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What do citizens think about living in multistorey wooden buildings?

NOFOBE – **No**rdic **Fo**restbased sector in the **B**io**E**conomy

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Preamble:

Building with wood is gaining global interest as one possibility to decrease adverse environmental impacts caused by the usage of fossil-based construction materials, especially in the urban areas. Abreast with the environmental benefits, multi-storey wood construction brings opportunities to enhance the well-being of end users through pleasant living and good working environments. To strengthen the operations of the Nordic forest-based value-chains in the context of sustainable urban planning initiatives, NOFOBE therefore aimed to provide key information on public perceptions of multi-storey wood building. Such new insights are crucial for a successful business development of a customer oriented and sustainable wood construction sector. The project has explored citizens' knowledge, beliefs and views related to multi-storey wood buildings in seven selected European countries based on two large-scale online surveys (~7 000 observations in each).

Main text:

The main aim of the NOFOBE network-project was to strengthen the future market position of the Nordic forest-based sector in the context of BioEconomy through multidisciplinary research and education collaboration connected to multi-storey wood building (MSWB). The research was concentrated to analyse citizens' knowledge and perceptions related to multi-storey wood buildings in seven European countries, while educational efforts were targeted at post-graduate level in the Nordic countries.

In what way is your subject relevant right now?

Multi-storey wooden buildings are proposed as a potentially favourable means for reducing the climate impact of the construction sectors energy use. In addition, the use of wood-based building solutions store carbon in the building mass. Because of these possibilities for both environmental and economic benefits, multi-storey wood buildings have received considerable attention and interest among architects, building-engineers, wood industry businesses as well as among the public.

However, many factors may contribute to limited substitution of traditional concrete-based on-site building technologies with more industrialized wood-based construction processes, characterized by pre-fabrication and off-site production. These may include both current regulatory frameworks, lock-in of capital in the sector and habits among professional communities, often called path-dependence.

So far, research has predominantly focused on examining the perceptions of construction professionals to identify means of breaking the path dependency. From the market development point of view, such information has predominantly added understanding of the supply factors in the markets. However, since market diffusion of MSWB also depends on the development of the demand, this project proposed using citizens' perceptions about the use of wood in multi-storey buildings to inform professional decision makers.

In what way is your subject relevant in a Nordic perspective?

Product development of engineered wood products have enabled substituting fossil-based building materials with industrial timber-based solutions in MSWBs especially in the 2000s. Forest-based value-chains have traditionally been important for rural economies in the Nordic countries. Thus, new knowledge on the market opportunities in the MSWB markets represent a prominent business opportunity for the firms in the forest-based value-chains. Given the forest resource trends within and building cultures of these countries, a forecast study on the potential for MSWB to penetrate markets by 2030 suggests that the likelihood is high in Finland, Norway, and Sweden (Hurmekoski et al. 2015).

Conclusions and Policy implications

In all, the results showed the most important factors to influence citizens' perceptions of the attractiveness of the MSWB to be (i) vulnerability to fire, (ii) material solidity and durability, (iii) healthy indoor environment, and (iv) vulnerability to moisture. In their communication, building professionals should focus on providing understandable, truthful information that addresses positive aspects for the citizens on the MSWB such as naturalness, visual appearance, and a healthy indoor environment. It is also worthwhile to correct misunderstandings related to the use of wood as a building material with up-to-date information and examples on the fire performance of MSWB.

Although environmental benefits of the MSWB have been widely discussed among building professionals and they appear to represent a market strength, they have yet to be further acknowledged by citizens as key benefits of MWSB. Furthermore, cross-country cultural differences, such as traditions and availability of domestic raw materials and general housing preferences, should be acknowledged as factors to affect citizen views on MSWB. For example, experience and knowledge dominated higher preferences toward wood over traditional materials, while negative attitudes related to forest logging may decrease the desirability of MSWB in the eyes of the citizens. In all, a concerted effort to better inform the public on the long-lived carbon storage properties of wooden building materials might be necessary to increase its use in European residential construction and retrofitting.