

TFK programme, funded projects 2025

Project title: Bio-Design for Low Carbon Architecture	
Coordinator Aalto University Magda Posani, magda.posani@aalto.fi	The Bio-Design for Low Carbon Architecture (Bio-LCArch) project is a collaborative initiative between Aalto University in Finland and Beijing Jiaotong University in China, geared toward demonstrating how bio-based materials can facilitate the construction industry's transition to net-zero emissions. By showcasing their effective use in achieving carbon reduction goals and advancing sustainable construction practices, the project seeks to cultivate critical thinking and foster a positive attitude toward sustainability in the next generation of architects and engineers. It equips students with the skills necessary to shift from traditional high-carbon methods to innovative low-carbon approaches, placing a strong emphasis on environmental sustainability, the use of natural materials, and the promotion of occupant well-being. The initiative focuses on developing courses, teaching materials, and strategic educational methodologies designed to further this vision at both universities. It strengthens students' understanding of sustainability issues and enhances their expertise in Life Cycle Analyses and Comfort-Energy efficiency optimization, providing them with the skills required to apply bio-based materials effectively in construction. Through this comprehensive learning experience, students are positioned as valuable assets in the workforce, prepared to drive the decarbonization of the construction industry throughout their careers. Core activities and results include: (I) Development of Teaching Materials and Twin Courses: The project will create modular teaching packages centered on bioconstruction and carbon-neutral design principles, as well as comfort and energy-efficiency. The packages will be made available open access on an online platform, serving as a hub for knowledge exchange for students and professionals interested in improving their knowledge on environmentally responsible construction practices. The modular teaching packages will be also used to develop two twin courses (2-5 ECTS each), tailored to the academic needs and strategic focuses of each HEI. (II) International Mobility: Facilitating mobility for faculty and students, the project promotes cross-cultural dialogue and advances international partnerships in sustainable construction practices. These exchanges provide opportunities to test and refine teaching methods in a multicultural environment, enriching participants' educational experiences and intercultural competence. (III) Experimentation with Teaching Methods: By implementing and evaluating diverse teaching methodologies—such as hybrid learning, interactive online activities, and hands-on workshops—the project aims to improve educational practices within international, multicultural contexts. This approach allows for continuous feedback collection,
Partners Beijing Jiaotong University	

	refinement and adaptation of teaching strategies to maximize their effectiveness in the two different cultural settings of the HEIs as well and in multi-cultural teaching.
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