

Re-developing communities to adapt to the impacts of climate change, Malmö - SE

1. Policy Objective & Theme

- ADAPTATION TO RISK: Managing impacts of climate change and safeguarding resilience of coasts/coastal systems

2. Key Approaches

- Integration
- Participation
- Technical

3. Experiences that can be exchanged

EcoCity Augustenborg is the collective name for a programme to make Augustenborg, Malmö into a more socially, economically and environmentally sustainable neighbourhood. It is one of Sweden's largest urban sustainability projects. Lessons are applicable for all coastal towns and cities.

4. Overview of the case

Malmö is using blue and green infrastructure e.g. roof gardens and innovative surface water systems to meet the needs of neighbourhood communities faced with the challenges of future climate effects. It is already planning for the future and involving the residents in formulated solutions.

5. Context and Objectives

a) Context

The City of Malmö is the third largest city in Sweden, and is committed to environmental and social goals. Augustenborg, once a rundown 1950s/60s neighbourhood, has been re-developed and re-energised as part of a very successful and far-reaching project called EcoCity Augustenborg. It is now an excellent example of an ecologically, socially and economically sustainable quarter, with climate change adaptation playing a key role. Situated on top of several industrial and office buildings in the area is the Green Roof Institute, where the world's first botanical roof garden was constructed in Malmö back in 1999, and now provides a valuable resource for research and education. Green and blue spaces have been incorporated into the regeneration plans to address issues such as flooding (with extensive community participation), including retro-fitting the area with innovative new surface water systems, green roofs, gardens, recreation areas, and renovated courtyards. The Western Harbour, an old industrial estate, has also been transformed into a leading example of environmental city-living by means of collaborative, high quality, urban design. The Bo-01 district is supplied by 100 per cent locally generated renewable energy and offers public transport and cycling facilities as well as generous use of space for green and blue infrastructure with a strong focus on social sustainability.

b) Objectives

The EcoCity is working within the residential area of Augustenborg in Malmö, as well as with the school, industrial area and other local businesses to bring climate change adaptation measures into urban planning at an early stage. Another key aim of the project is to enable residents to take a leading role in the ideas, design and implementation of the project.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

The Sustainable Development Unit at the City of Malmö is responsible for this work.

b) ICZM tools

Storm water and green roofs:

The storm water system has gone through a major change. Green roofs and open storm water channels leading into ponds have stopped the flooding in the area and have created a more amenable environment and a richer biodiversity. The MKB housing company has built houses which have 2,100 m² green roofs whilst the Botanical Roof Garden covers 9,000 m², one of the few green roofs in the world that is accessible and open to the public! This green roof is a living surface of plants growing in a soil layer on top of the roof. The soil layer (or another substrate than soil can be used) was spread over the roof membrane itself, with a protective root barrier, and a drainage layer underneath. On the substrate, draught-tolerant species of plants are grown, usually *Sedum* spp.. This forms an attractive mat that flowers and changes its appearance with the seasons. Roof vegetation like this one does not damage the waterproofing membrane of the roof, in fact it even protects it from the uv-light which does damage the membrane over time.

Blue infrastructure:

There are a total of 6 km of canals and water channels in Augustenborg. 90% of the storm water from roofs and hard surfaces is led into the open storm-water system in the housing area. The aim the project was that 70% of all storm water should be taken care of for the whole of Augustenborg.

Energy:

Ideas from residents are behind the large solar energy project in Augustenborg with 450 m² solar panels in the industrial area connected to the central heating system and solar panels on the new school building and a number of demonstration photovoltaic systems in the industrial area. The Augustenborg solar project was the starting point for Solar City Malmö which operates all over Malmö. In spring 2009, a wind power plant was installed at the local school.

Waste collection:

Today there are 15 recycling facilities handling full recycling and composting for the 1800 inhabitants of Augustenborg. The aim is that 90% of the waste from Augustenborg will be collected and recycled, re-used etc. The venues were based on design ideas from some of the residents who had been involved in the initial recycling pilot and who had visited recycling programmes in other Swedish cities. The traditional refuse chutes in houses have been closed and all inhabitants now leave their waste for recycling at the recycling venues. Here, there are containers for paper, cardboard, coloured glass, uncoloured glass, metal, plastic and electronic waste, hazardous waste and batteries.

Food waste:

Composting food waste started early on in the yards of the recycling venues, at that time the largest neighbourhood system in Sweden. More than a third of the waste was turned into fertile compost in less than eight weeks. In 2008, Augustenborg was chosen as a pilot area for separating food waste to make bio-gas. Within the pilot programme, all of the waste flows in the neighbourhood are being analysed and a new information campaign taking place. There is also collection of hazardous waste, electronics and fluorescent tubes. The collection of electronic waste generated 3,250 kg in the first six months.

Biogas car pool:

Residents started a car pool in 2001 which now is a part of regional not-for-profit Skånes car pool. The car, fuelled by ethanol or biogas, is parked close to the square and is used by members in the area and from other parts of Malmö.

7. Cost and resources

This work has been supported by the government's Local Investment Programme and also financed by key local partners within Malmö City and the MKB housing company. Supporters of the Botanical Roof Garden project included EU-LIFE and the Swedish Ministry of the Environment which cost over 12 million SEK.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The project was launched in 1998 and the results so far indicate that Augustenborg has become an attractive, multi-cultural neighbourhood in which the turnover of tenancies has decreased by almost 20% and the environmental impact has decreased to a similar degree.

A number of initiatives have been undertaken throughout Augustenborg to increase resource efficiency by up to 20% compared to 1995 levels. Measures to increase energy efficiency have been undertaken throughout the neighbourhood, optimising heating and hot water systems and cutting electricity use.

Two electric-powered trains built as prototypes transported around 300 000 passengers to and from Augustenborg and surrounding neighbourhoods during two years. However, the line was closed down when it could not be made profitable and the trains had some technical problems.

9. Success and Fail factors

Malmö has signed the Covenant of Mayors initiative to reduce greenhouse gas emissions. The Covenant of Mayors is an EU initiative, which aims at improving energy efficiency significantly in the urban environment through a formal commitment by the cities to reduce their CO2 emissions.

Ideas from residents are behind many of the initiatives and residents, pupils and people working in the area have been involved in the design of the outdoor environment to create new habitat whilst increasing amenity.

10. Unforeseen outcomes

The Augustenborg solar project was the starting point for Solar City Malmö which operates all over Malmö. The community is looking at innovative ways of using the roof gardens for food production. Bee-keeping is one example cashing in on the longer flowering season of city gardens. Tests conducted at Augustenborg showed no increased concentrations of heavy metals or other toxic substances in honey so produced. Some vegetables, or even better, drought tolerant herbs, can be grown in fairly thin soil layers or containers. To avoid fertiliser pollution, a system of re-circulated water is needed. Last but not least, for roofs that can take greater weight, fish are being grown in aquaponic facilities.

11. Prepared by

A.H. Pickaver, Coastal & Marine Union (EUCC), The Netherlands

12. Verified by

Trevor Graham, Head of the Sustainable Development Unit at the City of Malmö

13. Sources

- www.ekostaden.com
- www.malmo.se