November 18, 2022: Maine's Forest Inventory - Past, Present, and Future – Questions and Answers

Question:

Can you explain how harvested products sequester carbon (vs. store carbon)?

Answer:

A tree takes up carbon. At harvest much of the wood in that tree remains stored in the log and some is left behind as forest residues. After processing, some portion of the log is lost to mill residues. These mill residues are often used as energy or move to some other short-term pool. Over time, we know that the some of the carbon in the processed log remains stored in HWPs, with large proportions ultimately transferring to the landfill or back to the atmosphere (see Smith et al. 2006).

I think that perhaps some confusion comes from how we sometimes use the term carbon sequestration. Carbon sequestration is commonly defined as the process of capturing and storing atmospheric carbon dioxide. However, we use the definition from the forest carbon task force (https://www.maine.gov/future/initiatives/climate/climate-council/forest-carbon-taskforce):

Carbon storage is the amount (stock) of carbon stored in the forest ecosystem and in harvested wood products at a specific point in time. Carbon sequestration is the *rate of* change in that stock over a given period of time, typically one year.

Question:

I see you plot forest products as only sequestering carbon on the carbon slide. Does that indicate that forest harvest has net sequestration? Were emissions from harvest included in that factor?

Answer:

For the relevant slide, I think referring to the estimates as carbon stock change rates would also be appropriate.

What is reported here is an estimate of the average annual change in harvested roundwood in products and landfill using a "production-based approach". Basically, only the harvested wood (processed in-state and exported, no imports) that ends up in product is counted (even if the processed wood may travel out of state). The amount of stored wood is discounted over time (Smith et al. 2006). There are several other approaches that could be considered for handling carbon in harvested wood products, but last I heard this is the approach that USFS is using (though they are updating the disposition rates). Ultimately, it may be important to consider what approach other states use to avoid double-counting.

I omitted 2 additional citations from the relevant slide (see Domke et al. 2021 for background on the Domke disaggregated line and MDEP 2022 for the emissions lines).

Question:

Does FIA break out the data as to acres subject to shoreland zoning and not? and as a follow up, what percentage of the volume is in that zone? is it disproportionate to the percent acres?

Answer:

No FIA does not break out the data subject to shoreland zoning. This is a good question, and something we will explore in the future.

Additional Notes:

FIA will update its estimation methods for volume, biomass, and carbon early next year (or as soon as possible). We anticipate that biomass in the live aboveground pool will increase changing our carbon stock and stock change estimate (Westfall et. al. 2022):

https://www.fs.usda.gov/research/research/inventory/FIA/VBC

https://charcoal2.cnre.vt.edu/nsvb_factsheets/index.html

https://charcoal2.cnre.vt.edu/nsvb_factsheets/Reports/State/Maine.html

Citations:

Bai, X., Daigneault, A., Fernandez, I., Frank, J., Hayes, D., Johnson, B., Wei, X. and Weiskittel, A., 2020. State of Maine's carbon budget, 2006–2016 (version 1.0). Center for Research on Sustainable Forests.

Domke, G.M., Walters, B.F., Nowak, D.J., Smith, J., Nichols, M.C., Ogle, S.M., Coulston, J.W. and Wirth, T.C., 2021. Greenhouse gas emissions and removals from forest land, woodlands, and urban trees in the United States, 1990–2019. Resource Update FS–307. Madison, WI: US Department of Agriculture, Forest Service, Northern Research Station. 5 p.[plus 2 appendixes]., 307. https://doi.org/10.2737/FS-RU-307.

Maine Department of Environmental Protection (MDEP); Bureau of Air Quality. 2022. "Ninth Biennial Report on Progress toward Greenhouse Gas Reduction Goals. Report to the Joint Standing Committee on Environment and Natural Resources 130th Legislature, Second Session.

Smith, J.E., 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States (Vol. 343). United States Department of Agriculture, Forest Service, Northeastern Research Station.

Westfall, J.A., Coulston, J.W., Gray, A.N., and Shaw, J.D. 2022. Biomass increases in U.S. Forests as FIA implements new tree volume, biomass, and carbon models. Forestry Source 27(8):14.