

B.C. Forest Bioenergy Policy Suggestions

Science Alliance for Forestry Transformation

Who Are We?

The Science Alliance for Forestry Transformation is an assemblage of informed scientists and applied science forest professionals who have studied forests, their ecosystems, dynamics, fauna and flora. We are gravely concerned with the cumulative impacts of B.C. forest policy and practices on biodiversity, climate and communities.

Our Ask

We ask for **a moratorium on forest harvesting for biomass until science-based policy has been developed to regulate the industry**. The emerging wood pellet industry increases harvesting pressure on B.C.'s forest ecosystems. Inadequate regulation, combined with economic opportunity based on flawed carbon accounting, threatens to increase short-term carbon emissions, decrease carbon storage and undermine biodiversity conservation. A bioenergy-driven harvest spike would challenge B.C.'s emission targets.

Background

Generating energy from waste wood (e.g., mill residue, piled logging slash) can be part of a sound climate strategy¹ if the source material would otherwise be burnt in open slash piles. However, **there is no viable climate or environmental argument that justifies industrial-scale production of wood pellets derived from whole trees**.² The bioenergy industry must be regulated to avoid adverse effects on climate, biodiversity, and socio-economic outcomes.³

The main—flawed—argument for replacing fossil fuels with wood fuels is that net atmospheric CO₂ does not increase from wood pellet combustion, because growing forests will absorb emissions. However, regrowth takes time, decades to centuries,⁴ that we do not have. Growing evidence shows that harvesting trees for fuel ignores the important role that forests play as CO₂ sinks, and that managed forests never recover the carbon of primary forests.⁵ Moreover, the combustion of wood products is inefficient, producing more CO₂ per unit of useful energy than fossil fuels. **Harvesting forests for bioenergy emits more carbon than using fossil fuel sources because processing and combustion efficiencies for wood are lower and because forests take time to grow back**.⁶

Increased logging to feed the bioenergy industry will reduce the area of primary forest, increasing risk to biodiversity and lowering resilience to climate change.⁷ Biomass harvesting targets stands with marginal lumber value, but often high ecological value, including deciduous stands that resist wildfire, old interior cedar-hemlock forests with substantial decay and high biodiversity and carbon storage value, and naturally-disturbed stands that have special value in some landscapes. These ecosystems are being misconstrued as “waste wood”. Within cutblocks harvested for lumber, removing extra biomass (e.g., large pieces of downed wood) reduces habitat and nutrient values.

The logical and accounting flaws underpinning the bioenergy industry have been recognised and documented for over a decade in scientific and popular literature, yet governments continue along this dangerous path.⁸

Policy Recommendations for Discussion⁹

Place a moratorium on harvesting for biomass.

Rationale: Prevent unwarranted ecological and climate impacts until science-based policy is developed.

- Intact primary ecosystems sequester and store large amounts of carbon, especially inland and coastal temperate rainforests.¹⁰ Such forests are not a renewable resource.
- Deciduous forests serve important habitat, forage, soil and resilience functions as well as resisting wildfire spread. Harvesting deciduous stands for bioenergy may increase emissions from wildfire as well as impact biodiversity.

Develop science-based policy to regulate the biomass industry.

Rationale: Current policy is mismatched with science. Policy needs to find a path through emerging science related to multiple complex issues including carbon balance, forest resilience to climate change and ecosystem function. International carbon accounting rules are flawed and have led to subsidies for biomass fuels, perversely increasing greenhouse gas emissions and creating an artificial market that may collapse.¹¹

Issues to consider include

- Life-cycle carbon emissions by decade and biomass source
- Collateral damage to biodiversity and forest resilience
- Logging slash treatment objectives (e.g., biomass, prescribed burning)
- Downed wood supply standards for ecosystem function

Options include

- Use sawmill residue and logging slash that would be open-burned for source material
 - do not use whole trees, downed wood or snags needed for biodiversity function
- Remove subsidies to the bioenergy industry from the Forest Enhancement society of B.C.
- Place a carbon tax on slash pile burning.

Develop science-based forest carbon objectives for B.C.

Rationale: carbon storage and sequestration objectives for B.C.'s forests are needed to guide biomass policy.

- Produce annual reports on forest carbon emissions with full, science-based, carbon accounting for the B.C. forest land base and forest sector, addressing sequestration and emissions.

¹ **Law, B. E. et al.** 2018. Land use strategies to mitigate climate change in carbon dense temperate forests. *Proceedings of the National Academy of Sciences* **115**, 3663-3668.

² **Quinteiro, P. et al.** 2020. A comparative life cycle assessment of centralised and decentralised wood pellets production for residential heating. *Science of The Total Environment* **730**, 139162. **Magelli, F., Boucher, K., Bi, H. T., Melin, S. & Bonoli, A.** 2009. An environmental impact assessment of exported wood pellets from Canada to Europe. *Biomass and Bioenergy* **33**, 434-441, doi:<https://doi.org/10.1016/j.scitotenv.2020.139162>.

³ **Law, B. E. et al.** 2018. **Schlesinger, W. H.** 2018. Are wood pellets a green fuel? *Science* **359**, 1328-1329, doi:10.1126/science.aat2305 (2018).

⁴ **Malcolm, J.R., Holtsmark, B. and Piascik, P.W.,** 2020. Forest harvesting and the carbon debt in boreal east-central Canada. *Climatic Change*, **161**(3), pp.433-449. **DeCicco, J.M. and Schlesinger, W.H.,** 2018. Opinion:

Reconsidering bioenergy given the urgency of climate protection. *Proceedings of the National Academy of Sciences*, **115**(39), pp.9642-9645.

⁵ **Schlesinger, W. H.** 2018. **Schiffman, P. M. & Johnson, W. C.** 1989. Phytomass and detrital carbon storage during forest regrowth in the southeastern United States Piedmont. *Canadian Journal of Forest Research* **19**, 69-78, doi:10.1139/x89-010. **Sterman, J. D., Siegel, L. & Rooney-Varga, J. N.** 2018. Does replacing coal with wood lower CO₂ emissions? Dynamic lifecycle analysis of wood bioenergy. *Environmental Research Letters* **13**, 015007, doi:10.1088/1748-9326/aaa512.

⁶ **Sterman, J. D., Siegel, L., & Rooney-Varga, J. N. (2018).** Does replacing coal with wood lower CO₂ emissions? Dynamic lifecycle analysis of wood bioenergy. *Environmental Research Letters*, **13**(1), 015007. **Laganière, J., Paré, D., Thiffault, E. and Bernier, P.Y.** 2017. Range and uncertainties in estimating delays in greenhouse gas mitigation potential of forest bioenergy sourced from Canadian forests. *GCB Bioenergy*, **9**(2), pp.358-369.

⁷ **Watson, J. E. M. et al.** 2018. The exceptional value of intact forest ecosystems. *Nature Ecology & Evolution* **2**, 599-610, doi:10.1038/s41559-018-0490-x. **Searchinger, T. D., Hamburg, S. P., Melillo, J., Chameides, W., Havlik, P., Kammen, D. M., ... & Tilman, G. D.** 2009. Fixing a critical climate accounting error. *Science*, **326**(5952), 527-528. Studies suggest that biomass harvesting could replace most of the world's natural forests under current incentives (**Searchinger et al.** 2009).

⁸ **Searchinger et al.** 2009. **Scientists' letter to world leaders** 2021 Letter regarding use of forests for bioenergy, signed by hundreds of scientists. **Norton, M., Baldi, A., Buda, V., Carli, B., Cudlin, P., Jones, M. B., ... & Wijkman, A.** 2019. Serious mismatches continue between science and policy in forest bioenergy. *GCB Bioenergy*, **11**(11), 1256-1263. Popular articles in various media, including <https://thenarwhal.ca/bc-wood-pellets-drax-pinnacle-renewable-energy/>; <https://www.nytimes.com/2021/04/19/climate/wood-pellet-industry-climate.html?action=click&module=Top%20Stories&pgtype=Homepage>; <https://www.theguardian.com/environment/2019/dec/16/converting-coal-plants-to-biomass-could-fuel-climate-crisis-scientists-warn>

⁹ Policy suggestions will be discussed on May 27, 2021 with Nathan Cullen, Minister of State, FLNRORD. We can provide additional details as needed. We can also document the relationship between forest ecosystem resilience in relation to the suggestions.

¹⁰ **Watson, J. E. M. et al.** 2018.

¹¹ **Ter-Mikaelian, M.T., Colombo, S.J. and Chen, J.** 2015. The burning question: Does forest bioenergy reduce carbon emissions? A review of common misconceptions about forest carbon accounting. *Journal of Forestry*, **113**(1), pp.57-68. **Norton, M., Baldi, A., Buda, V., Carli, B., Cudlin, P., Jones, M. B., ... & Wijkman, A.** 2019.