DESIGN AND TECHNOLOGY. PEOPLE, SYSTEMS, ENVIRONMENT

DM 630/GBC - OpEN(0)CARBON Operational and Embodied Net Zero Carbon

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] GBC ITALIA [P.iva/CF:02073390227]
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Context of the research activity	The topic is aligned with the European Union's programs to accomplish the goal of zero CO2 emissions in specific strategic sectors, as outlined in the Paris Agreement. Specifically, the project aligns with the EU EPBD 4 Directive, which mandates that new buildings must achieve net zero emissions by 2030 and existing buildings by 2050. Additionally, it supports the DG Environment's Roadmap for the reduction of Whole Life Carbon (WLC) of buildings, which provides guidelines for assessing the WLC of buildings through the use of Operational (OC) and Embodied Carbon (EC) indicators, which quantify a building's CO2eq emissions throughout its lifecycle. Progetto finanziato dal PNRR a valere sul DM 630 2024 sotto condizione, CUP E14D24002360004 The activation of the position with scholarship is subject to the possible allocation of further funding by the MUR.
Objectives	OpEN (0)CARBON project is focused on developing strategies and technologies to achieve net zero carbon buildings, aligning with the broader EU goal of decarbonising the built environment. The doctoral research will align with the EU LIFE INDICATE program, aiming to: • Contribute to the implementation of Operational Carbon (OC) and Embodied Carbon (EC) accounting methodologies; • Establish benchmark whole-life carbon (WLC) threshold values for specific building types; • Assess the applicability of WLC accounting and assessment methods through case studies. Open (0) CARBON is structured as a research project with co-funding from

	the Italian Green Building Council. In response to the innovation requirements outlined by GBC Italy, the research will focus on: • Digitalising environmental data derived from OC and EC accounting and WLC assessment; • Developing Science Based Targets for various stakeholders involved in the building process, aligned with WLC assessments; • integrating the developed methodology into GBC Italy's protocols.

Skills and competencies for the development of the activity	Technical Skills required: • Building physics: To understand the energy performance of buildings. • Construction: To understand building materials and construction processes • Life Cycle Assessment (LCA). To evaluate the environmental impacts of products and processes throughout their entire life cycle. • Programming design. To design tools for data analysis and modelling. Soft Skills required: • Critical thinking. To evaluate different approaches and make informed decisions. • Communication. To effectively communicate the project's goals and findings to stakeholders. • Collaboration. To work successfully with experts from different fields. • Problem-solving. To identify and address challenges in developing the assessment system.