

Investigation

Canada's growing wood pellet export industry threatens forests, wildlife and our climate



Executive Summary

Forests in Canada are fueling high-emissions energy plants in Europe and East Asia as a replacement for coal. Governments are promoting large-scale biomass energy projects as renewable and clean, obscuring the true impacts of the sector on emissions and forests — including globally rare rainforests. Canada and British Columbia are supporting and subsidizing the development of the wood pellet industry as a climate solution based on faulty carbon accounting, poor scientific evidence, weak regulations, and land use planning that is failing to protect old growth forests or threatened species habitat.

This report details findings of an investigation into the risks of the growing wood pellet export sector across Canada, with a focus on British Columbia as the country's leading exporter. The BC government has sold wood pellet exports as an opportunity to make use of waste, such as sawdust and slash piles.

Using photos and satellite imagery of both of British Columbia's biggest pellet companies, Pacific BioEnergy and Pinnacle Renewable Energy, this investigation reveals with absolute certainty that **wood pellets are being made from whole trees in British Columbia.**

This investigation also reveals that:

- Pellets are likely being made with wood from threatened species habitat, and a growing wood pellet export sector puts additional strain on endangered species like woodland caribou.
- At the smokestack, burning wood pellets for power generation is worse than coal in terms of climate pollution.
- It can take decades to centuries for forests to regain the majority of their carbon storage capacity compared to pre-harvest levels, whereas carbon is instantly emitted to the atmosphere when wood pellets are burned.

- Serious flaws in emissions accounting and the blanket classification of biomass as a renewable energy resource jeopardize our ability to meet global climate goals.
- The industry is only tenable due to massive subsidies, especially in import countries, where resources could be invested in true low-carbon solutions such as wind, solar, tidal, geothermal, and efficiency.

Canada is the world's second largest wood pellet producer and exports the majority of wood pellets to European and Asian markets. A loophole in international climate agreements means that biomass plants do not have to count emissions at the stack, under the premise that emissions are accounted for and offset on the supply side—which is not the case. In reality, this investigation reveals forestry operations in Canada and BC are degrading some of the most carbon-rich forests on the planet, and the combined threat of forest destruction and uncounted biomass emissions endangers and undermines global efforts to avoid a climate catastrophe. Current wood pellet operations are not a global climate solution and in fact are contributing to our growing climate emergency.

British Columbia and other provincial governments need to take immediate legislative action to ensure that wood pellet export companies do not have access to forest harvest licenses and do not use whole trees in production. As the world struggles to mitigate ecological crises, Canada must take a leadership role to address this growing threat by:

- **Preventing new construction or expansion of wood pellet export facilities.**
- **Ending public subsidies for the wood pellet export industry,** the construction or expansion of new plants, and coal-to-wood conversions. Invest in climate solutions based on regional needs, such as wind, solar, and energy efficiency.
- **Establishing protection for primary, carbon-rich, and other natural forests,** as well as threatened species habitat, in partnerships with Indigenous, federal, provincial, and local governments.
- **Respecting Indigenous title and rights** by adopting policies that adhere to legal frameworks established by Indigenous Nations, treaty obligations, and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).
- **Supporting forest communities and workers** by enacting provincial forestry reform in partnership with Indigenous Nations and local communities; investing in long-lasting, lower impact practices like local, value-added milling from second-growth; and managing forests for ecological values.
- **Advancing only small-scale development of biomass projects** by following and upholding Indigenous leadership; using verified wood waste; and supporting community-driven projects designed to meet local needs for heat and power, rather than utility-scale or for export markets.



PHOTO: JAMES STEIDLE VIA CONSERVATION NORTH. TAKEN FEBRUARY 14, 2020 AT PACIFIC BIOENERGY IN PRINCE GEORGE, BC.

A growing industry means growing impacts

British Columbia accounts for the vast majority of Canada’s wood pellet export market, with about 80% of national exports.¹ New plants are being built or have been proposed in Québec, New Brunswick, Ontario, and even Vancouver Island— where remaining coastal temperate rainforests are still under threat and a wood pellet plant is being proposed.

The BC government claims that growing the export industry means “transforming wood waste into wood pellets” to provide trade partners with “clean, renewable energy.”² However, pellet plants have increased their use of logs over 2019, as sawmill residuals become more scarce due to mill closures in the province.³ As the industry grows, the need to use trees for fibre is likely to grow along with it.

Both of British Columbia’s biggest pellet companies, Pacific BioEnergy and Pinnacle Renewable Energy, use whole trees in some of their pellet plants. Investigations of these facilities yielded photographic evidence showing trucks, rail cars, and log piles comprised of whole trees.

On February 14, 2020 members of [Conservation North](#) took photos of a logging truck entering Pacific BioEnergy’s Prince George facility. The truck contained large, old trees identified as Western redcedar. Pacific BioEnergy has several forest licenses, including one for 25,000 cubic metres in the Prince George timber supply area, which includes temperate rainforest.⁴

Logging trucks pull into the Pacific BioEnergy facility in Prince George, BC. In 2019, the company shifted “away from sawmill residuals, due to a decrease in availability, with an increase in grinding and forest harvesting...”⁵

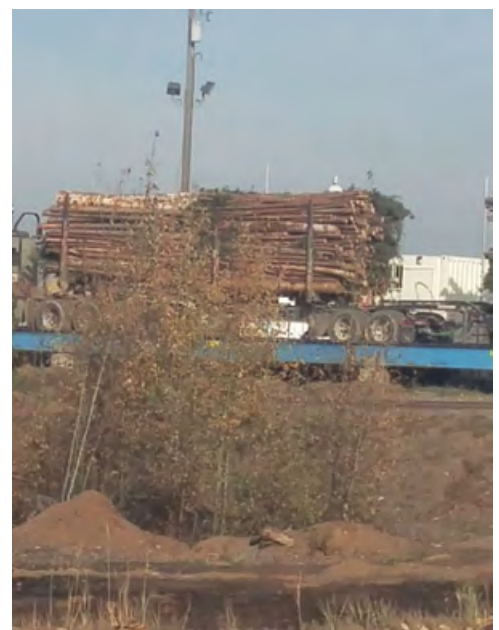




PHOTO: TAYLOR ROADES. ANZAC VALLEY CLEARCUTS

Extensive clearcutting in the BC interior continues to take place under the pretense of harvesting insect-infested trees. Pellet plants have secured wood harvest at massively discounted rates due to apparent spruce beetle infestation. A 2019 investigation focused on Anzac Valley clearcuts north of Prince George found that in these log piles, “three quarters of the spruce had no sign of beetle attack.”⁶ In 2017 and 2018, Pacific BioEnergy received \$2,182,758 in “grants” from a BC Crown agency for “fibre utilization projects.”⁷

Below, left: Satellite imagery shows the scale of log piles located at a Pinnacle pellet plant. Sourced: 2020 Google, CNES / Airbus. **Right:** Logs piled outside Pinnacle Renewable Energy’s Meadowbank Facility located 75km south of Prince George and 45km north of Quesnel, in Strathnaver, BC. Pinnacle is upgrading this facility, among others in BC, to increase production capacity – including by investing in more chippers that can process whole logs to reduce reliance on sawmill residuals.⁸



Countries, regions, and subsidies driving wood pellet export growth

Most wood pellets produced in Canada are exported to Europe and Asia. The United Kingdom and Japan are Canada's biggest customers. By some estimates, Japan will be consuming 20 million metric tons per year of wood pellets by 2030.⁹

In addition to the enormous climate and forest impacts associated with this growth, public subsidies are being used to make the industry economically viable. One of the largest pellet-burning stations in the UK, Drax, collects subsidies amounting to the equivalent of about one billion dollars each year aimed at facilitating a transition to renewable energy use, despite **clear emissions data showing that burning wood pellets emits more carbon dioxide than coal**.¹⁰ On the supply side in Canada, tens of millions of public dollars are being spent annually by federal and provincial governments to subsidize the growth of the wood pellet export industry.

In the United Kingdom, Canada's largest market for wood pellets, biomass made up 11% of electricity generation in 2019, amounting to about a third of energy sources classified as renewable.¹¹ The UK cannot achieve its target of net zero emissions if it continues to rely on biomass for such a significant share of heat and power, particularly when imported from primary forest regions like those in Canada or the wetland forests of the US Southeast. Writing to the European Union in 2018, 796 scientists stated that supplying an additional 3% of global energy with biomass would require logging rates of global forests to be doubled.¹²

Largest export provinces and import countries in 1,000 metric tons

IMPORTER	EXPORTER						Total
	British Columbia	Quebec	New Brunswick	Nova Scotia	Alberta	Ontario	
United Kingdom	1,492		81	5			1,578
Japan	622	0					622
United States	23	158	11	0	24	1	217
Netherlands	50			7			57
Italy		41		15			56
South Korea	41						41
Belgium	40	0		1			41
Denmark		28		11			39
Exporter total	2,268	227	92	39	24	1	2,651

A false climate solution

Growing the wood pellet export industry in Canada doubles down on carbon emissions: first by instantly releasing a forest's stored carbon at the smokestack; and second by driving the further degradation of forests, which are a critical ally in the fight against climate change.

In Canada, wood pellets are made from a variety of fibre inputs, from sawmill residuals to logs. While provincial and federal governments claim that wood pellet production displaces fibre that would otherwise be wasted or burned in slash piles, this rhetoric masks the direct impact of the logging industry on forests.

When forests are logged and burned for energy, the carbon they accumulated over many years is instantaneously transferred into the atmosphere.

Many forests may never re-capture the amount of carbon they once stored. Classifying forest bioenergy as a “renewable” resource alongside wind and solar falsely assumes that sourcing regions will recover within a single lifetime. Some of the planet's most carbon-dense forests are found in British Columbia, and it will take centuries for these forests to regain carbon storage potential comparable to pre-logging levels.¹⁴

Wood pellet production risks further legitimizing wasteful and destructive logging practices, rather than incentivizing meaningful forestry reform that protects carbon-rich and ecologically important forests. Destructive practices like clearcutting further diminish a forest's ability to begin recovering its carbon storage potential. Research in BC has shown that following a clearcut, there's a minimum 13 year window where the logged and replanted area no longer sequesters carbon: this analysis suggests that clearcutting is preventing forests in BC from removing an additional 26.5 million tonnes of carbon dioxide per year from the atmosphere.¹⁵ The combined figure is equivalent to the annual emissions from almost 15 million passenger vehicles.¹⁶

Protecting forests for natural and carbon values is a vital component of a successful global climate strategy. Maintaining older, biodiverse forests, draws down carbon levels and helps buffer imperiled ecosystems against the impacts of climate change. Protecting intact forests also makes nearby communities more resilient to climate impacts such as drought, floods, and wildfire.


Indigenous-led biomass projects at the community level have demonstrated where forest bioenergy — notably when combined with management and stewardship, as well as revitalization of local milling — can be an important component of energy independence. At the export level, especially when whole trees from primary forests are used in production, the wood pellet industry fails to meet this threshold for long-term viability.

A dangerous loophole in international climate agreements classifies biomass energy as carbon neutral, even when sourced from primary forests. This blanket classification assumes that carbon is counted on the supply side instead of at the stack, and means that coal plants converted to burning wood pellets or other forms of biomass no longer have to count emissions. In fact, burning wood releases more climate-polluting carbon dioxide at the stack than coal. The growth of the wood pellet sector, alongside this loophole, is a serious risk to achieving global emissions reductions targets and avoiding climate catastrophe.¹³

Biomass energy degrades forests and impacts threatened species

The growth of the wood pellet industry puts forest ecosystems at risk. Across Canada, about a third of the pellet industry is in the boreal forest. And in BC, fully one-third of the industry is in the Inland Temperate Rainforest. These forests are globally essential carbon sinks that also support indispensable biodiversity. The pellet industry impacts these forests by harvesting whole trees and other forest material for fibre, and as a co-product of industrial logging, underpinning the industry's most destructive practices (for example, by legitimizing clearcutting).

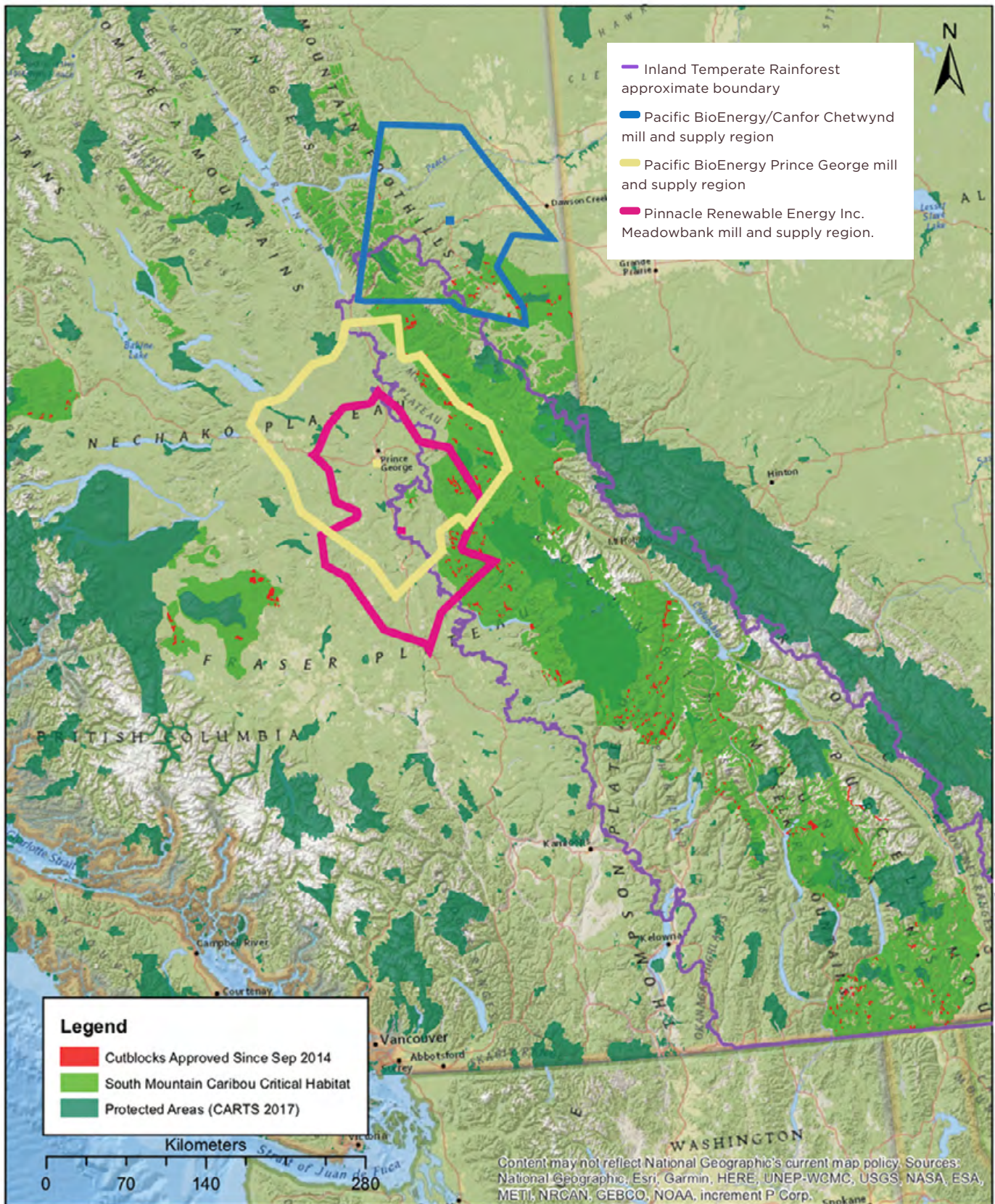
Woodland caribou in this area are particularly at risk from logging activities. These animals signal the broader health of forest ecosystems and their ability to regulate carbon, given that they depend upon large tracts of old and intact forests for their survival. Caribou are listed as a threatened species federally — primarily due to habitat loss and fragmentation. In 2018, the federal government declared that southern mountain caribou herds — the subpopulation of woodland caribou whose habitat includes the Inland Temperate Rainforest — were at imminent risk of extinction. This assessment opens the door for Canada to issue an emergency order to protect the species' habitat, which could directly implicate fibre sources for the biomass industry. The growth of the wood pellet industry is yet another extractive industry that is compromising the future survival of this indicator species.



“ If we let some of our forests grow, we could remove an additional 10 to 20 percent of what we emit every year; instead, we're paying subsidies to have people cut them down, burning them in place of coal, and counting it as zero carbon.

—Bill Moomaw, Professor Emeritus of International Environmental Policy at the Fletcher School, Tufts University and IPCC report author¹⁷

Overlapping Caribou Habitat and Pellet Mill Fibre Collection Areas





Wood pellets come from critical habitats

The impact of a pellet mill can potentially cover hundreds of kilometres, especially as they acquire increasing amounts of fibre from the forest. Both Pinnacle Renewable Energy and Pacific BioEnergy have said they have a fibre radius of about 150km, meaning that is the one-way distance they will travel for collecting sawmill fibre or forest residues. The map shows a rough outline of forestry roads within 150km radius of each of the three BC pellet mills that are close to caribou ranges: Pinnacle's Meadowbank mill, and Pacific BioEnergy's Prince George and Chetwynd mills. The map lines and measurements are intended to approximate the location of these potential fibre collection areas relative to critical caribou habitat and the Inland Temperate Rainforest. Further investigations are underway to determine the precise location of forest licenses and supply areas in these critical forests.

The Woodland caribou range roughly corresponds with boundaries of the Inland Temperate Rainforest, and inclusive of boreal rainforest, in the Prince George area. Further south, the caribou range is smaller because the southern populations have faced greater extirpation.

Supply areas are on Indigenous lands

“ Because the timber on T̓silhqot̓in Aboriginal title lands belongs to the T̓silhqot̓in, and not the Crown, the Forest Act does not apply as currently drafted. This means that the Province cannot authorize forestry companies to harvest timber on T̓silhqot̓in Aboriginal title lands.

— Summary of the landmark T̓silhqot̓in title case.¹⁸

A growing wood pellet export sector risks business as usual industrial operations on Indigenous territories, with varying levels of collaborative management and consent-based decision-making across the country. Federal and provincial governments must work in full partnership with Indigenous Nations, adhere to inherent and treaty rights, and prioritize full implementation of the United Nations Declaration on the Rights of Indigenous People (UNDRIP) relating to all forestry, including biomass—or the growth of the wood pellet sector could further erode land rights.

All forestry in Canada occurs on Indigenous territories. Important legal precedents outline inherent Indigenous rights and title, but colonial governments have largely left these issues unresolved, and are continuing to expedite resource extraction projects.

In a 2014 case to resolve a logging dispute, the Supreme Court of Canada unanimously ruled that the T̓silhqot̓in First Nation, not the Crown governments, have title to—and therefore, control over—some of their land claim base in British Columbia.¹⁹ This decision sets an important precedent as other Indigenous title cases are underway in the province, where hundreds of First Nations have territorial claims, and has broad implications for the operation of logging companies on lands where Indigenous consent is and will be required.

Indigenous Nations are also leading in community-based use of biomass energy for local heat and power needs in areas where energy independence is vital. Projects like the Teslin Tlingit Council's biomass initiative demonstrate the important confluence of community-driven biomass use with built-in land management practices.²⁰

Provincial governments must revise and restructure forest policies in line with Indigenous title and rights, as well as ecological values, or risk jeopardizing the future resiliency of communities.



Canada needs to protect forests

Canada has an enormous role to play in mitigating the climate crisis. The boreal forest, accounting for 75% of all remaining forest in Canada, is the largest intact forest on the planet. The boreal stores carbon in soil, wetlands, and trees, and this ecosystem is at serious risk from development like logging, which impacts older stands of trees more than natural disturbance like wildfires. Decreasing the age of the forests limits its carbon storage potential, which means protecting the boreal forest is essential on a global scale.

British Columbia is known for monumental old growth forests, which include some of the most carbon-rich forests on the planet. The province of British Columbia is facing mounting pressure from civil society to put a moratorium on further logging in intact and old growth areas, given the staggering losses of old growth and primary forests within the province. At the same time, forestry in BC is struggling economically. However, instead of taking measures to make the industry viable in the long term, BC is leaning on wood pellet exports as a way to maintain business as usual. But business as usual isn't going to work—economically or ecologically. As sawmills close, pellet mills lose their key source of fibre and will rely increasingly on whole tree inputs. Forest ecosystems are already struggling as a result of decades of mismanagement and over-logging. Wood pellets are an additional, extractive forest industry that further diminishes their ecological integrity.

Canada wants to be seen as a climate leader, but further degrading forests to export wood pellets is not a climate solution. A true climate solution is to protect the value of standing forests, especially now, when we need to be cutting carbon, not trees.

Solutions for import and export regions

- **Preventing new construction or expansion of wood pellet export facilities.**
- **Ending public subsidies for the wood pellet export industry**, the construction or expansion of new plants, and coal-to-wood conversions. Invest in climate solutions based on regional needs, such as wind, solar, and energy efficiency.
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- **Advancing only small-scale development of biomass projects** by following and upholding Indigenous leadership; using verified wood waste; and supporting community-driven projects designed to meet local needs for heat and power, rather than utility-scale or for export markets.

Conclusion

The European Union was the first region to heavily subsidize burning wood in place of coal under the guise of a climate solution. Billions of dollars have been—and continue to be—spent to regress energy production from coal to wood, in the form of subsidies and other financial incentives. Japan and other countries are increasingly following this dangerous path.

The world is facing climate and biodiversity crises. Policy-makers must focus on bringing true forms of renewable energy to scale, rather than misleading the public and contributing to further forest destruction and degradation.



PACIFIC BIOENERGY PRINCE GEORGE MILL . PHOTO: DOMINICK DELLASALA, GEOS INSTITUTE

Investigation: biomass companies are making wood pellets from whole trees

The three pellet mills described below all work in this region. In the case of two of them, we have evidence that they use whole logs in their pellets.

Pinnacle Renewable Energy Meadowbank Mill (Strathnaver, BC)

- The facility has been specifically designed to be able to process many types of wood fibre, including bush grind and logs.
- Pinnacle will pre-process fibre at this plant and then send the pre-processed wood fibre to other production facilities.²¹
- According to Pinnacle employees, the company prefers to use the term “round wood” instead of logs in order to manage perceptions and avoid backlash.
- 30% of the company’s fibre input is forest residual material, including logs.
- Gathering forest residual materials is a competitive business. The company hires contractors to source and collect this material.
- The company generally has a 150km travel radius to get fibre (for their Prince George area mills).

Figures 1, 2, and 3 show logs piled around the Pinnacle facility in Strathnaver, BC.



Figure 1: Pinnacle Pellet Mill, Strathnaver, BC. Image sourced: 2020 Google, CNES / Airbus.



Figure 2: Pinnacle Pellet Mill, Strathnaver, BC. Image sourced from Google Maps (Street view)



Figure 3: Pinnacle Pellet Mill, Strathnaver, BC.

Pacific BioEnergy Prince George Mill

According to company employees:

- Pacific Bioenergy uses logs that are not viable as saw logs to produce their pellets.
- Their preferred feedstock is logs killed by mountain pine beetle.
- Their logs originate from Crown lands and private purchases.

We observed whole logs on this mill site.



Figure 4: Pacific Bioenergy Pellet Mill, Prince George, BC. Image sourced: 2020 Google, CNES / Airbus.



Figure 5: Pacific Bioenergy Pellet Mill, Prince George, BC. Image of a truck carrying logs being weighed as it enters the pellet mill.

Pacific BioEnergy / Canfor Chetwynd Mill

- The Chetwynd mill is a joint venture with Canfor.
- Canfor has a sawmill at this site that produces SPF dimensional lumber. Therefore, while we have evidence of whole logs on the site, we are unable to identify which, if any of the logs, are used for the pellet mill.



Figure 6: Pacific Bioenergy Pellet Mill (red arrow) on the same property as Canfor Sawmill. Yellow arrows show whole logs on the same property. Image sourced from Google Maps.



PACIFIC BIOENERGY PRINCE GEORGE MILL. PHOTO BELOW BY DOMINICK DELLASALA, GEOS INSTITUTE



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