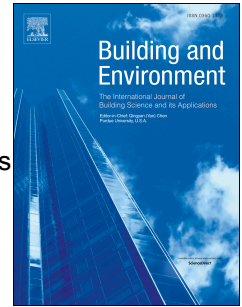


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Fast-growing bio-based materials as an opportunity for storing carbon in exterior walls

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

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12 **Abstract**

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

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