Challenges of governance to support circular economy implementation in the building sector

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Abstract The construction sector is responsible for a significant amount of resource depletion. It has been estimated that buildings account for more than 30% of raw materials globally, and up to 40% of the total waste sent to landfill. A significant number of international agendas have recently placed emphasis on the integration of energy efficiency with the increasing necessity to mitigate the embodied impact of all construction-related processes, in order to comprehensively address the transition towards the concept of a climate-neutral city. The Circular Economy (CE) transition is recognised as one of the pivotal strategies in this regard.

Nevertheless, the systematic implementation of CE practices continues to encounter numerous barriers, encompassing technical, procedural, and operational aspects. These barriers pertain to the limited skillset of operators and the pervasive absence of knowledge. In this context, policymakers have the capacity to initiate change by promoting pragmatic measures and binding assessments to facilitate CE uptake in construction.

The Italian-funded project PRIN Better Policies addressed the issues with the aim of identifying obstacles and opportunities for a systemic transition in the construction sector. In this context, the CE issue was considered as one of the key interrelated issues to tackle along with decarbonization, digitalization and life-cycle assessment.

To achieve this objective, a dual analysis is performed to detect barriers and drivers to CE implementation in the construction sector, with particular attention paid to the national policy framework. On the one hand, a literature review is conducted to detect gaps and open challenges, as well as good practices from the international context. On the other hand, Green Building Rating Systems are screened with a view on circularity indicators to understand how national regulatory tools (e.g. Criteri Ambientali Minimi – CAM) can be improved to achieve higher CE levels.

Guidelines have been formulated to enhance national CE-related measures at many levels. It is evident that the siloed approach currently being implemented on a national basis risks hindering the systematic and effective implementation of CE practices in buildings. In contrast, digitalization is regarded as a potent means to facilitate multi-scalar and multi-level considerations and operations. The higher requirements for the pre-use stages (e.g. use of recycled materials) are supported, while greater emphasis on the post-use stages (e.g. design for disassembly, adaptability, and durability) is called for to exploit the full CE potential in constructions. The results offer policymakers actionable insights to implement dedicated measures from national to local levels.