Analyzing policy-driven changes to US forest carbon sequestration

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Climate change influences the frequency and intensity of wildfires in

many areas of the United States. Trees remove carbon from the atmosphere, so tree planting can mitigate climate change. However, managing forests to prevent large destructive fires can involve thinning and prescribed burning, which releases a portion of forest carbon. To complicate matters further, large fires themselves can release significant carbon.

John W. Coulston and colleagues analyzed data from more than 130,000 national forest inventory plots to project how recent legislation to increase fire management and tree planting in the United States could affect the country's forest carbon sequestration 30 years into the future, given various fuel management, climate, economic, and energy use scenarios. The research is published in the journal *PNAS Nexus*.

Fuel reduction activities could remove 194–288 million metric tons of carbon from western forests over the next 10 years. However, fuel management can also increase annual net carbon sequestration rates over the long term, both because trees in thinned stands can grow larger faster and because avoided fires reduce overall emissions.

By 2050, fuel management could actually increase annual carbon sequestration over business as usual. This increase is modest, however, and the projected cumulative 2022–2050 carbon sequestered under fuel management scenarios is 200–310 million metric tons less than business as usual.

All wood removed during fuel management was assumed to be an emission for the purposes of the analysis, but the authors note that wood product innovation could change that picture by allowing carbon removed from forests to be stored in durable wood products.

More information: John W Coulston et al, Near-term investments in forest management support long-term carbon sequestration capacity in

forests of the United States, *PNAS Nexus* (2023). DOI: 10.1093/pnasnexus/pgad345