To: "Scientists concerned about climate and biodiversity impact of logging"

Re: 8 May 2020 letter to congressional committee members

From: John M. Hagan, Ph.D., Chair, Maine Climate Table

Date: September 15, 2020

cc: Rep. Kathy Castor, Chair, House Select Committee on the Climate Crisis
Rep. Frank Pallone, Chair, House Energy and Commerce Committee
Rep. Raúl Grijalva, Chair, House Natural Resources Committee
Rep. Collin Peterson, Chair, House Agriculture Committee
Sen. Lisa Murkowski, Chair, Senate Committee on Energy and Natural Resources
Sen. John Barrasso, Chair, Senate Committee on Environment and Public Works

Dear Colleagues:

This letter is a response to your 8 May 2020 letter to various House and Senate committee chairs (cc'd above) regarding the role of forests, forestry, and forest products in relation to climate change. We share a common interest in using forests to fight climate change. However, I think your framing of the problem requires modification to reach an accurate conclusion about forest and climate policy alternatives.

I am an ecologist. I spent most of my career studying biodiversity in working forest landscapes of Maine and Central America. I have also studied old-growth forest. I know the impact even certified sustainable forestry can have on late-successional and old-growth biodiversity. I also understand the carbon implications of using wood for energy. When I was president of Manomet (a sustainability research nonprofit) we produced a detailed study in 2010 for the Massachusetts Department of Energy Resources that showed using wood for bioenergy has an initial carbon debt.[1] [2] Depending on a complex mix of factors, we concluded that the debt can turn into a carbon benefit in as little as 15 years or take as long as a century or more. Your letter paints woody biomass as categorically bad for climate mitigation, which does not reflect our full scientific understanding of using wood for energy.

Knowing something about the issues you discussed in your letter, I have three main concerns:

First, your letter points out that ~40% of wood products return to the atmosphere as CO_2 in a relatively short amount of time. That estimate is being refined downward by recent studies of in situ landfill decomposition rates of wood.[3] [4] While we can and should refine the coefficients for how much carbon remains sequestered in different products and in landfills and for how long, the important questions is—*what would be the emissions of functionally equivalent structural materials, such as steel and concrete?* Citing that the current life-cycle emissions for wood may be off by a factor of 2 to 100 is good to know. But the important *practical* question pertains to the *relative* impact of wood vs. the alternatives. Your letter did not answer this specific and important question.

Second, humans need wood for construction, paper, cardboard, and other commodity products. If we don't use wood, what will we use instead? This is not rhetorical. Even with per-capita reductions in resource use and increases in recycling, the total global demand for wood will increase for many decades as the global human population grows to 10 billion by 2050 (Fig. 1).[5] The demand for infrastructure, especially buildings, is going to be enormous.

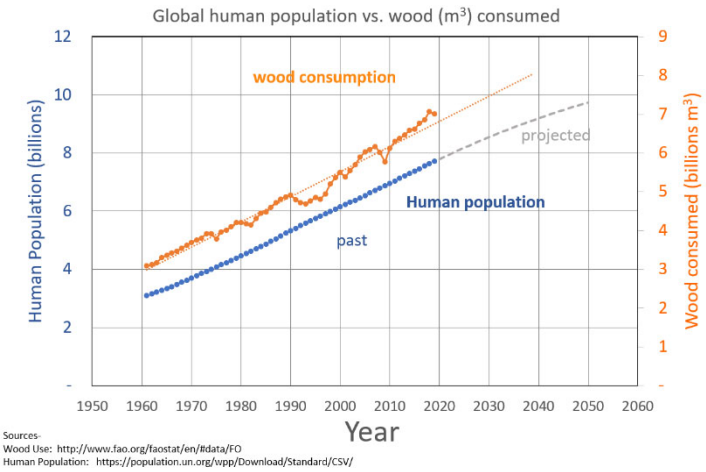


Figure 1: Human population growth in relation to global wood consumption.

Your call to "substantially increase protection of our native forests in order to absorb more CO_2 from the atmosphere" leaves the reader to speculate on what you mean by "protection." It could mean (1) extend the rotation lengths of managed forests, (2) set forest aside and let it grow instead of managing for timber, (3) reduce conversion of forests to non-forest, or all three. Regardless, your letter at least implies a reduction in wood processing.

Given the demand we know is coming, for every presumed ton of carbon sequestered by increased "protection of our native forests" by whatever means, 80%-100% of that ton is predicted to "leak" into the atmosphere as a result of somewhere else stepping in to meet the wood demand. [6-11] Wood flow is international, so reduced harvest in the U.S. will result in harvest elsewhere. The carbon benefit of "protection" in the U.S. will be largely illusory. Even the biodiversity benefits of "increased protection" can "leak." [12] [13]

Thus, the important question is not "how much more carbon can be stored in U.S. forests through 'protection'?" but "how can we optimize the storage of carbon in the forest *and* in forest products *while* meeting society's need for wood?"

This question allows us to address both our climate and biodiversity concerns simultaneously while confronting head-on the insidious leakage problem. Fortunately, new research is addressing this practical, real-world question.[14]

Given human population growth and demand for built infrastructure in the next 30 years, using concrete and steel could consume 35-60% of our remaining 2ºC carbon budget.[15] We could reduce that impact by shifting to wood products that have a *verified* lower carbon life-cycle profile[16] [17] and increase forest ecosystem services such as biodiversity conservation.

Third, although not the topic of your 8 May letter, in considering any forest climate policy or strategy it's important to consider the socio-economic implications to forest-based communities. Yes, we (society) can set policy to extend rotation length or even set aside (preserve) forestland. Woods and mill jobs will be impacted. Not to mention the climate justice issues of such an approach, the science on leakage suggests that these climate-inspired strategies would make little to no difference for the atmosphere. Everybody loses.

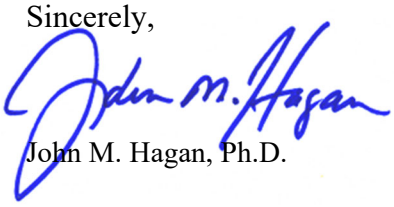
We need rural communities with us on climate change (and on biodiversity conservation). I fear your letter could give climate skeptics the ammunition they need—that "we" are living in an

educated, elite world where we don't use wood and their livelihoods don't matter. It could divide us even further at a time when we desperately need to be united.

If we are smart, through improved silviculture and forest management we can *better* conserve forest biodiversity (including the late-successional and old-growth species that I care about), sequester *more* carbon in the woods and in products, *and* create a new forest economy to meet the infrastructure demands we *know* are coming. This will require *multidimensional*, or system-wide thinking. All the values—social, economic, and environmental—will need to be on the table at the same time so we can understand how they are connected. One-dimensional approaches pit us against each other and obscure lasting solutions.

Notwithstanding overly cheerful marketing by the forest products sector, I hope we can use our collective intellect to find such multidimensional solutions for how forests can help solve the climate problem. Finding such solutions is no small feat, and time is nigh. We have some hard work ahead of us, and so I remain grateful for your knowledge and commitment to forests, forestry, and climate change.

Sincerely,



John M. Hagan, Ph.D.

Endnotes:

[1] Walker, T. et al. 2010. Biomass Sustainability and Carbon Policy Study. Manomet Center for Conservation Sciences, Manomet, MA.

[2] Walker T, et al. 2013. Carbon accounting for woody biomass from Massachusetts (USA) managed forests: a framework for determining the temporal impacts of wood biomass energy on atmospheric greenhouse gas levels. Journal of Sustainable Forestry, 32:130–158.

[3] O'Dwyer, J. et al. 2018. Wood waste decomposition in landfills: An assessment of current knowledge and implications for emissions reporting. Waste Management 73:184-85.

[4] Ximenes, F. et al. 2018. The Decay of Engineered Wood Products and Paper Excavated from Landfills in Australia. Waste Management 74:312-322.

[5] https://population.un.org/wpp/Download/Standard/Population/

[6] Wear, D, & Murray, B. 2004. Federal timber restrictions, interregional spillovers, and the impact on US softwood markets. Journal of Environmental Economics and Management, 47(2):307-330.

[7] Murray, B., et al. 2004. Estimating Leakage from Forest Carbon Sequestration Programs. Land Economics, 80(1):109-124.

[8] Gan J, & McCarl, B. 2007. Measuring transnational leakage of forest conservation. Ecological Economics, 64(2):423-432.

[9] Montserrat, A., & Sohngen, B. 2009. How big is leakage from forestry carbon credits? Estimates from a global model. IOP Conference Series: Earth & Enviro Science, 6(5),052011.

[10] Haya, B. 2019. Response to comments by the California Air Resources Board on "POLICY BRIEF: The California Air Resources Board's U.S. Forest offset" protocol underestimates leakage"

[11] Yu, W. & Clora, D. 2020. Implications of decarbonizing the EU economy on trade flows and carbon leakages. Policy Brief No. 7. http://european-calculator.eu/wp-content/uploads/2020/04/EUCalc_PB_no7_Trade.pdf

[12] Berlik et al., 2002. The illusion of preservation: a global environmental argument for the local production of natural resources. Journal of Biogeography. 29:1557-1568.

[13] Moilanen, A., & Laitila, J. 2016. Indirect leakage leads to failure of avoided loss biodiversity offsetting. Journal of Applied Ecology. 56:106-111.

[14] Daigneault, A. et al. 2020. Maine Forestry and Agriculture Natural Climate Solutions Mitigation Potential: Interim Report. University of Maine.

[15] Churkina et al. 2020. Building as a global carbon sink. Nature Sustainability. https://www.nature.com/articles/s41893-019-0462-4

[16] Ibid.

[17] Pomponi, F. & Moncaster, A. 2018. Scrutinising embodied carbon in buildings: The next performance gap made manifest. Renewable and Sustainable Energy Reviews 81, 2431-2442.