# Open Letter to President Biden and Members of Congress from Scientists: It is essential to Remove Climate-Harming Logging and Fossil Fuel Provisions from Reconciliation and Infrastructure Bills

November 4, 2021

Dear President Biden and Members of Congress,

As scientists with expertise in ecology, forest management, biodiversity, and climate change, we are writing to urge you to remove from the Budget Reconciliation and Infrastructure provisions that promote logging and fossil fuels because such measures will only make worse the global climate and biodiversity crises. As an initial matter, we note that, even under optimistic expert estimates, the clean energy provisions in these bills are insufficiently bold and would, by themselves, only achieve a fraction of what we would need to reach the Administration's minimum climate crisis mitigation target of a 50% reduction in annual U.S. greenhouse gas emissions from 2005 levels by 2030. Making matters worse, the bills contain numerous logging provisions that would dramatically increase annual carbon emissions from logging for lumber, forest biomass energy, and wood pellets on public and private forestlands nationwide, which would undermine natural climate solutions and our forests' carbon storage and sink capacities. The Reconciliation Bill is in jeopardy unless the cost can be reduced. Removing these compromising logging provisions and the subsidies for logging, bioenergy and fossil fuels would help accomplish that goal.

As hundreds of climate and forest scientists warned Congress last year, logging in U.S. forests emits 723 million tons of uncounted CO<sub>2</sub> into our atmosphere each year—more than 10 times the amount emitted by wildfires and tree mortality from insects combined.<sup>2</sup> Greenhouse gas emissions from logging in U.S. forests are now comparable to the annual CO<sub>2</sub> emissions from U.S. coal burning, and annual emissions from the building sector.<sup>3</sup> Most of the carbon in trees removed from forests through logging is emitted almost immediately, as branches and tree tops are burned at biomass energy facilities, and mill residues are burned at the sawmills, typically for energy production<sup>4</sup>—emitting more CO<sub>2</sub> than burning coal, for equal energy produced.<sup>5</sup> Logging conducted as commercial "thinning," under the rubric of fire management, emits about three times more CO<sub>2</sub> than wildfire alone.<sup>6</sup>

The Reconciliation Bill currently contains \$14 billion in new subsidies for logging on federal public lands—more than double existing levels—as well as billions in new logging subsidies on private forestlands. The Reconciliation Bill further proposes nearly \$1 billion in new subsidies for forest biomass energy, wood pellet facilities, and mass timber (cross-laminated timber) under the heading of "wood innovation." This ignores the advice of hundreds of climate and forest scientists who have previously informed Congress that these industries substantially increase emissions and worsen the climate crisis.<sup>7</sup>

The Infrastructure Bill includes a legislative mandate for 30 million acres of additional logging on federal public lands over the next 15 years, in addition to misdirecting billions of dollars in new subsidies for the fossil fuel industry and an exemption from environmental analysis for new oil and gas pipelines across federal lands. It also includes provisions that would roll back the National Environmental Policy Act by creating new "categorical exclusion" exemptions from

environmental analysis and disclosure of adverse impacts of this logging on our climate and forest biodiversity, while eliminating the public's right to file administrative objections on logging proposals. Further, the Infrastructure bill includes \$400 million for destructive post-fire clearcutting on public lands, and \$400 million in new subsidies for forest biomass and wood pellet facilities, which not only harm our climate and forest ecosystems but also disproportionately adversely affect communities of color with increased particulate and toxic pollution. In addition, there are \$18 billion in new subsidies in the bill for the forest biomass/pellet and fossil fuel industries to promote carbon capture and storage (CCS) and biomass energy with carbon capture and storage (BECCS), and construction of a massive network of CO<sub>2</sub> pipelines. Hundreds of climate scientists, and conservation and environmental justice organizations, have decried this as a false climate solution that can actually increase net carbon emissions and energy consumption while increasing pollution in communities of color.

In both bills, logging provisions are promoted as wildfire management and climate solutions measures, but commercial logging conducted under the guise of "thinning" and "fuel reduction" typically removes mature, fire-resistant trees that are needed for forest resilience. We have watched as one large wildfire after another has swept through tens of thousands of acres where commercial thinning had previously occurred due to extreme fire weather driven by climate change. Removing trees can alter a forest's microclimate, and can often increase fire intensity. In contrast, forests protected from logging, and those with high carbon biomass and carbon storage, more often burn at equal or lower intensities when fires do occur. 11

We urge Congress to move in the opposite direction by shifting from more logging toward natural climate solutions that store carbon in mature and older forests and allow naturally regenerating forests to continue growing for greater carbon accumulation. For example, protecting U.S. federal public forestlands from logging would not only reduce direct carbon emissions but would also increase annual drawdown of atmospheric CO<sub>2</sub> by 84 million tons per year. We do not wish to follow our Canadian neighbors where some of their managed forests have become a source of emissions because they followed many of the proposed policies in these Bills. There is a path toward meeting the vital 2030 climate crisis mitigation goals, but not with the Reconciliation and Infrastructure Bills as currently written.

We need the Administration and Congress to enact policies that will substantially *reduce* annual greenhouse gas emissions from logging, and from fossil fuels, and increase accumulation of carbon in our forests. The recent IPCC AR6 report released in August makes clear the urgent need to reduce emissions by at least half by 2030 to avoid large increases of devastating heat domes, prolonged droughts, wildfires that can impact communities, intense precipitation events, and catastrophic storms. The logging and fossil fuel subsidies and policies in the Reconciliation and Infrastructure Bills will only intensify the rate and intensity of our changing climate.

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#### References

- 1: Larsen, J., et al. 2021. Pathways to Build Back Better: Nearly a Gigaton on the Table in Congress. Rhodium Group, New York, NY. Accessed at: <a href="https://rhg.com/research/build-back-better-congress-budget/">https://rhg.com/research/build-back-better-congress-budget/</a>
- 2: (a) Moomaw, W.R., et al. 2020. Scientists concerned about climate and biodiversity impact of logging. Accessed at: <a href="https://johnmuirproject.org/2020/05/breaking-news-over-200-top-u-s-climate-and-forest-scientists-urge-congress-protect-forests-to-mitigate-climate-crisis/">https://johnmuirproject.org/2020/05/breaking-news-over-200-top-u-s-climate-and-forest-scientists-urge-congress-protect-forests-to-mitigate-climate-crisis/</a>; (b) Harris, N.L., et al. 2016. Attribution of net carbon change by disturbance type across forest lands of the conterminous United States. Carbon Balance Manage. 11: Article 24.
- 3: USEIA. 2021. How much of U.S. carbon dioxide emissions are associated with electricity generation? U.S. Energy Information Administration (2020 data). Accessed at: <a href="https://www.eia.gov/tools/faqs/faq.php?id=77&t=11">https://www.eia.gov/tools/faqs/faq.php?id=77&t=11</a>
- 4: (a) Harmon, M.E. 2019. Have product substitution carbon benefits been overestimated? A sensitivity analysis of key assumptions. Environmental Research Letters 14: Article 065008; (b) Hudiburg, T.W., Beverly E. Law, William R. Moomaw, Mark E. Harmon, and Jeffrey E. Stenzel. 2019. Meeting GHG reduction targets requires accounting for all forest sector emissions. Environmental Research Letters 14: Article 095005.
- 5: Sterman, J.D., L. Siegel, and J.N. Rooney-Varga. 2018. Does replacing coal with wood lower CO2 emissions? Dynamic lifecycle analysis of wood bioenergy. Environmental Research Letters 13: Article 015007.
- 6: Campbell, J.L., M.E. Harmon, and S.R. Mitchell. 2012. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Frontiers in Ecol. and Environ. 10: 83-90.
- 7: Moomaw, W.R., et al. 2020. Scientists concerned about climate and biodiversity impact of logging. Accessed at: <a href="https://johnmuirproject.org/2020/05/breaking-news-over-200-top-u-s-climate-and-forest-scientists-urge-congress-protect-forests-to-mitigate-climate-crisis/">https://johnmuirproject.org/2020/05/breaking-news-over-200-top-u-s-climate-and-forest-scientists-urge-congress-protect-forests-to-mitigate-climate-crisis/</a>

- 8: Koester, S, and S. Davis. 2018. Siting of Wood Pellet Production Facilities in Environmental Justice Communities in the Southeastern United States. Environmental Justice 11: 64-70.
- 9: (a) Art, H.W., et al. 2021. A Statement by Scientists and Economists on BECCS from Forest Biomass. Accessed at: <a href="https://www.biofuelwatch.org.uk/wp-content/uploads/BECCS-letter-by-scientists-and-economists-1.pdf">https://www.biofuelwatch.org.uk/wp-content/uploads/BECCS-letter-by-scientists-and-economists-1.pdf</a>; (b) 350.org, et al. 2021. Carbon capture is not a climate solution. Accessed at: <a href="https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter\_FINAL\_US-1.pdf">https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter\_FINAL\_US-1.pdf</a>.
- 10: (a) Bradley, C.M. C.T. Hanson, and D.A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western USA? Ecosphere 7: article e01492; (b) Cruz, M.G., M.E. Alexander, and J.E. Dam. 2014. Using modeled surface and crown fire behavior characteristics to evaluate fuel treatment effectiveness: a caution. Forest Science 60: 1000-1004; (c) Cruz, M.G., M.E. Alexander, and P.A.M. Fernandes. 2008. Development of a model system to predict wildfire behavior in pine plantations. Australian Forestry 71: 113-121.
- 11: (a) Zald, H.S.J., and C.J. Dunn. 2018. Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. Ecological Applications 28: 1068-1080; (b) Odion, D.C., and C.T. Hanson. 2008. Fire severity in the Sierra Nevada revisited: conclusions robust to further analysis. Ecosystems 11: 12-15; (c) Odion, D. C., M. A. Moritz, and D. A. DellaSala. 2010. Alternative community states maintained by fire in the Klamath Mountains, USA. Journal of Ecology 98: 96-105; (d) Bradley, C.M. C.T. Hanson, and D.A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western USA? Ecosphere 7: article e01492; (e) Dunn, C.J., et al. 2020. How does tree regeneration respond to mixed-severity fire in the western Oregon Cascades, USA? Ecosphere 11: Article e03003; (f) Meigs, G.W., et al. 2020. Influence of topography and fuels on fire refugia probability under varying fire weather in forests of the US Pacific Northwest. Canadian Journal of Forest Research early online 1-30. doi: 10.1139/cjfr-2019- 0406; (g) Lesmeister, D.B., Sovern, S.G., Davis, R.J., Bell, D.M., Gregory, M.J., and Vogeler, J.C. 2019. Mixed-severity wildfire and habitat of an old-forest obligate. Ecosphere10: Article e02696.
- 12: Depro, B.M., et al. 2008. Public land, timber harvests, and climate mitigation: Quantifying carbon sequestration potential on U.S. public timberlands. Forest Ecology and Management 255: 1122-1134.