

Forests and Climate Change Mitigation

The Role of Markets

February 10, 2020



Climate change benefits of forests



Forest carbon sink

Sequestering
Atmospheric CO₂
in tree biomass
and soils



Forest product benefits

- 1) Long-term storage of tree carbon in buildings
- 2) Renewable feedstocks for energy generation

Joint benefits



Forest Carbon Sink

Forests capture atmospheric carbon through photosynthesis...

Forests emit carbon through respiration, decay, wildfire...

In U.S. forests, capture has exceeded emissions for several decades...

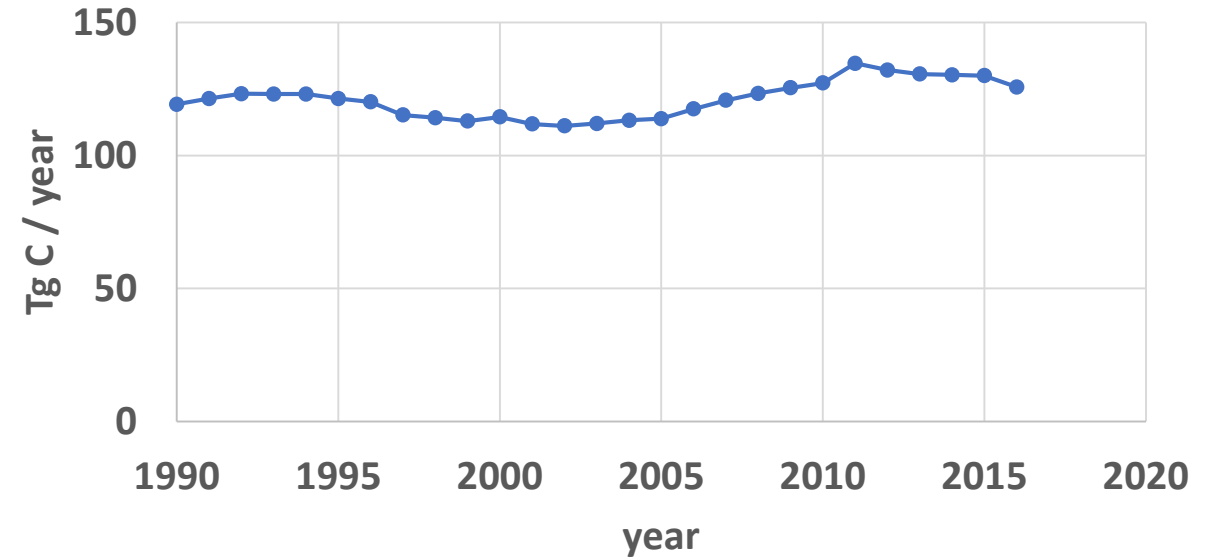
Forest C is a growing asset...net expansion of 0.5% per year from 1990 to 2017

Forest C inventories currently store about 52 years of US greenhouse gas emissions at 2017 levels...

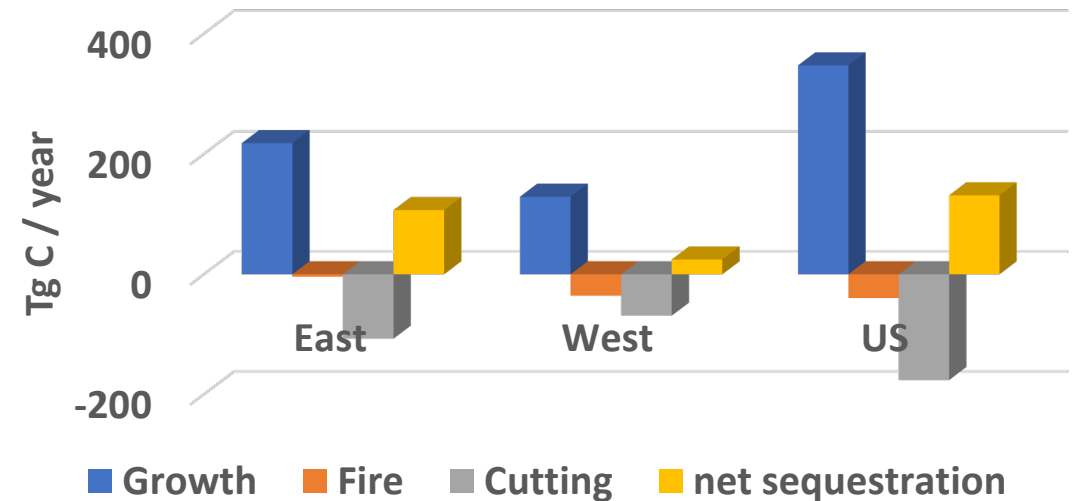


Forest Carbon Trends

Annual carbon sequestration by US forests



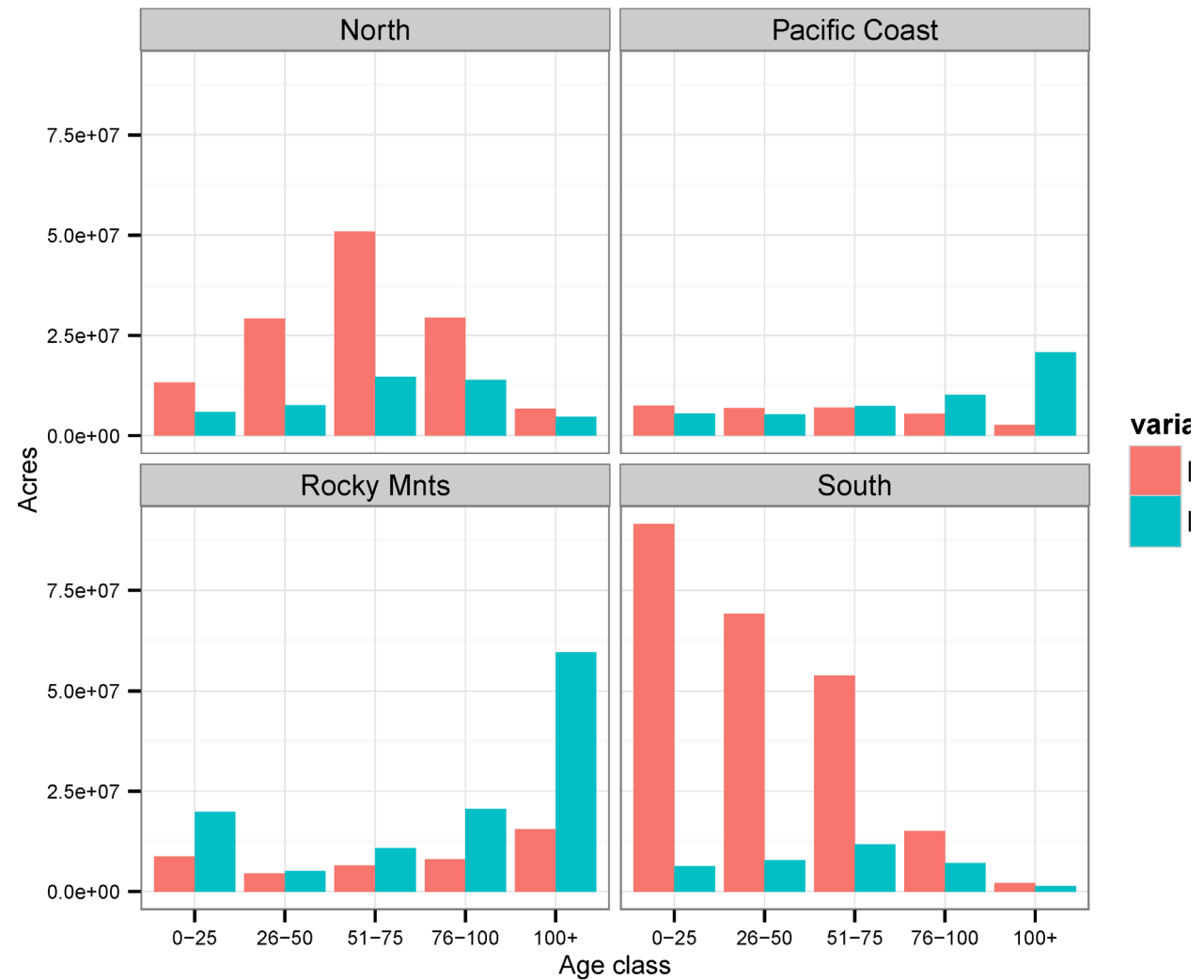
Forest carbon dynamics by region and US



Source: Woodall, Christopher W. et al. 2015. The U.S. forest carbon accounting framework: stocks and stock change, 1990-2016. Gen. Tech. Rep. NRS-154. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 49 p. <https://doi.org/10.2737/NRS-GTR-154>.

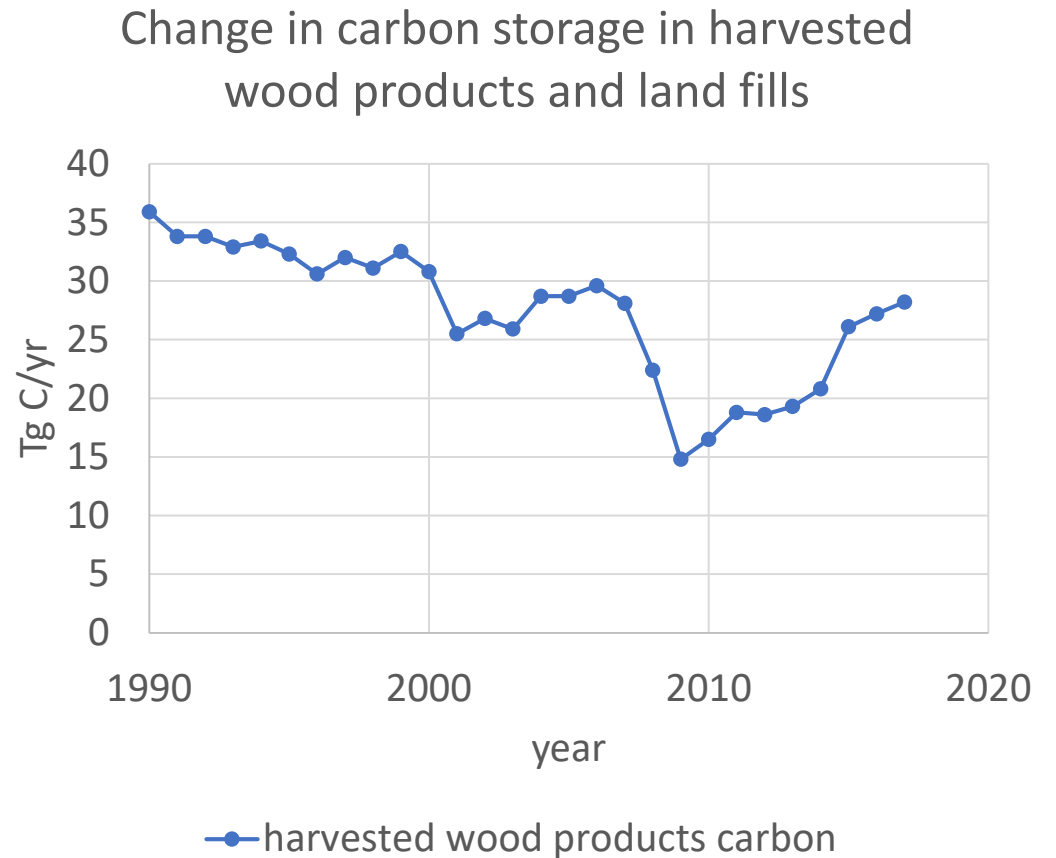
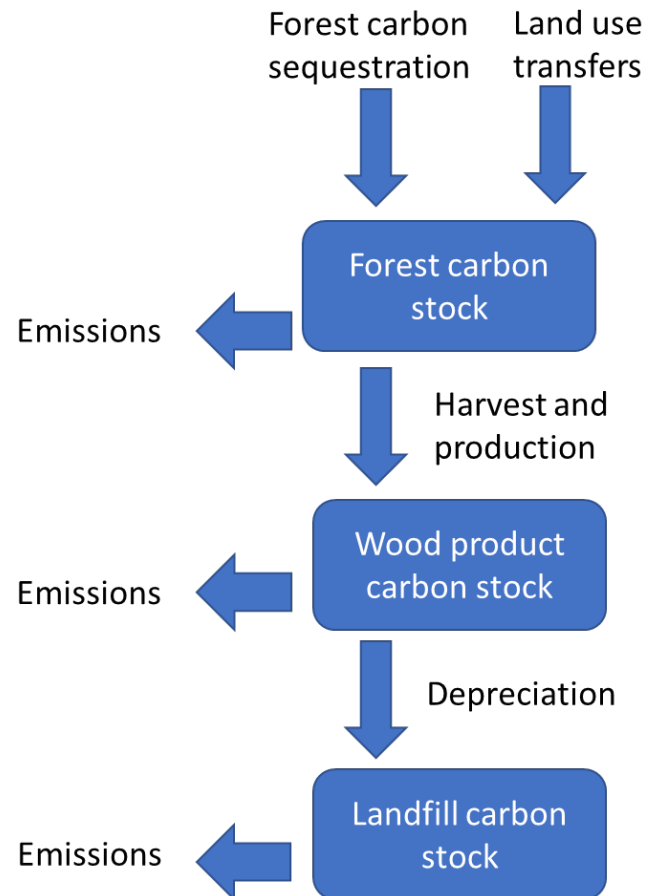


Regional differences in ownership and structure



Source: US Forest Service, FIA national forest inventory.

Carbon storage in harvested wood products

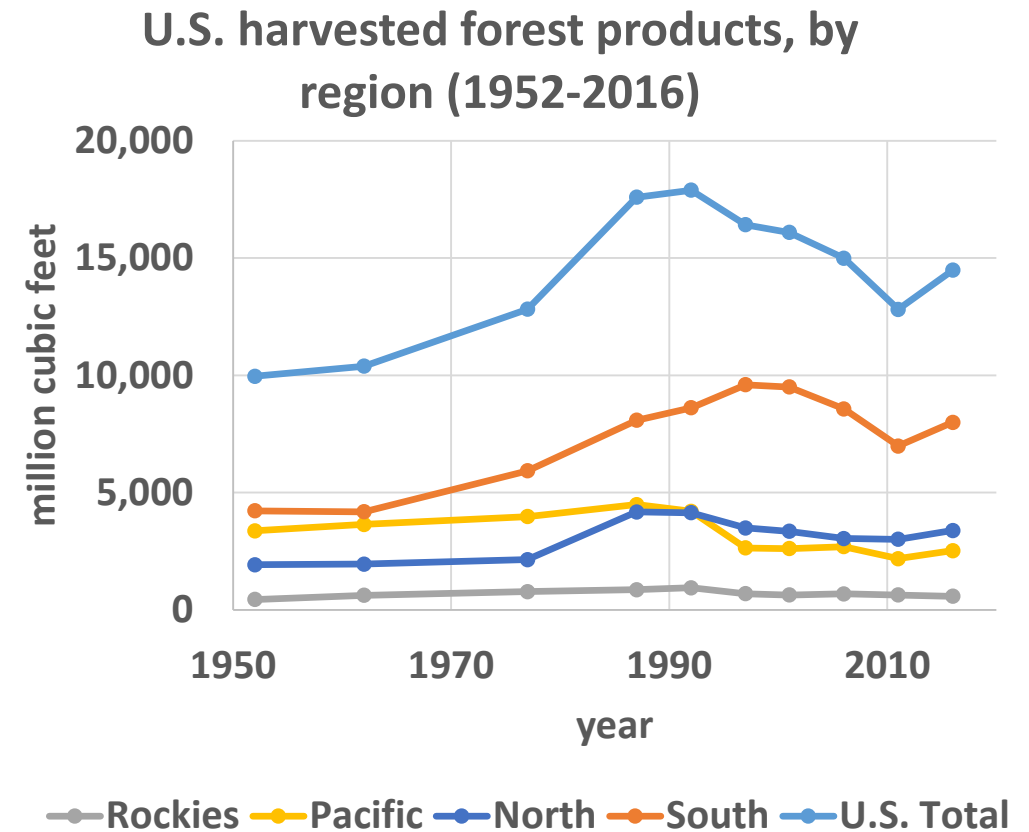


Sources: *Methods in Skog* (2008), estimates from EPA National Greenhouse Gas Inventory Reports, 2011, 2019

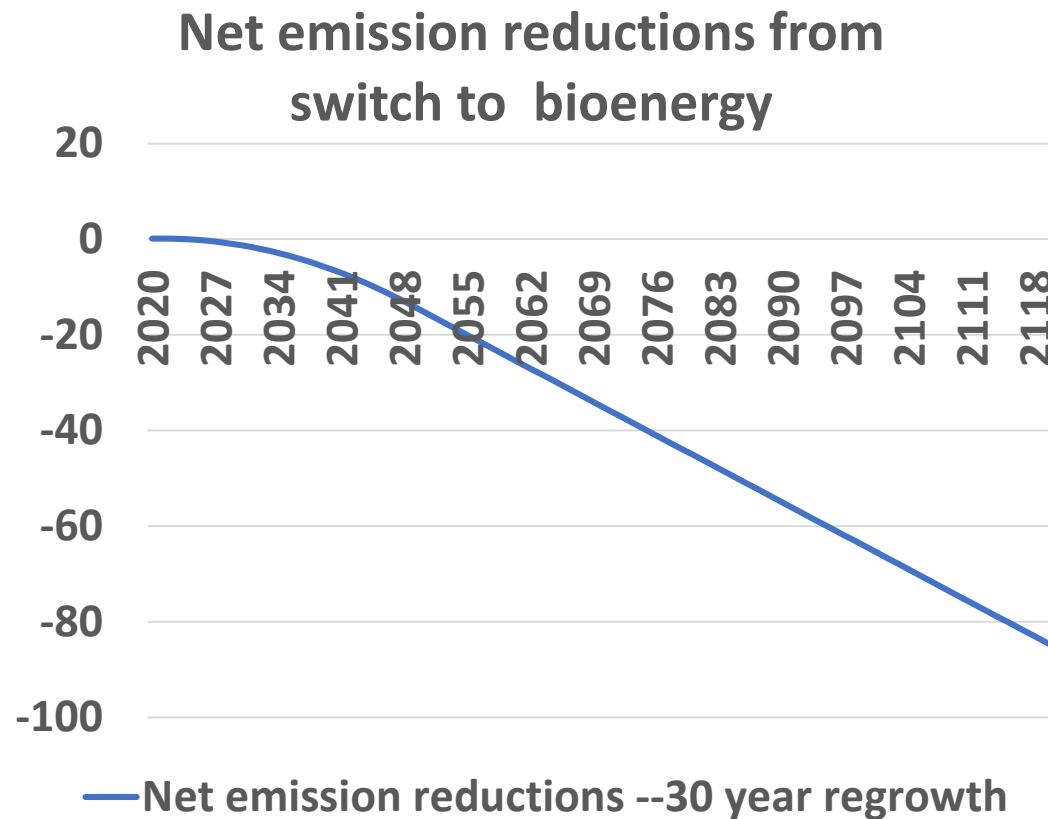


Timber harvest levels in the US

- Production peaked in the 1990s
- Now about 25% below the peak
- Timber supplies have continued to expand



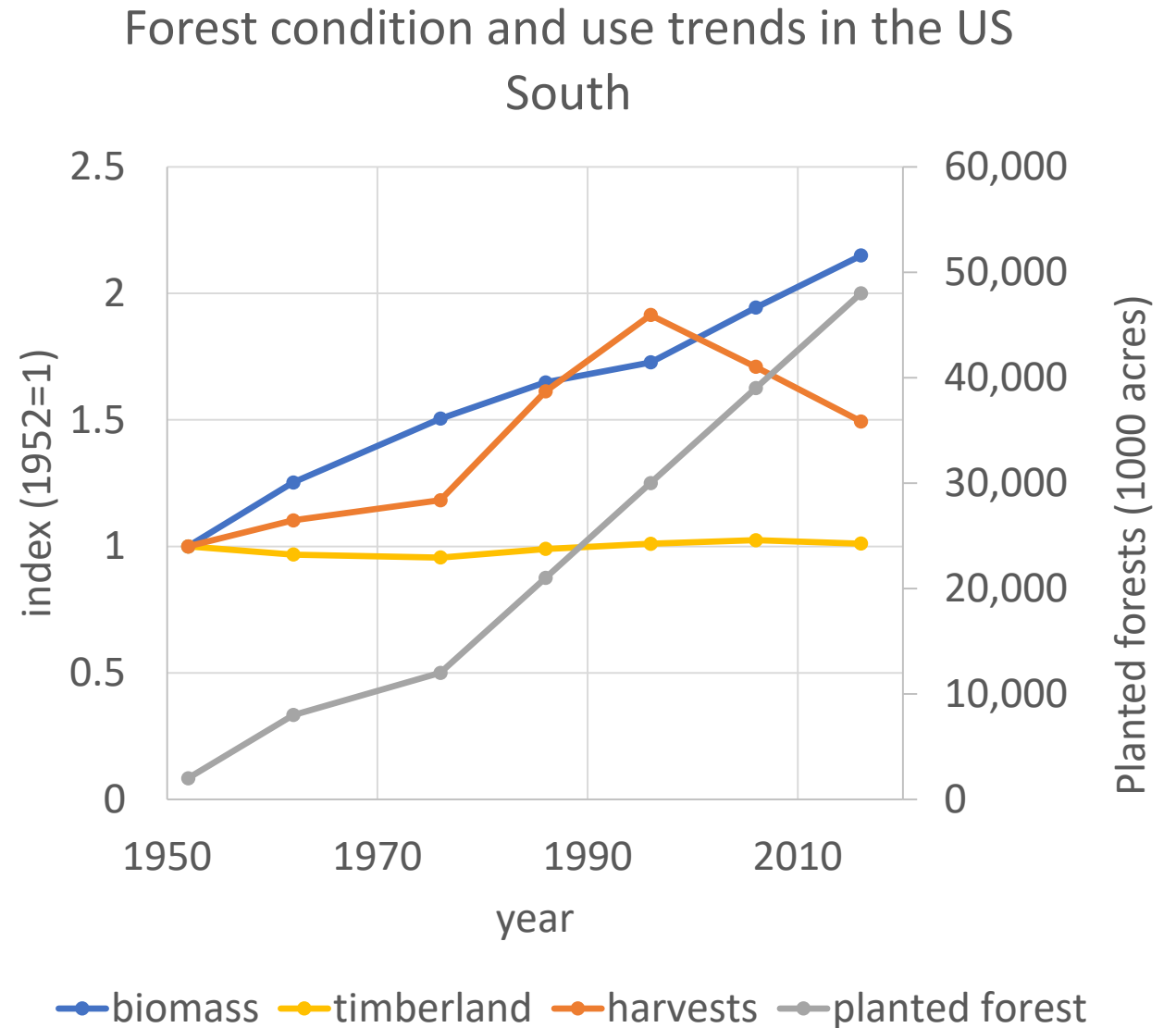
Forest Bioenergy: A strong potential for climate change mitigation



- Wood bioenergy now driven by European markets—pellet exports from US South to EU/UK
- Switching from coal to wood bioenergy in the US → substantial reductions in carbon emissions
 - Plus incentives to expand the forest carbon sink



Case study: forestry in the southeastern US



Forest
products
markets build
the forest
carbon sink

Incentives to retain and add
forests

Incentives to expand productivity

Revenues for forest fuel
reductions

Carbon storage and emission
offsets



Growing climate change benefits of forests



Expand forest area and enhance growth



Increase the utilization of wood in building and energy



Protect forest assets by reducing wildfire emissions



Thank you.

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