

Bo01 City of tomorrow (Malmö - SE)

Project description

Malmö is the third biggest city in Sweden and is located in the middle of the Öresund region. A bridge completed in 2000 link Malmö to Copenhagen within 45 minutes. Structural changes in Malmö's economy have distanced the city from its traditional industrial background. The economy of the city is now based on small and medium sized industrial, service and trading companies, the IT-business being the largest sector.

Bo01 –international housing exhibition that took place on 2001– represents the first development stage of the larger development of Västra Hamnen (The Western harbour). The area is typical of urban redundant industrial land with contamination and affected environment. The area has, at the same time, many positive aspects in its location by the sea and next to the beach and the city centre.

The Bo01 area covers 9 ha and provides ca 600 dwellings for around 1000 inhabitants. The western harbour covers an area of 140ha and will house ca 30 000 residents in about 20 years. At the moment ca 4000 people live in the western harbour.

The exhibition had two main objectives: develop self-sufficient housing units in terms of energy and greatly diminish the GES emissions. The aim was to create a debate around how we live today and how we will live in the future. Bo01 shows imaginative visions of future living, where high demands on aesthetics, ecology and high technology are combined. It is meant to be a pilot project to test which technologies and solutions can and should be applied on a wider scale.



Objectives



The main objectives were:

- **Soil reclamation:** the use of brown field sites for urban development requires safe-to-build on land. The soil was analysed for contamination and cleaned before construction started.

- **100 % net Locally Renewable Energy:** use of renewable energy only, large proportion of the heating needs are covered though an underground aquifer which serves a heat storage for the winter months as well as use of sea water, complemented with solar collectors.

The electricity is generated by a wind power plant and, to some minor extent, photovoltaic cells, production of biogas from the wastes.

- **Transport:** district planned to minimize future transport needs and car dependency, creation of a footpath and a cycleway network, attractive and well developed public transport system (run on environmentally fuels), programme for vehicles powered by environmentally friendly fuels, electric or gas powered vehicles.

- **Ecological Building:** no substances listed in the Swedish Chemicals Inspectorate's list of hazardous materials used in the building process. Building materials should be reusable when the buildings are demolished.



- **Biodiversity:** diverse range of natural life, creation of habitats for many different plant and animal species, green roofs and walls.

Driving factors

The housing exhibition presented an opportunity to show a best practice example for environmentally sustainable new-built city districts.

The city of Malmö took the opportunity to develop, in negotiation with the construction companies, a quality programme which defined the requirements and environmental targets (e.g. a cap on energy consumption per m² per year).

The exhibition was an opportunity to develop further the ecological commitment of the City.

<p>Financing structure</p>	<ul style="list-style-type: none"> - The City of Malmö has received support from the government through the local investment programme for the environmental measures taken in the Bo01-area. The money has mainly been used for physical investments, covering some of the extra costs the developers have incurred in order to meet the high goals set. Part of the money has been invested in technical systems, soil decontamination and infrastructure. Funds have even been used for information and educational projects. The Government has allocated SEK 250 million in contributions to various environmental projects in the district. - The European Union has also given some support for the energy measures taken.
<p>Partners & Roles</p>	 <ul style="list-style-type: none"> -The City of Malmö initiated the project through its strong environmental programme. It was the first city to win the first prize of the European “Campaign for Take-off Award” (for the development of renewable energies) in 2000. - The Swedish Energy Agency that financially supported the Bo01 project - Sydkraft, one of the Swedish biggest energy companies, was in charge of the electricity, heating and biogas production and distribution in Bo01. Now E-on is in charge of it. - Bo01AB was the organiser of the exhibition and created the Quality Programme of the district. It promotes the benefits of an ecological sustainable society - Lund University was actively associated to the project and developed highly energy efficient houses' concepts. - The construction companies were directly involved in negotiating the quality programme with its environmental targets and requirements.
<p>Results/Achievements</p>	<ul style="list-style-type: none"> - Energy: 1,400 m² of solar collectors, placed on top of ten of the buildings complement the heat produced by the heat pump to supply the area. A large wind power station (2MW) placed in Norra Hamnen (the north harbour) and 120m² of solar cells produce electricity for the apartments, the heat pump, fans and other pumps within the area. An important part of the concept is low energy use in the buildings. Each unit is only allowed to use 105 kWh/m²/year, including household electricity and is equipped with a meter that displays the electric and caloric consumption. This target was however not achieved in most of the houses, which is mainly due to the fact that the theoretically calculated energy consumption did not prove realistic in practice since it included a lot of unknown and previously not used assumptions. - Transport: pedestrians and bicycles have priority. Bus stops are within 300 m's distance from the flats. The bus service which connects with several of the main central points in town run in seven minute intervals. There is only 0.7 parking space per household, An electrical car pool is made available for the residents. - Architecture: the quality programme required the construction companies to use different architects for different plots of land, resulting in an interesting and stimulating, diverse city district which invites for walking and spending time in the area. - Biodiversity: The use of a green space factor that requires the construction companies to find solutions to increase the amount of rain water infiltration into the ground locally, the use of green points (a list of ca. 30 different measures, such as the planting of rare species, putting up of bird and bat boxes, creation of different habitats for animals and insects...) and the implementation of an open rain water management system resulted in a very high level of biodiversity, especially with regard to equally densely populated city areas. - Water: rainwater is collected and grey-water is treated in the city's purification post. - Waste: transformation of the organic wastes into biogas (through a system of the vacuum waste chutes where the waste is taken to the biogas plant). The biogas is then used to heat homes and power vehicles. 

Difficulties faced and solutions found	The theoretical calculations of energy consumption and the practical results differed in some cases widely. This is due to that most of the involved actors were not used to perform energy consumption calculations. The experiences of the Bo01 have been used and adapted in the next phase of the development of the western harbour. These houses are only being finished now (July 2008), but it is expected that theory and practice will lie closer together.
Next Steps	Västra Hamnens continued development is focused on the sustainable society based on the lessons learnt from the first phase development in Bo01.
Friendly advice to those who want to build new eco neighbourhoods	Involve planners, architects and construction companies from a very early stage, provide possibility for discussion and develop together targets and requirements.
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