



Växjö – Europe's First Modern Wooden City

With sustainability as the basis of construction



Växjö Municipality's environmental and climate work is well-known, both nationally and internationally. The main thrust of efforts of the strategic environmental work is focused on reducing emissions of carbon dioxide. What is important about Växjö Municipality's environmental and sustainability work is to see every initiative in the environmental area in terms of its place as part of the bigger picture. Wood construction in Växjö, with its well-documented climate benefits, is a part of this bigger picture.

Working to ensure that the construction process will show low climate emissions involves the establishment of a new holistic perspective – a lifecycle perspective – taking account of all of the stages of the process from resource extraction, manufacture and use to demolition and waste management of homes and other buildings. Lower energy performance in our completed buildings is not enough if we do not also create climate-optimised production. A commitment to modern wooden constructions is therefore completely in line with Växjö's strategic environmental work and Växjö's work with Agenda 2030.

Traditional wood-based construction systems have been natural for us for generations. Now it is primarily system benefits which are stronger reasons for continued efforts. This involves renewing construction through an industrial rational repetitive production of higher quality, climate-optimised processes both up to and after construction, shorter building processes with reduced disruptions to adjacent buildings and less traffic, together with providing a better indoor climate in homes and buildings.

More wooden constructions also lead to more actors in the building sector and increased competition. This results in lower costs and price development for planning, building and housing. A particularly welcome element as for a long period of time we faced weak productivity and construction prices rising substantially more than other industrial sectors. This also pushes other construction methods and construction material systems to become more environmentally-friendly.

Not just an environmental issue

The main reason for using wood is therefore sustainability; the material as such is non-fossil, circular, renewable, and works as a carbon sink during the lifespan of the building. There are of course more reasons why Växjö chooses to use wood as a construction material. Some of these are listed below.

Objectively

- Simple material that is easy to process, repair and transport
- Enables extensions to existing buildings or construction where land conditions so require
- Manufacturing with high precision and opportunities for repetitive effects
- Industrial production to achieve more efficient logistical and building processes, increased resource efficiency and fewer construction errors, as well as creating new types of jobs in rural areas.
- Local raw materials where all constituent parts of the wood are used and creates jobs and provides manufacture of a number of different timber products, as well as production of energy (electricity, heating and cooling)
- Develops the existing commercial sector and creates conditions for new business/products/innovations, more players and local establishments.
- Creates cutting edge research

Subjectively

- Can be used to reduce sound/noise
- Can lead to better health and increased well-being
- Perceived by many as warm and smooth to the touch and smells pleasant
- Perceived by many as beautiful and able to provide more attractive living environments

Växjö a city with engagement and good architecture

A combination of function, usability, economic use of natural resources, good design, purpose-adapted technology and cost effectiveness results in good architecture. According to the government's bill, *Policy for designed living environments*, submitted to the

government on 22.2.2018, good architecture, form and design has a long lifetime. Good architecture, according to the bill, is also a matter of high social awareness, that it is developed with insight into the human need for a good living environment and the wish to be involved and influence.

For good architecture to be realised, engagement, consensus and a good cooperation between architects, construction companies, contractors and civil society are required. Engagement in wood constructions creates common platforms, consensus and good cooperation. Wood construction in Växjö is therefore one path towards engagement. In this way, Växjö's wood construction also provides the conditions and foundation for architecture.

Starting point

The starting point for the *Wood Building Strategy 2018* (Växjö - Europe's first modern wooden city) is the experiences gained through the strategy *More Wood in Construction 2005 and Växjö – The modern wooden city 2013*, both adopted by the Växjö Municipal Council in the years concerned.

The strategy will also follow other policy documents, target descriptions and programmes. Wood construction should be seen as a part of the target of a fossil-free Växjö in 2030, adopted by the Municipal Council in 2014, as well as the Energy Plan, adopted in 2016 about efficient energy use.

It is also a part of the *Regional strategy for timber and wood-related industries in Småland* which was adopted by three regional development committees in 2012 and is closely associated with the VinnVäxt project Smart Housing Småland.

It will also clarify definitions, targets, measurement methods, as well as internal roles and responsibilities.

This strategy should be seen as a first step towards a more technology and material neutral construction strategy. This could be seen as a first step towards a more climate-orientated construction strategy.

Stimulant for increased use of wood

The strategy will increase the use of wood in construction for municipal companies, but will also stimulate private players to carry out more construction in wood. The fundamental principle is that the strategy will increase the use of wood where it is possible and appropriate to replace more finite materials.

Definition, targets and indicators

Definition

A building is a wooden building when wood-based materials constitute the majority of the load bearing frame-work.

General targets:

- A fossil fuel free Väjö (Väjö Municipality's Environmental Programme, adopted by Väjö Municipal Council in 2014)
- We will end use of fossil fuel
- We will make efficient use of energy
- *Regional strategy for the timber and wood-related industries in Småland* (adopted by the three regional development councils in 2012)
- By 2020, Småland will be a wood leading region in Europe

Wood construction targets:

The basic principle is that Väjö Municipality's own operations will test wood in all municipal premises and homes, as well as in the municipal outdoor and indoor built environments. Väjö Municipal Group's objective to increase wood construction will mainly take place by:

- Until 2020, 50 percent of all new construction will be wood-based. It is positive if some kind of reporting on the climate impact can be included to building projects before 2020
- From 2020, 50 percent of all new construction will be wood-based and should also include some kind of reporting on climate impact (a climate declaration)
- From 2022, priority will be given to new construction with the least climate impact from frames and load bearing parts (by using LCA/EPD, or similar)
- From 2025, priority shall be given to new construction with

the least climate impact from the whole construction (by using LCA/EPD, or similar)

The above targets are measured by counting the year's completed newly-produced homes and buildings, construction projects, with timber frames by the total number of completed, newly-produced homes and buildings during the year. Construction projects do not include pavilions, environmental housing, renovations, whereas additions and extensions can be included. The aim therefore is to increase the use of wood, but also learn and develop through each new project made of wood. The proportion of wooden buildings should increase over the years and be measured as a trend change. Thus, statistics are compiled for each year's wood constructions and are aggregated during the year and measured over the time period from 2020. The targets will be defined in more detail later in Väjö Municipality's Energy Plan and Sustainability Programme.

Internal measurements and indicators:

In addition to the targets, and for a clearer picture of the relationship between the use of wood and other building materials, the following will also be measured:

- *Total scope (in area) of wooden construction in the municipal Group - Completed area* (for homes in BOA/for premises in BRA) of wooden buildings during the year in the municipal group/Total area (BOA/BRA) completed during the year in the municipal group.
- *Impact on the private construction market* - Granted start requests before multi-occupancy properties and timber-frame buildings are measured in comparison with the total number of start requests for multi-occupancy properties and premises.

Strategies concerning sustainability, the business sector and academic institutions/research for Väjö Municipal Group

This strategy will support Väjö's sustainability and climate work, the research which is mainly conducted at Linnaeus University in the area, as well as stimulate and support initiatives in the business sector in order to increase industrial production and create more efficient construction.

- Växjö Municipal Group will test wood as a building material for all new municipal buildings.
- Växjö Municipality will use the selling municipal land as an instrument for increasing wood as a construction material.
- Växjö Municipality will in the long term monitor wood construction projects for increased quality and to learn from one another within the group's companies.
- Växjö Municipal Group will conduct an active dialogue with researchers, architects, construction companies and contractors for continued development of wood construction.
- Växjö Municipality will be active in the work and participate in networks relating to good architecture, not least in the perspective of industrial house production.
- Växjö Municipality will stimulate, support and develop the business sector related to buildings made of wood.
- Växjö Municipality will strengthen Linnaeus University as a centre of wood research and wood expertise.
- Växjö Municipal Group will develop the expertise related to climate calculations and climate declarations in order to be better able to compare buildings from a life cycle perspective and form a special working group for this.
- Växjö Municipal Group will explore the potential for extensions made of wood in existing stock
- Växjö Municipal Group will follow the research related to wood and health.
- Växjö Municipal Group will support the cooperation with academic institutions and the business sector in the areas in which the municipal group sees its biggest challenges.
- Växjö Municipality will be active in relevant networks, in activities, conferences and events relating to wood construction as well as in study visits. The latter in close cooperation with the tourist industry.
- Växjö will strengthen its wood construction position and market itself as a modern wooden city.
- Växjö Municipality will pursue and increase the designated wood construction area Välle Broar.
- Växjö Municipality will annually award a wood construction prize.

Organisation, roles and responsibilities

To maintain and develop Växjö's wood construction engagement and create strength to implement the wooden construction strategy increased coordination, transparency and the dissemination of information and knowledge are important. This applies both internally in the municipality and externally. For this a special Council for Urban Planning has been established.

The municipal manager/CEO for the parent company is responsible for implementation and carrying through this strategy. Responsibility for dialogue with construction managers and contractors, land surveys and land sales, as well as responsibility for commercial development linked to wooden buildings and responsibility for the application of wood in the municipality's technical infrastructure is delegated to the relevant administrations and companies.

Evaluation and follow-up

A follow-up of the wood construction strategy is carried out annually in Växjö Municipal Group's control model. The Municipal Executive Board is responsible for the monitoring of the goals of this strategy.

The wood construction strategy was adopted by the municipal council.

¹ EPD (Environmental Product Declaration) is a system for describing environmental characteristics of products and services from a life cycle perspective - an environmental product declaration.

LCA (Life Cycle Assessment) is a method for attaining a complete picture of the environmental impact during a product's entire life cycle.

² BOA is Living Area. The area of the building used for residence.

BRA is the usage area. The usage area is the area of all stories and is limited by the enclosing building parts inside.

BOA and BRA are standards used to make area and volume calculations in a building.





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