WESTERN HARBOR IN MALMÖ

STEFAN ANDERBERG

Figure 1: Västra hamnen seen from the air. Photo by Per Schou (2012) for the book Anderberg, S. and P. Schou: Malmö från ovan, Globe Forlag
For the last 15 years Västra hamnen (Western Harbor) in Malmö, and Hammarby Sjöstad in Stockholm have been the major flagships of Swedish international eco-city ambitions. These city development projects are presented both as leading examples of the conversion of former industrial harbor areas and of environmental adaptation of densely built urban environments. Western Harbor is a centrally located former shipyard area which, since the end of the 1990s, has developed into a mixed city area for housing, schools, offices, shops and other workplaces as well as for recreational areas with beaches, parks and yacht harbors. Since its first phase, part of a housing expo in 2001, it has attracted international interest for its dense architecture, bold energy goals based on varied local renewable energy production, household waste systems, green and blue structures, and dialogue processes. By 2031, when the area is completed, it is expected to be the home for 25,000 people and 25,000 workplaces. In 2014, there were 7,300 inhabitants and more than 12,000 workplaces in Western Harbor, already twice of the workforce of the former shipyard at its height.
Figure 2: Map of the Western Harbor. Source: City of Malmö, 2013: Västra hamnen 2031 – Ett hållbart och gott liv för alla. Uppdatering av visioner, mål och strategier, juli 2013 (Västra hamnen 2031 – A sustainable and good life for everyone)
Western Harbor is located northwest of the city center of Malmö, the third largest city in Sweden (318,000 inhabitants in 2014 and center of a metropolitan area with approximately 700,000 inhabitants). The 175 hectare area consists of a peninsula stretching out into the Öresund Straight and Universitätsholmen (The University Island) located between the peninsula and the old city center of Malmö that is surrounded by canals.

The Western Harbor peninsula developed during the late 19th century as the site of the Kockum shipyard. Like all the rest of the 10 km² harbor area of Malmö, the site was built by filling in the sea. By the middle of the 20th century the shipyard had become one of the most important builders of oil-tankers in the world, and the most important employer in the city. This came to an end with the Oil Crisis in 1973, which resulted in a sudden drop in the demand for new supertankers.

Malmö had constantly been among the fastest growing cities in the country since the early 1800s, but with the economic recession during the 1970s, Malmö lost 10% of its population. The tax revenue base of the city also deteriorated as high-income groups increasingly settled in residential suburbs in peripheral municipalities. Regional policies introduced in the 1960s disadvantaged the big cities, and new industrial development took place elsewhere. Finally the bankrupt shipyard was taken over by the Swedish state, which closed down civil shipbuilding in 1986.

Since the mid-1990s, the development has turned, and Malmö has experienced renewed growth in which immigration, education, trade, finance, and cultural activities play key roles. The emerging Western Harbor with the tall Turning Torso as landmark has become the most important symbol for this new development of Malmö.
HOW IT ALL STARTED: A RESPONSE TO AN ECONOMIC CRISIS

The Western Harbor project developed as a response to the crisis in Malmö. After the elections in 1994, the Social-democratic party returned to power and formed a strong and long-lasting government both in Malmö and on the national level. Malmö has traditionally been a stronghold for the Social-democratic party, the dominating political party in Sweden since the 1930s. In 1985, the Social-democrats sensationally lost power after ruling the city in 66 years. In 1994, the political situation was almost restored to the after-war period when Malmö was an important scene for implementing the central government housing, infrastructure and social welfare policies, including the most advanced wastewater treatment and remote heating systems in the world in the 1970s.

However, the situation in the mid-1990s was very different with the country experiencing the worst economic crisis ever. The Malmö crisis response strategies of replacing lost industrial jobs by new industrial investment had largely failed. The Saab car factory, which was established in 1988 with governmental support to replacing lost shipbuilding jobs, was closed down in 1991. It was obvious that the city desperately needed a new development strategy. The newly elected mayor, Ilmar Reepalu, started a Vision project within the city administration with the aims of identifying a possible positive future path for Malmö, a trip into the knowledge society, and how Malmö could become a competitive city in the future Öresund region.

The analysis of the Vision project identified both strengths and weaknesses. The city’s density and its established cultural heritage including its nice parks, canals and beaches were seen as benefits. In addition, the construction of the Öresund Bridge between Malmö and Copenhagen started in 1995, and opened in the 2000, was viewed as a positive event.
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Figure 5: Öresund Bridge. Source: Photo by Janus Langhorn /imagebank.sweden

Figure 6: Malmö University. Source: Photo by Kentaroo Tryman /imagebank.sweden
However, its dramatic loss of industrial jobs, low education level and very limited supply of attractive housing were seen as challenges for the city.

The identified challenges influenced the two major strategic projects emerging from this process: establishing a new university; and, the organization of a housing expo. Both these projects resonated well with national government policies, and received extensive governmental support, and both have had a decisive influence on the development of the city. Malmö University College opened in 1998 as a part of the governmental program for expanding and decentralizing higher education in Sweden. Today, the college has 13,000 full-year students from all of Sweden and is the largest and most attractive of the young generation of Swedish universities. The university college dominates the Southern and Eastern parts of Western Harbor: Universitetsholmen and Dockan.

**THE FIRST PHASE: THE HOUSING EXPO BO01**

The idea of arranging a housing expo was fuelled by the need to stimulate investment and construction in the city. To increase the supply of housing was perceived as a prerequisite for making high-income groups settle and pay tax in Malmö instead of in the suburban municipalities that had gained population on the expense of the city since the 1960s. A housing expo had the potential to attract extra funding and interest from developers, and to hopefully make them more interested in investing in the city.

In 1996 Malmö was selected to arrange the national housing expo, as a result of winning a competition with seven other major cities. Originally, Limhamn in Western Malmö was assigned as the site of the expo. However, the City of Malmö bought the property of Saab Automobiles in Western Harbor, and decided to move the housing expo to this area which is closer to the city center. The expo organization was launched in 1998 under the name of **Bo01 – City of Tomorrow**. Besides the major sponsors of the expo: City of Malmö, the Swedish government, and **Sydkraft**, the regional electricity company (now a part of E.ON), the EU supported the project financially, including support for particular energy efficiency measures and scientific evaluations of various projects. Originally scheduled to open in 2000, the expo opening was postponed until 2001 to coinciding with the first Swedish presidency of the EU Council.

For the housing expo, an “eco-village” with about thousand new homes was to be constructed as a leading example of sustainable urban development. The vision was to create efficient sustainable systems for an attractive and convenient compact city, which would serve as a model for future urban development. In contrast to earlier examples of “eco-villages”, the inhabitants should not need to make sacrifices to reduce their environmental impact. Instead the environmental benefits would accrue by using developed and tested technologies and solutions aimed to be generally applicable. It was intended that the lessons learned in the “eco-village” would be inspiring for cities all over the world, and thus exportable.

**Dialogues With Developers and The Quality Program**

Developers were invited early to take part in the planning process of the housing expo. Due to the economic situation, they were at first hesitant, but their interest and enthusiasm grew with the progression of the project. The developers chose architects and developed projects that the city architect and the expo architect agreed to in parallel. This made the building permit process smooth and fast, and construction could begin sooner than normally. It was agreed that the City of Malmö would be responsible for public spaces and infrastruc-
Interested developers also participated in the development of Bo01 quality program that set standards for achieving the vision as a common basis. Finally, 16 developers signed the allocation agreements with the City of Malmö, where they agreed to comply with the quality program of Bo01. The quality program contained a number of requirements to be met by the Bo01 area and its buildings, and aimed to:

- Give the developers a single basic standard securing the attractiveness and quality of the city district
- Be an operative instrument for attaining the aspirations for the new city district
- Secure a high quality in the city district’s environmental profile
- Secure a high level of technology and information services
- Secure a high quality of architectural conception and design

The Environmental Initiatives of Bo01

Many actors were actively involved implementing the vision. Sydkraft developed a concept for supplying the area with renewable energy. The City of Malmö developed solutions for soil decontamination, recycling green structure and traffic. The developers designed individual solutions for their buildings. However, the environmental adaptation of Bo01 was to a large extent made possible via support from the Swedish government which in 1998 had launched “The Green People’s Home” program.

The Green People’s Home policy incorporated environment and sustainable development into the traditional social-democratic People’s Home vision that guided the development of the Swedish welfare state in the after-war period. The most concrete result of Green People’s Home policy was the Local Investment Program (LIP) that offered co-funding for environmental investments in Swedish municipalities for accelerating the conversion of Sweden into an
ecologically sustainable society and developing the green sector of the economy. After Hammarby Sjöstad, Western Harbor became the most important project in the first round of the LIP. Sixty seven Bo01 projects were supported by LIP grants. The environmental initiatives and LIP projects of Bo01 were grouped into 8 categories:

Urban planning
The ambition for the Bo01 area was to create a compact and lively district, both providing shelter from the wind by the seaside, and offering opportunities for a high quality of life in the sustainable society. The area was planned to decrease transport needs and car dependency by giving priority to biking and walking. The street network that was designed by the expo architect, Klas Tham, consists of mixed individually designed streets, pedestrian and bike paths and open squares. Along the water-front, there is a promenade that opens up in squares and green areas. The inner area of Bo01 is car-free with parking facilities outside of the area.

Soil decontamination
Before construction, large former industrial areas with different degrees of contamination had to be assessed and secured. Even if soils seldom were severely contaminated, this remediation involved large quantities of soils that needed to be evaluated and handled. This process included new kinds of risk assessments, and testing of different remediation techniques, and resulted in improved routines and knowledge concerning the handling of lightly contaminated land.

Energy
A system solution for a self-sufficient community, based on 100 per cent local renewable energy, on a yearly basis, was created for Bo01 by Sydkraft. A system powered by wind, solar, biogas and heat-pumps would produce 6,200 MWh of heating, 3,000 MWh of cooling and 6,300 MWh of electricity per year. A maximum housing energy requirement was set to 105 kW/m² and year. Developers sought LIP-support for energy measures to insure that they lived up to the standards and contributed to the goal fulfillment. These measures included: heat recovery from ventilation systems; thick layers of wall insulation; triple-glazed, low-e windows; and, energy-efficient appliances. Common facilities for cold storage and waste recycling were also constructed to save space and energy. A heat pump plant was established as the heart of the energy network providing both heating and cooling. The energy was to be stored seasonally in natural aquifers in 90 meter deep wells. Some solar panels, and 1,400 m² of solar collectors on the roof-tops were planned to provide 15 % of the heating requirements of the Bo01 area. A local 2 MW wind power plant located in the Northern harbor was to produce the electricity needed to power the heat pumps and also to supply 1,000 apartments with electricity. The local system was connected to the city district’s heating grid and power supply network.

Ecocycles
Many measures for ecocyclic management of materials and waste products were devised for Bo01. Neighborhood source separation systems for waste were introduced in the whole area. Two different organic waste separation systems were implemented; a system for paper bags collected in a vacuum system; and, a system for pre-separation of food waste based on disposal mills for biogas production. Surfaces were covered by tiles and stones that are easy to remove and to replace, and can be reused.

Traffic
To achieve a more appropriate traffic system, a particular holistic concept was introduced for
1,400 m² of solar collectors on the roof-tops were planned to provide 15% of the heating requirements of the Bo01 area. Source: Photo by the author.
the Bo01 area with the aims of both reducing transport needs, and favoring environmentally friendly transports. In addition, measures were introduced to influence people’s attitudes and behavior concerning traffic. Cyclists and pedestrians were given priority, while cars and car parking were restricted. Car pools and public transport via frequent bus services to the central railway station were introduced. The expo also included demonstration and education activities concerning sustainable transportation.

Green structure and water
A central challenge for Bo-01 was creating a modern, resource-efficient and compact city district that would still be close to nature, and offer space for biodiversity and water. For provide for this goal a habitat-rich city district was created which provided space for biodiversity and for local storm-water management. A green space factor system was developed where developers could meet the performance requirements by introducing initiatives that favored biodiversity, connecting with local storm-water management, reducing the environmental impacts of courtyards, or adding elements of landscape architecture to their courtyards. This created various green and blue arrangements in the compact district, such as green roofs and ponds, and the whole area is surrounded by waters, canals, and saltwater channels.

Building and housing
The area development plan, the quality program and some other specific rules concerning green spaces and color schemes set the framework for the building development at Bo01. These standards however did allow individually designed housing projects with the result that the area is characterized by great variety of types of buildings, designs, building techniques and tenures. Both student and senior housing were included. New methods for building systems and materials were tested, even a return to wooden house construction.
Figure 10: The Bo01 is surrounded by waters, canals, saltwater channels and the seaside. Source: Photo by Aline Lessner/imagebank.sweden

Figure 11: Bo01 is characterized by great variety of types of buildings, designs, building techniques and tenures. Source: Photo by Aline Lessner/imagebank.sweden
Information, dissemination, housing activities, research and evaluation

Before, during and after the housing expo, Bo01 served as an important center for information and exchange on sustainable urban development issues. Numerous exhibitions and activities during the housing expo focused on the environment and sustainable development. The area also became the focus for several educational programs for school children and for a wide variety of research.

The Housing Expo and Its Impacts

The housing expo in the summer of 2001 attracted a lot of interest in the national media, but it was actually not a success. The target of 500,000 visitors was never reached and the expo company went bankrupt after the closing of the 4 month expo. Many citizens of Malmö thought that the entrance fees were too high and stayed away, and the expo did not reach the intended international attention. With exception of 140,000 Danes, the number of foreign visitors was far lower than projected. This “prestige project” had been controversial and debated from the start, and local media coverage of the whole process leading up to the expo had been rather critical, and negative. In the autumn of 2001, the critics took malicious delight in the economic failure of the expo, and used this as the final proof that the whole project was a total failure, that everything it was built upon was wrong for a city like Malmö, and that it was a complete waste of taxpayers’ money. Critics argued that the city should not spend its limited resources on such expensive events nor construct exclusive attractive housing areas for wealthy people.

However, with the completion of the Bo01 area, the opening up of the area to the public, and its increasing integration in the city, the skeptical feelings faded away. Today especially during the summertime, Bo01 is frequented by people from all parts of Malmö, and most locals see it as an asset to the city, worth showing to all visitors. It is indeed a unique area of the city that could not have realized without the extra resources and efforts that were mobilized through the housing expo.

From an environmental planning and policy perspective, Bo01 provided City of Malmö with fresh starting-points. The expo projects made the city able to show advanced examples in a number of different areas, and Malmö was suddenly among the cities that had a lot to show in terms of innovative urban sustainability projects. The years after the expo, increasing interest among international specialists and experts arose, and Malmö has since then attracted an increasing number of visitors from all continents. The City of Malmö also became very active in different international sustainable city networks, and began to regularly organize conferences on themes related to sustainable city development that further stimulated international interest. The city has received several international awards and honors during the last decade, such as a Livable Communities Award 2007, an Urban Best Practice Expo award in Shanghai 2010, a World Habitat Award 2010 and an Earth Hour Capital award 2011.

After Bo01, Malmö has continuously attracted large amounts of funding for various sustainability related city development projects and developed its role as a test-bed for new environmental technology and planning practices. The international recognition also made the city an increasingly attractive collaboration partner, and City of Malmö has participated in numerous international projects, often financed by the EU, and focused on further development of aspects of Bo01.

In relation to all the focus areas of Bo01 projects, spinoffs can be identified in terms of influences and further developments in later construction and city development projects, planning practices, city policies and various urban sustainability projects.
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Figure 12: Western Harbor, with the Turning Torso in the background. Source: Photo by Justin Brown /imagebank.sweden
THE SECOND PHASE: COMPLETION OF THE BO01 AREA AND THE TURNING TORSO

Many houses and apartments were ready to show at the housing expo, but the area was far from finished in the summer of 2001. The years after Bo01, the area was completed and expanded. Among the added buildings was the *HSB Turning Torso tower*, ready in 2005, which at 190 meters is the tallest residential building in Scandinavia. This spectacular 54-story building was designed by the Spanish architect Santiago Calatrava. It consists of 9 six-story pentagon-shaped segments that twist in relation to each other. The tower has 147 apartments and conference facilities at the top. Skyscrapers are rare in Scandinavian cities, and plans of tall buildings have often been quite controversial. However, in the beginning of the new century, the city politicians felt that Malmö needed a new addition to its skyline. It replaced the formerly highest structure which was the shipyard crane, removed and transported to South Korea in 2002.

With the completion of the Bo01, it became evident that the goal of creating a very attractive new city area had been reached. However, it was at first difficult to sell or find tenants for the many exclusive apartments due to the very high purchase prices for condominiums and small houses, and the rents which were above average monthly salary levels. The student houses in the area also have been difficult to fill due to more expensive rents than other housing alternatives in the city. The weak market for exclusive apartments also created problems for the Turning Torso that was originally planned for condominiums. Insufficient interest for buying the condos resulted in that they were instead made rental apartments. Due to construction costs that dramatically exceeded the budget, the Torso has not been an economic success for the owner HSB (“Savings and Construction Association of the Tenants”), the national cooperative housing organization, which unsuccessfully has tried to sell the building. Despite all of these issues, after a few years the project was deemed a success by most developers.

The sustainability visions and goals for the Bo01 area were only partially met. Particularly the energy goals proved difficult to realize in practice. Partly due to the accelerated planning and construction processes, the insulation of buildings and the energy production systems such as solar panels and collectors did not become as efficient as envisioned. The area is not self-sufficient in terms of energy, but since the opening of the largest offshore wind turbine park in Sweden (Lillgrund windfarm, south of the Öresund Bridge) it can be claimed that the area is supplied with locally produced renewable electricity.

The restricted parking space also soon became a problem for the new local residents, who had more cars than the 0.7 parking space per household (compared to general Malmö standard of 1.1) in the area allowed. After a few years a parking garage was built beside the Torso as a solution to this problem.

However, Bo01 and particularly its beach walk, quickly became a very popular excursion sight and summer meeting-place for young people from different parts of the city. This has made Bo01 to an unusually lively and well-integrated water front area. Despite swimming prohibition along the beach walk, Bo01 was already in the summer of 2002 a very popular swimming site. The authorities took the consequences, and abolished the prohibition, and developed a city beach with bathing platforms and security measures. In 2005, *Scaniabadet* with three bathing platforms opened north of Bo01, and the swimming area today stretches along almost the whole outer rim of the peninsula.
THE FURTHER DEVELOPMENTS IN THE WESTERN HARBOR

After the housing expo, the development of other parts of Western Harbor began. Around Dockan ("the dock"), the shipyard’s gigantic drydock, was turned into a yacht harbor. Old refurbished shipyard buildings got new functions related to the university college, other schools, media industry and other businesses. New high density residential areas and office buildings have gradually been added. To the west of this area, Stapelbäddsparken (The Slipway Park), a creative center for youth and street culture with a large skateboard park has been developed in connection to a former shipyard slipway.

Universitetsholmen is today the center of Malmö University College with its main building Orkanen that opened in 2005. From the island, there is direct access to the new subterranean part of Malmö Central Station, which opened with the City Tunnel in 2010. The City Tunnel is a 6 km long tunnel which provides a short-cut for the trains to the Öresund Bridge. On the University Island, new, often higher and denser office buildings have replaced most of the older industrial and office buildings. The latest development is Malmö Live, a new concert and congress center, crowned by a 25 story hotel that opened in June 2015.

In the northern part of Western Harbor, new residential areas (Flagghusen, 2004–2008, Fullriggaren, 2009-2013, and Kappseglaren, 2011–2016) have been developed around the large central park and city district school. In contrast to Bo01, these are regular construction projects with much more limited funding, but they all have been influenced to some degree by the heritage from Bo01.

In connection with the planning of Flagghusen an ambitious developer dialogue took place. It was funded by the national program “The Building-Living Dialogue” (2004-2009),
and was among the most productive processes of this program. It resulted in a sustainability agreement for Flagghusen covering rental costs, architectural diversity, energy efficiency and green space goals, indoor climate, accessibility for all and waste separation infrastructures.

Fullriggaren was the first area that was developed based on the local sustainable building program, *Byggmiljöprogram Syd* (“The Environmental Building Program South”). This program, developed by the cities of Malmö and Lund in collaboration with Lund University, utilizes a standardized classification system to compare building criteria concerning energy, humidity, indoor environment, and biodiversity. It has three levels, all stricter than the national regulations. In *Fullriggaren*, the developers also introduced a number of sustainability initiatives: it contains the largest bio-waste collection system through waste mills, separate pipes and collection tanks, and the largest collection of passive and low energy houses in the country.

*Kappseglaren* contains several leading examples of sustainable building projects. For example, one of the first carbon-neutral apartment buildings, an apartment house which has maximized green surfaces and biological diversity, and E.ON’s house, The Sustainability, a pilot project for smart energy systems.

In the southern part of the peninsula, conversion of sparsely built business-dominated areas into more dense mixed areas is taking place in *Hamnporten*. There are several residential buildings with shops in the bottom floor that have been added in connection with the World Trade Center, and conversion plans have been made for the remaining industrial area to a new dense neighborhood. The most interesting and daring project underway is *Masthusen*, south of the District’s Central park, where the goal is to create a dense lively business and service center for Western Harbor with inspi-
ration of lively and walking-friendly European city centers such as along Strøget in Copenhagen. This area will consist of 1000 homes and 20,000 m² of space for offices, shops and services, and is the first development outside of the United Kingdom to be certified by BREEAM Communities. The BREEAM evaluation includes evaluation of energy use, indoor climate, waste management, choice of building material and location in relation to public transportation.

The Western Harbor development is still ongoing and far from complete. Since the development of some of the important mixed areas that are projected as the core of the Western Harbor have not come so far, it remains to be seen if the challenging visions for creating lively dense mixed district, dominated by street walkers and bikers, will be realized.

Final Reflections

Twenty years after the ideas of a housing expo and conversion of the harbor area started to develop, it is hard to say anything but that Boo1 and the conversion of the Western Harbor have given very positive impulses to the city. Together with the university college, the Öresund bridge and the improved connections to Copenhagen, they have been important for turning the development of the city. Western Harbor has become the new façade of Malmö, where the city is able to show itself as it would like to be: dynamic, creative and in the international forefront of the development of a livable and sustainable city. It has also convinced developers to become more interested in investing in the city and improved the collaboration between developers and the city.

Starting with Boo1, the city, via partnerships with developers and other companies, has been able to create a new attractive district of the city with a long list of interesting projects from planning, architectural, environmental and infrastructural point-of-views. Western Harbor contains many examples of how dense cities can be both energy efficient and green. The international interest and recognition for the area has been of great importance for the city. Large groups come to visit Malmö from different parts of the world to see Boo1 and Western Harbor, the new developments in Hyllie in the periphery or revitalization projects such as the Eco-city Augustenborg. Increasingly delegations have visited Malmö to learning about the “the city’s transition from the industrial city in crisis to the city of knowledge”, as it is called in the official storyline. This has been very important for developing a new image and self-confidence in Malmö that still in the Swedish context most often stands out as a city with many unsolved challenges related to poverty, crime, poor school results and integration of immigrants. The international recognition has also stimulated the sustainability agenda and greatly increased the ambitions of the city. The many activities and projects, and the international exposure have also brought an expansion and upgrading of the planning and environmental administration of the municipality.

ENDNOTES

1 The most important source of income for Swedish municipalities is the municipal income tax paid to the home municipality.

2 Construction of naval ships, primarily submarines, continued, but has gradually moved to Karlskrona, the offices of what remains of Kockum is still in Western Harbor.