Carbon Value Far Exceeds Timber Value for Federal Forests in Western Oregon

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Note: the information below updates Background Paper 2014-01 of the Federal Forest Carbon Coalition, published 12 August 2014.

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Key Findings:

A. In 2016, the Bureau of Land Management (BLM) produced data for the value of logs produced from lands it manages in western Oregon and the magnitude of the costs to society from logging-related carbon emissions. The data indicated that the social costs would exceed the value of the logs produced by more than 4-to-1.

B. Subsequent research indicates that the climate-related social costs of logging exceed the value of the logs by at least 40-to-1, with a significant probability that the ratio exceeds 80-to-1.

A. The BLM showed that the climate-related costs of logging exceed the value of the logs produced by more than 4-to-1

Forests remove carbon from the atmosphere through the photosynthesis process and store it as plant material in live trees, dead trees, and forest soils. When a forest is logged, though, most of this carbon returns to the atmosphere, where it intensifies the future economic harm from climate change and ocean acidification.[1] Estimating the value of this harm requires multiplying the amount of carbon dioxide released, measured in metric tons per acre, times the harm per ton. Calculations completed in the Pacific Northwest show that the climate-related harm from logging far exceeds the value of logs produced.

The Northwest Forest Plan (NWFP) governs 24 million acres of federal forests in western Oregon, Washington, and northern California. Adopted in 1994, it emphasizes protecting the long-term health of forests, wildlife, and waterways through scientifically sound and ecologically credible actions consistent with all applicable legislation, including the Endangered Species Act. The transition to this emphasis on conservation resulted in reductions in logging from the levels of previous decades.[2]

The BLM manages more than 2 million acres in western Oregon under the NWFP. In 2016, the BLM adopted a new resource management plan and, in the environmental impact statement, it demonstrated the logging on its lands generates substantial CO_2 emissions. It also provided an example of how to estimate the emissions and calculate the economic costs therefrom.[3] The BLM's data show that, for an increase in logging on its lands, the climate-related costs from the

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[1] Smith, J.E., L.S. Heath, K.E. Skagg, and R.A. Birdsey. 2006. *Methods for Calculating Forest Ecosystem and Harvested Carbon with Standard Estimates for Forest Types of the United States*. U.S. Forest Service Northeast Research Station. General Technical Report NE-343.

[2] Pipkin, J. 1998. The Northwest Forest Plan Revisited. Regional Ecosystem Office. September.

[3] U.S. Bureau of Land Management. 2016. Resource Management Plan and Final Environmental Impact Statement: Western Oregon.

associated CO_2 emissions would exceed $35,000 per acre logged, and that these costs also would exceed the value of the logs produced by more than 4-to-1.[4]

B. Subsequent research indicates that the climate-related costs of logging exceed the value of the logs by at least 40-to-1, and perhaps more than 80-to-1.

To calculate the social (public) costs from the logging-related emissions, the BLM assumed the damage from near-term emissions would be about $40 per metric ton. This assumption comes from the efforts of a federal Interagency Working Group and represents the best science available in 2015.[5] The best available science today, however, shows that the economic damage resulting from near-term CO_2 emissions is about $417 per metric ton.[6] Applying this figure to the BLM's data indicates that the climate-related costs from logging-related CO_2 emissions would exceed the value of the logs from BLM's lands by more than 40-to-1. The researchers who published this finding in 2018, also noted that there is significant risk that the value could be $800 per ton. This risk indicates that the climate-related damage resulting from logging on BLM's lands plausibly could be 80 times the value of the logs produced. Thus, these numbers indicate that logging on BLM's lands and, hence, on similar national forest lands, will result in climate costs and risks of more than $350,000–$700,000 per acre logged.

In reality, the actual damage undoubtedly will be higher, insofar as no assessment of the social cost of atmospheric CO_2 accounts for all categories of damage, including warming and acidification of the oceans, species extinctions, and the potential for catastrophic rises in sea level sooner than previously anticipated. Indeed, with astonishing frequency, new research findings reveal that the climate crisis is more severe and worsening faster than previously believed. For example:

- "Our planet's climate may be more sensitive to increases in greenhouse gas than we realized, according to a new generation of global climate models being used for the next major assessment from the Intergovernmental Panel on Climate Change (IPCC). The findings—which run counter to a 40-year consensus—are a troubling sign that future warming and related impacts could be even worse than expected."[7]
- "Climate change is not just about temperature," Lester said. "Unfortunately, it's going to affect a range of factors. When we try to predict what's going to happen in the future for marine species, we need to account for the full suite of factors that are going to change and be prepared for the fact that the impact on those species might be worse than what we'd predict just based on temperature."[8]
- "Ocean heating—which could trigger potentially devastating weather events including hurricanes and storms—is happening 40 percent faster than previous thought, scientists have warned."[9]

[4] Id., Vol. 3, p. 526.
[5] Interagency Working Group on Social Cost of Carbon, United States Government. 2015 (revised). Technical Support Document: - Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866.
[6] Ricke, K., and others. 2018. Country-level social cost of carbon.
[7] Henson, B. 2019. New models point to more global warming than we expected.
[8] Florida State University. 2019. Multifactor models reveal worse picture of climate change impact on marine life.
[9] Gander, K. 2019. Oceans heating up 40 percent faster than thought, 2018 expected to see record temperatures, scientists warn.

- "Carbon-saturated oceans headed toward tipping point [that] could unleash mass extinction event."[10]
- "Glacial melting in Antarctica may become irreversible [and] trigger 50cm sea level rise."[11]
- "[S]ince 2000, warming has already cost both the US and the EU at least $4 trillion in lost output, and tropical countries are greater than 5% poorer than they would have been without this warming."[12]
- "The health, safety and well-being of millions of people in the U.S. have already been harmed by human-caused climate change, and health risks in the future are dire without urgent action to fight climate change."[13]

C. Conclusion

Data for federal forests in western Oregon show that the climate-related costs of logging—the harm to society resulting from carbon emissions—exceeds the value of the logs produced by at least 40-to-1 and perhaps more than 80-to-1. The actual ratio is larger, insofar as a growing body of research indicates that past analyses have underestimated the extent and severity of future harms resulting from future carbon emissions.

[10] Conley, J. 2019. Completely terrifying: study warns carbon-saturated oceans headed toward tipping point that could unleash mass extinction event. 9 July.
[11] Morton, A. 2019. Glacial melting in Antarctica may become irreversible: Thwaites glacier is likely to thaw and trigger 50cm sea level rise, US study suggests. 9 July.
[12] Burke, M., and V. Tanutama. 2019. Climatic constraints on aggregate economic output.
[13] Associated Press. 2019. 74 medical and public health organizations are calling climate change a 'health emergency'. 24 June.