



**Climate Smart  
Forest Economy  
Program**



## *BARCELONA – BUILDING SOCIAL HOUSING OF THE FUTURE WITH TIMBER*

The Barcelona social housing tower is a competition winning building by architect Daniel Ibañez and funded by the City of Barcelona. The project provides an opportunity to rethink social housing with an emphasis on creating a climate-smart, high quality living environment.

The new 9-story tower will contain 40 units and provide housing for 120 people. It will be one of the tallest timber buildings in Spain and the tallest social housing tower built with wood in Spain.

Barcelona is a city on the coast of the northeastern Spain and the capital of the autonomous community of Catalonia. The province of Barcelona is home to 4.8 million people and the fifth most populous area in the European Union. There is demand for increased social housing in Barcelona and demand for social housing is growing across almost all European countries.

Barcelona is known for developing and implementing progressive climate policies. One example is the urban mobility concept of superblocks (‘Superillies’ in Catalan), where pedestrians and cyclists have priority over the other mobility options.



## 'WHAT THE CITY DID TO ENABLE THIS'



The City of Barcelona created enabling conditions which made timber a more likely material choice for the building

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### DESIGN SELECTION PROCESS

The city of Barcelona is eager to support lower embodied carbon building techniques, particularly sustainable mass timber. The competition they ran for designs for this building more heavily weighted low embodied carbon compared to previous ones. The criteria were:



Architectural innovation

30%



Low embodied carbon

30%



Speed of assembly

30%



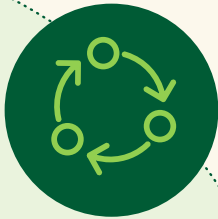
Cost

10%

2

### FOREST CITY OF 2022

Barcelona is the European Forest City 2022. The award to Barcelona recognised the management of the city and metropolitan area which includes conservation, protection, and development of forest areas, as well as research into a new urban model that promotes nature-based solutions. In that framework, the city of Barcelona and its metropolitan area will encourage public participation in activities related to the topic of reflection: Bioeconomy for cities. How can biocities transform the way we live on the planet?



A 'FUTURE-PROOF' BARCELONA

As well as constructing the building from timber, the design also incorporates solar panels and greenhouses on the roof to demonstrate how buildings of the future can also be used to produce energy and food as well as provide housing.



QUALITY SOCIAL HOUSING

Wood can be used to create healthier living environments. Wood-based materials can reduce the amount of volatile organic compounds (VOCs) from interior spaces. Wood, like other materials can emit VOCs, but a 2013 study showed that wood-based materials such as MDF, OSB and particle board adsorb at least 50% of these compounds.



MINIMAL DISRUPTION TO THE URBAN ENVIRONMENT

Wooden buildings can be fabricated offsite allowing for quick assembly onsite. This also comes with additional benefits of reduced noise, pollution and accidents on site during construction. The reduction of deliveries to site can also reduce congestion in cities such as Barcelona.

...could result in a substantial climate positive impact



**SINK:** After 50 years (building' lifespan) forests can accumulate 414 to 828 tCO<sub>2</sub>e

**STORAGE:** The timber tower will store ~ 252 tCO<sub>2</sub>e over 50 years

**SUBSTITUTION:** Substituting timber for concrete in walls and slabs will reduce carbon emissions by 1.4 and 2.1 times (176 tCO<sub>2</sub>e\*)

Notes: \* estimates of carbon substituted based on the mean - difference between emissions from hybrid homes and alternative of concrete and steel  
Source(s): Adsorbing VOC's Niedermayer, Fürhapper, Nagl, Polleres und Schober, 2013: VOC sorption and diffusion behavior of building materials Fell D., 2010: Wood In the Human Environment: Restorative Properties Of Wood In The Built Indoor Environment. Vancouver: Faculty of Graduate Studies, University of British Columbia