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Forest management strategies for reducing carbon emissions, the French case

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International agreements now recognize the role of forest in the mitigation of climate change through the levers of in-situ sequestration, storage in products and energy and product substitution. These three strategies of carbon management are often antagonistic and it is still not clear which strategy would have the most significant impact on atmospheric carbon concentrations. With a focus on France, this study compares several scenarios of forest management in terms of their effect on the overall carbon budget from trees to wood-products.
We elaborated four scenarios of forest management that target different wood production objectives. One scenario is 'Business as usual' and reproduces the current forest management and wood production levels. Two scenarios target an increase in bioenergy wood production, with either long-term or short-term goals. One scenario aims at increasing the production of timber for construction. For this, an empirical regression model was developed building on the rich French inventory database. The model can project the current forest resource at a time horizon of 20 years for characteristic variables diameter, standing volume, above-ground biomass, stand age. A simplified life-cycle analysis provides a full carbon budget for each scenario from forest management to wood use and allows the identification of the scenario that most reduces carbon emissions.