

Preliminary Estimates of Carbon Storage in NYS Harvested Wood Products from Sawtimber from 1990 to 2018

KEY POINTS

1. Harvested wood products (HWPs) address climate change challenges in two ways. First, carbon is stored in wood for the life of a product. Second, geologic carbon emissions – the emissions that are causing CO₂ levels in the atmosphere to rise – are reduced by using wood, a renewable material, as a substitute for fossil fuel-intensive products, such as those produced from steel, concrete, and plastic.
2. Using data from NYS DEC's Timber Product Output based on survey data, we estimated carbon stored in HWPs made from sawtimber from 1990 to 2018.
3. Annual amounts of carbon stored in HWP from sawtimber varied from a low of 1.2 MMT CO₂ in 2009 to a high of 2.0 MMT CO₂ in 2001. The greatest portion of this stored carbon was from sawtimber grown and processed in NY.
4. Ongoing work at ESF will develop estimates of stored carbon for other wood products (e.g., cardboard, paper, pallets) and their feedstocks (e.g., pulpwood, chips).



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ESTIMATING THE CLIMATE CHANGE BENEFITS OF HARVESTED WOOD PRODUCTS

- As long as forests are managed sustainably, which they are in NYS, forest products provide permanent and real climate change benefits by (1) reducing fossil fuel-based geologic carbon emissions and (2) storing carbon in harvested wood products (HWPs) during their useful life.
 - At the end of a HWP's useful life, the product is either burned in a waste-to-energy facility – which produces energy without using fossil fuels – or is landfilled, where about 75% of the carbon in forest products is permanently stored.
 - Forest products produce some fossil fuel-based carbon emissions (e.g., the fossil fuel-based emissions produced by harvesting, transporting, and manufacturing wood). However, these emissions are significantly less than the fossil fuel-based emissions created by products made of steel, concrete or plastics.¹
- Using DEC Timber Products Output (TPO) data, ESF Researchers estimated the metric tonnes of CO₂ stored in three categories of wood that produced HWPs from 1999 to 2018.
 - Sawtimber grown in NYS and milled in NYS (referred to as NY/NY),
 - Sawtimber grown out-of-state and milled in NYS (OUT/NY), and
 - Sawtimber grown in NYS and milled out of state (NY/OUT).
- Regressions were developed between northeast US housing starts and harvested sawtimber to estimate the amount of carbon stored in HWP from 1990 to 1998.
- This is a preliminary analysis since it did not account for:
 - Sawtimber that did not end up in wood products (i.e., mill residuals that are used to create energy or other materials),
 - Sawtimber not accounted for in TPO surveys (i.e., some HWP manufacturers did not respond to DEC surveys), and
 - Carbon stored in products made from pulpwood and wood chips.
- Research at ESF will address these issues and provide a more accurate estimate of carbon stored in additional NYS HWPs.



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KEY DISCOVERIES AND POTENTIAL IMPACTS

- The amount of CO₂ stored in HWPs from sawtimber varied from a low of 1.2 MMT (Million Metric Tonnes) CO₂ in 2009 to a high of 2.0 MMT CO₂ in 2001 (Figure 1). Factors in the broader economy impacted these numbers. For example, carbon stored in HWP was the lowest during the recession of 2008-09.
- The greatest portion of the carbon stored in HWP was from sawtimber grown and processed in NY (NY/NY), with the second largest amount coming from sawtimber grown in NY but shipped outside the state for processing (NY/OUT). Sawtimber from outside NY that was processed into HWP made up less than 10% of all the carbon stored in HWP.
- Results provide a year-by-year snapshot of how much carbon is stored in HWP. Further analysis is needed to project the amount of carbon stored over time based on the projected lifespan of different products.
- In addition to the climate change benefits of storing carbon, sustainable forest management that produces HWPs creates jobs in the bioeconomy, enhances forest health, and provides ecosystem services such as clean water and air, wildlife habitat, and recreational opportunities.

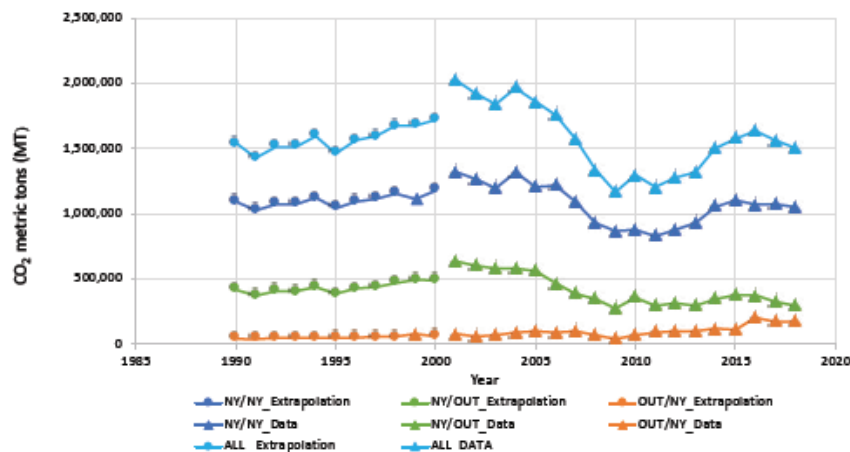


Figure 1. Estimates of the total carbon stored (light blue line entitled “ALL DATA”) in sawtimber-based HWPs and the contribution from different categories of where the sawtimber was grown and processed. Data from 1990-2000 is based on extrapolations using regressions based on annual housing data starts in the NE US.



Contact CAFRI experts for more information on **how HWPs can address climate change**.

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References:
 1 Malmshiemer et al. 2011 Managing Forests because Carbon Matters. *Journal of Forestry* 109(S):S7.