DESIGN AND TECHNOLOGY. PEOPLE, SYSTEMS, ENVIRONMENT

DAD/CRT - Superuse of building materials and components

Funded By	FONDAZIONE CRT CASSA DI RISPARMIO DI TORINO [P.iva/CF:06655250014] Dipartimento DAD
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Context of the research activity	The research focuses on applying the circular economy principles to the reuse - in the sense of superuse- of building components and materials, which is prioritized over recycling. not only from the perspective of environmental impact, but also from preservation and transmission of the value of material culture, imprinted in the components and materials themselves. The purpose of the research is to analyse the barriers and opportunities for the application of super-use in the building sector, and to identify an appropriate set of tools, supporting the sector's operators, to overcome the current single and isolated experiences.
Objectives	The research focuses on applying the circular economy principles to the reuse- in the sense of superuse- of building components and materials. The European policies on the rational use of building materials related to the Green Deal, the conditions of obsolescence of Italy's building heritage, particularly of the second half of the twentieth century, and the increase in prices of building materials led to the exploration of new perspectives with respect to the mere demolition and reconstruction of new buildings or to energy retrofit and adaptive reuse. In parallel, Design for Disassembly and Systemic Design as project methodologies lead to the conception of buildings as systems that can be disassembled into technological components, that can live several life cycles and are technically repairable. In this context, the superuse of building components takes priority over recycling, not only from an environmental point of view as it avoids the reprocessing of materials, but also from the point of view of the preservation and transmission of the value of material culture, imprinted in the materials, components and technological systems themselves and capable of communicating their history and origin. The purpose of the research is, on the one hand, to identify barriers and opportunities for the application of superuse and, on the other hand, to identify an appropriate set of tools to support operators in the construction

	sector, to map, quantify, characterize, and enhance the stock of materials incorporated in existing buildings. This would help to define a system of replicable technological solutions and options, systematizing a practice for superuse, and overcoming current single and isolated experiences.

Skills and competencies for the development of the activity	The scholarship, co-financed by the DAD Department, includes six compulsory months in a foreign university and a good knowledge of the English language. The candidate is required to have the following technical knowledge and skills: • training experience in the field of design and prototyping of technological solutions based on the reuse/repurposing of materials; • knowledge of theories, methods and tools related to circular design, with particular reference to the requirements of reuse, disassembly, modularity. Previous experience in the research field of this fellowship is also required: • ` research activities in the field of circular economy in architecture, with particular reference to materials and components; • practical experience in experimentation and prototyping in the field of circular design.