

What potential do structural woods offer for re-use in urban housing in Liège? The case of timber frames dating from the Ancien Régime (14th-18th centuries)

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ABSTRACT

Waste management is a current major challenge, particularly within the construction sector, known for its resource-intensive practices and high waste production, accounting for approximately 40% of all waste and 50% of raw material flows in Europe, yet only 9% of construction materials are reused.

By viewing cities as material repositories through an Urban Mining approach, demolition waste can be considered as new resources for construction projects. Consequently, reusing building materials becomes essential for achieving energy transition and carbon neutrality goals. In Liège, this approach is particularly relevant for vernacular half-timber construction, used from the Middle Ages until the early 20th century. Beyond their heritage interest, those structures offer numerous advantages for reuse: durability, high intrinsic quality, and ease of deconstruction.

Despite European policies promoting circular economy practices, the reuse of historic materials is often neglected. Specifically, the reuse of half-timber structures faces challenges regarding their suitability for modern construction. The uncertainty about their ability to meet current structural requirements and technical regulations limits their integration into new construction.

The research aims to establish a comprehensive regulatory framework that ensures the safe incorporation of historic timber frames materials into new buildings. It aims to enhance the compatibility of those materials with contemporary demands, promoting more efficient resource management while fostering greater appreciation for architectural heritage.

The contribution will present a methodology for creating 'identity cards' that explore the reuse potential of historical timber frames through a bottom-up strategy. This approach combines theoretical analysis — extracting data from scientific literature, such as

technical information on old timber structures and reuse practices — with practical steps, including a technical inventory and analysis of two case studies. The goal is to develop standardized 'identity cards' for these materials, offering essential technical information and guidelines for their reuse after potential demolition.