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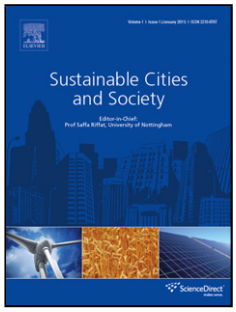

Title: The use of forest-based materials for the efficient energy of cities: environmental and economic implications of cork as insulation material

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The use of forest-based materials for the efficient energy of cities: environmental and economic implications of cork as insulation material

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Highlights

- · The current transformation of cork into finished products generates important environmental impacts that counteract the original advantages of a forest-based material.
- · Biogenic carbon has to be considered as the main advantage of the forest-based material, but eco-design strategies have to be implemented along their life cycle.
- · Cork insulation boards reach the market with the highest selling; being transformation costs the main significant.
- · Cork has a high potential of retrofit buildings, being a significant insulation material from an environmental approach.
- · Cork oak forests could improve their capacity of cork production by harvesting more available surface and applying more prioritization criteria.

Abstract

Cork is a very interesting forest-based material for many industrial sectors as a natural and renewable material with a high geographical concentration in the Iberian Peninsula. Currently stoppers for beverages are its most valuable application, but the properties of the cork are an excellent opportunity to eco-innovate. Natural materials are being studied as potential sustainable solutions for building sector to reduce environmental impact and energy use of cities. This study introduces and evaluates the environmental and economic implications of using cork insulation boards as a solution for retrofit buildings in Barcelona metropolitan area.

Results demonstrate a high potential of retrofit buildings with cork insulation boards from an environmental and economic perspective, therefore the present capacity of cork oak forest sector in Catalonia is not ready to absorb the potential demand that could be generated, as less than 50% of forests are not managed and harvested. This is also an opportunity for this sector to diversify its market and develop other products that can fit