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Enhancing Biomass Utilization for Economic, Environmental, and Social Benefits in British Columbia. – What Can Be Done? | Brief No. 1

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AUTHORS

J. Aeyelts, J. Bulkan, D. Roeser (Faculty of Forestry), X. Bi, R. Clift and H. Wang (Faculty of Applied Science Chemical & Biological Engineering) University of British Columbia

BACKGROUND

In British Columbia (BC) roughly 64 million m^3 of logs are harvested annually. Market conditions and government taxes dictate which logs are harvested by forestry companies. Loggers leave behind large amounts of branches, treetops, bark, needles, and other portions of the tree with low economic value. As the *Wildfire Act* considers this material a fire risk, residuals are amassed into slash piles and burned every autumn for hazard abatement. Despite significant policy and innovation efforts to combat the destruction of usable good-quality fibre, the combustion of this material remains common practice and is problematic for two principal reasons:

- **Emissions:** In 2019 alone, CO_2 emissions from this practice totalled 3.9 megatonnes (Mt), representing nearly 6% of BC's provincial total. It is estimated that biomass from logging residuals in BC could generate nearly 20% of BC's energy demand from fossil fuels. Combustion of forestry residues also emits significant fine particulate matter, which has known negative effects on heart and lung health.
- **Under-utilization of fibre:** The *status quo* undermines the potential ecological, economic, and social benefits of biomass. A more intensive harvest and a broader range of uses for the extra fibre would help to compensate for the decline in Allowable Annual Cut (AAC), which is in part due to years of epidemic beetle attack and increasingly intense and widespread wildfires.

Example of a slash pile near Weaver Lake, BC.

KEY CONSTRAINTS

Enhanced utilization offers many potential benefits ranging from improved long-term ecological health of forests, to reduced carbon emissions, improved air quality, job creation, and economic contributions. These benefits have yet to be realized in British Columbia, although they have been in other countries with greater utilization and present a significant economic opportunity with numerous associated advantages. Attempts to halt the burning of slash piles in BC have been stymied by the following significant constraints:

Lack of a detailed plan to achieve the near elimination of slash pile burning by 2030.
The *CleanBC Roadmap 2030* sets a goal of near elimination of slash pile burning by 2030, which is to include engagement with Indigenous communities and industry. However, there is no publicly available timeline or plan resulting in a lack of transparency, accountability, and ability to measure success.

Challenging economics and ineffective taxation structures.
Economics of transporting a low-value, low-density material are challenging in BC due to long hauling distances, lack of a permanent forest road network,

and mountainous geography. This is further exacerbated by aspects of the taxation structure which can discourage secondary harvest, as well as the failure to extend the carbon tax to slash pile burning as intended by the NDP in 2017.

Paradigm of non-integration and under-use.
The current state of the forestry sector does not adequately foster collaboration and integration of harvesting amongst users. While some companies are well integrated internally, the generally disconnected operations result in large amounts of residual fibre. The prevailing paradigm fails to adequately value and utilize this residual material, rather considering it a fire hazard to be disposed of.

Insufficient financial and political support for innovation and local applications.
Important innovations by dedicated individuals to address the needless destruction of wood fibre have not been adequately supported. Local uses of residual biomass for heat and/or power show great potential for fossil fuel replacement and energy independence in remote communities, in view of the shortage of renewable energy sources. However, lack of government support and high initial costs mean operations remain rare.

Existing policies are inadequately implemented, utilized, and enforced.
In 2014 the Forestry Fibre Working Group was established to improve fibre utilization, resulting in the Forestry Fibre Action Plan and development of the Residual Fibre Utilization Policy. Despite progress, the policies and practices have not been adequately implemented or utilized to have a meaningful impact on ending the burning of good-quality wood fibre. Further exacerbating this issue is a lack of enforcement of legally-required on-the-ground practices pertaining to harvest residuals.

Recommendations to enhance economic, environmental, and social benefits.

Create a structured plan and timeline for the near elimination of slash pile burning by 2030.

- Include deadlines, measures of success, and reviews to ensure work is on track to meet the 2030 target.
- Include prompt engagement with Indigenous nations and communities, in recognition of the short timeline and complexity of the task.

Review and amend the current taxation system to enhance biomass utilization.

- To recognize and appropriately discourage emissions from slash pile burning, prioritize operationalization of the provincial carbon tax applied to this practice. Promptly provide the funding and resources required, due to the already drawn-out timeline of the carbon tax.
- Consider implementation of carbon accounting, offering a carbon incentive for avoided greenhouse gas (GHG) emissions through utilization of harvest residuals.
- Removal of the "secondary product royalty" applied to harvest residuals.

FPInnovations operator reference card demonstrating best practices for biomass management.

Review of policies under the *Forest and Range Practices Act (FRPA)* and *Wildfire Act*, to assess and address the paradigm of biomass under-utilization.

- As part of the ongoing FRPA Improvement Initiative, review FRPA to understand the paradigm of under-use, and effects on associated policies. Ensure that biomass is embedded in the resource values of FRPA and make amendments at the next opportunity.
- Review and amend the Residual Fibre Utilization Policy to ensure practices align with the FPInnovations *Best Management Practices for Integrated Harvest Operations in British Columbia*. Establish a process to ensure best practices are standardized and consistently applied.
- Include biomass management in the transition to the Forest Landscape Planning framework. Utilize current evidence to ensure ecological functions and values are prioritized and embedded within this framework.

- Review of existing evidence regarding fire risk from harvest residues, and amendment of the *Wildfire Act* to address any discrepancies.

Create and fund a working group to support innovation and enhance local opportunities.

- Ensure continued collaboration with academia and FPInnovations, prioritizing options for various integrative harvesting methods for the diverse landscapes of British Columbia. Align with the Forest Landscape Planning framework.
- Establish a program to identify and support local communities in which transition from fossil fuels to biomass is feasible. Provide funding to ease the burden of high initial costs, as well as technical support for transition and initiation of operations. Align with the CleanBC Remote Community Energy Strategy (RCES) and the Clean Energy for Rural and Remote Communities program. Prioritize interested Indigenous communities.

Enhance the effectiveness of existing policies aimed at improved biomass utilization.

- In recognition of the positive work and contributions of the Forestry Fibre Working Group, revive this interdisciplinary and collaborative initiative. Build upon previous work, with a focus on understanding barriers to comprehensive implementation, utilization, and enforcement of existing policies. Provide funding to ensure work can continue beyond the next election cycle.
- Provide funding and resources for the continuation of the Residual Fibre Utilization Training and Workshops, facilitated by members of FPInnovations and FLNRORD.

A combination of factors including high profile reports, protests at Fairy Creek throughout 2021, the *Declaration on the Rights of Indigenous Peoples Act*, severe weather events, declining forestry jobs, and mounting public pressure have led to the current changes occurring in BC forest policy. The outdated slash pile burning described here can be recognized and meaningfully addressed in policy reforms, and considered an essential aspect of the modernization of forestry in BC. The recommendations presented provide important initial steps the Government of British Columbia can take to ensure improved biomass utilization for enhanced economic, environmental, and social outcomes.

Enhancing Biomass Utilization for Economic, Environmental, and Social Benefits in British Columbia – Support Document Describing Key Constraints

The findings presented here[1] are based on a literature review and interviews with individuals who have extensive experience working directly in or closely with the forest sector in British Columbia (BC). Backgrounds of participants were in forest industry, Indigenous forestry, the environmental sector, municipal government, journalism, and academia, and took place over the summer and fall of 2021. A total of 76 individuals were contacted, with 26 interviews completed. Despite attempts to include perspectives from government[2] and the wood pellet industry[3], interviews with members of these stakeholder groups were not secured. Interviews were informally structured, and each lasted 60-90 minutes. The analysis is arranged by the major themes which emerged, to understand the policy and operational norms which lead to the burning of slash piles left behind after the logging of coastal temperate rainforests and the various interior forests consisting of spruce, pine, fir, hemlock, and cedar.

KEY CONSTRAINTS

Lack of a detailed plan to achieve the near elimination of slash pile burning by 2030.

- On October 25, 2021, the Province of British Columbia released the *CleanBC Roadmap 2030*, laying out a path forward to achieving climate and economic goals. While the document sets a goal for the "near elimination" (p. 57) of slash pile burning by 2030, there are no benchmarks or definitions to accompany this statement. Additionally, there are few details on steps, timeline, or indicators of success for achieving this complex goal that will require a multi-faceted approach.
    - The provincial roadmap mentions intended government discussions with Indigenous communities and forest licensees. Ample time and resources will be needed to understand the various perspectives, but detailed plans are missing and the start date is not clear.
- In 2018 the Government of British Columbia initiated the *Forest and Range Practices Act* Improvement Initiative, resulting in the *Forest Statutes Amendment Act* and *Forest Amendment Act* which received royal assent in the Legislative Assembly of BC on November 25, 2021. The *Forest Statutes Amendment Act* makes amendments to the *Forest and Range Practices Act,* although it is yet to be seen if this will affect slash pile burning in BC.

Challenging economics and ineffective taxation structures.

- The economics of transporting a low-value, low-density material are inherently challenging in BC due to the long hauling distances, mountainous geography, and lack of a permanent public forest road network as exists in some other forested countries around the world.
    - Interviews confirmed that travel cycle times of 4-6 hours, or 40-60km are what is generally considered economically feasible, but these times may vary depending on location and other factors affecting transport costs.
    - The Forest Enhancement Society of BC (FESBC) has provided a subsidy to primary and secondary harvesters to support the recovery of fibre beyond economically feasible cycle times. The subsidy has received a mixed response from the public. Interviewees often described positive engagement with FESBC to facilitate the utilization of material that would otherwise have been burned, with the added benefits of enhanced collaboration. However, others

[1] Research Ethics for this study was approved by UBC's Office of Research Services. ID number is H20-02591.
[2] Researchers contacted eight individuals working in government positions, seven of which work within FLNRORD: three in ministerial positions, three in the Innovation, Bioeconomy, and Indigenous Opportunities Branch, and one at the Office of the Chief Forester. One person contacted worked within the Ministry of Jobs, Economic Recovery, and Innovation.
[3] Researchers contacted ten individuals who work in or are affiliated with the wood pellet industry.

felt that FESBC was a temporary solution that left fundamental flaws in BC's forest policy.
    - Interviewees also spoke of a "secondary product royalty", a provincial tax applied to products made from fibre recovered after the primary harvest. This second tax makes the production of wood pellets from leftover fibre uneconomic, so such residues are burned in the slash piles.
- In Premier John Horgan's 2017 mandate letter to the Minister of Environment and Climate Change Strategy, George Heyman, he directed the minister to expand the carbon tax to cover slash pile burning. As of February 2022, the carbon tax has not been expanded to slash pile burning and there is no indication of when this may happen.
    - According to the International Panel on Climate Change (IPCC,) emissions from biomass should only be reported in the land-use sector and not in the energy sector to prevent double counting. As combustion of slash piles does not involve the energy sector, it is logical for these emissions to be accounted for under land-use and be taxed accordingly.
    - A complementary carbon incentive awarded for avoided greenhouse (GHG) emissions of fibre harvested for energy or other uses, would encourage the utilization of harvest residuals.

Poor integration of operations and a paradigm of under-utilization.

- Currently harvest residuals are viewed as a material to be disposed of, rather than having potential economic, environmental, or social value. This can be seen in legislation and policy such as Forest Residue and Waste Surveying and Industrial Burning under the *Wildfire Act*.
    - The *Wildfire Act* deems harvest residuals as material which poses a wildfire risk. However, as stated by Sullivan et al. (2021), the discussion of hazard abatement should balance the various benefits of retention and uses of biomass, while reducing human-caused ignitions of this fibre.
- In 2015 the Fibre Recovery Process was introduced under FLNRORD's Residual Fibre Utilization Policy, in an attempt to enhance integration of harvesting and collaboration amongst primary harvesters (PH) and secondary users (SU). The FRP has not yet significantly affected outcomes as demonstrated by the continuing slash pile burning.
    - Interviews revealed that there are often fractured relationships amongst PH and SU's, because of the absence or failure of joint harvest planning.
    - FPInnovations *Best Management Practices for Integration of Harvest Operations in British Columbia* presents a comprehensive guideline for practitioners working in primary and secondary harvesting operations.

Insufficient financial and political support for innovation and local applications.

- In British Columbia there are nearly 50 communities which rely on fossil fuels, these communities have access to wood fibre that could be used for district heating (DH), or combined heat and power (CHP). The FPInnovations film, *The Forest Will Burn* presents the potential for fossil fuel displacement through biomass use in remote communities, along with the social and environmental benefits of such a transition.
    - Currently there are only a total of seven community operations with functional DH/CHP in BC, with three communities having secured federal funding and undertaking initial planning phases to utilize biomass for fossil fuel displacement .
- The *CleanBC Roadmap 2030* does not include biomass for DH/CHP, although there is potential for enhancing the use of biomass through the CleanBC Remote Community Energy Strategy and the federally funded Clean Energy for Rural and Remote Communities program
- Many interviewees expressed the view that biomass will always face an uphill battle in BC where energy from hydropower comes at a comparatively low cost.
    - Additionally, BC Hydro has contracts with various pulp mills in BC to purchase bioenergy for the provincial grid. Through interviews it was learned that as these contracts expire not all are being renegotiated, discouraging companies from investing in technology to advance bioenergy production. The lack of renegotiation relates to Site C and decreasing export energy prices, lowering what mills can get for bioenergy and no

longer incentivizing investment in this technology.

Existing policies are inadequately implemented, utilized, and enforced.

- Interviews revealed that there is an awareness within the sector that violations of rules and regulations regarding residual fibre occur, and that penalties and enforcement are not adequately applied. This sentiment is reflected in *Modernizing Forest Policy in British Columbia* (p. 21), which makes reference to penalties being seen as the "price of doing business" rather than a deterrent to violations and poor practices.
    - *Modernizing Forest Policy in British Columbia* has already set the intention to enhance reporting and penalties regarding violations and infractions. To complement this work, the revival of the Forestry and Fibre Working Group provides a collaborative means to further understand and address poor practices regarding utilization of fibre.
- In 2014 the interdisciplinary Forestry and Fibre Working Group (FFWG) was established, resulting in significant work and positive contributions including the Forest Fibre Action Plan which laid out 13 recommendations to improve fibre utilization. Subsequently the Residual Fibre Utilization Policy was created and includes innovative approaches to addressing fibre use such as the Fibre Recovery Process and Alternate Methods of Scale. As substantial work has already gone into the creation of strong policy measures, emphasis should be placed on ensuring these are adequately understood and implemented.
    - The Residual Fibre Training and Workshops started in 2018, and have moved to a virtual platform since the pandemic put a stop to in-person workshops. The most recent sessions took place in February and March of 2021, and covered a range of topics including specifics of the Residual Fibre Utilization Policy, bioenergy and wildfire, and the Forest Carbon Initiative. Interviews confirmed that the general reception to these workshops was positive and offered a platform for questions and discussion that did not otherwise exist.

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