

# The Forest Management Opportunity

*This brief discusses key findings from the following report: John Foye and Christopher B. Field, “Pathways to Carbon Neutrality in California: The Forest Management Opportunity”, Stanford Center for Carbon Storage and Stanford Carbon Removal Initiative, April 2022.*

California is blessed with vast working lands including forests, shrublands, grasslands, croplands, wetlands, and deserts. By the nature of these spaces, significant carbon is stored in biomass and soils. 5,340 million metric tons of carbon are stored in California’s working lands, representing over 19 Gt of CO<sub>2</sub>, or over 45 years of California’s current emissions.

## KEY FINDINGS

- 1.** Forests are California’s most important working land type for carbon storage and carbon flux; however, intentional management has inherent trade-offs; in particular, carbon storage is often at odds with reduced wildfire emissions and forest management requires investments today to avoid costs in the future.
- 2.** The scale-up in forest management to ~1,000,000 acres by 2025 (in-line with state goals), represents a doubling of current United States Forest Service work and a 5 fold increase in state funded work on private and other lands; this will generate significant amounts of additional wood products and biomass.
- 3.** Biopower is the lowest-value end-use for forest biomass on a dollar per volume basis.
- 4.** High-value wood products (e.g., lumber, veneer) effectively subsidize forest biomass removal for biopower, suggesting there is opportunity to support forest management with the commercial timber harvest.
- 5.** Broadly speaking, engineered wood products are compelling for their ability to lower costs, reduce carbon emissions (by replacing substitute products such as steel and concrete), and create rural jobs (by requiring value-added wood manufacturing).

California’s working lands – and forests in particular – have a major role to play in the path to net zero. Crucially, the 100 Mt+ annual CO<sub>2</sub> emissions from recent wildfire seasons must be controlled through intentional forest management on the order of 1 million acres per year, a doubling of current rates.

The supply of biomass coming from forests will increase dramatically with more dedicated forest restoration, with estimates ranging from 10-24M bone dry tons (vs. 1.5M currently consumed). In order to fund the scale-up in forest management, opportunities have been identified in the timber harvest and forest products industry, including an expanded commercial harvest and development of engineered wood products (including oriented strand board, cross-laminated timber, and glued laminated timber).

Using forest biomass for electricity generation through biopower, conversely, is the lowest value end-use for biomass. However, it still can play a critical role in helping subsidize the cost of forest restoration. Thus, it will be crucial to support the biopower industry by pursuing integrated wood product campuses, investing in new carbon capture and storage technologies, providing clear forecasts of supply, and investing in incentives or subsidies that directly fund biomass removal (specific to the type of biomass and distance to off-taker).

Biofuels also represent significant opportunities for supporting forest management. However, additional subsidies will be needed to incentivize use of forest biomass over municipal solid waste or agricultural residues given the high costs of transport.

