# 7. MAJOR LESSONS

*This section expands on the major lessons first summarized in Section 1.2.*

## 7.1 Major Lessons

The most important lessons to stress from Hammarby Sjöstad for application in other urban development projects are:

1. Sustainable urban development requires a holistic approach and the 12 Green Guidelines offer the framework for this approach.
2. Prioritize densifying areas that are adjacent to the city, even if these are brownfields.
3. Various departments from the government, private sector, and academia must all be deeply involved in the planning process.
4. A variety of channels (design and financial) must be used to change behaviors and mindsets.
5. Life-cycle assessments can reveal the true value of high environmental design standards.

This section will cover each of these lessons in more depth.

**1. Sustainable urban development requires a holistic approach and the 12 Green Guidelines offer the framework for this approach.**

*Set holistic and clear environmental goals:* In 1996, the governing politicians of Stockholm implemented environmental goals in order to have a chance of hosting the Olympic is 2004. A strict environmental program was drawn up with the aim of achieving a 50% reduction in the overall environmental impact in comparison with a “normal” district built in the beginning 1990s. The environmental goals cover all the key categories of urban form, transportation, and energy and resources. The goals also worked as a quality assurance to ensure that the developers had delivered what they had promised.

*Use integrated system solutions for material, waste, and energy:* The Hammarby Model addresses energy, waste, water, and sewage. This also means that environmental and infrastructure plans for this area have been developed jointly by three city agencies: the Stockholm Water Company, the energy company Fortum, and the Stockholm Waste Management Administration. The model has become internationally renowned since itconsumes inflowing resources and discards outflowing wastes into a cyclical system that optimizes the use of resources and minimizes waste.There are a number of cobenefits. For example, the storm water solutions are both aesthetically pleasing and have created great public spaces for residents to enjoy.

Through the Hammarby Model and the ambitious environmental goals, Hammarby’s urban development process has created a number of synergies between its various goals. Below are a few examples of where the 12 Green Guidelines have positive interactions in the case of Hammarby:

* Mixed-use and transit-oriented development reduced the need for private cars, which increased use of public transit and non-motorized transit.
* Water efficiency measures such as storm water management reduced pressure on piping and pump systems; the smaller pipe dimensions also reduced the cost of hard infrastructure. The low impact design of the storm water management system also leads to attractive public green spaces.
* The Hammarby Model closed loop system allows water, waste, and energy to feed into each other. This reduces the amount of energy and resources needed to maintain the system.
* Hammarby’s smaller blocks made it easier to lay down the piping for the waste vacuum network.

***2.* Prioritize densifying areas that are adjacent to the city, even if these are brownfields.**

Densify areas adjacent to the city. The soil remediation conducted by the City of Stockholm was a small sacrifice when compared to the substantial advantages of developing near the city center. Infill development made it easier to integrate the transportation system and technologies for water and energy (electricity, district heating and cooling) into existing city infrastructure.

*Apply integrated land use and transport planning strategies.* The planning strategy used by the Project Team was to reuse and transform old industrial and brownfield sites into attractive mixed-use areas. Hammarby Sjöstad is a part of a larger regional urban planning strategy used by the City of Stockholm in order to create a Polycentric Urban Structure as well as densify and build the city inwards. TOD strategies were implemented to avoid urban sprawl and increase the use of public transportation, bicycling, and walking. In Hammarby the TOD strategies have reduced the need for motorized traffic i.e. the private car. Easily accessible transportation stations are one of the key factors in making public transit so popular.

**3. Various departments from the government, private sector, and academia must all be deeply involved in the planning process.**

Political will and decisions based on a broad political consensus and commitment must be achieved to realize this kind of development. The development of Hammarby Sjöstad is an example of the application of the triple helix concept where government, industry and the private sector, and academia all interact and take part in the development. It was vital that an interdisciplinary project team including the City Administration, developers, researchers, and other stakeholders was formed at the beginning of the project.

From the experience of Hammarby’s Project Team, the following lessons can be extracted:

***1. Prioritize close collaboration between different departments:*** Regarding the close collaboration between the different departments at the Stockholm municipality, Susanne Bäckström, the Vice Project Leader for the planning of Hammarby,[[1]](#footnote-1) mentioned that one of the most important and challenging things was making all the different departments at the Stockholm municipality work together in the Project Team. Another important organizational arrangement was that the executing group (constructors etc.) was involved in the planning process. From this they had a good understanding from the start concerning the intentions and direction for Hammarby Sjöstad (Bäckström, 2012).

***2. Involve the developers as early as possible***: Bäckström (2012) emphasizes the importance of creating an environmental program as early as possible and involving developers as quickly as possible. This way, the developers do not see the program as a burden but instead as an important starting point for the project. It is also important to get input from the developers regarding their view of the project.

***3. Decide on Environmental Program first, and use as guiding framework:*** The fact that the master plan was decided before the Environmental Program made some of the planning conflict with environmental goals. The detailed plans were not primarily based on the Environmental Program, but rather on the older master plan. Making sure the residences had a view of the lake was given priority, even though the result was larger window areas facing the north, which somewhat impacted the energy efficiency goals. Due to the use of energy-efficient windows, the energy use was still sufficient to achieve the environmental objectives, however this is an example of the conflicts in different development agendas (Svane, 2002).

***4. Difficult goals can encourage innovation:*** The difficult goal of “twice as good” for environmental achievement pushed the Project Team to use innovative methods. Since the environmental objectives were tough, new methods, tools and solutions were needed in the development process (Svane Ö, 2002).

***5. Assign clear responsibilities that are aimed at achieving specific goals:***Bäckström (2012) believes that the motivation of the developers would be even higher if the structure of the organizations managing each goal where more clear. When the goals were designed there was no explanation of who had control over each goal. Early targets, clear objectives, and a structure for how these goals could be monitored and measured is something that Bäckström sees as important to share with the developers for future projects.

**4. A variety of channels (design and financial) must be used to change behaviors and mindsets.**

The growing interest in environmental solutions led to the decision to build an environmental information center – GlashusEtt. The center was designed to consume only 50% of the energy used by a conventional glass building. Smart-house technology adjusts the building’s lighting, ventilation, and heating in line with current levels of activity. GlashusEtt is backed by the Development Administration, Stockholm Water, and Fortum Energy, which is jointly owned by the City of Stockholm. The Traffic and Waste Management Administration is also a co-partner. GlashusEtt was an important part of the major environmental initiative from the City of Stockholm. It functions as an information center for both residents and visitors. Residents can get advice and recommendations on how to create a more environmentally friendly lifestyle and visitors can have a look at the different technologies installed in the building.

Although GlashusEtt serves an important function in providing information to Hammarby’s residents, much of the district’s sustainability comes from embedded design choices. These include small blocks, and strong and accessible public transit which allow residents to not need a car. Financial incentives such as the LIP subsidies helped promote sustainable choices throughout the development process.

**5. Using life-cycle assessments can reveal the true value of high environmental design standards.**

Using life-cycle cost analysis in planning decisions helped to justify the added cost of higher environmental design standards.

*A continuous evaluation process is required to analyze different technologies*. The importance of following up on how different technologies have performed is key to advancing the environmentally friendly solutions.

*It is important to reevaluate, update, and follow-up.* In Hammarby Sjöstad the use of the environmental tools Environmental Load Profile and Life-Cycle Assessmenthave contributed to feedback on the environmental performance of the built environment and have also helped to justify the added upfront cost of higher environmental design standards. New goals based on changes in technology have also been added so that Hammarby’s environmental performance is not stagnant.

Updated models are being created with the experience from Hammarby Sjöstad, in order to enhance and further develop other areas in Stockholm e.g. the Royal Seaport development.

## 7.2 Overcoming Challenges

The Hammarby project is not yet fully completed, but there have been several evaluations of the project. The evaluations have looked at the strengths and weakness of Hammarby’s development strategy. These challenges are outlined here. It is important that local governments and developers learn from mistakes so that they can be fixed or prevented in the future.

Problems and challenges for Hammarby Sjöstad:

* **Full implementation of the environmental program began too late in the planning process**. This resulted in contradictions between different goals in the project, and difficulties in the implementing the environmental program (Rutherford, 2013).
* **There was a conflict of environmental goals with livability preferences:** The planners wanted to achieve ambitious environmental goals but also integrate the housing area into the natural surroundings. Many green spaces and parks were planned and a good view on the Hammarby Lake was important for the design of many buildings. Many windows therefore face the lake but this also has the negative effect that it can affect the temperature in the apartments as heat radiates through the windows. ln summer, temperatures can reach high levels because of poor air circulation in some of the buildings, while the buildings receive little light during winter time (Poldermans, 2005).

An even more important issue concerning the apartment windows is their sheer size. The use of glass in modern apartments is common and large windows are often desired by the inhabitants. However, in an environmentally sustainable housing project, large windows do not fit into the strategy to reduce energy use. Even if the windows were four layers thick to provide adequate insulation, a wall is still up to five times better for conserving heat (Poldermans, 2005).

* **The parking cap has become controversial.** Another important change in the remainder of the project concerns car parking spaces. There have been a number of discussions about the number of parking spaces as well as their location. With the initial environmental goals, reliance on private vehicles was planned to be significantly reduced in Hammarby Sjöstad. The initial car parking standards were very stringent: 0.25 parking spaces per apartment (0.4 if guest and workplace parking were included). However, a new political party took over and the parking situation became politicized. It was soon decided to raise the number of parking places in Hammarby Sjöstad to 0.7 per apartment. This measure was in conflict with the environmental goals to reduce emissions and could also be an obstacle to further raising the mode share for public transit (Poldermans, 2005).
* **Follow-up on the goals has shown a lack of systematic gathering of data and results**. It is also evident that there was nothing written in the environmental program of Hammarby Sjöstad from 1996 that outlined follow-up for evaluating the goals and who should take responsibility for the evaluation (Rutherford, 2013).
1. Susanne Bäckström worked with Hammarby Sjöstad for a period of ten years, from start in 1995 until 2005, so it is a project that lies close to her heart. She was employed at Stockholm Planning Department as vice project leader for the planning of Hammarby Sjöstad where she took part in the generation of concepts and ideas, master planning, detailed planning and design guidelines. Since 2005 Susanne has been chief planning architect at Sweco Architects office in Stockholm. [↑](#footnote-ref-1)