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RE⁴ Project

REuse and REcycling of CDW materials and structures in energy efficient pREfabricated elements for building REfurbishment and construction

D2.2 NEC - Requirement No.2

Public summary of deliverable

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¹ Just mention the partner(s) responsible for the Deliverable

² PU: Public, RE: restricted to a group specified by the consortium, CO: Confidential, only for members of the consortium; Commission services always included.

³ Draft, Revised, Final

Introduction

The **Deliverable 2.2 Definition of sustainable strategies for the disassembly and reuse of structures and components from dismantled buildings** summarizes the outcome of an in-depth literature review addressing the topic of building demolition. The research has been mainly focused on concrete and timber constructions.

Purpose and scope

As the building stock in Europe was not designed for disassembly, the demolition of buildings in Europe contributes significantly to the overall CO₂ emissions, and to large extent also to the overall waste generation. In order to minimise waste generation and maximise the reuse and recycling of dismantled buildings new strategies have to be developed and applied. The report outlines a sustainable approach for the disassembly and reuse of concrete and timber structures and building components that reached the end of their service life to improve significantly the current situation and to demonstrate ways forward to a circular construction.

Main Achievements

As a starting point, reasons for the preservation of buildings have been analysed in more detail. As major finding it can be stated that in many cases, building preservation is the more economical approach. This outcome does not even take into consideration other benefits, which might be related to architectural and cultural aspects.

For the strategy itself, suitable building typologies, namely multi-family houses erected between 1950 and 1960, have been

identified for disassembly and reuse. Further analysis has been carried out with regards to impact of building demolition and the benefits for building dismantling. Environmental social and cost impact but also waste generation have been reviewed for.

Relevant standards with regards to building demolition and dismantling have been analysed for five countries (GER, IT, ES, SE, UK), where the majority of building stock is located in order to assess what aspects have to be considered for the development of the sustainable dismantling strategy.

Prerequisites for building dismantling and the reuse of building materials, elements and components for concrete and timber construction have been outlined. Barriers and opportunities for reuse and recycling were identified. In addition, parameters for reusability and recyclability at material and construction level were analysed in greater detail. In general, the quality of the material, component or element itself together with the kind of connection play the most important role, whether reuse or recycling is possible or not.

As final concept, selective dismantling has been identified as the most suitable strategy for both construction typologies, which increases the reuse of building elements and components and minimises waste generation.

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