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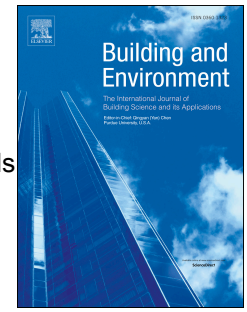

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Fast-growing bio-based materials as an opportunity for storing carbon in exterior walls

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Abstract

Storing carbon in construction products and building components seems a particularly attractive strategy for compensating the initial greenhouse gas (GHG) emissions from production and construction. Typically, in LCA methods, when a sustainable forestry management is assumed, biogenic carbon is not included in the calculation since forest products are considered as carbon neutral due to the full regeneration of biomass in forest at the end of a rotation period. The purpose of this article is to investigate the effect of storing carbon in biogenic materials and lime-based products when they are used as construction materials and left long in a building. Five different alternative exterior walls with different construction technologies are compared. In the first two alternatives (STR and HEM), a significant amount of fast-growing biogenic material is used as thermal insulation, while the third (TIM) represents a typical timber frame structure with mineral insulation. The last two are traditional wall alternatives based on bricks (BRI) and cast concrete (CON) with an