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An Investigation of the Carbon Neutrality of Wood Bioenergy

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ABSTRACT

Wood biomass has been viewed as "carbon neutral"—its uses as energy have a zero carbon footprint. Some observers argue that the use of wood biofuels will result in a decrease of the forest stock and a net reduction of the carbon captured in the forest. Such assessments take a static, accounting view of forest systems and do not consider the effects of management in renewing the forest and increasing its extent or ability to sequester carbon. This paper addresses the carbon neutrality debate using a dynamic optimization forest management model to examine the effect on the existing and future forests of a changing demand for wood biomass. The results show that under market optimizing conditions, when future demand is anticipated to increase for significant periods, the response of managers will be to increase the intensity of forest production thereby offsetting much of the carbon released in bioenergy production.

KEYWORDS

Carbon; Carbon Footprint; Carbon Neutrality; Bioenergy; Forest; Harvests; Anticipation; Rational Expectations

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