

City of Tomorrow

Malmö (SE)

GENERAL ASPECTS

Malmö is Sweden's third-largest city, with more than 265 000 inhabitants.

A former member of the Hanseatic League, Malmö has developed round its harbour. The economy is centred on investments in new technology and training programmes of high calibre. Malmö University, which opened in 1998, is Sweden's latest venture in the field of higher education, accommodating some 20 000 students.



BACKGROUND

The first Malmö Environmental Plan was completed in 1990 and a second plan was produced in 1998. The overall objectives of the programme are to become a sustainable society. The result of the plan is, amongst other things, an expansion of the district heating system and greatly reduced emissions of sulphur oxides. However, the use of energy is still mainly based on non-renewable fuels and the emissions of carbon dioxide are considered too high.

The Western harbour/Bo01

In 1996, the Swedish Government decided to start funding Local Investment Programmes (LIP) to promote the transition to an ecologically sustainable society in Swedish municipalities. In 2000, Malmö received funding for the transformation of Malmö into ecological sustainability, according to strategies in local "Agenda 21" and the 1998 – 2002 Environmental Plan. Their idea was to build an "ecological" district located in a harbour quarter in Malmö (The Western Harbour) that would function as inspiration on how to reach the goal of sustainability. The project won the Campaign for Take-Off Award, 2000.

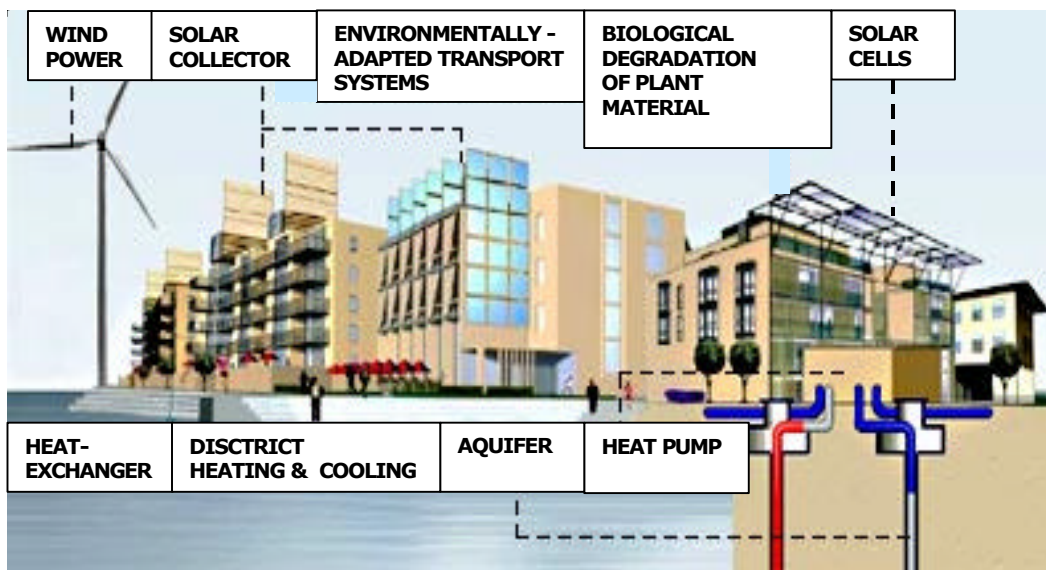
In 1997 it was also decided that this area should function as the first European Housing Exhibition, *Bo01-City of Tomorrow*. The objective of the exhibition was, as the name indicates, to define a city of the future in a sustainable society based on information and welfare.

The Western Harbour was reclaimed from the seabed in the 18th century but was abandoned and filled in as the port and industry migrated in search of space. The area is therefore old industrial land with environmental problems of contamination. However, the area has at the same time, many positive aspects in its location by the sea and the city centre.

The intention with Bo01 was to create a leading international example of an environmentally sound densely built up urban environment. Planning, building and construction follows environmental principles, incorporating innovative ideas and new techniques. A cooperative organisation, Bo01 has produced the energy plan for the Western Harbour. Members include the City of Malmö, the Housing Expo company Bo01 AB, the Swedish National Energy Administration, Lund University and Sydkraft.

Sustainable energy production and consumption is an important part of this environmental approach. The district is therefore 100% supplied with locally produced energy from renewable sources. Electricity is generated by wind power and photovoltaic solar cells. A heat pump recovers energy from sea water and accessible aquifers. Solar collectors will convert solar energy into heat. This is then transferred to the district-heating network. Bio-gas is produced from waste generated in the area, and this gas is returned to the district through the existing natural gas network of the city.

The aim is that the Bo01 area should consume only half the amount of energy used in other residential properties in Malmö. The target for energy consumption is 105 kWh per square metre a year. The buildings in the district are hence designed to minimise energy demands for heating and the electrical equipment that is installed is highly efficient. Many of the apartments also have their own electricity and district heating meters that allow residents to monitor and adjust their own energy consumption.



The new electricity grid and district heating network is linked to the existing systems of the city. This is done in order to use buffer energy, e.g. be able to bridge the time-lapse between the point of production and use of energy without the need for energy storage.

The total cost of investments in electricity and heat generation will be approximately 6,000,000 Euro of which the partners' share is 3,000,000 Euro. The Swedish government is supporting the project with 1,165,000 Euro and the EU supports it with 1,500,000 Euro.

The transport system is also environmentally sound. Bicycle and pedestrian traffic will be given priority and will constitute an attractive alternative to short journeys by car. Furthermore, the buses run on alternative fuels.

Additionally, a new facility is being built which will be used for the treatment of garbage and sludge, e.g. residual products. After treatment this can be used for heating or as a vehicle fuel.

Biological diversity is another issue that is considered in Bo01. Different types of natural area are incorporated providing areas for relaxation and recreation and reducing the desire to travel for recreation.

FUTURE DEVELOPMENTS

At present, several major research projects are underway for following up the work on environmental adaptation. A major project for adult education is also in progress, with both European and local elements. The district will have its own special environmental television channel on Internet, www.ekostaden.com. The municipality is participating in a SAVE funded programme to establish pilots for internal performance contracting in municipal buildings, in this case to renovate and improve the efficiency of lighting.

LESSONS LEARNED

The project makes great use of buffer supplies – taking account of the fact that energy is often not produced when it is needed. The mains network is a significant potential buffer and part of the fee paid to the distribution and transport networks is for balancing. So it is most unlikely that Bo01 could have considered the 100% renewable objective without using third party access to the network which is part and parcel of liberalisation.

However it is interesting that the producer, Sydkraft, the owner of the municipality's distribution network after the city sold its company, is a partner in the project. Many small generators find major obstacles in using this right of access and pay excessively high fees for balancing and involving the distributor would appear to be an intelligent way forward.

IMPLICATIONS FOR PUBLIC POLICY MAKERS

If projects designed to develop renewable communities are to develop, the opportunities for equitable third party access to the network are essential. In some countries the market, although nominally liberalised, is effectively closed for the smaller consumers and generators. Little movement has been seen in Germany and Austria for example. Public policymakers should see the network as a major store of energy and ensure that suitable investments are made to meet this function. It is vital if cogeneration and renewable energy are to make the necessary impact. At local level this emphasises the need for local partnerships, such as that developed in Malmö.

FURTHER INFORMATION

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