

A large, stylized tree graphic in a light green color, composed of thick, rounded branches and intricate, swirling, vine-like foliage. The tree is positioned on the left side of the page, with its branches extending across the top and right. The background is a solid, light green color. At the bottom of the page, there is a dark green silhouette of a grassy field.

# **Växjö** *the modern wooden city*

Växjö Municipality's Wood Construction Strategy

## Contents

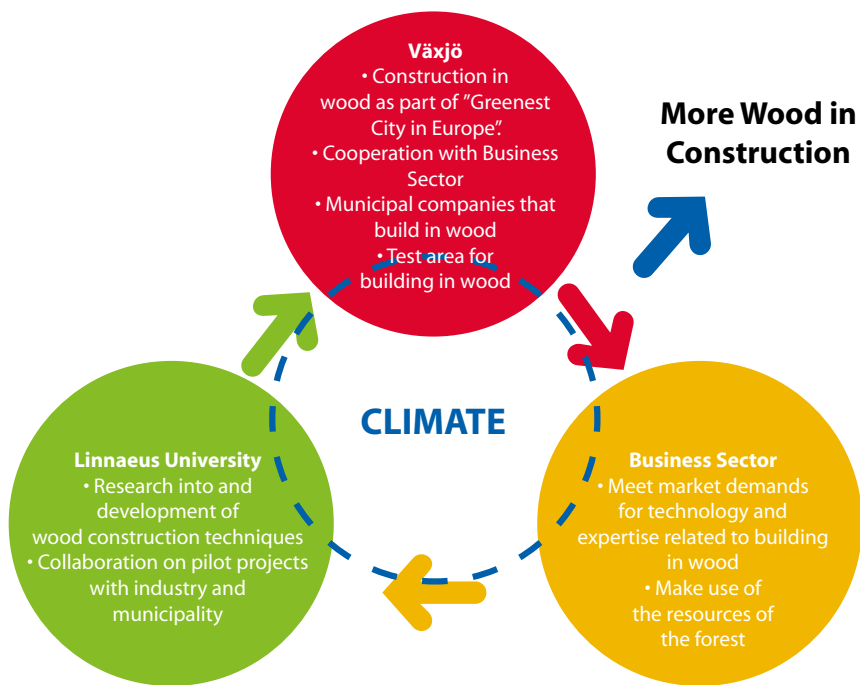
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## Introduction

Växjö Municipality's long-term strategic environmental work has created ripples around the world. The main thrust of efforts to achieve the objective of making Växjö a fossil fuel free city has focused on reducing emissions of fossil carbon dioxide. In "the Greenest City in Europe" it is important to see every initiative that leads to sustainable development in terms of its place in the bigger picture. Växjö's experiences and the city's status as a leading name in modern wood construction techniques play a key role in this context. Växjö showcases several interesting examples of state-of-the art wood construction techniques for both residential properties and other types of buildings.

The city lies at the heart of a large expanse of forests in Småland in southern Sweden. This is a region renowned for the entrepreneurial spirit of its inhabitants in a part of the country with a time-honoured tradition of small-scale wood construction. There is great potential here for a more industrial approach to the production of wooden houses. The role that the region plays for the nation as a whole is underlined by the broad programme of thematic research at Linnaeus University that is related to the forestry sector and the wood and construction industries. Current research trends increasingly focus on the need to see the construction process from a climate perspective. In this respect wood has an important role to play as a renewable construction material.

For many years Växjö has maintained a brisk pace in the construction of new homes. Its prominent position as a regional centre fuels a constant need for new houses. In this respect the actions of the municipal companies over which Växjö Municipal Council has jurisdiction are crucial for the sustainable development of the city. Växjö is committed to taking an active lead in the use of wood in new construction. This focus on wood is a fitting example of the strategic sustainability work in the Greenest City in Europe. The strategy aims to promote the use of wood in new building projects, not only for the municipal companies but for all the other players in the wood and construction industries as well.



*Close cooperation between Växjö Municipality, academic institutions, trade and industry is essential in order to realise ambitions of increasing the use of wood in modern construction projects. The climate issue is a strong mutual interest that links these different players. Close cooperation creates new opportunities for industry, for example by stimulating the development of new products and techniques.*

### **The current position:**

Växjö Municipality's new wood construction strategy is based on the experiences gained since the Municipal Council adopted its "More Wood in Construction" strategy in 2005. Before the new wood construction strategy was formulated, a survey was conducted in the form of interviews with some 30 or so individuals who, in their various different capacities, have taken part in the work that has been done in the city since 2005 to promote the use of wood in construction activities. This survey laid the foundations for the next stage in the process and is included as an annex to the strategy. The following are some of the conclusions that have been drawn:

- ▶ There needs to be broader based support for the strategy within the organisation, and responsibilities ought to be more clearly assigned.
- ▶ There needs to be a clearer focus on business sector.
- ▶ The "Triple Helix Model" needs to be developed further.
- ▶ More areas of R&D need to be inspired to become involved in issues relating to wood construction.

## Targets

- ▶ A fossil fuel free Våxjö (Våxjö Municipality’s Environmental Programme, adopted by the Municipal Council):
  - We will stop using fossil fuels
  - We will make efficient use of energy
  
- ▶ By 2020 the province of Småland will be a leader among Europe’s wood regions (“Think Wood for a Sustainable Småland”, Regional strategy for timber and wood-related industries, adopted by the three regional development councils in Småland in 2012)
  
- ▶ Våxjö Municipality and the city’s municipal companies (Executive Board §317/2012):
  - By 2015 25% of new builds will be wood-based
  - By 2020 50% of new builds will be wood-based

## Definitions

In order for a construction to meet the criteria for a “wooden building”, wood-based materials must constitute the majority of the frame. The Municipal Executive Board’s objective of “wood-based construction” is, therefore, defined accordingly.

## Challenges

There are numerous challenges associated with the construction of wooden buildings. These challenges are best met through further research and more pilot projects, but also by a general increase in the number of wooden buildings that are erected.

- |                              |   |
|------------------------------|---|
| <b>Life cycle costs:</b>     | The investment cost of new projects must be based on the production, user and disassembly phases. Tools need to be developed for calculating life cycle costs for wooden buildings. |
| <b>Construction costs:</b>   | Limited competition inevitably leads to the risk of higher construction costs, particularly for multi-storey, multi-occupancy properties.   |
| <b>Maintenance costs:</b>    | At present information about operating and maintenance costs is limited, particularly for buildings with wooden façades.  |
| <b>Sound and vibrations:</b> | In order to make wood competitive, it is important to solve the problem of impact noise that travels between the floors in a building, especially in large office blocks.           |



## ***Climate and energy – Why is wood important from a climate perspective?***

### **Why:**

- ▶ Research into life cycle assessments shows that a building with a wooden frame uses less primary energy and has a lower carbon balance than a corresponding building constructed with traditional materials.
- ▶ Wooden buildings also consume less energy and produce lower carbon dioxide emissions during the production phase than traditionally constructed buildings.
- ▶ During the time that a building is in use a difference in construction materials does not translate into any significant difference in the building's energy needs. What is important, however, is how the building is heated. District heating that is produced together with electricity in cogeneration plants is the most resource-efficient means of heating as it uses least primary energy.
- ▶ Research also demonstrates that wooden materials have advantages over traditional construction materials when buildings are dismantled or disassembled.
- ▶ From a fire safety point of view modern wooden buildings can be designed and erected to be safe.

### **Strategies**

- ▶ Växjö Municipality will collaborate with Linnaeus University to compile more information about the properties and characteristics of wooden materials and the most appropriate form of heating wooden buildings.
- ▶ Växjö Municipality will make every effort to simplify the choice of the optimum form of heating for each respective type of building, taking into account the building's physical location and the types of buildings in its immediate surroundings.
- ▶ Växjö Municipality and the city's municipal companies will commission projects that combine wood materials with energy-efficient construction solutions.



## ***Business Sector– Why is wood important from the perspective of business sector?***

### **Why:**

- ▶ Växjö is at the heart of a region of extensive forests. For many years wood and timber have laid the foundations for local business sector, as indeed they still do. Today forestry and the wood industry are two of the region's most important commercial activities. Growth in the wood industry and other industries indirectly linked to it generates new employment opportunities in and around Växjö.
- ▶ Approximately 5,000 people in Kronoberg County work in this sector of industry. Most of them are employed outside the main urban areas and are engaged in the manufacture of forest harvesters, wood and timber processing machinery, timber, wooden houses for single family homes, panelised systems and elements and furniture.
- ▶ Improving conditions for the wood industry, strengthening industry competence and making the industry more competitive will boost opportunities for growth, pave the way for value-added products and services (leading market positions), stimulate company start-ups and attract new establishments.
- ▶ Enhancing the Linnaeus University as a center excellence within the forest/wood sector and strengthening the Linnaeus University position as a potential University of Technology.

### **Strategies**

- ▶ To liaise closely with “Wood Region Småland” and support its action programme.
- ▶ To conduct seminars, arrange meetings with individual companies and participate in outreach activities.
- ▶ To work with other key players in the region, such as Vida, Södra, IKEA, the Centre for Building and Living with Wood (CBBT), the Swedish Trade and Employers’ Association of the Wood Processing and Furniture Industry (TMF), the Swedish Construction Federation, the Swedish Forest Industries Federation and Lammhults Design Group.
- ▶ To contact companies that are potential candidates for establishing operations in the Växjö region.

## **What can Väjö Municipality do to pave the way for an increased use of wood in construction?**

### **Why?**

Väjö Municipality and the city's municipal companies have a number of tools at their disposal to stimulate and develop construction in wood. The rules and regulations laid down by the municipal authorities must be clear for all those involved. As a landowner Väjö Municipality is able to impose criteria to control what is produced and the quality of the end result. Proper use of the powers vested in Väjö Municipality will lead to increased freedom of action and freedom to create added value in both new developments and in the city's existing residential, commercial and industrial areas. In order to support positive trends in wood construction the municipality needs to create test environments in the form of sites where all or part of the land is reserved for wooden buildings. Together these areas should offer the market a broad spectrum of different types of buildings in wood.

Municipal property companies are responsible for much of the new housing and other construction that takes place in Väjö. Good cooperation with the other players in the market and municipal companies that take an active role are essential to improve the prospects for building in wood and to develop the industry. Väjö Municipality needs to invite those concerned to engage in a dialogue about the increased use of wood in construction projects, and to inspire them through collaborative ventures, networks and the Väjösamtalet.

### **Strategies**

- ▶ Väjö Municipality will complete the Välle Broar project – a modern city district built from wood – and take an active part in singling out specific areas (for example, Torparängen) for construction in wood.
- ▶ Väjö Municipality will expand and develop the use of wood in construction by taking the lead in engaging construction companies, architects, contractors and researchers in a dialogue at an early stage in the planning process.
- ▶ Väjö Municipality will exercise its land allocation powers to help promote the use of wood in construction activities in the municipality.
- ▶ Väjö Municipality will work with regional initiatives and in national and international networks to market the unique potential of building in wood.
- ▶ Väjö Municipality will use the “Väjösamtalet” as a means of giving all those who are concerned an opportunity to voice their views on the subject of building in wood.
- ▶ Väjö Municipality will test the performance and properties of wood by using it in municipal facilities where appropriate (children's playgrounds, bridges, etc.).
- ▶ Väjö Municipality will build up competence about life cycle assessments and wood in order to be able to compare the cost of wood and other alternatives with greater accuracy.
- ▶ VKAB (the municipal property and energy company) will conduct a continuous dialogue about which projects are to be realised by building in wood.
- ▶ VKAB will make funds available to support development projects related to building in wood.
- ▶ Väjö Municipality and the city's municipal companies will collaborate with Linnaeus University and other educational institutions to set up new pilot projects to carry out research into building in wood.



## Responsibility and organisation

### Wood Construction Council

Coordinating all of the various efforts linked to Växjö Municipality's commitment to increase the use of wood in construction is important for three main reasons: to generate the resources and enthusiasm needed to implement the Wood Construction Strategy; to make sure that the necessary information is spread internally and externally; and to act with one voice when dealing with industry and commerce, construction companies, contractors and universities. For this reason a Wood Construction Council should be established with representatives from the various municipal departments and companies. Each representative is assigned an area of responsibility within which he/she is accountable for driving the strategy forward.

### The Wood Construction Council will represent Växjö Municipality and the city's municipal companies in various networks and collaborations:

- ▶ Centre for Building and Living with Wood (CBBT)
- ▶ The Wooden City Network
- ▶ Nordic Wooden Cities
- ▶ Wood Region Småland
- ▶ "City of Wood 2013–2014": a joint declaration of intent from the municipalities of Växjö and Skellefteå
- ▶ "Good inexpensive homes for small households": a joint declaration of intent from the municipalities of Växjö, Kalmar and Jönköping
- ▶ Växjösamtalet

### The Wood Construction Council's representatives and their areas of responsibility:

#### Executive Board:

##### *Head of Strategic Planning*

Coordinates the work of Växjö Municipal Council and the city's municipal companies in issues relating to building in wood. Responsible for relations with construction companies and contractors, land allocation issues and land sales.

##### *Head of Economic Development:*

Responsible for the expansion of local business sector in response to increased building in wood.

##### *Head of Business Support:*

Responsible for the development of the Business Sector linked to increased use of wood in construction projects.

#### Town & Country Planning Board:

##### *City Architect:*

Responsible for architectural and aesthetic issues linked to building in wood.

#### Technical Services Board:

##### *Technical Manager:*

Responsible for the use of wood in the city's technical infrastructure.

#### VKAB

Responsible for coordinating the activities of the municipal companies so that municipal ambitions with regard to building in wood can be achieved.

## *Evaluation and follow-up*

An annual follow-up of the Wood Construction Strategy is made within the “Building and Living” objective that constitutes part of the governance model for Väckjö Municipality and the city’s municipal companies. The objective linked to the municipal companies’ construction activities is followed up on a continuous basis over a three-year period. It is recommended that the strategy is reviewed every three years. Responsibility for evaluating and updating the Wood Construction Strategy rests with the Wood Construction Council. The Wood Construction Strategy is approved and adopted by the Municipal Council.



