Case Study: Climate Benefits of Timber Harvests on Washington DNR State Trust Lands Quantified

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Does retaining mature stands 80 years or older, (so-called "legacy" forests) on Department of Natural Resources managed state trust lands provide a larger carbon benefit than harvesting and storing that carbon in Washington-made wood products?

To answer this question, the Consortium for Research on Renewable Industrial Materials (CORRIM) and the University of Washington's Center for International Trade in Forest Products (CINTRAFOR) used data from a sold DNR timber sale and publicly available U.S. Forest Service Forest Inventory and Analysis (FIA) data to conduct a full carbon accounting of the timber sale using established life cycle assessment data on forestry, forest operations, and manufacturing of products that were produced from that sale. The timber sale used for the analysis is the Penny Alderwood Timber Sale in Jefferson County, Washington. The analysis relies on extensive data provided by the timber purchaser related to harvest operations, transportation distances, and the different types of wood products produced.

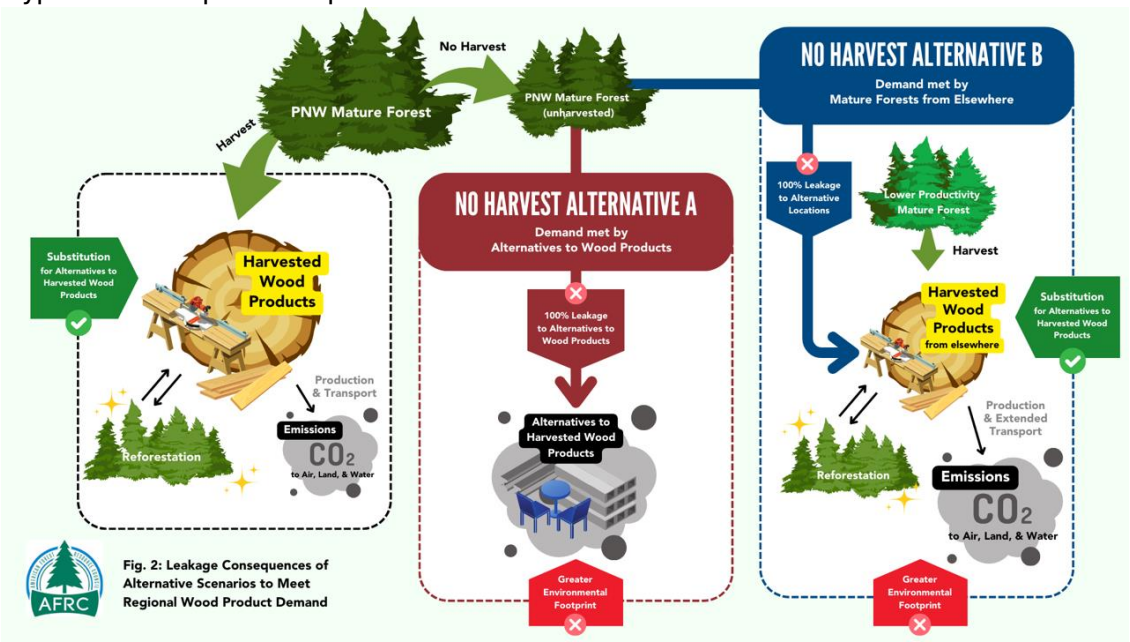


Fig. 2: Leakage Consequences of Alternative Scenarios to Meet Regional Wood Product Demand

Key Findings

- For every acre harvested of the 80-year-old DNR stand, 11.71 metric tons more of carbon is stored or offset over the non-harvest alternative.
- Because Washington state law requires reforestation after harvest, this climate benefit grows to as much as 72 metric tons per acre over the non-harvest alternative as new trees are planted and reach the age of 40 years.
- The full carbon calculation indicates there is no carbon "debt" after harvest when accounting for substitution and leakage.
- The harvest of a mature DNR stand yields a high percentage of long-lived wood products, which results in a high and efficient transfer of carbon stored safely in the built environment.

How does harvesting these older trees provide a greater climate benefit than leaving them unharvested?

Logging opponents claim "legacy" forests experience continued, and substantial, forest growth and carbon sequestration and storage past year 80, but these assumptions are not supported by FIA data. The FIA data indicates that carbon sequestration rates in these DNR forests, which are managed for longer rotations, effectively stops after the stands reach 70-80 years old.

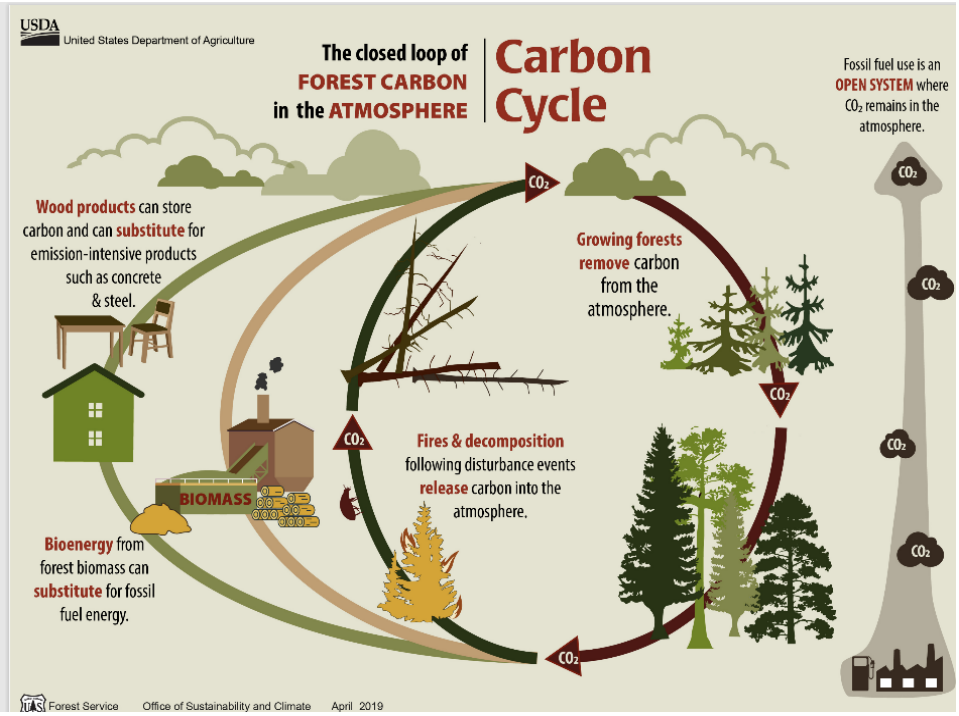
Because half the dry weight of wood is carbon, Washington-made wood products have the ability to store that carbon for generations. And because younger, growing trees absorb carbon from the atmosphere at higher rates compared to older stands, harvesting and processing this wood results in greater climate benefits over time.

Reducing harvests from DNR working forests means we either build with wood substitutes ("substitution") or ship our wood in from elsewhere ("leakage"). Neither would be good for the climate. Non-wood building materials, like steel and concrete, are nonrenewable and result in much larger carbon emissions and no long-term carbon storage. Likewise, when we choose to use wood from other places, we lose the climate benefits of using wood that's grown and processed here at home. In fact, CORRIM finds that when Washington mills and are forced to access logs from other states the environmental footprint increases, such as a 37% increase coming from nearby Oregon. The United States already imports about 30% of its softwood lumber, including from far away countries like Germany, Chile, and Brazil.

> *"Examining outcomes at the forest scale misses most of the impacts and benefits that can accrue from a managed forest and wood product system. Real climate benefits can only be determined by looking at a scale that measures the likely atmospheric impacts of our activities. At that system wide scale, carbon debt doesn't exist, especially when the wood products can serve as substitutes for products with a higher carbon footprint." - Elaine Oneil, PhD, Director of Science and Sustainability, CORRIM, and lead researcher for the study.*

The continuous cycle of sustainable forestry- the planting, growing, harvesting, and replanting of trees, combined with the use of long-lived wood building materials- offers superior carbon sequestration and storage benefits compared to unmanaged forests and using less sustainable building materials. This approach is exactly what the Intergovernmental Panel on Climate Change (IPCC) has recommended:

"Sustainable forest management can maintain or enhance forest carbon stocks, and can maintain forest carbon sinks, including by transferring carbon to wood products, thus addressing the issue of sink saturation. Where wood carbon is transferred to harvested wood products, these can store carbon over the long-term and can substitute for emissions-intensive materials reducing emissions in other sectors."- IPCC Special Report, 2019 [1]



This approach was also endorsed by more than two dozen countries, including the United States, who pledged to substantially increase sustainable forestry and the use of wood products in construction as a "vital decarbonization strategy" at the recently concluded COP28 conference in Dubai.

[1] https://www.ipcc.ch/site/assets/uploads/2019/11/SRCCL-Full-Report-Compiled-191128.pdf - page 21