

CASE STUDY - HAMMARBY SJÖSTAD

HAMMARBY SJÖSTAD, STOCKHOLM

Introduction

Hammarby Sjöstad, translated “Hammarby Lake City,” is a sustainable, environmentally friendly, mixed-use development located adjacent to the city center of Stockholm. The project illustrates a sustainable approach to redeveloping a former industrial site into housing, commercial areas, and recreational space, and how that development can be articulated as a direct extension of the Stockholm urban core. Many of the unique features and strategies of this project are a result of physical adjacencies and strategic interactions between the new development, Stockholm city and Lake Hammarby. Innovative transportation methods, urban planning, biogas production from waste, power generation from trash, installed photovoltaic arrays, solar hot water tubes, centralized vacuum tube recycling collection, storm water remediation, green roofs, brownfield cleanup, and public education on environmentalism are some of the successful technologies and strategies used at Hammarby. [7] The bold aspirations of the project necessitated cooperation between a number of public and private en-

tities and enabled the successful implementation of this visionary master plan. The effort has resulted in a successful “growth ring” [4] expansion of the Stockholm city center that meets Sweden’s stated environmental, energy, social and economic goals for the future.

“The building and property sector in Sweden is responsible for a very high proportion of the environmental impact on society; it accounts for 40% of total energy use, just over 40% of the use of materials, and a considerable share of waste. Considerable amounts of greenhouse gases are generated, and account for about 20% of Sweden’s total emissions of carbon dioxide.” [1] In response to environmental and other pressures, the Swedish government has stated that it wants to develop the concept of the “green welfare state” where “everyone lives in good housing, at reasonable cost, in a stimulating and safe environment, within a long-term sustainable framework.” [1]

Description

The 200 hectare site will eventually be home to 20,000 residents plus an additional 10,000 work-

ers. Residents will live in the roughly 10,000 new homes that will be constructed on the site. Serving this population will be a number of private businesses, public amenities, and community centers. The main circulation artery servicing the city is a 3.5 kilometer long, 37.5 meter wide, boulevard along which nearly all ground floor spaces are reserved for businesses and other commercial uses. Additional commercial space is provided in the form of two story pavilions placed strategically around the communities. To date [2, in 2005], the city is home to 24 restaurants and bars; 20 fashion, electrical, interior, book and flower shops; 15 health and beauty stores; 8 laundrettes, general services and key cutters; plus many other cafes and bars. The densities, mixed-use character, and urban patterns for Hammarby Sjöstad are based directly on the model of Stockholm's old city. Even widths of buildings, heights of buildings and dimensions of roads reference the old city. Planners hope that using similar urban patterns and densities to those found in the old city will reinforce the viability and vitality of Hammarby Sjöstad for generations to come.

Site

Hammarby Sjöstad is located south-east of the Stockholm city center. It sits close to the dense urban core, but because the area was previously used as an industrial manufacturing and shipping area, it had never been properly connected to the rest of the city. The original proposals for Hammarby Sjöstad were started in 1990 during a bid for the 2004 summer Olympics. The games were eventually awarded to Athens, but enthusiasm for the urban renewal of such a blighted and polluted site was maintained. It is interesting to note that one of the biggest challenges for the project and coincidentally a sign of its success was the cleaning of the brown-field site. Strengths of Stockholm, exposed during the Olympic bidding process, such as ecology and sustainability became driving forces for the new development scheme. Geographically, the new city is bounded by a large natural park on the south and a hilly island to the north. At the heart of the project lies Lake Hammarby or what the design team refers



Aerial Site Photos

to as the “blue eye” of the city. The lake is referred to commonly as the “most attractive public space” [4] in the city and is therefore lined on two sides by parks, walks, quays, boat moorings, docks, and of course mixed-use buildings. The public is encouraged to engage the waterfront and many of the planning decisions reflect the desire of the planners to have an active edge to the city.



Canal



Public Transport / Tram

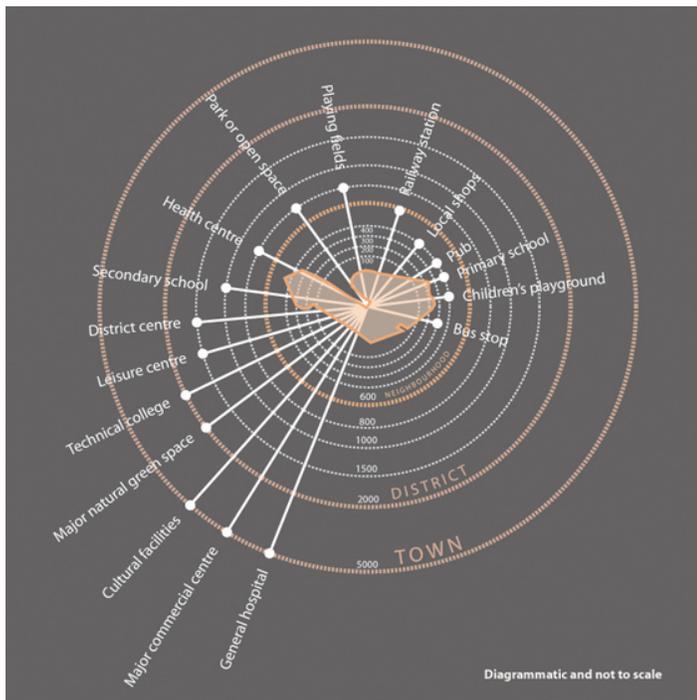
Transportation

In addition to public circulation and activity at the shoreline, a major consideration for Hammarby Sjöstad was the integration of a master transit plan to meet the social and environmental concerns of the project. Planners understood that the success of the new city would depend on a good transportation system that could move residents quickly and easily both in the new development and connect them to the old city beyond. Planners also encourage use of public transport by making it a convenient alternative to private vehicle transport. The transit system in Hammarby Sjöstad is based

on a network of pedestrian sidewalks, bicycle paths, trams, busses, personal vehicles, “shared” vehicles, and ferries. The wide array of transport technologies means that all parts of the new city are accessible and that it can be up to the user as to the combination of transport they use. In addition to bus and car, the city has four tram stops which are connected directly to the main city subway line and future plans extend this service directly to the Stockholm city transportation hub, Slussen. Alternately, two ferries across Lake Hammarby were established to serve the needs of the community and are on a 10 to 15 minute interval. Finally, residents can have access to the “City Car” carpool which



Aerial Photo



Amenity Distance Chart

operates between 20 and 25 cars for daily use. Recently completed surveys show that “two-thirds of all trips are made by public transport, bicycle, or walking while only one-third are car-borne.” [2] Ferry use is very high with respondents saying that roughly one-quarter of all trips were made across the water. The success of the Hammarby transportation system is still being tested and will not be fully understood until the new city is complete in year 2015.

Master Plan

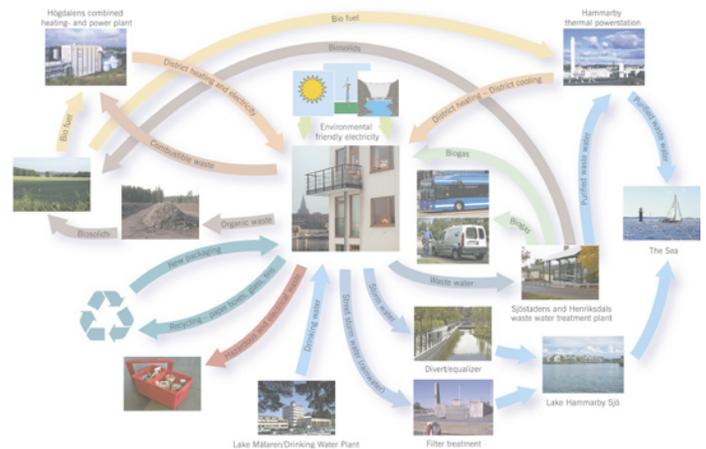
The master plan of Hammarby Sjöstad consists of roughly twelve development districts. Responsibility for design and construction of each individual district was handed out to different designers and builders. To aid the development of the Hammarby Sjöstad master plan, under the direction of Jan Inghe-Hagström, a series of design criteria were outlined. They include requirements for: District Character, Layout, Architectural Style, Building Types, Building Design Principles, Building Elements, Building Color, Open Space Design, Public Space Design, Architectural Distinctiveness, and Apartment Standards. A system of “parallel sketches” [x] was used whereby young upcoming architects were given specific design problems. After a design period, a series of presentations were made a committee reviewed the proposals and chose the best aspects of each design. The process ensured a varied architectural character for different zones and sub-neighborhoods in the project. The aesthetic for the entire project is modern in line with the Scandinavian modernist aesthetic. The design team felt that it was fitting for a city of the future to be designed in the latest style.



Public Gardens / Urban Farms

Environment

The environmental program in Hammarby Sjöstad is critical to the development's triumph as a model for Swedish city planning. The program includes “targets for decontamination use of brownfield land, provision of public transport options to discourage car use, energy consumption, and recycling of water and waste.” [2] Of note is the “Hammarby Model” for recapturing energy through the careful management of water, waste and trash. It was developed through cooperation between Birka Energy, Stockholm Water Company, and the City of Stockholm Waste Management Bureau. Stated goals for the



Hammarby Ecocycle Model

“Hammarby Model” are to be twice as effective at energy production, waste recovery and energy conservation as similar projects not using the system. [4] One particular example of the model is an innovative sewage treatment plant. Waste is cleaned and purified at a central plant and waste is turned into biogas for cooking. Excess heat gained in the purification process is used in the district heating unit. An experimental portion of the sewage facility also recycles waste for use in agriculture. Another interesting feature is the use of a centralized, EnVac, refuse vacuum system. Trash is presorted by the residents and placed into the appropriate receptacle. The bins are connected to a centralized network of pipes and at different intervals the trash can is activated and rubbish brought to a central plant under vacuum pressure. Any combustible trash is incinerated to heat the apartments. Biode-

gradable waste is chipped by the residents in special devices in each apartment and recycled.



GlasshusEtt "Glass House" Environmental Information Center

Education

Education was considered central to the success of any community wide environmental efforts. To facilitate education of the residents and businesses, a special environmental center named, GlasshusEtt or the "Glass House," was built along the main artery through the city. The center is open to the public and has classes, tours, exhibits, films, and other relevant information about the environmental aspects of Hammarby Sjöstad all collected in one location. Concerns the public may have about ecological matters or energy savings can all be addressed by the staff at the center.

Analysis

Observations from the Hammarby Sjöstad project suggest that it is a very successful development. Housing is in demand, the transportation system is widely used, businesses are flourishing, and the environmental initiatives are having positive affects on the surrounding ecology. The project has been particularly successful at attracting families with children. To date [2, as of 2005] there are approximately "981 children under the age of 16 living in the area." Demand for schools is increasing and more are being planned to meet needs. Planners

aimed at achieving a split ratio of owners to renters in the final development in order to accommodate lower income residents and create a mixed-income demographic within the city. Despite careful planning however, the quality of the buildings and development has raised housing prices within the new development to the same level as in the old inner city of Stockholm which means that many lower income residents are still not able to afford housing. The majority of the lower cost rental properties are also in less favorable areas of the development because of high land and project costs. This is particularly true for units which face the water or are immediately adjacent to open space. Critics point out that the residents are largely part of a "homogenous" [5] group which has a higher average income than adjacent city clusters.



Vacuum Trash Pickup / PV Array Built into Facade

Coordinating the location of residents and commercial businesses has been an ongoing problem for the development. Businesses have in some cases been subsidized 100% of rental costs for an interim period while housing blocks or apartments in the vicinity are built or turned over to residents. It is a major obstacle to the vitality of a community because businesses are very reluctant to locate in an area where there is no preexisting residential base of customers. Some of the problems can be attributed to the original plan for the project to be built around the Olympic village. The result-

ing development, even without the sports facilities, was built from the outside moving in. This meant that the densest urban areas were not developed until the later stages of the project. Connecting the transportation network to Stockholm city did alleviate some pressure on the development because shopping and other amenities can be reached very quickly from Hammarby Sjöstad.

Community education initiatives concerning the environmental strategies and procedures in the Hammarby Sjöstad are a major challenge. Despite significant effort through the Glass House and other informational campaigns, the residents and businesses have not been successfully engaged to help the city achieve its environmental mandate.

Conclusion

Hammarby Sjöstad is a good example of the Swedish “green welfare state” and how it can “promote sustainable development, new jobs, growth and welfare” into the future. The project is innovative on several fronts. It is very socially ambitious because of the government mandate that all citizens be provided a decent, safe, affordable home that will be sustainable in the long term. As discussed previously, the cost and quality of the development is such that lower-income residents have been marginalized in the new community. On the whole however it is a welcome addition to the housing stock available in Stockholm. Project attributes such as pedestrian friendliness, building scale, mixed uses, multi-modal transport, green spaces, access to water and light, all framed within the mandate to minimize the project’s impact on the environment, define a community that is potentially sustainable on multiple levels. Also, by blending itself into the scale and urban fabric of the old inner city, the new development has ensured that there is a dynamic interrelationship between parts of the city. People, traffic, goods and services can all flow between areas without feeling the stress of a complete change in urban character. Another achievement of the project is its level of environmental awareness. For example, it is written that the average Hammarby

Sjöstad home uses half the water and consumes far less electricity than a typical Swedish home. Power generation on site serves to even further offset the electricity load of the development. The success of Hammarby Sjöstad is a testament to the effectiveness of strong organized public sector involvement in a development project. It also illustrates the importance of cooperation and agreement between public and private sectors and for the careful evaluation of schemes before they are implemented.

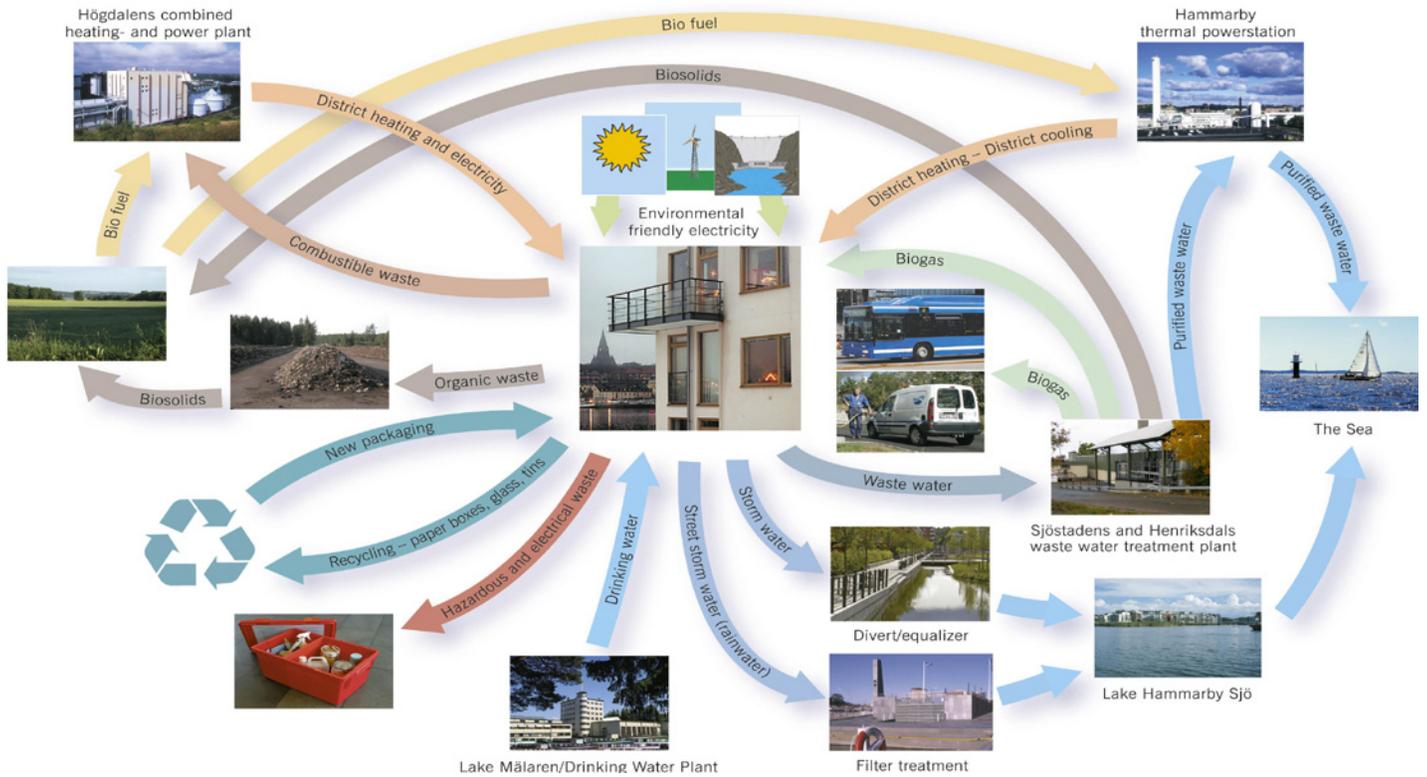
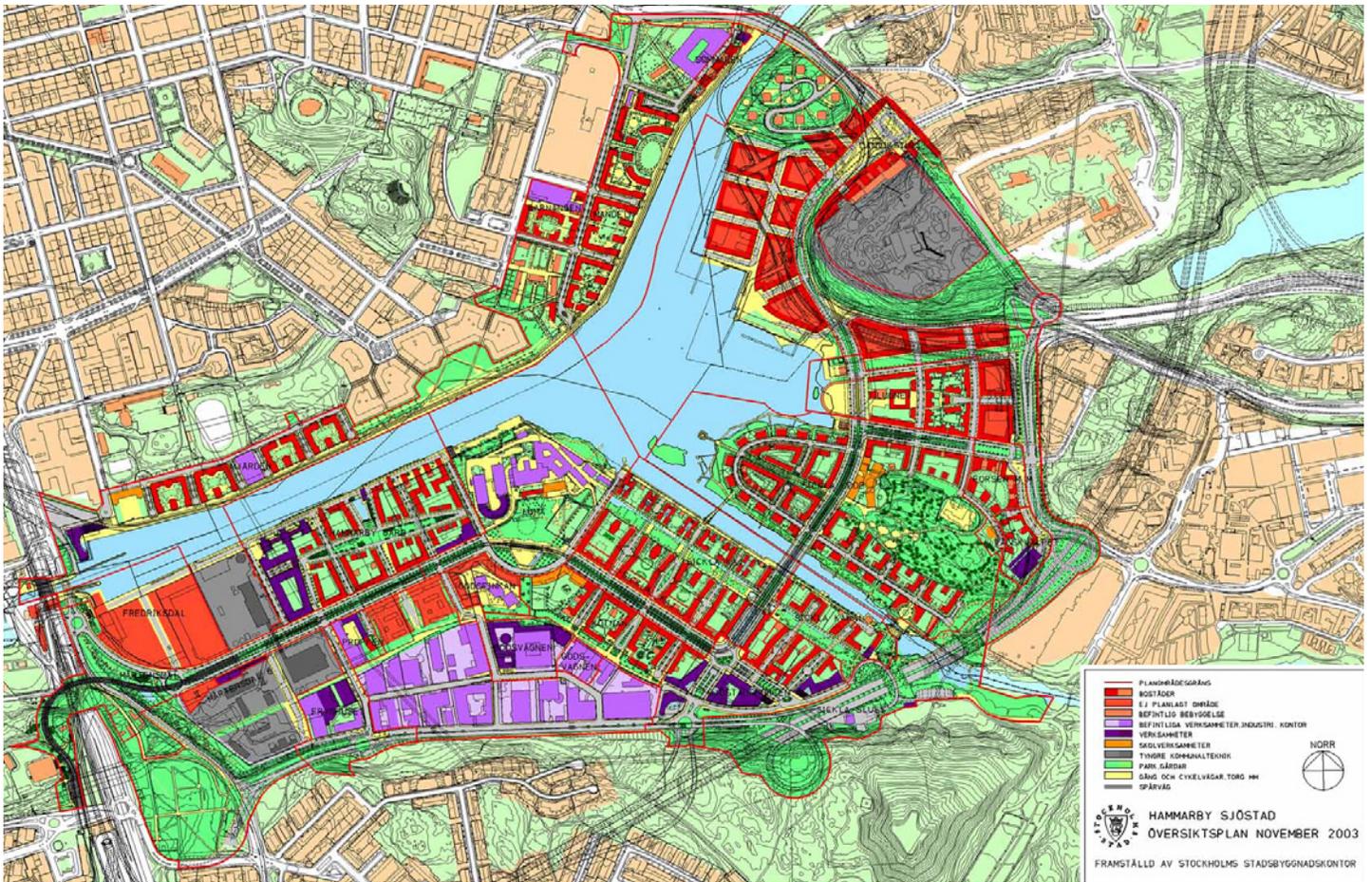
Sustainable Communities in Sweden:

- Urban planning
- Soil decontamination
- Energy
- Ecocycle
- Traffic
- Green structure and water
- Building and housing
- Information, knowledge dissemination and housing expo activities

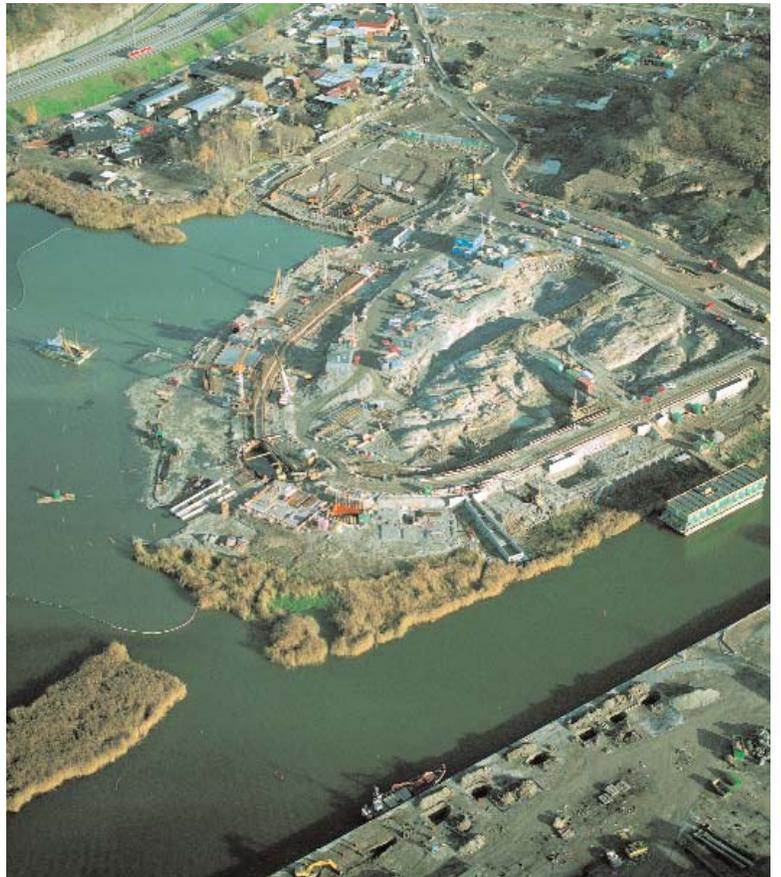
References

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- [7] Xuefei, Chen. “What is a Sustainable City?” People’s Daily Online. 25 Oct. 2005. 18 Feb. 2007 <http://english.people.com.cn/200610/25/print20061025_314991.html>.

FIGURES



FIGURES



FIGURES

