

# AUGUSTENBORG: GRØNNE TAGE OG REGNVANDSKANALER

Augustenborg er siden 1998 blevet transformeret fra et ghettolignende, forfaldent boligområde med oversvømmelsesproblemer til ét af Malmøs populære bosteder. Ved at udnytte stedets karakteristika til lokal regnvandshåndtering og via implementering af grønne tage er bydelens tidligere problemer blevet til fordele. Resultatet er et område, der deler ud af sine erfaringer og beboere, som passer på deres bydel.

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Grøn Regnvandskanal i Augustenborg. Af Malmö Kommune, [malmo.se/sustainablecity](http://malmo.se/sustainablecity)

Augustenborg-bydelen i Malmö, Sverige startede i 1998 en gennemgribende renovering under tilnavnet 'Ekostaden'. Kvarteret, som består af lavere boligbyggeri fra 1950'erne, var populært ved anlæggelsen. Pga. dårlig vedligeholdelse flyttede dem der havde muligheden og efterlod området forfaldent og socialt udfordret. Malmö Kommune og boligselskabet MKB har samarbejdet for at genvinde stedets oprindelige status. Byfornyelsesprojektet skulle være et fremvisningsprojekt og tillige engagere de 3000 beboere privat. Det resulterede i 2005 i "Eco-city Augustenborg", som i dag er et godt eksempel på holistisk bæredygtig byfornyelse.

Området havde indtil renoveringen været plaget af hyppige oversvømmelser af bl.a. kældre og skolegårde grundet et underdimensioneret afløbssystem, en lerholdig jordbund og et stigende antal befæstede arealer. Etableringen af 10.000 m<sup>2</sup> tagvegetation og integration af åben regnvandshåndtering har løst problemet.

De grønne tage er årsag til en betydelig reduktion af regnvandsafstrømningen i Augustenborg. Vegetationen optager en stor del af nedbøren og vender tilbage til atmosfæren ved fordampning. Herved er den totale regnvandsafstrømning reduceret med 20 % i Augustenborg. For at promovere anvendelsen af grønne tage i Skandinavien, åbnede man i området verdens første Botaniske Taghave i 2001. Det 9500 m<sup>2</sup> store anlæg er placeret oven på Malmø's tekniske forvaltning og er et offentligt tilgængeligt forsøgscenter med en eksempelsamling af 'grønne tage'. Biologer har beregnet, at den Botaniske Taghave alene øger den biologiske diversitet i hele området med omkring 50%.



Man har også udnyttet områdets lerholdige jordbund og bygget et naturligt kloakeringssystem, hvor nedbøren opsamles i render og bassiner, før den løber ud i et traditionelt kloaksystem. På den måde kanaliseres regnvandet fra diverse tage, veje og parkeringspladser gennem synlige grøfter, damme og vådområder. Den blå struktur er integreret i bybilledet, hvilket indebærer 30 gårdmiljøer med damme, kanaler og beplantning. De eneste områder, hvor vandet ikke er synligt, er når det skal passere en vej og derfor føres under. Kanaler og bassiner udnyttes rekreativt som byens åndehuller.

Ved at eksperimentere med og integrere forskellige former for økologiske tiltag (som også omfatter bl.a. solenergi, affaldshåndtering, el-tog og 'car pools' med el-biler), er bydelen et af de få områder, som har skabt et økologisk velfungerende system i denne størrelsesorden. Fornyelsen er blevet en platform for videndeling, da der foregår flere forskningsprojekter i Augustenborg; udover forskningen fra den Botaniske Taghave, undersøges det bl.a. hvordan erfaringerne fra områdets regnvandshåndtering kan udnyttes andre steder i Sverige og Europa.

Som følge af den holistiske tilgang er kvarteret blevet attraktivt og 'udvandringen' er allerede faldet med 20% - ligesom bydelens aftryk på miljøet er det. Resultatet understreges af et iøjnefaldende fravær af graffiti og hærværk. Idag passer beboerne på deres bydel.

### **Affaldshåndtering**

Der er opført 15 bygninger til genanvendelse med genbrugs- og kompost faciliteter til Augustenborgs 1800 boliger. Målet er, at 90% af bydelens affald samles og genanvendes, recirkuleres etc. I dag er opnået ca. 70% recirkulering. De traditionelle affaldsskakte er blevet lukket og alle beboere afleverer i stedet deres affald til genanvendelse i huse stillet op

til samme formål. I 'genanvendelsesbygningerne' er der containere til papir, pap, glas, metal, plastic og batterier. Herudover er der kompostmaskiner, som konverterer køkken- og haveaffald til kompost af høj kvalitet. Der produceres årligt 150 tons kompost, som dels bruges af lokale indbyggere og virksomheder og dels sælges til danske landmænd. En evaluering foretaget af universitetet i Malmø viser, at indbyggernes bevidsthed omkring bæredygtighed er steget pga. genanvendelsen.

### **Borgerinddragelse**

Et af projektets målsætninger var, at Augustenborgs beboere skulle være med så meget som muligt i både idéfasen og selve gennemførelsen af planerne for området. Det omfattende arbejde med borgerinddragelse har omfattet alt fra formelle design- og informationsmøder og regelmæssige workshops til festivaler, snakke på parkbænken og gadehjørnet samt uformelle sammenkomster til sports- og kulturbegivenheder. Denne stadig mere åbne og høringsbaserede tilgang har ført til en række initiativer, som måske ellers ikke ville være blevet til noget.

I Augustenborg har man formået at mobilisere og involvere beboere, skoleelever og folk fra bydelen i at udvikle konkrete løsninger for området: Beboernes ideer har udformet hele affaldssorteringssystemet og skabt grundlag for en del af omdannelsen af de grønne udendørs miljøer. Nogle andre gennemførte idéer, som kommer fra Ekostadens indbyggere, er Malmö's første car-pool og bydelens energisystem. Det lokale Agenda 21-kontor, som blev startet af lokale entusiaster, har uddannet omkring 40 mennesker og hjulpet dem i videre arbejde. Ekostaden har endda udviklet sine egne uddannelsesprogrammer.

Konstant kommunikation og stærkt fælles engagement satte skub i projektet. Designteamet stødte kun på ringe eller slet ingen modstand. Omkring en femtedel af beboerne har deltaget i de forskellige aktiviteter.

## **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.**

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Grøn Regnvandskanal i Augustenborg, Af Malmö Kommune, [malmo.se/sustainablecity](http://malmo.se/sustainablecity)

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 m<sup>2</sup> 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 m<sup>2</sup> garden is located on top of Malmö'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%.



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.