Letter from Scientists to Prime Minister Justin Trudeau Regarding Canada's Engagement on the Definition of Forest Degradation

November 8, 2023

Dear Prime Minister Trudeau,

In November 2021, Canada joined 144 other signatories to the Glasgow Leaders' Declaration on Forests and Land Use ("Glasgow Declaration") in committing to halt and reverse deforestation and land degradation by 2030.[i] The Glasgow Declaration clearly recognizes that solving the dual crises of climate change and biodiversity collapse will require an end not just to deforestation - forest conversion - but also the degradation of critical forest ecosystems from industrial logging and other extractive industries.[ii] As scientists with backgrounds in natural resources, climate change, and forest ecosystems, we are concerned about the Government of Canada's recent statements questioning the functionality of the term "degradation" due to the alleged lack of a commonly understood definition. We offer a science-based approach to defining and implementing policies to end not just deforestation but, importantly, forest degradation as well.

Like deforestation, forest degradation is identifiable and traceable, given proper government monitoring and best available science. Degradation in the tropics has been a long-standing international policy priority, including for Canada. **We urge Canada to now recognize and address forest degradation domestically, properly defined according to ecological, rather than economic, indicators, and to support, rather than hinder, global policymaking that advances efforts to halt and reverse forest degradation, in alignment with the Glasgow Declaration.**

While the term "degradation" has yet to receive a formally agreed approach internationally, it is routinely used throughout the world, with a long history in international environmental governance, and its meaning is well understood in practice[iii]. Degradation is widely understood to refer to impacts on forest ecosystems that may not constitute land-use change but that negatively affect their native species composition, structure, and function; deplete forest ecosystem carbon stocks; or reduce the quality of ecosystem services such as the provision of clean water.[iv] In fact, the Food and Agriculture Organization (FAO),[v] International Union for the Conservation of Nature (IUCN),[vi] and Convention on Biological Diversity (CBD)[vii] all employ similar language, identifying degradation as impacts to forest species composition, "structure," and "function" that reduce the provision of goods and/or ecosystem services.

Although there may be certain activities at the margins of forest degradation that require closer scrutiny and additional policy discussions, there are categories of industrial practices to which this term would consistently and incontrovertibly apply. One of these activities is industrial logging and associated activities including road building in natural forests.[viii] Of particular concern are the impacts of these activities on primary forests, which are forests of any successional stage (age) that have never before been industrially disturbed, as well as old-growth forest which may have been logged historically.[ix]

Across all biomes, primary and old-growth forests have unique values for climate mitigation, biodiversity conservation, water quality, and other ecosystem services that are negatively impacted by industrial

logging. Primary forests and old-growth forests have special values which, once lost, are irreplaceable on any meaningful human timescale.[x] Whether examining degradation through the lens of one of more of these ecosystem services or the more integrative criterion of ecological integrity,[xi] the industrial logging of primary and old-growth forests invariably degrades the forest's original characteristics, no matter the subsequent forest regeneration practices.[xii]

Primary and old-growth forests are also more resistant and resilient to extreme weather events (wildfire, droughts, heatwaves) and anthropogenic climate change due to their moderated forest interior micro-climate, functioning as potential climate refugia.[xiii] Logged forests are susceptible to more frequent, intensive wildfires than primary and old-growth forests as a result of the accumulated impacts at a landscape level in terms of a reduction in forest age, an artificially dense number of young trees, and logging slash, and an increase in fragmentation and edge effects. Monoculture replanting,[xiv] fire suppression, and other common industry practices further exacerbate wildfire conditions.[xv] In fact, given rapidly changing climate conditions, degradation may have compounding effects that hinder forest regeneration altogether, resulting in permanent forest cover loss.[xvi]

Identifying degradation should use ecological indicators such as loss of carbon stocks and biodiversity declines, rather than economic ones. Properly construed, degradation would necessarily include industrial impacts in primary and old-growth forests, and the conversion of naturally regenerating forest to planted forests or plantations. "Sustainable forest management" is not a term that has relevance to determining degradation.

A coordinated global effort to end degradation in all natural forest biomes (boreal, temperate, tropical) will significantly address the global climate and biodiversity crises and is essential to fulfilling their commitments under the Glasgow Declaration. Just like degradation in the tropics, degradation in boreal and temperate forests is something that countries can, and must, address immediately.

Canada's alignment with this international exigency is essential. Its policies, however, must rest on a foundation of processes and metrics guided by accepted science, with ecologically relevant indicators that reflect the irreplaceable importance of primary and old-growth forests.

Sincerely,

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[i] "Glasgow Leaders' Declaration on Forests and Land Use," Nov. 2021, https://webarchive.nationalarchives.gov.uk/ukgwa/20230418175226/https://ukcop26.org/glasgow-leaders-declaration-on-forests-and-land-use/.

[ii] See, e.g., N. Yousif, "Canada: Ambassador Tells EU that Deforestation Rules 'Burdensome,'" BBC, Dec. 2, 2022, https://www.bbc.com/news/world-us-canada-63736486; https://www.prpeak.com/highlights/canada-to-redefine-forest-degradation-following-eu-import-law-7134510.

[iii] See FAO 2020a, *Global Forest Resources Assessment 2020: Main Report*, Rome, https://www.fao.org/documents/card/en/c/ca9825en, Box 8. Forest degradation, pp. 95-96.

[iv] A. Vasquéz-Grandón et al. (2018), "Forest Degradation: When Is a Forest Degraded?," *Forests*, https://www.proquest.com/publiccontent/docview/2174408649?pqorigsite=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-managementdam/documents/Scientist%20Letter%20on%20forest%20degradation.pdf..

[v] FAO, Assessing Forest Degradation: Towards the Development of Globally Applicable Guidelines, 2011, https://www.fao.org/3/i2479e/i2479e00.pdf.
[vi] IUCN, Deforestation and Forest Degradation, Feb. 2021, https://www.iucn.org/resources/issues-brief/deforestation-and-forest-degradation.
[vii] Convention on Biological Diversity, "Definitions," https://www.cbd.int/forest/definitions.shtml (accessed Sept. 28, 2023).
[viii] We use the term "natural forest" here to distinguish naturally formed and regenerating forest ecosystems from planted forests and plantation tree crops. See *Global Forest Resource Assessment 2020 Terms and Definitions*, Forest Resources Assessment Working Paper 188, Food and Agricultural Organization of the United Nations. https://www.fao.org/3/I8661EN/i8661en.pdf.
[ix] D.A. DellaSala et al. (2020), "Primary Forests Are Undervalued in the Climate Emergency," *BioScience* 70, no. 6, https://www.researchgate.net/publication/341277924_Primary_Forests_Are_Undervalued_in_the_Climate_Emergency.
[x] Ibid.
[xi] Ecosystem integrity refers to the ability of ecosystems to maintain key ecological processes, recover from disturbance and adapt to new conditions, given the prevailing environmental drivers and perturbations, and continue the natural processes that enable self-organization and regeneration. Brendan M. Rogers et al. (2022), "Using Ecosystem Integrity to Maximize Climate Mitigation and Minimize Risk in International Forest Policy," *Frontiers in Forests and Global Change* 5, 2022. Hans Pörtner et al. (2022), *Climate Change 2022: Impacts, Adaptation, and Vulnerability: Summary for Policymakers*, Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC, Cambridge University Press.
[xii] Y. Bergeron and N.J. Fenton (2012), "Boreal Forests of Eastern Canada Revisited: Old Growth, Nonfire Disturbances, Forest Succession, and Biodiversity, *Botany*, 90(6), pp.509-523. D. Lindenmayer (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/.
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[xiv] Harold J.S. Zald, and Christopher J. Dunn (2018), "Severe Fire Weather and Intensive Forest Management Increase Fire Severity in a Multi-Ownership Landscape," *Ecological Applications* no. 28, 4, pp. 1068-1080, https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1002/eap.1710.
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