



# PROCEEDINGS

5th International Conference  
Forum Wood Building Baltic  
26-28 February 2024  
Tallinn, Estonia

FORUM  
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BALTIC



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# PROCEEDINGS OF THE 5TH FORUM WOOD BUILDING BALTIC 2024

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FWBB 2024 conference main visual by: Fatima-Ezzahra Khammas, Laura Martens (EKA)

ISBN 978-9916-80-117-8

ISBN 978-9916-80-118-5 (pdf)

Tallinna Tehnikaülikooli kirjastus

# ORGANISERS

In Estonia, **FORUM HOLZBAU** cooperates with the **Tallinn University of Technology** and the **Estonian Academy of Arts**.



Forum Wood Building 2024 is supported by the Research and development program **LIFE IP BuildEST**, the **City of Tallinn** and the **Estonian Woodhouse Association**.



# FORUM WOOD BUILDING BALTIC

Forum Wood Building Baltic is the main conference for architecture and engineering topics of wooden buildings: design for manufacturing and assembly, building physics, energy performance, fire safety etc. in the countries around Baltic Sea. The conference is a part of the international organization Forum Holzbau.

The overarching theme of Forum Wood Building Baltic 2024 is integrated design where different disciplines come together with their own possibilities and limitations to cooperate and push the boundaries of innovation in timber construction.

**FORUM HOLZBAU** was established 25 years ago as platform of leading universities for knowledge and technology transfer in timber construction and achieves the goal through its pan-European program of conferences and exhibitions.

Previous Forum Wood Building Baltic conferences:

Tallinn 27.02-1.03.2019

Riia 16-16.05.2021

Riia 9-11.05.2022

Vilnius 30-31.03.2023

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## KEYNOTE SESSION

**Role of New European Bauhaus in the transformation of timber architecture for a sustainable future**

Anna Sandak, Eva Prelovšek Niemela, Andreja Kutnar

**Designing material genealogies: the case of wood**

Aris Kafantaris

**Open-Source, Low-Code, No-Code: Digitalization of Renovation Processes**

Ergo Pikas, Lauri Koskela, Targo Kalamees, Elisa Iliste, Joosep Viik

# Role of New European Bauhaus in the transformation of timber architecture for a sustainable future

Anna Sandak <sup>1,2</sup>, Eva Prelovšek Niemela <sup>1</sup>, Andreja Kutnar <sup>1,2</sup>

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## Summary

Europe has the ambition to become the world's first climate-neutral continent. The European Union has implemented a range of policies to reduce net greenhouse gas (GHG) emissions by at least 55% by 2030, compared to 1990 levels. With around 40% of GHG emissions from building operations and an additional 10-20% from embodied emissions, the construction ecosystem is one of the major contributors to the climate crisis, making it an ideal sector for transformation.

The New European Bauhaus (NEB) is a creative initiative that connects the European Green Deal to our daily lives and living spaces. NEB is an inspired movement to facilitate and steer the transformation of our societies along three inseparable values: sustainability (from climate goals to circularity, zero pollution, biodiversity), aesthetics (quality of experience and style beyond functionality), and inclusion (from valuing diversity to securing accessibility and affordability).

At InnoRenew CoE we were aware of the necessity for change when we started designing our building in 2017. With an ambition to contribute towards the transformation of the built environment, we constructed the biggest wooden building in Slovenia in 2021, which was recognized as a best practice of the New European Bauhaus. Our building is a research object on its own. It provides new and pertinent information about the performance of timber buildings in general, and specifically in Slovenia's sub-Mediterranean coastal climate where events like earthquakes and strong winds must be considered. The exemplary characteristics of the three core values of NEB and the three working principles of the NEB implemented by our building can be summarized:

- Sustainability: Use of timber as the main building material; restorative, environmental, and ergonomic design (REED); data and new knowledge on the performance of timber buildings; 3,000 trees planted to offset the carbon footprint of the construction.
- Aesthetics and quality of experience: Use of natural light, air quality control, acoustic elements, open spaces for social interaction and physical movement, views to the outdoors and of the building interior, outdoor areas with particular microclimatic zones, green roofs, terraces where employees can relax; in addition, it provides a habitat for numerous insects and birds.
- Inclusion: Designing the largest timber building in Slovenia was a complex task that went beyond just designing a functional building. It has been clearly demonstrated that the physical transformation of a place defined as post-industrial can bring in a new spirit and sociotechnical development. The project has ambitiously brought new knowledge to the local community and the nation in general. By creating an engaging new science hub that enhances collaboration between research institutes, universities, private companies, vocational trainers, schools, and the local, national, and international community, InnoRenew CoE has become a significant landmark in Slovenia.
- Participatory process: While planning the building we used the process of co-creation with our staff, our project partners, and professionals at the University of Primorska. A broad number of professionals helped to develop the concept of the building that includes diverse laboratories and conference premises. During the planning phase, we

established a collaboration with the Municipality of Izola, which became a Living Lab golden member. Building on this connection, we were able to connect with the local community and collaborate on several projects.

- Multi-level engagement: We collaborated horizontally with national and international partners on the development of the building project and the use of ERDF funding. The major partners are the University of Primorska, the Slovenian National Building and Civil Engineering Institute, the Institute of the Republic of Slovenia for the Protection of Cultural Heritage, and Fraunhofer WKI. Stakeholder representatives from across the globe served as the institute's Council of Experts. The added value of this collaboration was an international and multidisciplinary approach that opened the design of the building and the organization's operations and services to broader perspectives.
- Transdisciplinary approach: At InnoRenew CoE architects, engineering professionals, researchers, material scientists, health researchers, art historians, community members, and woodworkers all come together. For instance, our biologists worked together with the architects in the selection of optimal bio-based coating systems and effective treatments for exterior wood materials.

The innovative character of the building and the InnoRenew CoE project was built around three main attributes. First, this building is InnoRenew CoE's own sustainable and healthy building design paradigm, where REED was used from the beginning of the project. Second, the building is both the result of state-of-the-art and ongoing research and is itself a research object. Third, the building is the largest wooden building in Slovenia and an attraction point for scientists, professionals, students, pupils, and the public regarding the multidisciplinary exchange of knowledge in the field of renewable materials and healthy buildings. InnoRenew CoE has increased the quality and value of renewable material education in the region by establishing a new PhD program "Renewable Material for Healthy Built Environment", at the University of Primorska. We coordinate the working group on Education and Vocational Training in the woodPoP initiative. Additionally, we publish articles about the research we conduct, which aims to increase the acceptance of renewable materials among the wider public and provides an important basis for future research and development activities in the field.

The twin green and digital transformation of the construction ecosystem is an enormous opportunity to create sustainable employment in urban and rural areas. The significant bottleneck for the transformation of the construction ecosystem is the massive need for skilled workers and educated professionals at all levels, since more than three-quarters of companies in the EU report difficulties in finding workers with the required proficiencies. Acceleration of upskilling and reskilling the current and future workforce is necessary to transition to a carbon-neutral, resilient, domestic sustainable construction sector in Europe. To address this issue, the EC President announced the New European Bauhaus Academy (NEBA) as the principal flagship of the NEB. We are proud that InnoRenew CoE is the headquarters of the NEB Academy Pioneer Hub for Sustainable Environments with Renewable Materials.

**Key words:** New European Bauhaus; aesthetics; sustainability; inclusion; construction sector; timber architecture; NEB academy

## Acknowledgements

The authors acknowledge the European Commission for funding the InnoRenew project (Grant Agreement #739574) under the Horizon 2020 Widespread-Teaming program and the Republic of Slovenia (investment funding of the Republic of Slovenia and the European Regional Development Fund) and the Slovenian Research and Innovation Agency ARIS for funding project J4-3087, J4-50132, and IO-0035. Furthermore, the authors acknowledge European Commission for funding NEBA Alliance project (#101160532-NEBA Alliance-HORIZON-JU-CBE-2023-2), LIFE Be-WoodEN project (#101148077 — LIFE23-PRE-IT-LIFE BE-WoodEN) and ARCHI-SKIN (#101044468 ERC CoG).