

Letter from Scientists to the Signatories of the Glasgow Leaders' Declaration on Forests and Land Use

November 16, 2022

Dear Glasgow Leaders' Declaration Signatories,

Since last November, over 140 countries have signed onto the Glasgow Leaders' Declaration on Forests and Land Use ("Glasgow Declaration"), committing to ending deforestation and land degradation by 2030.ⁱ The Glasgow Declaration is the strongest global recognition to date that addressing the dual crises of climate change and biodiversity collapse will require an end not just to deforestation - forest conversion - but also to the degradation of critical forest ecosystems from industrial logging and other industries. The CO₂ emissions and loss of biodiversity from forest degradation are significant and can no longer be ignored - forest degradation is responsible for the emission of an estimated 2.1 billion tons of carbon dioxide annually in the tropics alone,ⁱⁱ and contributes significantly to species' loss of habitat and other biodiversity declines.ⁱⁱⁱ

The success of the Glasgow Declaration and, more broadly, of international efforts to address climate change and biodiversity loss will therefore depend in significant part on the rigor with which all forested countries, including those in the Global North, address forest degradation as a key component of their commitment to end land degradation.

While the international community still needs to align around a formal definition of forest degradation, it is generally understood to refer to land use impacts on forest ecosystems that significantly and negatively affect their species composition, structure, and function; deplete forest ecosystem carbon stocks; and reduce the quality of ecosystem services such as the provision of clean water.^{iv}

Unfortunately, governments and industry actors have used the lack of consensus around a single definition of "degradation" to weaken and arbitrarily narrow its meaning in a way that divorces it from scientific reality. At the extreme of this are attempts to essentially conflate "forest degradation" with "deforestation," applying the term only to forest impacts that are practically indistinguishable from forest conversion.

The term, more accurately applied, would encompass a range of industrial activities, particularly within the logging and mining sectors, that may not permanently remove tree cover but leave the forest deprived of many of its original values, for example, through industrial logging that: promotes commercially valuable canopy trees species; converts the forest to even-aged, young

stands; eliminates habitat for old-growth-dependent wildlife; reduces the ecosystem carbon stock; and increases erosion and poor water quality.

One of these activities is the industrial logging of primary forests, which are those forests that have never before been industrially disturbed. Across temperate and boreal biomes, these forests have unique value for the climate, biodiversity, water filtration, and other ecosystem services and, once lost, are irreplaceable on any meaningful human timescale.^v Whether examining degradation through the lens of carbon storage, native species habitat, ecological complexity, water filtration and other services, or even future timber value, the industrial logging of primary forests invariably depletes or mars the forest's original characteristics, no matter the subsequent forest regeneration practices.^{vi}

As the Intergovernmental Panel on Climate Change (IPCC) has written, the preservation of primary forests is critically important to climate change mitigation.^{vii} Primary forests store approximately 30-50% more carbon than previously logged forests,^{viii} much of which is released to the atmosphere when the forest is industrially disturbed.^{ix} Even as it regrows, it can take centuries for the forest to recover the resulting carbon debt.^x

Primary forests' unique ecologies, including their structural and biological complexity, also create irreplaceable habitat for many plant, animal, and fungi species, and provide critical ecosystem services for communities around the world. Mammals like boreal caribou, lynx, and orangutans depend on primary forests, while studies have also shown dramatic decline in bird populations that depend on native forests in the wake of industrial logging.^{xi} Primary forests help to regulate global weather patterns, filter water, protect against zoonotic diseases, and harbor critical pollinators, among other services.

The irreplaceable value of primary forests will only grow in the face of worsening climate conditions. These forests, because of their complexity and biodiversity, are more resilient to wildfires and other natural disturbances expected to grow in frequency and intensity in the coming decades. As a result, they likely will become increasingly important stable carbon stores and biodiversity refuges. The growing stresses to previously logged forests also impair forests' ability to recover after logging, making the degrading impact of industrial logging even more severe and longer-term.

In addition to the industrial logging of primary forests, there are many other industrial impacts that would qualify as forest degradation, with varying degrees of severity. The industrial logging of primary forests, however, provides the starkest illustration that degradation has to be treated as distinct from deforestation and provides a clear starting point for policies implementing countries' commitments under the Glasgow Declaration.

As a clear and egregious example of forest degradation, the commercial logging of primary forests is incompatible with achieving the preservation of a safe climate and stable biodiversity. Based on a scientific understanding of what commitments under the Glasgow Declaration imply for forest management, the international community can begin to acknowledge the full scope of the challenges we face and chart pathways that align with a climate-safe and sustainable world.

Sincerely,

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ⁱ “Glasgow Leaders’ Declaration on Forests and Land Use,” <https://ukcop26.org/glasgow-leaders-declaration-on-forests-and-land-use/>.

ⁱⁱ N.L. Harris et al., “Global Maps of Twenty-First Century Forest Carbon Fluxes,” *Nature Climate Change*, 11(3), 2021, 234-240.

ⁱⁱⁱ See, e.g., Matthew G. Betts et al., “Forest Degradation Drive Widespread Avian Habitat and Population Declines,” *Nature Ecology & Evolution* 6, 2022, 709-719, <https://www.nature.com/articles/s41559-022-01737-8>. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, “Chapter 2.2: Status and Trends–Nature,” in 2020 IPBES Global Report, https://ipbes.net/system/files/2021-06/2020%20IPBES%20GLOBAL%20REPORT%20%28CHAPTER%202.2%29_V3_SINGLE_0.pdf.

^{iv} A. Vasquéz-Grandón et al., “Forest Degradation: When Is a Forest Degraded?,” *Forests*, 2018, <https://www.proquest.com/publiccontent/docview/2174408649?pq-origsite=summon&https://www.proquest.com/publiccontent?accountid=15172>. “Dear Member of the European Parliament Committee on the Environment, Public Health and Food Safety,” 2022, <https://ethz.ch/content/dam/ethz/special-interest/usys/ites/ecosystem-management-dam/documents/Scientist%20Letter%20on%20forest%20degradation.pdf>.

^v D.A. DellaSala et al., “Primary Forests Are Undervalued in the Climate Emergency,” *BioScience* 70, no. 6, 2020, https://www.researchgate.net/publication/341277924_Primary_Forests_Are_Undervalued_in_the_Climate_Emergency.

^{vi} Bergeron, Y. and Fenton, N.J., 2012. Boreal forests of eastern Canada revisited: old growth, nonfire disturbances, forest succession, and biodiversity. *Botany*, 90(6), pp.509-523. Lindenmayer, D., 2016. Interactions between forest resource management and landscape structure. *Current Landscape Ecology Reports*, 1(1), pp.10-18.

^{vii} IPCC Working Group III, *Climate Change 2022: Mitigation of Climate Change*, 2022, <https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/>.

^{viii} D.A. DellaSala et al., “Primary Forests Are Undervalued in the Climate Emergency,” https://www.researchgate.net/publication/341277924_Primary_Forests_Are_Undervalued_in_the_Climate_Emergency.

^{ix} B. Mackey et al., *Green Carbon: The Role of Natural Forests in Carbon Storage*, Australian National University Press, 2008, <https://press-files.anu.edu.au/downloads/press/p56611/pdf/book.pdf>.

^x J. Malcolm et al., “Forest Harvesting and the Carbon Debt in Boreal East-Central Canada,” *Climatic Change*, 2020, <https://link.springer.com/article/10.1007/s10584-020-02711-8>.

^{xi} Matthew G. Betts et al., “Forest Degradation Drive Widespread Avian Habitat and Population Declines,” *Nature Ecology & Evolution* 6, 709-719, 2022, <https://www.nature.com/articles/s41559-022-01737-8>.