



Green stormwater channel in Augustenborg, Photo by City of Malmö, malmo.se/sustainablecity

CASE

Augustenborg: Green roofs and storm water channels

Since 1998, Augustenborg has undergone a huge transformation from a ghetto-like residential area with flood problems to one of Malmö's most popular places to live. By taking advantage of site features to improve local storm water management and by adding green roofs on many buildings, the city's earlier drawbacks have come to inspire very advantageous solutions. The result is a more sustainable village with people who take care of their neighbourhood.

In 1998, the Augustenborg district in Malmö, Sweden, initiated an extensive renovation under the name of 'Ekostaden'. The neighbourhood, which consists of low-rise apartment buildings from the 1950s, was very popular when it was first constructed. However, due to poor maintenance, many of these original occupants have moved out over the years and left the area dilapidated, economically challenged, and socially deprived. Recently, Malmö Municipality and the housing company MKB have cooperated in an attempt to regain the area's original status. This was accomplished through an urban renewal program that would demonstrate the potential to construct future eco-districts in Sweden but also would engage the town's 3000 residents privately. In 2005, the resulting "Eco-city Augustenborg" was completed and, today, the district stands as a good example of holistic sustainable urban regeneration.

Before rehabilitation, the area had been plagued by frequent basement and schoolyard floods resulting from an underscaled drainage system, non-absorptive clayey soil, and an increasing number of impermeable ground surfaces. However, these problems were solved

with the addition of a total 10,000 m² of green roof vegetation and the integration of an open storm water management system.

The green roofs resulted in a significant reduction in Augustenborg's rainwater run-off as the roof vegetation can absorb a large part of a downpour and naturally return it to the atmosphere through transpiration. Accordingly, the total rainwater run-off of the district has been reduced by almost 20%. In 2001, the world's first Botanical Roof Garden opened in Augustenborg in order to promote the use of green roofs in the surrounding area as well as in all of Scandinavia. The 9,500 m² garden is located on top of Malmo's Technical Administration and is a publicly accessible research centre with a sample collection of 'green roofs'. Biologists have estimated that the Botanical Roof Garden alone has increased the biodiversity of Augustenborg by about 50%.



Augustenborg Botanical Roof Garden, Photo by Scandinavian Green Roof Association

The town's new water management system ingeniously takes advantage of the area's non-absorptive soil by collecting rainfall in natural ditches and reservoirs before having it flow into a conventional sewer system. In this sense, the rainwater from various roofs, roads and car parks is channelled through visible trenches, ditches, ponds and wetlands. These terrain features are integrated into the townscape by means of 30 courtyard areas that can also act as recreational green spaces for the city's residents and provide "breathing space" between buildings.

By experimenting with and integrating various sustainable measures (which also include solar energy collection, waste management, electric trains, and car pools with electric cars), the district has become one of the few areas to create an ecologically cohesive system of such a large magnitude. The city's renewal has become a platform for knowledge and has touched off several research projects in the area. In addition to research conducted on the Botanical Roof Garden, there has been a lot of exploration into the experiences with the neighbourhood's storm water system and the possibilities for such a system's application elsewhere in Europe.

As a result of the renewal, the neighbourhood has again become attractive and the rate of emigration has already fallen by 20% – as has Augustenborg's carbon footprint. The positive effects are underscored by a remarkable absence of graffiti and vandalism as well as a public that clearly cares for their part of town.

Waste management

To service the 1800 housing units in Augustenborg, there are 15 buildings for waste collection, reuse, recycling and composting. Presently, the town has found ways to recycle about 70% of all waste, an incredibly impressive statistic compared to most eco villages of the world. However, the ultimate objective is to recycle 90% of all waste and Augustenborg has been working to refine its system and find more end means to bring its rubbish to. To reduce the carbon emissions of waste collection and preserve much of the value of the rubbish, the traditional waste shafts have been closed and, presently, all residents bring their partially sorted waste directly to the 15 buildings. In these buildings there are containers for paper, cardboard, glass, metal, plastic and batteries. There are also composting machines that convert the community's kitchen and garden waste into an annual 150 tonnes of high quality compost, which is not only used by local residents and businesses but is also sold to Danish farmers. An evaluation conducted by the University of Malmo shows that citizens' awareness of sustainability has increased immensely through the application of the recycling program.

Public participation

One of the main objectives of the project was to involve Augustenborg's residents as much as possible in both the brainstorming and implementation phases of the renewal. This effort has included everything from community workshops, to formal design information sessions, to organised festivals and cultural events, to informally talking on a park bench or street corner. This increasingly open and consultative approach has led to a number of helpful initiatives that might not have happened otherwise.

The renewal planners have managed to mobilize and involve inhabitants, schoolchildren, and people from the area in developing successful sustainable solutions. Resident input has shaped the whole waste management system and has dictated how the outdoor green spaces for water collection should be arranged. Other ideas that stemmed from resident demand were Malmo's first car-pooling system and the district's new green energy system. Additionally, the Local Agenda 21 office, which was started by local sustainable enthusiasts, has trained about 40 people in sustainable practises and has helped them find jobs.

Constant communication and in-depth community involvement have not only produced a better and more functional result but they have also sped up the process. Thanks to a careful consideration of the community's desires, the design team encountered little or no opposition to their plans. In fact, about 1/5 of the residents participated in activities to support the plans and help make them a reality.

SORTING

KEY LEARNING POINTS

The creation of 10,000 m² of green roof vegetation and the addition of a natural open storm water system has not only solved Augustenborg's problems of flooding but also significantly improved the community's sustainability

The decrease in environmental impact is estimated to be 15% per capita. 70% of waste is being recycled and the amount of rain leaving the area for wastewater treatment has been reduced by 60%

The attractiveness of the neighbourhood has been restored and emigration has already fallen by 20% – as has the area's carbon footprint

Augustenborg used to have one of the highest unemployment rates in Sweden. However, the area has seen a rise of 30 per cent employment over the course of the renewal

CITY FACTS

Country: Sweden

District: Augustenborg

Area: 0,33 km²

Population: 3.188 (2008 est.)

Density: 294/km²

GDP (per capita): 37.526 USD

Source: www.wikipedia.org

PROJECT FACTS

FACTS FOR THOUGHT

RELATED FACTS