

Comprehensive circularity: Assessing social performances for the growing application of reuse in construction

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ABSTRACT

The built environment accounts for 40% of greenhouse gas emissions and global construction and demolition waste (CDW). While the circular economy (CE) offers a promising path toward ecological transition, current approaches remain technocentric, prioritizing material and economic efficiencies. The social dimension of sustainability is often overlooked, raising key questions about the inclusiveness and long-term viability of circular strategies in the built environment.

In response to this gap, the research aims to develop a robust and operational methodology for integrating social aspects and indicators (e.g., social innovation, and inclusion) into circular construction strategies. The main hypothesis is that incorporating social dimensions into evaluation methods can make the social value of CE more tangible, thereby fostering broader stakeholder acceptance and increasing practices related to this emerging concept. Among this, reuse appears as a particularly promising application. It offers cost and material savings, creates new types of employment, improves working conditions, and supports innovative collaboration across the value chain, while contributing to ecological benefits.

To test this hypothesis, the research adopts a mixed-method approach. Top-down (quantitative) and bottom-up (qualitative) strategies are combined to better address the complexity of Social Life Cycle assessment (S-LCA). Guided by the UNEP/SETAC guidelines, the study will develop and refine social indicators through both theoretical dimensions and empirical fieldwork. The Cross Impact Balance (CIB) method will enable scenario development by exploring systemic interactions, complemented by participatory workshops, interviews, and in-situ observations. This approach will then be quantified within the broader Life Cycle Sustainability assessment (LCSA) framework and will leverage Life Cycle Assessment (LCA) and Life Cycle Cost assessment (LCC) tools. In parallel, socio-economic evaluation methods like Social Return on Investment (SROI) will align technical indicators with local design contexts and social economy.

The resulting framework will provide decision-makers with concrete metrics and flexible tools to recognize and amplify the social dimensions of circularity. By promoting inclusive jobs, fair value sharing, and active stakeholder engagement, this research supports a just, scalable and socially embedded transition in the construction sector.

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