skåne, a network to which 20 municipal energy advisers in the region are connected, representing 28 out of the 33 municipalities of Skåne. The municipal advisory service is directed towards the general public, smaller businesses and organisations, and provides

consumer information in the energy, environmental and indoor climate areas. The network activities are lead by Skåne Energy Agency.

3. Building Stock

3.1. Provide some data on the existing local building stock.

The City of Malmö has developed from a garrison town in the late Middle Ages, into a shipping and transportation town, into an industrial city and today into an expansive big city with higher education. Some of the blocks are still characterized by the Middle Age appearance of the city.

The creation of the district of Western Harbour is based on a fundamental ecological approach to planning, building and construction. The aim is for the district to be an internationally leading example of environmental adaptation of a densely built urban environment.

In the Western Harbour development, Flagghusen, two passive houses were built without heat energy. This trend continues to be interesting in both the WesternHarbour and Hyllie developments from the perspective of the municipality and building firms.

Sadelmakarbyn's preschool in Southern Malmö is the municipality's first low-energy preschool, an important pilot project for the construction of future municipal buildings. The preschool's walls are a half meter thick, using dense materials whist energy consumption for water heating is limited to 70 kWh per square meter per year.

3.2. Please indicate future construction/renovation projects in your city where effective policy for solar urban planning could be implemented.

The City of Malmö is facing large investments in regeneration of the buildings from the post-war period. Regeneration will be made in a way that the buildings' efficiency is improved. Solar energy plants, for example fully integrated solar thermal roofs, will be one of the options in this work. Solar energy will also be integrated in new developments like for example Hyllie.

Sege Park is an old hospital area in Malmö undergoing restoration and new development for residency. The goal for the area is to be supplied with 100 % locally produced renewable energy. The largest PV plant in Scandinavia, 1250 m², and a 250 m² solar thermal collector plant was recently installed in the area. A Solar Stirling Engine demonstration plant, the first of its' kind in Europe, will be installed in the Sege Park area during 2010. There are also plans for a solar tracking PV plant and a house with a fully integrated PV roof. The Sege Park area is chosen as a district for pilot actions (WP4 of the POLIS project); Potential study and development and realization of town planning measures.

- 3.3 Refurbishment activities: please quantify the refurbishment activities in your municipality with as much detail as possible (e.g. refurbishment rate, costs of refurbishment...).**

4. Solar Market and Potential

4.1. Installed solar (thermal/photovoltaic) capacity at local level.

There is approximately 3000 m² (375 kW_p) of PV, and 4000 m² of solar thermal collectors in larger plants (with flat plate, vacuum tubes and unglazed thermal collectors) installed in Malmö (thermal installations on family houses not included).

4.2. Effective contribution of solar energy for the local energy mix.

Contribution of solar energy for the local energy mix is so small it is not measurable. As mentioned previously, the municipal Solar Energy initiatives in Malmö have mainly been driven by the Department of Internal Service. At the moment, approximately 0,7 % of the heat and 0,3 % of the electricity used in the real estate of buildings within the department comes from solar energy.

4.3. Technical/economical potential at local level.

For solar thermal: With a population of about 255 000 in Malmö the potential may range between 60-400 GWh/year. (without seasonal storage)

From EU-project PV City Guide (2001) the following potential was calculated for Malmö:
243 GWh/year with an average of 20 m² available roof area/capita which is about 13% of the total electricity use.

4.4. Percentage of energy demand to be covered if such capacity would be reached.

Total use of district heating is 2 500 GWh/year (which is about 90% of the heating in Malmö).
Solar thermal may cover 60 – 400GWh/ 2500 GWh per year = 2 – 16%
PV – 13% of total electricity use

4.5. Are there renewable technologies which are widely diffused in your city and that can therefore contribute in a renewable obligation?

In Malmö, around 90 % of heat demand is supplied from the district heating system, which is supplied with approximately 67 % renewable energy sources like waste industrial heat, heat from combustion of waste, heat pumps, heat pumps and bio fuels.

The city of Malmö is the city with the largest investments in solar energy in Sweden. Malmö is also planning large investments in wind power. The third largest instillation of off-shore wind energy in the world, Lillgund, is located approximately 10 kilometres off the south coast of Malmö, in the Öresund. The park produces 0.33 TWh of electricity per year, equivalent to the household electricity consumption of 60,000 homes.

The City of Malmö also promotes sustainable travelling, with the intention to increase the use of public transportation, carpooling, eco driving and environmental friendly cars and buses. Sweden ´s first hydrogen car can be seen driving around the City of Malmö. The car is used by employees of Malmö´s Environment Department. Malmö has also made investments to make Malmö a cycling friendly city.

On the national level, the numbers in 2007 showed that Sweden had the highest share of renewable energy in relation to final energy use in the whole European Union, 43,9%.

